



Title: Authorization to Award Contracts for Wassermann Alum Treatments

Resolution number: 21-025

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Recommended action: Authorize the execution of two contracts to implement buffered alum treatments on Wassermann Lake and the West Wassermann pond in Victoria, MN.

Schedule: April or May 2021 – First alum treatment of Wassermann Lake and second treatment of West Wassermann Pond
Fall 2022 – Second treatment of Wassermann Lake

Budget considerations: West Wassermann Pond Alum Treatment
Fund name and code: Wassermann Preserve 3-3153 (Alum treatment)
Fund budget (2021 Alum treatment): \$38,603 (includes \$33,942 BWSR Watershed Based Funding grant)
Expenditures to date: \$67,132 (2019 alum treatment)

Wassermann Lake Alum Treatment
Fund name: Wassermann Lake Internal Load Management 3-3156
Fund budget: \$360,900 (includes \$270,675 BWSR Clean Water Fund grant)
Expenditures to date: \$18,186 (Sediment analysis and design)

Past Board action:

Resolution 19-035:	Authorization to award contract for the Wassermann West alum treatment
Resolution 19-072	Authorization to apply for BWSR Clean Water Funds
Resolution 20-050:	Ordering of the Wassermann internal load management project
Resolution 20-051:	Approval of Wassermann internal load project agreement
Resolution 20-052:	Authorization to contract with UW-Stout to analyze Wassermann Lake sediment for alum treatment engineering design
Resolution 20-075	Authorization to contract with UW-Stout to perform sediment core analysis
Resolution 20-076	Authorization to contract with Wenck Associates (Stantec) to develop alum treatment specifications
Resolution 21-012	Authorization to release Request for Quotes for Wassermann Lake and Wassermann West Pond Alum Treatments

Summary:

In May 2014, the Minnehaha Creek Watershed District (MCWD) Board of Managers formally adopted the Six Mile Creek-Halsted Bay (SMCHB) subwatershed as a geography of strategic planning and implementation focus. In March 2015, the city of Victoria (City) and MCWD executed a memorandum of understanding (MOU) which identifies the mutual value both agencies find in cooperative planning, coordination across agencies on priority water resource issues, including the restoration of Wassermann Lake, and increasing regulatory coordination to support and foster integrated water and natural resources management.

Since adoption of the 2017 Water Management Plan, MCWD has been working to implement high impact capital projects within the SMCHB subwatershed, with particular focus in the City and Laketown Township, where current land use pressure presents a unique opportunity to implement projects concurrent with development. Under this plan, MCWD has invested substantially in both watershed and in-lake management activities in the restoration of Wassermann Lake, an impaired waterbody within the City.

In June 2017, MCWD and the City partnered to acquire a 33-acre parcel on the west side of Wassermann Lake now referred to as Wassermann Lake Preserve. In advance of that acquisition, the District and City entered into an agreement stating that the two agencies would collaborate to develop a park design that provides public access and enjoyment of the site while restoring its wetland and woodland areas and implementing water quality improvements in Wassermann Lake. With a subwatershed-wide carp management program underway, internal loading is the last remaining significant source of nutrient pollution to address in Wassermann Lake. The 2013 SMCHB Diagnostic Study estimates an annual internal release rate of 374 pounds per year, the largest nutrient source identified.

West Wasserman Alum Treatment at Wassermann Lake Preserve:

In November 2017, a contract was awarded for preliminary design for park amenity and natural resource improvements at the Wassermann Lake Preserve site. A component of that design scope was the development of specifications for aluminum sulfate (alum) treatment of the 6-acre pond on the site (West Wassermann pond). Prior analysis had identified this pond as a significant source of phosphorus into Wassermann Lake with approximately 39 pounds per year due to internal nutrient release from the pond. Stantec, under contract for design of the alum applications, prepared a technical memo which recommended two alum treatments to occur over three years, with the first and third years having active treatment. The memo also recommends a third contingency dose sometime in the following two-to-five year window, which would be informed by effectiveness monitoring. These alum treatments are funded by a grant from the Board of Water and Soil Resources (BWSR) Watershed Based Funding program with design and engineering costs funded through both Research and Monitoring and Project Planning program budgets.

