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January 31, 2024

Project : 227706430

Attention: Kurt Rasmussen
Water Resources Mgmt Spec-Sen
Division of Environmental Management

Jenny Murphy
Natural Resource Basin Supervisor - NorthWest Region
Wisconsin Department of Natural Resources

Sent via email to: Kurt.Rasmussen@wisconsin.gov & Jennifer.CroonborgMurphy@wisconsin.gov

Reference: Lake Mallalieu Dredging Feasibility Study– Preliminary Dredging Application and Low Hazard Grant of Exception Request, St. Croix County, Wisconsin

Stantec Consulting Services, Inc. (Stantec) is working with the Lake Mallalieu Lake Association (the Client) to develop conceptual designs and water resource permit applications for the Lake Mallalieu Dredging Feasibility Study (the Project). This letter is being submitted to the Wisconsin Department of Natural Resources (WDNR) to satisfy the preliminary dredging application requirement detailed in NR 347.05 (1), Adm. Code and to begin the WDNR review of the project. An assessment by the WDNR regarding the need for sediment sampling is anticipated within 30 days of the receipt of this letter.

Pertinent to section 289.43(8), Wis. Stats. or NR 500.08(4), Wis. Adm. Code, the Client is seeking a Low Hazard Grant of Exception (LHE) for disposal via land spreading of dredged material generated as part of this project. Response from WDNR regarding the LHE review and need for additional information is anticipated within 65 days of this submittal.

A summary of the major project components, conceptual plans for dredging and disposal, sediment sampling, and bathymetric surveying are below.

PROEJCT BACKGROUND

Lake Mallalieu is an impoundment of the Willow River, located in the City and Village of Hudson in St. Croix County. The lake is approximately 289 acres in size with a maximum water depth of 20 feet. From 2015-2019, a series of breaches in the Willow River Dam (Little Falls Lake) deposited soft sediment into the delta of the Willow River and two bays of Lake Mallalieu. Decreasing water clarity and quality prompted a desktop analysis of aerial imagery and available gage data from the United States Geological Survey (USGS). The analysis determined that high concentrations of total suspended sediments (TSS) and total phosphorus (TP) were observed during the breach period but were not common during the dammed period from the period of interest (2015-2019). Subsequently, a dredging feasibility study has been proposed to quantify the volume of material to be removed and determine levels of contamination to prevent further deterioration to the aquatic and riparian systems.

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SEDIMENT SAMPLING

If it is determined that sediment samples are necessary for off-site dredge spoil disposal, sampling will occur concurrently with a bathymetric survey to be conducted in spring, 2024. Qualified Stantec personnel will collect cores to a depth of 2ft below the soft sediment in a method compliant with NR347.06 guidelines. Stantec personnel will follow proper collection, handling, and reporting of sampling along with copies of chain of custody forms. Proposed sample locations can be found in Figure 1.

BATHYMETRIC SURVEY

Stantec will complete the bathymetric survey of Lake Mallalieu within an approximately 100-acre study area that includes the upper (north-eastern) portion of the lake and approximately 750 feet of the main Willow River channel, and two adjacent channels. This survey will provide valuable information on the depth of water in the various main lake, bay and channel portions of the Lake that have been targeted for dredging. The study areas for this Project are depicted in Figure 2.

Stantec will utilize a low draft remotely-operated hydrographic survey boat (Z-Boat 1800, developed by OceanScience Group), equipped with a single-beam echo sounder and RTK GNSS antennae mounted on the vessel. Guided by the operator on shore or within a boat, continuous measurements of the depth under the boat will be collected as it follows a pre-determined set of transects across the lake. The Z-Boat's long range wireless link is used to transmit the boat's location data to the handheld acquisition receiver display. This allows the operator to guide the boat and examine in real-time, the boat position, heading and completed survey track. Depth soundings and GNSS positions are acquired using HydroMagic software and stored onboard the unit. Once complete, the data collected on the unit is downloaded onto a computer and then exported into GPS survey software for post-processing.

Stantec will establish track lines (transects) oriented approximately perpendicular to the longitudinal axis of the reservoir. Additional transects will be used within the three Willow River channels shown in Attachment B. Transects will be spaced at approximately 50-foot intervals across the Lake. If issues arise during the survey, the operator can increase accuracy by adding transects, or delete transects in areas where the water is too shallow. Along the survey transects, the boat will record depths at approximately 25-50 feet intervals or less if needed.

DREDGING CONCEPTUAL PLAN

The primary objective of the Project is to quantify and remove the deposited soft sediments that are negatively impacting the aquatic and riparian systems of the Willow River and Lake Mallalieu. Dredging approximately 220,000 cubic yards (yds³) of material from three removal areas (Figure 2) will reduce the amount of TP accumulated in the deposition and reduce potential for future harmful algal blooms. Further, important aquatic and riparian habitat will be restored by increasing water depths and returning substrate to the appropriate state for the native vegetation, macro-invertebrate, and fish populations. The dredging areas and depth are preliminary estimates and will be verified with a comprehensive bathymetric survey.

