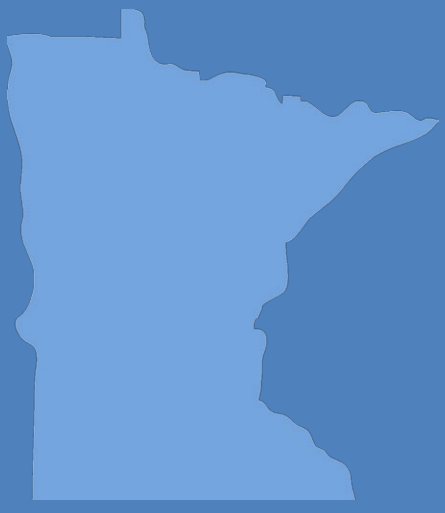
Minnesota Pollution Control Agency Wastewater Permit User's Manual

A guide to using a National Pollutant Discharge Elimination System/State Disposal System permit.



Minnesota Pollution Control Agency

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Introduction

Whether reading a permit as an operator, mayor, owner, town board member, clerk or board member, understanding all sections of a National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) permit is the first step to compliance. The Permit User's Manual is meant to complement the NPDES/SDS wastewater permit that has been issued to you by the Minnesota Pollution Control Agency (MPCA). This document contains information that may help answer questions regarding everything from the application process to the sampling required to meet limits and monitoring requirements and definitions of terms used in permits.

Minnesota Pollution Control Agency

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This report is available in alternative formats upon request, and online at www.pca.state.mn.us .

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Wastewater operator certification

Operator certification requirements

The MPCA requires individuals involved in a disposal operation or other environmentally related activity to obtain a license. An example is the certification of wastewater treatment operators. A person may not operate a wastewater treatment facility or collection system unless the permittee retains at **least one person** that:

- Is certified in a class equal to or higher than the class of the facility.
- Has full and active responsibility for the daily on-site operation of the facility or a portion of the facility (if additional operator(s) with appropriate certification are responsible for the remaining portions).
- Holds a Type IV Certified Operator license for all permittees that apply biosolids or industrial by-products to the land.
- Holds a Type V Certified Operator license for all industrial facilities that irrigate wastewater or other wastes.
    - The number of Type IV or V Operators required is dependent on the number of operators at the facility as follows:

# of Certified Operators	Required # Type IV/V Operators
3 or fewer	1
4 to 7	2
8 or more	3

Minnesota wastewater facility operator experience and education requirements*

Class	Experience requirements	Education requirements
A	Class B certified operator at least two years and Eight years operations experience in a Class A or B facility with two years management experience in a Class A or B facility	High school diploma or GED
	Class B certified operator at least two years and Four years operations experience in a Class A or B facility with two years management experience in a Class A or B facility	B.S. degree in chemical, civil, environmental, mechanical or sanitary engineering, or a physical or biological science
B	Class C certified operator at least one year and Six years operations experience in a Class A, B or C facility	High school diploma or GED
	Class C certified operator at least one year and Two years operations experience in a Class A, B or C facility	B.S. degree in chemical, civil, environmental, mechanical or sanitary engineering, or a physical or biological science

Class	Experience requirements	Education requirements
C	Three years operations experience in a Class A, B, C or D facility	High school diploma or GED
	One year operations experience in a Class A, B, C or D facility	B.S. degree in chemical, civil, environmental, mechanical or sanitary engineering, or a physical or biological science
D	One year operations experience in a Class A, B, C or D facility	High school diploma or GED
	No experience	Satisfactorily complete an **approved** postsecondary program of courses in water and wastewater treatment technology**

* The above also applies respectively to SA, SB, SC, and SD, except experience must have been gained in a wastewater facility or collection system.
**Approved program is available at St. Cloud Technical and Community College, and Vermilion Community College in Ely.

Fees

Exam	$55
Certificate Issuance	$23
Certificate Reissuance	$23

Disposal facility operator experience and education requirements

Type	Experience requirements	Education requirements
IV Operator	Six months work experience as a Type IV facility operator	High school diploma or equivalent or equivalent experience Nine contact hours of approved land application training
V Operator	Three months experience as a Type V facility operator	High school diploma or equivalent or equivalent experience Six contact hours of approved spray irrigation training

Fees

Exam	$15
Issuance	$15
Reissuance	$15

Substitutions for experience

- collection system or water treatment system operations experience may be substituted for up to 50% of the experience requirement
- 40 contact hours of correspondence or college courses relating to wastewater treatment may be substituted for one month of experience
- Sacramento State University wastewater training manuals = two and one half months experience for each volume
- no substitutions for one year experience required for Class D except satisfactorily completing postsecondary program in wastewater approved by the MPCA

Certificate issuance and renewal

The fee for issuance must be submitted within 90 days of receiving passing letter. Certificate must be renewed after three years. You should receive renewal notice one month prior to expiration date. If you don't receive one, call 800-657-3864.

All fees are nonrefundable; the certification program is mandated by the legislature to be self-supporting. If denied a reinstatement or reciprocity, the fee may be used for the exam application fee.

If your license expires the following fees apply:
More than 30 days after expiration date – certificate must be reinstated
Classes A – D: $40
Type IV and V: $30
More than one year after expiration date – license is lost and operator must retest

The following table outlines the number of hours needed in a three year period to renew the certificate based on the level of classification of the operator.

Operator classification	Hours needed for renewal
Class A	32 hours
Class B	24 Hours
Class C	16 hours
Class D	8 hours
Type IV	9 hours
Type V	6 hours

Acceptable training

A – D Wastewater operator classification

- **at least half** of renewal hours must be direct **wastewater**; the other half may be laboratory, water treatment, safety, management, etc.

Type IV

- municipal and industrial biosolids land application courses

Type V

- spray irrigation courses

A list of approved training courses for renewal is mailed to certified operators, and is posted on MPCA's wastewater training page. If an operator attends a training course that is not on the list they must submit the agenda that includes a schedule of all topics covered with the renewal application. The schedule must include stop and start times, breaks and lunches. Training approval is not automatic.

It is your responsibility to keep track of your training hours.
Check the website for training schedule – http://www.pca.state.mn.us/water/wwotrain.html

Contracting operators

- Should a permittee decide to contract with a properly certified operator to meet the certification requirement, a copy of the contract must be submitted to the MPCA. The contract must include the following items:
  - certified operator's name and certificate number
  - period covered by the contract and provisions for renewal
  - duties and responsibilities of the certified operator
  - duties and responsibilities of the permittee
  - provisions for notifying the MPCA 30 days in advance of termination if the contract is terminated prior to the expiration date
- In addition, the contract must specify the number of visits that the certified operator will make and the length of each visit. It is recommended that each visit be a minimum of two hours in length and at the following frequency:

Facility classification	Number of visits
Class A	3/week
Class B	2/week
Class C	1/week
Class D	1/month (Dec-Feb)
	1/two weeks (Mar-Nov)

- In an unexpected event that leaves a permit holder without a certified operator the permit holder is responsible for contracting with or hiring a certified operator as soon as possible. Please note that the facility must notify the MPCA of the change of operator within 30 days.

Large Subsurface Treatment System Operator Certification

Large Subsurface Treatment System (LSTS) operators are required by their MPCA State Disposal System permit to take both wastewater and Subsurface Sewage Treatment System (SSTS) training to become an SSTS Service Provider. Completing MPCA wastewater operator and SSTS trainings will be ensure LSTS operators are more adequately trained to successfully operate and maintain LSTS facilities**.** New and renewed permits issued after March 3, 2008, require the operator to be certified as an SSTS service provider.

To become a service provider, all LSTS operators are required to complete the Introduction to Onsite Systems and Service Provider courses provided through the University of Minnesota Onsite Sewage Treatment Program. Current class schedules can be found on the University of Minnesota website at http://septic.umn.edu/events/category/index.htm.

During the three year certification period, the service provider is required to earn 12 continuing education credit hours, with at least half of them approved as directly related to the operation of SSTS facilities by the MPCA.

