## MPCA Guidance for Application of CALM Category 4c

### Introduction

The Minnesota Pollution Control Agency (MPCA) has prepared this guidance for staff and stakeholders who are considering a category 4c determination for an impaired water. The following background, procedures and notes should be reviewed and discussed prior to forwarding a category 4c request to MPCA assessment and reporting staff.

Examples of pollution that would be appropriate for 4C classification (in absence of pollutants):

* Dams, impoundments or other anthropogenic factors that affect stream connectivity
* Channelization or alteration of natural streams
* Flow alterations, low or intermittent flow
* Lack of suitable habitat

### Background on Category 4c

The Consolidated Assessment and Listing Methodology (CALM) states, *“Segments should be placed in Category 4c when the state demonstrates that the failure to meet an applicable water quality standard is not caused by a pollutant, but instead is caused by other types of pollution. Segments placed in Category 4c do not require the development of a TMDL. Pollution, as defined by the CWA is “the man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water” (section 502(19)).”* Regarding the distinction between *pollutant* and *pollution*: pollutants are generally considered the typical parameters (or their surrogates) that are measured in the water column for which loads can be calculated (e.g. phosphorus, chloride, or total suspended solids). The term pollution in the 4c context refers to non-pollutant alterations. It’s expected that most 4c candidates will be impaired biota listings for which there is confidence in stressor identification findings.

This category exists and is applied in EPA Region 5 and beyond because in cases in which the sole stressor or sole cause of an impairment is not a pollutant, TMDLs are neither necessary nor an appropriate means of examination (TMDLs are for setting allowable loads for *pollutants*).

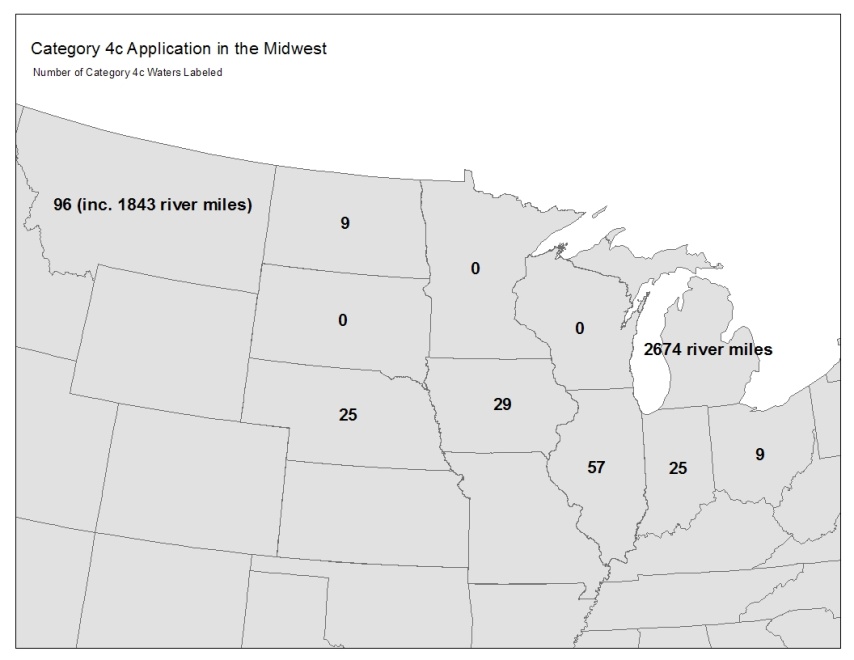
It should be noted that category 4c waters are impaired, which may have implications for permitting and other Agency activities. For additional details, see the Section: Steps Subsequent to a Category 4C Determination.

### Use of Category 4c in Other States

Illinois, Indiana, Iowa, Michigan, Montana, Nebraska, North Dakota and Ohio have all included 4c listings in their integrated report to EPA. In total (as of 2012), these eight states report 250 category 4c waters (some states list river miles, see Figure 1). In general, contacts in these states confirmed that category 4c is used when it is determined that an aquatic life impairment is caused by something other than a pollutant; habitat and flow were cited as examples. Ohio noted that their 4c listings were due to effects of permanent impoundments. Category 4c determinations were made via examination of existing water quality data and/or a stressor identification process (Iowa noted specifically that 4c listings were a result of their stressor identification process). Some of the states made a point of noting that the 4c listings were an important part of watershed planning processes.

South Dakota does not use biocriteria in their assessment process; their assessments are driven by pollutant data and therefore category 4c is not applicable at this time. To date, Wisconsin lists “degraded habitat” impairments and then executes TMDLs for TSS or phosphorus; they have no 4c listings.

Figure 1. Category 4c Application in the Midwest (as of 2012).



