DAVY ENGINEERING

WATER QUALITY TRADING PLAN
HUB ROCK SANITARY DISTRICT #1 WWTP

HUB CITY-ROCKBRIDGE, WI

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HUB ROCK SANITARY DISTRICT #1

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1 SUMMARY

The WPDES Permit for the Hub Rock wastewater treatment facility (WWTP) proposes a future phosphorus effluent limit of 0.075 mg/L. The existing limit is 2.9 mg/L. The Facility Plan proposes to temporarily add chemicals to reduce phosphorus combined with an initial Water Quality Trade (WQT) to offset the phosphorus mass to the 0.075 mg/L limit. Within this Permit term, the Sanitary District plans to offset the entire phosphorous mass with additional WQT projects.

In 2020, the total discharge from the Hub Rock lagoon averaged 10,000 GPD. The effluent phosphorous mass loading at 1.0 mg/L is 30.5 lbs./year. At the same 10,000 GPD flow, the future 0.075 mg/L limit will reduce the phosphorous mass loading to 2.3 lbs./year, a reduction of 28.2 lbs./year. WQT will require a 2:1 or 3:1 Trade Ratio, which means Hub Rock would need to secure approximately 56 to 85 lbs./year of phosphorus credit to meet the base trade amount via Water Quality Trade (WQT) with a 1.0 mg/L effluent.

The chemical addition that reduces the lagoon effluent phosphorus to 1.0 mg/L was performed on a pilot basis, but it was determined to be too expensive to meet these limits consistently. Without chemical feed, the effluent phosphorus is approximately 2.9 mg/L, a mass loading of 88.3 lbs./year. At the same 10,000 GPD flow, the future 0.075 mg/L limit will reduce the phosphorus mass loading to 2.3 lbs./year, a reduction of 86 lbs./year, the base trade amount for the full WQT with no chemical addition. With the 2:1 to 3:1 Trade Ratio, Hub Rock will need to secure 172 to 258 lbs./year of credit to meet the limit via Water Quality Trade (WQT).

Both above conditions assume the current wastewater Flow. Hub Rock is not gaining customers.

The WWTP is located on a hill and the discharge is piped to the Pine River.

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 Hub Rock WWTP will utilize water quality trading (WQT) to comply with the phosphorus limits of WPDES permit WI-0049689-05-0, which expires on June 30, 2025. 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 November 2019 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 the Pine River and is authorized to discharge through WPDES permit WI-0049689-05-0. The permit is effective from July 1, 2020 to June 30, 2025. The total phosphorus limits are summarized as follows:

- June 30, 2020, to June 30, 2024 2.9 mg/L
- July 1, 2024 to June 30, 2025 1.0 mg/L
- July 1, 2025 to June 30, 2030 0.075 mg/L

In accordance with s. 283.15, Wis. Stats., the outfall for permit WI-0049689-05-0 currently is under a Multi-Discharger Variance 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 $54.23 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. Refer to the schedules section for the scheduled annual requirements. With Flow at 10,000 GPD and effluent P at 2.9 mg/L, the estimated annual payment is $4,457.20. With the 1.0 mg/L effluent P achievable with the pilot chemical fed, the estimated annual MDV payment is reduced to $1,320.65.

2.3 Location of WWTP Outfall

The outfall discharges to the Pine River, which is located in the Upper Pine River Watershed in the Lower Wisconsin River Basin. Pine River flows to the southeast and discharges to the Wisconsin River approximately 18 miles south of the Hub Rock WWTP outfall location. The outfall location is located near the intersection of CTH DD and STH 80 south of the Town of Rockbridge. See **Appendix 2-2** for the Hub Rock WWTP Outfall Location Map.

2.4 Location of Restoration Project in Comparison to the WWTP Outfall

The initial WQT project location is on the Pine River just south of the Village of Yuba approximately 7 miles northwest of the WWTP discharge along the meandering path of the Pine River. The Brendon Clarke / Engine Creek streambank restoration project is on the southeast side of Yuba, upstream of the WWTP discharge location, see **Appendix 2-3** for a comparison map of the two locations.

3 DESCRIPTION OF EXISTING LAND USES IN VICINITY OF WQT PROJECTS

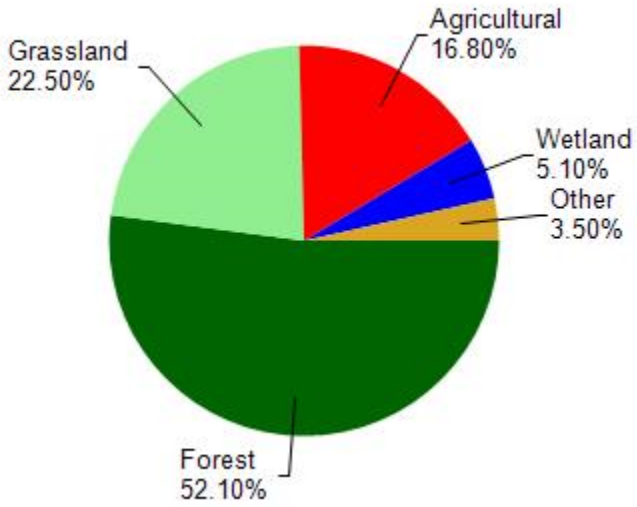
3.1 Pine River in Yuba

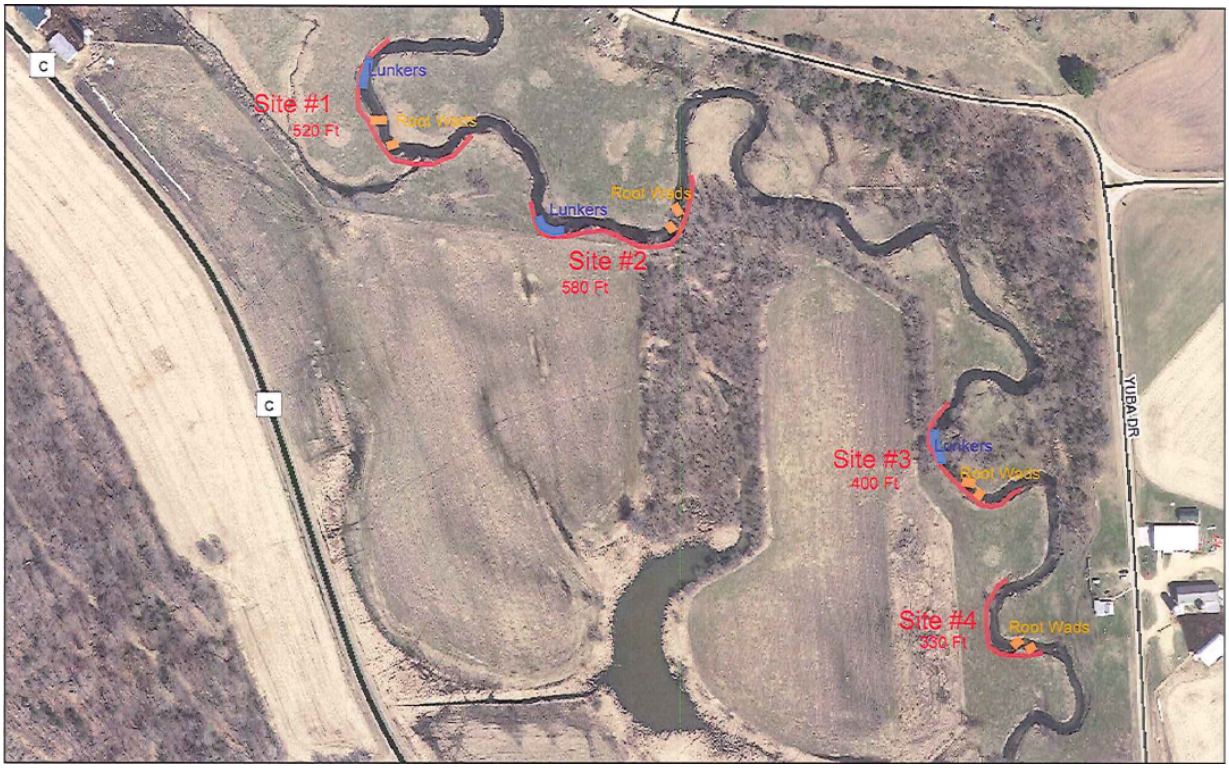
Pine River is 22.35-mile long and 17 miles of the river is Class II trout stream. The trout stream is largely within Richland County though the Pine River originates in Vernon County. Per the WI DNR website, "This watershed is ranked High for runoff impacts on streams, Low for runoff impacts on lakes and High for runoff impacts on groundwater and therefore has an overall rank of High." Pine River is considered a "Coldwater, Cool-Cold Headwater, Cool-Cold Mainstream, Macroinvertebrate, No Classification, Large River, Warm Mainstream, COOL-Warm Headwater, COOL-Warm Mainstream" stream under the state's Natural Community Determinations.

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

Per the DNR website under Watershed Characteristics, "Pine River is located in the Willow Creek watershed which is 153.08 mi². Land use in the watershed is primarily forest (52.10%), grassland (22.50%) and a mix of agricultural (16.80%) and other uses (8.60%). This watershed has 339.41 stream miles, 64.58 lake acres and 3,605.43 wetland acres."

PINE RIVER WATERSHED CHARACTERISITCS





4 MANAGEMENT PRACTICES USED TO GENERATE CREDITS

Streambank Stabilization. The 1,800-foot streambank stabilization site for the Engine Creek Pine River project was chosen as a good site to generate WQT credits through a riprap project, as this section of streambank is where very high-velocity waters rapidly erode the banks during flood events.

A very conservative annual recession rate of 0.6 feet per year was determined, but over the last few years this site has 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. This site also has high levels of nonpoint source pollutants entering from farm practices. Working with the farmer on this project to install conservation practices would greatly reduce those pollutants. It was determined that riprapping the creek banks to permanently armor the banks was the best solution to the Clarke bank erosion problem.

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 landowner will enter into a contract with the County and the District, which 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 will be designed by the County 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 261 pounds of phosphorus per year would be prevented from entering Pine River by constructing the Engine Creek WQT project. 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 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).

Pine River. The credit user and credit generator are not in the same HUC 12 basin, though the credit generator is upstream of the credit user. The distance along the Pine River is approximately 7.50 miles from the credit generator project site (Clarke / Engine Creek) to the credit user discharge point at the Pine River. This is measured using DNR's Surface Water Data Viewer. 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. 14). The delivery factor is often zero when in the same HUC 12, see **Appendix 6-1** for the HUC 12 Watershed Basin Map. The site for the Pine River project is not within the same HUC 12. The discharge point of the user is downstream of the credit generator as well. 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. 16). 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.

