WATER QUALITY TRADING PLAN

WASTEWATER STABILIZATION POND

WAUMANDEE SANITARY DISTRICT #1

WAUMANDEE, WI



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1 EXECUTIVE SUMMARY

The WPDES Permit for the Waumandee wastewater treatment plant (WWTP) proposes a future phosphorus effluent limit of 0.075 mg/L. The existing limit is 1.3 mg/L. Within this Permit term, by September 30, 2024, the Sanitary District plans to meet the limit by offsetting the entire phosphorous mass with WQT projects.

From 2020-2022, the total flow discharged from the Waumandee WWTP averaged 2.46 MG. At the average 1.3 mg/L, the effluent phosphorous mass loading is 27 lbs./year. At the same annual average flow of 2.46 MG, the future 0.075 mg/L limit will reduce the required phosphorous mass loading to 1.5 lbs./year, a reduction of 25 lbs./year. WQT will require a 2:1 or 3:1 Trade Ratio, which means Waumandee would need to secure approximately 50 to 76 lbs/year of phosphorus credit to meet the base trade amount via Water Quality Trade (WQT) with a continued 1.3 mg/L phosphorus effluent.

Waumandee has an interim limit of 1.0 mg/L going into effect October 31, 2023. At 1.0 mg/L, the mass loading is approximately 19 lbs/year. Waumandee would need to obtain approximately 38 to 57 lbs of credits if the full WQT cannot be constructed by the interim limit date.

Both above conditions assume the current wastewater Flow rate for future conditions. No growth is expected for the Waumandee sewer service area.

The WWTP discharge is piped to the Waumandee Creek in the Waumandee Creek Watershed of the Buffalo-Trempealeau River Basin.

2 BACKGROUND SUPPORTING THE WATER QUALITY TRADE PLAN

2.1 *Purpose of Water Quality Trading*

The purpose of this Water Quality Trading Plan is to describe how the Waumandee WWTP will utilize water quality trading (WQT) to comply with the phosphorus limits of WPDES permit WI-0061646-04-0, which expires on September 30, 2024. This Water Quality Trading Plan will require a Water Quality Trade Agreement with the landowners. The agreement will be developed pursuant to a Notice of Intent (form 3400-206) to conduct a WQT. The Notice of Intent (NOI) was filed in March 2020 and is included in **Appendix 2-1** of this plan.

2.2 *Background of the Total Phosphorous Permit Requirements for the WWTP Outfall*

The outfall is located on Waumandee Creek and is authorized to discharge through WPDES permit WI-0061646-04-0. The permit is effective from October 1, 2019, to September 30, 2024. The total phosphorus limits are summarized as follows:

- October 1, 2019 to September 30, 2023 1.3 mg/L
- October 1, 2023 to September 30, 2024 1.0 mg/L
- October 1, 2024 to September 30, 2039 0.075 mg/L (proposed)

In accordance with s. 283.15, Wis. Stats., the outfall for permit WI-0061646-04-0 currently is under a Multi-Discharger Variance (MDV) phosphorus variance. The conditions of the variance include the following requirements:

- Optimization: The permittee shall continue to optimize performance to control phosphorous discharges in accordance with s. 283.16(6), Wis. Stats. See the schedules section of the permit for optimization requirements.
- Watershed Provisions: The permittee is required to implement watershed measures to reduce the amount of phosphorous entering the receiving water.

- Payment to County for Phosphorous Reduction: The permittee shall make payments for phosphorous reduction to the county or counties approved by the Department per s. 283.16(8), Wis. Stats. The permittee shall make a total payment by March 1 of each year in the amount equal to the per pound amount of $53.01 times the number of pounds by which the effluent phosphorous discharged during the previous year exceeded the permittee's target value. The target value is 0.2 mg/L per s. 283.16(1)(h), Wis. Stats., and is applicable year-round. With Flow at 2.46 GPD and effluent P at 1.3 mg/L, the estimated annual payment is $1,198.64. With the 1.0 mg/L effluent P achievable with the pilot chemical fed, the estimated annual MDV payment is reduced to $871.74.

2.3 Location of WWTP Outfall

The stabilization pond outfall discharges to Waumandee Creek, which is located in the Waumandee Creek Watershed in the Buffalo-Trempealeau River Basin in Buffalo County. Waumandee Creek flows to the southwest and discharges to the Mississippi River approximately 10 miles southeast of the Waumandee WWTP outfall location. The outfall location is located east of the intersection of CTH U and WWTP service entrance road within the Town of Waumandee. See **Appendix 2-2** for the Waumandee WWTP Outfall Location Map.

2.4 Location of Restoration Project in Comparison to the WWTP Outfall

The WQT project locations are on Waumandee Creek within the Town of Waumandee. The Reuter project site is 500 feet upstream of the WWTP discharge. The Reglin/Brommer streambank restoration project is approximately 1,500 feet downstream of the WWTP discharge location. See **Appendix 2-3** for a map of the two locations.

3 DESCRIPTION OF EXISTING LAND USES IN VICINITY OF WQT PROJECTS

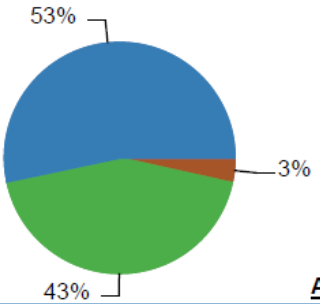
3.1 Waumandee Creek in Waumandee

Waumandee Creek is 34-mile long; 7 miles of the creek is a Class III brook trout stream. The remaining 27 miles are a warm water fishery. Per the WI DNR website, "This watershed is ranked High for runoff impacts on streams, Low for runoff impacts on lakes and High for runoff impacts on groundwater and therefore has an overall rank of High." Waumandee Creek is considered a "Cool-Warm Mainstem" stream under the state's Natural Community Determinations.

The soil type at each project site is identified as Orion Silt Loam, see **Appendix 3-1** for the Soils Map.

Per the DNR website under Watershed Characteristics, "Waumandee Creek is located in the Irish Valley – Waumandee Creek watershed which is 140.24 mi^2. Land use in the watershed is primarily forest (53%), agricultural (43%), urban (3%) and other uses (1%). This watershed has 842 stream miles, 357 lake acres and 8,254 wetland acres."

WAUMANDEE CREEK WATERSHED CHARACTERISTICS



Type	Area
Forest	73.2 mi²
Agriculture	59.35 mi²
Urban	4.75 mi²
Wetland	1.63 mi²
Barren	0.79 mi²
Grassland	0.43 mi²

4 MANAGEMENT PRACTICES USED TO GENERATE CREDITS

Streambank Stabilization. The 1,075 lineal feet streambank stabilization sites for the Reuter, Reglin, and Brommer Waumandee Creek projects were chosen as good sites to generate WQT credits through a riprap project, as these sections of streambank have very high-velocity waters that rapidly erode the banks during flood events. A very conservative annual recession rate of 0.5 feet per year was determined, but over the last few years the sites have lost many feet of streambank during flood events. The basis for determining the recession rate is to use the definitions defined by NRCS (see **Appendix 4-1** for the NRCS recession rate reference material used). The sites also have high levels of nonpoint source pollutants entering from farm practices. Working with the landowners to install conservation practices would greatly reduce those pollutants. Stabilizing and riprapping the creek banks to armor the banks is the best solution to limit future erosion on the Reuter, Reglin, and Brommer properties.

4.1 Duration of Management Practice

The duration of the streambank restoration management practice can be 50+ years if maintained properly and no extreme wet weather events occur. The construction will require shaping of the streambank and placement of properly sized rip rap. The landowners will enter into contracts with the County and the District that requires the landowner to maintain the streambank protection. The operation and maintenance are discussed in more detail in Section 13 of this plan.

4.2 Description of Best Management Practices Used

Streambank Stabilization. The streambank stabilization BMP will be designed by the County Land Conservation Dept. and follow the NRCS 580 Code. The bends where higher tractive forces are required to maintain vegetation will implement riprap armor. The County will design the riprap to follow NRCS standards by including geotextile fabric under the riprap and properly sized stones. The BMP will be designed such that the riprap should not migrate due to the flow of the stream.

5 AMOUNT OF CREDIT BEING GENERATED

This Water Quality Trading Plan is to trade for the pollutant of phosphorus. Throughout the year, sediment is transported in the stream from erosion of the streambanks. The sediment contains phosphorus, which causes poor water quality. NRCS has developed a spreadsheet that estimates the annual runoff of erosion based upon whether the impaired bank is a streambank, gully, or ephemeral gully. The estimated annual sediment volume is converted to an amount of phosphorus based upon the percent of leachable phosphorus in the soil, as determined by soil sample testing results. After installing BMPs, such as revegetation of a streambank or an armored riprap streambank, the sediment transport from the erosion has been theoretically eliminated. The estimated amount of annual phosphorus due to erosion can be calculated to determine the amount of credit generated by the BMP.

Calculations show that an estimated 154 pounds of phosphorus per year would be prevented from entering Waumandee Creek by constructing the Reuter, Brommer, and Regling WQT projects along Waumandee Creek. See **Appendix 5-1** for the Phosphorus Loss Calculation.

Additional credit can be generated with a "Habitat Adjustment" on the streambank restoration projects as further described in Section 6.5.

6 DESCRIPTION OF APPLICABLE TRADE RATIO PER AGREEMENT/MANAGEMENT PRACTICE

The Wisconsin Department of Resources will make the ultimate decision on the Trade Ratio to be applied to the project. The estimated ratio is derived from the following formula:

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

6.1 Delivery Factor

The delivery factor is determined by the following equation:

Delivery Factor = (1 / SPARROW delivery fraction) – 1

The SPARROW delivery fraction is determined by a model developed for the USGS. The WDNR has implemented the Sparrow trade factors onto the Water Surface Data Viewer on their website. Upon review of the website the delivery factor was shown to be a 1:1 ratio (a zero in the trade ratio equation).

Waumandee Creek. The credit user and credit generator are located in the same HUC 12 basin, though two of the credit generators, Brommer and Reglin, are downstream of the credit user. The Brommer and Reglin sites are located approximately 1,500 feet downstream from the Waumandee discharge. The Reuter project is located approximately 350 feet upstream from the Waumandee discharge.

Per the *Guidance for Implementing Water Quality Trading in WPDES Permits*, the Delivery Factor in section 2.11.1 states "The delivery factor accounts for the distance between trading partners and the impact that this distance has on the fate and transport of the traded pollutant in surface waters" (pg. 26). The delivery factor is often zero when in the same HUC 12, see **Appendix 6-1** for the HUC 12 Watershed Basin Map. The sites for the Waumandee Creek projects are within the same HUC 12. However, two of the project sites are located downstream of the credit generator. DNR guidance shows a 1:1 ratio, therefore the delivery factor will be zero.

The Delivery Factor is zero (0).

6.2 Downstream Factor

The DNR WQT Guidance (2013) states, "The downstream factor is used to help prevent a violation of water quality criteria in the receiving water between the credit user and generator." (pg. 27). The downstream factor is only measured when the credit generator is downstream of the credit user. If the credit generator is upstream of the user, then the downstream factor is zero.

Two of the credit generators are downstream of the credit user (WWTP). The downstream trading factor is a function of the average annual pollutant load discharged by the credit user when compared to the overall total pollutant load at the credit user's point of standards application. The total phosphorus within the watershed was estimated using DNR's PRESTO tool. Following is the phosphorus load estimate from PRESTO for the Waumandee Creek watershed:

PRESTO Phosphorus Load Estimate	
Avg. Annual Nonpoint Phosphorous Load (80% Confidence Interval)	85,751 (40,185 - 182,987) lbs
Number of Facilities (Individual Facility Information below)	2
Avg. Annual Point-source Phosphorous Load (2010 - 2012 total of all facilities)	1,295lbs
Most Likely Point : Nonpoint Phosphorous Ratio	1% : 99%
Low Estimate Point : Nonpoint Phosphorous Ratio (Adaptive Management)	1% : 99%

Waumandee discharged an average of approximately 27 lbs/year of phosphorus from 2020-2022. As noted from the PRESTO phosphorus load estimate, the total average annual nonpoint phosphorus load is approximate 85,751 lbs. Waumandee contributes less than 1% of the total phosphorus load in the watershed. The downstream trading factor for the numerous credit user load allocations is indicated in the *Guidance for Implementing Water Quality Trading in WPDES Permits* (pg. 28).

The Waumandee Creek Downstream Factor is 0.1.

6.3 Equivalency Factor

The WQT for the credit user is based upon total phosphorus (TP). According to the *Guidance for Implementing Water Quality Trading in WPDES Permits* (2013), when accounting for the equivalency factor for TP, the equivalency factor is zero. This is because the differences between the soluble and sediment-bound P have been accounted for in the delivery factor (pg. 28).

The Equivalency Factor is zero (0).

6.4 Uncertainty Factor

The uncertainty factor is used to compensate for the uncertainty of the effectiveness of the WQT project/plan. The uncertainty, especially with non-point discharges, is because many factors which are not controllable determine the effectiveness of the implementation, such as climate, potential inaccuracies from field testing or the reliability of the management practice to perform under various hydrological conditions. The WDNR has established a table to help assign values to the uncertainty variable of the equation. The table is on page 151 in the *Guidance for Implementing Water Quality Trading in WPDES Permits.*

6.4.1 Bank Stabilization

For bank stabilizations, WDNR has assigned a value of a two (2) with aquatic habitat restoration (this accounts for the subtraction of the habitat adjustment) and a three (3) without aquatic habitat restoration; therefore, this project has an uncertainty value of three (3). The habitat adjustment will be considered in the following section.

The Uncertainty Factor is three (3).

6.5 Habitat Adjustment

Waumandee Creek. The habitat adjustment factor is the same as the habitat restoration discussed in section 6.4 above. To be eligible to claim credit for habitat restoration, the surface water where the project work is taking place must be listed by WDNR as an impaired water body due to the pollutant which the credit user is attempting to mitigate.

Per the WDNR website, https://dnr.wi.gov/water/waterDetail.aspx?key=1439074, Waumandee Creek is considered an impaired system due to phosphorus. The total phosphorus data exceeds the WisCALM listing criteria for the Fish and Aquatic Life use. Because the total phosphorus exceeds the WisCALM criteria, this stream would qualify for Aquatic Habitat Adjustment.

In order to obtain the habitat adjustment, habitat best management practices must be implemented and established as part of the project. Per Table 4, pg. 21 of the *Guidance for Implementing Water Quality Trading in WPDES Permits*, the uncertainty factor for Waumandee Creek can be reduced from a three (3) to a two (2) with aquatic habitat restoration. Helping to restore aquatic restoration can come in many forms.

The following example habitat structure alternatives are from the *NRCS Companion Document 580-15, EFH Notice 210-WI-122* (August 2011). This document can be seen in **Appendix 6-2**.

- **Random Boulder Placement.** This type of structure is placed within the streambed and will create micro habitat for several species of fish, but primarily it benefits trout. It will create mini scour holes, but care needs to be taken with the placement of the boulders, because if they are placed ineffectively then the currents can be deflected toward the streambanks causing erosion.
- **Cross-Channel Logs**. Logs and rock placed perpendicular to the stream flow create a pool area (scour holes) which provides habitat for all species of fish and can potentially provide for both snakes and turtles as well. This practice is best situated downstream of a riffle area and are best fit for slow moving areas within the stream. One of the disadvantages of these practices is the cost to install. The rock will need to be hauled to the site and the layout needs to be precise; therefore, the installation can be labor intensive which drives up the cost.
- **Trout Lunker & Mini-Trout Lunker.** This is a built habitat, which is unique to trout. It is essentially a shelter on the side of the stream bank. These structures are best suited for corners but can be placed anywhere if there is enough stream velocity to prevent sedimentation build up within the structure. These structures need to be incorporated during the streambank stabilization work, as the habitat is incorporated into the bank.
- **Root Wads.** Root wads are a structure placed at the bank toe to provide additional microhabitat and cover for several species including fish, amphibians, and reptiles. Root wads provide toe support for bank revegetation and collect sediment and debris that will enhance the streambank structure over time. Root wads are comprised of approximately 10’ long tree trunks (boles) buried into the streambank with treetops removed. Boles are placed perpendicular to the flow channel with root fans still attached and oriented parallel to the channel. Due to their size, root wads typically require the use of heavy equipment for collection, transport, and installation.