LSTS operators who are SSTS certified service providers do not need a business license to operate permitted LSTS, provided the system is owned by a municipality and the LSTS operator is a municipal employee. If these conditions are not met, an SSTS business license is required.

For more information about program requirements for SSTS professional certification and business licensing, contact:

SSTS Certification & Licensing Staff
Minnesota Pollution Control Agency Certification and Training Unit
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

MPCA general numbers: 651-296-6300 or 1-800-657-3864, Fax: 651-297-8676

E-mail: ssts-info.pca@state.mn.us

Online: search "SSTS" at http://www.pca.state.mn.us

Information about SSTS certification and licensing requirements can be found on the MPCA website at http://www.pca.state.mn.us/index.php/view-document.html?gid=5294

The following link describes the requirements of a service provider
http://www.pca.state.mn.us/index.php/view-document.html?gid=19061

Parameter specific monitoring requirements

Certain facilities may be assigned specific limits and/or monitoring parameters in their permit. The following sections will outline what types of parameters may be included in a permit and the basis for assigning them.

Nitrogen species and total dissolved solids

There are three factors that require some form of nitrogen monitoring in National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) Permits:

1. If a permittee's average wet weather (AWW) design flow is >0.100 million gallons per day, the following parameters are required in the limits and monitoring by 40 CFR 122.21(j).
   - total nitrite plus nitrate (as N)
   - total ammonia (as N)
   - total kjeldahl nitrogen
   - total dissolved solids (TDS)
2. All major domestic wastewater treatment plants are required to sample once per month for ammonia to provide adequate data to determine toxicity of their effluent.
3. As a result of completion of the 2013 draft Statewide Nutrient Reduction Strategy a Phase 1 Milestone: a 20% reduction in total nitrogen loads to surface waters by 2025 was established for point source wastewater discharges. As a first step in achieving this Phase 1 Milestone influent and effluent monitoring for total nitrogen (nitrite + nitrate and total kjeldahl) will be added to municipal and industrial NPDES/SDS permits. This additional monitoring will provide the data necessary to develop a better understanding of the total nitrogen concentrations and loadings that is currently being received and discharged from municipal and industrial wastewater treatment plants. Once a more extensive total nitrogen data set is established work can begin on making the necessary reductions to achieve the goal of a 20% reduction in total nitrogen loads from point source dischargers by 2025.

Mercury

Many permittees are required to monitor for mercury due to the statewide mercury total maximum daily load (TMDL) that was approved by U.S. Environmental Protection Agency (EPA) on March 27, 2007. With regards to mercury monitoring, the MPCA's key implementation consideration continues to be to ensure that NPDES/SDS permits verify that wastewater point source discharges are insignificant on the local and regional levels. To find more information about the MPCA's strategies to address mercury in wastewater permits, please refer to the guidance document found at http://www.pca.state.mn.us/index.php/view-document.html?gid=12813.

Municipal facilities

Municipal limits and monitoring are based on:

- waste load allocations (WLAs) consistent with the northeast and southwest regions of the state
- reasonable potential of a facility to exceed mercury standards determined by the influent and effluent monitoring assigned to the facility
- antidegradation requirements

Industrial facilities

Industrial facilities will have limits and/or monitoring based on:

- Sector; some likely candidates include:
  - metallic mining
  - refineries
  - peat mining
  - power plants
- Geographical location related to the Lake Superior Basin – requirements and/or monitoring/limits will be determined on a case-by-case basis via discussion between effluent limits staff, permit writers and their supervisors, and reasonable potential calculations.
- Reasonable potential determination of a facility to exceed mercury standards.

Additionally, municipal and industrial facilities may be required to send MPCA a new or updated Mercury Minimization Plan (MMP) at a frequency specified in the facility's permit. These plans require facilities to identify any influent sources of mercury and to develop a plan to minimize those inputs to avoid creation of mercury concentrations in fish or water that are higher than other concentrations in the area and/or caused by a local source.

Phosphorus

As a result of the increased concern regarding phosphorus in receiving waters, the MPCA has determined that there is a need to obtain more information from dischargers. Frequencies will vary depending on the type of facility being permitted. Phosphorus limit assignment is based on the following:

- reasonable potential determination
- TMDL waste load allocation
- impaired water determination
- Minn. R. 7053.0255

The continued evaluation of pollutant minimization opportunities will require facilities to be prepared to comply with phosphorus mass Water Quality Based Effluent Limits. As flow and loading increases, compliance with this limit is more challenging. Phosphorus Management Plans (PMPs) are a tool that will help to determine where phosphorus is being added to the facility's flow and if there is a potential area from where it can be reduced.

Salty discharges

In recent years, MPCA staff became aware of environmental issues associated with salty discharges from industrial and municipal facilities. As a result, MPCA staff began to request additional monitoring for these facilities and also began assigning effluent limits to facilities that already have data which shows a reasonable potential to exceed a water quality standard.

Monitoring and technical data has shown that certain types of processes contain concentrated levels of chlorides, salinity, dissolved solids, etc. Many of the facilities that have concentrated discharges are discharging directly to Publicly Owned Treatment Works (POTWs). The concentrations are high enough to raise concerns regarding whether POTWs are capable of fully treating this wastewater and/or if POTW final effluent is being impacted by the industrial users.

Industrial and municipal facilities with one or both of the following conditions will be required to monitor for salty discharge parameters:

- continuous, periodic/seasonal, or intermittent wastewater flows where the low flow volume of the receiving water stream is five times less than the effluent design flow
- facilities with salty waste streams from concentrating treatment technologies (e.g., reverse osmosis, ion exchange, membrane filtration, etc.) and food processing industries using density-based (saline) sorting processes

Salty discharge parameters include:

- chloride
- calcium and magnesium hardness as C_aO_3
- specific conductance
- total dissolved solids
- sulfates as SO_4
- bicarbonates (HCO_3)
- sodium
- calcium
- magnesium
- potassium
- whole effluent toxicity (WET) testing will be assigned on a case-by-case basis

Whole effluent toxicity testing

WET refers to the aggregate toxic effect to aquatic organisms from all pollutants contained in a facility's wastewater (effluent). It is one way we implement the Clean Water Act's prohibition of the discharge of toxic pollutants in toxic amounts. WET tests measure wastewater's effects on specific test organisms' ability to survive, grow and reproduce. Additional information can be found at http://water.epa.gov/scitech/methods/cwa/wet/.

MPCA WET Test Report forms: http://www.pca.state.mn.us/index.php/water/water-types-and-programs/wastewater/wastewater-permits/index.html

Discharge Monitoring Reports

A complete Guide to Discharge Monitoring Reports (DMRs) is located at http://www.pca.state.mn.us/index.php/water/water-types-and-programs/wastewater/wastewater-technical-assistance/how-to-complete-your-discharge-monitoring-report-dmr.html.

DMRs are a set of monitoring report forms unique to the facility location and operation and based on currently effective permit requirements. The heart of the NPDES permitting program is self-monitoring, and DMRs are the way to do that. Completing DMRs allows the facility to maintain compliance with the permit and verify that compliance. It also allows the identification of pollutants from multiple sources that are entering a water body.

The MPCA's data management staff generates the DMR forms for a specific facility and those forms are then available online for download. DMRs are generated whenever a permit is issued, reissued, modified or final limits are triggered; make sure to download a new version after receiving a new permit or beginning final limits. If the incorrect version is uploaded the Electronic Discharge Monitoring Report (e-DMR) file will fail and not be uploaded.

The facility name and address are printed in the upper left corner with the station information directly below. The permittee name and address are in the upper right corner. The permit number and the monitoring period are listed in the middle of the upper portion of the form. The body of the form is organized in different sections and is site specific. It contains the limits and monitoring parameters that are assigned for individual facilities.

If, during the time-period specified, there is no discharge, no flow or no material generated, answer "Yes" to the question and submit the form. Note: You may need to fill in some of the tan boxes, for example, if the permit requires nitrogen and mercury series in June and December for pond facilities (even if the box says "Yes").