The credit generator is upstream of the credit user (WWTP); therefore, the downstream factor is dropped from the trade equation.

The Pine River Downstream Factor is zero (0).

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. 17).

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 pages 20-23 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 implemented in the following section.

The Uncertainty Factor is three (3).

6.5 Habitat Adjustment

Pine River. 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=18493, the Pine River is considered an impaired system due to both unknown pollutants. The total phosphorus data exceeds the WisCALM listing criteria for the Fish and Aquatic Life use; however, the available biological data did not indicate impairment. 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 Pine River 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 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 cons 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 sever specials 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 Clarke WQT project.

The Habitat Adjustment is one (1).

Table 6.1 below summarizes the calculated Trade Ratios for the Clarke WQT Project.

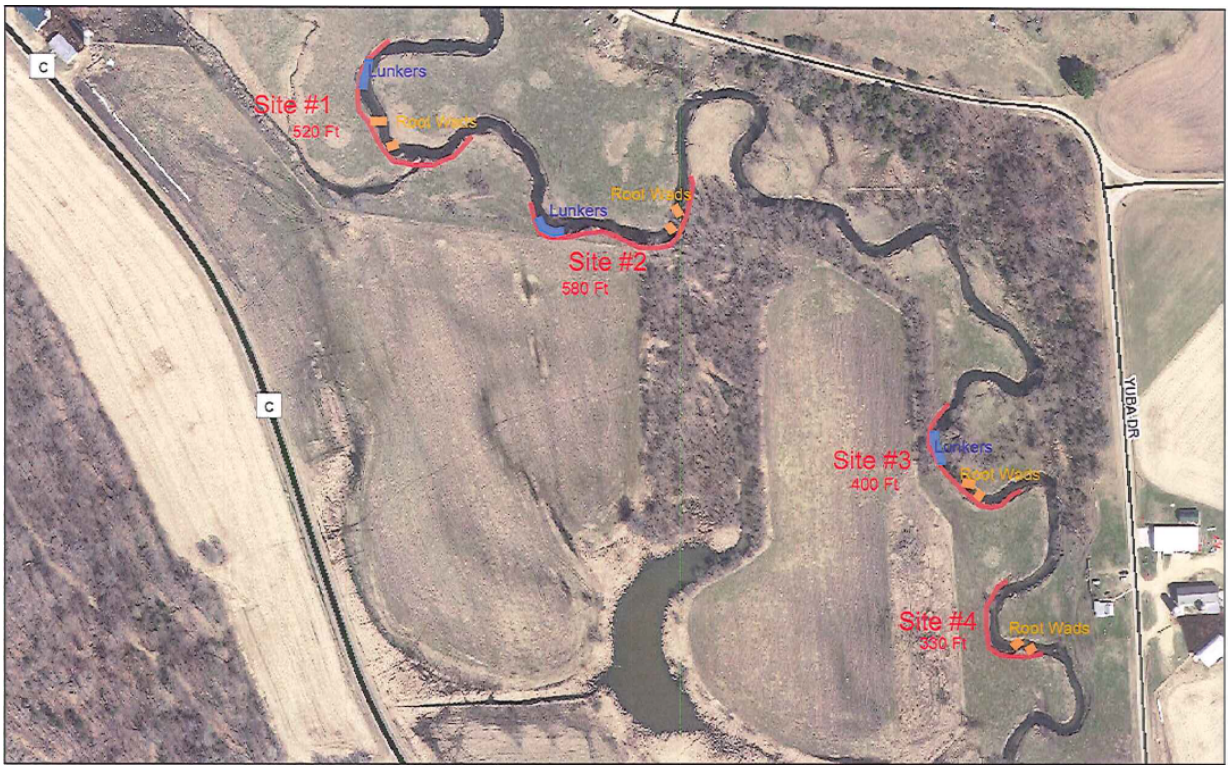
TABLE 6.1: WATER QUALITY TRADING FACTORS

	Project	Delivery Factor	Downstream Factor	Equivalency Factor	Uncertainty Factor	Habitat Adjustment	Trade Ratio
1	Engine Creek Section 1	0	0	0	3	-1	**2**
2	Engine Creek Section 2	0	0	0	3	-1	**2**
3	Engine Creek Section 3	0	0	0	3	-1	**2**
4	Engine Creek Section 4	0	0	0	3	-1	**2**

7 LOCATION WHERE CREDITS WILL BE GENERATED

Credits will be generated in a different HUC 12 than the Hub Rock WWTP HUC 12. The credits will be generated on the same body of water upstream. The Pine River will be used to generate credits in this plan.

Pine River. The Clarke project site is best described as both banks of the Pine River. The project has been broken into four sections. Site #1 to be stabilized is approximately 520 feet along the stream and is located along Mill Street, approximately 800 LF west of the intersection with Dog Lane. Additional areas on the stream will also be restored are labeled as Sites #2, 3, and 4. Site #2 is immediately downstream of Site #1 and is approximately 580 feet. Sites #3 and 4 are further downstream and are approximately 400 feet and 350 feet, respectively. 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 2021; therefore, the available date for the credits is 2021.

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

The WQT Agreement with Hub Rock, the County and the Clarke's is attached to this plan in **Appendix 8-1**.

9 METHOD FOR QUANTIFYING CREDITS

Streambank Stabilization. Existing phosphorus loss for the streambank projects were produced using the NRCS Soil Loss Spreadsheet recommended by the DNR, which can be seen in **Appendix 5-1**. Davy Engineering staff was accompanied by Hub Rock and County representatives to collect 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 2, 2019 for the Clarke project. Soil samples were gathered by taking a number of individual grab samples and combining them into one large composite soil sample for every 1,000 feet (minimum). The grab locations were documented with a GPS unit. The locations of the sample collections can be seen in **Appendix 9-2**. The average % P over the samples gathered was 0.04%. Thus, it was deemed that this project would withhold **261 pounds of phosphorus** from entering Pine River each

year that the riprap would be retained. The four (4) sections of the creek were calculated separately and added together to determine the total pounds of phosphorus reduction.

The methodology to determine the recession rates will include utilizing 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. A conservative recession rate was used for preliminary calculations until field data is obtained.

10 TRACKING PROCEDURES

This project will be tracked with photography before, during, and after riprap installation. The project will also be monitored with inspections and documented in a logbook, to ensure the preservation of the project site and BMP installations. The landowner will inspect the bank stabilization site after flood events and annually. The Richland 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 should be inspected at least once per year and immediately after flood events. The velocity of Pine River 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 Richland County Department of Land Management to ensure that these sites are properly maintained and should approach them for technical assistance if there are any concerns regarding the projects.

12 REPORTING REQUIREMENTS SHOULD THE MANAGEMENT PRACTICE FAIL

If the riprap were to fail at these sites, the landowners should immediately report the situation to the Richland County Department of Land Management to 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 Richland 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 shall 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

Pine River. The Engine Creek WQT project is located over seven miles northwest from the Hub Rock Wastewater Treatment Facility Discharge. See **Appendix 14-1** for a Location Map.

15 PRACTICE REGISTRATION DOCUMENTS, IF AVAILABLE

The construction of the Engine Creek project has not yet begun. Registration documents will be completed by the County and submitted to the DNR upon completion of construction in Fall 2021.

16 HISTORY OF PROJECT SITE(S)

Pine River. This project site has been privately owned by the Brendon Clarke family for decades. Based upon aerial imagery through Google Earth, the project site appears to have been pastureland as long as Google Earth has maintained imagery (1992). The streambanks of Pine River 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

At the 2020 Average Flow of 10,000 GPD, the phosphorus mass loadings and the required WQT are summarized in the following table:

TABLE 17.1: REQUIRED PHOSPHORUS MASS OFFSET

Description	Units	Quantity
Hub Rock Annual Average Daily Existing Flow	GPD	10,000
Estimated Effluent Phosphorus Concentration	mg/L	2.9
WQT Target Concentration	mg/L	0.075
Annual Mass of Phosphorus	lbs/year	88.2
WQT Target Mass of Phosphorus	lbs/year	2.3
Baseline Mass (Existing - Target)	**lbs/year**	**86**

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
Engine Creek - Section 1	Streambank Stabilization	2	74	37
Engine Creek - Section 2	Streambank Stabilization	2	83	41
Engine Creek - Section 3	Streambank Stabilization	2	57	29
Engine Creek - Section 4	Streambank Stabilization	2	47	24
Total			**261**	**131**

The Engine Creek WQT Project will generate 131 lbs./year in P credits, approximately 45 lbs./year more credits than necessary for a 2:1 trade ratio. The County estimates that the bank stabilization project will cost approximately $72,300. The cost estimate is included in **Appendix 17-1**.

17.1 Summary

Hub Rock Sanitary District #1 cannot meet the new phosphorus limits with the technology currently employed at the WWTP, as discussed in the Facility Plan. The water quality trading is the most economical solution to 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 has been met by the 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 8 (2013, p. 37). Table 8 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 Hub Rock Sanitary District #1 will be installing rip rap 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 8. This list includes a brief statement of where to find the information in this plan.

- Permittee's / credit user's WPDES Permit number. The Hub Rock Sanitary District #1 WWTP WPDES permit number is WI-0049689-04-0 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 2021 (but can be pushed to July 2022 if needed) when the permit is modified, and this date is referenced in Section 8. The deadline for WQT projects is seven (7) years after the first discussion in the permit, which places the deadline on July 1, 2022.
- 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 (see Table 4 on p. 20 of the WQT Guidance). 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.

