

APPENDIX D  
Pipestone Creek Fish Summary and Streambank  
Assessment Forms



| Habitat Parameter                          | Condition Category   |  |   |   |
|--|--|--|---|---|
|  | Optimal  | Sub-Optimal  | Marginal  | Poor  |
| 1. Available Cover/<br>Epifaunal Substrate | Greater than 70% of substrate favourable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient). | 40-70% mix of stable habitat; well suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of new fall, but not yet prepared for colonization (may rate at high end of scale). | 20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.  | Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.  |
| SCORE                                      | 20 19 18 17 16   | 15 14 13 12 11   | 10 9 8 7 6  | 5 4 3 2 1 0   |
| 2. Substrate Embeddedness                  | Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment.   | Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.  | Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.   | Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.  |
| SCORE                                      | 20 19 18 17 16   | 15 14 13 12 11   | 10 9 8 7 6  | 5 4 3 2 1 0   |
| 3. Velocity /<br>Depth Regime              | All 4 velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (slow is <0.3 m/s, deep is >0.5m).  | Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).   | Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).   | Dominated by 1 velocity/depth regime (usually slow-deep).   |
| SCORE                                      | 20 19 18 17 16   | 15 14 13 12 11   | 10 9 8 7 6  | 5 4 3 2 1 0   |
| 4. Sediment Deposition                     | Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.  | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.   | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition. |
| SCORE                                      | 20 19 18 17 16   | 15 14 13 12 11   | 10 9 8 7 6  | 5 4 3 2 1 0   |

| Habitat Parameter                   | Condition Category  |   |  |  |
|-------------------------------------|---|---|--|--|
|                                     | Optimal   | Sub-Optimal   | Marginal   | Poor   |
| 5. Channel Flow Status              | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.   | Water fills >75% of the available channel; or <25% of channel substrate is exposed.   | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.  | Very little water in channel and mostly present as standing pools.   |
| SCORE                               | 20 19 18 17 (16)  | 15 14 13 12 11  | 10 9 8 7 6   | 5 4 3 2 1 0  |
| 6. Channel Alteration               | Recent channelization or dredging absent or minimal; stream with normal pattern.  | Some new channelization, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, may be present, but recent channelization is not present. | Channelization may be extensive: embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. | Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. In stream habitat greatly altered or removed entirely. |
| SCORE                               | 20 19 18 17 (16)  | 15 14 13 12 11  | 10 9 8 7 6   | 5 4 3 2 1 0  |
| 7. Frequency of Riffles (or Bends)  | Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural rest areas is important. | Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.   | Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.  | Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.          |
| SCORE                               | 20 19 18 17 16  | 15 14 13 (12) 11  | 10 9 8 7 6   | 5 4 3 2 1 0  |
| 8. Bank Stability (score each bank) | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.  | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.  | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.   | Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosion scars.    |
| SCORE                               | Left Bank 10 9  | 8 7 6   | (5) 4 3  | 2 1 0  |
| SCORE                               | Right Bank 10 9   | 8 7 6   | 5 4 (3)  | 2 1 0  |

| Habitat Parameter                                   | Condition Category  |   |  |   |
|---|---|---|--|---|
|   | Optimal   | Sub-Optimal   | Marginal   | Poor  |
| 9. Bank Vegetative Protection (score each bank)     | More than 90% of the stream bank surfaces and immediate riparian zone covered by native vegetation, including trees, under story shrubs, or non-woody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. | 70-90% of the stream bank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. | 50-70% of the stream bank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. | Less than 50% of the stream bank surfaces covered by vegetation; disruption of stream bank vegetation is very high; vegetation has been removed to 5 centimetres or less in average stubble height. |
| SCORE   | Left Bank 10 9  | 8 7 6   | 5 4 3  | 2 1 0   |
| SCORE   | Right Bank 10 9   | 8 7 6   | 5 4 3  | 2 1 0   |
| 10. Riparian Vegetative Condition (score each bank) | Width of riparian zone > 18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.  | Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.  | Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.  | Width of riparian zone < 6 meters; little or no riparian vegetation due to human activities.  |
| SCORE   | Left Bank 10 9  | 8 7 6   | 5 4 3  | 2 1 0   |
| SCORE   | Right Bank 10 9   | 8 7 6   | 5 4 3  | 2 1 0   |
| 11. Pool Substrate                                  | Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.   | Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.   | All mud or clay or sand bottom; little or no root mat; no submerged vegetation.  | Hard-pan clay or bedrock; no root mat or vegetation.  |
| SCORE   | 20 19 18 17 16  | 15 14 13 12 11  | 10 9 8 7 6   | 5 4 3 2 1 0   |
| 12. Pool Variability                                | Even mix of large-shallow, large-deep, small-shallow, small-deep pools present.   | Majority of pools large-deep; very few shallow.   | Shallow pools much more prevalent than deep pools.   | Majority of pools small-shallow or pools absent.  |
| SCORE   | 20 19 18 17 16  | 15 14 13 12 11  | 10 9 8 7 6   | 5 4 3 2 1 0   |

FINAL SCORE = 155  
 "SUB-OPTIMAL"

**MANITOBA DRAIN INVENTORY**

**DATA COVER SHEET**

Drain Name: Pipestone Creek East Site #: 2

Observers: Matrix Solutions Date: Jun 10/2021 Time: 5:00 AM  PM

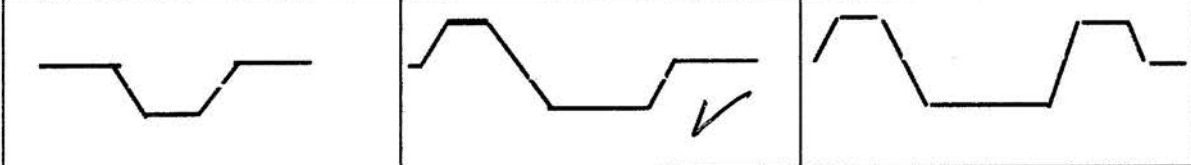
Location: SEC: NE 4 TWP: 9 RGE: 28W

UTM East (E): 14U 339564 Easting UTM Long (N): 14U 5510322 Northing

Drain Order:

Watershed Map #: SOUTH RIVER Cattle Impacts:  NONE  LIGHT  MOD  SEVERE

Drain Type (X-Section) Check One



**Classification Data**

Flow:  Permanent  Intermittent  Ephemeral  Unknown

Habitat: Upstream:  Simple  Complex Downstream:  Simple  Complex

Indicator Species Collected: Channel Catfish Freshwater Drum  Suckers

ALL SAMPLES NUMBERED 11 Minnow traps Bass/Crappies Sauger/Walleye Yellow Perch

Fishing Effort 1 hoop net Cisco/Whitefish Trout Burbot

Fishing Effort 2 seine nets SARA Species Goldeye/Mooneye Lake Sturgeon

Weather Conditions Sunny  Cloudy  O/Cast Fog Rain Snow

Wind Speed & Direct: Calm Light  Mod Strong V Strg Direction East

Air Temperature 15 °C Water Temperature °C DO mg/l %

Conductivity umhos Turbidity NTU pH units

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|--------|---------|---------|
| Sketch | Notes:  |         |
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|        |         | Azimuth |