If results are ever below the detection limit, fill in the box using the 'less than' (<) symbol and the reporting limit from the laboratory report. For example: The lab report indicates "ND" with a reporting limit of 6 mg/L. You would report this as '<6 mg/L.' Please see the NPDES Data Reporting Memo, April 2005 (found at http://www.pca.state.mn.us/index.php/view-document.html?gid=6266) for more guidance on how to report and calculate nondetect values.

If data is missing from a DMR, please include a comment and/or explanation, either in the comments section of the DMR or as an attachment to the e-DMR.

Supplemental report forms vs. Sample values forms

Supplemental report forms may currently be required to contain a facility's detailed monitoring results. These forms will be replaced with the sample values spreadsheet and/or the operational spreadsheet, which are currently available for download. **All** facilities will be required to submit sampling and monitoring data completed during the reporting period electronically. Depending on the facility preference, the sample values spreadsheet or the operational spreadsheet can be used, but **only one of the two forms will need to be completed.**

Pond and mechanical systems have different reporting requirements. The facility's individualized forms will reflect this and includes space to fill out the information required by the permit and facility type. If you are a pond facility you are still required to report your pond observations and electronically submit that information on the pond weekly observations form as an attachment to the DMR.

In the DMR, sample values, and operational spreadsheets, there are individual forms for each station. Station types may include; groundwater, land application, surface discharge, waste stream (influent), waste stream (wastewater to land application), etc. Even if there is no activity at the station (monitoring location), you must still submit the form with the no discharge, no flow, or no material generated field populated.

If the electronic calculator tool is used to populate the fields on the DMR, please make sure to review the calculated values and fix any that may not have been calculated or calculated incorrectly. It is the permittee's responsibility to validate the calculations prior to submitting the DMR.

Significant figures

Significant figures include all the digits in a measurement that are known with certainty as well as the last digit which is an approximation. Regardless of the measuring device there is always some uncertainty in a measurement, but consistently using the following rules for determining significant figures will ensure more accuracy in DMR reporting.

For any parameter, sample measurements shall be reported in the same number of significant digits as the limits for that parameter are set forth in the permit. If the permit does not clarify the number of significant digits, sample measurements shall be reported in two significant digits. In the cases of effluent total suspended solids (TSS) or biochemical oxygen demand (BOD), where single digit effluents are achieved, single digits can be reported.

Rules for significant figures:

- All non-zero digits (1-9) are to be counted as significant.
  Example: 91 has two significant figures (9 and 1) and 123.45 has five significant figures (1, 2, 3, 4, 5)
- All zeroes between non-zero digits are always significant.
  Example: 4308 (4, 3, 0, 8) and 40.05 (4, 0, 0, 5) contain four significant digits
- For numbers that **do not** contain decimal points, the trailing zeroes may or may not be significant.
  Example: 470,000 may have two to six significant digits
- For numbers that **do** contain decimal points, the trailing zeroes are significant.
  Example: 0.360 (3, 6, 0) and 4.00 (4, 0, 0) contain significant digits
- If a number is less than 1, zeroes that follow the decimal point and are before a non-zero digit are not significant.
  Example: 0.00253 (2, 5, 3) and .0670 (6, 7, 0) contain three significant digits

Rounding

Rounding may be necessary in order to report in the same number of significant figures as the permit limit. All calculations (i.e. averaging and multiplying) should be performed prior to rounding any numbers for reporting purposes.

Rules for rounding:

- If the digit is less than 5, drop it and all figures to the right of it.
  Example 20.303 is rounded to 20
- If this digit is greater than 5, increase the digit to be rounded by 1 and drop everything after it.
  Example: 26.8 and 26.9 are rounded to 27

- If the digit is 5 and there are non-zero digits following the 5, increase the digit to be rounded by 1. Example: 2.40568 is rounded to 2.041 and 8.93532 is rounded to 8.94
- If this digit is 5 and there are no non-zero digits following the 5 (i.e. no digits or only zeros), round the digit to an even number (keep in mind that zero is considered an even number when rounding). Examples: 4.24500 is rounded to 4.24 and 6.37500 is rounded to 6.38

Invalid sample (invalid quality control/lab accident)

There are a number of conditions when a sample or sample result is considered invalid. These include:

- if a sample is subject to a lab accident and a valid analysis cannot be performed
- the quality control during sample analysis is not within analytical standards
- sample preparation results in insufficient dilutions and the result is reported with a greater than symbol (>), (Typically occurs with BOD and coliform analysis)

Invalid sample results are not to be used in performing calculations. When sufficient time remains in the monitoring period, an additional sample can be collected and reported. When not enough time remains in the monitoring period to collect an additional sample, leave the sample measurement box blank and attach an explanation of the situation to the DMR. Documentation from the lab and/or a written explanation from the operator must be retained with lab records for inspection.

Pond facilities and discharging

For pond facilities with a discharge event that occur in two consecutive months, summarize only the discharge samples that occur in the month being reported. The required effluent monitoring should be reported in the month in which the samples were taken. If all of the required effluent samples were taken in one of the months, then the month in which there were no effluent samples taken but a discharge occurred, a note should be included on the DMR indicating that the required samples were reported in the previous month or will be reported on the following month's DMR form.

An example of this would be if a discharge began the 27th day of the month and ended one or two days into the next month. Effluent samples could be taken at the required frequency of twice per week before the month ended. There would be no effluent samples to report in the new month, but there would still be flow reported from the discharge. A note should then be written on the DMR stating that the required sampling was done during the previous month.

Facility specific information about the acceptable discharge windows is located in the facility's permit. The following table outlines acceptable discharges windows for ponds based on the facility's assigned MPCA office. More information about discharge windows is found within the following website publication http://www.pca.state.mn.us/index.php/view-document.html?gid=8807.

MPCA Office	Brainerd Detroit Lakes Duluth	Rochester Marshall/Willmar St. Paul
Spring windows	March 1 - June 30	March 1 - June 15
Fall windows	September 1 - December 31	September 15 - December 31

Quarterly influent samples

These values will print on the DMR forms for influent waste in the months of March, June, September, and December. The samples **do not have to be taken in those months; they may be taken at any time during the quarter.** The influent quarterly samples for pH, TSS, CBOD and phosphorus may still be taken during any of the three months in the calendar quarter, and must be reported on the supplemental report form/sample values spreadsheet/operational spreadsheet for the month during which the sample was taken. Quarterly influent sample results must also be reported on the DMR form for the last month of each calendar quarter. Take the samples and report as follows:

Month sample was taken in	Month reported on DMR
January, February, March	March
April, May, June	June
July, August, September	September
October, November, December	December

Checklist: Before you send in your Discharge Monitoring Reports

Use this checklist to ensure everything is submitted:

- Are all required forms correctly filled out for the monitoring period?
- Has the sample values or operational spreadsheets been submitted already?
- Are all attachments included? (Release Sampling Reports, Pond Observation Form, Mercury Supplemental Report Form, Cover letters, etc.)
- Do all the empty tan boxes have a value in them? If data is missing, is an explanation attached in the comments?
- Is the submission on time? (submitted on or before the 21st of the month following the monitoring period)

Resources

See MPCA's DMR webpage: http://www.pca.state.mn.us/index.php/water/water-types-and-programs/wastewater/wastewater-technical-assistance/how-to-complete-your-discharge-monitoring-report-dmr.html

- guidance documents
- permit calculations and definitions
- information on e-DMRs and sample values
- link to online services portal
- contact information for DMR assistance

The MPCA has staff that can answer your questions about filling out DMRs. Call the MPCA toll-free 1-800-657-3864 and ask for a data manager or your assigned compliance person.

Compliance

Municipal and Industrial Wastewater Facility Compliance and Enforcement Coverage Areas Inspector Map: http://www.pca.state.mn.us/index.php/view-document.html?gid=19145

The ultimate goal for wastewater operators and MPCA inspectors is for a facility to maintain compliance with NPDES/SDS permit requirements which in turn means environmental protection. The NPDES/SDS permitting program is designed to allow permittees to self-monitor and self-report to demonstrate compliance with permit conditions, state statues and rules and federal regulations are being achieved. Therefore, it is important that an operator become familiar with permit conditions, submittal dates, and resources to avoid enforcement.

