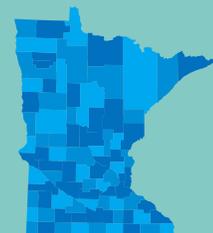
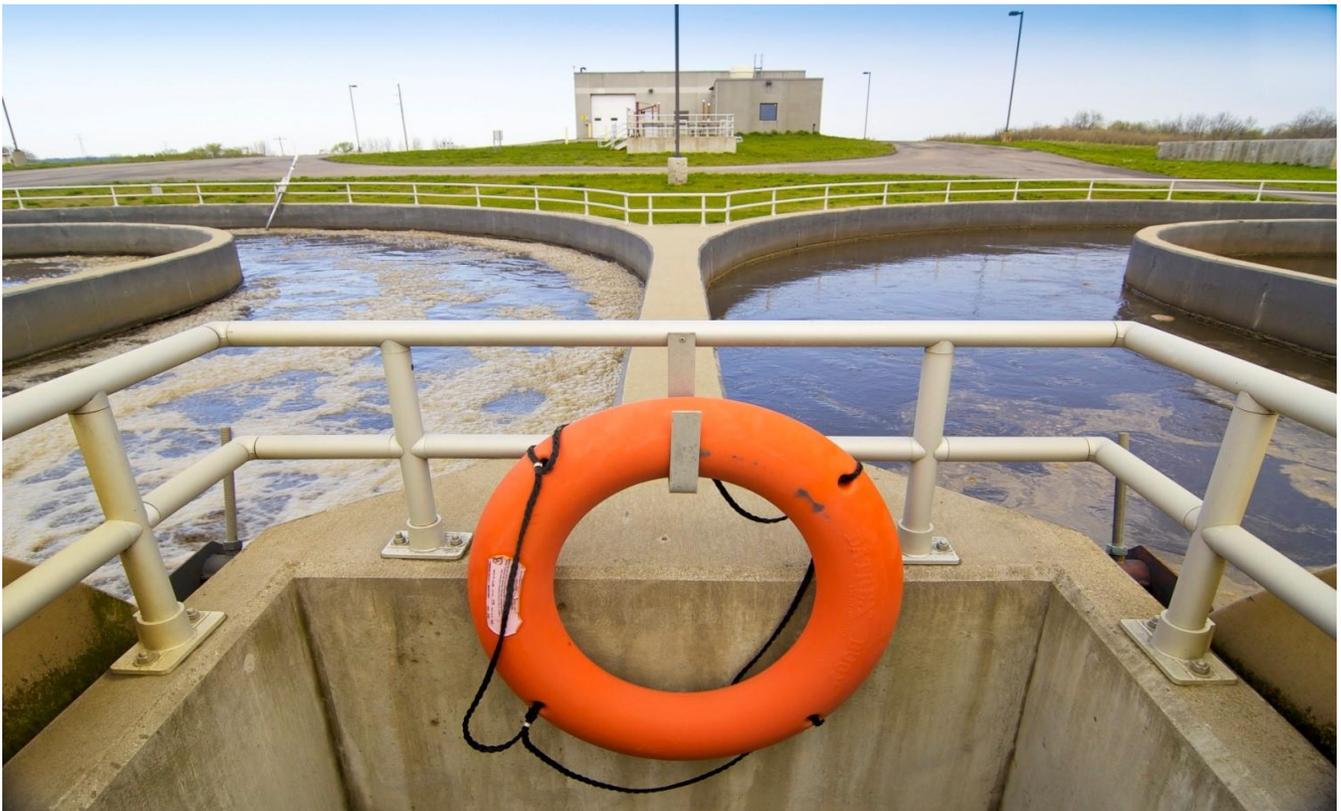


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Guidance for water quality standard variances



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I. Introduction

Background

Federal regulations implementing the Clean Water Act allow states to adopt variance provisions. These provisions allow granting a variance to a permit holder where it is documented that, despite fully utilizing treatment capabilities as required by the Clean Water Act, the permit holder cannot control a specific pollutant in its discharge to the extent necessary to meet the applicable water quality standard. A variance is considered to be a temporary modification to the water quality-based effluent limit or water quality standard that would otherwise be applicable.

The U.S. Environmental Protection Agency (EPA) regulates variances under the Code of Federal Regulations (CFR) Chapter 40 Section 131.14 The conditions to grant a variance are listed here and can be found in greater detail in Appendix A of this guidance. The discharger and State must be able to demonstrate that attaining the water quality standard is not feasible because:

- Controls more stringent than those required by sections 301(b) and 306 of the CWA would result in substantial and widespread economic and social impact
- Naturally occurring pollutant concentrations prevent the attainment of the use
- Natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met
- Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place
- Dams, diversions or other types of hydrologic modifications preclude the attainment of the use and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in the attainment of the use
- Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses

Dischargers may be eligible for a variance if the discharger is not able to achieve a Water Quality-Based Effluent Limit, or WQBEL, in the foreseeable future due to factors such as the high cost for advanced treatment technologies. A variance may also be appropriate when a facility has opportunities to improve its water quality (and possibly meet criteria), but the timeframe is uncertain.

As the State agency delegated to implement the CWA, the Minnesota Pollution Control Agency (MPCA) has the authority to grant variances (see Minnesota Stat. §§ 115.03, 115.44, 116.02 and 116.07) and governs the issuance of variances through Minnesota Rules (See Minn. R. chs. 7000.7000, 7050.0190, 7052.0280, and 7053.0195). The complete text of applicable citations is provided in Appendix A.

The MPCA's variance rules allow a National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) permitted facility to seek a temporary modification to the WQBEL and/or water quality standard. A variance must include an achievable interim effluent limit for the pollutant of concern and a schedule of pollutant reduction activities intended to result in a discharge of the highest quality wastewater possible. A variance does not exempt the discharger from the requirement to be compliant with all other applicable technology-based effluent limits (TBEL) or WQBEL for other pollutants.

Variance requests from NPDES/SDS permit holders in Minnesota must be approved by the Commissioner and approved by EPA (see Section V of this guidance for more information). Variance requests and requests for renewal of a variance are initially reviewed by MPCA staff. If MPCA staff support the proposed variance, it is incorporated into a draft NPDES/SDS permit and subject to public review and comment during the public notice process. After this process, the variance request must be approved by the MPCA Commissioner and then sent to EPA Region 5 for final approval. Once EPA has granted final approval of the variance, the NPDES/SDS permit with the variance can be final issued. Each variance is granted for the minimum time needed. This will be discussed further in Section V. Renewal of a variance also requires approval by MPCA and EPA, as discussed in Section VI.

Purpose of this guidance

The purpose of this guidance is:

- To outline the steps involved in the variance application and review process, including state and federal review
- To provide permittees with an explanation of what is required as part of a variance request
- To provide the permittee with resources, forms and links to assist them in preparing a variance request

Table 1. Variances at a glance

What is it?	<ul style="list-style-type: none"> • Allows a NPDES/SDS permitted facility in Minnesota the ability to seek a temporary modification to a water quality standard and its associated water quality-based effluent limit and/or state discharge restriction applicable to their facility
Eligibility requirements	<ul style="list-style-type: none"> • Proof that technology-based controls are insufficient to meet water quality standards • The variance will not jeopardize endangered species or their habitat • The variance will not result in an unreasonable risk to human health • The variance will not impair an existing use • The variance will comply with antidegradation requirements
Justification	<ul style="list-style-type: none"> • Characterization of the discharge • Justify that alternative treatment / control options have been considered and are not feasible to meet water quality standards • Justify that all cost-effective and reasonable best management practices have been implemented for non-point sources of the pollutant under which the permittee has control. <p>At least one of the six conditions must be met:</p> <ul style="list-style-type: none"> • Controls to reduce pollutant would cause substantial and widespread economic and social impact • Naturally occurring pollutant prevent attainment of water quality standards • Human-caused pollutants cannot be remedied or would cause more environmental damage to correct • Natural physical features of a stream prevent attainment of water quality standards • Hydrologic modifications prevent attainment of water quality standards • Physical conditions related to the natural features of the waterbody, unrelated to water quality, prevent attainment of water quality standards
Submittal requirements	<ul style="list-style-type: none"> • Variance Request Form • Additional information required for the justification of 40 CFR 131.14 (See Section IV and Appendix E)
Approval	<ul style="list-style-type: none"> • Preliminary approval by MPCA Commissioner or delegated staff • EPA, Region 5

II. Purpose of a variance

The purpose of a variance is:

- To provide a mechanism for a permitted facility to seek a temporary deviation from a Water Quality Based Effluent Limit (WQBEL) or treatment requirement in Minn. R. 7053 after providing the appropriate justifications
- To encourage maintenance of an original standard as a goal instead of removing a use that represents a lesser goal than can be achieved in the long term
- To ensure the highest level of water quality achievable during the term of the variance through interim permit limits and the implementation of a pollutant minimization plan

The MPCA anticipates a request for a variance may be pursued by a NPDES/SDS discharger in a situation where implementation of controls more stringent than technology-based requirements would result in substantial and widespread economic and social impact, i.e. existing treatment technologies may be cost prohibitive. In addition, if discharging to waters undergoing or proposed to undergo a use attainability analysis or site specific standard associated with the pollutant of concern, a variance may provide time to determine what use or standard is appropriate in the long term. In this last situation, the Permittee would be required to submit a detailed timeline describing the facility's contribution to data collection for this analysis.

A. Alternatives to a variance

The Permittee must analyze all alternatives prior to considering a variance. This includes, but is not limited to, source reduction (Section IV.C), extensive study of treatment capabilities, and consideration given to the relocation of the outfall. After analyzing all possible alternatives, if the Permittee is still not reasonably certain when or if a WQBEL or treatment requirement will be achieved, then a variance may be appropriate.

The MPCA staff will consider whether another administrative tool is appropriate prior to MPCA consideration of a variance request. For example, MPCA staff will consider whether the use of a permit compliance schedule is more appropriate if effluent limits cannot be met in the short term, but can be met within a known timeframe. Longer term options include development of a site-specific criterion or a use attainability analysis. These options may be appropriate when a water body is not able to achieve water quality standards even after sources of pollutants are controlled to the maximum extent feasible.

B. Timing of a variance request

During the permit issuance and/or renewal process, the permit holder has the option to request a variance. The NPDES/SDS permit holder will be required to provide documentation, in addition to the data submitted in the permit application. Such information may include an economic analysis based on EPA requirements, treatment technology pilot studies, and additional effluent and ambient data. The permit holder should be prepared and must plan accordingly to sufficiently gather this information prior to requesting a variance. Without it, the MPCA may be unable to review, subsequently approve or deny the request, and issue a permit. See Section IV of this guidance for further information.

Variance reviews take time. The variance review process involves coordination between multiple programs at the state and federal level (e.g., permit staff and water quality standard staff). It includes review of the application, development of a preliminary determinations, writing and public noticing a draft NPDES/SDS permit, submittal and preparation of an agenda item to MPCA's Commissioner and/or

Advisory Committee, and final review and approval or denial by EPA. Although the MPCA strives to complete the variance review process as efficiently as possible, this process takes time. It may be a year or more before a final action can be made on the variance request.

III. Variance Eligibility Requirements

Before a request for a variance can be considered, the permittee must demonstrate and the MPCA concur that the below list of conditions have been considered. Before conducting a full variance review, MPCA may want to briefly review information the permit holder has submitted related to the conditions below. However, some of the conditions below cannot be pre-determined until a full variance request is submitted (e.g. no jeopardy to threatened and endangered species and antidegradation review). Therefore, it is important that the Permittee and MPCA work together early in the process.

