

DATE: 1-4-2024 FILE REF: NA

TO: Mike Polkinghorn, Limit Calculator; Arthur Ryzak, Compliance Engineer

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

SUBJECT: Village of Tony, Unnamed trib. (WBIC 2223400) to Deertail Creek (WBIC 2221700), Facility name, Rusk County

### Overview of issue

In preparation for reissuance of the Village of Tony permit, staff were requested to do a site visit to determine the appropriate stream classifications for a portion of the receiving waters. Village of Tony is a noncontinuous discharger, with a daily maximum flow permit limit of 0.136 MGD (0.210 cfs). Their permit says they operate fill & draw in Apr-May & Sept-Nov; and continuous for the remaining months.

NR 104 lists Segment 1 of the receiving water as Limited Aquatic Life-Wastewater Effluent Channel (LAL-WWEC) from the discharge outfall to a wetland, and Segment 2 as LAL-Wetland down to Townline Rd (combined, the total LAL extent is ~0.32 mi). Current code lists Segment 3 of the stream as LFF from Townline Rd to Deertail Creek; however the permit memo treats the whole stretch above Deertail Creek as LAL for a total of ~3 miles (i.e. the LFF portion is also treated as LAL). In the previous permit, downstream protection limits were calculated for Deertail Creek (Seg 4) but not for protection of the LFF, Segment 3. Therefore, no downstream protection phosphorus limits were included because they were not needed based only on Deertail Creek. However, it appears this is inconsistent with the code.

The main purpose of this site visit was to:

- Determine whether Segment 2 is a wetland, & whether it is channelized/could support fish.
- Determine whether Segment 3, currently listed as LFF in code, should more appropriately be classified as LAL (not able to support a fish community) as currently applied in the permit, LFF as currently codified, or another classification. If LAL is appropriate, limits based on LAL may be retained and the code should be revised to LAL for Segment 3. If not, then limits should be recalculated to be protective of the appropriate classification.

After the surveys and evaluation, for the upcoming permit reissuance we recommend using LAL limits for the wastewater effluent channel and wetland. However, the segment along Townline Rd should at a minimum be treated as LFF (as in the current code), but is recommended to be changed to Warmwater Sport Fish in the future and a note to this effect should be included in the permit. Phosphorus limits should be considered for downstream protection starting at Townline Rd.

The limit calculator also requested a set of monthly total phosphorus samples (May-Oct) but these were not available due to funding limitations.

### Summary of recommendations

- **Segment 1 (most upstream): Wastewater effluent channel from lagoon to wetland**
  - *Codified designated use:* LAL: “Channel from Tony Lagoon to wetland” is “effluent ditch” (LAL)
  - *Classification used for previous permit issuance:* LAL
  - Previous stream class recommendations: 2003 proposal recommends retaining the existing LAL-WWEC code segment (2003 recommends slightly changing the description, but the actual extent is the same).
  - *Modeled Natural Community:* NA
  - *New recommended Natural Community and Designated Use:* LAL-Wastewater Effluent Channel

- **Segment 2: Wetland from effluent ditch to Town Line Rd**
  - *Codified designated use:* LAL: “drainage from effluent ditch to Town Line Road” is “wetland” (LAL)
  - *Classification used for previous permit issuance:* LAL
  - *Previous stream class recommendations:* 2003 proposal recommends retaining the existing LAL-Wetland code segment (2003 recommends slightly changing the description, but the actual extent is the same).
  - *Modeled Natural Community:* NA
  - *New recommended Natural Community and Designated Use:* LAL-Wetland
  
- **Segment 3: Road ditch along Townline Rd into Unnamed trib. (WBIC 2223400), to Deertail Creek**
  - *Codified designated use:* LFF: “tributary to Deer Tail Creek below Town Line Road” is “Noncontinuous” (LFF)
  - *Classification used for previous permit issuance:* LAL (note: the permit limits based on LAL are inconsistent with the codified LFF and with the 2003 recommendations)
  - *Previous stream class recommendations:* 2003 proposal recommends retaining the existing LFF code segment (2003 recommends slightly changing the description, but the actual extent is the same).
  - *Modeled Natural Community:* Cool-Warm Headwater (Warm Transition Headwater).
  - *New recommended NC & DU:* Recommend changing the code to remove LFF from this trib; recommend Warmwater Sport Fish DU. A historic fish survey at Becker Road in 2012 was completed during the index period. Natural community verification recommends this stream be classified a warm transition headwater. Fish surveys on this stream in 2023 were prior to the index period so NC verification was not reviewed for these surveys however, the species captured in 2023 are consistent with a warm transition headwater natural community. The capture of northern pike in 2012 and 2023 shows sport fish use this waterway.
  
- **Segment 4: Deertail Creek (WBIC 2221700)**
  - *Codified designated use:* Not listed in ch. NR 104, so defaults to Warmwater
  - *Classification used for previous permit issuance:* Warmwater
  - *Previous stream class recommendations:* NA
  - *Modeled Natural Community:* Cool-Warm Headwater
  - *New recommended NC & DU:* Not surveyed this year; there is previous data farther down. This would be a Warmwater DU.

**Site overview maps**

Figure 1. Overview map from DNR Surface Water Data Viewer.