Inspections

An inspection is the MPCA's best tool to determine the operating procedures of a facility and its compliance with the permit. The permittee is encouraged to ask questions throughout the inspection. The inspection affords both the permittee and MPCA inspector a unique opportunity to learn from each other. Expect the following agenda when an inspector visits your facility.

Arrival

Sign in – when the facility provides a blank sign-in sheet, log, or visitor register, it is acceptable for MPCA inspectors to sign it. Please keep in mind, MPCA employees are not allowed to sign any "waiver" or "visitor release" that would relieve the facility of responsibility for injury or that would limit the rights of the MPCA to use data obtained from the facility. The inspector may cross-out and initial wording to ensure the form is able to be signed by the inspector.

Confidentiality – the inspector may also work with the facility to protect any trade secrets that may be encountered during the inspection. If you have any questions about this please talk to your inspector about public and non-public data prior to the tour of the facility.

Opening conference

MPCA inspectors may present identification upon arrival. To outline the purpose and scope of the inspection, the inspector may also provide a document with a list of objectives for the visit or an agenda. A mutually agreed upon agenda is meant to allow the permittee time to start up intermittent operations, and organize records, if not already compiled.

Treatment facility items

MPCA inspectors will want to see every treatment component of the system. Additionally, discharge locations, sampling methods and locations, etc. are all likely inspection items/areas.

On-Site document review

Depending on the visit, the inspector will review facility records before or after viewing the treatment facility's components. The following documents are required to be kept for at least three years by the facility and may be reviewed as part of your inspection:

- current permit
- Discharge Monitoring Reports

- chain of custody (COC) forms
- sampling/lab data
- operation and maintenance records
- other records as requested depending on the type of inspection being performed

Closing conference

Following your inspection, MPCA staff should allow time for an exit interview. At this time the inspector may outline tentative violation findings or other concerns identified as well as possible corrective actions the facility should consider implementing. This discussion may also include a discussion about how enforcement decisions are made at the MPCA (forum process). This is also an opportunity to ask any questions or obtain any other information about your inspection.

Photographic documentation

The MPCA inspector may use a camera to collect images and copy records at the facility. The inspector will attempt to accommodate permittees who have confidential business information or trade secret/proprietary items. Photography is an essential tool used to assist the inspector in preparing a thorough and accurate inspection record. If you have any concerns regarding the photos taken during your inspection, talk to your inspector about confidentiality options.

Sampling

The following sections should be used as a guide to properly collect, preserve and transport samples to ensure proper record keeping and reporting accuracy.

Sampling frequency

Efforts shall be made to space weekly or monthly samples out in a manner which is most representative (40 CFR 122.41 (j)(1)) of the monitored water/activity throughout the course of the week/month. For example, in most cases the permittee should not sample on consecutive days unless that is the most representative of the monitored water/activity.

Invalid samples

For information related to invalid samples, please see page 10 of the DMR Section of this document.

Containers

All sample containers must be clearly and completely labeled. Fill out labels in advance or immediately after taking the samples.

Preservation and storage

Samples shall be properly preserved when immediate analysis is not possible. Methods of preservation may include cooling, pH control, and chemical addition. There must be clear documentation of any chemical preservation of the sample. Information concerning preservation can be found in 40 CFR pt. 136: http://www.ecfr.gov/cgi-bin/text-idx?SID=b4170ca4292234073e2a5a3919650efd&node=se40.23.136_13&rgn=div8.

Sample transport

All sample transmittal forms and shipping bills from common carriers shall be placed in waterproof bags and sealed in the transport containers with the samples. If shipped by common carrier, transport containers should be securely sealed with strapping tape or other means to prevent lids from accidentally opening.

All samples that require thermal preservation shall be packed in thermally insulated coolers with wet ice that will sufficiently cool them to a temperature of <6°C for the duration of shipment. **Blue ice packs or other chemical cooling packs have been proven to not be as effective as wet ice.** The sample containers should be packed so that leakage and cross contamination is minimized, and care should be taken to prevent breakage of glass containers. A temperature blank containing non-freezing liquid should also be included in the cooler.

Sample transmittal records

The following procedures are designed to document and track all time periods and the **physical possession and/or storage** of sample containers and samples from point of origin through the final analytical result and sample disposal.

This type of documentation is useful in establishing the evidentiary integrity of samples and/or sample containers. It can be used to demonstrate that the samples and/or sample containers were handled and transferred in such a manner to eliminate possible tampering.

The number of individuals who physically handle the samples should be limited to those responsible for sample collection, initial laboratory receipt, sample preparation and sample analysis and sample disposal.

The signature of any individual on any record that is designated as part of the COC is their assertion that they personally handled or processed the samples identified on the record. Each signature shall be accompanied by a short statement which describes the activity of the signatory (i.e. received by, relinquished by, etc.).

All parties handling the sample are responsible for sample custody (i.e. relinquishing and receiving) and documentation **except** when the samples or sampling kits are relinquished to a common carrier. The common carrier should not sign COC forms. The COC form shall indicate the name of a common carrier, when used. The shipping bill or other documents must be retained.

All other transferor and transferee signatures associated with common carrier transfers are required. This shall include laboratory, field and other personnel releasing or accepting materials from the common carrier. COC will be relinquished by the party who seals the shipping container and accepted by the party who opens it. The COC form shall indicate the date and time that the transport container was sealed for shipment. Transport containers shall be sealed with strapping tape and a tamper proof custody seal. The custody seal must have space for the signature of the person who affixed the seal along with the date and time. The COC forms shall remain with the samples during transport or shipment. They must be put in a waterproof closure inside the sealed cooler or shipping chest.

Chain of custody

All samples that are submitted to a laboratory must be accompanied by a sample transmittal record or COC form. This record may be designed as individual forms for each sample or a summary form for a set of samples. Tracking records shall be kept for a period of three years.

At a minimum, the information transmitted to the laboratory shall include:

- site name and address (client code may be acceptable if samples are considered sensitive information and if the field records clearly trace the code to a specified site and address)
- date and time (military time preferred) of sample collection for each sample
- unique identification for all samples
- number of samples
- intended analyses – the analytical method number shall be listed if the sample results are related to a permit which specifies the method to be used
- storage conditions for the samples, including chemical and thermal preservation (may be indicated on sample label/field sheets)
- signature of person or sampler responsible for sample transmittal with date and time
- signature of person receiving the samples with date and time
- comments section (about sample or sample conditions)
- appropriate place for identification of common carrier (if used)

Chain of custody seals

At a minimum, tamper-indicating tape or seals shall be affixed to all shipping container closures when transferring or shipping sample container kits, or samples to another party. The seal shall be placed so that the transport container cannot be opened without breaking the seal. The time, calendar date and signatures of responsible personnel affixing and breaking all seals shall be recorded on the seals. Seals shall be retained as a part of the COC documentation. While not required, seals may be applied to individual sample containers. This establishes the history of each individual sample. The requirements specified for transport container seals shall be followed.

Calibration

Acceptable calibration protocol must involve a demonstration that the instrument or measuring system is capable of acceptable performance at the beginning of the analysis sequence and that initial calibration is still valid after continued system operation. This section will discuss different parameters that are monitored as required by the permit and how to properly ensure they are monitored correctly.

pH

The operation of a pH instrument system is calibrated and verified daily. A minimum of two pH buffers are needed to properly calibrate the pH instrument system (pH 7 buffer and either the pH 4 or 10 buffer, depending on the anticipated sample pH). The third buffer should be used to verify the calibration. The reading for the calibration verification buffer should be within 0.1 pH units of the expected value. The calibration and verification standard buffers must bracket the range of the samples being analyzed. Use a small portion of each buffer solution each day (or disposable daily use packets) for calibration and verification. Discard the used portion.

In-line pH meters can be by removing them from their mountings and calibrating directly on a daily basis or by verifying indirectly using a calibrated laboratory type pH meter.

If indirect calibration verification is done, the temperature and condition of the grab sample must remain constant until its pH has been measured by the laboratory pH meter.