Habitat structures will be included in the proposed Waumandee Creek WQT projects on the Reuter, Brommer, and Reglin properties.

The Habitat Adjustment is one (1).

Table 6.1 below summarizes the calculated Trade Ratios for the Reuter, Brommer, and Reglin WQT Projects.

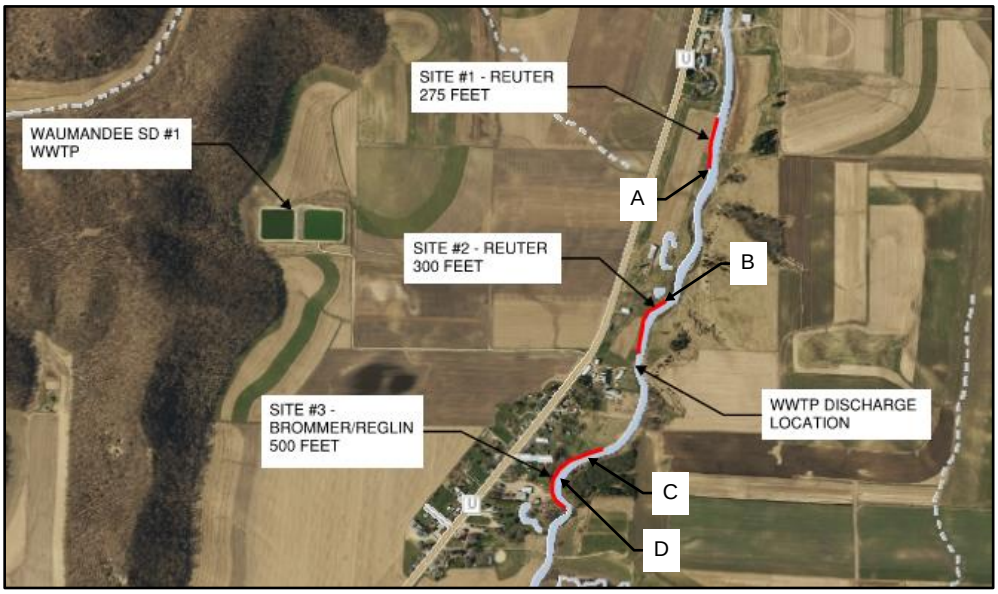
TABLE 6.1: WATER QUALITY TRADING FACTORS

	Project	Delivery Factor	Downstream Factor	Equivalency Factor	Uncertainty Factor	Habitat Adjustment	Trade Ratio
1	Reuter	0	0	0	3	-1	**2**
2	Brommer / Reglin	0	0.1	0	3	-1	**2.1**

7 LOCATION WHERE CREDITS WILL BE GENERATED

Credits will be generated in the same HUC 12 as the Waumandee WWTP HUC 12. The credits will be generated on the same body of water upstream and downstream. The Waumandee Creek will be used to generate credits in this plan.

Waumandee Creek. The project sites are best described as both banks of the Reuter property and the west bank of the Brommer / Reglin properties along Waumandee Creek. The project has been broken into three sites. Site #1 is the Reuter property and includes approximately 200 feet along the creek immediately upstream of the WWTP discharge. Site #2 is also on the Reuter property and includes approximately 300 feet of streambank immediately upstream of the WWTP outfall. Site #3 is downstream of Sites #1, #2 and the WWTP outfall, and is approximately 500 feet of streambank. See the red lines along the map below.



8 TIMELINE FOR CREDITS AND AGREEMENTS

The credit generation must occur before the credit user can claim the credit, per the *Water Quality Trading How To Manual* (pg. 15). Construction is planned in 2023; therefore, the available date for the credits is 2023.

Streambank Stabilization. While performing as designed, the project will continue to generate credits on an annual basis. Regular inspection and maintenance of the riprap is essential.

The completed WQT Agreements with Waumandee, the County and the Reuter, Reglin, and Brommer are included in **Appendix 8-1**.

9 METHOD FOR QUANTIFYING CREDITS

Streambank Stabilization. Existing phosphorus loss for the streambank projects was produced using the NRCS Soil Loss Spreadsheet recommended by the DNR, which can be seen in **Appendix 5-1**. Buffalo County representatives collected data for the streambank project, including the linear feet and the average stream bank height in feet. A composite soil sample was collected for testing for total soil phosphorus concentration (% P) (see **Appendix 9-1** for soil test lab report from the University of Wisconsin Soil Science Laboratory) to determine the phosphorus loss in pounds per year. Soil samples were collected on November 23, 2020, for the Reuter project and on December 12, 2022, for the Brommer/Reglin projects. Soil samples were gathered by taking several individual grab samples and combining them into one large composite soil sample for every 200 feet (minimum) of stream. The average % P over the samples gathered was 0.05%. Thus, it was deemed that this project would withhold **154 pounds of phosphorus** from entering Waumandee Creek each year that the bank stabilization functions as planned. The three (3) sections of the creek were calculated separately and added together to determine the total pounds of phosphorus reduction.

A conservative recession rate of 0.5 feet/year was used for preliminary calculations. The methodology to determine the recession rates typically utilizes historical LIDAR data overlaid atop recent topographical survey data of the eroded streambanks. AutoCAD can then be used to perform earthwork calculations to determine the volume between the two surfaces. The amount of fill between the two surfaces represents the volumetric quantity that has eroded between the LIDAR conditions and the surveyed conditions. This is a total volume; therefore, the average annual erosion can be determined by dividing the volumetric amount by the number of years between the LIDAR and survey data. The recession rate is the volumetric eroded quantity divided by the eroded bank area. The eroded area is calculated from actual field measurements and the eroded volumetric quantity is the volume calculation determined through AutoCAD. Because Buffalo County does not have updated LIDAR, the conservative recession rate of 0.5 feet/year was used.

10 TRACKING PROCEDURES

This project progress will be tracked with photography before, during, and after riprap installation. The project sites will be inspected annually to monitor the preservation of the project site and BMP installations. The landowner will inspect the bank stabilization site after flood events and annually. The Buffalo County Department of Land Management will annually inspect the site to document that the banks are stable, and phosphorus was prevented from entering the water each year. At that time, the County will note debris that may have gathered in the stream and make assessments as to whether the debris is impeding flow or has become a fish habitat. The impeding debris will be removed, as discussed in Section 13.

11 CONDITIONS UNDER WHICH THE MANAGEMENT PRACTICES MAY BE INSPECTED

The riprap and vegetation should be inspected at least once per year and immediately after flood events. The velocity of Waumandee Creek increases greatly during flood events, and these portions of the streambank have been eroding at alarming rates during heavy rains. The landowners should work with the Buffalo County Department of Land Management to ensure that these high-velocity locations are properly maintained and should request technical assistance if there are any concerns regarding maintenance.

12 REPORTING REQUIREMENTS SHOULD THE MANAGEMENT PRACTICE FAIL

If the bank stabilization fails at any part of these sites, the landowners should immediately report the situation to the Buffalo County Department of Land Management so they can develop a remediation action plan.

13 OPERATION AND MAINTENANCE PLAN FOR EACH MANAGEMENT PRACTICE

Maintenance of the riprap will be the responsibility of the landowner with technical assistance from the Buffalo County Department of Land Management. Maintenance will consist of the following:

Inspect riprap annually and after heavy storms for any erosion or displacement of rocks. Repairs should be done immediately.

1. Debris will be removed to prevent clogging or rerouting of water in the channel. Channel clearing to remove stumps, fallen trees, debris, and sediment bars will only be performed when they are causing or could cause unacceptable bank erosion, flow restriction, or damage to structures. Habitat forming elements that provide cover, food, pools, and water turbulence shall be retained or replaced to the extent possible.
2. Check for sloughing, erosion, or damage to vegetative cover. Damaged areas shall be graded, shaped, and re-vegetated as soon as possible.
3. Periodically cut grass to control weeds and invading brush.
4. Restore or add riprap as needed.
5. Eliminate burrowing animals and repair damage.

14 LOCATION OF CREDIT GENERATOR IN PROXIMITY TO RECEIVING WATER AND CREDIT USER

Waumandee Creek. The Reuter WQT project is located directly upstream of the Waumandee WWTP discharge. The Brommer and Reglin projects are located downstream of the WWTP discharge. See **Appendix 6-1** for a Location Map.

15 PRACTICE REGISTRATION DOCUMENTS, IF AVAILABLE

The construction of the Waumandee Creek projects has not yet begun. Registration documents will be completed by the County and submitted to the DNR upon completion of construction in Fall 2023.

16 HISTORY OF PROJECT SITE(S)

Waumandee Creek. This Reuter project site has been privately owned by the Reuter family for decades. Similarly, the Brommer and Reglin properties have been privately owned for decades with no changes in land use over time. The streambanks of Waumandee Creek have seen an exponential increase of erosion problems due to an increasing number of flood events and heavy rainfalls, which is evident in the photographs seen in **Appendix A**.

17 REQUIRED PHOSPHORUS CREDITS

The goal is to fully comply with the future 0.075 mg/L phosphorus limits with WQT only, without any modifications to the wastewater treatment process to reduce effluent phosphorus. At the 2020-2022 Average Total Flow of 2.46 MG, the phosphorus mass loadings and the required WQT are summarized in the following table:

TABLE 17.1: REQUIRED PHOSPHORUS MASS OFFSET

Description	Units	Quantity
Waumandee Annual Average Total Flow	MG	2.46
Estimated Effluent Phosphorus Concentration	mg/L	1.3
WQT Target Concentration	mg/L	0.075
Annual Mass of Phosphorus	lbs/year	26.7
WQT Target Mass of Phosphorus	lbs/year	1.5
Baseline Mass (Existing - Target)	**lbs/year**	**25.2**

The total credits generated from each site are summarized in the following table:

TABLE 17.2: REQUIRED PHOSPHORUS MASS OFFSET

Project Description	BMP Type	Trade Ratio TR	P lbs/year	TR x P lbs/year
Reuter – 1	Streambank Stabilization	2	30	15
Reuter – 2	Streambank Stabilization	2	32	16
Brommer / Reglin	Streambank Stabilization	2.1	85	40.5
Total			**154**	**71.5**

The Waumandee Creek WQT Projects will generate 71 lbs./year in P credits, approximately 21 lbs./year more credits than necessary. The estimated project cost for the bank stabilization projects is **$65,000.00**. This does not include the associated Engineering costs. The cost estimate is included in **Appendix 17-1**.

17.1 Summary

Waumandee Sanitary District #1 cannot meet the new phosphorus limits with the technology currently employed at the WWTP, as discussed in the Facility Plan. Water quality trading is the most economical solution for meeting compliance with the new regulations. This plan has discussed the proposed project along with the associated calculations to provide enough detail to show the compliance will be met by the Sanitary District.

18 COMPLIANCE WITH WATER QUALITY TRADING CHECKLIST

This Water Quality Trading Plan was produced in accordance with the Wisconsin Department of Natural Resources, *Guidance for Implementing Water Quality Trading in WPDES Permits* based upon Table 5 (p. 45). Table 5 contains several columns of checklist items, but this plan must adhere to column (e), which states "credits are obtained from a construction project or implementation of a plan undertaken by the credit user for sources other than that covered by the credit user's WPDES permit." The Waumandee Sanitary District #1 will be installing bank stabilization at several locations to generate credits for the WWTP.

Below is a list of the requirements to be included in a WQT plan per column (e) of Table 5. This list includes a brief statement of where to find the information in this plan.

- Permittee's / credit user's WPDES Permit number. The Waumandee Sanitary District #1 WWTP WPDES permit number is WI-0061646-04-0 and is referenced in Section 2.
- Permittee's / credit user's contact information. The contact information is included in Section 19.
- Pollutants for which credits will be generated. Credits will be generated for total phosphorus, which is discussed in Section 5.
- Amounts of credits available from each location / management practice / local governmental unit when acting as a broker. The amount of credit available is discussed in Section 17.
- Certification that the content of the trading application is accurate and correct. The certification is included in Section 19.
- Signature and date of the permittee's / credit user's authorized representative. The signature of the authorized representative is included in Section 19.
- Location where credits will be generated (i.e. map of site where management practice will be applied including major drainage ways from the project). The location where credits are generated are discussed in Section 7 and 14. A map is located in both Section 7 and **Appendix 14-1**.
- Identification of method(s) including management practice(s) that will be used to generate credits at each location. Identifications of methods are discussed in Section 9.
- Duration of agreement (i.e. the design life of the management practice) with each credit generator. The duration of the agreement is discussed in Section 4.1.
- Schedule for installation / construction of each management practice. The schedule is discussed in Section 8.
- Operation and maintenance plan for each management practice used to generate credits. The operation and maintenance plan are discussed in Section 13.
- Date when credits become available for each management practice (i.e., when practice is established and effective). The date when the credits become effective is in 2023 when the permit is modified.
- Models used to derive the amount of credits. The model used to derive the amount of credits is a scientific equation for phosphorus loss and is the approved spreadsheet from WDNR. This is discussed in Section 9.
- The applicable trade ratio for each management practice including supporting technical basis. The applicable trade ratio is 3:1 and the technical basis and calculation of the trade ratio is discussed in Section 6. The habitat adjustment reduces the trade ratio to a 2:1, which is also discussed in Section 6.

19 CERTIFICATION OF WATER QUALITY TRADING PLAN

This plan was prepared by Davy Engineering Co., Inc. This Water Quality Trading Plan is complete, accurate and correct, to the best of our knowledge and belief.

Prepared By: Davy Engineering Co., Inc.