### Category 4c Determination Requirements

Given Minnesota’s current sequence of monitoring, assessment and reporting, stressor identification and TMDL computation, most 4c determinations will be made via stressor identification subsequent to initial listing of biota impairments in category 5. A completed stressor identification effort constitutes a sufficient category 4c determination. The stressor identification process provides confidence that conventional parameter stressors are not impacting the biota. Category 4c placement following stressor identification is reserved for streams in which the sole stressor(s) of impaired biota are non-pollutants (see the [stressor identification checklist](file:///X:\Agency_Files\Water\Impaired%20Waters\Impaired%20Biota%20Studies\Biota%20TMDL%20Protocol\supporting%20info\Checklist%20for%20Stressor%20Identification.doc)). Streams with conventional pollutant impairments that may affect the biota on the reach or upstream of the reach are not candidates for 4c. If stressor identification is completed prior to listing of a biota impairment (not typical, but could occur in small watersheds with few listings), it could be placed directly in category 4c.

In the case of impaired parameters other than biota (e.g. dissolved oxygen upstream of a dam), an examination of available water quality and other watershed data can provide sufficient determination of a non-pollutant impairment cause. In such a case, while there is no minimum data requirement, the determination should be informed by the extent of the available data and the professional judgment of the watershed team (e.g. review all available assessment data). EPA encourages the state to collect or assemble additional data and/or information to verify the 4c categorization, and to re-categorize the segment based on the assessment of the additional data and/or information where appropriate.

It is not a requirement that data for all water quality constituents must be available and examined to confirm the absence of a pollutant linkage; rather, a reasonable linkage to a non-pollutant cause and the absence of any data that would suggest a pollutant linkage are sufficient.

**Example of category 4c determination approach from Illinois, EPA Region 5:** *In each of these* [4c] *cases, water data was available and revealed no violation of an Illinois Water Quality Standard. In addition, a review of permits, watershed information or other source data indicated no potential pollutant impairments. Furthermore, in each of these waters, the reason for the impairment is explained by the presence of degraded habitat or other non-pollutant causes.*

### Approval Process

Watershed teams (most likely project managers and/or stressor identification staff) can document category 4c determinations using the attached form (Appendix A). Completed forms will be forwarded to the MPCA Assessment Consistency and Technical Team (ACTT). Subsequent to any necessary discussion, waters that are determined to be appropriate category 4c candidates will be included in the standard integrated reporting process: they will be subject to public notice and comment as a component of the impaired waters list. After comment review and response, the impaired waters list is forwarded to EPA for approval. Category 4c candidates may be examined by other groups as needed and as timing and sequencing allow: the Watershed Assessment Policy Group (per discretion of ACTT), and/or the watershed Professional Judgment Group (if a 4c determination is advanced during the assessment process; PJG deliberation is not a requirement).

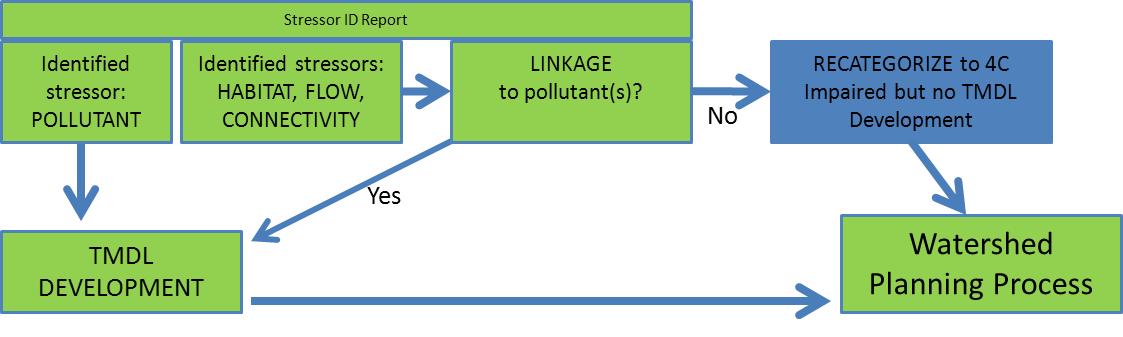
### Steps Subsequent to a Category 4c Determination

Category 4c is an impairment listing; waterbody/impairment combinations placed in category 4c are not supporting one or more designated uses. As such, these waters are part of watershed planning processes and candidates for restoration projects (see Figure 2). They differ from category 5 listings only in that there is no need for a TMDL (a pollutant load quantification tool) because the impairment is not caused by a pollutant. In the context of watershed planning, category 4c listings may be assigned alternative endpoints; for example: hydrology, connectivity, habitat or land cover goals, among others.

Placing a waterbody/impairment combination in category 4c is not equivalent to de-listing and does not constitute any de-emphasis of the importance of the impairment.