Figure 2. Site Map showing wastewater treatment plant (WWTP) relative to Village of Tony and Air photo of the WWTP ponds, outlet, Stream Segments including effluent ditch line (Seg 1) into to wetland (Seg 2) and waterway along North side of Town Line Road (Seg 3). Orange arrows indicate channelized flow and direction. Red Triangle is the fish survey site upstream of Town Line Road (other fish survey sites are shown in Fig. 3).

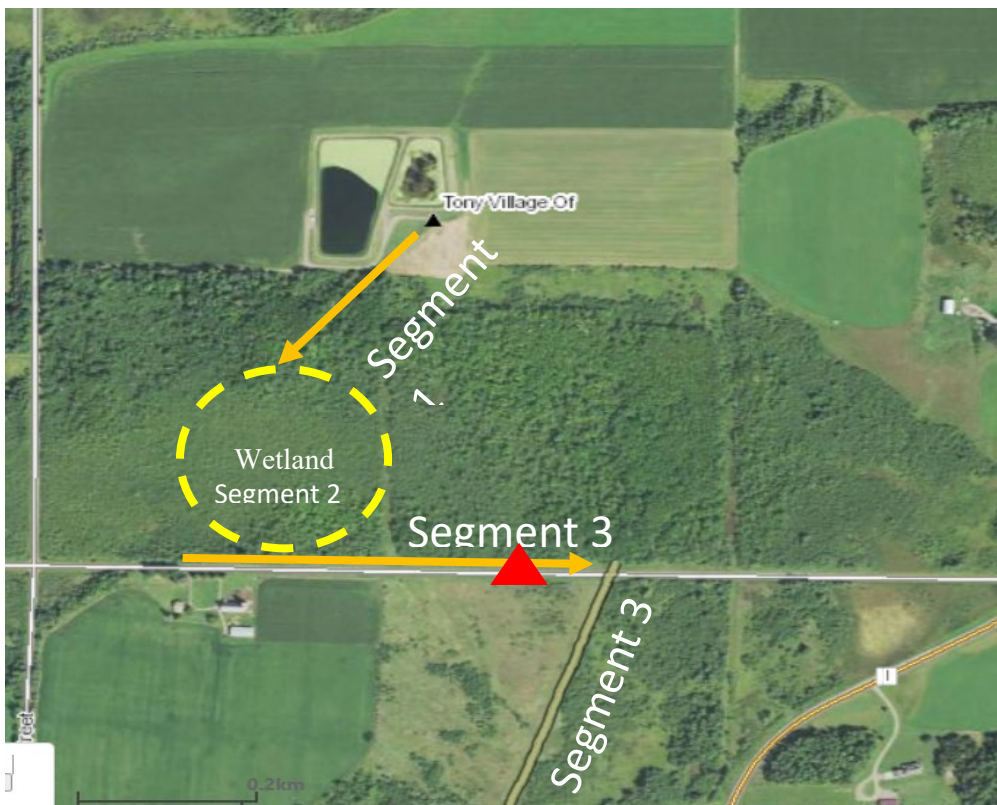


Figure 3. Site Map of Fish Survey Stations, Unnamed Stream, and Deertail Creek.



### Site observations

- Segment 1 (most upstream): Effluent Channel into wetlands
  - The channel originates at the outfall of the Tony WWTP ponds and flows southwesterly into a forested, alder, and sedge wetland complex. The channel is straight and is easily observable in air photographs until it enters the wetlands. The channel continued in the wetlands approximately 200 m until a single channel was no longer observable. During the August 18, 2023 site visit water was present in the ditch channel in the wetland complex but little if any flow was observable.
- Segment 2: Wetland
  - After channelized flow is no longer visible, water or effluent would spread into wetlands forming several smaller channels or would disperse through the alder and sedge wetland complex flowing in a southeast direction. Standing water was observed throughout the wetland complex on August 18, 2023. We also considered whether the flow path of the effluent went more westerly toward the several small intermittent streams to the west

(Meadowbrook tributaries, etc.). However, tracing the flow path confirmed that it did go south and east to the road ditch along Townline Road.

- Segment 3 (first part): Ditch line on North side of Townline Road:
  - A visible channel was observed along the north side of Townline Road. The channel banks were well vegetated consisting mostly of reed canary grass; channel bed was mucky but wadeable. Flowing water was present in the channel during the spring site visit on May 25, 2023. The flows originated well upstream of (west of) where the WWTP discharge likely enters the waterway. The flow originated upstream of the intersection of Cemetery and Townline Roads. A fish survey (Figures 2 and 3 Red Triangle) was conducted starting at the culvert crossing on Townline road and continued upstream approximately 100 meters. A minnow community was observed and 94 fish (6 species) were captured.
- Segment 3 (continued): Stream channel continued as mapped as WBIC 2223400, south of Townline Road.
  - The stream channel was observed south of Townline Road, CTH P, and Oak Grove Road crossings on May 25, 2023. A defined channel was observed with flowing water at each crossing. A short fish survey (approximately 25m) was conducted upstream of Oak Grove Road crossing to look for the presence of fish (Figure 3 Blue Triangle). The fish survey was discontinued as a diverse fish population was quickly observed, 48 fish from 8 species were captured including a 211 mm northern pike.

### **Fish survey results**

Fish surveys were conducted at 2 stations on May 25, 2023. A historical fish survey completed June 7, 2012 is reported in the fish and habitat database.