A. Technology-based controls insufficient to meet water quality-based effluent limits

The permit holder must provide information to enable MPCA to make the finding that the underlying water quality standard cannot be attained by implementing Technology-Based Effluent Limits (TBELs) required by the CWA. TBELs are developed for industrial facilities using either the national effluent limitations guidelines (40 CFR Parts 405-499) or best professional judgment and are based on specific industrial categories. TBELs for municipal facilities are derived from secondary treatment standards. The permit holder can do this by describing the technology required to treat the pollutant, stating whether the permit holder has installed this technology, and if so, what the current level of removal of that pollutant has been achieved, as shown by Discharge Monitoring Reports (DMRs) from the most recent permit term. MPCA will review the TBELs applicable to the facility and review past permits and information submitted.

B. No jeopardy to endangered species

The MPCA and EPA must ensure that granting the variance is not likely to jeopardize the continued existence of any threatened or endangered species listed under the Endangered Species Act (ESA), or result in the destruction or adverse modification of such species' critical habitat. First, MPCA will determine if the receiving water body provides habitat or feeds into a water body identified as critical habitat for any threatened or endangered species. If it is, MPCA will notify EPA as soon as possible if a variance is being considered for an aquatic life criterion. EPA leads the ESA consultation process and will coordinate with the U.S. Fish and Wildlife Services prior to a formal submission whenever possible. Therefore, early communication with EPA may help expedite the consultation process.

C. No unreasonable risk to human health

The MPCA must find that the variance will not result in an unreasonable risk to human health. This would apply to water quality standards based on human health criterion. For human health, toxics criteria, the analysis will focus on the potential impact from the pollutant levels that would be allowed by the variance compared with the otherwise applicable WQBEL. This includes whether the water is classified as a source of drinking water. Also, it should be noted that human health criteria is also based on the extent to which the fish accumulate the pollutant over time and people's long term exposure to the pollutant. MPCA will take this into account in addition to fish consumption and drinking water exposure routes.

D. No removal of an existing use

According to EPA, “Existing uses” are defined as “those uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the water quality standards”(40 CFR § 131.3(e)). To make this determination, MPCA will evaluate available information on what impact the incremental increase in pollutant load would have on maintaining that existing use.

Existing use determinations are made on a site-specific basis. MPCA will use any data available regarding the uses that have been achieved on the receiving water body, as well as the water quality supporting the specific uses. The MPCA may ask for additional information from the permit holder in order to conduct this analysis. For variances to aquatic life criteria, the MPCA will use available biological data as an indicator of both water quality and the existing (actual) use, in conjunction with any available chemistry data. Other data sources include drinking water intakes, public access points (i.e. boat launches, fishing piers, known swimming areas), and any other information that provides insight into existing uses.

E. Conforms with antidegradation procedure

Minn. R. 7050.0250 to 7050.0335 requires MPCA to make a determination of whether additional control measures beyond minimum treatment can reasonably be taken to minimize the impact to the receiving water. An additional level of antidegradation protection is provided for outstanding resource value waters (ORVWs), of which there are two categories – Prohibited and Restricted (Minn. R. 7050.0180). New or expanded discharges are not allowed to Prohibited ORVWs. Discharges to Restricted ORVWs are only allowed when there is no prudent or feasible alternative.

The antidegradation requirement to minimize impacts will be addressed along with the permit holder’s application, variance request, and pollutant minimization plan. Economic considerations are addressed in both a request for a variance and an antidegradation review, and economic tests used for both may be the same or similar. However, granting a variance requires a demonstration that meeting the water quality standards will cause substantial and wide spread economic impacts, whereas antidegradation requires a demonstration that lowering water quality is important for economic and social development. Ultimately, the antidegradation determination weighs the net social and economic benefits of the proposed activity against the net impacts to the receiving water. (See Section IV.D for more information).

IV. Variance Submittal Requirements

The use of variances is limited to those situations where it is not feasible to require a discharger to meet more stringent WQBELs or treatment requirements in Minn. R. 7053. An applicant will need to provide adequate justification showing that at least one of the six variance conditions listed in 40 CFR 131.10(g) prevents attainment of the water quality-based effluent limit associated with the water quality standard and beneficial use (See Section IV.D below). MPCA has procedural requirements for variance submittal in Minn. R. 7000.7000. Those requirements are addressed in the Variance Request Form in Appendix B of this guidance.

The majority of the MPCA’s information is classified public data. All submittals are considered to be public unless a statute, temporary classification or federal law creates a not public classification for them.

Pursuant to Minn. R. 7000.1300, a business/person may request that submitted information be classified as not public data. For example, information submitted by an industrial source may be classified as not public data and exempt from public disclosure if identified and qualified as “trade secret information”. “Trade secret information” is defined as a formula, pattern, compilation, program, device, method, technique or process that is supplied by an individual or organization that is the subject of efforts that are reasonable under the circumstances to maintain its secrecy and derives independent economic value, actual or potential, from not being generally known. For more information on requesting a not public data classification, see Appendix C.

A. Water quality data

The permit holder should provide a tabular summary of the water quality data collected during the past five years for the parameter for which the permit holder is requesting a variance. This data, however, may not be sufficient to fully support a variance request. The permit holder may need to collect additional data to justify a variance. This includes but not limited to data collected as part of a pollutant minimization plan (for further information, see Section IV.C) or data collected during any pilot testing of advanced treatment technology options (see Section IV.D). Further, the MPCA may ask for additional information from the permit holder in order to verify conditions related to human health risk, jeopardy to threatened and endangered species, and other data supporting a variance. As with any data collection, it is important to ensure that data are reliable and accurate, and the permittee should document that they have used appropriate QA/QC processes.

B. Control of other discharge source(s)

A variance cannot be granted if the effluent limit sufficient to meet the underlying water quality standard can be attained by implementing cost-effective and reasonable best management practices for nonpoint sources under the control of the discharger. If a permittee also has a discharge of a pollutant of concern under its control (e.g., stormwater), the permittee should explain what actions it has taken to control those sources, what improvements in water quality those controls are expected to achieve, and that all cost-effective and reasonable BMPs are being implemented. This data may be available from the permit holder or MPCA in connection with the development of a Municipal Separate Storm Sewer System (MS4) permit, TMDL or TMDL Implementation Plan. An industrial (or other) facility should demonstrate it has implemented BMPs to control any other sources of the pollutant on its property or otherwise within its control (e.g., through an easement).

C. Source reduction and pollutant minimization

In order to be granted a variance, the Permittee must reduce the pollutant in the discharge so that it is as close to the underlying water quality standard as possible. One way to do this is to make process control changes at the plant to optimize pollutant removal. Another, sometimes more cost effective method, is to control the pollutant at the source. The first step in pollutant source reduction is developing a pollutant minimization plan. If a pollutant minimization plan was submitted under a previous permit, provide an update on actions and implementation progress as required on the Variance Request Form.

The source reduction and pollutant minimization needed must include the following information:

- Types of actions (e.g. source reduction, pre-treatment, or treatment) already taken to reduce the pollutant in the discharge
- Complete and representative data on the pollutant levels in the various sources that contribute to the wastewater. For Publically Owned Treatment Works (POTWs), this includes complete and representative data for industrial users
- For source reduction, pre-treatment, and treatment options not yet completed, a schedule for and proposed plan identifying and evaluating potential reduction, elimination, and prevention methods that will be taken throughout the variance period to reduce the specific pollutant to the lowest practical level
- Types of waste materials or byproducts that will be produced by these steps and the ultimate means of disposal of those wastes

Information and guidance on source reduction and pollutant minimization can be found at the following webpages and documents:

[Mercury Minimization Plan Guide](#)¹ (Wastewater)

[Mercury Minimization Plan](#)² (Stormwater)

[Phosphorus Management Plans](#)³

[EPA Pollution Prevention \(P2\) webpage](#)⁴

University of Minnesota - [MN Technical Assistance Program \(MNTAP\)](#)⁵

[MPCA's Preventing Waste and Pollution](#)⁶

D. Demonstration of why a variance is needed; Substantial and widespread social and economic impact

A description of variance condition 40 CFR 131.10(g)(6) is given below. A description of variance conditions 40 CFR 131.10(g)(1-5) is included in Appendix E. Each description includes the types of situations that may be appropriate for consideration under the different conditions. The applicant is encouraged to discuss with the MPCA which of the conditions applies before completing the Variance Request Form. The permit writer may want to consult with effluent limit staff and water quality standards staff if they are unclear about the suitability of any particular variance condition.

Substantial and widespread economic and social impact

40 CFR 131.10 (g) (6): Controls more stringent than those required by sections 301(b) and 306 of the federal Clean Water Act would result in substantial and widespread economic and social impact.

As stated in Section III.A of this guidance, every permit holder is required to meet Technology-Based Effluent Limits (TBELs). If TBELs are not sufficient to meet water quality standards, Water Quality-Based

¹<http://www.pca.state.mn.us/index.php/view-document.html?gid=8778>.

² <http://www.pca.state.mn.us/index.php/view-document.html?gid=15341>.

³ <http://www.pca.state.mn.us/index.php/water/water-monitoring-and-reporting/water-quality-and-pollutants/phosphorus/phosphorus-management-plans.html>.

⁴ <http://www.epa.gov/p2>

⁵ <http://www.mntap.umn.edu/>

⁶ <http://www.pca.state.mn.us/index.php/preventing-waste-and-pollution/index.html>

Effluent Limits (WQBELs) are determined by MPCA. The permittee must exhaust all options for meeting the WQBEL. Only after this analysis has been performed can the Permittee request a variance from the WQBEL. The following section explains in detail the necessary procedures and submittals to analyze what technologies can produce effluent that meets applicable water quality-based effluent limits, how to estimate the capital and operation and maintenance costs for a full-scale, long term treatment system, and how to determine if it would result in a substantial and widespread economic and social impact in accordance with 40 CFR 131.10(g)(6).

Alternatives Identification Plan

The Permittee shall submit an Alternatives Identification Plan (Plan) for MPCA review and comment in conjunction with submittal of the Variance Request Form (see Appendix B). The Plan shall be prepared and signed by a professional engineer registered in the state of Minnesota with expertise and experience in wastewater treatment plant (WWTP) design and operation and maintenance (O & M). The Plan shall include a preliminary analysis of **all potentially feasible** alternatives/technologies that may be capable of meeting the currently applicable effluent, water quality, and public health requirements for 20 years. Not listed in any particular order of importance, potentially feasible alternatives/technologies shall include, but not be limited to:

- Treatment alternatives/technologies (includes wastewater, water supply and process changes/enhancements)
- Replacement water supply source(s) and/or water supply treatment alternative/technologies
- Existing system enhancements/modifications (e.g. modifications to processes & piping, enhanced chemical addition to processes or side-streams, changes to sludge handling, etc.)
- Pollution Prevention (P2) techniques and pollution minimization programs (e.g. water recycling and reuse)
- Pretreatment/“upstream” program changes and/or improvements
- Land application
- Regionalization
- Relocation of the existing or proposed discharge

The Plan shall be modified pursuant to MPCA review. For the treatment alternatives/technologies component of the Plan, the Plan shall include a schedule for the Treatability Study (see below) which will detail evaluation timeliness and establish interim milestone dates for all treatment alternative/technologies identified.

Treatability Study

A Treatability Study (Study) of treatment alternatives/technologies identified in the Plan, having a reasonable chance of removing the pollutant(s) for which the permittee is requesting a variance, shall be submitted for MPCA review and comment within 3 months of MPCA acceptance of the Plan (as discussed above). The Study shall be prepared and signed by a professional engineer registered in the state of Minnesota with expertise and experience in WWTP design and O & M.

