



Waterford Waterway Management District

Agenda

Thursday December 17th, 2020 at 6 PM

This meeting will be held in person and online using Zoom

1. Call to Order - 6:03 pm. All board members present. Greg Horeth, Alex Abendschein, Grant Horn, Margaret Shoptaw, Dan Schultz, Scott Uhler, Bill McCormick
2. Review and act on Claims - No Claims
3. Information/Education/Marketing presentation WWMD Communications:
 - a. Website redevelopment update - Alex demonstrated new website
 - b. Social Media
 - c. Email/Newsletter
4. ESR Update
 - a. Evaluation of current engineering firm's efforts on pilot project consideration - Proposal modified to read not to exceed \$7500. Grant motion to approve. Margaret seconded. Vote 7-0 to approve. Margaret motion to approve Grant signing of contract. Bill seconded. Vote 7-0 to approve.
 - b. A Hydrology and Navigation motion on Waterway Safety--Greg motion to discuss. Margaret seconded. Grant modified proposal to spend the money limiting the expenditures to buoys related items only and removing the police boat upgrades and repairs. Greg motion to approve. Alex seconded. Vote 7-0 to approve.
5. Review of Special Meeting consideration and preparation plans. Margaret motion to move special meeting from Jan. 30 to Feb. 13. Scott seconded. Vote 7-0 to approve. Greg motion to approve the committee to spend up to \$2K for the special meeting to cover the costs of the mailing to owners, RFP process costs and Administrative packets for the meeting. Alex seconded. Vote 7-0 to approve.
6. Public Comments
7. Adjournment - 8:27 pm.

Those interested may listen and observe at:

Topic: WWMD Website and ESR Updates

Time: Dec 17, 2020 06:00 PM Central Time (US and Canada)

Join Zoom Meeting

<https://zoom.us/j/91678844546?pwd=UFp5bEM3TGwxeUR6U0xIUjYmndLdz09>

Meeting ID: 916 7884 4546

Passcode: 971334

One tap mobile

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DRAFT



Waterford Waterway Management District
Navigation and Hydraulic Management Committee Additional Meeting
Thursday, 12.17.2020 at 6:00pm

Overview:

The waterway suffered a tragic loss this summer when a jet ski collided with a pontoon boat, resulting in the death of the jet-ski operator. Tichigan Fire Department, Waterford Police, and others responded and did the best they could. Another incident occurred near the sandbar as well where a fight broke out and police were involved after the fact. In addition to these incidents, our navigational buoy management, which helps watercraft to safely travel in navigational lanes both during the day and before dawn and after dusk, has had its share of issues. Buoys are missing solar lights, are drifting out of place, and many of the 26 total buoys are in a state of disrepair.

Current Situation:

1. The town police boat has no written markings or decals indicating that it is indeed a police watercraft. The only way that anyone would be aware of police presence is when the boat is pulling over a vessel and the blue and white lights are flashing. Many of us residents know the white and blue G3 is the police boat, but a clearer presence may help to deter dangerous activities and problematic behavior.
2. The police boat has some deficiencies in its steering as well as its loudspeaker/PA system and must be repaired.
3. The buoys we have used for years are easily damaged by inattentive boaters and the solar lights have been knocked off or destroyed, making night navigation difficult and dangerous.

Proposed Alternative:

1. The Navigation and Hydraulic Management committee suggests increasing funding to the Town Police for labor to maintain the buoys beyond the amount we have contributed for the past few years.
2. Additionally we will meet the Town Police halfway on the cost to upgrade the police boat with lettering/decals that clearly indicate their authority and presence as well as repair the current deficiencies.
3. We will provide additional funding for ongoing buoy upgrades and replacement each year, including purchasing a more robust-style of buoy that will stand up better to propellers.

Requested Action:

1. The ESR chair will be making a motion to approve an increase in funds to the Waterford Town Police from the current \$3,000.00 per year up to \$6,000.00 per year.

Attachments:

1. Letter from Waterford Town Police Sergeant John Nelson



Waterford Police Department

Sergeant John R. Nelson
415 North Milwaukee St., Waterford, WI 53185
Phone: 262-534-2119 Fax: 262-534-7789

Date: 11/19/2020

Greg Horeth
Waterford Waterway Management District

Mr. Horeth:

On behalf of the Waterford Police Department, I am requesting the following to enhance and streamline buoy maintenance, repair and placement through the calendar year 2021. In addition, the added requests will improve our patrol boats visual/outward appearance and increase the safety of our Police Officers.

- ✦ **\$5,000.00**- Identified for staff hours to repair/re-locate and replace buoys, channel markers, etc. in a very timely fashion. This will enable Police Officers to respond to citizen requests, identify and mark hazards; encompassing all buoy challenges. These funds will ensure the water patrol budget remains focused on waterway safety and ordinance enforcement.
- ✦ **\$1,900.00**- Identified for the continued annual buoy purchase, this equates to half the annual amount, split with the Township.
- ✦ **\$1,700.00**- Identified for 15-solar lights, buoy top mount.
- ✦ **\$800.00**- Identified for improved emergency and safety lighting for the Waterford Police patrol boat.
- ✦ **\$590.00**- Identified for a new Public Announcement (PA) system/horn, permanently mounted to the Waterford Police patrol boat.
- ✦ **\$425.00**- Identified for a protective, 2-foot wrap, surrounding and protecting the upper rim of the boat, blue in color, black reflective lettering with white outlines, identifying the Waterford Police Department.

Total request for 2021: \$ 10,415.00

Thank you in advance for your time, consideration and interest in maintaining safe waterways.

