

DATE: Feb. 23, 2023 FILE REF: NA

TO: Mike Polkinghorn, Limit Calculator

FROM: Jon Kleist, Stream Biologist; Kristi Minahan, Water Quality Standards; Diane Figiel, Limit Calculator Coordinator

SUBJECT: Whitecap Mountains Sanitary District, receiving water classification (flow path to Alder Creek (WBIC 2908700)), Iron Co.

Overview of issue

Jon Kleist was asked to do a site visit at the Whitecap Mountains Sanitary District prior to reissuance of their permit. The receiving water is not listed in ch. NR 104 as Limited Aquatic Life (LAL) or Limited Forage Fish (LFF), but has been receiving permit limits based on LAL because the discharge was described as being “overland flow to Alder Creek”. The purpose of the site visit was to determine the flow path of the facility’s discharge before it reaches Alder Creek, and specifically whether the direct receiving water is appropriately classified as diffuse surface water or wetland (both of which would fall under the LAL classification) or whether it is channelized with sufficient flow and habitat to support fish, in which case a full fish and aquatic life classification (warmwater) would apply.

The facility typically discharges once per year over a three week period starting in early October; occasionally they also discharge in the spring. The reported flow rate on days of discharge is 0.1 MGD.

Summary of recommendations

- **Segment 1 (most upstream): From facility outfall to Alder Creek**
 - *Codified designated use:* It is not in NR 104 as LAL, but because it fits the definition of diffuse surface water, it is automatically classified as LAL.
 - *Classification used for previous permit issuance:* LAL
 - *Previous stream class recommendations:* The 2003 proposal recommends it be added to NR 104 as LAL.
 - *Modeled Natural Community:* Not modelled
 - *New recommended Designated Use:* LAL-Diffuse surface water
- **Segment 2: Alder Creek**
 - *Codified designated use:* Coldwater (is a Class III trout water currently and in the 1980 Trout Book)
 - *Classification used for previous permit issuance:* Coldwater
 - *Previous stream class recommendations:* NA
 - *Modeled Natural Community:* Cool-Cold Headwater
 - *New recommended NC & DU:* NA (these were not reviewed at this time)

Site observations

On August 24, 2022, Jon Kleist met with Kevin Peltonen, with the Whitecap Sanitary District to inspect the discharge from the wastewater treatment plant (WWTP). The WWTP system is a fill and draw with 3 ponds. The southernmost pond elevation is controlled by a dam structure which discharges into a 2nd control structure with a single notched weir which meters flow into two concrete tanks which then discharge via outlet pipe to an unnamed watercourse and then flows in a southerly direction about ¼ mile toward Alder Creek. I did not look inside the control structure at the outlet of the pond (Site Photo 1); according to Kevin there is a stoplog structure that is used to drawdown the ponds. He lets out water until the elevation in the structure with the weir reached the 2nd nail from the top (Site Photo 2). I observed

several nails spaced maybe a ½ inch apart sticking out of a track on the west side of the structure, used to measure discharge levels. Kevin said he currently draws the ponds down 1x a year over a 3-week period starting in early October. He also said he has never looked into the 2 concrete tanks but thought they may have been intended for chlorination of the wastewater (Site Photo 3).

The outlet pipe was hidden under a pile of rocks and timber harvest debris at 46.3978, -90.39628 (Site Photo 4). It discharged into a well-vegetated wetland swale and flowed southerly toward Alder Creek (Site Photo 5). I followed the discharge route from the southernmost pond southerly toward Alder Creek. I used a GPS to track my route as I followed the flow path about 1100 feet or 0.2 miles southerly (Figure 1). The black diamond is the point of discharge, and the orange line is my best estimate of the flow of water. Based on map measurements and a GPS waypoint, I estimate I lost any evidence of channelized flow about 150 feet from Alder Creek, in a mixed alder and forested wetland (Figure 3). I did not try to reach Alder Creek as the wetland soils were completely saturated with water slightly ponded at the surface, about 20 feet from where I lost any evidence of channelized flow. At that point wetland hydrology was likely influenced by a beaver dam on Alder Creek. The flow path basically followed the contour lines of the USGS Topographic Map (Figure 2). There is a steep gradient with over 40 feet of elevation change from the discharge point to the wetland edge of Alder Creek (Figure 2). When I could find a channel, it ranged from 6 to about 36 inches wide and if filled would be less than an inch to about 4 inches deep (Site Photo 6). There was no surface water in the channel or in any wetlands (Site Photo 7) until I reached the wetlands near Alder Creek.

