memo

Project Name |	Lake Management: Woodpile, Masterman & Long	**Date** |	04/3/2024
To / Contact info |	BCWD Board of Managers		
Cc / Contact info |	Karen Kill, District Administrator		
From / Contact info |	Pat Conrad and Ryan Fleming		
Regarding |	Scope of Services		

Background

The District developed lake management plans for Long Lake in 2006, Masterman Lake in 2010, and Woodpile Lake in 2011. Each plan included an assessment of the lake and its watershed and a stakeholder engagement process that included a series of meetings with lakeshore residents. Residents were educated on lake and watershed management issues, were asked to provide first-hand observations related to the condition of their lake and helped define future lake management objectives.

At this time, District staff has identified the need to re-engage with residents living on these three lakes. Some of the residents that were involved in the original planning efforts are no longer living on these lakes and new residents have moved in. District staff have noted that the new residents moving on to the lake have not been educated on shallow lake dynamics and have expressed concerns about the abundance of aquatic plants within the lakes.

In addition, the District has updated their approach to developing lake management plans since the development of these plans to include a flood risk assessment element. This element was first conducted for the Bass Lake East and West management plan and has been subsequently applied to the Northern Chain of Lakes, Benz Lake, and to the large ponds throughout the district.

The following is a scope of services to facilitate education/outreach meetings with residents, to conduct the flood risk assessment for the lakes and to incorporate the lakes into the District's web-based Story Map interface.

Scope of Services

Lake & Watershed Assessment

This task will consist of bringing past assessment information up to date for use in the stakeholder engagement process and for incorporation into the District's Story Map interface. The main datasets to be updated will be water quality summaries and any vegetation surveys that have been conducted. We are recommending one additional assessment that was not previously conducted, a shoreline assessment. This assessment will establish the degree to which the shorelines have been modified by property owners and the impact that may have on water quality. EOR will coordinate with the District Administrator and WCD Staff in the data collection task.

This task will include summarizing findings and developing content for the Story Map.

H&H Modeling and Flood Risk Analysis

EOR will update the District H&H Model to better understand hydrologic conditions of Woodpile and Masterman Lakes. The model update will consist primarily of refining catchments, depressional

storage in the landscape, and overland conveyances using LiDAR elevation data. The recently compiled Washington County culvert database will also be added to the model where appropriate. The District H&H Model has been updated more recently for Long Lake.

The updated model will be run to determine the critical events producing peak water elevations for each of the lakes, e.g., 100-year 24-hour, or 100-year snowmelt events. Based on the flood elevations, EOR will determine risk factors for infrastructure within the critical event footprint. The evaluation will look at buildings, wells, septic systems, and roads/driveways. Infrastructure elevations will be determined via desktop by intersecting the features (publicly available point and polygon GIS data) with the LiDAR to estimate the degree of flooding by the critical event. The outcome will be a list of potentially vulnerable infrastructure. Well and septic locational data is not entirely dependable, so a site visit will be needed for confirmation. This task will be conducted following the public engagement effort so coordination with landowners can be facilitated.

The final deliverable for this task will be an update to the District H&H Model for each of the lake watersheds, determination of peak water elevations for critical events, and identification of flood vulnerable infrastructure. Recommended flood risk mitigation strategies will be developed for each of the lakes and vulnerable infrastructure.

Public Engagement

EOR and District Staff will conduct a public outreach effort after updating the assessment work and the preliminary screening process of the H&H Modeling and Flood Risk Assessment. The objectives for the public engagement will be to convey findings from the assessment & analysis work, to coordinate any additional site visits that may be needed and to review the suite of conservation practices lakeshore owners can use to improve the health of their lake. One combined meeting will be held for Masterman and Woodpile Lakes and one meeting will be held for Long Lake. An additional online meeting will be held for all three lakes for a total of three meetings.

Story Map Development

The final deliverable for the project will be a memo summarizing the flood risk assessment and incorporation of content for each lake into the district Story Map.

Task	Estimated Hours	Estimated Cost
Lake/Watershed Assessment	12	$2,380
H&H Model Update and Flood Risk Analysis	60	$9,156
Public Engagement	36	$7,644
Story Map Development	38	$6,776
Totals	**146**	**$25,956**

Requested Action

1. Consider approval of this scope of services for an estimated cost of $25,956 from the following accounts from 923-0000 Flood Risk Assessment