Be sure to analyze grab samples within 15 minutes of collection.

The pH of the buffer solution is temperature dependent: pH 10 buffers change more per unit change in temperature than do pH 4 buffers. The temperature of buffer solutions must be known, and temperature-correction factors may need to be applied before calibration adjustments are made (depending on instrumentation). Calibration and operating procedures differ with instrument systems – check the manufacturer's instructions.

Report results to the nearest 0.1 pH unit. Always report the temperature at which the pH is measured.

Analyze at least one duplicate for each matrix type daily or with each batch of 20 or fewer samples for quality control.

Meters with microprocessors have reliable auto calibration functions and will automatically compensate for buffer temperatures and indicate slope. For such meters, follow the manufacturer's calibration instructions precisely – do not take shortcuts.

Check the records of electrode performance before each calibration and field trip. Use the following as a guide as to when to clean the electrode.

Action	Slope range
Ideal	95% – 102%
Needs cleaning	92% – 95%
Needs replacement	92% or below

Calibrate or check the temperature sensor at least three times per year, and tag the sensor with the date of last calibration. Do not use the automatic temperature compensating function of a pH meter if it has not been calibrated within the past four months.

pH measurement issues:

- Sodium at pH ≥10 can be reduced or eliminated by using a low sodium error electrode.
- Coatings of oils, greases, and particulates may impair the electrode's response. The electrode bulb should be patted dry with lint-free paper or cloth and rinsed with deionized water. If not, acetone may be used to clean very hard to remove films, but must be used sparingly so the electrode surface is not damaged.
- Poorly buffered solutions with low specific conductance (<200 µS/cm) may cause fluctuations in the pH readings. Equilibrate electrode by immersing in several aliquots of sample before taking pH.
- Each meter/electrode system must be calibrated at a minimum of three points, with no more than three pH units between each buffer, bracketing the expected sample pH. Check historical data for expected pH or use pH paper on an aliquot to estimate.
- Under normal conditions a pH measurement should be accurate to +/- 0.1 pH unit.

All initial calibrations and calibration verifications shall be completely documented in bound notebook or field sheets, including: date/time, standard(s) used, resultant meter response, action taken, and technician initials.

Temperature

Temperature determinations can be made with any field grade alcohol-filled, or dial-type Celsius thermometer as well as an electronic thermistor. If your facility is using or storing a mercury-filled thermometer, please turn the equipment into the nearest hazardous waste facility. The dial type thermometer is preferred over the glass type for field work because of its durability and ease of reading. Use care and proper cleaning procedures to prevent sample cross-contamination.

All thermometric devices should be checked at two temperatures annually against a National Institute of Standards and Technology (NIST) precision thermometer. If the certificate supplied by the manufacturer includes a calibration expiration date, the permittee is required to calibrate/verify them prior to this date and then to calibrate/verify them again within one year. If a calibration expiration date is not indicated, the checks must be done each year. The calibration/verification is completed with thermometers traceable to NIST. Alternatively, they can be replaced with currently certified thermometers. Temperatures should agree within +/- 0.1°C. Make note of the make, model, serial number, and calibration of each thermometer in the calibration records. If the difference is shown to be constant (i.e. + 0.5°C) over the thermometer range, the thermometer may be used provided that the difference is documented for 10 degree increments, and the correcting factor is used in all measurements.

All thermistors must be calibrated in the field with a field grade (or NIST-grade) thermometer.

1. Allow the thermometer or thermistor to equilibrate to ambient temperature.
2. Insert thermometer or thermistor **in situ** when possible or in a sub-sample. Swirl and take readings when the mercury column, needle, or read-out becomes constant; record the temperature to the nearest 0.5°C. Read to the nearest 0.1°C for a digital gage. Continuing calibration must also be performed for thermistors. The thermistor should be checked against the field grade thermometer at 4-hour intervals and at the end of the sampling day.

Chlorine

Chlorine is added to water supplies and wastewater treatment processes as a disinfectant. The properties for which it is valued as a disinfectant also make chlorine extremely toxic to aquatic organisms. The final acute value for total residual chlorine (TRC) is 0.038 mg/L for all Class 2 waters in the State of Minnesota [Minn. R. ch. 7050.0222]. NPDES/SDS permits issued by the MPCA typically establish TRC daily maximum effluent limitations at 0.038 mg/L to prevent acutely toxic conditions in Class 2 receiving waters. The TRC effluent limit for power generation facilities is 0.2 mg/L based upon a maximum discharge time limit of two hours in a 24 hour period.

Residual chlorine is unstable in aqueous solutions and as such its concentration decreases rapidly with time. Exposure to sunlight (or other strong light) or agitation will accelerate chlorine reduction; therefore, samples must be collected as discrete grab samples and analyzed within fifteen minutes of collection to assure accuracy. Field colorimetric kits are available to test for the presence of chlorine. The colorimetric method which requires the use of a spectrophotometer and the amperometric method are approved by EPA, see 40 CFR pt. 136.3 Table 1B, May 2012 for current Clean Water approved methods. Some visual colorimetric tests using diethyl-p-phenyldiamine chemistry and color wheels are EPA approved for drinking water only and should not be used for wastewater. The colorimetric spectrophotometer method is more desirable because of its ability to be calibrated. The subjective nature of assessing a titration endpoint used in the amperometric method reduces precision. The colorimetric method reduces human error. The amperometric method is better to use when there are matrix interferences in the wastewaters. For example, the lignins in pulp and paper wastewaters could cause background color interference in the colorimetric method. A complete discussion of the methods is found in the most current edition of *Standard Methods for the Examination of Water & Wastewater*.

Total residual chlorine

Although TRC effluent limitations are 0.038 mg/L, some of the analytical instruments used by NPDES permittees are not capable of accurate detection at this level. NPDES permittees who analyze TRC samples on-site must establish method detection limits (MDLs) and reporting limits (RLs) for their TRC analytical equipment. Guidance concerning this can be found at: http://www.pca.state.mn.us/index.php/view-document.html?gid=6266.

TRC analyzers may display analytical results below the instrument's MDL, e.g., 0.01 mg/L. However, analytical results that are below the RL are not considered reliable and are unacceptable for NPDES reporting purposes. Report analytical results that are below the RL as "<RL". The symbol "<" means "less than". For example, if an analytical value of 0.01 mg/L is obtained and the instrument's RL is 0.02 mg/L, report the result as: <0.02 mg/L.

Sanitary sewer extensions

MPCA staff will review data for sanitary sewer extensions (SSEs) when the permittee submits a SSE application, or prior to inspections.

Background: The sanitary sewer, or collection system, collects and transports wastewater. It includes sewers, lift stations, conveyance systems, interceptors, temporary storage basins, and related facilities. (Minn. R. 7077.0105, subp. 9a). Modifications to sanitary sewers typically provide new or improved sanitary service to residential dwellings, and industrial and commercial facilities.

Under Minnesota law (Minn. Stat. § 115.07, subp. 3), an MPCA permit is required for any extension, addition, or modification that: increases an existing pollutant discharge; introduces a new pollutant; or will result in an increase or potential increase in the amount of flow in a sanitary sewer system.

Additional information is found within the sanitary sewer modification or extension permit fact sheet at http://www.pca.state.mn.us/publications/wq-wwprm1-15.pdf
from: http://intranet/index.php?option=com_docman&task=doc_view&gid=466

Permitting

The permit is often the main compliance tool – both for the permittee and the MPCA. The permittee benefits from knowing exactly how the MPCA defines the parameters of the activity being permitted and how the permittee is required to track and report its compliance status to the MPCA. The MPCA benefits from the consistency that permits help provide. The permit and any language included in it supersede this document. If there are any variations, the permittee will be held to the requirements written in the permit.