The alternatives/technologies to be evaluated should focus on the alternative(s) identified in the Plan, which needs further evaluation to determine the effectiveness of treatment, the necessary sizing of components, and the associated capital and O & M costs. The evaluation shall include “leading edge” alternatives/technologies; however they must be technically proven to the extent that their performance has been established beyond a level categorized as emerging or research alternatives/technologies. The Study alternatives/technologies to be evaluated shall include process

optimization trials with existing and/or new systems at the current facility. The Permittee may, upon concurrence from the MPCA, make changes to the Study as new alternatives/technologies and information emerges.

The Treatability Study shall include a detailed pilot study work plan to specifically evaluate and support the Treatability Study. The pilot study may be replaced/substituted by actual full scale operating data (if that data is readily available) from similar facilities under the full range of anticipated operating conditions. Facilities used for generation of replacement or substitute data (for alternatives/technologies evaluation purposes) must be substantially the same as the facility requesting the variance. This pilot study shall be completed on the same timelines as required for all potential alternatives/technologies identified in the Treatability Study. The Treatability Study and pilot study shall be modified pursuant to MPCA review.

- A pilot study schedule (the duration of each evaluation period should be defined. The period should be that length of time needed to insure that the treatment units have experienced the representative range of organic and hydraulic loading rates that could reasonably be experienced at the facility, including seasonal changes).
- An outline/abstract of site specific objectives.
- A discussion of the performance of the current treatment processes under various conditions, including seasonal changes.
- A detailed discussion of the alternatives/technologies being considered, including where they have been used, in what conditions and results.
- Schematics and design data sheets of the actual processes/plants involved in the Work Plan. The design data sheets should include but not be limited to the physical dimensions of each unit in the process/plant, the expected flow rates through each unit, the detention time in each unit and the range of hydraulic loading rates through each unit (to allow for direct extrapolation of the results to full scale facilities).
- The specific operational and performance characteristics that will be analyzed and the sampling frequency of the selected processes throughout the anticipated range of loadings, hydraulic influent flow rates, chemical feed(s) location(s) and rate(s), and operating conditions (including seasonal cold weather conditions).
- A discussion of why any other seemingly adequate treatment alternatives/technologies that were not selected for pilot testing were eliminated from consideration.

The final outcome of the Treatability Study is to provide the organic/solids/hydraulic loading rate, at all design flow and loading rates anticipated for full-scale operations, for all potential discharges from the facility. The Treatability Study shall target currently applicable effluent, water quality, and public health requirements for 20 years. The Study shall take into consideration all analytes known or believed to be present in the WWTP influents, including return flows (e.g. discharges from sludge handling systems).

Study reports

The Permittee shall provide written progress updates on the Treatability Study to the MPCA every three months following MPCA concurrence of the Plan. The updates shall include a discussion of what has occurred to date and what is planned for the up-coming three-month period.

The Permittee shall provide results of the Study to the MPCA as soon as possible, but within three months of Study completion. Based on the Study results, the Permittee shall include a description of the selected treatment alternative(s) and the complete wastewater treatment system of which it is a part. Use the following as guidelines for the report:

- [MN R. 7077.0272 subp. 2.](#)

- Recommended Standards for Wastewater Facilities, also known as "Ten States Standards", Chapter 10 & Chapter 50 - Section 53
- Design of Municipal Wastewater Treatment Plants Water Environment Federation Manual of Practice #8 (WEF MOP 8) shall be used as guidelines for the Report.

The Final Report shall also include, but not be limited to:

- A general summary of the project including a discussion of the effectiveness of the alternatives/technologies in removing the parameter(s) listed in the variance request.
- A discussion of the ability of the alternatives/technologies to produce effluent that meets applicable WQBELs.
- The recommended method of treatment and cost estimates.
- A description of any operational problems and treatment system limitations encountered during the Study.
- A description of all testing performed.
- Tabular and graphical summaries and interpretations of the data, including but not limited to percentage removal of water quality parameters of concern.*
- A complete set of all the raw water data obtained.*
- Chemical usage, capital and O & M costs for the pilot study and an extrapolation to full-scale size.
- Estimated costs for all of the alternatives/technologies identified in the Plan.
- Projected impacts to receiving water quality if the pilot technology is implemented on a larger scale.
- The Final Pilot Study Report must be signed by a Minnesota registered engineer.

* The water quality data obtained during the Study must be analyzed by a certified laboratory similar to those required by NPDES permits.

Treatment technology resources

The MPCA anticipates that permit holders seeking variances will be aware of resources to research available and feasible alternative treatment technologies or other pollution reduction alternatives. The table below provides several of these resources. The MPCA recognizes that it does not have readily accessible information on emerging technologies for various contaminants, and will therefore need to work closely with permit holders and technology suppliers to gain a common understanding of what emerging technologies could be relevant for any given pollutant.

Resources	Website
EPA Treatment Technology	http://water.epa.gov/scitech/wastetech/guide/technologies.cfm
EPA Drinking Water Treatability Database (can be used for both wastewater treatment and water supply treatment alternatives to improve effluent quality)	http://iaspub.epa.gov/tdb/pages/general/home.do
EPA Treatability Manual, 1982	Available through EPA's National Service Center for Environmental Publications http://www.epa.gov/nscep/index.html
Water Environment Research Federation	http://www.werf.org
National Association of Clean Water Agencies	http://www.nacwa.org
National Council for Air and Stream Improvement	http://www.ncasi.org

How to show substantial and widespread economic and social impacts

The applicant must be prepared to prove that complying with WQBELs would result in a substantial and widespread economic and social impact. This is a robust analysis, requiring expertise by a financial officer, and verified by both MPCA and EPA. It is more than just a “cost: benefit analysis”. Each analysis of economic impacts must demonstrate:

- That the polluting entity, whether privately or publically owned, would face substantial financial impacts due to the cost of the necessary pollution control (*substantial*); **and**
- That the affected community will bear significant adverse impacts if the entity is required to meet existing or proposed water quality standards (*widespread*).

The MPCA is following [EPA's Interim Economic Guidance for Water Quality Standards \(Guidance\)](#)⁷ and is directing applicants to Worksheets contained in the Guidance. The Guidance describes the types of information and analyses that should be considered by applicants and reviewers and is summarized in Appendix D of this guidance. However, EPA's Guidance is not an exhaustive description of appropriate economic impact analysis. Additional information and tests may be necessary and/or desirable in certain circumstances.

First, as explained above, the economic impacts are those that result from treatment beyond that required by technology-based effluent limit (TBEL) requirements. Consider this the 'baseline'. Therefore, the following economic impact analyses should address only the cost of improving the water to meet water quality standards. From the development of treatment alternatives/technologies in the Treatability Alternatives Plan and Study identified above, the entity must estimate the annual capital and O&M costs of the necessary pollution control alternatives.

Next, the applicant must determine whether the pollution control alternative is the responsibility of a public or private entity. The economic analysis for each is different. For example, if the entity is publicly owned (e.g. a municipal sewage treatment plant), the households in the community may bear the cost either through an increase in user fees, an increase in taxes or a combination of both. If the entity is privately-owned (e.g. a manufacturing facility), the analysis should consider factors such as the entity's ability to secure financing and the degree to which it will be able to pass the cost of pollution control on

⁷ See <http://water.epa.gov/scitech/swguidance/standards/economics/>.

to its customers in the form of higher prices. In some cases, a publicly owned entity serving privately owned industries must reflect in the analysis both the household factors and private industry factors in combination.

Demonstration of substantial financial impacts is not sufficient reason to grant a variance. The applicant must also demonstrate that compliance would create widespread socioeconomic impacts on the affected community. There are no economic ratios per se that evaluate socioeconomic impacts. Instead, the relative magnitudes of indicators such as increases in unemployment, losses to the local economy, changes in household income, decreases in tax revenues, indirect effects on other businesses, and increases in sewer fees for remaining private entities should be taken into account when deciding whether impacts could be considered widespread. Since EPA does not have standardized tests and benchmarks with which to measure these impacts, the Guidance provides an example of the types of information that should be considered when reviewing impacts on the surrounding community.

If the permit holder cannot find any data on available technologies, treatment or economic determinations, the facility should list what sources of information it explored. This evaluation of treatment alternatives may provide information the permit holder can include in other portions of the variance request, such as the proposed pollutant minimization plan. Some of the alternatives considered may achieve some reduction of the pollutant, even if not enough to meet the WQBEL.

One of the goals of a variance is to ensure the highest level of water quality achievable during the term of the variance. The economic analysis of treatment alternatives being considered for Minnesota's new antidegradation rules uses a "top down" approach. This means that all technologically feasible alternatives are listed and ranked starting with those that result in the least environmental impact to those with the most environmental impact. Starting with the alternative at the top of the list, the applicant tests whether the alternative is affordable, does not cause significant cross-media pollution, is legally possible, and has supportive governance. If the alternative "passes" all of these tests, then that is the preferred alternative. If the given alternative does not pass these tests, the applicant evaluates the successive alternatives until an alternative is identified that results in the least net increase in pollutant loading.

Although the terminology is different, the tests for economic considerations for variances and antidegradation are basically the same. In the case of variances, finding of substantial and widespread economic impacts can be the basis for granting a variance. In the case of antidegradation, the analysis must show that maintaining "high-quality waters" will preclude important economic and social development. As such, the two cases can be thought of as two sides of the same coin. Variances refer to situations where additional treatment to meet standards may result in declining economic and social conditions, while antidegradation refers to situations where lowering water quality may result in improved social and economic conditions. Because of this similarity, MPCA recommends that facilities also use economic analyses that are referenced in implementation of the antidegradation rule. **Links to this guidance will be provided when available.**

Another reference for how to assess widespread economic and social impact for public sector entities is the EPA document entitled [Combined Sewer Overflows – Guidance for Financial Capability Assessment and Schedule Development](#)⁸. Though developed for communities that need to reduce, eliminate or control combined sewer overflows, it is applicable to permit holders that must undertake other types of

⁸ <http://www.epa.gov/npdes/pubs/csofc.pdf>. EPA Document No. 832-B-97-004, February 1997.

major investments as well. An overview of the methodology shows that, first; the permittee would calculate the average cost per household for wastewater treatment. If the resulting cost is in the high range, the permittee proceeds to the next step. Second, the permittee shall determine its Financial Capability Indicators. These indicators take into account information such as bond rating, debt level, unemployment rate, median household income, property tax income and tax collection rates that could affect an applicant's financial capability to implement the proposed project.

As with the treatment alternatives analysis in general, affordability is addressed on a case-by-case basis. While all references above provide some direction for determining the degree of financial impact of a proposed project, they do not specify definitively when a variance is appropriate. This determination will have to be made by the MPCA and EPA.

V. Permit Conditions and Enforcement of Approved Variances

If the variance is approved, MPCA incorporates into the discharger's permit all conditions necessary to implement and enforce the approved variance. MPCA staff should document all the rationale used to make decisions relative to the variance in the Water Quality Variance Preliminary Determination Template and the materials should be made available during public notice.