Sincerely,

Sergeant John R. Nelson #9096
Waterford Police Department



Waterford Waterway Management District
Navigation and Hydraulic Management Committee Special Meeting
Thursday, 12.17.2020 at 6:00pm

Overview:

There has been a concern voiced by members of the board and some riparian owners regarding the direction of both the ESR committee and the engineering firm that has worked with the WWMD over the past 11 years. The WWMD chair has calculated approximately \$600,000 spent on engineering and consulting with GRAEF to date. While this consulting has been necessary to determine specific areas where dredging needs to occur, determine total quantities of sediment to be removed, design of bid packages for dredging, identify levels of contaminants in sediment that must be remediated, design remediation plans, and so on there is still no guarantee that our current plan will lead to the ultimate approval of dredging 500,000 cubic yards from our waterway.

Current Situation:

1. We have a proposal from GRAEF to perform a pilot test project of 400 cubic yards (CY) that would mimic a full-scale project of 500,000 CY and a theory that contaminant levels will reduce to acceptable levels and therefore prove it can be done on a larger scale.
2. This project is budgeted for in the 2021 ESR budget and \$155,000 funds are approved. These funds include contingencies & money that can be used towards peer review.
3. We have an opinion of cost for a full-blown 500,000 CY project of \$12,000,000 from GRAEF, but only an opinion. The 400 CY test would need to be performed first in order to proceed.
4. The DNR is still reviewing aspects of the pilot project prior to moving forward.

Proposed Alternative:

1. The ESR committee has sought two additional environmental engineering firms who both suggest a peer review of the work performed by GRAEF over the past 11 years, including methods for cleaning up contamination, distribution of the sediments, extraction of the sediment, etc. They will review and determine if we are already on the best course of action or if there is a faster or lower cost alternative.
2. SCS Engineering has provided a proposal for the peer review, which they call phase one of their project. It is \$7,500.00 and they will complete within four weeks of approval.
3. Sigma Environmental has not provided a proposal, but they estimate the peer review would cost between \$20,000 and \$30,000.

Requested Action:

1. The ESR chair will be making a motion to approve the peer review proposal by SCS Engineering for \$7,500 on December 17th so that we can move forward and have this completed by January 25th. Please prepare and email any questions in advance.

Attachments:

- 1a. Pilot Plan from GRAEF; 1b. DNR Response; 2. Proposal from SCS Engineering; 3. Opinion of Cost



July 12, 2020

Paul Kling and Don Baron
Waterford Waterway Management District
P.O. Box 416
Waterford, WI 53185

SUBJECT: Draft Small Scale Dewatering Test Report, Waterford Waterway Management District, Waterford, Wisconsin

Dear Paul and Don:

This letter summarizes the revised proposal for a small-scale pilot test (Test) for the Waterford Ecosystem Restoration Project. The objective of the Test is to demonstrate that ammonia concentrations within the sediments will drop below regulatory levels that are protective of groundwater within a short time after placement in a dewatering cell.

Background

This Test is based on natural nitrification-denitrification processes observed within sediment surfaces in shallow lakes and rivers, significant losses of N observed under saturated conditions on agricultural fields, and the observations made by Dr. Cuhel during the anammox tests performed in the fall of 2018 in which significant anammox activity was not observed but the tests did seem to indicate that significant aerobic nitrification was occurring and the nitrate generated was subsequently eliminated through anaerobic denitrification and lost as nitrogen gas.^{1, 2, 3}

Over the last several weeks the feasibility of a benchtop test followed by a larger scale test using vac trucks and dewatering boxes has been evaluated. Although the data collected from the benchtop test would be valuable for future design the costs are currently estimated to be roughly \$30,000. Additional drawbacks with this combination of tests include the cost of the second part of the test with the vac trucks and dewatering boxes - roughly estimated at over \$150,000 plus engineering and design, the limited volume of these combined tests – 30 to 40 cubic yards, and the differences between this approach and the proposed full scale project. These differences include the dredging method of vac trucks and dewatering boxes to be used in the test compared to a hydraulic dredge and earth pond proposed to be used in the proposed full scale project. The WDNR also mentioned concerns about these differences.

1. Scheffer, Marten (2004) *Ecology of Shallow Lakes* The Netherlands: Kluwer Academic Publishers
2. (1991) *Managing Nitrogen for Groundwater Quality and Farm Profitability* Madison, WI: Soil Science Society of America
3. James, William F, Eakin, Harry L. and Barko, John W. (September 2003) *Manipulation of Sediment Nitrogen via Dewatering and Rehydration: Implications for Macrophyte Control and Nitrogen Dissipation* APCRP-EA-06

Test Design

Based on this, the pilot test is revised to include the following elements:

- Construct a 2,700 cubic yard pond at the clay stockpile area shown on the attached figure. The area has ample clay for the pond construction and it would not be necessary to import material. The pond would be designed so that the material excavated could be used for a berm around the sides, minimizing the excavation efforts. The pond would be large enough to hold 400 to 500 cubic yards at 15 to 18% solids.
- Hydraulically dredge approximately 400 cubic yards of sediment (as measured in place) from areas of the river channel that are located closest to the pond to minimize piping cost, potentially dredging a roughly 100 foot length of channel downstream of the boat launch that would potentially improve access in this area. All pipe can be placed on the surface.
- Dewater in the pond using a silt curtain and skimmer pump and pump/gravity flow back to the river.
- Samples would be collected from the sediment in the water just before dredging and analyzed for Total Kjeldahl (TKN), Nitrate and Nitrite, Ammonia/Ammonium, and pH. Calculations will be completed to estimate the amount of oxygen needed to facilitate nitrification and air added, if needed, by a mixer box, agitation at discharge point to the pond and/or aeration in the pond. The cost of a bubble nano-bubble generator is included in the cost estimate, if needed. Significant oxygen would also be provided during the hydraulic dredging process.
- After discharge into the pond, the sediment would be allowed to settle for a period of one to two weeks before starting to dewater. Dissolved oxygen and pH would be monitored throughout this period. Before the start of the discharge, sediment samples would again be collected for TKN, Nitrate and Nitrite, and Ammonia/Ammonium.
- Dewatering would occur at a controlled rate so that the interface between the saturated and unsaturated zones would continue to move through the settled solids to continue the conversion of the remaining ammonia in the sediments to nitrate with subsequent denitrification in the underlying anoxic sediments.
- At the end of the dewatering defined as no free liquids on the sediment, up to five composite samples would be collected from the sediments for laboratory analysis of TKN, Nitrate and Nitrite, and Ammonia/Ammonium. Sequential Batch Leaching Tests (SBLT) will be completed on up to five of the samples with ammonia/ammonium results that are less than 50 mg/kg.
- After completion of the dewatering, the sediment could be buried and/or, if desired, a portion of the sediment could be removed and spread on a nearby farm field. Given the limited volume of sediment, the clay soils underlying the pond area, distance to the nearest residence and the location of the site next to

the river, there is minimal risk to groundwater outside the immediate area of the pond.

- Three groundwater monitoring wells will be installed within a 50 foot radius of the pond and analyzed for Nitrate and Nitrite and Ammonia/Ammonium three months before the start of dredging, at the start of dredging and six months after dredging.
- Six months after completion of dewatering and closure of the pond, samples of the buried sediments will be collected for analysis of nitrogen compounds, including TKN. Separate samples will be sent to UWM for further analyses. The purpose of these tests will be to estimate potential for breakdown of remaining organic nitrogen.

We are suggesting that the small scale dewatering test objectives would be met if the dewatering is completed within six months, the sediment ammonia/ammonium concentrations at that time are less than 50 mg/kg, and the SBLT results are Nitrate and Nitrite and Ammonia/Ammonium less than 1 mg/L (as N).

If the objectives are met, we would request the WDNR consider conditions for permitting full scale implementation of the dredging project with the option of permanent placement of the sediment at an upland sediment management facility at the Super Mix site. This may include the need for additional testing and evaluation.

It is important to note that the objectives of this Test might not be met due to insufficient nitrification and/or denitrification within the proposed six month period that could be caused by inadequate oxygenation so not all of the ammonia is converted to nitrate, slow growth rates for nitrifying and denitrifying bacteria, and settling of the solids before nitrification can occur. Also, although the sediment samples collected from the area of the river closest to the proposed test, S16 through S19, had an average ammonia concentration above 750 mg/kg, roughly twice the average of all the samples collected, the ammonia levels would have to be confirmed in the area of the proposed test prior to proceeding to ensure that the ammonia levels are at or above the observed average for all the samples. Indications of relatively high and unstable organic nitrogen levels would also be a cause for concern.

The small scale dewatering test can be scaled up to an upland sediment management facility as follows:

- The upland sediment management facility would likely employ a synthetic liner rather than clay to save on transportation and material costs. Skimmer pumps or other methods would also be used to drain the dewatering pond. Water from the skimmer pumps would be discharged back to the river in a temporary above grade river discharge pipe. An underdrain could also be installed to facilitate

dewatering and control the depth of the depth of the interface of the saturated and unsaturated interface of the settled sediment.

- The water surface area of approximately 25 acres at the upland disposal site would provide a large surface area to oxygenate the slurry; however, as in the pilot test, pumps, mixer boxes and other methods would be used to oxygenate the sludge slurry before it is discharge into the pond.
- Sediment settling and dewatering in the full-scale upland disposal site would be similar to the settling in the small pond, although the final sediment depths will be several feet deeper in the upland disposal site.

Permits

The following permits may be required:

- Temporary Wetland Impact: The pond site does not have wetlands. The pipe route might have wetlands but the impact would be minimal - less than 400 square feet, and temporary – less than 6 months.
- Dredge Permit Modifications: The dredge permit would be modified, if needed, and extended.
- Discharge Permit: A request would be made to modify the draft discharge permit to minimize operational restrictions given the limited volume of material and discharge water.

The WDNR wildlife program is open to a land use agreement for the state land as long as the proposal meets state and federal environmental standards and does not negatively impact the resource or impair the use of the land by the public. When a new proposal is submitted it will require that the wildlife program re-valuate potential impacts to the resource and public use. Based on preliminary discussions with Marty Johnson of the Wildlife program, he does not see significant issues with the use of the site.

Opinion of Probable Cost

Our opinion of the probable cost to implement the Test is as follows:

Engineering Services:

Design	\$10,750
Permitting	\$3,700
Bid Documents and Bidding	\$8,000
Construction Services and Operational Testing	\$26,500
Final Report	<u>\$3,900</u>
Total	\$52,850

Construction Services:

Pond Construction and Site Development	\$22,500
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collaborāte / formulāte / innovāte

Dredging, Piping, Dewatering and Air	\$34,000
Site Restoration	\$3,500
Construction Contingency	<u>\$4,500</u>
Total	\$64,500
Total Probable Cost	\$117,350

Since GRAEF has no control over the cost of labor, materials, equipment or services furnished by others or market conditions at the time of bidding, the construction costs represent our best judgement based on familiarity with the construction industry, actual costs may vary from the opinions of probable construction costs provided.