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Dean Berry
President
Hub Rock Sanitary District
25675 Rockbridge Cemetery Lane
Richland Center, WI 53581
Telephone: 608-647-4950

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. (2013). *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

APPENDIX 2-1

HUB ROCK 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
Hub Rock Sanitary District #1	WI- 0049689-04-0	

Facility Address	City	State	ZIP Code
CTH DD	Rockbridge	WI	53581

Project Contact Name (if applicable)	Address	City	State	ZIP Code
Jolene Coy	25475 Schoonover Street	Richland Center	WI	53581

Project Name: Hub Rock Water Quality Trade

Receiving Water Name	Parameter(s) being traded	HUC 12(s)
Pine River	Phosphorus	070700051105, 070700051101

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: 070700051101
- ○ 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: Richland County
- ○ 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
Land cover conversion (cropland to prairie grass)

Method for quantifying credits generated:
- ☐ Monitoring
- ☒ Modeling, Names: streambank P calcs., Snapplus
- ☐ Other: _____

Projected date credits will be available: 11/30/2020

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
Brice A. Nelson	11/25/19

Authorized Representative Signature

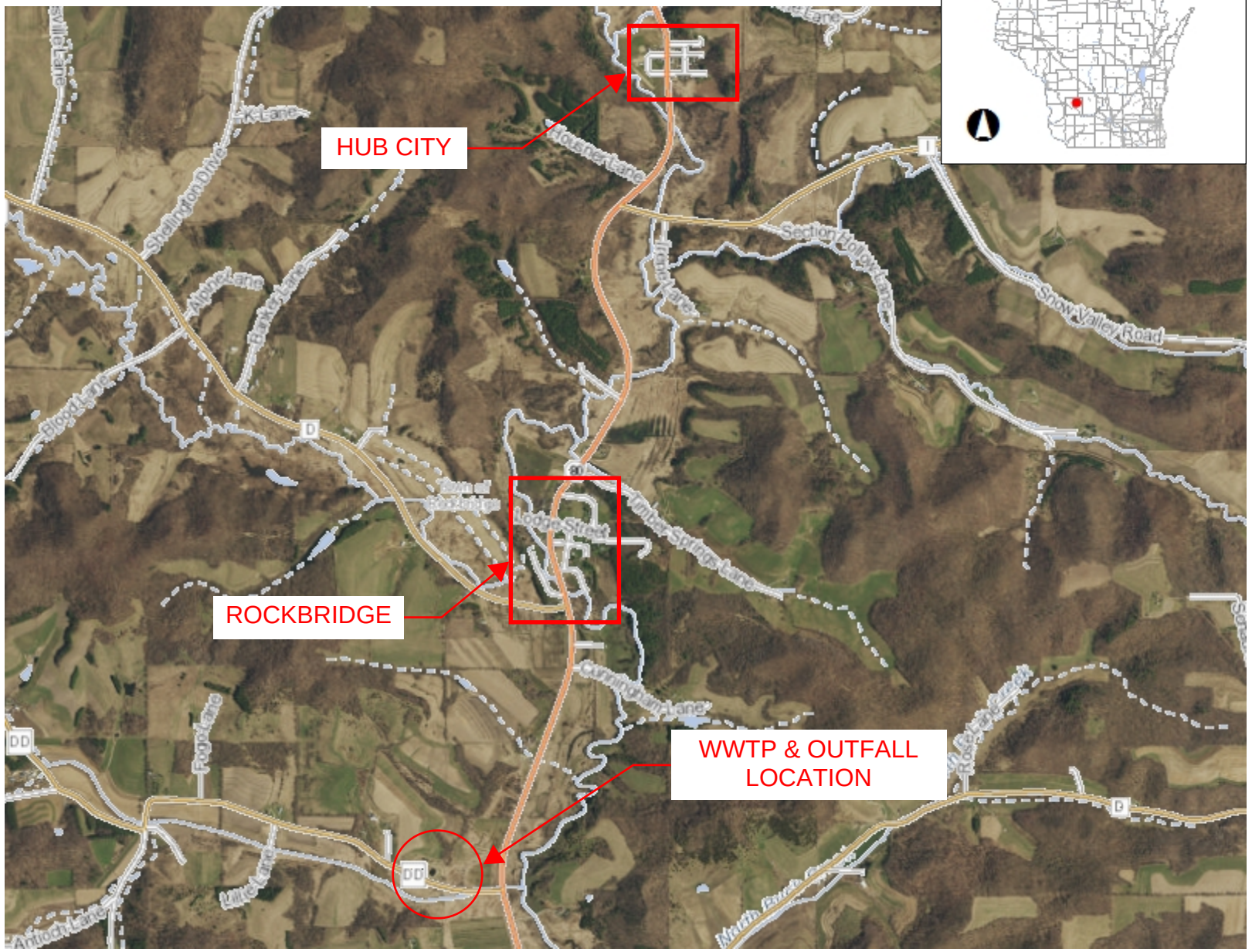
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision. Based on my inquiry of those persons directly responsible for gathering and entering the information, the information is, to the best of my knowledge and belief, accurate and complete. 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

APPENDIX 2-2

WWTP DISCHARGE LOCATION

Hub Rock WWTP Outfall Location



Legend

- Municipality
- State Boundaries
- County Boundaries
- Major Roads
  - Interstate Highway
  - State Highway
  - US Highway
- County and Local Roads
  - County HWY
  - Local Road
- Railroads
- Tribal Lands
- Rivers and Streams
- Intermittent Streams
- Lakes and Open water
- Index to EN_Image_Basemap_Leaf_Off