By: _____

Carson R Hackett, P.E.
Project Engineer
Davy Engineering Co.
115 6th Street South
La Crosse, WI 54601
Telephone: 608-782-3130

Owner: Waumandee Sanitary District #1

By: _____

Greg Mueller
President
Waumandee Sanitary District
S2002B County Road U
Cochrane, WI 54622
Telephone: 608-626-2279

References

United States Department of Agriculture. (August 2011). *Stream Habitat Development, Companion Document 580-15.* Natural Resources Conservation Services. doi:EFH Notice 210-WI-122

Wisconsin Department of Natural Resources. (2020). *A Water Quality Trading How To Manual.* doi:Guidance Number: 3400-2013-03

Wisconsin Department of Natural Resources. (2013). *Guidance for Implementing Water Quality Trading in WPDES Permits.* doi:Guidance Number: 3800-2013-04

APPENDIX A

PHOTOGRAPHS

REUTER PROJECT SITES

SITE 2



SITE 1



REGLIN/BROMMER PROJECT SITES

SITE 1



SITE 1



APPENDIX 2-1

WAUMANDEE NOTICE OF INTENT (NOI)

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
Waumandee Sanitary District #1	WI- 0061646-04-0	

Facility Address	City	State	ZIP Code
S1991 County Road U	Waumandee	WI	54622

Project Contact Name (if applicable)	Address	City	State	ZIP Code
Joe Helwig	W889 County Road E	Cochrane	WI	54622

Project Name
Waumandee Water Quality Trade

Receiving Water Name	Parameter(s) being traded	HUC 12(s)
Waumandee Creek	Phosphorus	070400030403, 070400030401

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: Buffalo County Land Conservation
- ○ 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
Improved Farming Practices
Land Cover Conversion

Method for quantifying credits generated:
- ☐ Monitoring
- ☒ Modeling, Names: Streambank P calc., Snapplus
- ☐ Other:

Projected date credits will be available: 09/30/2024

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
Bruce A Nelson	2/20/2020

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
Larry Mulder	2/20/2020

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APPENDIX 2-2

WWTP DISCHARGE LOCATION MAP

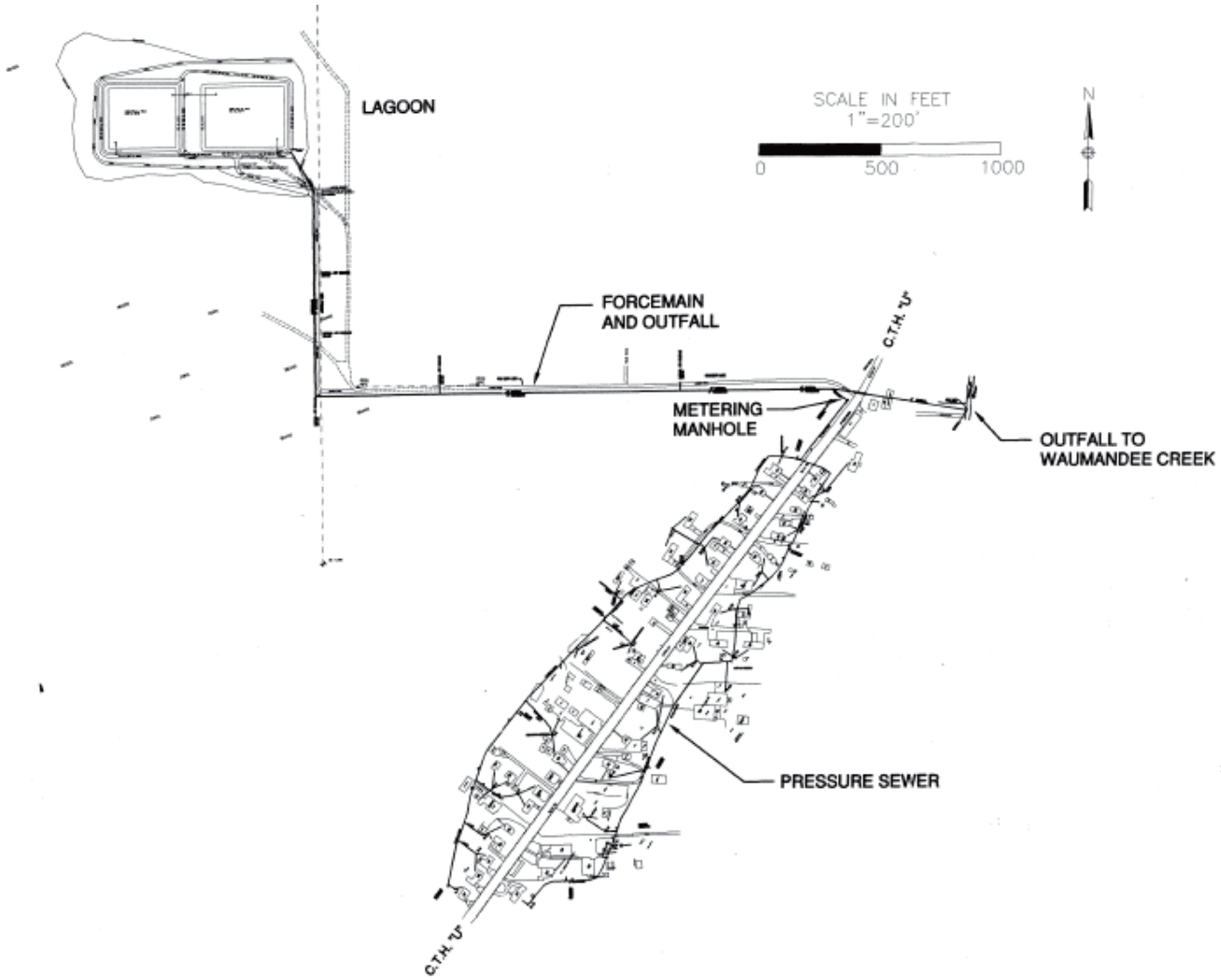
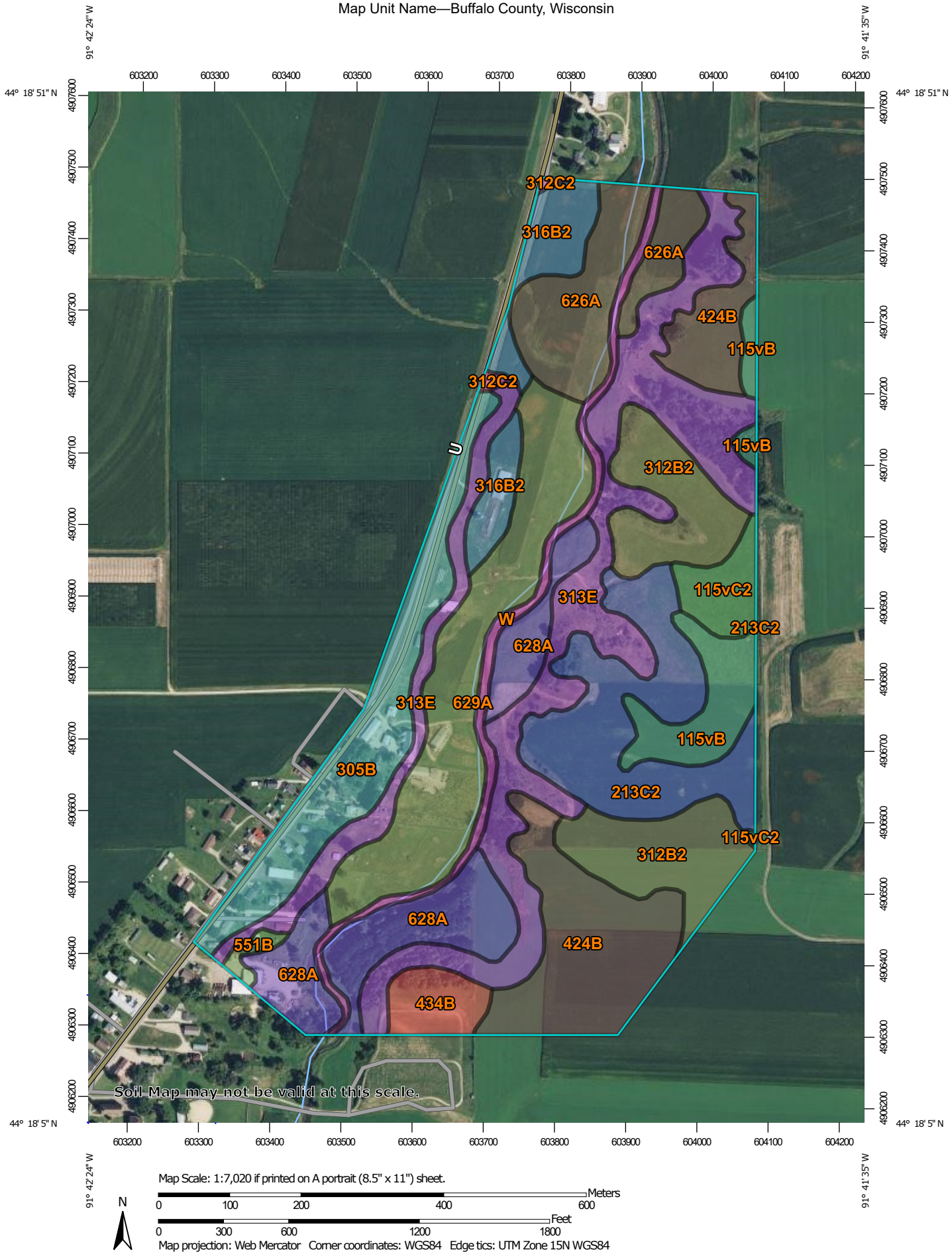


Figure 2-2
Waumandee SD #1
Sewer Service Area Map

APPENDIX 3-1

SOIL MAP


91° 42' 24" W
91° 41' 35" W
44° 18' 51" N
44° 18' 5" N
603200
603300
603400
603500
603600
603700
603800
603900
604000
604100
604200
4907600
4907500
4907400
4907300
4907200
4907100
4907000
4906900
4906800
4906700
4906600
4906500
4906400
4906300
4906200
312C2
316B2
626A
626A
424B
115vB
312C2
115vB
312B2
316B2
313E
115vC2
W
213C2
628A
313E
629A
115vB
305B
213C2
115vC2
312B2
628A
551B
424B
628A
434B
Soil Map may not be valid at this scale.
Map Scale: 1:7,020 if printed on A portrait (8.5" x 11") sheet.
N
Meters
0
100
200
400
600
Feet
0
300
600
1200
1800
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 Rating Polygons

- Arenzville silt loam, 0 to 3 percent slopes, occasionally flooded
- Bilson sandy loam, 1 to 6 percent slopes
- Ella silt loam, 1 to 6 percent slopes, moderately eroded
- Ettrick silt loam, 0 to 2 percent slopes, frequently flooded
- Festina silt loam, 1 to 6 percent slopes, moderately eroded
- Festina silt loam, 6 to 12 percent slopes, moderately eroded
- Hixton silt loam, 6 to 12 percent slopes, moderately eroded
- Impact sand, 2 to 6 percent slopes
- Merit silt loam, 1 to 6 percent slopes
- Orion silt loam, 0 to 3 percent slopes, occasionally flooded
- Plumcreek silt loam, 20 to 45 percent slopes
- Richwood silt loam, 1 to 6 percent slopes
- Seaton silt loam, driftless valley, 2 to 6 percent slopes
- Seaton silt loam, driftless valley, 6 to 12 percent slopes, moderately eroded
- Water
- Not rated or not available

Soil Rating Lines

- Arenzville silt loam, 0 to 3 percent slopes, occasionally flooded
- Bilson sandy loam, 1 to 6 percent slopes
- Ella silt loam, 1 to 6 percent slopes, moderately eroded
- Ettrick silt loam, 0 to 2 percent slopes, frequently flooded
- Festina silt loam, 1 to 6 percent slopes, moderately eroded
- Festina silt loam, 6 to 12 percent slopes, moderately eroded
- Hixton silt loam, 6 to 12 percent slopes, moderately eroded
- Impact sand, 2 to 6 percent slopes
- Merit silt loam, 1 to 6 percent slopes
- Orion silt loam, 0 to 3 percent slopes, occasionally flooded
- Plumcreek silt loam, 20 to 45 percent slopes
- Richwood silt loam, 1 to 6 percent slopes
- Seaton silt loam, driftless valley, 2 to 6 percent slopes
- Seaton silt loam, driftless valley, 6 to 12 percent slopes, moderately eroded
- Water
- Not rated or not available

Soil Rating Points

- Arenzville silt loam, 0 to 3 percent slopes, occasionally flooded
- Bilson sandy loam, 1 to 6 percent slopes
- Ella silt loam, 1 to 6 percent slopes, moderately eroded
- Ettrick silt loam, 0 to 2 percent slopes, frequently flooded
- Festina silt loam, 1 to 6 percent slopes, moderately eroded
- Festina silt loam, 6 to 12 percent slopes, moderately eroded
- Hixton silt loam, 6 to 12 percent slopes, moderately eroded
- Impact sand, 2 to 6 percent slopes
- Merit silt loam, 1 to 6 percent slopes
- Orion silt loam, 0 to 3 percent slopes, occasionally flooded
- Plumcreek silt loam, 20 to 45 percent slopes
- Richwood silt loam, 1 to 6 percent slopes
- Seaton silt loam, driftless valley, 2 to 6 percent slopes
- Seaton silt loam, driftless valley, 6 to 12 percent slopes, moderately eroded
- Water
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads

MAP INFORMATION

Local Roads

Background

Aerial Photography

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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: Buffalo County, Wisconsin
Survey Area Data: Version 16, Sep 6, 2022

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

Date(s) aerial images were photographed: Aug 16, 2020—Sep 23, 2020

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 Name

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
115vB	Seaton silt loam, driftless valley, 2 to 6 percent slopes	Seaton silt loam, driftless valley, 2 to 6 percent slopes	6.0	4.1%
115vC2	Seaton silt loam, driftless valley, 6 to 12 percent slopes, moderately eroded	Seaton silt loam, driftless valley, 6 to 12 percent slopes, moderately eroded	3.0	2.0%
213C2	Hixton silt loam, 6 to 12 percent slopes, moderately eroded	Hixton silt loam, 6 to 12 percent slopes, moderately eroded	14.0	9.5%
305B	Richwood silt loam, 1 to 6 percent slopes	Richwood silt loam, 1 to 6 percent slopes	12.0	8.2%
312B2	Festina silt loam, 1 to 6 percent slopes, moderately eroded	Festina silt loam, 1 to 6 percent slopes, moderately eroded	14.0	9.5%
312C2	Festina silt loam, 6 to 12 percent slopes, moderately eroded	Festina silt loam, 6 to 12 percent slopes, moderately eroded	0.3	0.2%
313E	Plumcreek silt loam, 20 to 45 percent slopes	Plumcreek silt loam, 20 to 45 percent slopes	27.3	18.5%
316B2	Ella silt loam, 1 to 6 percent slopes, moderately eroded	Ella silt loam, 1 to 6 percent slopes, moderately eroded	6.0	4.1%
424B	Merit silt loam, 1 to 6 percent slopes	Merit silt loam, 1 to 6 percent slopes	16.6	11.3%
434B	Bilson sandy loam, 1 to 6 percent slopes	Bilson sandy loam, 1 to 6 percent slopes	2.9	2.0%
551B	Impact sand, 2 to 6 percent slopes	Impact sand, 2 to 6 percent slopes	0.7	0.5%
626A	Arenzville silt loam, 0 to 3 percent slopes, occasionally flooded	Arenzville silt loam, 0 to 3 percent slopes, occasionally flooded	10.2	6.9%
628A	Orion silt loam, 0 to 3 percent slopes, occasionally flooded	Orion silt loam, 0 to 3 percent slopes, occasionally flooded	13.0	8.8%
629A	Ettrick silt loam, 0 to 2 percent slopes, frequently flooded	Ettrick silt loam, 0 to 2 percent slopes, frequently flooded	17.3	11.7%
W	Water	Water	4.1	2.8%
Totals for Area of Interest			**147.4**	**100.0%**

Description

A soil map unit is a collection of soil areas or nonsoil areas (miscellaneous areas) delineated in a soil survey. Each map unit is given a name that uniquely identifies the unit in a particular soil survey area.

Rating Options

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

APPENDIX 4-1

NRCS RECESSION RATES

RAP-M

Rapid Assessment, Point Method

&

BATHMASTER

Bathymetric Depth Mapping



Erosion and Sediment
Inventory Procedures
Illinois
August 2002

NRCS Natural Resources Conservation Service

William J. Gradle, State Conservationist

R. D. Windhorn 6/99

Lateral Recession Rates

Streambank Erosion

Lateral Recession Rate (ft/yr)	Ave. (ft/yr)	Category	Description
0.01 - 0.05	0.03	Slight	Some bare bank but active erosion not readily apparent. No vegetative overhang. No exposed tree roots. Bank height minimal.
0.06 - 0.2	0.13	Moderate	Bank is predominantly bare with some vegetative overhang. Some exposed tree roots. No slumping evident.
0.3 - 0.5	0.40	Severe	Bank is bare with very noticeable vegetative overhang. Many tree roots exposed and some fallen trees. Slumping or rotational slips are present. Some changes in cultural features, such as missing fence posts and realignment of roads.
0.5 - 2.0	1.5	Very Severe	Bank is bare and vertical or nearly vertical. Soil material has accumulated at base of slope or in water. Many fallen trees and/or extensive vegetative overhang. Cultural features exposed or removed or extensively alterered. Numerous slumps or rotational slips present. Generally silty or sandy bank material, NOT glacial till or exposed shale bedrock.
2.0 - 5.0	3.5	Extremely Severe	Bank is bare and vertical. Soil material has accumulated at base of slope and oftentimes still contains living grass or other vegetative material. Extensive cracking of the earth parallel to the exposed face above the bank. Generally evidence of "block-size" material that has either recently fallen in or is about to fall in. Can be "pillars" of soil materials that have already been loosened by stream and indicate imminent failure into the stream. Trees have been undercut and lie in stream, often with root balls intact. Silty or sandy bank material, NOT glacial till or exposed shale bedrock. (These rates should be verified with several observations or with actual streambank monitoring.)