Station 1, Red Triangle. Upstream of Culvert Crossing on Townline Road (Figures 2 & 3): A 100 m station was surveyed along the road ditch on the north side of Townline road starting just upstream of the culvert crossing. The stream channel wetted widths ranged from about 0.5 to 1.3 meters. The stream channel banks were heavily vegetated with reed canary grass and the stream channel bed was mucky. Maximum water depths were approximately 0.3 m. Six species of fish were captured during the survey with mudminnow being the most common. A small channel of flowing water was observed entering the road ditch along a cleared area, probably a property line. The fish survey was extended up this channel slightly to the edge of the road right of way. Two creek chubs were captured in this channel. A qualitative fish habitat rating for streams less than 10 m wide was completed. The habitat score was 40, with % pool area, riffle/riffle-bend/bend, and % fine sediments getting a score of 0 as the stream had extensive sediments and no bends, riffles, or pools in the station.

Station 2, Blue Triangle. Upstream of Bridge Crossing on Oak Grove Road (Figure 3). A short fish survey of approximately 25 m was conducted upstream of Oak Grove Road bridge. Eight species of fish including a 211 mm Northern Pike were captured (Table 2). The survey was ended as the intent was to document the presence of fish and once a game fish along with a couple fish species of intermediate tolerance were captured there was limited value in continuing. The stream channel was ditched though this reach but was beginning to re-meander within the ditched channel. The stream banks were well vegetated with woody and herbaceous vegetation. Soft sediments were present on the stream margins however the main channel bed was sand and small gravel. A qualitative fish habitat rating for streams less than 10 m wide was completed based on what could be observed from the end of the fish station. The habitat score was 55, with % pool area getting a score of 0 as the stream had no pools visible.

Station 3, Orange Triangle. Downstream of Culvert Crossing on Becker Road (Figure 3). A fish and habitat survey were completed on June 7, 2012. Five species of fish were reported in the survey. The fish IBI score is a 30; poor. Survey notes describe the channel banks as dominated by reed canary grass. The stream channel was historically straightened, and the stream bed had coarse substrate embedded by silts. The habitat score was 35 with % pool area, riffle/riffle-bend/bend, and % fine sediments getting a score of 0 as the stream had extensive sediments and no bends, riffles, or pools in the station. Natural Community verified as Cool-Warm Headwater (a.k.a. Warm Transition Headwater).

### **Discussion and Designated Use Recommendations**

***Note: Recommendations from this site visit are shown at the top of this memo.***

- A Site Visit to the Tony WWTP site on August 18, 2023, showed that water flows originate at the outlet pipe of the eastern most treatment pond and flow through a manmade channel in a southwesterly direction. This channel extends into the wetland complex in a southwesterly direction but eventually loses its single channel. At this point the flows begin to move in a south to southeasterly direction toward Townline Road either overland, through wetland soils or in small diffuse channels. It is approximately 250 to 300 meters between the WWTP channel end in the wetlands to the channelized waterway along Townline Road. A backpack shocker was used to look for fish in the standing pools of water in the ditched channel within the wetlands downstream of the WWTP outlet on August 18<sup>th</sup>, 2023, none were observed.
- The road ditch on the north side of Townline Road collects water from the nearby wetlands and other waterways and ditches to the west of the Tony WWTP. These flows combine and continue along the north side of the Townline Road to a culvert crossing, then the flows head south toward Deertail Creek. The culvert crossing on Townline road is visible in the aerial photographs and is the point where the stream channel is shown on the USGS 7.5 minute topo maps. This is also the point at which the channel receives a WBIC number, however channelized flows originate well upstream of this point.
- The stream channel continues to head south to south westerly until its confluence with Deertail Creek (WBIC 2221700).
- Fish Surveys completed in May of 2023 and June of 2012 captured 9 species of fish including 2 gamefish. A young of year and 211 mm Northern Pike were captured at Becker Road and Oak Grove Road crossings in 2012 and 2023 respectively. This suggests that northern pike use this waterway in the spring and likely spawn in the adjacent wetlands.
- A fish population consisting of 6 species was present in the road ditch along Townline Road in May of 2023, likely attracted there by the spring flows. This channel was mostly dry and not flowing in August of 2023.
- A more diverse fish population was present in the waterway at Oak Grove Road (8 species). Judging by its position in the watershed and channel dimensions there is probably a more permanent flow of water and better habitat leading to the more diverse fish community.
- No barriers to fish passage were observed at any road crossings or are known within the area surveyed. Fish were documented using the available stream habitat throughout the entire reach upstream of Townline Road and most likely use the waterway whenever water is present and especially during spring flows. The modifications (ditching) of wetlands and the stream channel combined with land use practices have degraded the fish habitat but the stream still supports a fish population. Many of these are tolerant fish species but a couple species are of intermediate tolerance and there is gamefish use.
- The lack of channelized flow, distance, and vegetation in the wetlands between the channels at the WWTP and Townline Road prevent any fish from reaching the ditched channel from the WWTP

pond outlet into the wetlands. There is enough water and habitat to support a macroinvertebrate community in this channel and wetlands.

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

Recommend retaining LAL-WWEC and LAL-Wetland portions, but removing LFF from code. The codified LFF portion contains an existing warmwater game fish community and should therefore be considered a full warmwater sport fish designated use.