Notes

Appendix 2-2

1.0 0 0.50 1.0 Miles

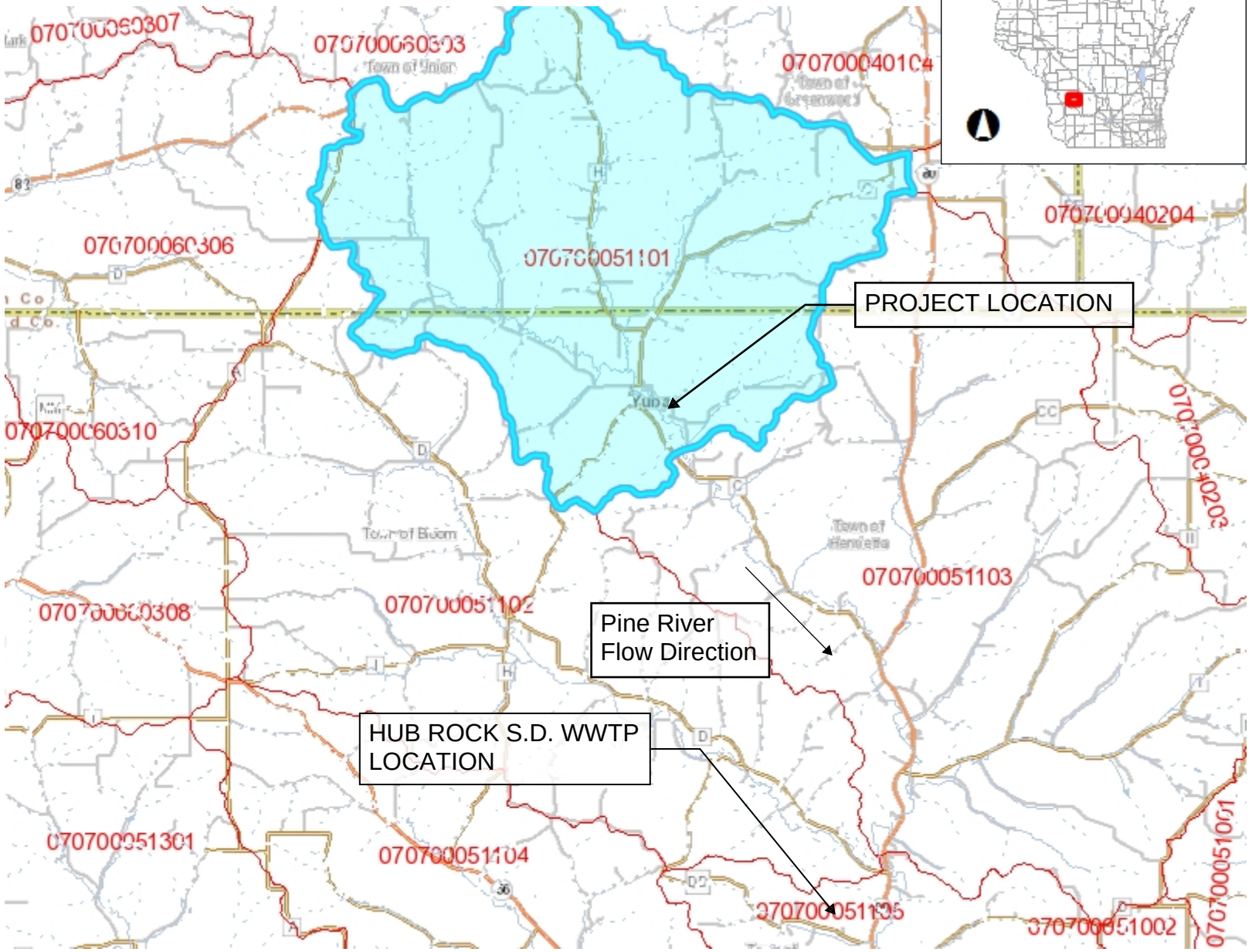
NAD_1983_HARN_Wisconsin_TM

1: 31,680

APPENDIX 2-3

LOCATION MAP – WWTP DISCHARGE AND PROJECT

Hub Rock HUC 12 Location 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

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/

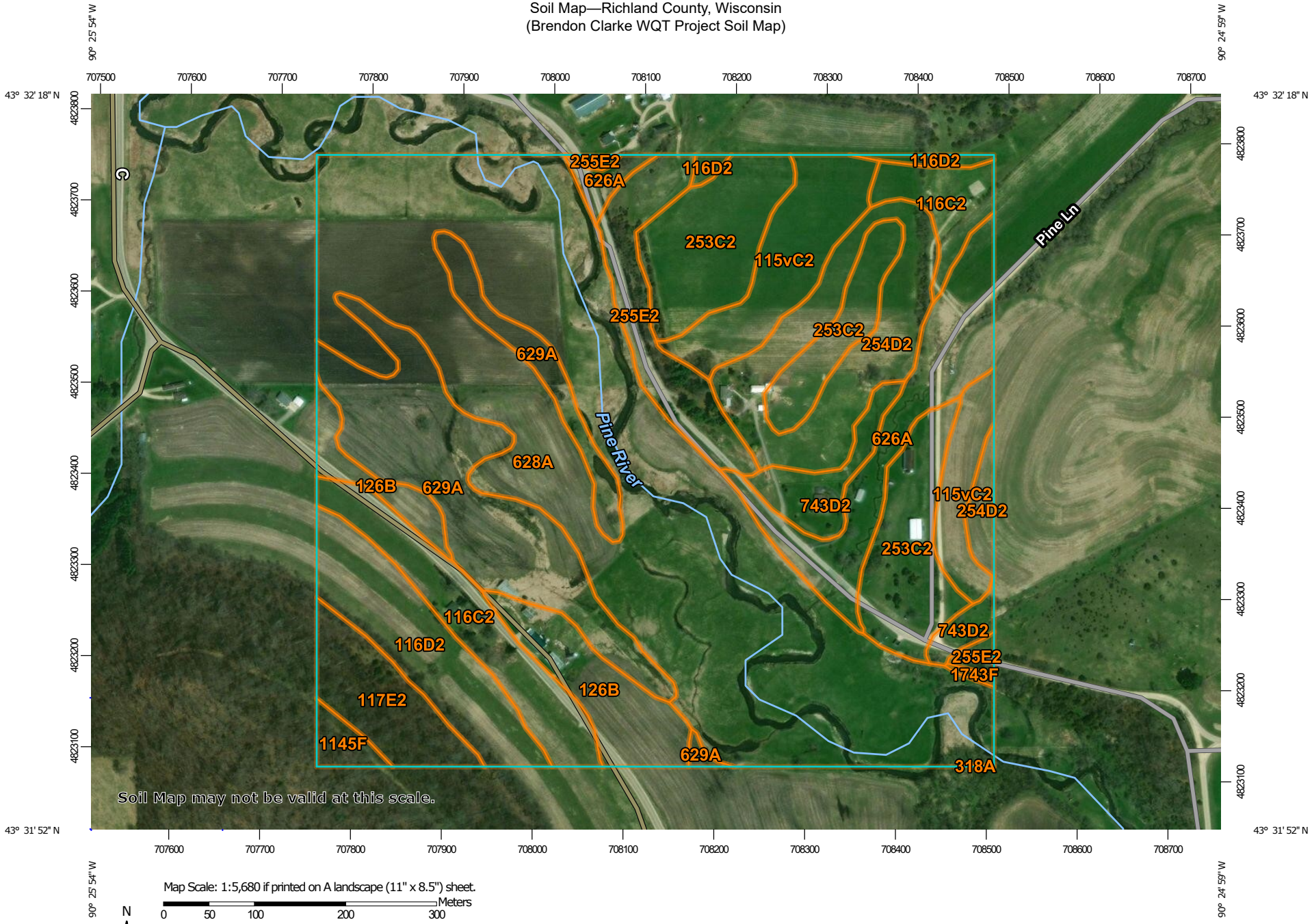
Notes

Appendix 2-3

APPENDIX 3-1

SOIL MAP

Soil Map—Richland County, Wisconsin
(Brendon Clarke WQT Project Soil Map)



Map Scale: 1:5,680 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 250 500 1000 1500

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

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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: Richland County, Wisconsin
Survey Area Data: Version 15, Sep 14, 2019

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

Date(s) aerial images were photographed: May 5, 2014—May 5, 2016

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
115vC2	Seaton silt loam, driftless valley, 6 to 12 percent slopes, moderately eroded	7.3	5.9%
116C2	Churchtown silt loam, 6 to 12 percent slopes, moderately eroded	7.4	6.0%
116D2	Churchtown silt loam, 12 to 20 percent slopes, moderately eroded	6.6	5.3%
117E2	Brownchurch sandy loam, 20 to 30 percent slopes, moderately eroded	3.8	3.1%
126B	Barremills silt loam, 1 to 6 percent slopes	5.5	4.5%
253C2	Greenridge silt loam, 4 to 12 percent slopes, moderately eroded	12.6	10.2%
254D2	Norden silt loam, 12 to 20 percent slopes, moderately eroded	8.3	6.7%
255E2	Urne fine sandy loam, 20 to 30 percent slopes, moderately eroded	5.1	4.1%
318A	Bearpen silt loam, 0 to 3 percent slopes, rarely flooded	0.0	0.0%
626A	Arenzville silt loam, 0 to 3 percent slopes, occasionally flooded	7.1	5.7%
628A	Orion silt loam, 0 to 3 percent slopes, occasionally flooded	43.4	34.9%
629A	Ettrick silt loam, 0 to 2 percent slopes, frequently flooded	13.2	10.6%
743D2	Council fine sandy loam, 12 to 20 percent slopes, moderately eroded	2.9	2.3%
1145F	Gaphill-Rockbluff complex, 30 to 60 percent slopes	0.8	0.7%
1743F	Council-Elevasil-Norden complex, 30 to 60 percent slopes	0.1	0.1%
Totals for Area of Interest		**124.2**	**100.0%**

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

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.)

APPENDIX 5-1

NRCS SOIL PHOSPHORUS LOSS CALCULATIONS

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

Farmer / Cooperator Name:	Brendon Clarke	Evaluated By:	Carson Hackett
Tract Number:		Evaluation Date:	March 19, 2021

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)*
	1	520.0	7.0	3,640	0.60	2,184.0	Silt Loam	85	92.8
	2	580.0	7.0	4,060	0.60	2,436.0	Silt Loam	85	103.5
	3	400.0	7.0	2,800	0.60	1,680.0	Silt Loam	85	71.4
	4	330.0	7.0	2,310	0.60	1,386.0	Silt Loam	85	58.9
			Total Estimated Annual Streambank or Ditch Erosion Soil Loss (Tons):						326.7
			Percent Leachable Phosphorus in the Soil (nitric/peroxide):						0.04%
			Total Estimated Annual Streambank or Ditch Erosion Phosphorus Loss (Tons):						0.131
			Total Estimated Annual Streambank or Ditch Erosion Phosphorus Loss (lbs):						**261**

Total Phosphorus Loss for sum of reaches (lbs/yr):	**261**

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

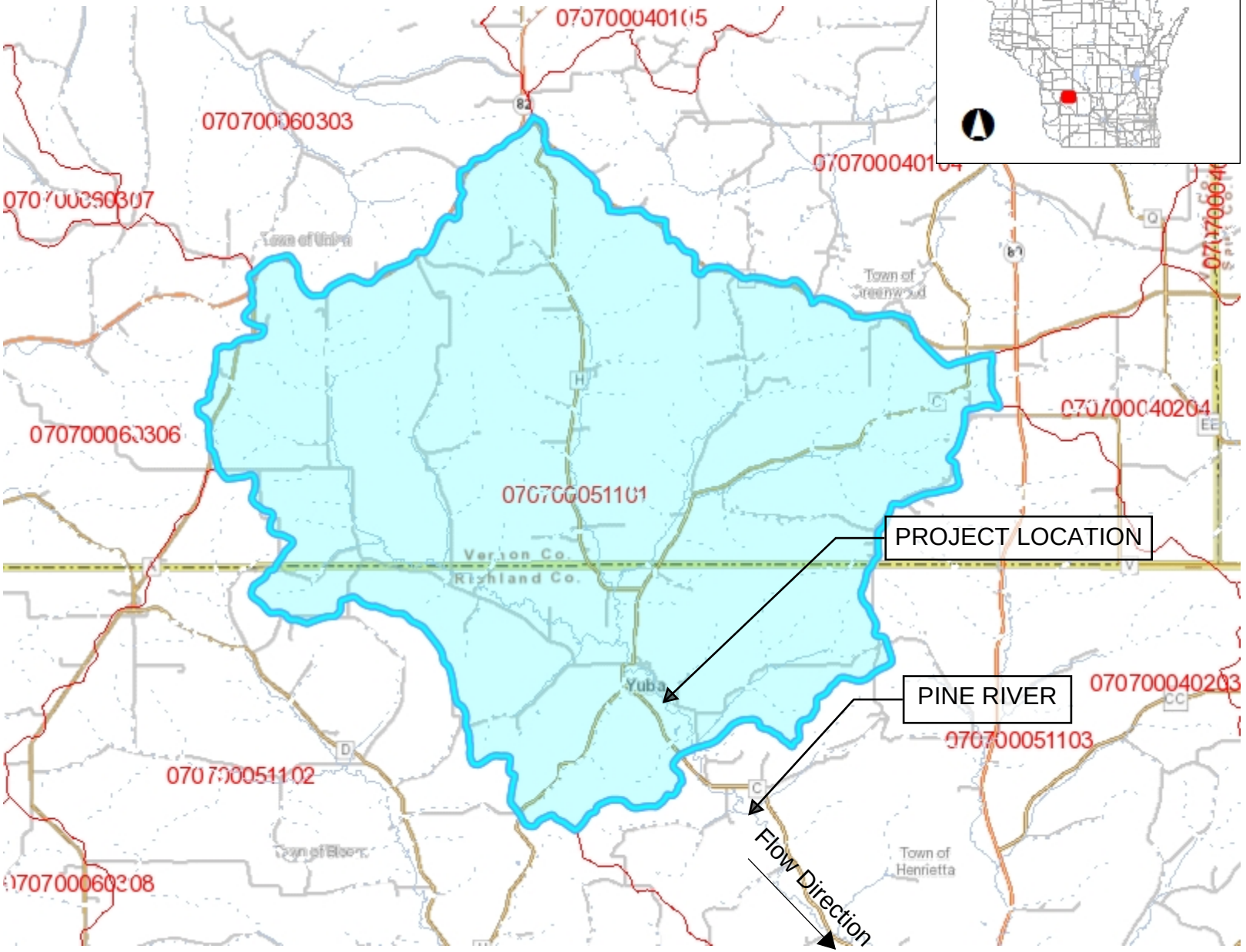
Streambank or Ditch Erosion Calculation Formula:

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

APPENDIX 6-1

HUC 12 WATERSHED BASIN MAP

Hub Rock WQT Clarke Property HUC 12



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

3.0 0 1.50 3.0 Miles

NAD_1983_HARN_Wisconsin_TM

1: 95,040

Notes

Appendix 6-1

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.

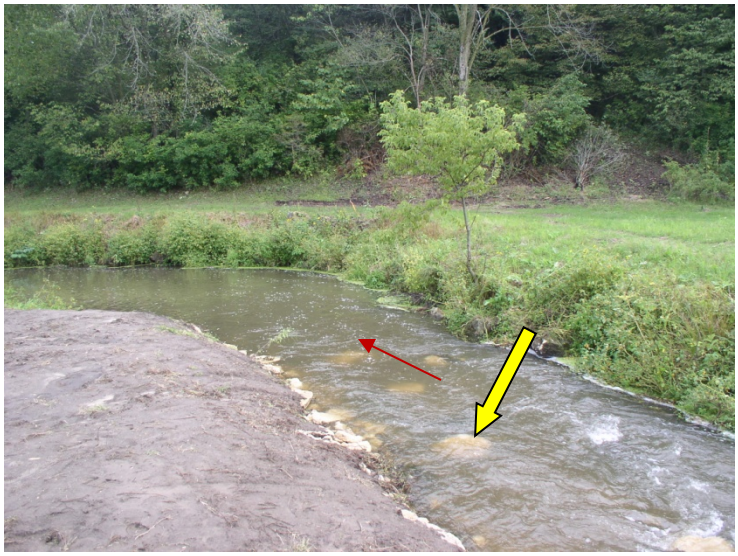
Table of Contents

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.