The first alum application to the West Wassermann pond occurred in spring 2019 resulting in a 75-pound per year decrease in phosphorus loading to Wassermann Lake. During the 2020 monitoring season, Research and Monitoring program staff collected sediment cores from the bed of the pond, and sediment was then analyzed by the University of Wisconsin – Stout to determine the total amount of legacy phosphorus in pond sediment and the rate at which phosphorus is released from sediment into the water column. These analyses along with lake bathymetry information, historic and recent water quality data, initial dosing calculations, and the internal load management plan were used by Stantec to identify the most cost effective alum dose and, thereby, phosphorus load reduction possible.

Based on these findings, the recommended follow-up application is a lower dose, buffered alum treatment of the pond in all areas with a water depth greater than six feet. This three acre treatment will immobilize the remaining available phosphorus which was identified by the sediment sampling to be present in the top 10 centimeters of lake sediment.

Wassermann Lake Alum Treatment:

In January 2020, MCWD was awarded a Clean Water Fund grant from BWSR positioning Wassermann Lake for an initial alum treatment in spring 2021 and a subsequent treatment in fall 2022. The total budget for this project is \$355,900, including \$284,720 in grant funds and \$71,180 in match. MCWD's match funds are allocated to feasibility, pre- and post-project sediment analysis, and a portion of the treatment cost. The grant dollars are allocated exclusively to alum application.

In addition to the analyses that were performed for the West Wassermann pond, the recommended alum dose for the lake has also been informed by continuous temperature and dissolved oxygen readings gathered by equipment placed on a monitoring buoy deployed throughout 2020. These data sets were analyzed by Stantec, and findings included treatment, a cost-benefit analysis, and estimated total project cost.

In summary, the recommendation is to split the dose into two treatments: the first in spring 2021 and a follow-up treatment in fall 2022. A cost-benefit analysis conducted by Stantec calculates the cumulative cost/pound of phosphorus removed for each depth contour. While the cumulative load reduction peaks at 310 pounds/year at the 10-foot contour, the cost per pound removed is most advantageous, while still achieving significant load reduction, by treating the lake to the 38-foot contour. Both the remediated internal load and the subsequent cost increase as the application area increases, thus the recommendation is based on balancing extending treatment area with increased cost. The proposed treatment scenario achieves an internal load reduction of 269 pounds/year. Based on this analysis, Stantec has recommended a conservative first dose with a second dose refined based on 2021 post-treatment sediment data.

The alum treatments of the pond and lake collectively are projected to reduce internal loading to Wassermann Lake by an estimated 90%, for a reduction of 336 pounds per year. If successful, this reduction positions Wassermann Lake to be removed from the State of Minnesota's Impaired Waters List.

Although the Wassermann Lake and West Wassermann pond are separate projects and have different funding sources, due to the projects' close proximity and timing of the alum applications, staff have combined the two projects into one quote solicitation to reduce mobilization and administrative costs. A request for quotes was released on February 12, 2021 with quotes due on March 4, 2021. In total, three quotes were received, and those quotes are summarized below:

CONTRACTOR	WASSERMANN LAKE TREATMENT	WEST WASSERMANN TREATMENT
Clarke Aquatic Services	\$107,713.82	\$23,020.06
HAB	\$129,423.90	\$36,230.35
Solitude Lake Management	\$170,135.62	\$32,868.87

Variation in the quotes is due to differences in chemical costs and estimated costs for mobilization among the three submittals. The low quote for each project was submitted by Clarke Aquatic Services (Clarke). Since the time that quotes were received, MCWD staff have contacted references, met with the project team from Clarke, and carefully reviewed all information in the submitted proposals. This due diligence has determined that Clarke is capable of performing the applications as specified. In addition to monitoring required to be performed by Clarke to document application rates and location and to observe water chemistry throughout the treatment, redundant monitoring will be performed by Stantec and MCWD staff to ensure that the application is performed as prescribed.

Staff recommend the selection of Clarke Aquatic Services to perform buffered alum treatments of Wassermann Lake and the West Wassermann pond.