**Attachments**

- Photos
- Fish surveys
- NC Verification Report
- Habitat surveys

**Site Photos May 25, 2023**



Photo 1. Unnamed tributary looking upstream (West) at culvert crossing on Townline Road.



Photo 2. Unnamed tributary looking upstream (west) along Townline Road.



Photo 3. Electrofishing survey in unnamed tributary looking downstream (east) along Townline Road.





Photo 4. Fish captured in survey of unnamed tributary upstream along Townline Road.



Photo 5. Unnamed tributary looking upstream of CTH P.



Photo 6. Unnamed tributary looking downstream at CTH P.



Photo 7. Unnamed tributary looking upstream of Oak Grove Road bridge.



Photo 8. Unnamed tributary looking downstream of Oak Grove Road bridge.



Photo 9. Unnamed tributary looking downstream at Oak Grove Road bridge.



Photo 10. Unnamed tributary looking upstream from end of fish survey US of Oak Grove Road bridge. Note the ditched channel with wetland margins.



Photo 11. Fish captured during electrofishing survey upstream at Oak Grove Road bridge. Note several species visible in net: mudminnow, creek chub, Northern Redbelly Dace, White Sucker.



Photo 12. Northern Pike Captured in fish survey US Oak Grove Road bridge.

# Natural Community Verification Report

Waterbody Name (WBIC): UNNAMED SINGLE-LINE STREAM T34N-R5W-S8 (2223400)

Swims Station ID: 10037881

Survey Sequence Number: 368790182

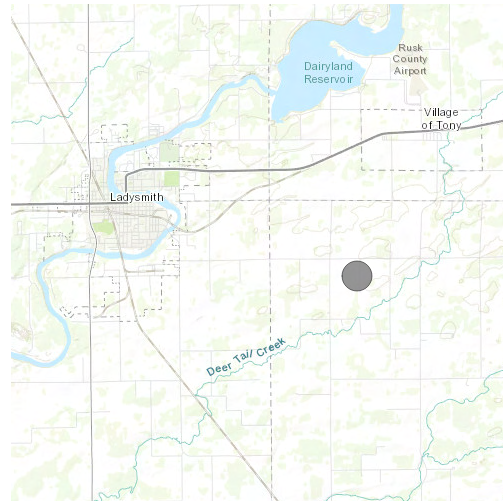
This NC Verification Report was run on Unnamed Stream 110 m DS Becker Rd, (10037881), located in RUSK County with fish Survey Sequence Number 368790182 sampled on June 7, 2012. The Natural Community for this station was verified by Jon Kleist on December 18, 2023.

The Natural Community was modeled *Warm Transition Headwater* and is now Verified as *Warm Transition Headwater* .

## Fish captured

| Species           | Count |
|-------------------|-------|
| BROOK STICKLEBACK | 7     |
| CENTRAL MUDMINNOW | 18    |
| CREEK CHUB        | 1     |
| NORTHERN PIKE     | 1     |
| WHITE SUCKER      | 5     |