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APPENDIX 5-1

NRCS PHOSPHORUS SOIL LOSS CALCULATIONS

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

Farmer / Cooperator Name:	Waumandee Sanitary District	Evaluated By:	Carson Hackett
Tract Number:		Evaluation Date:	December 12, 2022

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)
	Reuter 1	275.0	5.0	1,375	0.50	687.5	Silt Loam	85	29.2
			Total Estimated Annual Streambank or Ditch Erosion Soil Loss (Tons):						29.2
			Percent Leachable Phosphorus in the Soil (nitric/peroxide):						0.06%
			Total Estimated Annual Streambank or Ditch Erosion Phosphorus Loss (Tons):						0.018
			Total Estimated Annual Streambank or Ditch Erosion Phosphorus Loss (lbs):						**37**

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)
	Reuter 2	300.0	5.0	1,500	0.50	750.0	Silt Loam	85	31.9
	Reglin / Brommer	500.0	8.0	4,000	0.50	2,000.0	Silt Loam	85	85.0
			Total Estimated Annual Streambank or Ditch Erosion Soil Loss (Tons):						116.9
			Percent Leachable Phosphorus in the Soil (nitric/peroxide):						0.05%
			Total Estimated Annual Streambank or Ditch Erosion Phosphorus Loss (Tons):						0.058
			Total Estimated Annual Streambank or Ditch Erosion Phosphorus Loss (lbs):						**117**

Total Phosphorus Loss for sum of reaches (lbs/yr):	**154**

* Eroding bank height is measured along the bank, not the vertical height of bank.

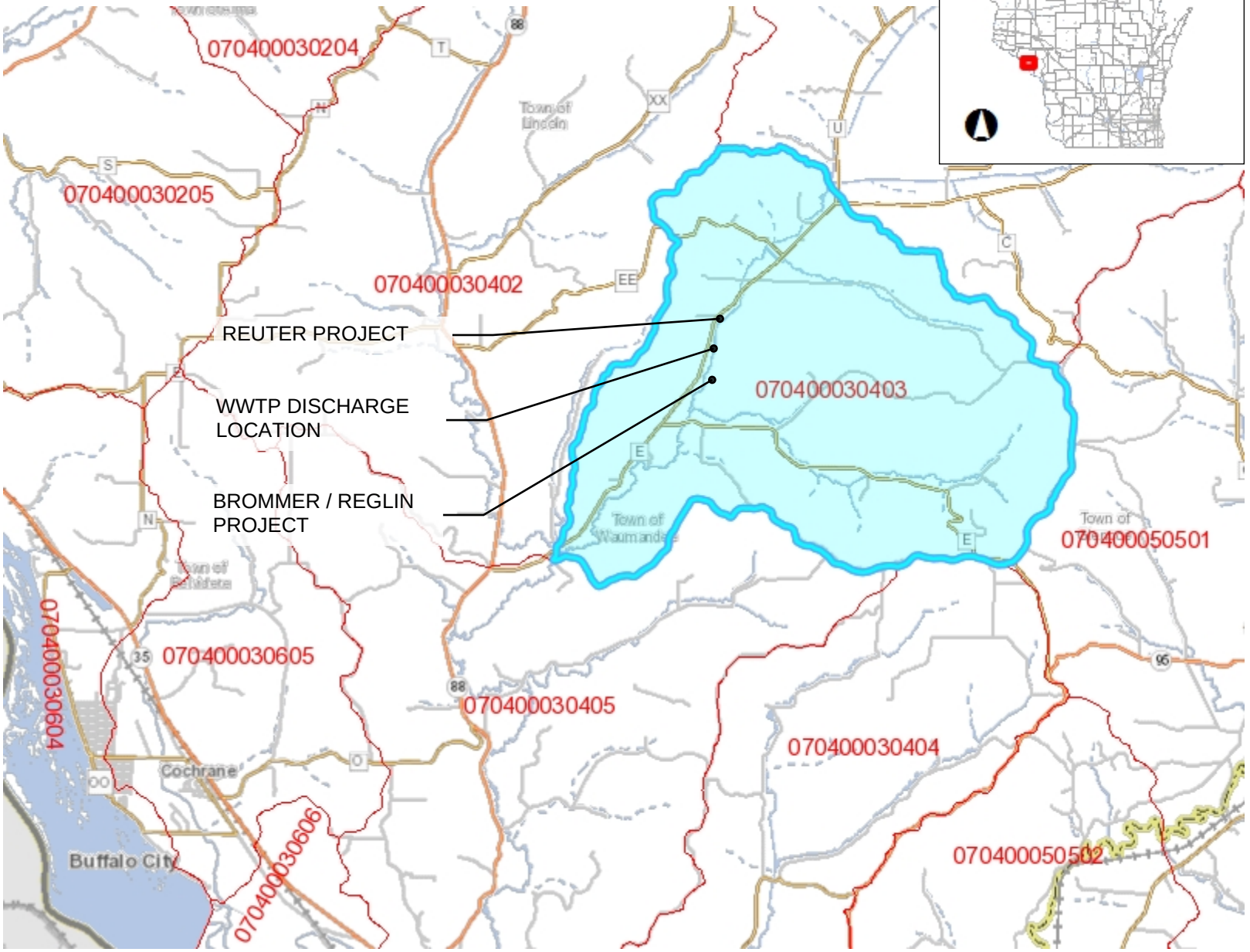
Streambank or Ditch Erosion Calculation Formula:

$$\frac{\text{Eroding Bank/Ditch Length} \times \text{Eroding Bank Ht or Ditch Bottom Width} \times \text{Lateral or Ditch Bottom Recession Rate (FT/YR)} \times \text{Soil Weight (lbs/ft}^3\text{)}}{2000} = \text{Estimated Soil Loss Per Year (Tons)}$$

APPENDIX 6-1

HUC 12 WATERSHED BASIN MAP

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

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/

APPENDIX 6-2

NRCS COMPANION DOCUMENT, EFH NOTICE

Stream Habitat Development

Introduction

One of the purposes of streambank protection is to improve and protect wildlife habitat and biodiversity. Although adding stream and stream corridor habitat is not a required component of a protection project, these practices come with multiple benefits to a number of species.

This guide will explore some of the common habitat development practices that have been successfully implemented by the NRCS in Wisconsin. It includes recommendations on where each particular practice should be installed to maximize utility, and also a discussion of the pros and cons of each technique. All corresponding WI Standard Drawings are also included.

Knowledge of the fishery and fishery potential for a stream is essential when selecting the type of habitat development to install. The Field Office Technical Guide, Practice Standard 395 *Stream Habitat Improvement and Management* outlines criteria for installing habitat in streams. These plans require approval of the DNR fish manager. Be sure to review these criteria and coordinate with the DNR fish manager before beginning to plan habitat development.

There are many additional resources available on habitat development. The last page of this guide lists some them.

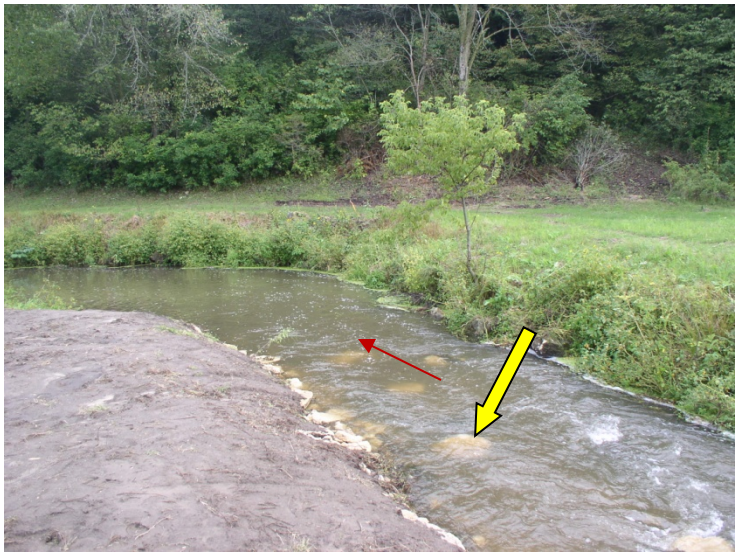
Table of Contents

Habitat Development Practices

Random Boulder Placement 1
Cross Channel Log 3
Vortex Weir 6
Escape Log 9
Log Deflector 11
Rock Deflector 13
Root Wad 15
Snake Hibernacula 17
Turtle Hibernaculum 19
Trout Lunker & Mini-Trout Lunker 23
Brush Bundle 26

Additional Resources 27

Random Boulder Placement



Purpose:
Encourages additional scouring and provides micro habitat for several species.

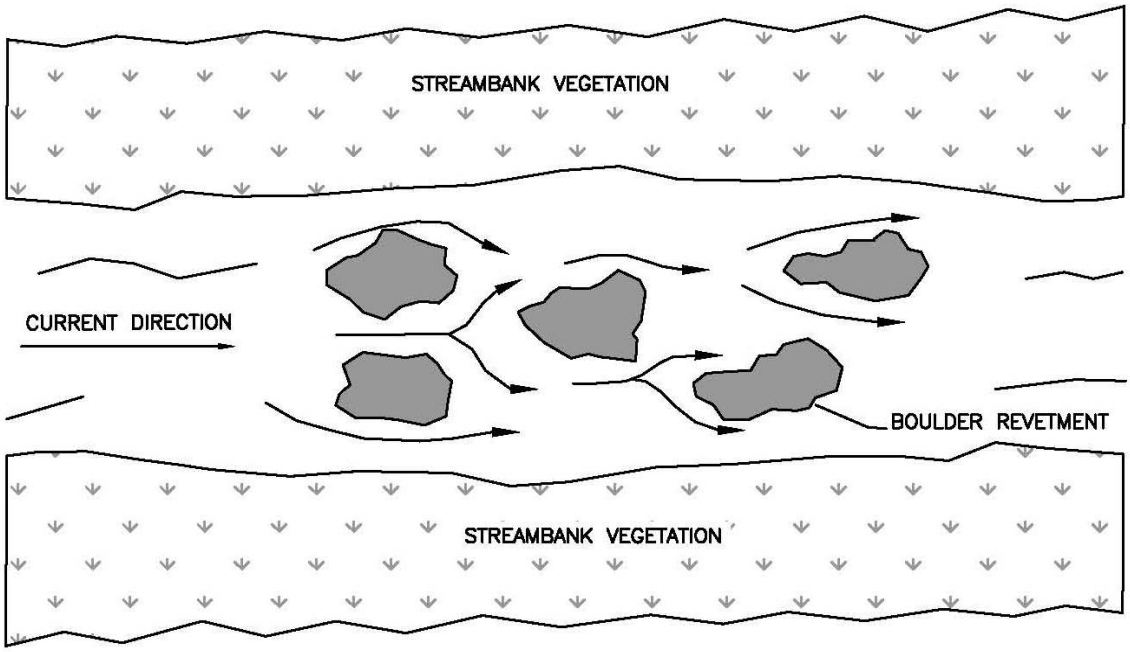
Location:
In runs and/or in existing scour holes.

Species:
The scouring and small overhangs primarily benefit trout but have the potential to benefit all fish species. If scouring down to native gravel beds is accomplished it can benefit all macro-invertebrates. If a shadow in the current creates deposition of fine sediments, it could be over-wintering habitat for turtles such as the Wood, Map and Blanding's. Also if placed so some boulders protrude from water during normal flows can be loafing and perching areas for birds.

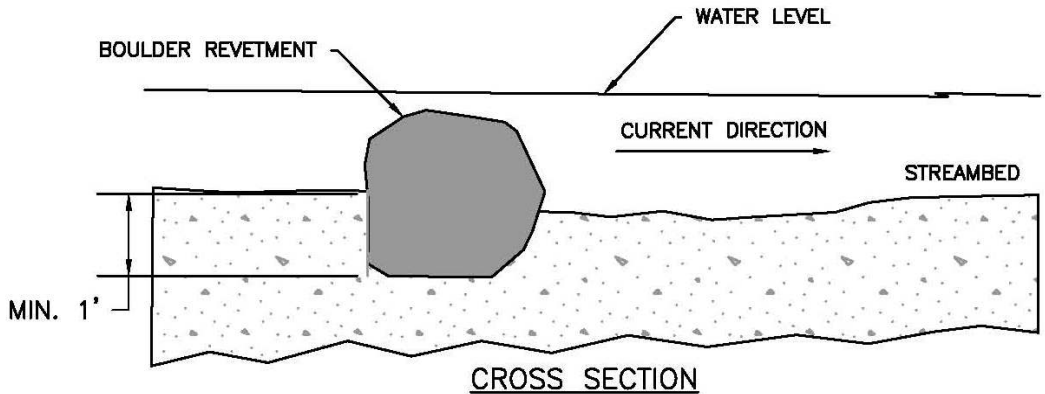
Caution:
Care needs to be taken in placement to ensure that currents are not deflected into stream banks, and also that the boulders will not catch flood debris which could cause stream bank erosion.

Pros	Cons
• Easy and inexpensive to install • Very versatile-can be installed in almost any setting • Potential to benefit many different species	• Only creates small amounts of habitat

See next page for Standard Drawing WI-937.



PLAN VIEW



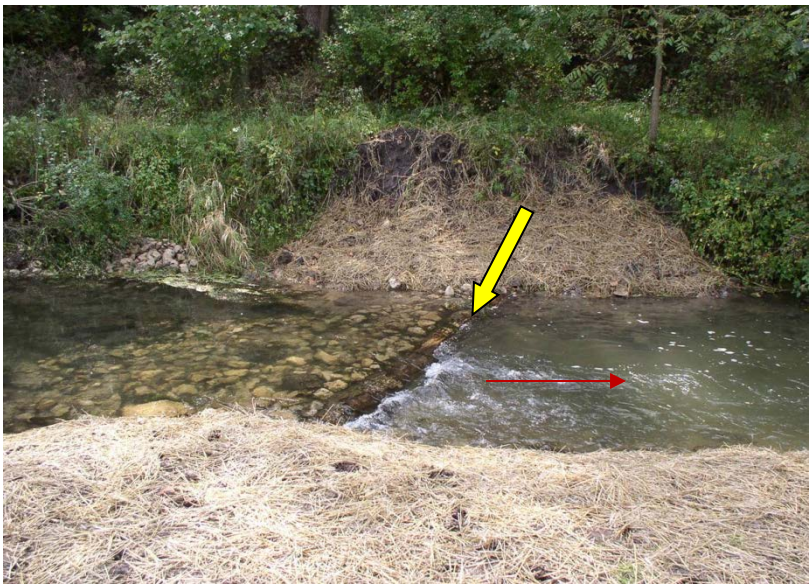
CROSS SECTION

- AVERAGE ROCK SIZE– 1.5'–3.5' DIA.–ROCK, SIZE IS SITE DEPENDENT.
- A MINIMUM OF ONE BOULDER PER SET OF BOULDER REVETMENTS SHOULD PROTRUDE FROM WATER SURFACE DURING TIMES OF ORDINARY FLOW TO ACT AS MID–STREAM PERCHING/LOAFING SITES.
- USE BOULDERS WITH IRREGULARITIES OR MULITPLE BOULDERS TOGETHER TO PROVIDE SLIGHT OVERHANGING COVER.
- PLACE BOULDER REVETMENT SO CURRENT WILL NOT BE DEFLECTED INTO UNPROTECTED STREAM BANKS.

NRCS Natural Resources Conservation Service United States Department of Agriculture	RANDOM BOULDER PLACEMENT CLIENT: _____ COUNTY: _____	Date Designed _____ Drawn _____ Checked _____ Approved _____	Drawing Name WI–937 Date 12/2010 Sheet of

Cross-Channel Logs

Purpose:
Creates and maintains pools (scour holes) to re-connect a stream's natural riffle pool sequence while providing habitat for several species. They can also be used to deflect water away from eroding banks or towards other stabilization structures.