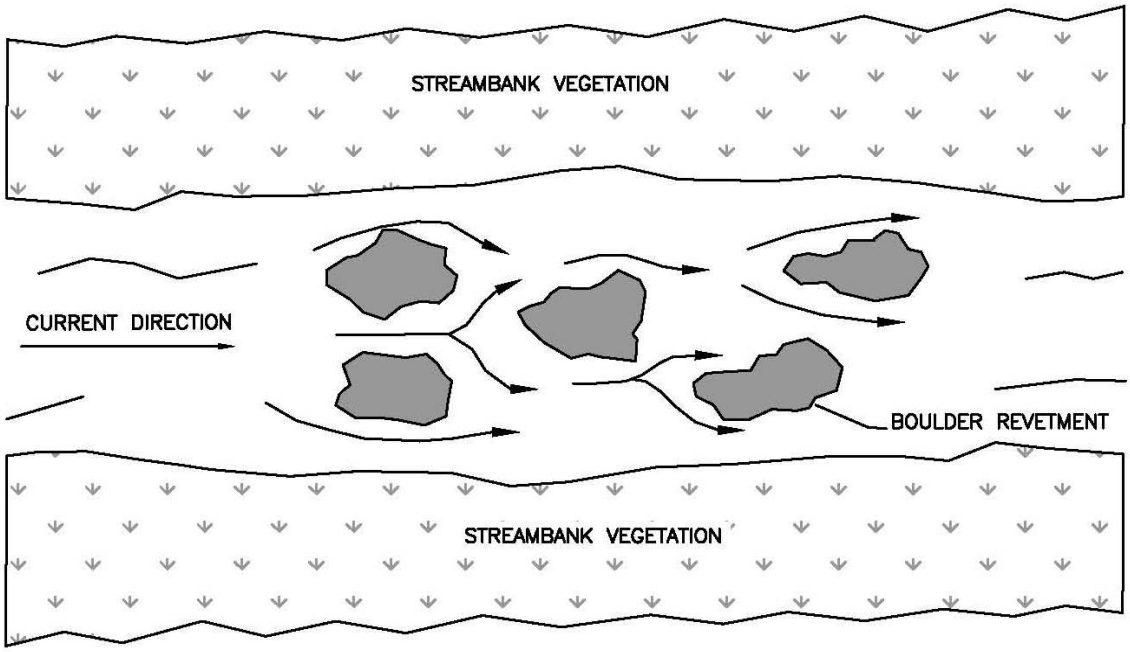
Location:
In runs and/or in existing scour holes.

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.

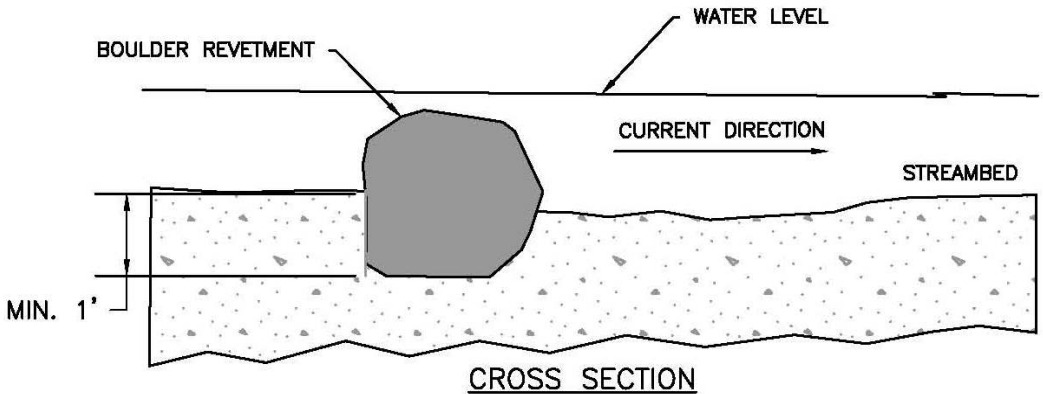
Caution:
Care needs to be taken in placement to ensure that currents are not deflected into stream banks, and also that the boulders will not catch flood debris which could cause stream bank erosion.

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



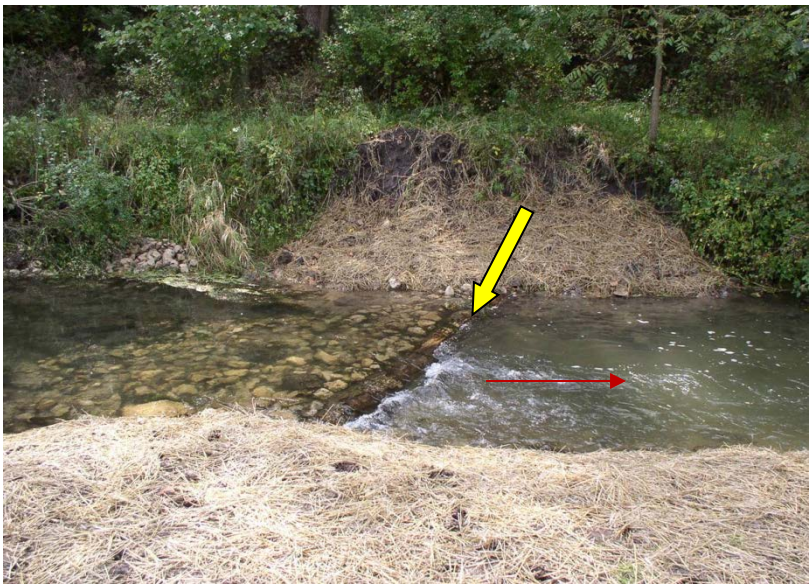
CROSS SECTION

- 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.

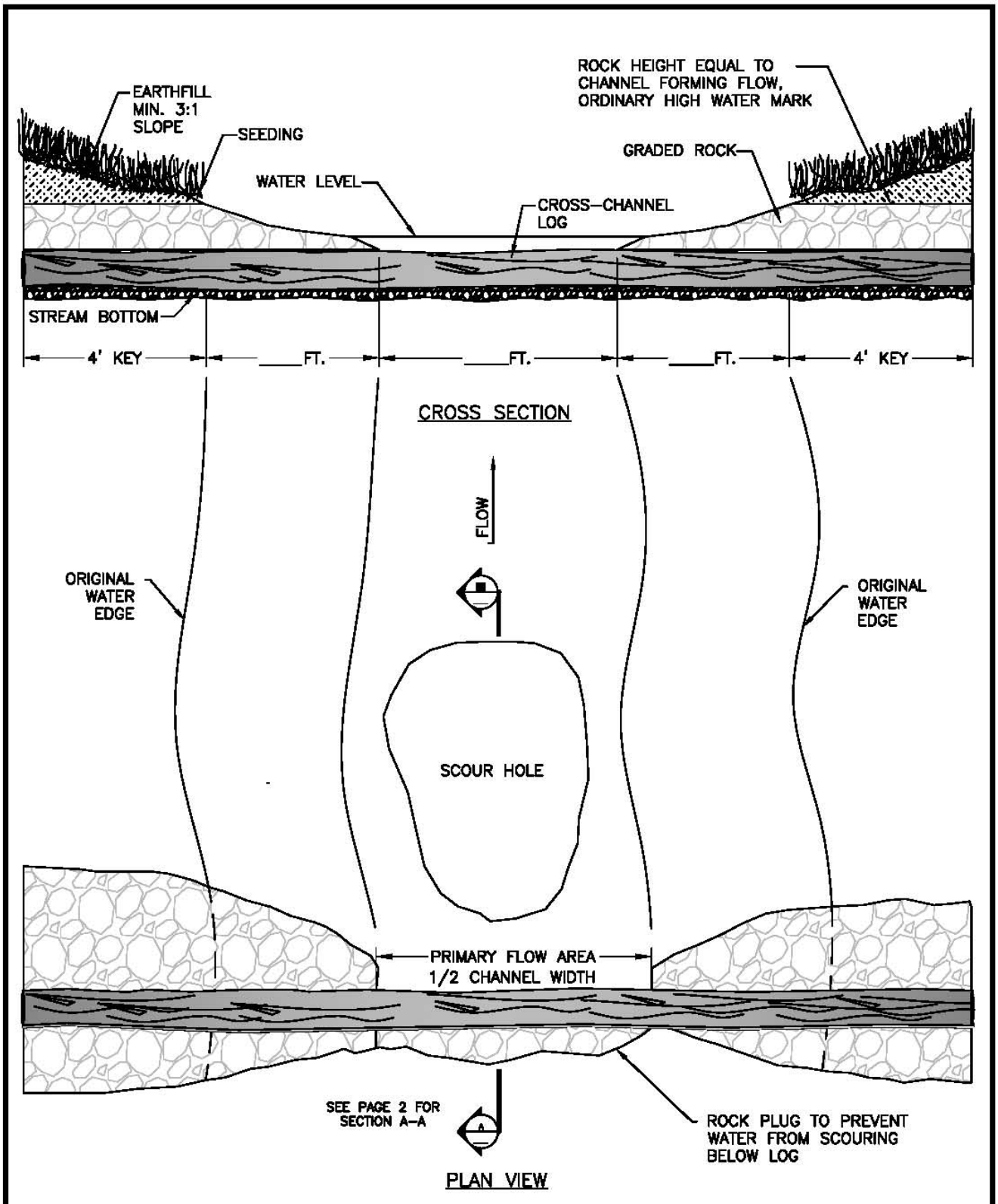


Location:
Primarily installed immediately downstream of riffle areas. They are occasionally used in slow runs to add variances in habitat.