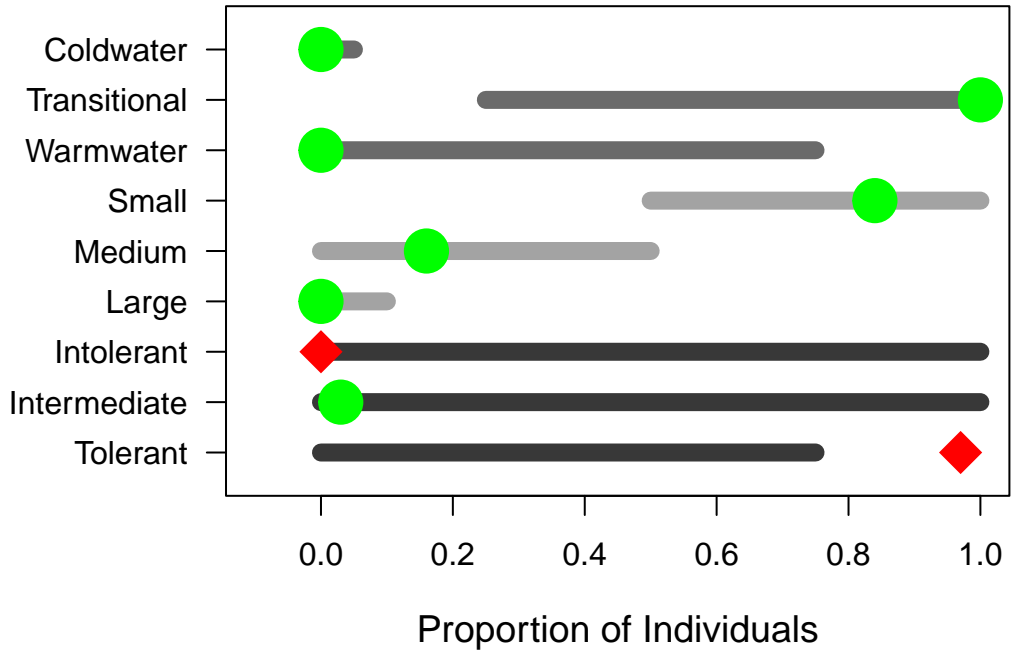
## Survey location



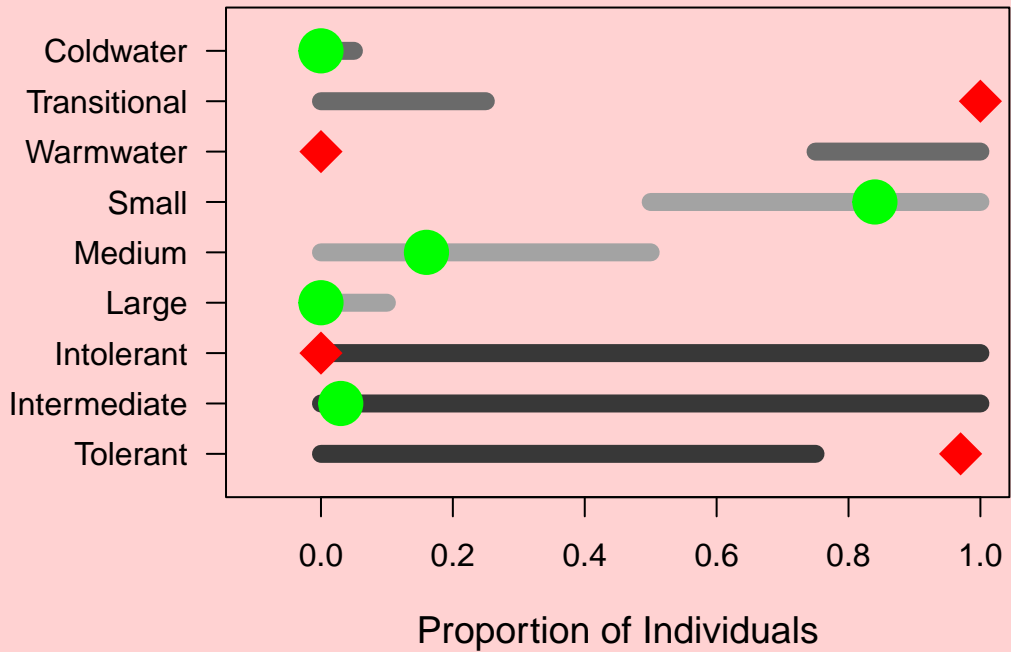
## Guild percentages

| Thermal      | Percent.Indiv. | Size   | Percent.Indiv. | Tolerance    | Percent.Indiv. |
|--------------|----------------|--------|----------------|--------------|----------------|
| Coldwater    | 0              | Small  | 84             | Intolerant   | 0              |
| Transitional | 100            | Medium | 16             | Intermediate | 3              |
| Warmwater    | 0              | Large  | 0              | Tolerant     | 97             |

### Warm Transition Headwater Guild Test



### The NC shown below was considered but NOT selected Warm Headwater



**Comments from WR Biologist:**

Natural community previously verified, re check for Tony WWTP review. YOY northern pike in survey.



Unnamed Trib to Unnamed Trib (2223400) to Deer tail Cr @  
Townline Rd US Culvert

STREAM FISH SURVEY FORM

|  |  |   |
|--|--|---|
| Stream Name: Unnamed Trib                                | <input checked="" type="checkbox"/> Backpack <input type="checkbox"/> Stream shocker | Date: <del>08/20/03</del> 05/25/23  |
| WBIC: 2223400  | Current <input type="checkbox"/> DC <input checked="" type="checkbox"/> KPDC         | Start time: 1140  |
| Station Name/Description:                                | Volts: 310 Pulse Rate: 90  | End time: 1200  |
| Unnamed Trib to Deer tail Cr @ Townline Rd to US Culvert | Amps: 1.2 Duty Cycle: 10   | Total time: 20  |
|  | No. of dippers/anodes: 1   | Distance shocked (m): 400   |
| Start Lat: 45.46578                                      | Water temp (C or F): 13.95   | Mean width (m): 0.9   |
| Start Long: -90.99890                                    | D.O. (mg/l): 4.8 46%   | Water Level -   |
| End Lat: 45.46581  | Conductivity (umhos/cm): 69  | high <input type="checkbox"/> norm <input checked="" type="checkbox"/> low <input type="checkbox"/> |
| End Long: -90.00022                                      | pH: 5.41   |   |
| Collectors: Kleist, LeFevre                              | Transparency (cm): 44  |   |
|  | Flow (cfs):  |   |
|  | Field Sample i.d.  |   |

Comments: Road Ditch - 100 m Survey from Culvert US - Wetted width 0.5 to 1.3 m - Bottom very muddy - Channel lined w/ RCG  
Water depth up to 0.3 m - 6 Species of Fish captured

AIS Observed mud minnow, most common followed by Creek Chub

| Species/Count (list lengths for sportfish) |      |
|--|------|
| 1. Mudminnow                               | (41) |
| 2.   |      |
| 3. Brook stickleback                       | (6)  |
| 4.   |      |
| 5. Creek Chub                              | (38) |
| 6.   |      |
| 7. White sucker                            | (3)  |
| 8.   |      |
| 9. Fathead minnow                          | (5)  |
| 10.  |      |
| 11. Pearl Dace                             | (1)  |
| 12.  |      |
| 13.  |      |
| 14.  |      |
| 15.  |      |
| 16.  |      |

17. shocked ~ 5m us of what appeared to be the channel from treatment plant ~ 2 Creek Chubs

|     |
|-----|
| 18. |
| 19. |
| 20. |
| 21. |
| 22. |
| 23. |
| 24. |
| 25. |
| 26. |
| 27. |
| 28. |
| 29. |
| 30. |
| 31. |
| 32. |

### Wadable Stream Qualitative Fish Habitat Rating for Streams < 10 m wide

Form 3600-532A (R 6/07)

Instructions: Bold fields must be completed. Record all measurements in metric units.