RESOLUTION

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- WHEREAS pursuant to Resolution 14-047 the MCWD Board of Managers has identified the Six Mile Creek-Halsted Bay (SMCHB) Subwatershed as a priority area for focusing District planning activities and coordination efforts with subwatershed partners;
- WHEREAS on March 26, 2015 the Board of Managers authorized MCWD to enter into a Memorandum of Understanding with the City of Victoria (City), outlining opportunities to collaborate and integrate mutual efforts in the realms of coordinated planning of local water and land use plans, assessment of specific management issues, and coordinated regulatory review of water and land development, and specifically identified a shared interest in addressing the water quality impairment of Wassermann Lake;
- WHEREAS in January 2018 the Board of Managers adopted the MCWD Watershed Management Plan (WMP), which incorporated a comprehensive restoration strategy for the SMCHB subwatershed to achieve MCWD's goals of protecting and improving water quality, water quantity, ecological integrity, and thriving communities through land use and water integration. The WMP includes a capital improvement plan, which lists the Wassermann West External Load Reduction and Landscape Restoration and the Wassermann Lake Internal Load Management as implementation projects;
- WHEREAS in November 2017, the Board of Managers approved a contract with Wenck Associates (Stantec) for the Wassermann West Park and Natural Resource Improvements, including the development of feasibility and specifications for alum treatment;
- WHEREAS in September 2018, the Board of Managers accepted a grant award of \$93,879 through the Board of Water and Soil Resources (BWSR) Watershed-Based Funding Pilot Program for the Wassermann West pond alum treatment project;
- WHEREAS in August 2019, the Board of Managers ordered the Wassermann Lake Park Project, which includes alum treatment of the Wassermann West pond, in fulfillment of the MCWD WMP's identification of the project as a planned capital investment to reduce internal nutrient loading, improve water clarity, and create a more abundant and diverse aquatic vegetation community with alum treatments;
- WHEREAS in March 2020, the Board of Managers accepted a grant award of \$284,720 through the BWSR Clean Water Fund grant program for the implementation of the Wassermann Lake Internal Load Management project;
- WHEREAS on June 23, 2020, the Board of Managers ordered the Wassermann Lake Internal Load Management Project in fulfillment of the MCWD WMP's identification of the project as a planned capital investment to reduce internal nutrient loading, improve water clarity, and create a more abundant and diverse aquatic vegetation community with alum treatments;
- WHEREAS on September 24, 2020, the Board of Managers approved a contract with Wenck Associates (Stantec) to analyze collected water chemistry and sediment data to develop specifications for alum treatment of

Wassermann Lake and the Wassermann West pond and to provide construction oversight of the alum application;

WHEREAS on January 22, 2021, Wenck Associates (Stantec) provided technical memos recommending alum application and prescribing dosing and specific treatment areas of Wassermann Lake and the Wassermann West pond to develop a request for quotes for these treatments;

WHEREAS on January 28, 2021, the Board of Managers authorized the release of a request for quotes for the Wassermann Lake and Wassermann West pond alum treatments.

NOW, THEREFORE, BE IT RESOLVED, that the Minnehaha Creek Watershed District Board of Managers hereby authorizes the District Administrator, on advice of counsel, to execute a contract with Clarke Aquatic Services for \$23,020 for the Wassermann West pond alum treatment, and authorizes the Administrator to execute change orders in his discretion up to an additional 10% of the proposal fee for a not-to-exceed of \$25,322.

BE IT FURTHER RESOLVED that the Minnehaha Creek Watershed District Board of Managers hereby authorizes the District Administrator, on advice of counsel, to execute a contract with Clarke Aquatic Services for \$107,714 for the Wassermann Lake alum treatment, and authorizes the Administrator to execute change orders in his discretion up to an additional 10% of the proposal fee for a not-to-exceed of \$118,485.

Resolution Number 21-025 was moved by Manager _____, seconded by Manager _____. Motion to adopt the resolution ___ ayes, ___ nays, ___ abstentions. Date: March 25, 2021

Secretary Date: _____