A. Preliminary determination

The Water Quality Variance Preliminary Determination document will aid in drafting the permit and public notice. The Preliminary Determination will describe the reason for the variance and why the permit holder is eligible for the variance, including cross-references to information MPCA relied on in making its findings. The Preliminary Determination should include, but is not limited to, the information below:

- Water quality standards at issue, including:
 - Designated or Beneficial Use (Classification numbers and narrative describing the use)
 - Water quality standard that cannot be fully attained
 - 303(d) listing status
 - Any other relevant information.
- Water quality data summary, including:
 - Effluent concentration
 - Intake water concentration (if applicable)
 - Determination of ambient background concentration for pollutant (if available) in enough detail to establish whether or not the pollutant in question is already present in the waterbody, and if so, at what levels relative to the standard.
- Reason for the variance request per 131.10(g)
- Factual description of why the water quality-based effluent limit cannot be achieved.
- List applicable Technology-Based Effluent Limits. Explain why TBELs are insufficient to meet the applicable water quality standard.
- Identify any Permittee-controlled non-point source(s) (i.e. stormwater). Include any actions taken by the Permittee to reduce the pollutant of concern. IMPORTANT – the Permittee must

implement cost-effective and reasonable best management practices for nonpoint source control (CFR 131.10(h)(2) and Minn. R. 7052.0280.B).

Also included in the document should be information on treatment alternatives considered before requesting a variance:

- List the various options considered by the Permittee for reducing the discharge of the pollutant that were determined to be infeasible.
- Alternatives may include, but are not limited to: treatment upgrades, expanded pretreatment, relocation of discharge, etc.
- Pollutant Source Investigation or Pollutant Minimization Plan from the Permittee, including but not limited to:
 - Intake water source and river mile.
 - Receiving water body and river mile.
 - Studies (such as groundwater studies) showing where the pollutant is coming from and how the pollutant is entering the effluent.
 - Actions taken or that could be taken to reduce pollutant in the discharge, including milestones and dates and any studies or monitoring to show reasonable progress in meeting the underlying water quality standard.
 - Schedule for identifying and evaluating potential reduction, elimination and prevention methods.
 - Types of waste or byproducts produced by source reduction steps.

After reviewing the variance request submittal and supporting information, MPCA must characterize the risk to human health and aquatic life as a result of the variance in order to conclude that any increased risk is consistent with the protection of the public health, safety, and welfare. This analysis will be based on the difference between concentration or level of pollutant allowed by the variance versus how much concentration would be allowed by the calculated WQBEL. If the standard is based on human-health, the variance must not result in an increased risk to human health and must be consistent with the protection of the public health, safety and welfare. If the standard is based on aquatic life, MPCA will work with EPA to determine that endangered species and their critical habitat is not jeopardized. This document will also have information on compliance with antidegradation procedures and existing uses.

B. Alternative/Interim permit limit (highest attainable condition)

The alternative permit limit(s) must represent the highest attainable condition based on discharge monitoring data and cannot be less stringent than that achieved under the previous permit. The development of interim permit limits involves best professional judgment. MPCA staff charged with developing alternative or interim permit limits is directed to take into consideration discharge monitoring data, facility treatment capabilities, engineering studies, performance of similar facilities, and other applicable sources.

Under a variance renewal, the alternative/ interim permit limit for the pollutant of concern should reflect any improvements to water quality that were made under the previous pollution minimization plan (i.e. permit limits could become more stringent under a variance renewal than under the preceding variance).

C. Permit requirements

The permit will include a “Variance Requirements” Chapter. This chapter will require the Permittee to meet a series of activities; the goal of which is to achieve highest quality effluent, while working towards attaining the underlying WQBEL or treatment requirement. A permit will include:

A schedule of variance activities

Each permit with a variance is required to have a schedule of compliance activities. This includes activities such as evaluation or re-evaluation of treatment technology alternatives, establishment of a fund to aid economic feasibility, or information and update on pilot projects – whatever steps are necessary to bring the Permittee closer to achieving the WQBEL or treatment requirement.

Pollutant minimization plan

The variance request already requires submittal of a pollutant minimization plan. The permit will require that the Plan be updated and specified actions to be taken by the permittee that would result in reasonable progress toward meeting the underlying WQBEL or treatment requirements. Plans must be tailored to address the specific circumstances of each facility and the extent to which pollutant reduction can be achieved. (See Section IV.D above for more information on pollutant minimization plans).

Annual progress report(s)

The MPCA will review annual progress reports submitted by the permit holder to assess progress and identify impediments in reaching specific milestones, as well as affirm that the conditions under which the variance was based have not changed.

Monitoring

Depending on the nature of the variance and the surrounding circumstances, examples of monitoring requirements could be effluent monitoring to assess the effectiveness of any treatment and/or reduction requirements; ambient downstream monitoring to determine whether water quality is improving; studies assessing whether the beneficial uses are attainable; and/or studies supporting the development of site-specific water quality standards revisions.

D. Duration of variance

The MPCA issues a variance in a NPDES/SDS permit. The permit includes language that allows MPCA to reopen and modify the permit based on MPCA triennial water quality standards revisions applicable to the variance. In addition, the MPCA shall public notice every three years a list of variances currently in effect at the time of public notice, consistent with the triennial review of water quality standards required under 40 CFR section 131.20. At this time, a person may submit to MPCA new information that has become available relevant to the list of variances.

The term of the variance should only be as long as necessary to achieve the highest attainable condition. For variances longer than five years, the Permittee must submit a request for a reevaluation of the variance in order for the variance to continue. If MPCA does not receive this request, the variance shall expire. . As noted in Section VI below, a renewal or extension of a variance request will have to go through the same review as when it was first adopted.

In the event that the Permittee is compliant with the current permit and submits a timely application for permit reissuance, the permit can be administratively extended, and the permit effluent limits and any other requirements will continue to be in effect during the period of the administrative extension.

The variance does not become effective until EPA has approved the variance. Therefore, a permit with a variance will not be issued by the MPCA until EPA approves the proposed variance.

E. Public notification requirements

The public notice package will include the Public Notice document, Draft NPDES/SDS Permit with the associated variance requirements, and Permit Fact Sheet. The package will be public noticed for a period of 30 days to allow for public comment.

F. MPCA staff, MPCA Advisory Committee, and EPA roles and responsibilities

All variances from water quality standards and treatment requirements (Minn. R. 7053) must be approved by MPCA's Commissioner and EPA Region 5. The permit will be final issued after the EPA grants final approval.

Notification of the Variance Request will be communicated to EPA Region 5 by the MPCA at various times throughout the process. First, the MPCA will notify the EPA after a Variance Request Form has been submitted and discuss EPA's level of engagement and timeline for review. The EPA will be kept informed of the on-going review up to the point the MPCA makes a Preliminary Determination on whether to approve or deny the variance. At this point, the MPCA will share a draft of the permit with the EPA.

VI. Variance Renewals

The same process and requirements are followed when requesting a renewal of an existing variance. As stated in Section V.C above, any extension to a variance in an existing permit must be requested one year prior to permit expiration to insure enough time for a variance review.

In all cases, if a Permittee would like to renew a variance in an existing permit, they must reapply for the variance per the guidance provided here. This includes a demonstration that all or most of the circumstances justifying the original variance still exist, that the permit holder has made reasonable progress toward meeting the water quality standard by implementing the actions described in its Permit, and that the permit holder has complied with the terms and conditions of the existing variance. Renewal of a variance also requires approval by the MPCA Commissioner and U.S. EPA.

Appendix A: Water Quality Variance Rules and Statutes

7000.7000 VARIANCES.

Subp 1. Scope.

This part governs the procedure for issuance of all variances by the board or commissioner, except to the extent otherwise specifically provided by statute or rule.

Subp. 2. Written application.

In no case shall the board or commissioner grant a variance unless a written application has been made to the board or commissioner. The application must be served upon the commissioner. The written application must contain:

- A. The name and address of the applicant and the person who prepared the application;
- B. The signature of the applicant or authorized representative;
- C. A description, including the location, of the business, plant, system, or facility for which a variance is sought;
- D. The nature of the variance sought, including an identification of the applicable rules or standards from which a variance is sought, the period of time for which it is sought, and the reasons relied upon by the applicant in requesting the variance;
- E. If the applicant seeks a variance primarily on grounds of economic burden, financial statements prepared or approved by a certified public accountant, or other person acceptable to the agency, which shall fairly set forth the status of the business, plant, system, or facility for each of the three financial years immediately preceding the year of the application, and an analysis of the effect of such financial status if the variance is not granted (if the business, plant, system, or facility has not been in operation for this period, then the financial statements and analysis must be based on the most complete data available);
- F. If the applicant seeks a variance on grounds that compliance is not technologically feasible, a report from a registered professional engineer, or other person acceptable to the agency, stating fully the reasons why compliance is not technologically feasible;
- G. Other additional data or information that is required by any applicable agency rule or standard; and
- H. Any other relevant data or information that the board or the commissioner deems essential to a determination on the application, including but not limited to the following:
 - (1.) A general description of the materials handled or processed by the applicant that are pertinent to the subject application, and a statement of the nature and quantity of the materials being discharged, emitted, or disposed of, and that can reasonably be expected to be discharged, emitted, or disposed of during the period of the proposed variance, and proposed methods for the control of these materials;
 - (2.) A comprehensive proposed plan indicating the steps to be taken by the applicant during the period of the variance, even if the applicant is seeking a permanent variance, to reduce emission levels or discharges to the lowest limits practical;
 - (3.) A concise statement of the effect upon the air, water, and land resources of the state and upon the public and other persons affected, including those residing in the area where the variance will take effect, which will result from board or commissioner approval of the requested variance
 - (4.) A statement of the alternatives to the proposed operation under the variance which have been considered by the applicant

- (5.) A concise statement of the effect on the establishment, maintenance, operation, and expansion of business, commerce, trade, traffic, and other economic factors that may result from approval and from denial of the requested variance

Subp. 3. Review of applications.

The commissioner shall review all variance applications for completeness. If the commissioner finds that the application is incomplete or otherwise deficient, the commissioner shall promptly advise the applicant of the incompleteness or deficiency. The commissioner shall suspend further processing of the portion of the application affected by the deficiency until the applicant has supplied the necessary information or otherwise corrected the deficiency.

Subp. 4. Preliminary determination; preparation of public notice.

After a variance application is complete, the commissioner shall make a preliminary determination as to whether the variance should be issued or denied. The commissioner shall prepare a notice of the completed application and the preliminary determination. The notice must include a statement as to the manner in which the public may submit comments on the variance application and the manner in which a person may serve a request pursuant to part 7000.0650, subpart 4 or 7000.1800, asking that a contested case hearing or public informational meeting be held on the variance application. The notice must provide the public 30 days in which to submit these comments or requests.

Subp. 5. Availability of public notice.

The commissioner shall make a copy of the public notice available at the main agency office and at the applicable agency regional office.

Subp. 6. Mailing of public notice.

The commissioner shall mail a copy of the public notice to the applicant, to all persons who have registered their names on the mailing list established under Minnesota Statutes, section 14.14, subdivision 1, and to any person upon request.

Subp. 7. Circulation of public notice.

The commissioner shall circulate the public notice within the geographical area of the facility or activity that is the subject of the variance request. The commissioner shall designate the geographical area, which shall as a minimum include the county in which the facility or activity is or will be located.

The commissioner shall circulate the public notice in one or more of the following ways: posting the notice in the post office, public library, or other buildings used by the general public in the designated geographical area; posting the notice at or near the entrance of the applicant's premises, if located near the facility that is the subject of the variance application; or publishing the notice in one or more newspapers or periodicals of general circulation in the designated geographical area.

Subp. 8. Board decision.

The board shall make all final decisions on variance applications pursuant to Minnesota Statutes, section 116.02, subdivision 6, clause (6), or subdivision 8. The board shall approve or deny each application. The board may grant a variance upon such conditions as the board may prescribe.

