

Lake Winnepesaukee Watershed Management Plan

Assessment of the Hawkins Brook Sub watershed- Meredith, NH

Background.

The Meredith Community Plan, 2002 (aka master plan) 2002, recommended developing consensus-based watershed and sub watershed management plans as a framework for water resource management. The Lake Waukegan Watershed is identified as a top priority as it serves as our water supply and is the primary inflow to Meredith Bay, Lake Winnepesaukee. The Waukegan Watershed Management Plan was completed in 2005 with the Waukegan Watershed Advisory Committee currently working on numerous implementations activities.

Excluding the Lake Waukegan Watershed, Hawkins Brook is the next largest sub watershed influencing water quality in Meredith Bay. The Hawkins Brook sub watershed is approximately 1,886 ac in size and extends from its outfall at Meredith Bay northerly into the town of Center Harbor. The sub watershed is characterized by numerous potential contaminant sources as suggested by the data noted above. The area is defined by the US Route 3 corridor, municipal facilities, commercial and residential urban development, and a prime wetland.

In 2006, the Lake Winnepesaukee Association submitted its Final Report to NHDES entitled Tributary Monitoring in the Winnepesaukee Watershed. Of the twelve site monitored, two were in Meredith Bay; Hawkins Brook and the canal at Mill Falls. As it relates to Hawkins Brook, the report noted:

1. Higher e-coli counts (> 126 colonies per 100 ml) did occur at Hawkins Brook in 2004 and 2005
2. The Hawkins Brook site was the only consistently problematic site in terms of oxygen levels
3. Turbidity levels at all sites except Hawkins Brook were well below the 10 ntu standard for Class B waters
4. Hawkins Brook showed the highest conductivity levels consistently through 2004 and 2005.
5. Only the Hawkins Brook site reached the 50 ppb level of concern in June, July and August of 2004

According to the 2008 Water Quality Monitoring Report prepared by the UNH cooperative Extension and the UNH Center for Freshwater biology;

1. The Hawkins Brook sampling station exhibited the highest median and average chlorophyll a concentrations
2. Short term water clarity reductions and short term algal blooms have historically been documented in Meredith Bay and suggest periodic pollutant inputs particularly the nutrient phosphorus.
3. A June 2008 cyanobacteria bloom indicates that Lake Winnepesaukee is susceptible to short term algal blooms in localized sections of Meredith Bay.

In 2009, Rick Van de Poll, Ph.D. completed the Natural Resources Inventory for the Town of Meredith Phase II. Van de Poll concluded that the Hawkins Brook Prime Wetland has been significantly compromised by human activity and is not recommended that its status as “prime” be continued. This is not to suggest that the wetland doesn’t perform important water quality functions, but rather its

ecological integrity has been compromised. This suggests that the Hawkins Brook wetland may very well be an ideal candidate for restoration and enhancement activities.

The problems are significant and complex. The solutions need to be varied, interrelated and comprehensive in scope. A thorough assessment of the subwatershed area is warranted. An assessment should at a minimum answer the following questions:

Where does the water come from? Conduct a detailed drainage map associated with the Hawkins Brook sub watershed including storm drains, inflows etc.

Where does the polluted runoff come from? Conduct a parcel level land use analysis of potential contaminant sources.

What are the hydrological characteristics of the sub watershed and of Hawkins Brook? Prepare a drainage analysis of the Hawkins Brook sub-watershed;

How is the Hawkins Brook wetland complex functioning at present? Conduct a functional assessment of the Hawkins Brook wetland system to establish a baseline of existing water quality and water quality wetland functions and efficacies.

Are there reasonable opportunities to enhance the functionality of the existing wetland? Develop alternative scenarios to maximize water quality treatment (sediment trapping, nutrient removal, flood control, etc.) including estimated load reductions thereby reducing inputs into Meredith Bay.

What are our options? Evaluate the alternatives, develop preliminary estimated costs and determine a cost-effective, preferred alternative.

What enhancements are recommended? Develop design plans and specifications of the preferred alternative that is "application ready" including detailed cost estimates.

Are there additional opportunities to employ best practices and retrofits to help improve water quality in the Hawkins Brook sub water-shed? Identify specific BMP/LID opportunities for developed public and private properties. Identify willing land owners interested in partnering with the LWVA, NHLA and the Town of Meredith as we proceed to secure funding to implement the result of the study.

How would we measure success? Establish baseline water quality characteristics along Hawkins Brook building upon the tributary study submitted in 2006. Recommend post-construction water quality monitoring testing program associated with the proposed wetland enhancements and BMP/LID measures including cost estimates.