Schedule

Design and Permitting	August – October 2020
Bid Documents	November to mid-December
Bidding	winter 2020-2021
Construction and Dredging	May through June 2021
Dewatering and Monitoring	June through November 2021
Final Report	November 2021

Please contact me at 414-266-9284 with any questions or comments.

Sincerely,

Brian Schneider, P.E.
Project Manager

BWS:bws
Document2

Enclosures: Site Plan

cc: Jim Delwiche - WDNR
File



September 16, 2020

Mr. Brian Schneider
GRAEF
One Honey Creek Corporate Center
125 South 84th Street, Suite 401
Milwaukee, WI 53214-1470

Subject: Comments Regarding the Small-Scale Sediment Dewatering Test, Waterford Waterway Management District, Waterford, Wisconsin.

Dear Mr. Schneider:

The Department of Natural Resources (department) Waste and Materials Management Program (WA) has reviewed the July 22, 2020 "Small Scale Sediment Dewatering Test, Waterford Waterway Management District, Waterford, Wisconsin." This letter provides review comments on the proposed Small-Scale Test from the WA program and does not include any comments related to dredging permits, wetland impacts, wastewater discharge or the wildlife program land use agreement.

Overall Review Comments

The importance and magnitude of this project suggests that its plan be developed by a multidisciplinary team (i.e., dredging engineers, wastewater engineers, water chemists, hydrogeologists, wetland specialists, etc.) and that a peer review by additional professionals be conducted done prior to submission to the department. The department is concerned because our review of the June 2, 2020 pilot study indicated that the scope of work proposed at that time would not provide meaningful results that could be scaled up for a larger project. Graef's decision not to follow through with that pilot study because of its cost indicates that the cost had not been determined prior to submittal of the plan to the department. The mission of the department is not intended to be a resource for providing consultation input on a sequence of preliminary conceptual plans. The department's purpose in permitting is to assure that Statutes and Administrative Codes that were written to protect the environment are being met. As such, the department finds it very difficult to provide review and approval of preliminary plans that do not include details that address the requirements of Statutes and Administrative Codes, as well as guidance documents.

The proposed Small-Scale Test will require the submittal of a Low Hazard Exemption (LHE) request for the department to approve the test. Four-hundred cubic yards of sediment is a significant amount of materials and there is no exemption from state Statutes or Administrative Code for the disposal of this quantity of materials. The July 22, 2020 memo is a preliminary conceptual plan and does not provide enough information to assure that the environment will be protected; please see the comments below. Approval of an LHE requires payment of the \$550 review fee. The department will only review a LHE request upon payment of the required fee in order to be consistent with other requests for LHEs and to encourage the submittal of detailed and fully supported proposals to us. Because the LHE is for dredged materials, s. 289.54, Wis. Stats. also requires that a public meeting is held prior to approval.

The full-scale project will require another LHE. The department provided a list of items that must be addressed for an upland facility in the May 19, 2017 review memo (attached). All these items (not just ammonia) in the dredged materials, must be addressed.

Small-Scale Test Summary

The proposed Small-Scale Test description in the July 22, 2020 memo is a preliminary conceptual plan. This plan replaces June 2, 2020 Pilot Study by Graef, which the department reviewed and commented on. The Small-Scale Test takes an entirely new approach as compared to the Pilot Study because it was determined to be too costly.

The July 22, 2020 Small-Scale Test proposes to:

- Construct a 2,700 cubic yard pond to hold 400 to 500 cubic yards at 15 to 18% solids.
- Collect samples from the sediment before dredging and analyze for Total Kjeldahl (TKN), Nitrate and Nitrite (N+N), Ammonia/Ammonium (A/A), and pH. Calculate the amount of oxygen needed to facilitate nitrification.
- Hydraulically dredge approximately 400 cubic yards of sediment (as measured in place) and discharge to the pond. The samples collected from the area of the river closest to the proposed test had an average ammonia concentration above 750 mg/kg
- Allow sediment to settle for a period of one to two weeks before starting to dewater. Dewater the pond using a silt curtain and skimmer pump and pump/gravity flow back to the river.
- Monitor dissolved oxygen (DO) and pH in the pond and analyze its sediment for TKN, N+N, and A/A prior to discharge.
- Collect up to five composite sediment samples at the completion of dewatering, which is defined as no free liquids in the sediments. Analyze for TKN, N+N, and A/A. Perform Sequential Batch Leaching Tests (SBLT) on up to five of the samples with A/A results that are less than 50 mg/kg.
- The sediment would be buried and/or, if desired, a portion of the sediment would be removed and spread on a nearby farm field at the completion of the study.
- Three groundwater monitoring wells will be installed within a 50-foot radius of the pond and analyzed for N+N and A/A three months before the start of dredging, at the start of dredging and six months after dredging.
- Collect samples of the buried sediments six months after completion of dewatering and closure of the pond for analysis of nitrogen compounds, including TKN. Separate samples will be sent to UWM for further analyses. The purpose of these tests will be to estimate potential for breakdown of remaining organic nitrogen based on TKN minus ammonia.

Graef suggests that the Small-Scale Test objectives would be met if the dewatering is completed within six months, the sediment A/A concentrations at that time are less than 50 mg/kg, and the SBLT results are N+N and A/A are less than 1 mg/L (as N).