**Example of category 4c listing in Minnesota’s watershed planning process:** *In the ABC Creek watershed, stressor identification determines that three fish IBI listings are caused by a series of perched culverts (lack of connectivity). These impairments are forwarded as category 4c candidates and at the same time subjected to planning by local partners to redesign and fix the culverts. In the context of the final watershed planning products (Watershed Report, other plans), these 4c listings are considered targets for restoration projects, drawing from the same pools of funding as do impairments with goals described by TMDLs. Note that the category 4c designation applies to the AUID/fish IBI combination; if the same water were also impaired for chloride, E coli, or any other pollutant it would have a category 5 designation for those combinations.*

Figure 2. Category 4c in planning context.



### References & Further Reading

EPA integrated reporting and TMDL development guidance documents include information regarding category 4c.

Category 4c listings in other states can be reviewed within the context of their integrated reports to EPA; most states make these reports and any associated documents available on the internet. Two examples of appendices that tabulate 4c listings are included below.

Illinois waters in category 4c:  
<http://www.epa.state.il.us/water/tmdl/303-appendix/2012/appendix-a8.pdf>

Iowa waters in category 4c:  
<http://www.igsb.uiowa.edu/wqm/ImpairedWaters/Year2010/Draft2010Category4c.pdf>

## Appendix A: Evaluation Form for Category 4C - Non-pollutant Impairments

### Reach Description

|  |  |  |
| --- | --- | --- |
| Review date | 12/16/15 |  |
| Assessment Unit ID | 07040001-530 | |
| Assessment Unit Description | Gilbert Creek, Sugarloaf Cr to T112 R12W S31, east line | |
| Watershed | Mississippi River – Lake Pepin | |
| Impairment | Fishes Bioassessment | |
| Station ID#s |  | |
| Stressor ID staff | Tiffany Schauls | |
| Project Manager | Justin Watkins | |
| Review team members (ACTT) | Initial contact: [Chandra.carter@state.mn.us](mailto:Chandra.carter@state.mn.us) | |

**Summary**

List the non-pollutant stressors(s) and summarize data. Describe the rationale supporting the conclusion that pollutants aren’t contributing to aquatic life impairment. The table below may be used to summarize conclusions regarding various typical candidate stressors. Attach any relevant pictures, maps, or data.

\*\*\*\*\*\*\*\*

Stressor identification determined that the stressor to aquatic life for this reach is habitat. Lack of suitable habitat is the most probable cause of fish impairment in this location due to the wide/shallow channel and naturally lower gradient.

Other chemical stressors would likely be verified in a macroinvertebrate community response, which is not seen here.  Two biological stations upstream from this site were found to be supporting healthy fish communities, therefore the physical habitat aspects for fish, at this specific location are its limiting factors.

This impairment should be addressed via watershed planning, but no TMDL is needed given the lack of a pollutant stressor.

### Candidate Causes Stressor Table

|  |  |  |
| --- | --- | --- |
| **Candidate Cause for Impairment** | **Check if applicable** | **Brief Summary of Data Used to Eliminate candidate causes as final stressors** |
| Elevated total suspended solids (TSS) / turbidity | X | TSS data was limited to 2008 (which was a higher flow year, so data used with caution). Transparency data from two stations on the reach showed response to rain events, but not extended periods of low transparency.  Most readings were above 50 cm transparency.  Macroinvertebrates had a low percentage of tolerant to TSS individuals, which is evidence that they are not likely stressed by TSS.  The fish community showed a mixed response, and did not demonstrate tolerance or sensitivity to TSS, as they are responding to other stress (habitat) |
| Elevated water temperature | X | While coldwater fish were not abundant, coldwater sensitive macroinvertebrate taxa were present in good numbers.  A continuous temperature logger collected from June-September 2011 with daily average temperatures under 19 degrees C with maximums under 21 degrees C.  Temperatures are considered normal and suitable compared against other coldwater streams in the region. |
| Nitrate | X | Nitrate concentrations are low; 11 samples in 2008 showed a range from 1.7mg/L-2.5 mg/L which is well below most coldwater streams in the region. The unaffected (not impaired) macroinvertebrate community is also strong evidence as macroinvertebrates are typically more sensitive to nitrate than fish. |
| Dissolved oxygen | X | Grab samples taken in 2008 and 2009 showed an acceptable DO range from 9.2 mg/L-11 mg/L.  A continuous sonde was placed in August 2011 also confirmed adequate DO readings ranging between 8.9 mg/L and 10.3 mg/L over a two week period with a daily flux of 2 mg/L or less.  The macroinvertebrate community had a high number of low DO intolerant taxa (17) and very few low DO tolerant taxa (1). |

### Review Team Recommendation

The team recommends moving Gilbert Creek to category 4C. The only identified stressor is a lack of habitat. The stream channel is too wide and shallow. A TMDL would not be appropriate to address this problem. Instead habitat improvement and further sediment input prevention is the goal. This AUID will have to be considered in the context of DNR’s priorities for habitat improvement. It’s possible that partners in Lake City could work together on a restoration that would provide multiple benefits including habitat improvement.