The permittee has input throughout the permitting process, and has the same rights as any other citizen to contest the permit. It is important to remember that the permitting process is not unilateral, but allows for negotiation between the MPCA and the permittee. This negotiation is limited to the parameters used to determine compliance with the law. The law itself cannot be negotiated. The final permit should ideally reflect the needs of both the MPCA and the permittee. The MPCA and the permittee can use the permit to resolve noncompliance issues. The permit can allow a grace period during which the permittee is required to take certain steps to return to compliance. In those cases, a compliance schedule is often included in the permit. The MPCA relies on permits to advance environmental protection.

Permits are the basis for many of MPCA's regulatory activities. The MPCA authorizes activities in four categories through permits:

- Establish limits to prevent, control, or abate pollution. For example, permits may prevent deterioration of water quality by establishing limits on the concentration of pollutants discharged from a wastewater facility.
- Authorize the release, discharge, emission, or disposal of pollutants. The NPDES/SDS permits the discharge of treated wastewater.
- Authorizes construction, installation, or operation of a facility.
- Authorizes the storage, collection, transport, or processing of waste.

There are two main classes of NPDES/SDS permits:

- Major – POTWs that have an AWW flow of greater than 1.0 million gallons per day (mgd) or a Non-POTW that scores more than 80 points on the NPDES Permit Rating Worksheet.
- Minor – all other dischargers with AWW flows greater than 0.200 mgd

Water quality permit fees

Application fees reflect the level of effort required to process the different types of permit applications and develop a permit that complies with applicable regulations. Application fees must be submitted with the application.

Like application fees, annual fees vary and are dependent upon the type of permit. Annual fees can also depend on the design flow or design capacity for the different types of wastewater treatment facilities.

Guidance on application fees and permit annual fees can be found at: http://www.pca.state.mn.us/index.php/water/water-permits-and-rules/water-permits-and-forms/mpca-water-quality-permit-fees.html

Permit issuance/reissuance application forms

To determine the required application forms, attachments, and other information that must be included for a completion application, use the checklists below for the specific waste types discharged from the facility. These checklists can be found at http://www.pca.state.mn.us/index.php/water/water-permits-and-rules/water-permits-and-forms/water-permit-application-forms.html.

- Permit Application Checklist for Municipal/Domestic Wastewater
- Permit Application Checklist for Industrial Wastewater
- Permit Application Checklist for Miscellaneous Waste Types
- Permit Application Checklist for Water Treatment

Definitions

Certification	
Exclusions	A city manager, superintendent of public works, or other administrative official is not eligible to be certified as an operator unless that person's duties include the operation of the system of the facility. Includes maintenance and laboratory personnel, also.
Direct responsibility	Have full and active responsibility for the operation of a portion of, or all of a facility.
Disposal facility	A waste facility that is designed or operated for the purpose of disposing of waste on or in the land and has a permit, stipulation agreement, or other written approval from the agency.
Management	To direct or supervise the operation of a facility or shift operators who make operational decisions or operate facilities without supervision from a supervisor.
Operation	The routine performance of duties at a facility to achieve results that meet existing state laws and rules pertaining to wastewater.
Type IV	Any disposal facility that applies on the land any sewage sludge or semisolids from commercial or industrial operations.
Type V	Any disposal facility that applies on the land any nonhazardous liquid waste from commercial, industrial, or agricultural operations.
Waste disposal inspector	Any individual who has governmental authority to routinely review waste disposal facilities to determine compliance with applicable statutes, rules, permits, ordinances, or standards.
Waste disposal operator	Any individual responsible for conducting work at a waste disposal facility. It does not include office personnel, laborers, transporters, corporate directors, elected officials, or other individuals in managerial roles unless the person is directly involved in on-site supervision or operation of a waste disposal facility.
Discharge Monitoring Report definitions	
Concentration	The information contained in this column is usually a concentration calculation, such as milligrams/liter (mg/L) or micrograms/liter (ug/L). Some values to be reported in this column are not true concentration values, such as flow in million gallons per day (mgd).
Concentration units	Specifies the reporting units required in the concentration boxes.
DMR	Discharge Monitoring Report. The form used to report self-monitoring results by the NPDES permittees as required by the NPDES/SDS Permit.
e-DMR	The electronic version of the Discharge Monitoring Report.
Frequency of analysis	The frequency of analysis required by the permit is printed in the gray box. If the actual frequency varies from that indicated in the permit, insert the actual frequency in the tan box above the required frequency. If the actual frequency of sampling matches that required by the permit, leave these fields as to what is defaulted.

Discharge Monitoring Report definitions	
Operational Spreadsheet	The operational spreadsheet is a form to be used to record and submit individual monitoring results in an electronic file format, as a prerequisite to the DMR.
Parameter	The constituent that is being sampled. The parameter data is located in the box(es) along the left side column of the form designated as "Parameter". The name of the parameter is printed on the first and possibly second line(s). The five digit number printed on the next line in the same box is for internal MPCA use only.
Permit requirement	Reflects the limit type of the sample value to be reported, and the associated limit, if applicable. If there is no numeric limit, this means monitor only. Permit limits are preprinted in the shaded boxes below the corresponding blank tan sample values boxes.
Quantity	The information contained in this column is usually a mass calculation, such as kg/day or kg/month or kg/year and/or total calculations for flow and precipitation.
Quantity units	Specifies the reporting units required in the quantity sample value boxes.
Report	Means no limit applies but monitoring is required to be reported.
Sample type	The sample type required by the permit (grab, 4-hour composite, etc.) is printed in the grey box. If the actual sample type varies from that indicated in the permit, report the actual sample type in the tan box above the required sample type. If the actual sample type matches that required by the permit, leave these fields as to what is defaulted.
Sample value	The actual value or calculation to be reported.
Sample values spreadsheet	The sample values spreadsheet is a form to be used to record and submit individual monitoring results in an electronic file format, as a prerequisite to the DMR.
Supplemental report form	Form used to report a facility's detailed monitoring results.
General definitions	
Act	The Federal Water Pollution Control Act, as amended, commonly referred to as the Clean Water Act, U.S. Code, title 33, section 1251 et seq.
Agency	The Minnesota Pollution Control Agency.
Average dry weather flow	The daily average flow when the groundwater is at or near normal and a runoff condition is not occurring.
Average wet weather flow	The daily average flow for the wet test 30 consecutive days for mechanical facilities or for the wettest 180 consecutive days for controlled discharge pond systems. The 180 consecutive days for pond systems must be based on either the storage period from approximately November 15 through May 15 or the storage period from approximately May 15 through November 15.
Bypass	An intentional diversion of a waste stream from any portion of the treatment facility.

General definitions	
CFR	Code of Federal Regulations.
Commencement of construction	a) to begin or cause to begin as a part of a continuous program the placement, assembly, or installation of facilities or equipment; or to conduct significant site preparation work, including clearing, excavation, or removal of existing buildings, structures, or facilities, which site preparation is necessary for the placement, assembly, or installation of facilities or equipment; or b) to enter into a binding contractual obligation for the purchase of facilities or equipment which is intended to be used within a reasonable time in the operation of a new source. For the purpose of these rules, "binding contractual obligation" does not include an option to purchase or a contract which option or contract can be terminated without substantial financial loss, and does not include contracts for feasibility, engineering, or design studies.
Commissioner	The commissioner of the Minnesota Pollution Control Agency or a designated representative.
Continuous discharge	A discharge of a pollutant that occurs throughout the operating hours of a facility without interruption, except for occasional shutdowns for maintenance, process changes, or similar activities.
Discharge	The conveyance, channeling, runoff, or drainage of waste water, including stormwater and snow melt from a site.
Disposal system	A system for disposing of sewage, industrial waste or other wastes, and includes sewer systems and treatment works.
Duty officer	The Minnesota Duty Officer, Department of Public Safety, Division of Emergency Management.
Effluent limitation	A restriction established by rule or permit condition on quantities, discharge rates, and concentrations of pollutants that are discharged from point sources into waters of the state.
EAW	Environmental Assessment Worksheet. A document prepared by an entity that is proposing a project that has the potential to impact surface waters or groundwater. It may be a mandatory worksheet based on Minnesota Rules Part 4410, and may be because of one of the following circumstances: a proposed expansion of an existing municipal wastewater treatment facility, or a new municipal wastewater treatment facility; a new industrial discharge. If an EAW is required, it must also be presented to the MPCA Board for approval or denial.
EPA	United States Environmental Protection Agency
General permit	A permit issued under Minn. Rule 7001.0210 to a category of permittees whose operations, emissions, activities, discharges, or facilities are the same or substantially similar.
Groundwater	Water contained below the surface of the earth in the saturated zone including, without limitation, all waters whether under confined, unconfined, or perched conditions, in near-surface unconsolidated sediment or regolith, or in rock formations deeper underground.