Graef proposes that the Small-Scale Test can be scaled up to an upland sediment management facility as follows:

- A synthetic liner would be used. Water from skimmer pumps would be discharged back to the river. An underdrain could also be installed to facilitate dewatering.
- The upland disposal site would have a water surface area of approximately 25 acres. Oxygen would be added for treatment. The final sediment depths would be several feet deeper than in the pilot test.

Comments Regarding the Proposed Small-Scale Test

The following are comments regarding specific items in the Small-Scale Test work plan:

- “Construct a 2,700 cubic yard pond at the clay stockpile area” (Page 1, first bullet item)- Please confirm the area and depth of the pond. Provide a larger scale map of the actual pond, as well as its layout. Please confirm who owns the land and if written approval has granted. **This is**

straightforward – the land is owned by the WDNR. The original proposal included time to develop a layout.

- “Ample clay for pond construction” (Page 1, first bullet item)- If the project is relying on the quality of the clay to prevent groundwater contamination, then the thickness, quality (see s. NR 504.06(2), Wis. Adm. Code), compaction and testing in order to assure that the clay provides the protection of groundwater must be addressed. It will not be possible to meet all of the requirements under NR 504.06 including the ten-foot separation from the groundwater, and the five-foot thickness for the clay. In order to determine the clay quality, also a requirement under NR 504, we would need to conduct some testing on site that would cost an additional \$2,000 to \$3,000. This could be done in conjunction with the well installation noted below.
- Defining the end of dewatering as “no free liquid” (page 2, bullet item 6) does not appear to be practical given the conceptual plan provided and the 6-month time frame. An underdrain would be needed, as well as a slope to the liner. An underdrain can be constructed – we can obtain sand from Super Mix, bring in a separation fabric and plastic drain pipe, slope the bottom and install a sump. But again, this will add a bit to the design process and more to the construction.
- “...up to five composite samples would be collected...” (page 2, bullet item 6)- Please indicate a minimum number of samples that will be collected per WDNR Protocols and Sampling Methodologies. The only protocols I am aware of would indicate only four samples would be required (NR 718).
- “Sequential Batch Leaching Tests (SBLT) will be completed on up to five of the samples with A/A results that are less than 50 mg/kg.” (page 2, bullet item 6). - Please indicate a minimum number of samples (per WDNR Protocols and Sampling Methodologies) that will be collected. Also, per WDNR representative sampling techniques, it is unclear why the tests would be limited to samples that have less than 50 mg/kg A/A. The greatest concern would be with A/A concentrations greater than 50 mg/kg A/A, not less than 50 mg/kg. My thought on this was that if we are not below 50 mg/kg we might not want to bother with the testing at all, which is generally about \$1,000 per test.
- “... the sediment could be buried and/or, if desired, a portion of the sediment could be removed and spread on a nearby farm field.” (page 2, bullet item 7)- If the intent is to bury the sediment, this must be clearly stated and justified in the LHE request because this is the disposal of a solid waste. If the material is to be land spread, this can be done in accordance with the department’s November 30, 2018 Landspreading approval (attached). Burying the sediment is cheaper and the thought was that given how close this is to the river, it could be buried at minimal risk. Doing a formal LHE would take a little more effort in the design phase. I would have to do a little more research on how much effort this would take.
- “Given the limited volume of sediment, the clay soils underlying the pond area, the distance to the nearest residence and the location of the site next to the river, there is minimal risk to groundwater outside the immediate area of the pond”(page 2, bullet item 7)- The “limited “ volume of sediment does not exempt it from applicable solid waste Statutes and Administrative Code. Details must be provided so that the department can conclude whether the risk is minimal. Provide the distance to the nearest residence and well location. Does the proposed pond comply with the locational distances of s. NR 718.12(c), Wis. Adm. Code, or does an exemption need to be requested and justified? What is the nature and extent of the clay soil? (see “Ample clay for pond construction” bullet regarding clay above). We will need to get clarification from the WDNR on whether we are to meet the NR 504 standards or the NR 718 standards. The NR 718 standards are generally much easier to meet.
- Provide the direction of groundwater flow. Provide the geology and hydrogeology that supports the conclusion of “minimal risk”. See below

- “Three groundwater monitoring wells will be installed within a 50-foot radius of the pond and analyze for all GW constituents initially (then short listed to N+N and A/A) three months before the start of dredging, at the start of dredging and six months after dredging” (page 2, bullet item 8)- How will the location of groundwater monitoring wells be determined? Will one well be upgradient and two downgradient? Confirm the direction of groundwater flow. Because the river is located both north and east of the proposed location, the direction of groundwater flow could vary. Confirm if the wells be constructed in a permeable layer. Also, provide justification to discontinue groundwater sampling and analysis after 6-months. **Likely, we would need to complete more borings to get additional soils data (we completed two borings on site) and install wells/piezometers this fall to evaluate groundwater flow. Depending on the additional data required, this could add \$4,000 to \$5,000 to the design.**
- “Separate samples will be sent to UWM for further analyses.” (page 2, last bullet item)- Please list what compounds would be analyzed and confirm if these are being sampled at the same time as N+N and A/A, before or after dredging. **This step was included in the design.**

Comments Regarding the Full-Scale Project

Because limited information is provided regarding the full-scale project, only a few comments are provided. Additional comments would be provided when more details are given.