## Appendix B: CALM Summary

Consolidated Assessment and Listing Methodology (CALM)

CALM provides a framework for states and other jurisdictions to document how they collect and use water quality data and information for environmental decision making. The primary purposes of these data analyses are to determine the extent that all waters are attaining water quality standards, to identify waters that are impaired and need to be added to the 303(d) list, and to identify waters that can be removed from the list because they are attaining standards.

1. **Which waters belong in Category 1?**

Waters belong in Category 1 if they are attaining all designated uses and no use is threatened. Segments should be listed in this category if there are data and information that are consistent with the State's methodology and this guidance, and support a determination that all WQSs are attained and no designated use is threatened. Minnesota also requires that the water is fully assessed, meaning that there are sufficient data to assess all parameters for each designated beneficial use and all are in compliance with standards.

1. **Which waters belong in Category 2?**

Waters should be placed in Category 2 if there are data and information that meet the requirements of the State's assessment and listing methodology that support a determination that some, but not all, designated uses are attained and none are threatened. Attainment status of the remaining designated uses is unknown because data are insufficient to categorize a water consistent with the State's listing methodology.

1. **Which waters belong in Category 3?**

Waters belong in Category 3 if there are insufficient or no data and information to determine, consistent with the State's listing methodology, if any designated use is attained. To assess the attainment status of these waters, States should schedule monitoring on a priority basis to obtain data and should also make efforts to obtain information necessary to move these waters into Categories 1, 2, 4, and 5.

1. **Which waters belong in Category 4?**

Waters belong in Category 4 if one or more designated uses are impaired or threatened but establishment of a TMDL is not required. States may place an impaired or threatened water that does not require a TMDL in one of the following three subcategories: a TMDL has been completed for the water-pollutant combination (Category 4A), other required control measures are expected to result in the attainment of WQSs in a reasonable period of time (Category 4B); and the impairment or threat is not caused by a pollutant (Category 4C).

* 1. Which waters belong in Category 4A?

Waters should only be placed in Category 4A when all TMDLs needed to result in attainment of all applicable WQSs have been approved or established by EPA. Once the TMDLs have been approved or established, the State should implement the TMDL as soon as practicable. Additionally, EPA encourages States to provide monitoring schedules for these waters to ensure that sufficient data are obtained to document progress of the implementation actions toward the attainment of WQSs, and that progress is reasonably consistent with the projected time of attainment included in the TMDL.

* 1. Which waters belong in Category 4B?

Current regulations do not require TMDLs for all waters. Some waters may be excluded from Category 5, and placed into Category 4B. In order to meet the requirements to place these waters into Category 4B, the State must demonstrate that "other pollution control requirements (e.g., best management practices) required by local, State or Federal authority" (see 40 CFR 130.7(b)(1)(iii)) are expected to address all water-pollutant combinations and attain all WQSs in a reasonable period of time. EPA expects that States will provide adequate documentation that the requiredcontrol mechanisms will address all major pollutant sources and establish a clear link between the control mechanisms and WQSs.

* 1. Which waters belong in Category 4C?

Waters should be listed in this subcategory when an impairment is not caused by a pollutant. States should schedule these segments for monitoring to confirm that there continues to be no pollutant-caused impairment and to support water quality management actions necessary to address the cause(s) of the impairment.

**Note:** The following two categories (4D and 4E) are not EPA CALM categories. They are State subcategories under CALM category 4c used to differentiate between anthropogenic non-pollutants, placed in category 4C, and solely natural conditions which result in impairment, placed in category 4D. Category 4E is only a temporary categorization for one year to allow for the collection of an additional year’s monitoring data and its review as requested by the natural background review committee.

* 1. Which waters belong in Category 4D?

Waters should be placed in this subcategory when an impairment is caused solely by a natural background condition. A natural background condition is not considered to be a pollutant.

* 1. Which waters belong in Category 4E?

Waters should be placed in this subcategory when the natural background or non-pollutant review committee determines that additional monitoring data are needed to consider the cause of the impairment to be solely from natural background or non-pollutant conditions. The additional monitoring and subsequent review must occur during the following year after the initial review. If the additional monitoring and subsequent review do not occur within the following year, the impaired water is moved to CALM category 5.

1. **Which waters belong in Category 5?**

This category constitutes the Section 303(d) list that EPA will approve or disapprove under the CWA. Waters should be placed in Category 5 when it is determined, in accordance with the State's assessment and listing methodology, that a pollutant has caused, is suspected of causing, or is projected to cause an impairment or threat. If that impairment or threat is due to a pollutant, the water should be placed in Category 5 and the pollutant causing the impairment identified.