General definitions	
Impervious surface	A constructed hard surface that either prevents or retards the entry of water into the soil and causes water to run off the surface in greater quantities and at an increased rate of flow than prior to development. Examples include rooftops, sidewalks, patios, driveways, parking lots, storage areas and concrete, asphalt, or gravel roads.
Initiation of operation	The date on which all components of the wastewater treatment system and all individual sewage treatment systems within a project service area are complete and functioning and the project begins operating for the purposes for which it was planned, designed, and built.
ISTS	Individual Sewage Treatment System
Local government unit	Cities, towns, and counties and sanitary districts
Major facility	A major municipal wastewater treatment facility that has a design average wet weather flow of 1.0 million gallons per day or more, and has been designated as such by the State, and has been approved by the EPA. Major industrial facilities meet the criteria set forth in the EPA Industrial Categorical Worksheet or the State has determined is significant and should be designated as a major facility.
Minor facility	A minor municipal wastewater treatment facility that has an average wet weather design flow of less than 1.0 million gallons per day. A minor industrial facility does not meet the criteria set forth in the EPA Industrial Categorical Worksheet.
MPCA	Minnesota Pollution Control Agency
Municipality	Any county, city, town, the Metropolitan Council Environmental Services, the Metropolitan Council when acting under chapter 473, an Indian tribe or an authorized Indian tribal organization, or any other governmental subdivision of the state responsible by law for the prevention, control, and abatement of water pollution in any area of the state.
New source discharge	A discharge not in existence on or before the date the receiving water body was designated an Outstanding Resource Value Waters or, for discharges to trout waters, on or before September 14, 1999.
NPDES	National Pollutant Discharge Elimination System. The program for issuing, modifying, revoking, reissuing, terminating, monitoring, and enforcing permits and imposing and enforcing pretreatment requirements under sections, 307, 318, 402 and 405 of the Clean Water Act, United States Code, title 33, sections 1317, 1328, 1342 and 1345.
Operator	A person who has full and active responsibility for the daily on-site operation of the system or facility, or of a portion of the system or facility if an additional operator or operators with appropriate certification are responsible for the remaining portions.
Outstanding resource value waters	Waters of the state with high water quality, wilderness characteristics, unique scientific or ecological significance, exceptional recreational value, or other special qualities which warrant stringent protection from pollution as defined in Minn Rule 7050.0180.

General definitions	
Permittee	The entity identified as permittee on the cover letter authorizing coverage under a permit.
Petroleum	a) gasoline and fuel oil as defined in Minn. Stat. section 296.01, subdivisions 3 and 4; b) crude oil or a fraction of crude oil that is liquid at a temperature of 60°F and pressure of 14.7 psi absolute; and c) constituents of gasoline and fuel oil under items a. or b. of this part.
Plans and specifications	Documents, including completed drawings and specifications that describe the project in full and detail the complete requirements for materials, dimensions, and construction technique. The documents that comprise the plans and specifications must conform with generally accepted engineering practices and applicable state statutes, rules, and requirements.
Point source	A discernible, confined, and discrete conveyance, including, but not limited to, a pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged.
Pollutant	Any sewage, industrial waste, or other wastes, as defined in Minnesota Statutes chapter 115.01, discharged into a disposal system or to waters of the state.
Pollution of water, water pollution or pollute the water	a) the discharge of any pollutant into any waters of the state or the contamination of any waters of the state so as to create a nuisance or render such waters unclean, or noxious, or impure so as to be actually or potentially harmful or detrimental or injurious to public health, safety or welfare, to domestic, agricultural, commercial, industrial, recreational or other legitimate uses, or to livestock, animals, birds, fish or other aquatic life; or b) the alteration made or induced by human activity of the chemical, physical, biological, or radiological integrity of waters of the state.
Process wastewater	Any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of a raw material, intermediate product, finished product, by-product, or waste product.
POTW	Publicly Owned Treatment Works. A device or system used in the treatment, recycling, or reclamation of municipal sewage or industrial wastes of a liquid nature which is owned and operated by a municipality or sanitary district. This term includes sewers, pipes, or other conveyances only if they convey wastewater to a publicly owned treatment works for treatment.
Reasonable potential	The process for determining the possibility for a discharged pollutant to exceed water quality standards or criteria. The reasonable potential determination is described in part 7052.0220 for chemical-specific water quality-based effluent limitations, and part 7052.0240, subpart 5, for whole effluent toxicity.
Release	Any overflow, discharge, spill, or other release of wastewater or materials to the environment.
SDS	State Disposal System. Generally describes a permit issued by the state of Minnesota that is non-surface water discharging or land application facilities.

General definitions	
Septic tank	Any watertight, covered receptacle that is designed and constructed to receive the discharge of sewage from a building sewer or preceding tank, stores liquids for a detention period that provides separation of solids from liquid and digestion of organic matter, and allows the effluent to discharge to a succeeding tank, treatment device, or soil dispersal system.
Sewage	The water-carried waste products from residences, public buildings, institutions or other buildings, or any mobile source, including the excrementitious or other discharge from the bodies of human beings or animals, together with such groundwater infiltration and surface water as may be present.
Surface waters	Waters of the state excluding groundwater as defined in Minnesota Statutes, section 115.01, subdivision 6.
TMDL	Total maximum daily load. The sum of the individual WLAs for point sources and load allocations for nonpoint sources and natural background, as more fully defined in Code of Federal Regulations, title 40, section 130.2, paragraph (i). A TMDL sets and allocates the maximum amount of a pollutant that may be introduced into a water of the state and still assure attainment and maintenance of water quality standards.
TTO	Total toxic organics. The summation of all values greater than 0.01 milligrams per liter (mg/l) for the toxic organics and found in the discharge from the Permittee's facility.
Upset	An exceptional incident in which the permit discharge limits are unintentionally and temporarily exceeded due to factors beyond the reasonable control of the permittee.
WLA	Waste Load Allocation. The portion of a receiving water's loading capacity that is allocated to one of its existing or future point sources of pollution, as more fully defined in Code of Federal Regulations, title 40, section 130.2, paragraph (h). In the absence of a TMDL approved by EPA under Code of Federal Regulations, title 40, section 130.7, or an assessment and remediation plan developed and approved according to part 7052.0200, subpart 1, item C, a WLA is the allocation for an individual point source that ensures that the level of water quality to be achieved by the point source is derived from and complies with all applicable water quality standards and criteria.
Water quality variance	A temporary change in a state's water quality standard for a specific pollutant and its relevant criteria, allowing deviation from meeting a water quality-based effluent limit (WQBEL) for a particular discharger. More information located at http://www.pca.state.mn.us/mvri148b.
Waters of the State	All streams, lakes, ponds, marshes, wetlands, watercourses, waterways, wells, springs, reservoirs, aquifers, irrigation systems, drainage systems and all other bodies or accumulations of water, surface or underground, natural or artificial, public or private, which are contained within, flow through, or border upon the state or any portion thereof.