- “The upland sediment management facility would likely employ a synthetic liner rather than clay to save on transportation and material costs.” (page 3, bullet item 1)- For long term storage of waste, geosynthetic membrane requirements (see s. NR 504.07 (3) in general and item (d) in particular include the removal of all stones or other materials that could damage the membrane, a protective layer above the membrane if stone is used for drainage, a drainage layer above it, a quality control/quality assurance plan with testing, minimum thicknesses of stone as roadway over the membrane if vehicles will drive over the membrane and specialized crews for its installation. The cost of an installed membrane is about \$1.00 per square foot and a 25-acre pond would cost over \$1 million. The drainage materials can cost more than the membrane itself. While it is not the responsibility of the department to estimate the cost of this project, it seems likely that a membrane liner could be more expensive than a clay liner for the project. In addition, a membrane must be placed on a smooth, regularly sloped surface. The topography of the Super Mix site, based on past submittals by Graef, is an irregular surface of rock that could make use of a membrane at this site impractical. **Note that \$1.35 million was included for the liner in the opinion of cost. One of the reasons to assume a synthetic liner was that the cost of clay has risen in the area and getting the clay to the site would create considerable truck traffic. A significant unknown is whether the WDNR will still apply the NR 504 standards even our small-scale test is successful. This would greatly reduce the value of the small-scale test and drive up the cost of the final project.**
- As indicated above, another LHE request will needed, and all of the items in the May 19, 2017 review memo must be addressed.

Permits

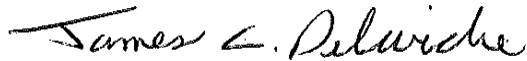
As indicated above, this memo is from the DNR Waste and material Management program of the department. A LHE is required for the Small-Scale Test as well as another for the full-scale project. The WA program is not providing comments regarding the necessity or sufficiency of the list of permits by other programs of the department.

In summary, the proposed Small-Scale Test description in the July 22, 2020 memo is a preliminary conceptual plan. This plan replaces June 2, 2020 Pilot Study by Graef, which the department also reviewed and commented on. The department will continue to work with the Waterford Watershed

Review of July 22, 2020 Small Scale Dewatering Test
September 16, 2020
Page 5

Management District to get any proposed pilot program, to the point of answering the questions relating to a larger scale project. Please feel free to contact me with any questions regarding this letter, or the project in general, at (414) 550-4723 or at jim.deliwche@wisconsin.gov.

Sincerely,



James C. Delwiche
Waste and Materials Management Program Supervisor
Southeast Region

cc: SER files
Grant Horn – WWMD
Bryan Hartsook – WDNR Wastewater Supervisor
Natasha Gwidt – WDNR Waste & Material Management Field Operations Director

Attachment: May 19, 2017 WDNR review memo
November 30, 2018 WDNR Landspreading Approval

DRAFT

November 20, 2020
File No. 25266220

Mr. Grant Horn
Waterford Waterway Management District
P.O. Box 416
Waterford, Wisconsin 53185

Subject: Proposal for Engineering File Review and Regulatory Evaluation

Dear Grant:

Thank you for the opportunity for SCS Engineers (SCS) to continue to support the Waterford Waterway Management District (WWMD). Our proposal to provide engineering consulting services for this project is provided in this letter. Our professional services agreement and Fee Schedule are attached.

PROJECT UNDERSTANDING

SCS understands that prior engineering has been completed for the characterization of nitrogen and other nutrient-impacted sediment that is planned for dredging. These sediments are planned for an approximate 500,000 cubic yard (CY) dredging project in 2022. The removal and final disposition of the sediments is forecast to cost approximately \$12,000,000.

SCS has received some information with respect to the work completed to date, and recent correspondence with the Wisconsin Department of Natural Resources (WDNR) including the November 2018 approval for NR 518 Land Spreading. Upon our preliminary assessment of WWMD provided data, it appears that a typical cost-effective option for managing dredged sediment has not been evaluated to date. Specifically, it may be possible that the dredged sediment can be managed consistent with the Wisconsin Department of Agriculture, Trade and Consumer Protection Division of Agricultural Resource Management (WDATCP), Agricultural Chemical Cleanup Program (ACCP).

The focus of the scope of work covered by this proposal is to:

1. Review the provided files;
2. Evaluate if dredged sediment can be landspread more economically via the ACCP;
3. Recommend additional sediment characterization requirements needed, if any, to comply with the ACCP; and,
4. Summarize our findings.

SCOPE OF SERVICES

We propose to complete the following to develop a summary for WWMD's use to inform future implementation decisions regarding the overall project. Specifically, this will include:



File Review and Data Evaluation

SCS will Review WWMD-provided files, including:

1. 2018 WDNR Approval for Landspreading
2. 2018 Single Bid for Dredging of 23,000 cubic yards (CY) as a Test Project
3. 2019 Alternative Pilot Test Proposal 7-8 CY
4. 2020 June Benchtop Study Test Proposal 20-30 CY
5. 2019 October Pilot Test <200 CY
6. 2020 Current Test Pilot
7. 2017 WDNR Response
8. 2018 WDNR Landspreading Approval
9. 2020 Opinion of Probable Cost
10. Proposed Dredging Channels
11. Project Area
12. Location for Proposed 2,700 CY Pond for Current Project
13. Sediment Analytical Data

SCS will assess the completeness of the work provided and assess for data gaps.

Alternative Regulatory Program Determination

After completing our file review to develop a thorough understanding of the overall project, we will engage WDATCP personnel to discuss the project in detail. This discussion will serve to identify if all, or portions, of the project can be managed within the ACCP.

Summary Memorandum

SCS will develop a draft and final Technical Memorandum summarizing our file review and WDATCP evaluation. Should the ACCP program be determined a suitable and appropriate program to pursue, we will summarize the key compliance requirements, including additional characterization needs, for WWMD to advance within this program.