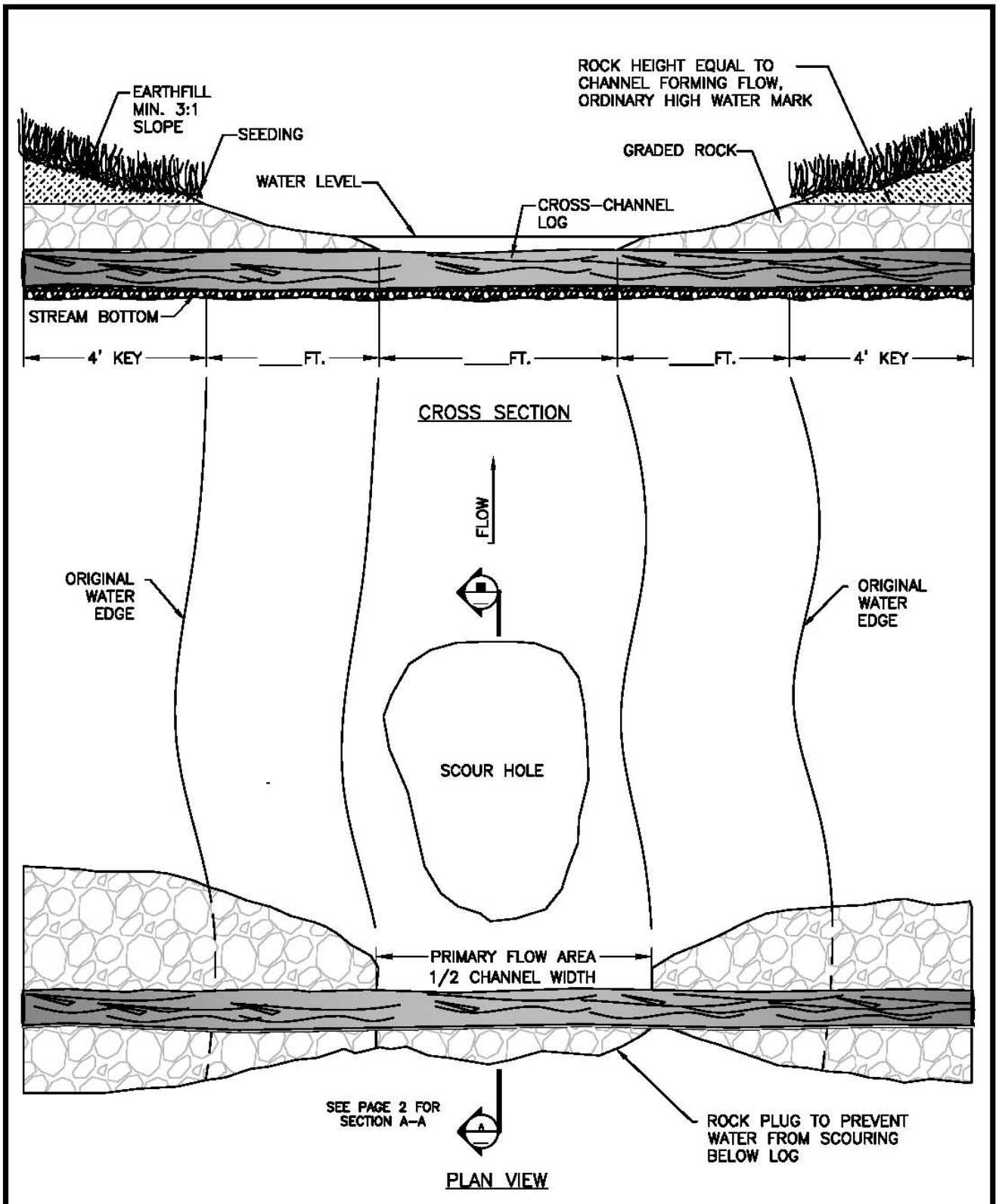


Location:
Primarily installed immediately downstream of riffle areas. They are occasionally used in slow runs to add variances in habitat.

Species:
The scour holes created benefit all fish species. When used in conjunction with other habitat structures, this practice can also benefit turtle and snake species.

Pros	Cons
• Multi-purpose • Can easily be used with other structures like escape logs and boulder retards • Potential to benefit many different species • Can use on site woody material – reduces cost	• Hauled in rock needed for proper installation – higher project costs • Exact placement of rock needs to be precise and can require additional labor and expertise • Does not maintain as large of a scour hold as a vortex weir

See next page for Standard Drawing WI-935.



NRCS
Natural Resources Conservation Service
United States Department of Agriculture

CROSS CHANNEL LOG

CLIENT: ----

COUNTY: ----

Designed ----- Date -----

Drawn

Checked

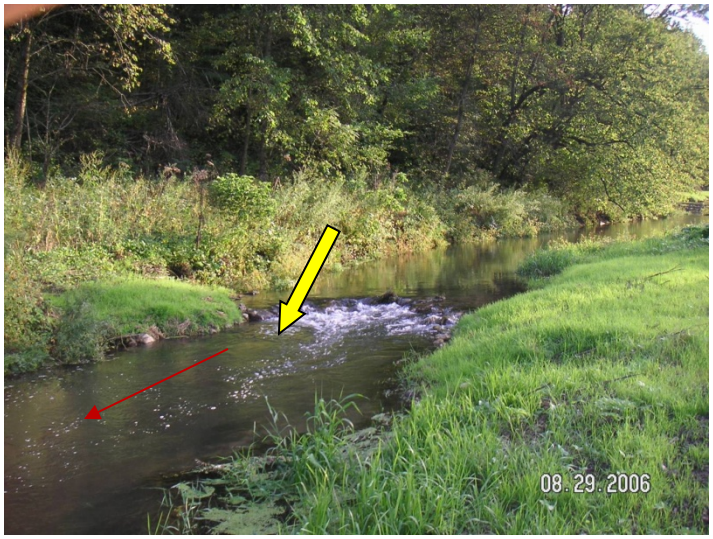
Approved

DWG Name/Date
WI-935/7-10

Page
1 of 2

Sheet XX of ----

Vortex Weir



Purpose:
Creates and maintains scour holes which serve as habitat for fish. They also re-connect a stream's natural riffle pool sequence.

Locations:
Primarily used immediately downstream of riffle areas. They can occasionally be used in slow runs to add variances in habitat.

Species:
All fish species are benefitted from the creation of the large scour hole. With the addition of other habitat development structures like escape logs or root wads, vortex weirs can also benefit turtle and amphibian species.

Pros

- Most effective practice for creating and maintaining scour holes
- Can easily be used with other structures like escape logs, root wads, or random boulder placements
- Potential to benefit many different species

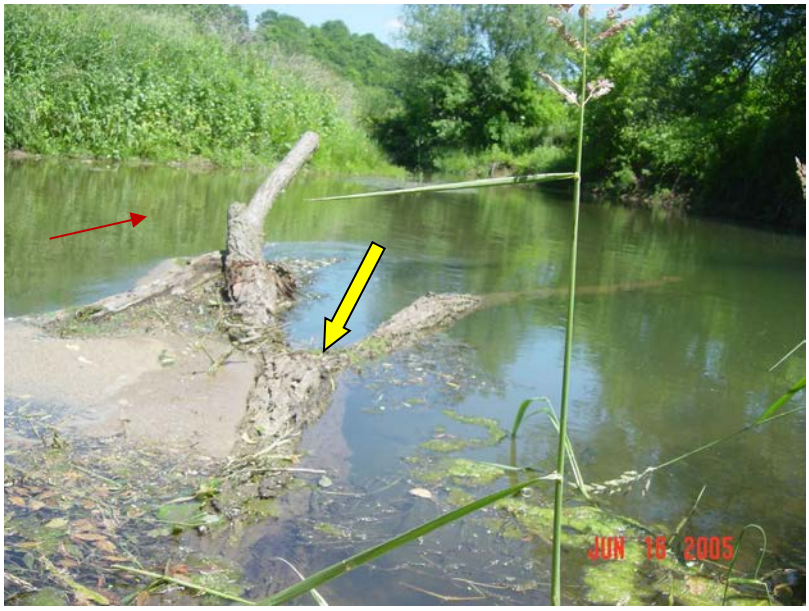
Cons

- Hauled in rock needed for proper installation – higher project costs
- Exact placement of rock needs to be precise and can require additional labor and expertise
- More difficult to install on narrow streams

See next page for Standard Drawing WI-932.

Escape Logs

Purpose:
Provide sunning areas for snakes, turtles and amphibians.



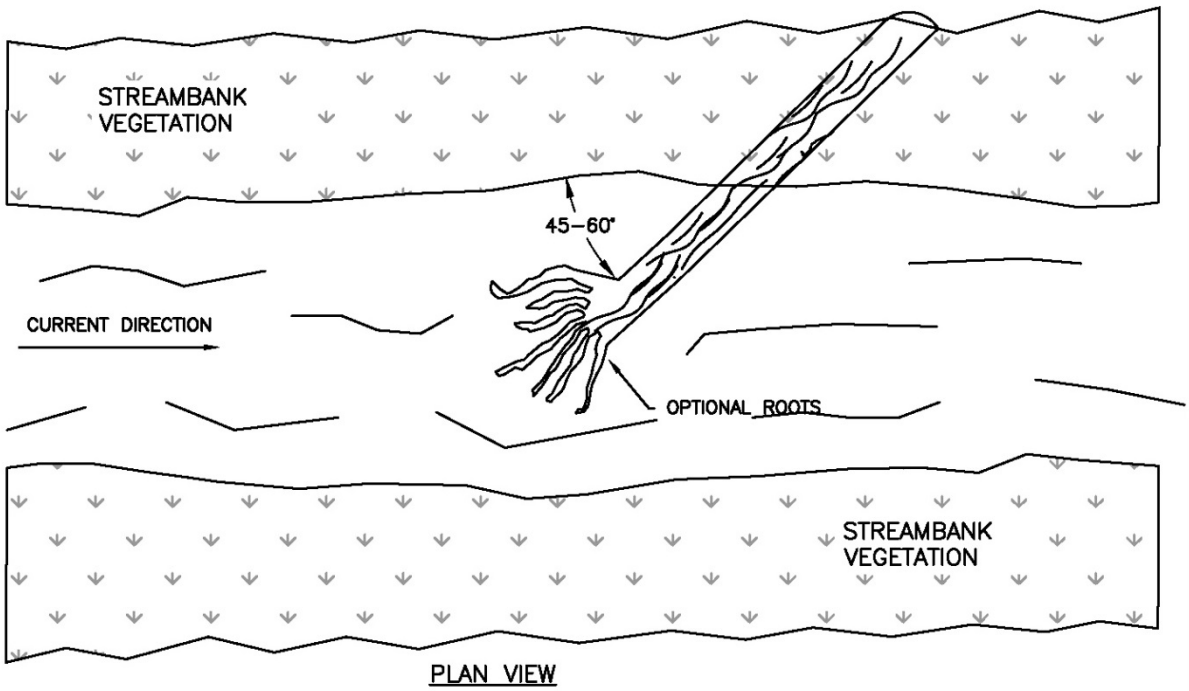
Location:
Installed in areas with deep, slow moving water.

Species:
All water dwelling snake, turtle and amphibian species benefitted. They can also serve as bird perches and provide minor overhead cover for fish.

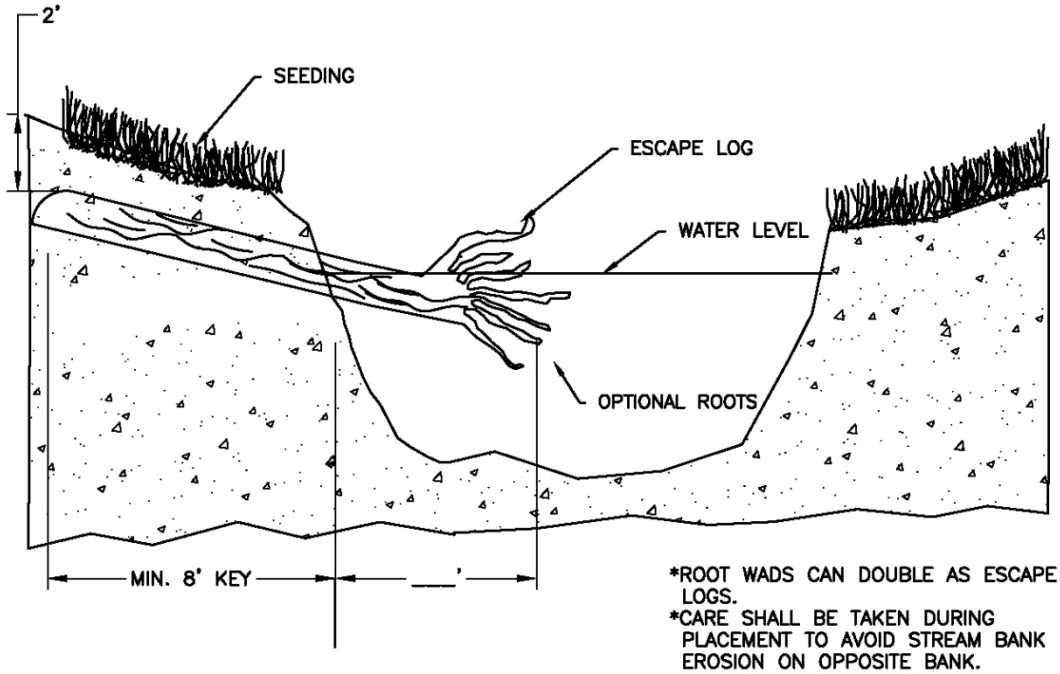
Caution:
Care needs to be taken in placement to ensure that currents are not deflected into stream banks.

Pros	Cons
• Potential to benefit many different species • Can use on site woody material – reduces cost	• Since logs are exposed to the atmosphere, they will not have as long of a lifetime as structures that are fully submerged

See next page for Standard Drawing WI-942.



PLAN VIEW



CROSS SECTION

*ROOT WADS CAN DOUBLE AS ESCAPE LOGS.
*CARE SHALL BE TAKEN DURING PLACEMENT TO AVOID STREAM BANK EROSION ON OPPOSITE BANK.
*THE LOG SHOULD EMERGE MIN. 3'–4' FROM EDGE OF STREAM BANK.
*ROOTS/LIMBS SHALL BE TRIMMED SO AS TO BE BELOW THE ORDINARY HIGH WATER MARK.