If a contested case hearing has been held, the board shall act on each variance application as expeditiously as possible after receipt of the administrative law judge's report and recommendation or after submission of the application if no hearing is held. Any person may submit to the board an oral or written statement or recommendation regarding a variance application in accordance with part 7000.1800.

Subp. 8a. Commissioner decision.

The commissioner shall make final decisions on variance applications for those matters where the board does not have authority pursuant to Minnesota Statutes, section 116.02, subdivision 6, clause (6), or

where the board does not exercise authority pursuant to Minnesota Statutes, section 116.02, subdivision 8. The commissioner shall approve or deny each application. The commissioner may grant a variance upon conditions the commissioner may prescribe, in accordance with Minnesota Statutes, chapter 14. If a contested case hearing has been held, the commissioner shall act on each variance application as expeditiously as possible after receipt of the administrative law judge's report and recommendation, or after submission of the application if no hearing is held, but no later than 60 days after receipt of the report or submission of the application. Any person may submit to the commissioner a written statement or recommendation regarding a variance application in accordance with part 7000.1800. Any such submission shall be made within ten days following the receipt of the administrative law judge's report or within ten days after submission of an application where no hearing is held.

Subp. 9. Notification.

The commissioner must serve every decision of the board or commissioner on a variance application on the applicant and upon all interested persons who have submitted to the agency a request to receive a copy of the decision.

Subp. 10. Remedies preserved.

During the pendency of a variance application, the board or commissioner may, in its discretion, avail itself of any legal, equitable, or administrative remedy provided by law for violation of Minnesota Statutes or rules.

Subp. 11. Amendment or modification.

In the event a variance has been granted by the board or commissioner, the person holding the variance may file with the board or commissioner at any time a written application for modification or amendment of the variance. The application for modification or amendment, and the board's or commissioner's consideration of the application, shall comply with the requirements of this chapter. This provision shall not apply to a time extension of an existing variance.

Subp. 12. Assignment.

No variance may be assigned or transferred by the holder without the approval of the board or commissioner.

Subp. 13. Violation by variance holder.

Any variance holder who violates a provision of the variance is subject to revocation or suspension of the variance, or other sanction as authorized or provided by law. No revocation, suspension, or other sanction may be imposed before notice to the variance holder and opportunity for a contested case hearing

Statutory Authority: MS s [14.06](#); [116.07](#)

History: L 1984 c 640 s 32; L 1987 c 186 s 15; 19 SR 1310; 20 SR 2629; [28 SR 1249](#)

Posted: April 20, 2004

7050.0190 VARIANCE FROM STANDARDS.

Subp 1. Applicability

A variance under this part is a temporary change in a state water quality standard for a specified pollutant that reflects the highest attainable conditions for a permittee during the term of the variance. This part applies to variance requests from individual point source discharges to surface waters of the state for any water quality-based effluent limit based on a water quality standard of this chapter that is included in a permit. To be eligible for a water quality standards variance, the permittee must demonstrate to the agency that the permittee has met the following conditions:

- A. The variance would not jeopardize the continued existence of an endangered or threatened species listed under chapter 6134 or section 4 of the Endangered Species Act, United States Code, title 16, section 1533, or result in destruction or adverse modification of the species' critical habitat;
- B. Standards will not be attained by implementing effluent limitations required under sections 301(b) and 306 of the Clean Water Act, United States Code, title 33, sections 1311(b) and 1316, and by the permittee implementing cost-effective and reasonable best management practices for nonpoint sources under the permittee's control as established under state authority; and
- C. The variance would not remove an existing use.

Subp. 2. Listing.

The agency shall advise the United States Environmental Protection Agency of variances granted by the agency under this part, together with information as to the need for the variance. By October 1 each year, the commissioner shall prepare a list of the variances currently in effect and approved by the United States Environmental Protection Agency or granted by the agency under part 7053.0195. The list must be available for public inspection and must be provided to the United States Environmental Protection Agency. The list must identify the person that received the variance, the rule from which the variance was granted, the water body affected, the year approved by the United States Environmental Protection Agency or granted by the agency under part 7053.0195, the date the variance expires, and any restrictions that apply in lieu of the rule requirement.

Subp. 3. [Repealed, 41 SR 463]

Subp. 4. Conditions for approval.

Before a variance can become effective, the variance must be submitted to and approved by the United States Environmental Protection Agency in accordance with section 303(c) of the Clean Water Act and Code of Federal Regulations, title 40, sections 131.20 and 131.21. To be eligible for a preliminary determination by the agency to grant the variance, the permittee must:

- A. demonstrate to the agency that attaining the water quality standard is not feasible because:
 - (1) Naturally occurring pollutant concentrations prevent attainment of the water quality standard;
 - (2) Natural, ephemeral, intermittent, or low-flow conditions or water levels prevent attainment of water quality standards, unless these conditions may be compensated for by discharging sufficient volume of effluent to enable water quality standards to be met without violating the water conservation requirements of Minnesota Statutes, chapter 103G;
 - (3) Human-caused conditions or sources of pollution prevent attainment of water quality standards, and the conditions or sources cannot be remedied or would cause more environmental damage to correct than to leave in place;

(4) Dams, diversions, or other types of hydrologic modifications preclude attainment of water quality standards, and it is not feasible to restore the water body to its original condition or to operate the modification in a way that would result in attainment of the water quality standard

(5) physical conditions related to the natural features of the water body, such as the lack of a proper substrate cover, flow, depth, pools, riffles, and the like, unrelated to chemical water quality, preclude attainment of aquatic life protection uses

(6) controls more stringent than those required under sections 301(b) and 306 of the Clean Water Act, United States Code, title 33, sections 1311(b) and 1316, would result in substantial and widespread negative economic and social impacts

- B. show that the variance conforms with parts 7050.0180 and 7050.0185
- C. characterize the extent of any increased risk to human health and the environment associated with granting the variance, such that the agency is able to conclude that any increased risk is consistent with the protection of the public health, safety, and welfare
- D. Show sufficient information to allow the agency to determine the water quality currently attained and the interim numeric effluent conditions that reflect the highest attainable conditions for a permittee during the term of the variance.

Subp. 5. Submittal and notice requirements.

Variance application submittal, public notice of the agency's preliminary determination to grant the variance, and notice requirements must conform to part 7000.7000.

Subp. 6. Agency final decision; variance requirements.

The agency must make a final decision regarding the variance request that conforms to the procedural requirements in part 7000.7000. The agency must hold at least one meeting that meets the minimum public participation requirements in Code of Federal Regulations, title 40, section 25.5, before the agency makes a final decision on the variance request. If the agency grants the variance and the variance is approved by the United States Environmental Protection Agency, the permit issued by the agency must include and incorporate the following variance terms and conditions:

- A. An effluent limitation representing currently achievable treatment conditions based on discharge monitoring or projected effluent quality that is no less stringent than that achieved under the previous permit
- B. A schedule of compliance activities to improve water quality and move toward attainment of the underlying water quality standard
- C. An effluent limitation sufficient to meet the underlying water quality standard, upon the expiration of the variance, when the duration of the variance is shorter than the duration of the permit
- D. A provision allowing the agency to reopen and modify the permit based on agency triennial water quality standards revisions applicable to the variance.

Subp. 7. Renewal.

To be eligible for renewal of a variance, the permittee is subject to the requirements of subparts 1 to 6.

Subp. 8. Term and expiration.

The terms and conditions of a water quality standards variance are included and incorporated in the permit issued by the agency. The term of a variance must only be as long as necessary to achieve the highest attainable condition. For a variance with the term greater than five years, only if requested in writing by the permittee, the agency shall reevaluate the variance every five years in accordance with Code of Federal Regulations, title 40, section 131.14 (b)(1)(v) and (vi), as provided by the Federal Register, volume 80, page 51048. If the permittee does not request a reevaluation, the variance expires at the end of the five-year period.

Subp. 9. Public notice and review.

- A. Every three years, the agency shall provide public notice of a list of variances currently in effect at the time of public notice, consistent with the triennial review of water quality standards required under Code of Federal Regulations, title 40, section 131.20. The public notice shall include a statement that a person may submit to the agency new information that has become available relevant to the list of variances.
- B. If a permittee requests a renewal of a variance according to subpart 7, the agency shall consider information submitted under item A in its review for renewal of the variance. Variances from discharge effluent limits and treatment requirements are granted by the agency under parts 7000.7000 and 7053.0195.

Statutory Authority: *MS s 115.03; 115.44; 116.07*

History: *SR 913; 12 SR 1810; 19 SR 1310; 32 SR 1699; 41 SR 463*

Published Electronically: *October 24, 2016*

7052.0280 VARIANCES FROM WATER QUALITY STANDARDS OR CRITERIA (GLI)

Subpart 1. Applicability.

This part applies to GLI pollutant-specific variance requests from individual point source dischargers to surface waters of the state in the Lake Superior Basin for WQBELs which are included in a permit. This part does not apply to new dischargers, unless the proposed discharge is necessary to alleviate an imminent and substantial danger to public health and welfare. To be eligible for a water quality standards variance, the permittee must demonstrate to the agency that the permittee has met the following conditions:

- A. The variance would not jeopardize the continued existence of any endangered or threatened species listed under chapter 6134 or section 4 of the Endangered Species Act, United States Code, title 16, section 1533, or result in destruction or adverse modification of such species' critical habitat
- B. Standards will not be attained by implementing effluent limitations required under sections 301(b) and 306 of the Clean Water Act, United States Code, title 33, sections 1311(b) and 1316, and by the permittee implementing cost-effective and reasonable best management practices for nonpoint sources under the permittee's control as established under state authority
- C. The variance would not remove an existing use

Subp. 2. Term.

A variance must not exceed five years or the term of the permit, whichever is less.

Subp. 3. Conditions for approval.

Before a variance can become effective, the variance must be submitted to and approved by the United States Environmental Protection Agency in accordance with section 303(c) of the Clean Water Act and Code of Federal Regulations, title 40, sections 131.20 and 131.21. To be eligible for a preliminary determination by the agency to grant the variance, the permittee must:

- A. Demonstrate to the agency that attaining the water quality standard is not feasible because:
 - (1) Naturally occurring GLI pollutant concentrations prevent attainment of the water quality standard
 - (2) Natural, ephemeral, intermittent, or low-flow conditions or water levels prevent the attainment of water quality standards, unless these conditions may be compensated for by discharging sufficient volume of effluent to enable water quality standards to be met without violating the water conservation requirements of Minnesota Statutes, chapter 103G
 - (3) Human-caused conditions or sources of pollution prevent the attainment of water quality standards and cannot be remedied, or would cause more environmental damage to correct than to leave in place

(4) Dams, diversions, or other types of hydrologic modifications preclude the attainment of water quality standards, and it is not feasible to restore the water body to its original condition or to operate the modification in a way that would result in attainment of the water quality standard

(5) Physical conditions related to the natural features of the water body, such as the lack of a proper substrate cover, flow, depth, pools, riffles, and the like, unrelated to chemical water quality, preclude attainment of water quality standards

(6) Controls more stringent than those required under sections 301(b) and 306 of the Clean Water Act, United States Code, title 33, sections 1311(b) and 1316, would result in substantial and widespread economic and social impact

- B. Show that the variance conforms with parts 7050.0180 and 7050.0185
- C. Characterize the extent of any increased risk to human health and the environment associated with granting the variance, such that the agency is able to conclude that any increased risk is consistent with the protection of the public health, safety, and welfare
- D. Show sufficient information to allow the agency to determine the water quality currently attained and the interim numeric effluent conditions that reflect the highest attainable conditions for a permittee during the term of the variance

Subp. 4. Submittal and notice requirements.