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: ----

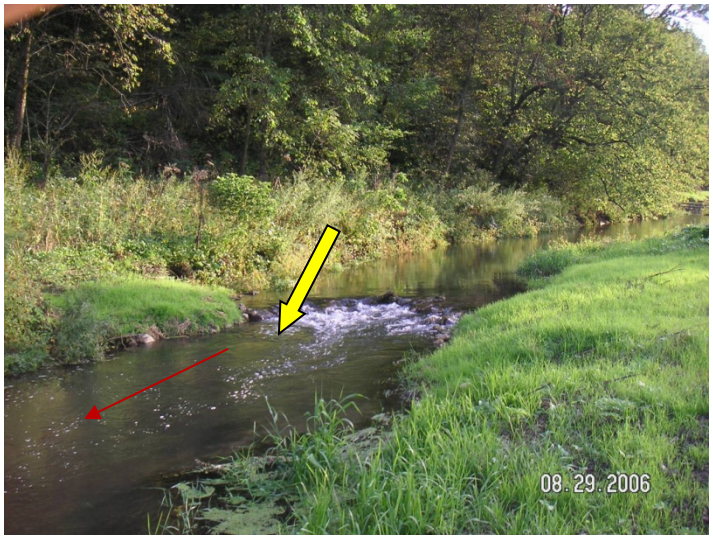
	Date
Designed ----	----
Drawn	
Checked	
Approved	

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

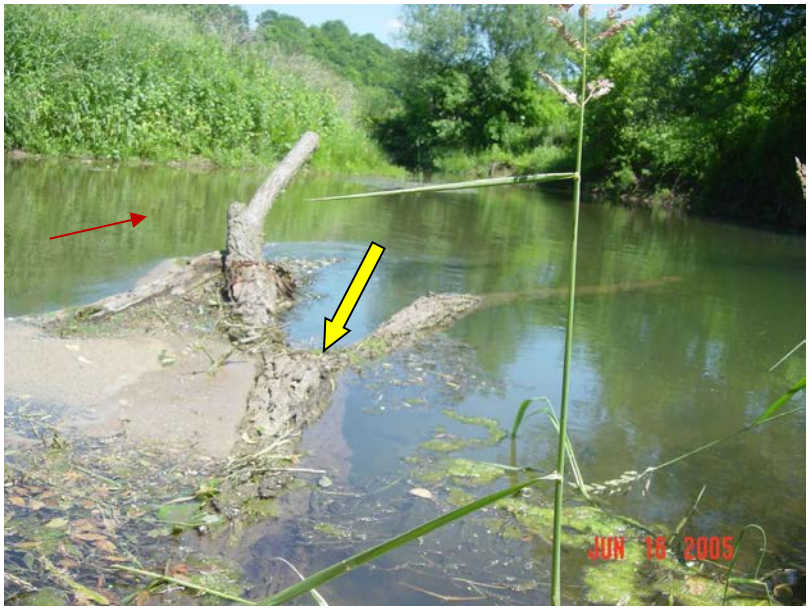
Cons

- 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.



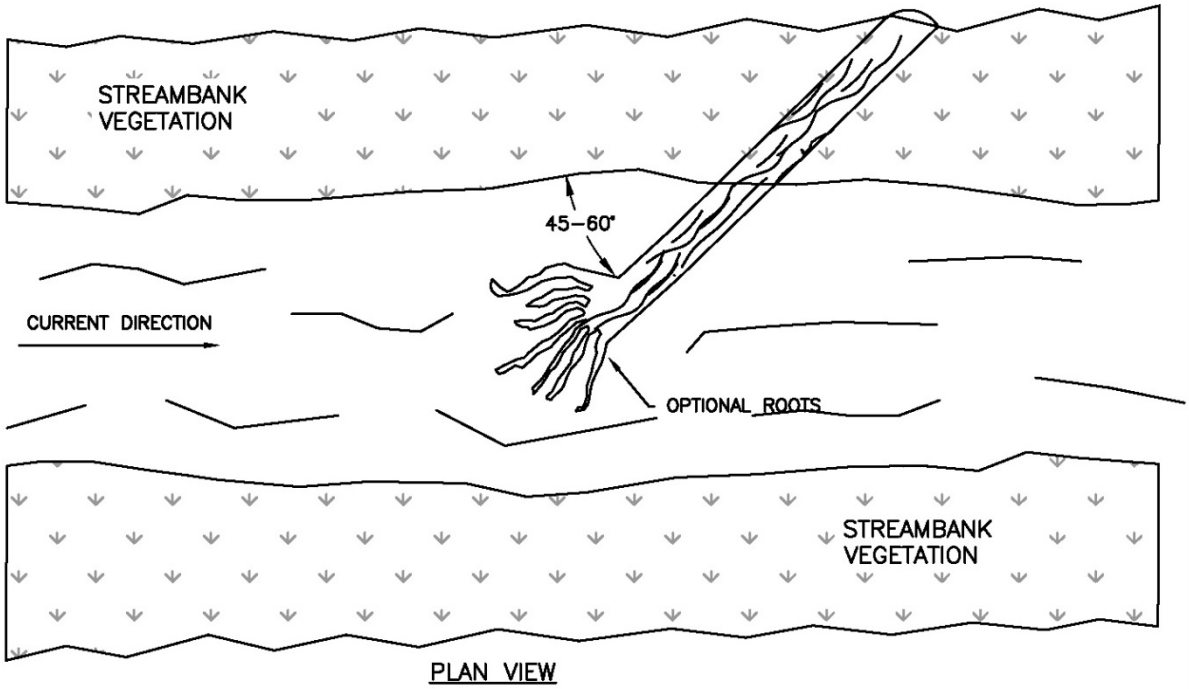
Location:
Installed in areas with deep, slow moving water.

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

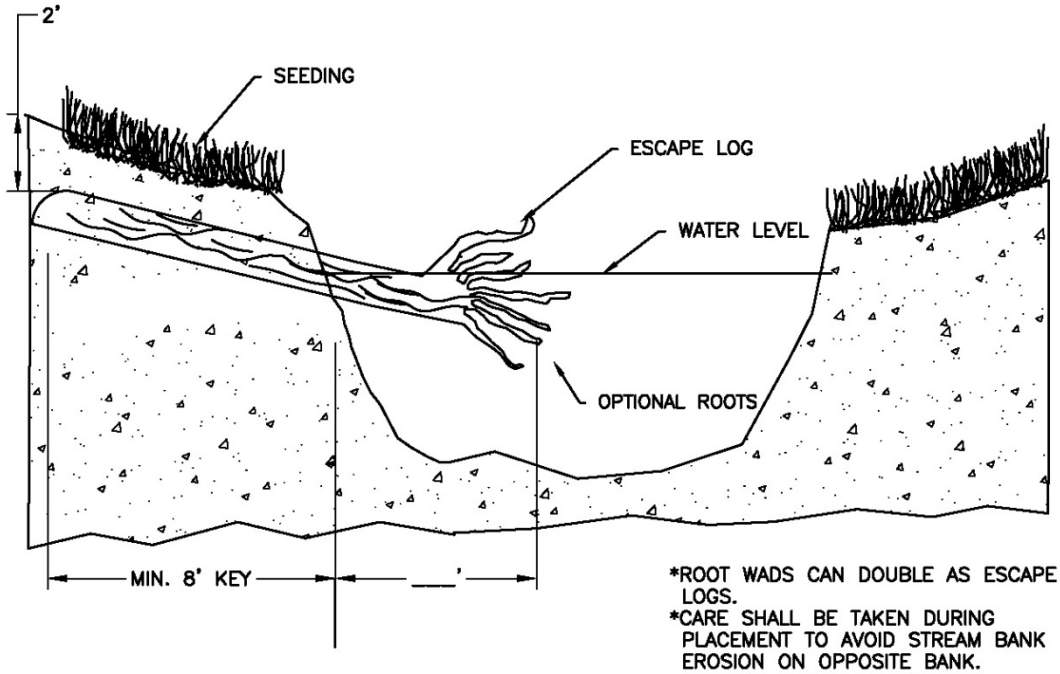
Caution:
Care needs to be taken in placement to ensure that currents are not deflected into stream banks.

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

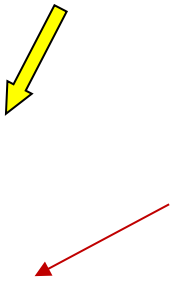
CLIENT: _____

COUNTY: _____

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

Log Deflectors

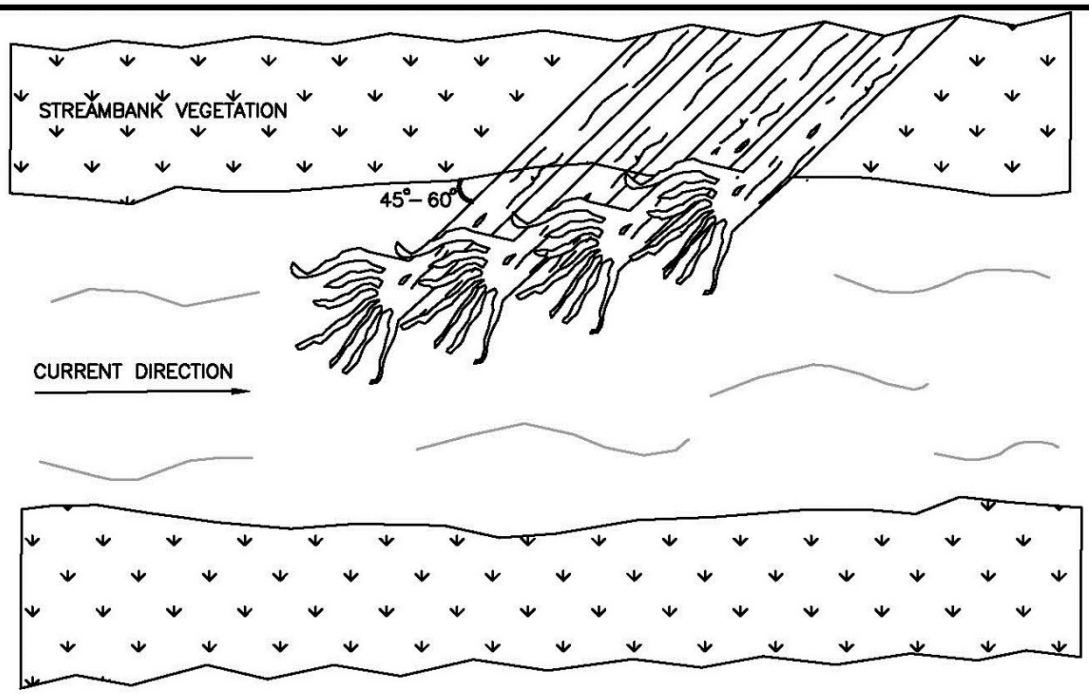
Purpose and Location:
Log deflectors have many functions depending on their location.
They are most commonly placed on eroding stream banks to guide the water away from the affected area. In long, wide stagnant runs they can narrow the stream and recreate some meander. In all settings given enough time,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