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

ESCAPE LOG

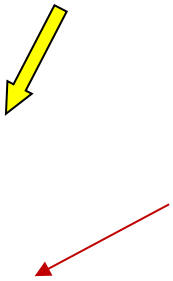
CLIENT: _____

COUNTY: _____

	Date	Drawing Name
Designed		WI–942
Drawn		Date 11/2013
Checked		
Approved		Sheet of

Log Deflectors

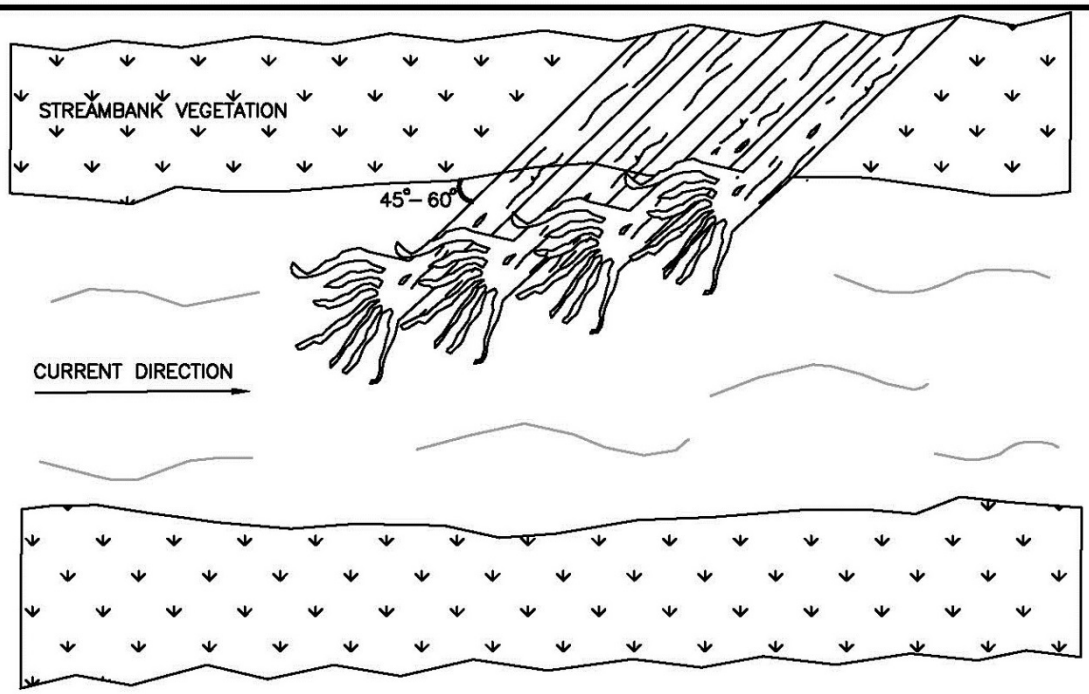
Purpose and Location:
Log deflectors have many functions depending on their location.
They are most commonly placed on eroding stream banks to guide the water away from the affected area. In long, wide stagnant runs they can narrow the stream and recreate some meander. In all settings given enough time, they encourage the development of a mudflat downstream of the structure.



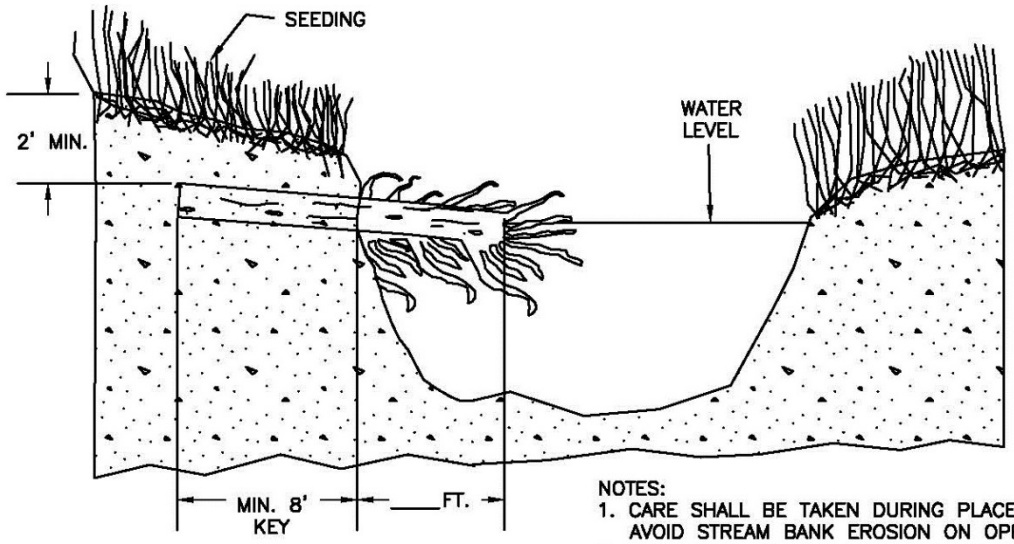
Species:
Root wads on the logs can serve as cover for reptile, amphibian, and fish species or as a perching area for birds. The mudflat that develops downstream can be utilized by amphibians and turtles as a basking area, as well as a feeding ground for shore birds.

Pros	Cons
• Multi-purpose • Can be used in many different areas • Potential to benefit many different species • Can use on site woody material – reduces cost	• More difficult to install – requires expertise from the equipment operator • Effectiveness of this technique could vary between streams and from flood event to flood event • Since portions of the logs are exposed to the atmosphere, they will not have as long of a lifetime as structures that are fully submerged

See next page for Standard Drawing WI-934.



PLAN



CROSS SECTION

NOTES:
1. CARE SHALL BE TAKEN DURING PLACEMENT TO AVOID STREAM BANK EROSION ON OPPOSITE BANK.
2. ROOT WADS MUST BE PRESENT ON EACH LOG.
3. THE LOG DEFLECTOR SHALL CONSIST OF THREE LOGS AT A MIN 24" DBH OR FIVE LOGS OF APPROX. 16" DBH.
4. THE MAJORITY OF THE LOG SHALL BE SUBMERGED WITH APPROX. 15% OF THE LOG EMERGED. CARE SHALL BE TAKEN TO KEEP THE LOG BELOW THE OHWM.

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

LOG DEFLECTOR

CLIENT: _____

COUNTY: _____

	Date	Drawing Name
Designed		WI-934
Drawn		Date
Checked		11/13
Approved		Sheet of

Rock Deflectors

Purpose and Location:
Rock deflectors have many functions depending on their location.
They are most commonly placed on eroding stream banks to guide the water away from the affected area. In long, wide stagnant runs they can narrow the stream and recreate some meander. In all settings with time, they encourage the development of a mudflat downstream of the structure. They are also used often to redirect current into another habitat structure, such as a set of lunker structures.



Species:
The mudflat that develops downstream can be utilized by amphibians and turtles as a basking area, as well as a feeding ground for shore birds.

Pros	Cons
• Multi-purpose • Immediate, permanent solution to erosion problems • Can be used in many different areas • Potential to benefit many different species • Natural in appearance after establishment of vegetation	• More difficult to install – requires expertise from the equipment operator • More expensive since they can require large quantities of rock • Improper placement can cause serious erosion to banks on opposite side of the stream

See next page for Standard Drawing WI-933.

Root Wads



Purpose:
Provide additional micro-habitat and cover for several species. They can also serve as escape logs and sunning areas.

Location:
Placed in deep scour holes, and often used in conjunction with other structures like vortex weirs or cross channel logs.

Species:
Provides overhead cover and micro-habitat for fish, amphibians, and reptiles.

Pros	Cons
• Can be used in along with other habitat structures • Potential to benefit many different species • Can use on site woody material – reduces cost	• If improving public recreation (fishing) is the purpose of the project, a root wad decreases the fishability of the scour hole

See next page for Standard Drawing WI-936.

Snake Hibernaculum

Purpose:
Provides a unique habitat for snake species that require a high humidity or saturated over-wintering area with temperatures above freezing.



Location:
Placed outside of the primary floodplain in an area that will provide 2'-3' of ordinary summer water table at the bottom of the trench with a minimum of 5' of soil cover from the top of the ordinary summer water table to the soil surface to provide necessary temperature buffering. The entrance should be placed with a southerly or westerly exposure. Also, if site conditions allow, a snake hibernaculum could be incorporated in the beginning or end section of Rip-Rap. Only one hibernaculum needed per roughly 1-2 mile segment of stream.

Species:
Snake species such as Milk, Garter and Western Fox snakes with the unique over-wintering needs mentioned above.

Caution:
Proper trench safety construction protocol should always be followed.

Pros	Cons
• Provides a unique habitat for snake species that would not normally be accommodated	• Requires a large amount of rock – increased project cost

See next page for Standard Drawing WI-941.

Turtle Hibernaculum

Purpose:
When stream bank stabilization practices occur such shaping and rip-rapping, turtle habitat is destroyed. Installing these lunkers provides an alternative habitat location for snapping turtles to over-winter.

Location:
These lunkers should be installed within a reasonable distance from bank stabilization projects and should be positioned in the shadow of the current. Best results are achieved if the lunker is installed adjacent to a structure that deflects flow (such as a rock deflector) and creates a back eddy to promote sedimentation.

Species:
The snapping turtle will be the primary species of benefit since they over-winter in tall eroding stream corners.

Special Notes:
- The hibernaculum should have no rock behind them
- A dredged hole should be dug in front of the lunker to serve as a sediment trap to catch fine sediments – this is where the turtles will burrow down to over-winter
- Care needs to be taken to ensure that no stream current will prevent sedimentation from occurring

Pros	Cons
• Provides a unique over-wintering habitat for snapping turtles • Contractors familiar with stream habitat restoration should be able to complete these project fairly easily	• This is a new practice, therefore there is no research to confirm the effectiveness of the technique

See next page for Standard Drawing WI-940.

Trout Lunker & Mini-Trout Lunker

Purpose:
To provide a unique habitat for trout.

Location:
Primarily placed on eroding stream corners while stream bank stabilization techniques such as shaping and rip-rap are being performed, but can be placed in any location where stream flow will pass through the lunker keeping them clean of sediment deposition.

Species:
Primarily Brown Trout, but will also be utilized by Brook Trout.







Pros	Cons
• Very effective habitat development technique – they have proven to increase the holding capacity for trout in a proper stream	• Favors Brown Trout over other fish species • Relatively expensive to install

See next pages for Standard Drawings WI-930 and WI-930A.

Brush Bundle

Purpose:
Induces sedimentation to allow the stream to constrict itself naturally. Adds woody material to the stream which serves as cover for many species.

Location:
In sections of stream in the shadow of the current, such as behind point bars or deflector structures.

Species:
Benefits reptile and amphibian species by adding cover.

Pros	Cons
• Can use on-site woody material – reduced cost • Relatively easy to install • Potential to benefit several species	• There have not been enough of these structures installed to determine the overall effectiveness – it is possible that there would be a minimal effect on sedimentation.

Other Resources

Glossary of Wisconsin Trout Habitat Development Techniques by Robert L. Hunt, illustrations by Ruth King, has been published by the Wisconsin Department of Natural Resources, 1987.

Unit Construction Of Trout Habitat Improvement Structures For Wisconsin Coulee Streams by David M. Vetrano, Administrative Report No. 27, 1988.

Driftless Riparian Habitat Guide prepared by Jeff Hastings with Trout Unlimited. Report No. 060109, 2009.

APPENDIX 8-1

WATER QUALITY TRADE AGREEMENTS

8027282
Tx:4017183

276579

CAROL J BURMEISTER
REGISTER OF DEEDS
BUFFALO COUNTY, WI
RECORDED ON
07/23/2021 08:34 AM

REC FEE: 30.00
PAGES: 7

Document Number	Water Quality Trading Agreement: Waumandee Sanitary District #1 and Rick Reuter

Recording Area

Name and Return Address
Buffalo County Land Conservation Department
407 S. 22nd Street
Alma, WI 54610

Parcel Identification Number (PIN)
034003230000
034003240000

Real property in the County of Buffalo, Town of Waumandee, State of Wisconsin, being that part of the NW ¼ of the SE ¼ and the SW ¼ of the SE ¼ of Section 10, Township 21 North, Range 11 West, Buffalo County, Wisconsin, lying easterly of County Road U.

THIS PAGE IS PART OF THIS LEGAL DOCUMENT – DO NOT REMOVE

This document was drafted by:
Click or tap here to enter text.

Water Quality Trading Agreement: Waumandee Sanitary District #1 and Rick Reuter

PermitteeInformation

Credit User Name (Permittee)	Permit Number
Waumandee Sanitary District #1	WI-0061646-04-0

Credit User Address
W889 County Road E, Cochrane, WI 54622

Broker Name	Trade Agreement Number
Buffalo County Land Conservation Division	WQT-0061646-01

Broker Address

Street Address	City	State	ZIP Code
407 S 2nd St, PO Box 58	Alma	WI	54610

Project Name
Rick Reuter Waumandee Creek Bank Stabilization

Name of Credit Generator (Landowner/Operator) (Last, First, M.I.)
Reuter, Rick & Jean

Street Address	City	State	ZIP Code
S2099 Cty Rd E	Cochrane	WI	54622

PropertyInformation

Name of Landowner(s) (if not Operator) (Last, First, M.I.)

Street Address	City	State	ZIP Code

Legal Description of Property - Contiguous sites under the same ownership: (add additional sheets if necessary)

Parcel Identification Numbers (PIN): 034003240000, 034003230000

Parcel ID(s):
034003240000, 034003230000

Site Locator for Construction Projects

County	Township	Range E/ W	Section	Quarter/Quarter (e.g., NW ¼ of the NE ¼)
Buffalo County	21N	11W	15	NE ¼ of the NW 1/4
	N			
	N			
	N			

Agreement

The property described above is enrolled in a Water Quality Trading Agreement. Funding is provided by the credit user to pay for the installation of best management practices (BMPs) on the described property which are designed to reduce phosphorous, a nonpoint source of pollution. This agreement commits the landowner/operator, their heirs or successors and assigns to maintain the BMPs and fulfill the trade agreement until a satisfaction or release is filed by the credit user or 20 years, whichever occurs first

Plans which describe the BMPs, costs, installation schedule, and conditions are hereby incorporated into this agreement, are on file with the credit user and may be given to Wisconsin Department of Natural Resources (DNR) upon request by the DNR.

Landowner/Operator

Signed this 21 day of July 20 21.

Signature of Landowner/Operator

Rick Reuter
Typed Name of Landowner/Operator

Signature of Landowner/Operator

Jean Reuter
Typed Name of Landowner/Operator

STATE OF WISCONSIN)
) ss.
Buffalo County)

Personally came before me this 21st day of July, 2021.

The above named Rick Reuter & Jean Reuter to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

Signature of Notary Public — Brenda Pronschinske
Typed Name of Notary Public

Notary Public Buffalo County, Wisconsin

My commission (is permanent) (expires 5-19-2023).

Landowners (if not operator)

If the landowner section is not completed, check (X) one or both of the following that apply

☒ Landowner is also operator

☐ Trade agreement contains only high residue management, nutrient management, pesticide management, cropland protection cover (green manure)

Signed this 21 day of July 2021.

Signature of Landowner (if not operator)

Rick Reuter
Typed Name of Landowner (if not operator)

Signature of Landowner (if not operator)

Jean Reuter
Typed Name of Landowner (if not operator)

STATE OF WISCONSIN)
) ss.
Buffalo County)

Personally came before me this 21st day of July, 2021.

The above named Rick Reuter & Jean Reuter to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

Signature of Notary Public — Brenda Pronschinske
Typed Name of Notary Public

Notary Public Buffalo County, Wisconsin

My commission (is permanent) (expires 5-19-2023)

Credit User

Signed this 21 day of July, 2021.

Signature of credit user

Waumandee Sanitary District #1
Typed Name of credit user/broker/exchange

STATE OF WISCONSIN)
) ss.
Buffalo County)

Personally came before me this 21st day of July, 2021.

The above named Greg Mueller to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

Signature of Notary Public — Brenda Pronschinske

Notary Public Buffalo County, Wisconsin

My commission (is permanent) (expires 5-19-2023)

Other Signer- Specify title or relationship: Buffalo County Land Conservation Division – Broker

Signed this 23 day of July, 2021.

Signature

Kristen Foehringer, Land Conservation Manager
Typed Name

Signature

Kristin Foehringer
Typed Name

STATE OF WISCONSIN)
)
Buffalo County) ss.
)
)

Personally came before me this 23rd day of July, 2021.

The above named Kristin Foehringer to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

Sonya J Hansen
Signature of Notary Public

Sonya J Hansen
Typed Name of Notary Public

Notary Public Buffalo County, Wisconsin

My commission (is permanent) (expires 7-12-2022).

Other Signer- Specify title or relationship:

Signed this day of, 20.

Signature

Typed Name

Signature

Typed Name

STATE OF WISCONSIN)
)
County) ss.
)
)

Personally came before me this day of, 20.

The above named to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

Signature of Notary Public

Typed Name of Notary Public

Notary Public County, Wisconsin

My commission (is permanent) (expires).

Other Signer- Specify title or relationship:

Signed this day of, 20.

Signature

Typed Name

Signature

Typed Name

STATE OF WISCONSIN)
)
County) ss.
)
)

Personally came before me this day of, 20.

The above named to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

Signature of Notary Public

Typed Name of Notary Public

Notary Public County, Wisconsin

My commission (is permanent) (expires).