Variance application submittal, public notice of the agency's preliminary determination to grant the variance, and notice requirements must conform to part 7000.7000.

Subp. 5. Agency final decision; variance requirements.

The agency must make a final decision regarding the variance request that conforms to the procedural requirements in part 7000.7000. The agency must hold at least one meeting that meets the minimum public participation requirements in Code of Federal Regulations, title 40, section 25.5, before the agency makes a final decision on the variance request. If the agency grants the variance and the variance is approved by the United States Environmental Protection Agency, the permit issued by the agency must include and incorporate the following variance terms and conditions:

- A. An effluent limitation representing currently achievable treatment conditions based on discharge monitoring or projected effluent quality. If the variance is being considered for renewal, the effluent limitation must be no less stringent than that achieved under the previous permit
- B. A schedule of compliance activities to improve water quality and move toward attainment of the underlying water quality standard
- C. An effluent limitation sufficient to meet the underlying water quality standard;
- D. A provision allowing the agency to reopen and modify the permit based on agency triennial water quality standards revisions applicable to the variance
- E. For BCCs, a GLI pollutant minimization program consistent with part 7052.0250, subpart 4

Subp. 6. Renewal.

To be eligible for renewal of a variance, the permittee is subject to the requirements of subparts 1 to 5.

Subp. 7. Listing.

The agency shall advise the United States Environmental Protection Agency of variances granted by the agency under this part, together with information as to the need for the variance. The agency must list all variances to state water quality standards as required in part 7050.0190, subpart 2.

Subp. 8. Public notice and review.

The agency shall provide public notice and review all variances currently in effect as required in part 7050.0190, subpart 9. Variances from discharge effluent limits and treatment requirements are granted by the agency under parts 7000.7000 and 7053.0195.

Statutory Authority: *MS s 115.03; 115.44; 116.07*

History: *22 SR 1466; 41 SR 463*

Published Electronically: *October 24, 2016*

7053.0195 VARIANCE FROM TREATMENT REQUIREMENTS.**Subpart 1. Applicability.**

A variance under this part is a temporary change in a discharge effluent limit or treatment requirement for a specified pollutant that reflects the highest attainable conditions for a permittee during the term of the variance. This part applies to variance requests from individual point source discharges to surface waters of the state for any provision of this chapter that is included in a permit. To be eligible for a variance from a discharge effluent limit or treatment requirement, the permittee must demonstrate to the agency that the permittee has met the conditions specified in part 7050.0190, subpart 1, items A to C.

Subp. 2. Listing.

The agency shall advise the United States Environmental Protection Agency of variances granted by the agency under this part, together with information as to the need for the variance. The agency must list all variances as required in part 7050.0190, subpart 2.

Subp. 3. [Repealed, 41 SR 463]

Subp. 4. Conditions for approval.

To be eligible for a preliminary determination by the agency to grant the variance, the permittee must meet the conditions specified in part 7050.0190, subpart 4, items A to D.

Subp. 5. Submittal and notice requirements.

Variance application submittal, public notice of the agency's preliminary determination to grant the variance, and notice requirements must conform to part 7000.7000.

Subp. 6. Agency final decision; variance requirements.

The agency must make a final decision regarding the variance request that conforms to the procedural requirements in part 7000.7000. If the agency grants the variance, the permit issued by the agency must include and incorporate the terms and conditions of the variance specified in part 7050.0190, subpart 6.

Subp. 7. Renewal.

To be eligible for renewal of a variance, the permittee is subject to the requirements of subparts 1 to 6.

Subp. 8. Term and expiration.

The terms and conditions of a variance from a discharge effluent limit or treatment requirement are included and incorporated in the permit issued by the agency. The term of a variance must only be as long as necessary to achieve the highest attainable condition. For a variance with the term greater than five years, only if requested in writing by the permittee, the agency shall reevaluate the variance every five years in accordance with Code of Federal Regulations, title 40, section 131.14 (b)(1)(v) and (vi), as provided by the Federal Register, volume 80, page 51048. If the permittee does not request a reevaluation, the variance expires at the end of the five-year period.

Subp. 9. Public notice and review.

The agency shall provide public notice and review all variances currently in effect as required in part 7050.0190, subpart 9. Variances from water quality standards are granted by the agency under parts 7000.7000, 7050.0190, and 7052.0280.

Statutory Authority: *MS s 115.03; 115.44; 116.07*
History: *32 SR 1699; 41 SR 463*
Published Electronically: *October 24, 2016*

116.07 POWERS AND DUTIES.

Subd. 5. Variances.

The Pollution Control Agency may grant variances from its rules as provided in rules adopted under this section and sections 14.055 and 14.056 in order to avoid undue hardship and to promote the effective and reasonable application and enforcement of laws, rules, and standards for prevention, abatement and control of water, air, noise, and land pollution. The variance rules shall provide for notice and opportunity for hearing before a variance is granted.

A local government unit authorized by contract with the Pollution Control Agency pursuant to section 116.05 to exercise administrative powers under this chapter may grant variances after notice and public hearing from any ordinance, rule, or standard for prevention, abatement, or control of water, air, noise and land pollution, adopted pursuant to said administrative powers and under the provisions of this chapter. **History:** [1967 c 882 s 7](#); 1969 c 1046 s 5-7; [1971 c 727 s 3-5](#); [1971 c 904 s 1](#); [1973 c 412 s 13](#); [1973 c 573 s 1](#); [1973 c 733 s 1](#); [1974 c 346 s 2-4](#); [1974 c 483 s 5-7](#); [1976 c 76 s 4](#); [1977 c 90 s 10](#); [1979 c 304 s 1](#); [1980 c 564 art 11 s 5-10](#); [1980 c 614 s 123](#); [1980 c 615 s 60](#); [1981 c 352 s 27,28](#); [1982 c 424 s 130](#); [1982 c 425 s 17](#); [1982 c 458 s 2](#); [1982 c 569 s 19](#); [1983 c 247 s 51](#); [1983 c 301 s 112-114](#); [1983 c 373 s 44,45](#); [1984 c 640 s 32](#); [1984 c 644 s 49](#); [1985 c 248 s 70](#); [1985 c 274 s 14](#); [1Sp1985 c 13 s 233](#); [1986 c 425 s 28](#); [1987 c 348 s 30](#); [1989 c 131 s 7](#); [1989 c 276 s 1](#); [1989 c 325 s 48](#); [1989 c 335 art 1 s 269](#); [1Sp1989 c 1 art 20 s 19](#); [1990 c 426 art 2 s 1](#); [1990 c 604 art 10 s 6](#); [1991 c 199 art 2 s 1](#); [1991 c 254 art 2 s 37](#); [1991 c 291 art 21 s 3](#); [1991 c 303 s 4,5](#); [1991 c 337 s 55](#); [1991 c 347 art 1 s 8,18](#); [1992 c 546 s 2](#); [1992 c 593 art 1 s 31](#); [1993 c 172 s 77](#); [1994 c 585 s 32](#); [1994 c 619 s 8](#); [1994 c 632 art 2 s 31](#); [1994 c 637 s 1](#); [1994 c 639 art 3 s 3](#); [1995 c 111 s 1](#); [1995 c 220 s 104,130](#); [1995 c 233 art 1 s 7,8](#); art 2 s 49; [1995 c 247 art 1 s 37,38](#); art 2 s 54; [1995 c 250 s 1](#); [1995 c 265 art 2 s 14](#); [1996 c 305 art 1 s 28](#); art 2 s 25; [1996 c 437 s 20](#); [1996 c 470 s 19](#); [1997 c 7 art 1 s 36](#); [1997 c 143 s 1](#); [1997 c 158 s 1](#); [1997 c 216 s 113,114](#); [1998 c 401 s 41-43](#); [1999 c 231 s 146](#); [1999 c 250 art 3 s 18](#); [2000 c 435 s 4,5](#); [2001 c 67 s 1](#); [2001 c 116 s 1](#); [2001 c 128 s 1](#); [1Sp2001 c 2 s 137](#); [2003 c 107 s 29](#); [2003 c 128 art 2 s 37,38](#); art 3 s 39; [2004 c 176 s 1](#); [1Sp2005 c 1 art 1 s 78](#); art 2 s 161; [2007 c 131 art 1 s 75](#); [2008 c 357 s 34](#); [2008 c 363 art 5 s 24](#); [2010 c 361 art 4 s 63,64](#); [2011 c 4 s 4](#); [1Sp2011 c 2 art 4 s 21,22](#). 2012 c 150 art 1 s 6,7; 2014 c 237 s 8; 2014 c 248 s 17; 1Sp2015 c 4 art 4 s 118-120; 2016 c 158 art 1 s 29

Appendix B: Variance Request Form

Link to form:

<http://www.pca.state.mn.us/publications/wq-wwprm2-10b.doc>

Appendix C: Non-Public Data and Variances

The majority of the MPCA's information is classified as public data. The [Minnesota Government Data Practices Act \(MGDPA\) found in Chapter 13 of Minnesota Statutes](#) classifies all governmental data as public unless a specific federal law, state statute or temporary classification classifies the data as not public. There are also other Minnesota statutes besides the MGDPA that classify certain types of data as not public. Many state agencies have data classification provisions contained in the authorities that are specific to their agencies. For example, Minn. Stat. § 116 deals with the MPCA and [Minn. Stat. § 116.075](#) specifically classifies some MPCA data as not public. Data practices-related regulations can also be found in [Minn. R. 1205](#).

There are some types of data within the agency that are classified as not public. One type is "trade secret information". "Trade secret information" is defined as a formula, pattern, compilation, program, device, method, technique or process that is supplied by an individual or organization that is the subject of efforts that are reasonable under the circumstances to maintain its secrecy and that derives independent economic value, actual or potential, from not being generally known. Information submitted by an industrial source may be exempt from public disclosure if identified and qualified as "trade secret information."

Process for submitting not public data

If a permit holder would like any of the data contained in a permit application or variance request form designated not public, the applicant will need to submit a letter to the MPCA Commissioner stating the specific sections, subsections, passages, tables, table cells etc. that it would like to have classified as not public data. The letter should cite the federal law, Minnesota statute or temporary classification which enables the request (e.g., [Minn. Stat. § 13.37 subd. 1b](#) or Minn. Stat. § 116.075, subd. 2). The letter should also state the justification(s) for this not public data classification. (This procedure is described in [Minn. R. 7000.1300, subp. 1.](#))

If an applicant has concerns about sensitive information contained in future submittals (such as final reports), the MPCA would suggest that these submittals be accompanied with a not public data classification request letter (as per the above-described procedure) which lists the specific information for which a not public data classification is being sought.

To make this process easier, the MPCA suggests that the not public data contained within a submittal be segregated from the public data contained within it so that these data can be easily removed from the report if the agency determines that they are classified as not public (e.g., placed within an appendix). If the not public data appears throughout the submittal and cannot easily be segregated within the document, it may be helpful to provide a not public version of the submittal (which will be maintained as not public data at the MPCA if it is determined that the data in question are classified as not public) as well as a redacted version of the submittal that has the not public data contained within it removed.