ESTIMATED COST

The work will be completed on a time-and-materials basis in accordance with the attached Fee Schedule. The total cost will depend on the services provided. We will not exceed \$7,500 in charges without your approval.

SCHEDULE

SCS will complete our file review and regulatory determination within 4 weeks of your approval of our proposal.

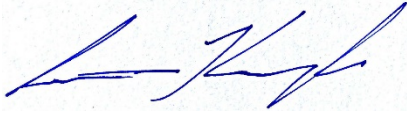
AUTHORIZATION

If this proposal is acceptable to you, please sign the Agreement and return a signed copy via email (sknoepke@scsengineers.com).

Mr. Grant Horn
November 20, 2020
Page 3

Please feel free to contact Scott Knoepke at (630) 524-3794 if you have any questions or comments concerning our proposal.

Sincerely,



Scott K. Knoepke, PE
Project Manager
SCS Engineers



Eric J. Nelson, PE
Vice President/Project Director
SCS Engineers

SKK/jsn/EJN

Encl. Agreement for Professional Services
Fee Schedule

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DRAFT

SCS Engineers File No.: 25266220

**AGREEMENT BETWEEN SCS ENGINEERS AND CLIENT
FOR PROFESSIONAL SERVICES
November 20, 2020**

THIS AGREEMENT (hereafter "Agreement") is made by and between Waterford Waterway Management District (hereafter "Client"), and Stearns, Conrad and Schmidt, Consulting Engineers, Inc. dba SCS Engineers (hereafter "SCS").

WITNESSETH

That for the considerations set forth below, the parties agree as follows:

1. Scope of Services: SCS shall provide professional services (hereafter "Services") for the project (hereafter "Project") as set forth in the attached Scope of Services dated November 20, 2020, in accordance with the terms and conditions of this Agreement.

2. Basis of Compensation:

SCS will be compensated for time and expenses in accordance with SCS' standard rates in effect at the time of performance, provided that total compensation will not exceed \$7,500.00 without the authorization of Client.

3. General Conditions:

a. Payments for invoices prepared by SCS are due and payable upon receipt. Payments due SCS under this Agreement shall be subject to a service charge of one and one-half (1-1/2) percent per month for invoices not paid within thirty (30) days after the date of receipt of invoice.

b. Client agrees to pay all costs and expenses of SCS, including reasonable attorneys' fees, arising out of or in connection with collecting amounts for which Client is responsible pursuant to this Agreement.

c. This Agreement may be terminated by either party upon 15 days' written notice to the other party. Upon termination, SCS shall be paid for all Services rendered to the date of termination together with any termination expenses incurred.

d. Any work in addition to that described in Article 1 above performed at the request of the Client shall be compensated on a time-and-materials basis at the rates contained in SCS's Standard Fee Schedule in effect at the time of performance of the Services. Unless expressly stated therein, the scope of work does not include testimony or responding to subpoenas or other legal orders requiring production of records or testimony. In the event SCS receives a subpoena or other legal order for the production of project records or testimony related to the Scope of Service or other work for Client, SCS will be compensated by client at current Fee Schedule rates.



e. The parties hereto shall each maintain in full force and effect Commercial General Liability insurance with coverage limits which are reasonable in light of the Services to be undertaken, and Workers' Compensation Insurance as required by law.

f. All reports, drawings, renderings, source and object code, software, data and other works and documents prepared by SCS under this Agreement, and all intellectual property rights in the same, shall be owned exclusively by SCS.

g. Neither party shall delegate its duties under this Agreement without the written consent of the other party. Each party binds itself to the successors, administrators and assigns of the other party in respect of all covenants of this Agreement.

h. The parties agree that the total liability of SCS under this Agreement and for the Project shall be limited to Fifty-Thousand Dollars (\$50,000) or the amount of SCS's total fees hereunder (whichever is greater), unless Client pays for the assumption of additional liability by SCS as a separate line item in Article 2 above.

i. Unless otherwise expressly stated in the Scope of Services, SCS shall have no responsibility for site health and safety, except with respect to the activities of SCS and its subcontractors. In no event shall SCS be responsible for the means, methods or manner of performance of any persons other than SCS and SCS's subcontractors.

j. Client agrees that SCS will not be responsible for liability caused by the presence or release of hazardous substances or contaminants at the site, unless the release results from the sole negligence of SCS or its subcontractors. The Client will make others responsible for liabilities due to such conditions, or will indemnify, defend and save harmless SCS from such liabilities. At no time shall title to hazardous substances, solid wastes, petroleum contaminated soil or other regulated substances pass to SCS, nor shall any provision of this Agreement be interpreted to permit or obligate SCS to assume the status of a "generator," "owner," "operator," "transporter," "arranger" or "treatment, storage or disposal facility" under state or federal law. The provisions of this Article 3j shall survive any termination of this Agreement.

k. SCS shall be entitled to rely on information provided by Client. SCS shall be entitled to an equitable adjustment in the price and schedule if conditions differ materially from information provided by Client, or differ from what could reasonably be anticipated given the nature of the Services.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed by their duly authorized representatives as of the last date written below.