☐ Check this box if this page is purposely left blank.

Section A – General Requirements

1. The following relationship has been established for this Water Quality Trading Agreement:
   - The Waumandee Sanitary District #1 will hereby be known as the Credit User.
   - The Buffalo County Land Conservation Department will be known as the Broker.
   - Rick Reuter will be known as the Landowner/Operator.
2. This contract may be amended, by written mutual agreement of the parties, during the installation or maintenance period, if the proposed changes will provide equal or greater control of water pollution. For any changes in practice components or costs, the broker will determine eligibility and whether to approve such changes. Any increases to the project cost shall be approved in advance in writing by the Credit User.
3. The Credit User reserves the right to terminate this agreement if the Wisconsin Department of Natural Resources (DNR) does NOT approve the Water Quality Trading Plan (WQT Plan). The WQT identifies this project for phosphorus credits to help the Credit User's wastewater treatment facility (WWTF). These credits will be established in the WQT Plan and analyzed to determine if it is a cost-effective project. Should the DNR either deny or reduce the project credits which results in a higher cost per pound of phosphorus credit, then the Credit User may terminate the agreement.
4. The Broker reserves the right to enter the property to verify the information on the inspection report is accurate.
5. Any duly authorized officer, employee or representative of WDNR shall have the right to access and inspect the practices pursuant to Wis. Stat. 283.55(2) so long as this Agreement remains in effect.
6. **Hold Harmless.** The Credit User shall defend, indemnify and hold the Broker, its officers, officials, employees and volunteers harmless from any and all claims, injuries, damages, losses or suits including attorney fees, arising out of or in connection with the performance of this Agreement, except for injuries and damages caused by the negligence of the Broker.

Section B – Credit User

1. The Credit User is responsible for a share of the monetary costs incurred with the BMP practice installation, which includes but is not limited to site preparation, clearing, ensuring planned grades; stream bank shaping; rock riprap and installation; liming, fertilizing, seeding and mulching. The Credit User's share of the monetary costs will not be distributed until the WDNR has approved the WQT Plan and credits. If the project is constructed prior to WDNR approval of the WQT Plan, then the Landowner shall pay for the construction and be partially reimbursed by the Credit User after the WQT plan has been approved by the WDNR.
2. The Credit User reserves the right to analyze the cost per pound of phosphorus credit, to determine if the project is a good fit financially. The Credit User's share shall consider the cost per pound of phosphorus.
3. The Credit User shall have the right to access the property for inspection or maintenance. If a natural disaster impacts the BMPs and causes damage that reduces phosphorus credits and The Landowner/Operator does not take corrective action, the Credit User has the option of paying the cost of repairs or releasing this agreement.

Section C – Landowner/Operator Shall:

1. If any land covered by this agreement is transferred or otherwise changes ownership, this agreement will be held in obligation with the land in perpetuity and the new owners will be obligated to comply with this agreement. Landowners are obligated to notify any prospective buyers of this agreement and their responsibilities under this agreement and applicable law.
2. The Landowner/Operator agrees to repay reimbursed project costs to the Credit User, upon demand by the Broker, if the Landowner fails to comply with the terms of this agreement. Repayment shall not be required if a practice(s) is rendered ineffective due to circumstances which are beyond the control of the Landowner/Operator.
3. The Landowner/Operator shall inspect the riprap and streambank at least annually and after heavy storms. Any erosion or displacement of rocks shall be repaired. The Broker should be contacted immediately and directly if any damage has occurred.
4. The Landowner/Operator shall ensure that debris is removed from the channel and that vegetation is controlled around the channel only when the vegetation or obstructions are threatening stream function. Invasive vegetation should be controlled, and channel obstructions deemed harmful may be removed. Channel clearing to remove stumps, fallen trees, debris, and sediment bars shall only be performed when they are causing or could cause unacceptable bank erosion, or flow restriction.
5. The Landowner/Operator shall check for sloughing, erosion, or damage to vegetative cover. Damaged areas shall be graded, shaped, and replanted by Landowner as soon as possible with a seed mix pre-approved by the broker.
6. Periodically mow the vegetative buffer to control weeds and invading brush. All farm equipment and row crops must remain outside of the agreed upon 20-foot buffer from the top of the bank.
7. The Landowner/Operator shall eliminate all burrowing rodents and repair damage caused by them.
8. The Landowner/Operator shall maintain the project consistent with NRCS technical standard 580.
9. The Landowner/Operator shall work with the Broker in the preparation of a Livestock Management Plan.
10. Installation of these practices brings the Landowner into compliance with the applicable state and local performance standards listed below. Compliance with these performance standards shall be in perpetuity. These practices must be maintained or

replaced with a practice which ensures continued compliance with the following N.R. 151 performance standards:

- N.R. 151.06 Clean Water Diversion

Section D. Broker

1. The Broker will be responsible for regulation of applicable performance standards, annual inspections, and monitoring of landowners' obligations in the form of performing on-site checks as needed. The Broker shall not have any financial obligation for this project except as expressly stated in this agreement.
2. The Broker will ensure the contract is recorded in the Buffalo County Register of Deeds office, the Landowner/Operator shall be responsible for the $30 filing fee.
3. The Broker agrees to complete annual inspections.

TA Number	Typed Name of Landowner/Operator	Initials of Landowner/Operator	Date
	Rick Reuter	RR	7/21/21

The cost-share recipient shall implement and maintain all best management practices listed in this Contract, unless otherwise amended in accordance with this agreement.							Installation Period			
							From (MM/YYYY)		To (MM/YYYY)	
Field #	DNR BMP Code	Practice Name	Quantity	Unit	Unit Cost	Total Cost	Reimbursement Rate (%)	Cost-Share Amount	Cost-Share Amt. From Other Programs*	Year Installed
	NRCS 580	Limestone rock riprap D50 size 8" Diameter				$ 7,100.00				2020
* Identify Program Names:					TOTALS	$ 7,100.00	$ -	$ -	$ -	
CSA Number	Typed Name of Landowner / Operator Rick Reuter					Initials of Landowner/Operator			Date	

DocId:8037307
Tx:4023733

281908

CAROL J BURMEISTER
REGISTER OF DEEDS
BUFFALO COUNTY, WI
RECORDED ON
03/28/2023 11:31 AM

REC FEE: 30.00
PAGES: 7

Document Number

Water Quality Trading Agreement: Waumandee Sanitary District #1 and Jeff Reglin

Recording Area

Name and Return Address
Buffalo County Land Conservation Department
407 S. 22nd Street
Alma, WI 54610

Parcel Identification Number (PIN)
034004280000

Real property in the County of Buffalo, Town of Waumandee, State of Wisconsin, being that part of the NE ¼ of the NW ¼ Section 15, Township 21 North, Range 11 West, Buffalo County, Wisconsin, lying easterly of County Road U.

THIS PAGE IS PART OF THIS LEGAL DOCUMENT – DO NOT REMOVE

This document was drafted by:

Water Quality Trading Agreement: Waumandee Sanitary District #1 and Jeff Reglin

PermitteeInformation

Credit User Name (Permittee)	Permit Number
Waumandee Sanitary District #1	WI-0061646-04-0

Credit User Address
S1991 County Road U, Waumandee, WI 54622

Broker Name	Trade Agreement Number
Buffalo County Land Conservation Division	WQT-0061646-02

Broker Address

Street Address	City	State	ZIP Code
407 S 2nd St, PO Box 58	Alma	WI	54610

Project Name
Jeff Reglin Waumandee Creek Bank Stabilization

Name of Credit Generator (Landowner/Operator) (Last, First, M.I.)
Reglin, Jeff

Street Address	City	State	ZIP Code
S2012 Cty Rd U	Waumandee	WI	54622

PropertyInformation

Name of Landowner(s) (If not Operator) (Last, First, M.I.)
Reglin, Jeff

Street Address	City	State	ZIP Code
S2012 Cty Rd U	Waumandee	WI	54622

Legal Description of Property - Contiguous sites under the same ownership: (add additional sheets if necessary)

Parcel Identification Numbers (PIN): 034004280000

Parcel ID(s):
034004280000

Site Locator for Construction Projects

County	Township	Range E/W	Section	Quarter/Quarter (e.g., NW ¼ of the NE ¼)
Buffalo County	21N	11W	15	NE ¼ of the NW ¼
	N			
	N			
	N			

Agreement

The property described above is enrolled in a Water Quality Trading Agreement. Funding is provided by the credit user to pay for the installation of best management practices (BMPs) on the described property which are designed to reduce phosphorous, a nonpoint source of pollution. This agreement commits the landowner/operator, their heirs or successors and assigns to maintain the BMPs and fulfill the trade agreement until a satisfaction or release is filed by the credit user or 20 years, whichever occurs first

Plans which describe the BMPs, costs, installation schedule, and conditions are hereby incorporated into this agreement, are on file with the credit user and may be given to Wisconsin Department of Natural Resources (DNR) upon request by the DNR.

Landowner/Operator

Signed this 13th day of February, 20 23.

Jeffrey Reglin
Signature of Landowner/Operator

Signature of Landowner/Operator

Jeff Reglin
Typed Name of Landowner/Operator

Typed Name of Landowner/Operator

STATE OF WISCONSIN)
Buffalo County) ss.

Personally came before me this 13th day of February, 20 23.

The above named Jeffrey Reglin to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

Brenda Pronschinske
Signature of Notary Public

Brenda Pronschinske
Typed Name of Notary Public

Notary Public Buffalo County, Wisconsin

My commission (is permanent) (expires 5-19-2023).

Landowners (if not operator)

If the landowner section is not completed, check (X) one or both of the following that apply

☒ Landowner is also operator

☐ Trade agreement contains only high residue management, nutrient management, pesticide management, cropland protection cover (green manure)

Signed this _____ day of _____, 20 23.

Signature of Landowner (if not operator)

Signature of Landowner (if not operator)

Typed Name of Landowner (if not operator)

Typed Name of Landowner (if not operator)

STATE OF WISCONSIN)
_____ County) ss.

Personally came before me this _____ day of _____, 20 23.

The above named _____ to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

Signature of Notary Public

Typed Name of Notary Public

Notary Public _____ County, Wisconsin

My commission (is permanent) (expires _____).

Credit User

Signed this 13 day of Feb, 20 23.

Signature of credit user

Waumandee Sanitary District #1
Typed Name of credit user/broker/exchange

STATE OF WISCONSIN)
Buffalo County) ss.

Personally came before me this 13th day of February, 20 23.

The above named Greg Mueller to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

Brenda Pronschinske
Signature of Notary Public

Notary Public Buffalo County, Wisconsin

My commission expires 5-19-2023

Other Signer- Specify title or relationship: Buffalo County Land Conservation Division – Broker

Signed this 21 day of March, 2023.

Signature

Signature

Cale Severson, Land Conservation Manager
Typed Name

Typed Name

STATE OF WISCONSIN)
Buffalo County) ss.
)

Personally came before me this 21st day of March 2023

The above named _____ to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

Signature of Notary Public

Lea Krolewski
Typed Name of Notary Public

Notary Public Buffalo County, Wisconsin

My commission (is permanent) (expires 03-16-2024)

Other Signer- Specify title or relationship: _____

Signed this _____ day of _____, 20____.

Signature

Signature

Typed Name

Typed Name

STATE OF WISCONSIN)
_____ County) ss.
)

Personally came before me this _____ day of _____, 20____.

The above named _____ to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

Signature of Notary Public

Typed Name of Notary Public

Notary Public _____ County, Wisconsin

My commission (is permanent) (expires _____).

Other Signer- Specify title or relationship: _____

Signed this _____ day of _____, 20____.

Signature

Signature

Typed Name

Typed Name

STATE OF WISCONSIN)
_____ County) ss.
)

Personally came before me this _____ day of _____, 20____.

The above named _____ to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

Signature of Notary Public

Typed Name of Notary Public

Notary Public _____ County, Wisconsin

Section A – General Requirements

1. The following relationship has been established for this Water Quality Trading Agreement:
   - The Waumandee Sanitary District #1 will hereby be known as the Credit User.
   - The Buffalo County Land Conservation Department will be known as the Broker.
   - Jeff Reglin will be known as the Landowner/Operator.
2. This contract may be amended, by written mutual agreement of the parties, during the installation or maintenance period, if the proposed changes will provide equal or greater control of water pollution. For any changes in practice components or costs, the broker will determine eligibility and whether to approve such changes. Any increases to the project cost shall be approved in advance in writing by the Credit User.
3. The Credit User reserves the right to terminate this agreement if the Wisconsin Department of Natural Resources (DNR) does NOT approve the Water Quality Trading Plan (WQT Plan). The WQT identifies this project for phosphorus credits to help the Credit User's wastewater treatment facility (WWTF). These credits will be established in the WQT Plan and analyzed to determine if it is a cost-effective project. Should the DNR either deny or reduce the project credits which results in a higher cost per pound of phosphorus credit, then the Credit User may terminate the agreement.
4. The Broker reserves the right to enter the property to verify the information on the inspection report is accurate.
5. Any duly authorized officer, employee or representative of WDNR shall have the right to access and inspect the practices pursuant to Wis. Stat. 283.55(2) so long as this Agreement remains in effect.
6. **Hold Harmless**. The Credit User shall defend, indemnify and hold the Broker, its officers, officials, employees and volunteers harmless from any and all claims, injuries, damages, losses or suits including attorney fees, arising out of or in connection with the performance of this Agreement, except for injuries and damages caused by the negligence of the Broker.

Section B – Credit User

1. The Credit User is responsible for a share of the monetary costs incurred with the BMP practice installation, which includes but is not limited to site preparation, clearing, ensuring planned grades; stream bank shaping; rock riprap and installation; liming, fertilizing, seeding and mulching. The Credit User's share of the monetary costs will not be distributed until the WDNR has approved the WQT Plan and credits. If the project is constructed prior to WDNR approval of the WQT Plan, then the Landowner shall pay for the construction and be partially reimbursed by the Credit User after the WQT plan has been approved by the WDNR.
2. The Credit User reserves the right to analyze the cost per pound of phosphorus credit, to determine if the project is a good fit financially. The Credit User's share shall consider the cost per pound of phosphorus.
3. The Credit User shall have the right to access the property for inspection or maintenance. If a natural disaster impacts the BMPs and causes damage that reduces phosphorus credits and The Landowner/Operator does not take corrective action, the Credit User has the option of paying the cost of repairs or releasing this agreement.

Section C – Landowner/Operator Shall:

1. If any land covered by this agreement is transferred or otherwise changes ownership, this agreement will be held in obligation with the land in perpetuity and the new owners will be obligated to comply with this agreement. Landowners are obligated to notify any prospective buyers of this agreement and their responsibilities under this agreement and applicable law.
2. The Landowner/Operator agrees to repay reimbursed project costs to the Credit User, upon demand by the Broker, if the Landowner fails to comply with the terms of this agreement. Repayment shall not be required if a practice(s) is rendered ineffective due to circumstances which are beyond the control of the Landowner/Operator.
3. The Landowner/Operator shall inspect the riprap and streambank at least annually and after heavy storms. Any erosion or displacement of rocks shall be repaired. The Broker should be contacted immediately and directly if any damage has occurred.
4. The Landowner/Operator shall ensure that debris is removed from the channel and that vegetation is controlled around the channel only when the vegetation or obstructions are threatening stream function. Invasive vegetation should be controlled, and channel obstructions deemed harmful may be removed. Channel clearing to remove stumps, fallen trees, debris, and sediment bars shall only be performed when they are causing or could cause unacceptable bank erosion, or flow restriction.
5. The Landowner/Operator shall check for sloughing, erosion, or damage to vegetative cover. Damaged areas shall be graded, shaped, and replanted by Landowner as soon as possible with a seed mix pre-approved by the broker.
6. Periodically mow the vegetative buffer to control weeds and invading brush. All farm equipment and row crops must remain outside of the agreed upon 20-foot buffer from the top of the bank.
7. The Landowner/Operator shall eliminate all burrowing rodents and repair damage caused by them.
8. The Landowner/Operator shall maintain the project consistent with NRCS technical standard 580.
9. The Landowner/Operator shall work with the Broker in the preparation of a Livestock Management Plan.
10. Installation of these practices brings the Landowner into compliance with the applicable state and local performance standards listed below. Compliance with these performance standards shall be in perpetuity. These practices must be maintained or

replaced with a practice which ensures continued compliance with the following N.R. 151 performance standards:

- N.R. 151.06 Clean Water Diversion

Section D. Broker

1. The Broker will be responsible for regulation of applicable performance standards, annual inspections, and monitoring of landowners' obligations in the form of performing on-site checks as needed. The Broker shall not have any financial obligation for this project except as expressly stated in this agreement.
2. The Broker will ensure the contract is recorded in the Buffalo County Register of Deeds office, the Landowner/Operator shall be responsible for the $30 filing fee.
3. The Broker agrees to complete annual inspections.