Appendix D: An Overview of EPA’s Interim Economic Guidance for Water Quality Standards

Summary:

The EPA workbook presents the economic factors to consider and types of tests to use to determine if:

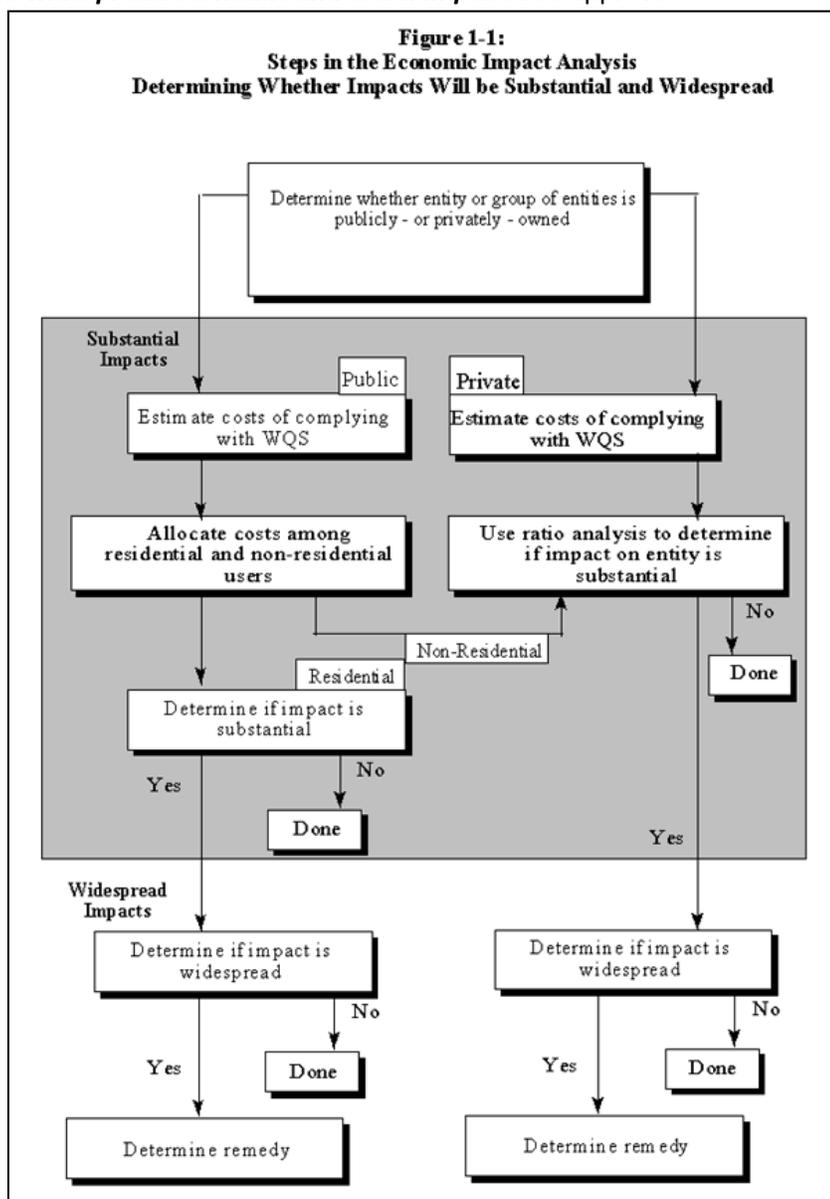
- designated use cannot be attained
- variance can be granted
- degradation of high-quality water is warranted

To remove a designated use or obtain a variance, State or discharger must demonstrate that the designated use would result in **substantial and widespread economic and social impacts**. To approve degradation of high-quality water must show that lower water quality is necessary to accommodate **important social and economic development**.

The workbook provides guidance to those seeking to remove a designated use, obtain a variance, or degrade high-quality water **and** to EPA and states responsible for reviewing variance requests, modifications of designated uses, and antidegradation analyses.

Analysis of economic impacts must demonstrate **both** of the following:

- **Substantial Impacts:** Polluting entity (or whoever would pay for the necessary pollution control) would face **substantial** financial impacts due to the costs of the necessary pollution controls (consider impacts on the entity itself, including the community if a public entity; evaluate via financial analysis of the discharger).
- **Widespread Impacts:** The affected community would bear significant widespread adverse socioeconomic impacts if the entity is required to meet water quality standards (consider changes in social and/or economic conditions of affected community; evaluate via socioeconomic conditions of affected geographic area).



Substantial impacts, public sector entities
from the cost of meeting required pollution control

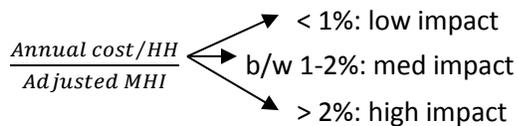
➤ Is the project financially viable?

Things to consider:

Financial impacts to the public entity
current socioeconomic conditions of the community

Five-step process:

- 1) Estimate cost of pollution control project and calculate total annual cost (over likely term of a loan to finance the project)
- 2) Calculate total annual pollution control cost per household (including existing pollution control costs)
- 3) Municipal preliminary screener:



- 4) Secondary test:
Public entity will need to provide financial and socioeconomic information (although much of this information is publicly available if we need to look anything up).

Six indicators addressing *debt* (community's ability to obtain financing), *socioeconomic health* of the community, and *financial management* conditions of the community.

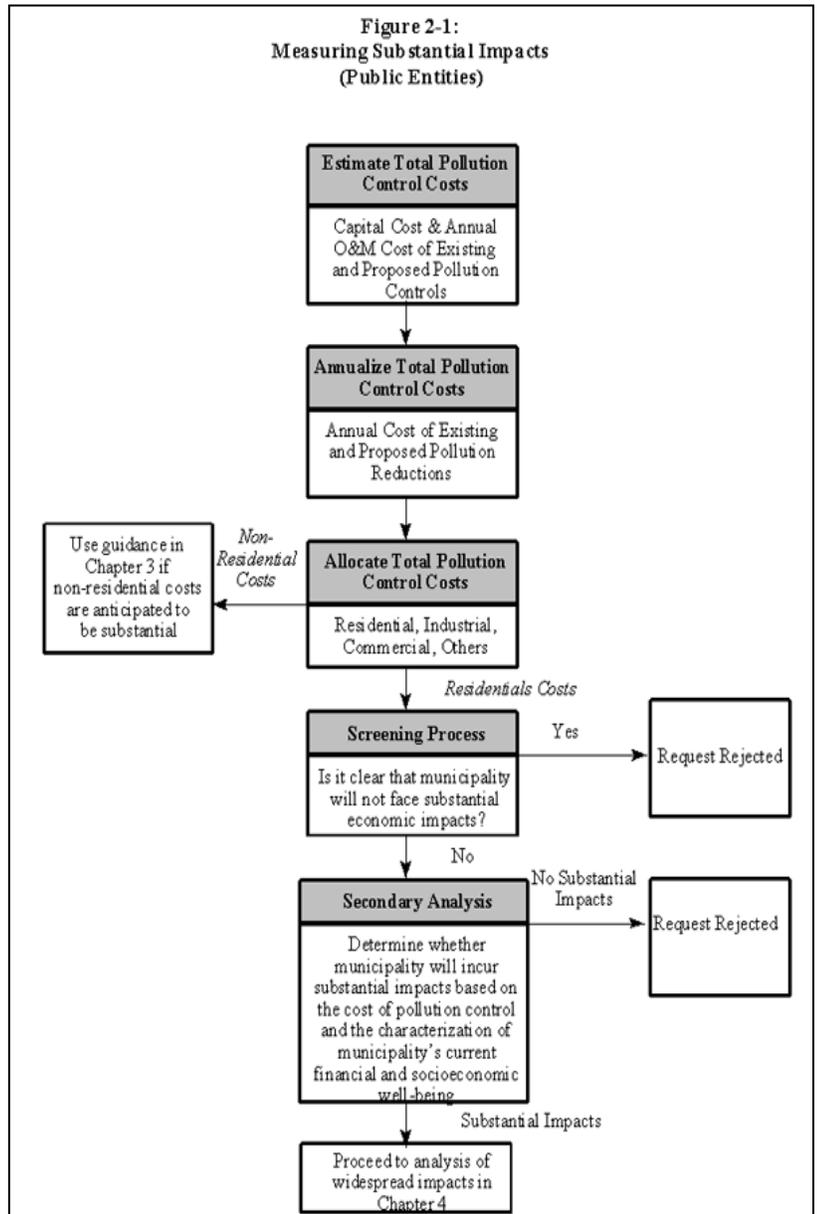
For each indicator score the applicant and take overall average:

- Weak = 1
- Mid-range = 2
- Strong = 3

- 5) Assess where community falls on *Impacts Matrix*

The EPA has worksheets to guide both dischargers and MPCA through all of these steps:

<http://water.epa.gov/scitech/swguidance/standards/economics/upload/usespublic.xlsx>



Secondary Indicators			
Indicator	Weak	Mid-Range	Strong
Bond Rating	Below BBB (S&P) Below Baa (Moody's)	BBB (S&P) Baa (Moody's)	Above BBB (S&P) or Baa (Moody's)
Overall Net Debt as Percent of Full Market Value of Taxable Property	Above 5%	2%-5%	Below 2%
Unemployment	More than 1% above National Average	National Average	More than 1% below National Average
Median Household Income	More than 10% below State Median	State Median	More than 10% above State Median
Property Tax Revenues as a Percent of Full Market Value of Taxable Property	Above 4%	2%-4%	Below 2%
Property Tax Collection Rate	< 94%	94% - 98%	> 98%

Assessment of Substantial Impact Matrix

Secondary Score	Municipal Preliminary Screener		
	Less than 1.0%	Between 1.0% and 2.0%	Greater than 2.0%
Less than 1.5	?	X	X
Between 1.5 and 2.5	✓	?	X
Greater than 2.5	✓	✓	?

X: Impact is likely to be substantial → Proceed to *Determination of Widespread Impacts*

✓: Impact is not likely to be substantial → Community expected to meet water quality standards
(Applicant may appeal decision by presenting unique circumstances of the community)

?: Impact is borderline → Can round up or down and/or consider other factors

Substantial impacts, private sector entities
from the cost of meeting required pollution control.

- What is the entity's ability to pay for the pollution control?
- Is the project affordable?

The process:

- 1) Verify project costs and calculate the annual cost of the pollution control project.
 - Discharger must demonstrate that the proposed project is the most appropriate means of meeting water quality standards and must provide project cost estimates.
 - Most cost-effective approach to meeting water quality standards should be considered.
- 2) *Financial Impact Analysis:*
To what extent will existing or planned activities and/or employment be reduced as a result of meeting the water quality standards?

Primary measure: profitability

How much will profits decline due to pollution control expenditures?

$$Profit\ Test = \frac{Earnings\ before\ Taxes}{Revenues}$$

Calculate with and without cost of pollution control.

Consider what degree discharger can raise prices to cover pollution control costs.

Secondary measures:

- **Liquidity:** How easily can the entity pay its short-term bills?

$$Current\ Ratio = \frac{Current\ Assets}{Current\ Liabilities}$$

Generally, *Current Ratio* > 2 means entity can cover its short-term obligations.

