MEMORANDUM
Comfort Lake-Forest Lake Watershed District

To: Board of Managers **Date:** March 21, 2019

From: Mike Kinney

Subject: Hayward Ave Assessment and Feasibility 2019 Scope

Background/Discussion

The Watershed Management Plan contains item 5228B) Forest Lake Diagnostic Study Implementation, which can be broken out into multiple subwatersheds including the Hayward Avenue subwatershed. The 2019 budget contains $35,000 for item 5-228-B4 Hayward Avenue.

The enclosed scope of work from Emmons & Olivier Resources details the recommended next phase of monitoring for this subwatershed.

Recommended Action

Proposed Motion: Manager _____ moves to authorize the administrator, on advice of counsel, to enter into an agreement with Emmons & Olivier Resources in accordance with the March 19, 2019 scope of work and in an amount not to exceed $34,804. Seconded by Manager _____.

Attached: 2019 Proposed Scope of Work – Hayward Avenue

technical memo - forest lmd

Project Name |	5228-B4: (Forest) Diagnostic Impl. - Hayward Avenue	**Date** |	3-19-2019
To / Contact info |	CLFLWD Board of Managers		
Cc / Contact info |	Mike Kinney, District Administrator		
From / Contact info |	Meghan Funke, PhD & Greg D. Graske, P.E.		
Regarding |	2019 Proposed Scope of Work		

This memo details a proposed scope of work for additional project feasibility and planning to be completed in 2019 to further the design and implementation of four medium and high priority projects identified in the EOR 2018 Hayward Avenue Assessment and Feasibility Study report:

- R3 Ditch Checks/Claros Technology (High priority)
- R15 Catchment Cattail Harvesting (High priority)
- R15 Catchment Neighborhood Raingardens (Medium priority)
- R5 Catchment Pond/Wetland Clean Out (Medium priority)

Additional wetland assessments, surveying, soil borings, and preliminary project design and cost estimates will be completed in 2019 for three of these projects. This work addresses the 2019 Budget Item 5228-B4: (Forest) Diagnostic Impl. - Hayward Avenue, approved for $35,000 in 2019 for continued monitoring and project identification and feasibility. Research project evaluation will be completed for the R3 Ditch Checks/Claros Nanotechnology project as directed by CLFLWD staff as part of 2019 Budget Item 3007; no additional work is proposed in 2019 for this project as part of this scope of work.

Task 1. R3 Ditch Checks/Claros Technology (High priority)

The R3 catchment ditch outlet has been identified as a potential test site for the Claros Nanotechnology Media (Figure 1). This media has been developed to specifically remove dissolved phosphorus. To date the technology has only been tested in the lab. CLFLWD and Claros Technologies have discussed using this site for a pilot project to test the ability for the filter media to remove phosphorus in a field setting. Runoff from the ditch on the north side of the road flows through a culvert under North Shore Trail into a ditch connecting it to Forest Lake (2nd Lake). This ditch presents an excellent opportunity for testing the aggregate technology Claros has developed. Multiple installation options are possible, including: ditch checks comprised of Claros aggregate or a subsurface permeable drain trench. An additional benefit of this site is the gravel driveway/boat landing located adjacent along the length of the ditch which would provide excellent access for any improvements. The ditch and road are on a 30' parcel owned by a private landowner, so landowner permission will be required for any projects along this stretch.

Research project evaluation will be completed in 2019 as directed by CLFLWD staff as part of 2019 Budget Item 3007; no additional work is proposed in 2019 for this project as part of this scope of work. A LCCMR grant application was submitted on March 15, 2019. If the Claros technology is determined to be infeasible or ineffective, efforts should shift to the wetland enhancement identified to the north of this site.

Task 2. R15 Catchment Cattail Harvesting (High priority)

The prevalence of narrow-leaf/hybrid cattail within the R15 catchment 40 acre wetland complex, and knowledge that researchers have demonstrated the successful removal of stored nutrients from natural wetland systems through the harvesting of wetland vegetation, provide evidence to suggest that cattail harvesting may be a viable option for reducing phosphorus export from the R15 catchment. There are two large parcels near the outlet that are owned by the City of Forest Lake that are primarily covered by cattails (Figure 1). These areas appear to be a good location to incorporate a pilot project.

Soil profiles and up to 4 soil samples will be collected to determine the phosphorus concentration and structural integrity of the wetland substrate material for cattail harvesting. A wetland vegetation survey and boundary determination will be completed to identify permitting needs and constraints, and a feasibility memo will be completed and presented to the Board of Managers.

Deliverables

Wetland vegetation survey and boundary determination; soil samples and profiles; cost estimate feasibility memo; summary presentation.

Schedule

April – August 2019

Estimated Hours and Cost

108 hours = $11,970; Mileage, equipment and lab expenses = $360; Total cost = $12,330

Task 3. R15 Catchment Neighborhood Raingardens (Medium priority)

The neighborhood areas near Henna Avenue and 229th Street were developed prior stormwater treatment standards (Figure 1). The rural section nature of the neighborhood make it a prime candidate for incorporation of rain gardens with little need for infrastructure alternations.

Soil profile borings will be conducted to determine if the soils are favorable for infiltration. In addition, utility locates will be completed to determine any constraints for rain garden implementation due to the presence of existing infrastructure. If raingardens are determined to be feasibility in the rural section road right-of-ways, it is assumed the District will lead landowner outreach and coordination. District staff will lead landowner outreach with support from EOR as needed. A feasibility memo and preliminary cost estimates for the project will be presented to the Board of Managers.

Deliverables

Soil profile borings; utility locates; feasibility memo; cost estimate; summary presentation.

Schedule

April – August 2019

Estimated Hours and Cost

114 hours = $12,616; Mileage, equipment and lab expenses = $670; Total cost = $13,286

Task 4. R5 Catchment Pond/Wetland Clean Out (Medium priority)

A comparison of historical aerial imagery with more recent aerial imagery revealed three key areas in the R5 catchment which were once dry and possibly farmed that are now inundated, open water wetland habitats (Figure 1). It is plausible that these open water areas contain a large amount of nutrient-laden sediments from previous farming activities as well as a much larger volume of water from the portions of the catchment that have seen an increase in the amount of impervious surface area from the new developments which have largely been constructed after 1990.

Additional water quality and bathymetry data collection will be completed in three open-water areas of the wetland to better understand the hydrology and water quality of these open-water areas, and potential for contributing to the total phosphorus load discharged from this catchment. Three sediment samples will be collected from the open-water areas of the wetland to verify if high concentrations of phosphorus have accumulated in the sediment of the open-water areas. In addition, three water quality samples will be collected to determine the phosphorus concentration of the open water areas. In addition, a sediment sample will be collected from each basin to determine the accumulation of total phosphorus in the basin sediments. A wetland vegetation survey will also be completed to determine permitting needs and constraints.

A feasibility memo and preliminary cost estimates for the project will be presented to the Board of Managers.

Deliverables

Wetland basin bathymetry and sediment total phosphorus concentration; wetland vegetation survey; feasibility report; cost estimate; summary presentation.

Schedule

April – August 2019

Estimated Hours and Cost

74 hours = $8,908; Mileage, equipment and lab expenses = $280; Total cost = $9,188

Recommended Motion

We recommend the Board approve a motion to complete additional monitoring, feasibility and project design in 2019 of three high and medium priority projects from the EOR 2018 Hayward Avenue Assessment and Feasibility Study report, at a total cost of $34,804. This information will be used to advance grant applications in the next round of CWF grant applications due August 2019.

Figure 1. Hayward Avenue Subwatershed Potential Project Location and Prioritization