**Station Summary**

|                                    |                                   |                   |                  |                |
|------------------------------------|-----------------------------------|-------------------|------------------|----------------|
| Stream Name<br><i>Unnamed Trib</i> | <del>WBIC</del><br><i>2223400</i> | Waterbody ID Code | SWIMS Station ID | FH Database ID |
|------------------------------------|-----------------------------------|-------------------|------------------|----------------|

|                 |   |                      |
|-----------------|---|----------------------|
| Date (MMDDYYYY) | Station Name<br><i>to Unnamed Trib (2223400)</i><br><i>Unnamed Trib to Deetail Cr @ Townline Rd</i> | <i>US of culvert</i> |
|-----------------|---|----------------------|

|  |            |
|--|------------|
| Latitude - Longitude Determination Method Used | Datum Used |
|--|------------|

|                |                 |              |               |                       |
|----------------|-----------------|--------------|---------------|-----------------------|
| Start Latitude | Start Longitude | End Latitude | End Longitude | County<br><i>Rusk</i> |
|----------------|-----------------|--------------|---------------|-----------------------|

**Water Characteristics**

|                                    |                     |                                       |                                   |                                |
|------------------------------------|---------------------|---------------------------------------|-----------------------------------|--------------------------------|
| Time (24-hr clock)<br><i>12:25</i> | Air Temperature (C) | Water Temperature (C)<br><i>13.95</i> | Conductivity (µs/cm)<br><i>69</i> | Transparency (cm)<br><i>44</i> |
|------------------------------------|---------------------|---------------------------------------|-----------------------------------|--------------------------------|

|                                       |  |                   |
|---------------------------------------|--|-------------------|
| Dissolved Oxygen (mg/l)<br><i>4.8</i> | Dissolved Oxygen % Saturation<br><i>46</i> | pH<br><i>5.41</i> |
|---------------------------------------|--|-------------------|

|               |  |  |
|---------------|--|--|
| Flow (m³/sec) | Water Level (check one - measure distance if Above or Below Normal):<br><input checked="" type="checkbox"/> Normal <input type="checkbox"/> Below: _____ (m) <input type="checkbox"/> Above: _____ (m) | Water Clarity:<br><input type="checkbox"/> Clear <input type="checkbox"/> Turbid <input checked="" type="checkbox"/> Stained |
|---------------|--|--|

**Channel and Basin Characteristics**

|                       |                    |
|-----------------------|--------------------|
| Mean Stream Width (m) | Station Length (m) |
|-----------------------|--------------------|

|                                   |                                  |  |  |   |   |
|-----------------------------------|----------------------------------|--|--|---|---|
| Channel Condition:<br>(check one) | <input type="checkbox"/> Natural | <input checked="" type="checkbox"/> > 20-year-old Channelization | <input type="checkbox"/> 10- to 20-year-old Channelization | <input type="checkbox"/> < 10-year-old Channelization | <input type="checkbox"/> Concrete Channel |
|-----------------------------------|----------------------------------|--|--|---|---|

|                                       |           |                 |              |                  |
|---------------------------------------|-----------|-----------------|--------------|------------------|
| Percent Channelization<br><i>100%</i> | Sinuosity | Gradient (m/km) | Stream Order | Basin Area (km²) |
|---------------------------------------|-----------|-----------------|--------------|------------------|

Comments / Notes  
*Road Ditch*

## Wadable Stream Qualitative Fish Habitat Rating for Streams < 10 m wide

Form 3600-532A (R 6/07)