TA Number	Typed Name of Landowner/Operator	Initials of Landowner/Operator	Date
	Jeff Reglin	JMR	2-13-23

DocId:8037306
Tx:4023733

281907

CAROL J BURMEISTER
REGISTER OF DEEDS
BUFFALO COUNTY, WI
RECORDED ON
03/28/2023 11:31 AM

REC FEE: 30.00
PAGES: 7

Document Number

Water Quality Trading Agreement: Waumandee Sanitary District #1 and Daniel Brommer

Recording Area

Name and Return Address
Buffalo County Land Conservation Department
407 S. 22nd Street
Alma, WI 54610

Parcel Identification Number (PIN)
034004260000

Real property in the County of Buffalo, Town of Waumandee, State of Wisconsin, being that part of the NE ¼ of the NW ¼ Section 15, Township 21 North, Range 11 West, Buffalo County, Wisconsin, lying easterly of County Road U.

THIS PAGE IS PART OF THIS LEGAL DOCUMENT – DO NOT REMOVE

This document was drafted by:

Water Quality Trading Agreement: Waumandee Sanitary District #1 and Daniel Brommer

PermitteeInformation

Credit User Name (Permittee)	Permit Number
Waumandee Sanitary District #1	WI-0061646-04-0

Credit User Address
S1991 County Road U, Waumandee, WI 54622

Broker Name	Trade Agreement Number
Buffalo County Land Conservation Division	WQT-0061646-02

Broker Address

Street Address	City	State	ZIP Code
407 S 2nd St, PO Box 58	Alma	WI	54610

Project Name
Daniel Brommer Waumandee Creek Bank Stabilization

Name of Credit Generator (Landowner/Operator) (Last, First, M.I.)
Brommer, Daniel

Street Address	City	State	ZIP Code
W869 Korte Drive	Waumandee	WI	54622

PropertyInformation

Name of Landowner(s) (If not Operator) (Last, First, M.I.)
Brommer, Daniel

Street Address	City	State	ZIP Code
W869 Korte Drive	Waumandee	WI	54622

Legal Description of Property - Contiguous sites under the same ownership: (add additional sheets if necessary)

Parcel Identification Numbers (PIN): 034004260000

Parcel ID(s):
034004260000

Site Locator for Construction Projects

County	Township	Range E/W	Section	Quarter/Quarter (e.g., NW ¼ of the NE ¼)
Buffalo County	21N	11W	15	NE ¼ of the NW ¼
	N			
	N			
	N			

Agreement

The property described above is enrolled in a Water Quality Trading Agreement. Funding is provided by the credit user to pay for the installation of best management practices (BMPs) on the described property which are designed to reduce phosphorous, a nonpoint source of pollution. This agreement commits the landowner/operator, their heirs or successors and assigns to maintain the BMPs and fulfill the trade agreement until a satisfaction or release is filed by the credit user or 20 years, whichever occurs first

Plans which describe the BMPs, costs, installation schedule, and conditions are hereby incorporated into this agreement, are on file with the credit user and may be given to Wisconsin Department of Natural Resources (DNR) upon request by the DNR.

Landowner/Operator

Signed this 20th day of March, 20 23.

Daniel Brommer
Signature of Landowner/Operator

Signature of Landowner/Operator

Daniel Brommer
Typed Name of Landowner/Operator

Typed Name of Landowner/Operator

STATE OF WISCONSIN)
)
_____ County) ss.
)

Personally came before me this 20th day of March, 20 23.

The above named Daniel Brommer to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

Karla R. Olson
Signature of Notary Public

Karla R. Olson
Typed Name of Notary Public

Karla R. Olson
Notary Public - State of Wisconsin

Notary Public Buffalo County, Wisconsin

My commission (is permanent) (expires 09/06/2023).

Landowners (if not operator)

If the landowner section is not completed, check (X) one or both of the following that apply

☒ Landowner is also operator

☐ Trade agreement contains only high residue management, nutrient management, pesticide management, cropland protection cover (green manure)

Signed this _____ day of _____, 20 23.

Signature of Landowner (if not operator)

Signature of Landowner (if not operator)

Typed Name of Landowner (if not operator)

Typed Name of Landowner (if not operator)

STATE OF WISCONSIN)
)
_____ County) ss.
)

Personally came before me this _____ day of _____, 20 23.

The above named _____ to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

Signature of Notary Public

Typed Name of Notary Public

Notary Public _____ County, Wisconsin

My commission (is permanent) (expires _____).

Credit User

Signed this 13 day of February, 20 23.

Signature of credit user

Waumandee Sanitary District #1
Typed Name of credit user/broker/exchange

STATE OF WISCONSIN)
)
Buffalo County) ss.
)

Personally came before me this 13th day of February, 20 23.

The above named Greg Mueller to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

Brenda Pronschinske
Signature of Notary Public

Notary Public Buffalo County, Wisconsin

My Commission expires 5-19-2023

NOTARY PUBLIC STATE OF WISCONSIN

Other Signer- Specify title or relationship: Buffalo County Land Conservation Division – Broker

Signed this 21 day of March, 2023.

Signature

Signature

Cale Severson, Land Conservation Manager
Typed Name

Typed Name

STATE OF WISCONSIN)
) ss.
Buffalo County)

Personally came before me this 21st day of March 2023

The above named _____ to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

Lea Krolewski
Signature of Notary Public

Lea Krolewski
Typed Name of Notary Public

Notary Public Buffalo County, Wisconsin

My commission (is permanent) (expires 03-16-2024)

LEA KRALEWSKI NOTARY PUBLIC STATE OF WISCONSIN

Other Signer- Specify title or relationship: _____

Signed this _____ day of _____, 20____.

Signature

Signature

Typed Name

Typed Name

STATE OF WISCONSIN)
) ss.
_____ County)

Personally came before me this _____ day of _____, 20____.

The above named _____ to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

Signature of Notary Public

Typed Name of Notary Public

Notary Public _____ County, Wisconsin

My commission (is permanent) (expires _____).

Other Signer- Specify title or relationship: _____

Signed this _____ day of _____, 20____.

Signature

Signature

Typed Name

Typed Name

STATE OF WISCONSIN)
) ss.
_____ County)

Personally came before me this _____ day of _____, 20____.

The above named _____ to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

Signature of Notary Public

Typed Name of Notary Public

Notary Public _____ County, Wisconsin

Section A – General Requirements

1. The following relationship has been established for this Water Quality Trading Agreement:
   - The Waumandee Sanitary District #1 will hereby be known as the Credit User.
   - The Buffalo County Land Conservation Department will be known as the Broker.
   - Daniel Brommer will be known as the Landowner/Operator.
2. This contract may be amended, by written mutual agreement of the parties, during the installation or maintenance period, if the proposed changes will provide equal or greater control of water pollution. For any changes in practice components or costs, the broker will determine eligibility and whether to approve such changes. Any increases to the project cost shall be approved in advance in writing by the Credit User.
3. The Credit User reserves the right to terminate this agreement if the Wisconsin Department of Natural Resources (DNR) does NOT approve the Water Quality Trading Plan (WQT Plan). The WQT identifies this project for phosphorus credits to help the Credit User's wastewater treatment facility (WWTF). These credits will be established in the WQT Plan and analyzed to determine if it is a cost-effective project. Should the DNR either deny or reduce the project credits which results in a higher cost per pound of phosphorus credit, then the Credit User may terminate the agreement.
4. The Broker reserves the right to enter the property to verify the information on the inspection report is accurate.
5. Any duly authorized officer, employee or representative of WDNR shall have the right to access and inspect the practices pursuant to Wis. Stat. 283.55(2) so long as this Agreement remains in effect.
6. **Hold Harmless**. The Credit User shall defend, indemnify and hold the Broker, its officers, officials, employees and volunteers harmless from any and all claims, injuries, damages, losses or suits including attorney fees, arising out of or in connection with the performance of this Agreement, except for injuries and damages caused by the negligence of the Broker.

Section B – Credit User

1. The Credit User is responsible for a share of the monetary costs incurred with the BMP practice installation, which includes but is not limited to site preparation, clearing, ensuring planned grades; stream bank shaping; rock riprap and installation; liming, fertilizing, seeding and mulching. The Credit User's share of the monetary costs will not be distributed until the WDNR has approved the WQT Plan and credits. If the project is constructed prior to WDNR approval of the WQT Plan, then the Landowner shall pay for the construction and be partially reimbursed by the Credit User after the WQT plan has been approved by the WDNR.
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Section C – Landowner/Operator Shall:

1. If any land covered by this agreement is transferred or otherwise changes ownership, this agreement will be held in obligation with the land in perpetuity and the new owners will be obligated to comply with this agreement. Landowners are obligated to notify any prospective buyers of this agreement and their responsibilities under this agreement and applicable law.
2. The Landowner/Operator agrees to repay reimbursed project costs to the Credit User, upon demand by the Broker, if the Landowner fails to comply with the terms of this agreement. Repayment shall not be required if a practice(s) is rendered ineffective due to circumstances which are beyond the control of the Landowner/Operator.
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5. The Landowner/Operator shall check for sloughing, erosion, or damage to vegetative cover. Damaged areas shall be graded, shaped, and replanted by Landowner as soon as possible with a seed mix pre-approved by the broker.
6. Periodically mow the vegetative buffer to control weeds and invading brush. All farm equipment and row crops must remain outside of the agreed upon 20-foot buffer from the top of the bank.
7. The Landowner/Operator shall eliminate all burrowing rodents and repair damage caused by them.
8. The Landowner/Operator shall maintain the project consistent with NRCS technical standard 580.
9. The Landowner/Operator shall work with the Broker in the preparation of a Livestock Management Plan.
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replaced with a practice which ensures continued compliance with the following N.R. 151 performance standards:

- N.R. 151.06 Clean Water Diversion

Section D. Broker

1. The Broker will be responsible for regulation of applicable performance standards, annual inspections, and monitoring of landowners' obligations in the form of performing on-site checks as needed. The Broker shall not have any financial obligation for this project except as expressly stated in this agreement.
2. The Broker will ensure the contract is recorded in the Buffalo County Register of Deeds office, the Landowner/Operator shall be responsible for the $30 filing fee.
3. The Broker agrees to complete annual inspections.

TA Number	Typed Name of Landowner/Operator	Initials of Landowner/Operator	Date
	Daniel Brommer		03/20/2023

APPENDIX 9-1

PHOSPHORUS SOIL TEST RESULTS

Soil and Forage Analysis Lab
COLLEGE OF AGRICULTURAL & LIFE SCIENCES
UNIVERSITY OF WISCONSIN-MADISON

2611 Yellowstone Drive
Marshfield WI 54449
715-387-2523
http://uwlab.soils.wisc.edu

Buffalo County Land Conservation
Davy Engineering

Waumandee WQT

Date 11/23/2020
Account # 558654
Report # 4528

Soil Total Mineral Analysis

Sample ID	*P* %
Site 1 - 1	0.08
Site 1 - 2	0.06
Site 1 - 3	0.05
Site 2 - 1	0.08
Site 2 - 2	0.04
Site 2 - 3	0.05

Soil and Forage Analysis Lab
WISCONSIN STATE LABORATORY OF HYGIENE
UNIVERSITY OF WISCONSIN–MADISON

4702 University Avenue
Madison, WI 53705
608-262-4364
http://uwlab.soils.wisc.edu

Joe Krumrie
Buffalo County LCD
407 S 2nd St
Alma, WI 54610

Date 12/12/2022
Account # 559083
Report # 4120

Soil Total Phosphorus Analysis

Sample ID	*TP* %
1	0.05

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APPENDIX 17-1

WATER QUALITY TRADE PRELIMINARY COST ESTIMATES

The cost-share recipient shall implement and maintain all best management practices listed in this Addendum, unless otherwise amended in accordance with this agreement.							Installation Period From (MM/YY)		To (MM/YY)	
Field #	DNR BMP Code	Practice Name	Quantity	Unit	Unit Cost	Estimated Total Cost	Reimbursement Rate (%)	Estimated Cost-Share Amount	Cost-Share Amt. From Other Programs*	Estimated Year to be Installed
	NRCS 580	Mobilization	1	L.S.	$ 7,500.00	$ 7,500.00				2022
	NRCS 580	Site Preparation, clearing, and grading	1	L.S.	$ 2,250.00	$ 2,250.00				2022
	NRCS 580	Limestone rock riprap D50 size 8" Diameter	30	cu. yd.	$ 50.00	$ 1,500.00				2022
	NRCS 580	Geotexile Fabric, Type SAS	225	sq. yd.	$ 3.00	$ 680.00				2022
	NRCS 580	Liming, fertilizing, seeding and mulching	150	sq. yd.	$ 5.00	$ 750.00				2022
	NRCS 580	Erosion Control	1	L.S.	$ 6,000.00	$ 6,000.00				2022
	NRCS 580	Tracking Pad	1	L.S.	$ 1,500.00	$ 1,500.00				2022
		Sub-Total				**$ 20,180.00**				
		Contingencies (10%)				$ 2,020.00				
Note: These estimates are based on an overall project of three parcels of land. The estimated values were broken up through an assumed percentage of land. The exact values in the field may differ from above.										
* Identify Program Names:					**TOTALS**	**$ 22,200.00**	**$ -**	**$ -**	**$ -**	
CSA Number		Typed Name of Landowner / Operator Ricky Reuter				Initials of Landowner/Operator			Date	

The cost-share recipient shall implement and maintain all best management practices listed in this Addendum, unless otherwise amended in accordance with this agreement.							Installation Period From (MM/YY)		To (MM/YY)	
Field #	DNR BMP Code	Practice Name	Quantity	Unit	Unit Cost	Estimated Total Cost	Reimbursement Rate (%)	Estimated Cost-Share Amount	Cost-Share Amt. From Other Programs*	Estimated Year to be Installed
	NRCS 580	Mobilization	1	L.S.	$ 7,500.00	$ 7,500.00				2022
	NRCS 580	Site Preparation, clearing, and grading	1	L.S.	$ 2,250.00	$ 2,250.00				2022
	NRCS 580	Limestone rock riprap D50 size 8" Diameter	50	cu. yd.	$ 50.00	$ 2,500.00				2022
	NRCS 580	Geotexile Fabric, Type SAS	315	sq. yd.	$ 3.00	$ 950.00				2022
	NRCS 580	Liming, fertilizing, seeding and mulching	250	sq. yd.	$ 5.00	$ 1,250.00				2022
	NRCS 580	Erosion Control	1	L.S.	$ 6,000.00	$ 6,000.00				2022
	NRCS 580	Tracking Pad	1	L.S.	$ 1,500.00	$ 1,500.00				2022
		Sub-Total				**$ 21,950.00**				
		Contingencies (10%)				$ 2,200.00				
Note: These estimates are based on an overall project of three parcels of land. The estimated values were broken up through an assumed percentage of land. The exact values in the field may differ from above.										
* Identify Program Names:					**TOTALS**	**$ 24,150.00**	**$ -**	**$ -**	**$ -**	
CSA Number		Typed Name of Landowner / Operator Brommer / Reglin				Initials of Landowner/Operator			Date	