SCS ENGINEERS

CLIENT:

Waterford Waterway Management
District

BY:



BY:

NAME:

Eric J. Nelson

NAME:

TITLE:

Vice President

TITLE:

DATE:

November 20, 2020

DATE:

Fee Schedule

Personnel

<u>Category</u>	<u>Rate/Hour</u>
Project Director/Senior Project Adviser	\$ 206
Senior Project Manager/Senior Technical Adviser	\$ 163 – \$ 183
Project Manager/Senior Project Professional.....	\$ 129 – \$ 150
Project Professional.....	\$ 119
Staff Professional.....	\$ 114
Associate Professional.....	\$ 108
Field Professional.....	\$ 108
Senior Designer/CAD Technician.....	\$ 103
Senior Technician.....	\$ 98
Project Administrator	\$ 93
Designer/CAD Technician.....	\$ 90
Technician	\$ 74
Administrative Assistant	\$ 74

Equipment and Expenses

Groundwater Monitoring	
Brass Well Locks	\$ 17/each
Chipped Bentonite.....	\$ 12/bag
Dedicated Bailers	\$ 65/each
Disposable Bailers.....	\$ 15/each
Dissolved Oxygen Meter.....	\$ 40/day
Field Filtering Apparatus	\$ 22/day
Field Filters	\$ 16/each
Ice	\$ 7/bag
Low-flow Sampling Compressor/ Controller	\$50/day
Petroleum Product Interface Probe	\$ 70/day
pH Meter	\$ 20/day
pH, Conductivity, Temp, TDS Meter.....	\$ 20/day
Pressure Trans. / Data Logger	\$ 125/day
Water Level Indicator	\$ 30/day
Well Caps.....	\$ 18.25/each
Pumps	
2" Gas Engine Pump	\$ 45/day
Explosion Proof Pump	\$ 100/day
Peristaltic Pump	\$ 30/day
Submersible Pump	\$ 100/day
Sump Pump	\$ 15/day
Well Development Pump.....	\$ 30/day

PPE and Air and Gas Monitoring	
Air Monitoring Detector Tubes.....	\$ 15/each
Four Gas Meter.....	\$ 65/day
Landfill Gas Meter.....	\$ 100/day
Level D PPE.....	\$ 5/day
Modified Level D PPE.....	\$ 15/day
Personal Air Sampling Pump	\$ 30/day
Respirator Cartridges	\$ 35/pair
Tyvek Suit.....	\$ 20/each
Soil Sampling and Testing	
Concrete Air/Slump	\$ 30/each
Concrete Core Drill.....	\$ 120/day
Concrete Cylinder Mold.....	\$ 3/each
FID/PID Rental	\$ 85/day
Hand Auger Kit.....	\$ 30/day
Nuclear Density Gauge	\$ 125/day
Soil Scale.....	\$ 25/day
Stainless Vapor Pin Cap	\$ 30/each
Vapor Pins	\$ 60/each
Vapor Sampling Kit	\$ 25/day
Surveying	
¾-inch Irons	\$ 4/each
GPS Unit/Total Station	\$ 50/day
Level/Laser Level.....	\$ 5/hour

Marking Paint	\$ 5/each
Survey Hubs	\$ 0.60/each
Survey Lath.....	\$ 0.75/each
Miscellaneous	
55-Gallon Drums.....	\$ 65/each
Air Compressor	\$ 40/day
Copies.....	\$ 0.07/each
Curlex Blanket	\$ 65/each
Curlex Staples	\$ 10/box
Digital Camera.....	\$ 10/day
Dump Trailer.....	\$ 175/day
Hard Boom (10").....	\$ 1.80/foot
Metal Detector.....	\$ 35/day
Oil Absorbent Boom (5" x 10').....	\$ 70/each
Oil Absorbent Boom (8" x 10').....	\$ 90/each
Oil Absorbent Pad.....	\$ 1.00/each
Oil Dry Absorbent.....	\$ 8/bag
Orange Safety Fence.....	\$ 40/roll
Plastic Sheeting (20' x 100')	\$ 80/roll
Portable Generator.....	\$ 45/day
Spill Response Trailer	\$ 200/day
Utility Trailer.....	\$ 40/day
Vehicle.....	\$ 0.575/mile
Water Storage Tank	\$ 75/day

Equipment and expense rates may be modified by SCS Engineers from time to time as new equipment is added or costs change. Client will be notified prior to any change in the personnel rates that will affect the project billings.

Outside services contracted through SCS Engineers will be billed at cost plus 10 percent. Outside services may include, but are not limited to, laboratory testing, drilling, or other subcontracted services.



Opinion of Probable Construction Cost - Summary

Project: Waterford Ecosystem Restoration **Location:** Waterford, Wisconsin
Owner : WWMD **Cubic Yards:** 500,000
Preliminary - Subject to Change

Item Description	Division Number	Qty	Unit	Total
Construction Services	31	1	LS	\$10,019,438
WDNR Permits and Fees		1	Allow	\$7,500
Consulting Services During Construction	N/A	1	LS	\$198,407
Sub Total				\$10,225,345
Contingency 15%				\$1,533,802
Project Total				\$11,759,146
Cost per Cubic Yard				\$23.52

Since GRAEF has no control over the cost of labor, materials, equipment or services furnished by others, the contractors means of determining prices or over the competitive bidding or market conditions; GRAEF's opinions of probable construction cost are made on the basis of GRAEF's experience and qualifications and represent GRAEF's best judgement as an experienced professional familiar with the construcion industry: but GRAEF cannot and does not guarantee that the proposals bids, or actual project costs will not vary from the opinions of probable construction costs prepared by GRAEF.

It is also important to note that the cost estimates are based on obtaining successful pilot test results and several assumpitons including:

- a. The SuperMix site on HWY 20 is available for dewatering and final disposal of the dredged sediments and is accessible by overland pipe with trenching ; required only in limited areas;
- b. Only a sinlge layer synthetic pond liner will be required and clay will not be required to line the dewatering pond, and any soils required for the pond construction will be available at the SuperMix site at no cost to the project.