Page 2 of 2

| Rating Item  | Excellent   | Good   | Fair   | Poor   | Score        |
|--|---|--|--|--|--------------|
| <b>Riparian Buffer Width (m)</b><br>Width of contiguous undisturbed land uses; meadow, shrubs, woodland, wetland, exposed rock | Riparian zone well protected; buffer wide (> 10.0 m)  | Riparian zone protected, but buffer width moderate (5.0 - 10.0 m)                        | Riparian zone moderately disturbed, buffer narrow (1.0 - 4.9 m)  | Most of the riparian zone disturbed, buffer very narrow or absent (< 1.0 m)                | 5            |
| <b>Bank Erosion</b><br>Width of bare soil on bank, along transects   | No significant bank erosion; < 0.20 m of bank is bare soil  | Limited erosion; 0.20 - 0.50 m of bank is bare soil                                      | Moderate erosion; 0.51 - 1.0 m of bank is bare soil  | Extensive erosion; > 1.0 m of bank is bare soil  | 15           |
| <b>Pool Area</b><br>% of stream length in pools  | Pools common; wide, deep, slow velocity habitat, balanced by other habitats; 40 to 60% of station | Pools present; not frequent or over-abundant; 30 to 39% or 61 to 70% of station          | Pools present, but either rare or overly dominant, few other habitats present; 10 to 29% or 71 to 90% of station | Pools either absent or dominant; not balanced by other habitats; < 10% or > 90% of station | <del>0</del> |
| <b>Width:Depth Ratio</b><br>Average stream width divided by average thalweg depth in runs and pools                            | Streams very deep and narrow; width/depth $\leq 7$  | Stream relatively deep and narrow; width/depth 8-15                                      | Stream moderately deep and narrow; width/depth 16-25   | Stream relatively wide and shallow; width/depth > 25                                       | 10           |
| <b>Riffle:Bend or Bend:Bend Ratio</b><br>Average distance between riffles or bends divided by average stream width             | Diverse habitats; meandering stream with deep bends and riffles common; ratio < 10                | Diverse habitats; bends and riffles present, but not abundant; ratio 10 to 14            | Habitat diversity low; occasional riffles or bends, ratio 15 to 25   | Habitat monotonous; riffles or bends rare; generally continuous run habitat; ratio > 25    | <del>0</del> |
| <b>Fine Sediments</b><br>% of the substrate that is < 2 mm (sand, silt, or clay)   | Fines rare or absent, < 10% of the stream bed   | Fines present but limited, generally in stream margins or pools; 10 to 20% of stream bed | Fines common in mid-channel areas, present in riffles and extensive in pools; 21 to 60%                          | Fines extensive in all habitats; > 60% of stream bed covered                               | <del>0</del> |
| <b>Cover for Fish</b><br>% of the stream area with cover   | Cover/shelter for fish abundant; > 15% of stream  | Cover common, but not extensive; 10 - 15% of stream                                      | Occasional cover, limited to one or two areas; 5 - 9% of stream  | Cover rare or absent; limited to < 5% of stream  | 10           |
| <b>Total Score</b>   |   |  |  |  | <b>40</b>    |

Unnamed Trib (2223400) to Deertail Creek @ Oak Grove Rd US Bridge

Unnamed Trib

**STREAM FISH SURVEY FORM**

|  |  |   |
|--|--|---|
| Stream Name: <u>Deertail Creek</u>     | <input checked="" type="checkbox"/> Backpack <input type="checkbox"/> Stream shocker | Date: <del>06/20/2007</del> <u>05/25/2008</u>   |
| WBIC: <del>222700</del> <u>2223400</u> | Current <input type="checkbox"/> DC <input checked="" type="checkbox"/> PDC          | Start time: <u>1246</u>   |
| Station Name/Description:              | Volts: <u>155</u> Pulse Rate: <u>800</u>   | End time: <u>1257</u>   |
| <u>Deertail Creek @ Oak Grove Rd</u>   | Amps: <u>1.3</u> Duty Cycle: <u>10</u>   | Total time: <u>11</u>   |
| <u>US Bridge</u>                       | No. of dippers/anodes: <u>1</u>  | Distance shocked (m): <u>20</u>   |
| Start Lat: <u>45.44935</u>             | Water temp (C or F): <u>14.4</u>   | Mean width (m): <u>2.2</u>  |
| Start Long: <u>-91.00791</u>           | D.O. (mg/l): <u>8.1</u> <u>78.7%</u>   | Water Level -   |
| End Lat: <u>45.44961</u>               | Conductivity (umhos/cm): <u>213</u>  | high <input type="checkbox"/> norm <input checked="" type="checkbox"/> low <input type="checkbox"/> |
| End Long: <u>-91.00772</u>             | pH: <u>7.0</u>   |   |
| Collectors: <u>Keist, LeGorre</u>      | Transparency (cm): <u>58</u>   |   |
|  | Flow (cfs):  |   |
|  | Field Sample i.d.  |   |

Comments:

AIS Observed

Crayfish Observed

Species/Count (list lengths for sportfish)

|    |                        |        |        |
|----|------------------------|--------|--------|
| 1  | Mudminnow              | ### ## | 12     |
| 2  |                        |        |        |
| 3  | Creek Chub             | ### ## | 11     |
| 4  |                        |        |        |
| 5  | Brook stickleback      | ###    | 6      |
| 6  |                        |        |        |
| 7  | Northern Redbelly Dace | ### ## | 10     |
| 8  |                        |        |        |
| 9  | Northern Pike          | 2 11   | (mm) 1 |
| 10 |                        |        |        |
| 11 | White Sucker           | ###    | 6      |
| 12 |                        |        |        |
| 13 | Pearl Dace             | 1      | 1      |
| 14 |                        |        |        |
| 15 | Southern Redbelly Dace | 1      | 1      |
| 16 |                        |        |        |
| 17 |                        |        |        |

18 Short Survey looking for general and get an idea of minnow community  
 19 Stream ditched beginning to meander a little. Soft sediment on stream  
 20 margins little bit present in the runs. Streambed w/ main flow mostly  
 21 sand and small gravel

23 8 Species of fish captured including 1 Northern Pike  
 24 in captured  
 25  
 26  
 27  
 28  
 29  
 30  
 31  
 32

### Wadable Stream Qualitative Fish Habitat Rating for Streams < 10 m wide

Form 3600-532A (R 6/07)

Instructions: Bold fields must be completed. Record all measurements in metric units.