- **Solvency:** How easily can the entity pay its fixed and long term bills?

$$Beaver's\ Ratio = \frac{Cash\ Flow}{Total\ Debt}$$

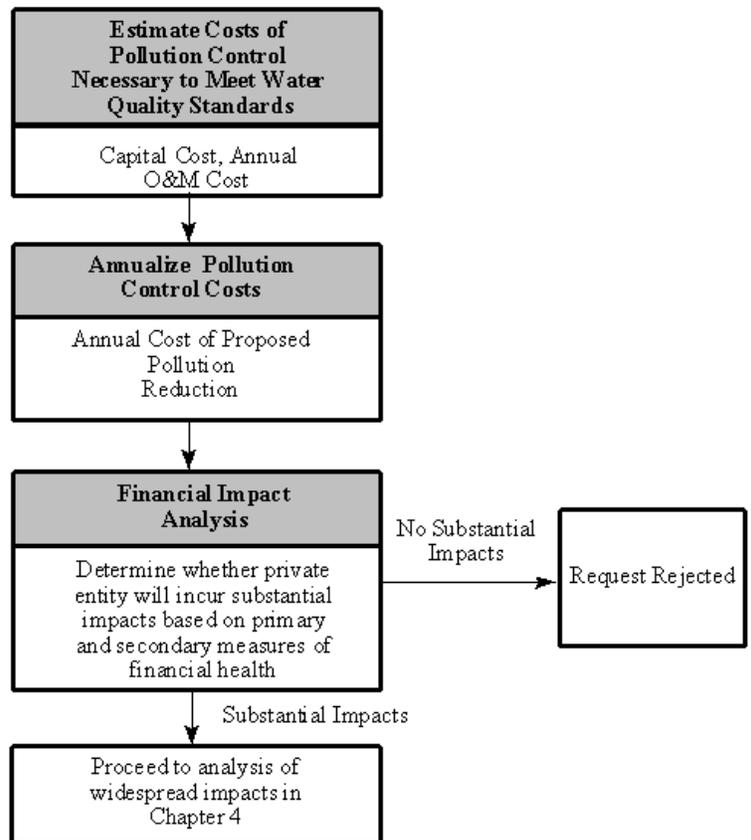
- > 0.20: solvent
- 0.15 – 0.20: future solvency is uncertain
- < 0.15: may be insolvent

- **Leverage:** How much money can the entity borrow?

$$Debt\ to\ Equity\ Ratio = \frac{Long - Term\ Liabilities}{Owner's\ Equity}$$

- All four of these measures should be considered jointly to obtain overall picture of economic health of the applicant and the impacts of water-quality standards requirement on economic health.
- All of these measures should be compared to industry benchmarks (available from various publicly-available sources) to assess whether there is a substantial impact to the applicant.

**Figure 3-1:
Measuring Substantial Impacts
(Private Entities)**



- There are no clear benchmarks for these indicators to assess substantial impact. Rather, these indicators should provide a picture of the economic health of the entity.

Determination of widespread impacts

Generally, there are no clear and standardized metrics or benchmarks to assess whether there will be widespread socioeconomic impacts. Rather, EPA suggests a number of indicators to take into account to assess whether impacts can be considered to be widespread.

The process:

- 1) Define the geographical area that is considered to be the *affected community*.
- 2) Consider the *baseline economic health* of the affected community.
- 3) Evaluate how the proposed project will affect the *socioeconomic well-being* of the community.

Step 1: Define the geographical area affected

- No simple rules to do this. Decision is based on the judgment of discharger and the state.
- Need to consider who would be impacted by the costs of pollution control (including potential unemployment impacts)?

Public-sector entities: Are impacts widespread?

- Applicant must show that compliance with standards would be burdensome to community.
- Applicant must show the estimated change in socioeconomic conditions that would occur as a result of compliance.
- Socioeconomic indicators to consider (for each one, the applicant should estimate the potential change from pre-compliance conditions if the community were to adopt pollution controls):
 - Median Household Income
 - Community Unemployment Rate
 - Overall Net Debt as a Percent of Full Market Value of Taxable Property
 - Percent of Households Below Poverty Line
 - Impact on Community Development Potential
 - Impact on Property Values
- Again, there are worksheets to guide both the applicant and MPCA through this assessment

Private-sector entities: Are impacts widespread?

- Additional impacts to consider: will affected community be able to absorb the impacts of reduced business activity or closures:
 - Loss of employment: number of jobs lost relative to the total number of jobs in the community and to the job opportunities available in the community.
 - Loss of property tax revenues: loss of property tax revenues relative to the total property tax revenues in the affected community.
 - Will other businesses be discouraged from locating in the area?

Multiplier effects

- Losses in employment and personal income as well as reductions in local expenditures will be compounded as money moves through the local economy.
- We have access to multipliers that estimate the effect of reduced economic activity on output, earnings and employment.

Economic benefits of clean water: may be considered on a case-by-case basis, but a full benefit –cost analysis is not required.

Appendix E: Remaining Factors for a Variance Based on 40 CFR 131.10(g)

**The remaining factors or justifications are based on ambient receiving water conditions. At this time, the MPCA is not aware of any specific situation where these conditions would be applicable and does not foresee variances being requested based on these factors in the short term. However, if a situation developed where a variance could be considered under these conditions, MPCA will work with EPA to determine a course of action.*

Naturally occurring pollutant concentrations

40 CFR 131.10 (g) (1): Naturally occurring pollutant concentrations prevent attainment of the use.

This variance condition describes a situation where natural background concentrations of a pollutant, such as a naturally occurring earth metal (e.g. arsenic, iron, etc.), already exceeds or contributes to an exceedance of a water quality standard or criterion. One way of making a determination that the pollutant is naturally occurring is to compare it with a reference natural condition. If it is demonstrated that the pollutant is naturally occurring, then the permit holder must explain why the facility cannot meet the criteria at the end of the pipe. The analysis will vary whether water the facility is discharging has high concentrations of this pollutant because it is of natural origin or if data indicates the pollutant is also being contributed through its processes (i.e., human-caused). The Permittee should consider how it is removing or will remove or reduce the pollutant caused by the facility to the maximum extent feasible, either through existing methods or as part of its proposed pollutant minimization plan.

Examples of information to support this rationale:

- Water quality assessment of all relevant parameters, biological assessment (as an indicator of water quality), upstream ambient data sufficient to adequately characterize pollutant concentrations and effluent data, appropriate reference conditions for comparison (if available).
- Soil composition data, groundwater data, U.S. Geological Survey (USGS) analyses/reports, comparison to data collected from headwater streams.
- Land usage/watershed characteristics, characterization of natural sources, water quality modeling (as necessary to confirm effects from natural pollutant sources), assessment of possible groundwater contamination from human activities as a source of surface water pollutant levels, and stream bank stability (including upstream stability if natural siltation is suspected).
- Source(s) of the pollutant and how it enters the facility discharge; how much of the pollutant in receiving water occurs naturally, how much is a result of permitted sources, and how much is from other sources.

Natural flow conditions

40 CFR 131.10 (g) (2): Natural, ephemeral, intermittent, or low-flow conditions or water level prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating state water conservation requirements to enable uses to be met.

This factor is most suitable for use attainability analysis situations to evaluate water flow conditions related to the attainability of the aquatic life uses. Some states have also used this factor to evaluate the attainability of recreational uses in situations where water body conditions are considered unsafe for

swimming (e.g. low flow/shallow depth or high flows). (NOTE: The last phrase, “unless those conditions...”, means that the factor is not relevant to situations where a discharger creates permanent flow in an otherwise ephemeral stream or where a discharger creates sufficient depth for recreation in a stream that would otherwise be too shallow.)

Examples of information to support this rationale:

- Volume and velocity of flow, depth, range of flow conditions (including highs, lows, and representative conditions not influenced by drought or recent precipitation), presence of pools within the water body channel, precipitation and snowmelt patterns, presence of riparian vegetation (as an indicator of pattern of flow and water levels), depth of the water table (to distinguish ephemeral from intermittent, if necessary), biological assessment (as necessary to confirm flow or water level limitation if physical evidence is unclear), recreational use safety and access, potential use by children.

Human caused conditions

40 CFR 131.10 (g) (3): Human-caused conditions or sources of pollution prevent attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place.

This factor may be applicable in circumstances where pollutant concentrations already exceed the applicable water quality standard in the water body; however, in this instance, the source of the pollutant is anthropogenic, as opposed to naturally occurring. An example of this type of human-caused condition are legacy pollutants, some of which are ubiquitous in the environment and result from past use of toxic chemicals such as DDT or Polychlorinated biphenyls (PCBs). A good example is removal of contaminated sediment from a harbor that would cause more damage by disruption than the damage caused by leaving it in place. A Permittee must demonstrate that it is not able to reduce the presence of the pollutant in its effluent, or that to do so would cause more environmental damage than to leave the pollutant in place.

Examples of information showing that sources of pollutant cannot be remedied and information showing that environmental costs and treatment outweigh the benefits:

- Data characterizing receiving water concentrations, sediment and tissue quality (as necessary), biological assessment (as an indicator of water quality), appropriate reference condition for comparison (if available), land use/watershed characteristics, characterization of human caused condition and its relationship to water quality and/or the use in question.
- For legacy pollutants, data, information and analyses describing the "life history" of the pollutant (e.g., how pollutant has entered into the environment, continues to cycle through, and will not be removed from the environment in the near future because its sources are diffuse and not within the control of the discharger to address).
- Identification of currently available remedies and assessment of their potential efficacy and feasibility, demonstration of technology-based requirements and cost effective and reasonable BMPs (as appropriate), forecast of water quality conditions once implemented (e.g., using water quality modeling), and assessment of potential damage caused by potential remedies.
- Demonstrate why the Permittee cannot meet the WQBEL, an evaluation of how much the pollutant is/can be removed by current treatment processes, and other alternatives to meet WQBELs (particularly if added through their processes).
- Describe how an alternative approach would have adverse environmental consequences (i.e., would cause more environmental damage to correct than to leave in place), consider additional treatment alternatives which could result in other environmental effects, such as potential

disposal of waste generated from various treatment technologies (e.g. brines, spent resin), alternative water source issues (e.g. high levels of arsenic in groundwater, sulfate or hardness in alternative raw water supplies), or high energy use (NOTE: Often, sources of electricity change over time, vary by nature of the grid, and have different impacts when released to water or air, so adjustments are necessary. Collaborate early with MPCA staff.)

Hydrologic modifications

40 CFR 131.10 (g) (4): Dams, diversions, or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such modification in a way, which would result in the attainment of the use.

This justification has been used to examine dam operation in consideration of potential use modifications related to the attainability of the aquatic life uses. Some states have also used this factor to evaluate the attainability of recreational uses. At this time, The MPCA is not aware of any specific situation where this condition would be applicable for variances. Also, as with a justification using human caused conditions, this justification is very closely tied with the particular aspects of a given situation and not easily generalized. As a result, the MPCA does not foresee variances being requested based on this factor. However, if a situation developed where a variance could be considered under this condition, the MPCA will work with EPA to determine course of action.

Examples of information to support this rationale:

- Water quality assessment for all relevant parameters, biological assessment (as an indicator of water quality), appropriate reference condition for comparison (if available), land usage/watershed characteristics, characterization of hydrologic modification and its relationship to water quality and/or the use in question, identification of currently available restoration and/or operation methods and assessment of their potential efficacy and feasibility, societal value of the hydrologic modification.

Natural features

40 CFR 131.10 (g) (5): Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and unrelated to water quality preclude attainment of aquatic life protection uses.

This justification would be relevant for situations where the natural features of the water body (e.g. substrate quality, width to depth ratios, lack of cover) is not conducive to certain aquatic life uses. The phrase “unrelated to water quality” does not preclude an examination of water quality. This is particularly important when evaluating a waterbody below a discharge. A demonstration that the downstream conditions are *natural* may require a quantitative examination of the water quality in the waterbody above and below the discharge to determine the effects of the discharge on the downstream condition. At this time, the MPCA is not aware of any specific situation where this condition would be applicable for variances and does not foresee variances being requested based on this factor. However, if a situation developed where a variance could be considered under this condition, the MPCA will contact EPA to determine the best course of action.

Examples of information to support this rationale:

- Physical habitat characterization of the water body, natural hydrologic patterns, sediment grain size, bathymetry, biological assessment, (as necessary to confirm physical habitat limitation if physical evidence is unclear).