Land application	
Agronomic rate	The sewage sludge application rate (dry weight basis) designed to: a) provide the amount of nitrogen which can be utilized by the food crop, feed crop, fiber crop, cover crop, or vegetation grown on the land; and b) minimize the amount of nitrogen in the sewage sludge that passes below the root zone of the crop or vegetation grown on the land to the ground water.
Available nitrogen	Nitrogen which is present in inorganic forms and the amount of organic nitrogen that can be mineralized to plant available forms.
Biosolids	Sewage Sludge
Ceiling concentrations	A pollutant concentration in biosolids which prohibits the land application of those biosolids.
Cropping year	A year beginning on September 1 of the year prior to the growing season and ending August 31 the year the crop is harvested. For example, the 1994 cropping year began September 1, 1993 and ended August 31, 1994.
Cumulative pollutant loading rate	The maximum amount of an inorganic pollutant that can be applied to an area of land.
Exceptional quality sewage sludge	Sewage sludge which has been prepared to meet one of the Class A pathogen reduction requirements in part 7041.1300, subpart 2; the pollutant concentrations in part 7041.1100 subpart 4, item C; and one of the vector attraction/reduction requirements in part 7041.1400 subpart 2, items A to H.
Pathogens	Organisms that are capable of producing an infection or disease in a susceptible host.
Pollutant limit (related to exceptional quality biosolids)	A numerical value that describes the amount of a pollutant allowed per unit amount of sewage sludge, such as milligrams per kilogram of total solids, or the amount of a pollutant that can be applied to a unit area of land, such as pounds per acre.
Sewage sludge	Solid, semisolid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes but is not limited to, scum or solids removed in primary, secondary, or advanced wastewater treatment processes, and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works. Sewage sludge that is acceptable and beneficial for recycling on land as a soil conditioner and nutrient source is also known as biosolids.
Realistic yield goal	The most recent five-year average of crop yields, excluding the worst year, or the most recent three- to five-year average yield increased by 10% or if the crop has never been grown, the realistic yield goal based on soil productivity and level of management as determined by the county Natural Resources Conservation Service, county extension agent, or a crop consultant.
Type IV certified operator or inspector	A person certified according to chapter 7048 for the land application of sewage sludge or the inspection of sewage sludge land application sites.
Vector attraction	The characteristic of sewage sludge that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious agents.

Permit calculations & definitions	
	For a complete list of limit type definitions, please refer to the Permit Calculations and Definitions document on the MPCA website located at http://www.pca.state.mn.us/index.php/view-document.html?gid=16214
Pretreatment	
Categorical industrial user	An industrial user that is subject to national categorical pretreatment standards.
Industrial user	A nondomestic source of indirect discharge.
Interference	A discharge that alone or in conjunction with a discharge or discharges from other sources: a) inhibits or disrupts a POTW plant, its treatment processes or operations, or its sludge processes, use, or disposal; and b) is, therefore, a cause of a violation, including an increase in the magnitude or duration of a violation, of any permit or rule controlling, prohibiting, or limiting the release of pollutants from the POTW plant into the environment.
Pass-through	A discharge that exits a POTW plant into waters of the state in quantities or concentrations that, alone or in conjunction with a discharge or discharges from other sources, is a cause of violating a requirement of any permit, rule, regulation, or ordinance controlling, prohibiting, or limiting the release of pollutants from the POTW plant into the environment, including an increase in the magnitude or duration of a violation.
Pretreatment	The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater before or in lieu of discharging or otherwise introducing pollutants into a POTW. The reduction or alteration may be obtained by physical, chemical, or biological processes, process changes, or other means, except as prohibited by part 7049.0300, subpart 4. Appropriate pretreatment technology includes, but is not limited to, control equipment, such as equalization tanks or facilities, for protection against surges or slug discharges that might interfere with or otherwise be incompatible with the receiving POTW. However, when process effluent limited by categorical pretreatment standards is mixed with wastewater other than those generated by processes limited by the same categorical pretreatment standard, the effluent must meet, after pretreatment, the alternate limits for the combined effluent calculated using the combined waste stream formula as provided in part 7049.0350.
Sampling	
	For a complete list of limit type definitions, please refer to the Limit Type Calculations and Definitions document on the MPCA website located at http://www.pca.state.mn.us/index.php/view-document.html?gid=16214
Acute toxicity test	A static renewal test conducted on an exponentially diluted series of effluent. The purpose is to calculate the percent of effluent that causes 50% mortality/immobility of aquatic organisms at 48 or 96 hours. An LC50/EC50 (lethal/immobile) concentration less than or equal to 100 % effluent constitutes a positive for toxicity.

Sampling	
Chronic toxicity test	A static renewal test conducted on an exponentially diluted series of effluent. The purpose is to find the dilution rate that causes no unacceptable effect on the test organisms by the end of the chronic exposure period.
Calculation	Determine the amount or number of a parameter mathematically.
Continuous	A sample taken without interruption.
Estimate	An approximate calculation or judgment of the value, number quantity or extent of something.
Flow composite sample	A sample prepared by physically combining two or more samples taken proportionately to flow over a designated period of time.
Grab sample	An individual sample collected from one location at one point in time and place.
Instantaneous sample	A measurement such as flow pH or temperature taken immediately at the time of sampling.
Measurement sample	A sample taken using the designated unit of measurement.
Stormwater	
BMPs	Best management practices. Practices to prevent or reduce the pollution of waters of the state, including schedules of activities, prohibitions of practices, and other management practices, and also includes treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge, or waste disposal or drainage from raw material storage. (Minn. R. 7001.1020, subp.5.)
Construction activity	For this permit includes construction activity as defined in 40 CFR pt.122.26(b)(14)(x) and small construction activity as defined in 40 CFR pt. 122.26(b)(15). This includes a disturbance to the land that results in a change in the topography, existing soil cover (both vegetative and non-vegetative), or the existing soil topography that may result in accelerated stormwater runoff, leading to soil erosion and movement of sediment into surface waters or drainage systems. Examples of construction activity may include clearing, grading, filling, and excavating. Construction activity includes the disturbance of less than one acre of total land area that is a part of a larger common plan of development or sale if the larger common plan will ultimately disturb one (1) acre or more.
Erosion prevention	Measures employed to prevent erosion. Examples include but not limited to: soil stabilization practices, limited grading, mulch, temporary erosion protection or permanent cover, and construction phasing.
Final stabilization	All soil disturbing activities at the site have been completed and all soils are stabilized by a uniform perennial vegetative cover with a density of 70% of its expected final growth density over the entire pervious surface area, or other equivalent means necessary to prevent soil failure under erosive conditions. In addition, all temporary synthetic and structural erosion prevention and sediment control BMPs (such as silt fence) have been removed on the portions of the site for which the permittee(s) is/are responsible. BMPs designed to decompose on site (such as some compost logs) may be left in place.

Stormwater	
Flood event	The surface elevation of a water body has risen to a level that causes the inundation or submersion of areas normally above the Ordinary High Water Level.
Impervious surface	A constructed hard surface that either prevents or retards the entry of water into the soil and causes water to run off the surface in greater quantities and at an increased rate of flow than prior to development. Examples include rooftops, sidewalks, patios, driveways, parking lots, storage areas, and concrete, asphalt, or gravel roads.
Non-structural BMPs	Practices that will reduce or eliminate pollutants to stormwater and do not require installation of permanent structural devices to treat runoff. Examples of non-structural BMPs include but are not limited to parking lot and street sweeping, employee training, changing material handling practices, installation of silt fence, and minimizing materials exposed to stormwater through inventory reduction, tarping, or moving materials indoors.
Significant materials	Includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); any chemical the facility is required to report pursuant to Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA); fertilizers; pesticides; and waste products such as ashes, slag, and sludge that have the potential to be released with stormwater discharges. When determining whether a material is significant, the physical and chemical characteristics of the material should be considered (e.g. the material's solubility, transportability, and toxicity characteristics) to determine the material's pollution potential. (40 CFR 122.26(b)(12).
Storm event	A precipitation event (rainfall, snowfall, snowmelt, etc.) that results in surface runoff and is independent of the duration of the event and/or the volume of precipitation.
Stormwater	Stormwater runoff, snow melt runoff, and surface runoff and drainage. (Minn. R. 7090.0080, subp.12.)
Structural BMPs	The installation of devices that will reduce or eliminate pollutants to stormwater through installation of permanent structural devices to treat or control runoff. Examples of structural BMPs include but are not limited to installation of stormwater diversion berms or channels; sedimentation basins (retention or detention basins); oil/water separators; grit chambers; roofs, awnings, or buildings to cover significant material.