#### Station Summary

|  |  |                   |                  |                       |
|--|--|-------------------|------------------|-----------------------|
| Stream Name<br><i>Deertail Creek</i>           | <del>222700</del>  | Waterbody ID Code | SWIMS Station ID | FH Database ID        |
| Date (MMDDYYYY)                                | Station Name <i>Unnamed Trib (2223400) to Deertail Cr @ Oak Grove Rd US Bridge</i> |                   |                  |                       |
| Latitude - Longitude Determination Method Used |  |                   |                  | Datum Used            |
| Start Latitude                                 | Start Longitude  | End Latitude      | End Longitude    | County<br><i>Rusk</i> |

#### Water Characteristics

|                                   |  |                       |  |                   |
|-----------------------------------|--|-----------------------|--|-------------------|
| Time (24-hr clock)<br><i>1257</i> | Air Temperature (C)  | Water Temperature (C) | Conductivity (µs/cm)   | Transparency (cm) |
| Dissolved Oxygen (mg/l)           | Dissolved Oxygen % Saturation  |                       | pH   |                   |
| Flow (m³/sec)                     | Water Level (check one - measure distance if Above or Below Normal):<br><input checked="" type="checkbox"/> Normal <input type="checkbox"/> Below: _____ (m) <input type="checkbox"/> Above: _____ (m) |                       | Water Clarity:<br><input type="checkbox"/> Clear <input type="checkbox"/> Turbid <input checked="" type="checkbox"/> Stained |                   |

#### Channel and Basin Characteristics

|                                     |                                  |  |  |   |   |
|-------------------------------------|----------------------------------|--|--|---|---|
| Mean Stream Width (m)<br><i>2</i>   | Station Length (m)               |  |  |   |   |
| Channel Condition:<br>(check one)   | <input type="checkbox"/> Natural | <input checked="" type="checkbox"/> 20-year-old Channelization | <input type="checkbox"/> 10- to 20-year-old Channelization | <input type="checkbox"/> < 10-year-old Channelization | <input type="checkbox"/> Concrete Channel |
| Percent Channelization<br><i>85</i> | Sinuosity                        | Gradient (m/km)  | Stream Order   | Basin Area (km²)                                      |   |

Comments / Notes

## Wadable Stream Qualitative Fish Habitat Rating for Streams < 10 m wide

Form 3600-532A (R 6/07)

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| Rating Item  | Excellent   | Good   | Fair   | Poor   | Score |
|--|---|--|--|--|-------|
| <b>Riparian Buffer Width (m)</b><br>Width of contiguous undisturbed land uses; meadow, shrubs, woodland, wetland, exposed rock | Riparian zone well protected; buffer wide (> 10.0 m)  | Riparian zone protected, but buffer width moderate (5.0 - 10.0 m)                        | Riparian zone moderately disturbed, buffer narrow (1.0 - 4.9 m)  | Most of the riparian zone disturbed, buffer very narrow or absent (< 1.0 m)                  | 15    |
| <b>Bank Erosion</b><br>Width of bare soil on bank, along transects   | No significant bank erosion; < 0.20 m of bank is bare soil  | Limited erosion; 0.20 - 0.50 m of bank is bare soil                                      | Moderate erosion; 0.51 - 1.0 m of bank is bare soil  | Extensive erosion; > 1.0 m of bank is bare soil  | 15    |
| <b>Pool Area</b><br>% of stream length in pools  | Pools common; wide, deep, slow velocity habitat, balanced by other habitats; 40 to 60% of station | Pools present; not frequent or over-abundant; 30 to 39% or 61 to 70% of station          | Pools present, but either rare or overly dominant, few other habitats present; 10 to 29% or 71 to 90% of station | Pools either absent or dominant, not balanced by other habitats; < 10% or > 90% of station   | 0     |
| <b>Width:Depth Ratio</b><br>Average stream width divided by average thalweg depth in runs and pools                            | Streams very deep and narrow; width/depth $\leq 7$  | Stream relatively deep and narrow; width/depth 8-15                                      | Stream moderately deep and narrow; width/depth 16-25   | Stream relatively wide and shallow; width/depth > 25   | 10    |
| <b>Riffle:Riffle or Bend:Bend Ratio</b><br>Average distance between riffles or bends divided by average stream width           | Diverse habitats; meandering stream with deep bends and riffles common; ratio < 10                | Diverse habitats; bends and riffles present, but not abundant; ratio 10 to 14            | Habitat diversity low; occasional riffles or bends, ratio 15 to 25   | Habitat monotonous; riffles or bends rare; generally continuous run habitat; ratio $\geq 25$ | 5     |
| <b>Fine Sediments</b><br>% of the substrate that is < 2 mm (sand, silt, or clay)   | Fines rare or absent, < 10% of the stream bed   | Fines present but limited, generally in stream margins or pools; 10 to 20% of stream bed | Fines common in mid-channel areas, present in riffles and extensive in pools; 21 to 60%                          | Fines extensive in all habitats; > 60% of stream bed covered                                 | 5     |
| <b>Cover for Fish</b><br>% of the stream area with cover   | Cover/shelter for fish abundant; > 15% of stream  | Cover common, but not extensive; 10 - 15% of stream                                      | Occasional cover, limited to one or two areas; 5 - 9% of stream  | Cover rare or absent; limited to < 5% of stream  | 5     |
| <b>Total Score</b>   |   |  |  |  | 55    |