Soft sediment removal activities will likely be completed via hydraulic dredging equipment to prevent damage to the native lakebed. Floating silt curtain will be installed on the perimeter of the excavation activities to contain temporary turbidity. Material will be removed from the lake bottom and pumped to a sediment dewatering location. Disposal location and methods are dependent on contamination and will be part of the dredging feasibility study findings.

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SCHEDULE

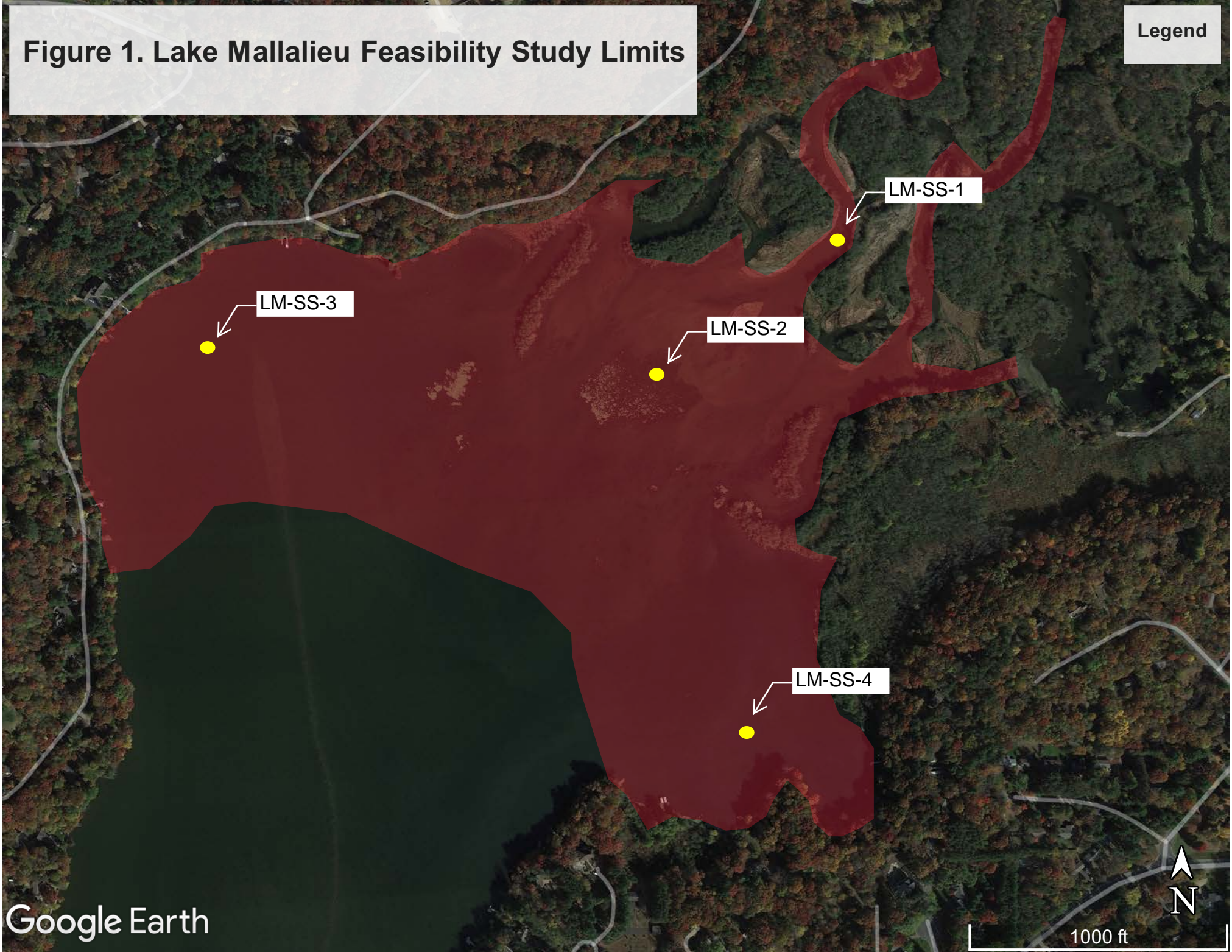
WDNR NR 347 Pre-application Review	February 2024
Sampling and Analysis Plan	March 2024
Sediment Sampling	May 2024
Engineering Design and Permitting	May 2024 to June 2024
Receipt of Approved Permits	July 2024
Contractor Bidding and Award	TBD
Construction	TBD

LOW HAZARD GRANT OF EXEMPTION (LHE)

Per background review, Stantec is seeking a Low Hazard Grant of Exception for the dredge spoils removed from the Project, as the surrounding watershed is largely residential and forested State Park land. Part of the feasibility study is to determine if the material qualifies for dispersal on nearby farm land. Stantec understands that further study may be needed to determine risk of contamination.

Figure 1. Lake Mallalieu Feasibility Study Limits

Legend



Google Earth

1000 ft



Figure 2. Lake Mallalieu Preliminary Dredging Target Areas