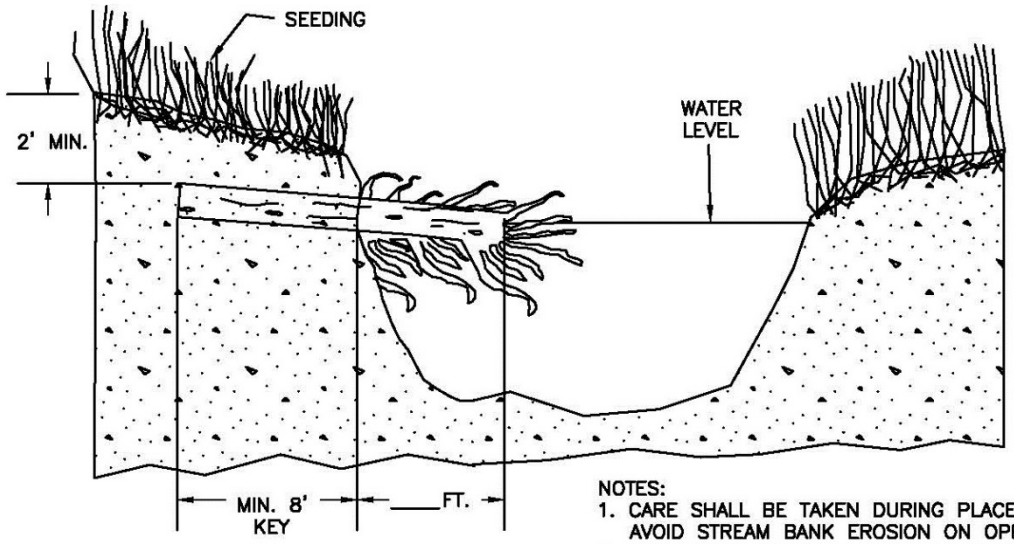
Species:
Root wads on the logs can serve as cover for reptile, amphibian, and fish species or as a perching area for birds. The mudflat that develops downstream can be utilized by amphibians and turtles as a basking area, as well as a feeding ground for shore birds.

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 AGREEMENT

Water Quality Trading Agreement: Hub Rock Sanitary District #1 and Brendon Clarke

Permittee Information

Credit User Name (Permittee)	Permit Number
Hub Rock Sanitary District #1	WI-0049689-05-0

Credit User Address
16977 State Hwy 80 N, Richland Center, WI 53581

Broker Name	Trade Agreement Number
Richland County Land Conservation Division	WQT-0049689050-01

Broker Address

Street Address	City	State	ZIP Code
26136 Executive Ln, Suite C Rm 102	Richland Center	WI	53581

Project Name
Brendon Clarke Bank Stabilization

Name of Credit Generator (Landowner/Operator) (Last, First, M.I.)
Clarke, Brendon
Clarke, Elissa

Street Address	City	State	ZIP Code
11678 Yuba Drive	Hillsboro	WI	54634

Property Information

Name of Landowner(s) (if not Operator) (Last, First, M.I.)
Clarke, Brendon & Clarke, Elissa

Street Address	City	State	ZIP Code
11678 Yuba Drive	Hillsboro	WI	54634

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

Parcel Identification Numbers (PIN): 19607231000, 01407231000, 01407310000, 01407130000

Parcel ID(s):
19607231000, 01407231000, 01407310000, 01407130000

Site Locator for Construction Projects

County	Township	Range E/ W	Section	Quarter/Quarter (e.g., NW ¼ of the NE ¼)
Richland	12N	01E	07	NW 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 in perpetuity or release is filed by the credit user, 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 June, 20 21.

Phillip M. Connars. P.O.A.
Signature of Operator

Signature of Landowner/Operator

Brendon Clarke, Operator
Typed Name of Operator

Engine Creek Farming LLC, Landowner
Typed Name of Landowner/Operator

STATE OF WISCONSIN)
)
Richland County) ss.
)
)

Personally came before me this 21 day of June, 20 21.

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

CLAIRE E. SHANNON
Notary Public
State of Wisconsin

Claire E. Shannon
Signature of Notary Public

Claire E. Shannon
Typed Name of Notary Public

Notary Public Richland County, Wisconsin

My commission (is permanent) (expires 7/15/2024).

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_____.

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 21.

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 12th day of July, 20 21.

Dean Berry Pres. Hub-Rock
Signature of credit user

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

STATE OF WISCONSIN)
)
Richland County) ss.
)
)

Personally came before me this 12th day of July, 2021.

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

Annette A Clark
Signature of Notary Public

Notary Public Richland County, Wisconsin

My commission (is permanent) (expires 11-13-24).

Other Signer- Specify title or relationship: Richland County – Broker

Signed this 24th day of November, 2020.

Cathy Cooper
Signature

Cathy Cooper, Richland County
Typed Name

Ken W. Anderson
Signature

Ken W. Anderson
Typed Name

STATE OF WISCONSIN)
Richland County) ss.
)

Personally came before me this 24th day of November, 2020.

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

Ken W. Anderson
Signature of Notary Public

Ken W. Anderson
Typed Name of Notary Public

Notary Public Richland County, Wisconsin

My commission (is permanent) (expires Jan. 23, 2023)

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:
   - Hub Rock Sanitary District #1 will hereby be known as the Credit User.
   - The Richland County Land Conservation Division will be known as the Broker.
   - Brendon Clarke will be known as the Landowners, and Brendon Clarke will also be known as the 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. Hub Rock Sanitary District #1 reserves the right to terminate this agreement if the Wisconsin Department of Natural Resources (DNR) does NOT approve the Water Quality Trading Plan (WQT). The WQT identifies this project for phosphorus credits to help the Hub Rock Sanitary District #1 wastewater treatment facility (WWTF). These credits are established in the WQT and has been analyzed as 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 Hub Rock Sanitary District #1 may terminate the agreement.
4. Hub Rock Sanitary District #1 reserves the right to terminate this agreement if the District is unable to procure funding to cover the cost of the project, which would provide reasonable terms to the District and their users.
5. The Broker reserves the right to enter the property to verify the information on the inspection report is accurate.
6. 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.
7. **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 all monetary costs incurred with the BMP practice installation, which includes but is not limited to site preparation, clearing, ensuring planned grades; stream shaping; rock riprap and installation; liming, fertilizing, seeding and mulching.
2. 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, 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 Landowners agree to repay all 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.
3. The Landowner/Operator shall inspect riprap and streambank at least annually and after heavy storms. Any erosion or displacement of rocks shall be repaired at the cost of the landowner. The Broker should be contacted immediately and directly if any damage has occurred.
4. Fencing will be constructed to control livestock access to the stream and the livestock will not have access to the stream except for any designated watering ramp. Livestock will be allowed access to the stream for intermittent periods as agreed upon between the landowner and broker, and following a grazing plan prepared by the Broker. Landowner shall inspect fencing annually and make necessary repairs to prevent animals from accessing project site.
5. 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, 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.
6. 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.
7. 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.
8. Eliminate all burrowing rodents and repair damage caused by them.

9. Maintain the project consistent with NRCS technical standard 580 and grazing plan prepared by the Broker
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. 151.03 Tillage Setback
    - N.R. 151.06 Clean Water Diversion
    - N.R. 151.08 Manure Management Prohibitions

Section D. Broker

1. The Broker will be responsible for the oversight of BMP practice design, project bidding, contractor construction agreements, inspection of site preparation, project design, BMP installation oversight, 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 Richland County Register of Deeds office.
3. The Broker agrees to complete annual inspections.

TA Number	Typed Name of Landowner/Operator	Initials of Landowner/Operator	Date
WQT-0049689050-01	Brendon Clarke	BMC Manager	10/27/20

Ashley L. Harrison
2.24.2024

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) 04/22		To (MM/YY) 10/22	
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	750	cu. yd.	$ 50.00	$ 37,500.00				2022
	NRCS 580	Geotexile Fabric, Type SAS	1630	sq. yd.	$ 3.00	$ 4,890.00				2022
	NRCS 580	Liming, fertilizing, seeding and mulching	1025	sq. yd.	$ 5.00	$ 5,130.00				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				**$ 64,770.00**				
		Contingencies (10%)				$ 6,480.00				
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**	**$ 71,250.00**	**$ -**	**$ -**	**$ -**	

CSA Number	Typed Name of Landowner / Operator	Initials of Landowner/Operator	Date
	Brendon Clarke	BMC Mangus	10/22/20

Keep.

Phil

POWER OF ATTORNEY

KNOW ALL BY THESE PRESENTS, that WE, Brendon Ronald Clarke and Elissa Anne Clarke, Joint Buyers, Purchasers and Landlords, have made, constituted and appointed and by these presents make, constitute and appoint Phillip M. Connors our true and lawful attorney, for us and in our name, place and stead; to negotiate purchases, execute offers to purchase, amendments, land contracts or land contract amendments, residential leases, agricultural leases any and all documents of conveyance and any documents related thereto for the purpose of purchase, transfer, lease, or other conveyance of real estate described as follows:

11678 Yuba Drive, Hillsboro, WI 54634. This 160 acre farm consists of at least five tax roll parcels with PIN of: 014-0744-1000, 014-0743-2000, 014-072-0000, 014-0734-2000, 014-0741-0000. Legal description: see attached.

and giving and granting unto our said attorney full power and authority to do and perform all and every act and thing whatsoever requisite and necessary to be done in and about the premises, as full to all intents and purposes as we might or could do if personally present, with full power or substitution and revocation, hereby ratifying all that our said attorney, or his substitute shall lawfully do or cause to be done by virtue thereof.

THIS POWER OF ATTORNEY SHALL NOT BE AFFECTED BY SUBSEQUENT DISABILITY OR IN CAPACITY OF THE PRINCIPALS.

This will certify that a true and correct signature of our attorney herein above appointed is as follows to-wit:

B Clark (SEAL)

Brendon Ronald Clarke, Joint Buyer, Purchaser, Landlord.

A Clarke (SEAL)

Elissa Anne Clarke, Joint Buyer, Purchaser, Landlord

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 7th day of August, 2012.

STATE OF WISCONSIN)
)SS
COUNTY Of DANE)

Personally came before me this 7th day of August, 2012, the above named Brendon Ronald Clarke and Elissa Anne Clarke, to me known to be the persons who executed the foregoing instrument and acknowledged the same.

Dale R. Gregory SBN: 01012711
Notary Public, Dane County, WI.
My Commission is permanent.

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 7th day of August, 2012.

CONSENT TO POWER OF ATTORNEY

Phillip M. Connors

STATE OF WISCONSIN)
)SS
COUNTY OF DANE)

Personally came before me this 7th day of August, 2012, the above named Phillip M. Connors, to me known to be the person who executed the foregoing instrument and acknowledged the same.

Dale R. Gregory SBN: 01012711
Notary Public, Dane County, WI.
My Commission is permanent.