The waterway is unlikely to have flowing water except during spring runoff or during discharge from the WWTP ponds and is unlikely to support fish. The limited channel morphology consisting of barely observable channel banks and a vegetated stream bed with a few washed rocks and exposed tree roots support this determination.

The effluent has the potential to reach Alder Creek especially during frozen or saturated soil conditions. There is over 40 feet of elevation change over 0.2 miles from the discharge pipe to Alder Creek. The channel dimensions are narrow and shallow, and the wetland areas are limited to a few small shallow depressions about 2500 sq ft or less and 6 to 8 inches deep, neither of which will store much runoff or effluent water. The effluent will likely flow downslope until it reaches the larger mapped wetland complex along the Alder Creek floodplain (Figure 3).

Discussion

Because the direct receiving water has a steep gradient, limited channel morphology, only flows during effluent discharges, spring runoff, or after a rain event we believe it is appropriate to continue the application of a “LAL-diffuse surface water” classification, with downstream protection limits for Alder Creek. It fits the definition of diffuse water in ch. NR 104.02(1)(b) “any water from rains, intermittent springs, or melting snow which flows on the land surface through ravines, etc., which are usually dry except in times of runoff.” This segment could also potentially qualify as a wetland. Under ch. NR 104.02(3)(b), it specifies that the LAL classification shall be applied to all diffuse surface waters and wetlands. We recommend that this segment be added to ch. NR 104 as LAL-diffuse surface water in the future.

Maps and Photos



Figure 1. Aerial Photo Map: Orange line indicates flow path from facility outfall (black triangle) to Alder Creek.

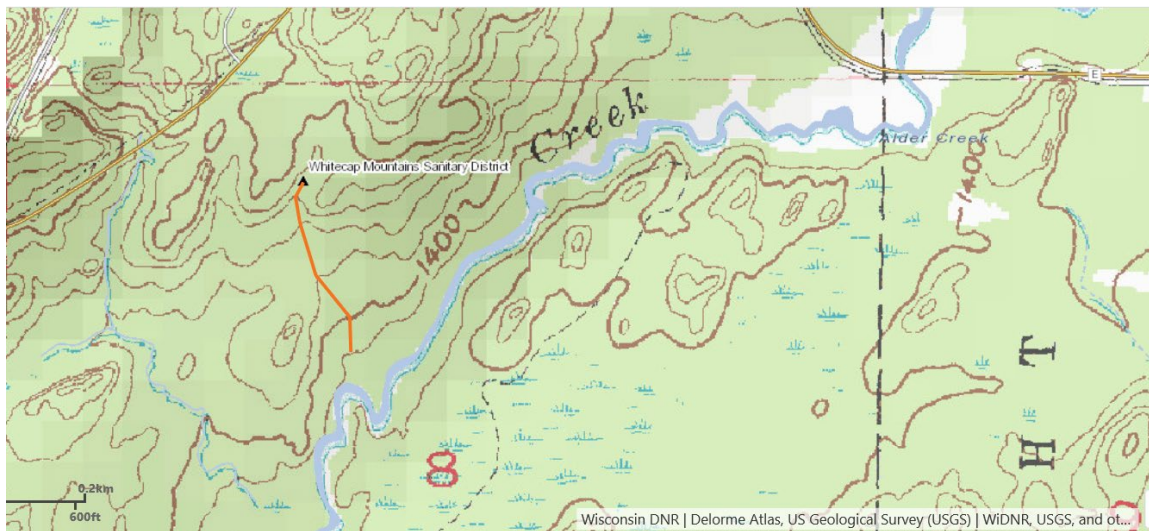


Figure 2. USGS Topo Map: Orange line indicates flow path from facility outfall (black triangle) to Alder Creek.





Site Photo 2. Concrete Structure with notched weir used to measure flows from ponds during discharge. Note the nails in a track center right of photo. Flows adjusted until water level reaches 2nd nail from top during discharge.



Site Photo 3. One of two concrete tanks observed between treatment pond outlet and discharge point.



Site Photo 4. Pipe outlet coved by rocks and timber slash.



Site Photo 5. Wetland swale at outlet pipe discharge point



Site Photo(s) 6. Typical channel.



Site Photo(s) 7. Typical wetland depressions.