

DATE: 1/14/2025 FILE REF: NA

TO: Ben Hartenbower, Limit Calculator; Adebowale Adesanwo, Compliance Engineer

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

SUBJECT: Wilson WWTF, unnamed tributary to Wilson Creek (WBIC 2066000), Saint Croix County

### Overview of issue

In preparation for reissuance of the Wilson WWTF permit, staff were requested to do a site visit to determine the appropriate stream classifications for the receiving waters. Wilson WWTF is a noncontinuous discharger, with a permitted daily maximum flow of 0.15 MGD (0.23 cfs). They discharge daily during October each year, occasionally into November.

The immediate receiving water is an unnamed dry run to Wilson Creek (Segment 1). The next segment farther down is Wilson Creek (Segment 2). Segment 1 is an intermittent stream channel or dry run when Wilson WWTF is not discharging. No fish or aquatic life were observed during their seasonal discharge. Under non-precipitation conditions the effluent from the WWTF is lost to groundwater within approximately 400 meters from the outfall, further limiting the potential of the segment since there is limited potential for upstream migration into the segment. The facility's previous permit limits were based on Limited Aquatic Life (LAL).

The receiving water was described in the previous limit memo (2020) as follows:

Limited Aquatic Life Community. Wilson Creek at the outfall location can be classified hydraulically as a diffused surface water as defined in NR 104.02(1)(b) and carries a default classification of limited aquatic life. The volume of effluent discharged also seeps into groundwater prior to reaching the permanent flowing portion of Wilson Creek.

On 10/16/2024, Chris Willger, Stream Biologist, along with Mycal Raleigh did a site visit to assess the receiving water and downstream water. The main objective of this site visit was to verify whether the receiving water is a diffused surface water and that the effluent does not create flow conditions with the potential to support fish. Additionally, staff looked for connectivity with the downstream water, Wilson Creek.

### Summary of recommendations

- **Segment 1:** Unnamed dry run to Wilson Creek
  - *Codified designated use:* This has been considered a diffused surface water, which qualifies as an LAL per s. 104.02(3)(b), even though it is not specifically listed in ch. NR 104.
  - *Classification used for previous permit issuance:* LAL
  - *Previous stream class recommendations:* Recommendations from 2003 proposed classifying this as "LAL from the WWTF outfall in the NW ¼ SW ¼ T29N R15W S35 to second railroad crossing in the NE1/4 SE ¼ T29N R15W S35"
  - *Modeled Natural Community:* Coldwater
  - *New recommended Natural Community and Designated Use:* Natural Community is recommended as Macroinvertebrate; recommended Designated Use is LAL – Diffused Surface Water (the proposed extent to be listed as LAL in 2003, shown above, is still appropriate)

- Farther down the system is Wilson Creek, which is modeled as a Coldwater Natural Community. However, the unnamed dry run does not reach Wilson Creek.

### Site overview map



### Site observations

No fish or aquatic life were observed during their seasonal discharge on 10/16/2024. Under non-precipitation conditions the effluent from the WWTF is lost to groundwater within approximately 400 m from the outfall, further limiting the potential of the segment since there is limited potential for upstream migration into the segment.

### Discussion and Designated Use Recommendations

In our professional judgement, the segment fits into the Limited Aquatic Life classification, as this portion is disconnected from downstream waters, and disappears to groundwater ~400 meters downstream of the outfall pipe.

### Are code changes and/or a Use Attainability Analysis needed?

- The dry run meets the definition of a diffused surface water in ch. NR 104.02(1)(b): “Diffused surface waters: This classification includes 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. [...]”
- Under ch. NR 104.02(3)(b)1, diffused surface waters are automatically classified as LAL per; the code states that LAL “shall be applied to all surface waters classified as effluent channel, wetland or diffuse surface water”. Because it is included in the LAL category per code, it does not necessarily need to be added to the ch. NR 104 tables of LAL and LFF waters, but could be added for clarity.

**Photos**



*Photo 1 - Effluent discharge on left, before entering culvert under USH 12 and flowing northwest towards Wilson Creek.*



*Photo 2 – Effluent entering channel from left, dry run above effluent input.*



*Photo 3 – Downstream side of USH 12 culvert.*



*Photo 4 – End of effluent, and back to dry run channel 400 meters downstream of outfall.*