Document Drafted By:
Attorney Dale R. Gregory
2009 West Beltline Highway
Madison, WI 53713
608-327-4203

Water Quality Trading Agreement: Hub Rock Sanitary District #1 and Engine Creek Farming LLC

Permittee Information

Credit User Name (Permittee)	Permit Number
Hub Rock Sanitary District #1	WI-0049689-05-0

Credit User Address
16977 State Hwy 80 N, Richland Center, WI 53581

Broker Name	Trade Agreement Number
Richland County Land Conservation Division	WQT-0049689050-02

Broker Address

Street Address	City	State	ZIP Code
26136 Executive Ln, Suite C Rm 102	Richland Center	WI	53581

Project Name
Brendon Clarke Bank Stabilization

Name of Credit Generator (Landowner/Operator) (Last, First, M.I.)
Engine Creek Farming LLC / Clarke, Brendon & Clarke, Elissa

Street Address	City	State	ZIP Code
11678 Yuba Drive	Hillsboro	WI	54634

Property Information

Name of Landowner(s) (if not Operator) (Last, First, M.I.)
Clarke, Brendon & Clarke, Elissa

Street Address	City	State	ZIP Code
11678 Yuba Drive	Hillsboro	WI	54634

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

Parcel Identification Numbers (PIN): 01407420000

Parcel ID(s):
01407420000

Site Locator for Construction Projects

County	Township	Range E/ W	Section	Quarter/Quarter (e.g., NW ¼ of the NE ¼)
Richland	12N	01E	07	NW ¼ of the SE 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 in perpetuity or release is filed by the credit user, 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 June, 20 21.

Phillip M. Connars. P.O.A.
Signature of Operator

Signature of Landowner/Operator

Brendon Clarke, Operator
Typed Name of Operator

Engine Creek Farming LLC, Landowner
Typed Name of Landowner/Operator

STATE OF WISCONSIN)
)
Richland County) ss.
)
)

Personally came before me this 21 day of June, 20 21.

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

CLAIRE E. SHANNON
Notary Public
State of Wisconsin

Claire E. Shannon
Signature of Notary Public

Claire E. Shannon
Typed Name of Notary Public

Notary Public Richland County, Wisconsin

My commission (is permanent) (expires 7/15/2024).

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_____.

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 21.

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 12th day of July, 20 21.

Dean Berry Pres. Hub-Rock
Signature of credit user

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

STATE OF WISCONSIN)
)
Richland County) ss.
)
)

Personally came before me this 12th day of July, 2021.

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

Annette A Clark
Signature of Notary Public

Notary Public Richland County, Wisconsin

My commission (is permanent) (expires 11-13-24).

Other Signer- Specify title or relationship: Richland County – Broker

Signed this 28th day of June, 2021.

Cathy Cooper
Signature

Signature

Cathy Cooper, Richland County
Typed Name

Typed Name

STATE OF WISCONSIN)
Richland County) ss.
)

Personally came before me this 28th day of June, 2021.

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

Ken W. Anderson
Signature of Notary Public

Ken W. Anderson
Typed Name of Notary Public

Notary Public Richland County, Wisconsin

My commission (is permanent) (expires Jan. 23). 2023

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

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:
   - Hub Rock Sanitary District #1 will hereby be known as the Credit User.
   - The Richland County Land Conservation Division will be known as the Broker.
   - Engine Creek Farming LLC will be known as the Landowner, and Brendon Clarke will be known as the 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. Hub Rock Sanitary District #1 reserves the right to terminate this agreement if the Wisconsin Department of Natural Resources (DNR) does NOT approve the Water Quality Trading Plan (WQT). The WQT identifies this project for phosphorus credits to help the Hub Rock Sanitary District #1 wastewater treatment facility (WWTF). These credits are established in the WQT and has been analyzed as 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 Hub Rock Sanitary District #1 may terminate the agreement.
4. Hub Rock Sanitary District #1 reserves the right to terminate this agreement if the District is unable to procure funding to cover the cost of the project, which would provide reasonable terms to the District and their users.
5. The Broker reserves the right to enter the property to verify the information on the inspection report is accurate.
6. 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.
7. **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 all monetary costs incurred with the BMP practice installation, which includes but is not limited to site preparation, clearing, ensuring planned grades; stream shaping; rock riprap and installation; liming, fertilizing, seeding and mulching.
2. 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, 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 Landowners agree to repay all 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.
3. The Landowner/Operator shall inspect riprap and streambank at least annually and after heavy storms. Any erosion or displacement of rocks shall be repaired at the cost of the landowner. The Broker should be contacted immediately and directly if any damage has occurred.
4. 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, 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.
5. 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. Eliminate all burrowing rodents and repair damage caused by them.
8. Maintain the project consistent with NRCS technical standard 580.
9. 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. 151.03 Tillage Setback
- N.R. 151.06 Clean Water Diversion
- N.R. 151.08 Manure Management Prohibitions

Section D. Broker

1. The Broker will be responsible for the oversight of BMP practice design, project bidding, contractor construction agreements, inspection of site preparation, project design, BMP installation oversight, 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 Richland County Register of Deeds office.
3. The Broker agrees to complete annual inspections.

TA Number	Typed Name of Landowner/Operator	Initials of Landowner/Operator	Date
WQT-0049689050-02	Engine Creek Farming / Brendon Clarke		

APPENDIX 9-1

PHOSPHORUS SOIL TEST RESULTS

Soil and Forage Analysis Laboratory
2611 Yellowstone Dr, Marshfield, WI 54449
Phone 715-387-2523

University of Wisconsin
Madison/Extension

Brice Nelson
Davy Engineering Co.
115 6th Street S
LaCrosse WI 54601

Date 11/13/19
Acct # 558654
Lab # **5421**

RE: Hub Rock WQT, Yuba, WI

Soil Nutrient Analysis

Sample	Total Leachable P nitric/peroxide %	
1	0.04	Brendon Clarke Property

APPENDIX 9-2

SOIL SAMPLE LOCATION MAP

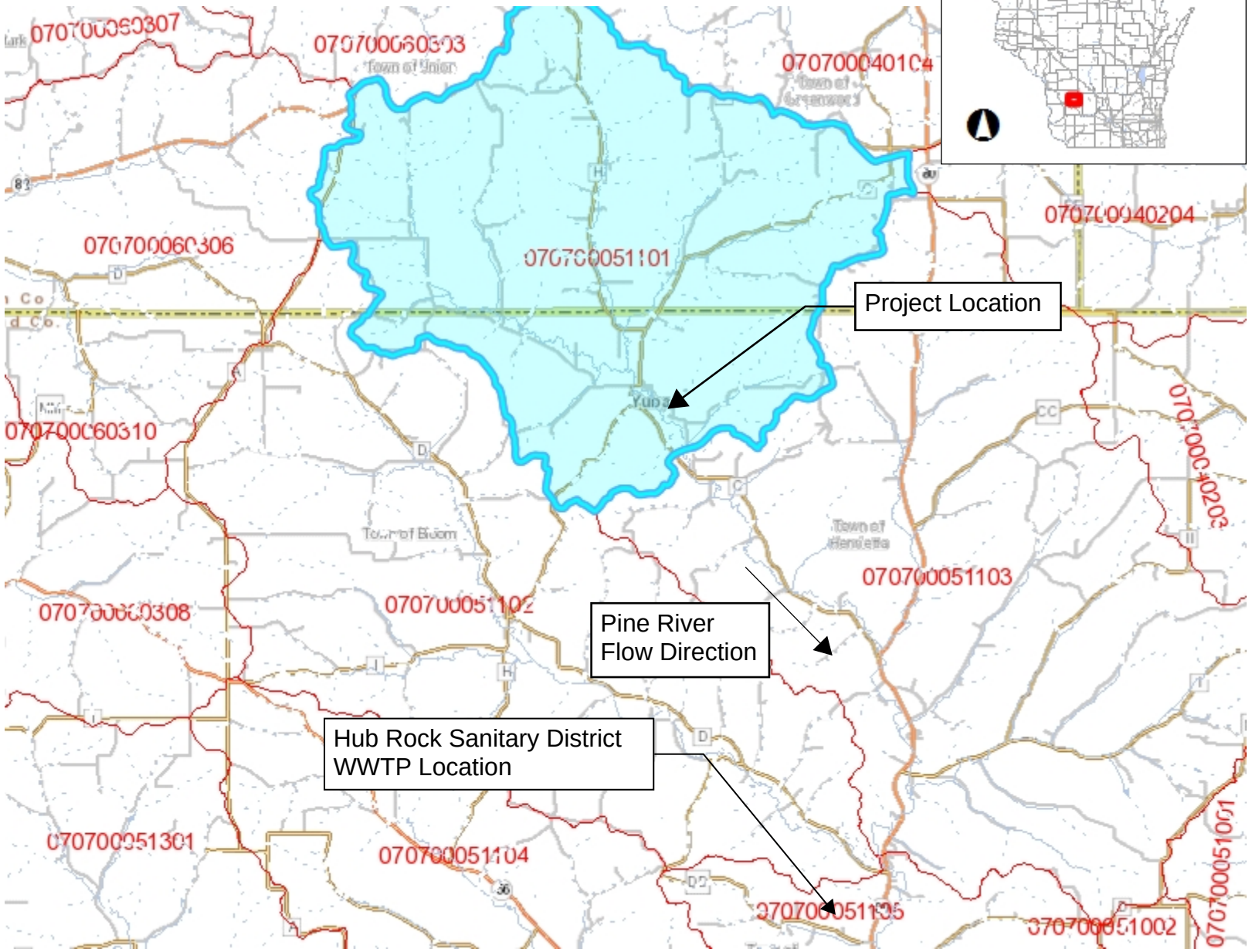
Soil Sample Location Map

Appendix 9-2

APPENDIX 14-1

HUC 12 OVERVIEW LOCATION MAP

Hub Rock HUC 12 Location 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

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/

Notes

Appendix 14-1

APPENDIX 17-1

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) 04/22		To (MM/YY) 10/22	
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	750	cu. yd.	$ 50.00	$ 37,500.00				2022
	NRCS 580	Geotexile Fabric, Type SAS	1630	sq. yd.	$ 3.00	$ 4,890.00				2022
	NRCS 580	Liming, fertilizing, seeding and mulching	1025	sq. yd.	$ 5.00	$ 5,130.00				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				**$ 64,770.00**				
		Contingencies (10%)				$ 6,480.00				
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**	**$ 71,250.00**	**$ -**	**$ -**	**$ -**	
CSA Number		Typed Name of Landowner / Operator Brendon Clarke				Initials of Landowner/Operator			Date	