

CONCRETE PRODUCTS OPERATIONS - FACT SHEET

WPDES Permit No. WI-0046507-06-0

August 2016

GENERAL PERMIT COVERAGE

General Permits (GP) are designed to cover pollutant discharges from a class of facilities or industries that are similar in nature. GPs currently exist for groundwater remediations, nonmetallic mining operations, swimming pools and numerous other types of industrial operations. For facilities that are eligible for coverage under a GP, the Department sends a cover letter and provides a copy of the permit to the facility. The cover letter includes the Department's determination that a facility's pollutant discharge is authorized under the GP.

MORE THAN ONE GP CAN APPLY

A facility may need to be covered under more than one GP, depending on the different types of waste streams that a facility may discharge. For example, if a concrete products operation has a separate discharge of noncontact cooling water, then the facility would need to be covered under two general permits: the Noncontact Cooling Water general permit and the Concrete Products Operations general permit. However, if the noncontact cooling water is used on or combines with the concrete process wastewater prior to discharge to the environment, then the facility pollutant discharges may be covered under the Concrete Products Operation general permit alone.

A facility that requires an individual permit for any part of its discharge (because the operation has activities not covered under part 1.2 of the general permit), normally would have all of the facility pollutant discharges addressed in the individual permit. The only exception would be for a facility that commences a discharge that is eligible for a GP after a specific permit has already been issued or reissued for the facility. For example, a facility that currently has an individual permit may begin a process that results in the discharge of noncontact cooling water. The noncontact cooling water discharge can be covered under a GP, as long as it meets the requirements of the GP, until the individual permit can be reissued or modified to include the noncontact cooling water discharge.

GENERAL DESCRIPTION OF OPERATIONS COVERED UNDER THIS GP

The concrete product operations general permit is intended to cover process wastewater discharges from the manufacture of concrete products. This general permit does not include storm water requirements. In order to meet the requirement of ch. NR 216, Wis. Adm. Code, a facility must obtain a separate storm water permit.

Facilities eligible for the Concrete Products Operations GP are listed below with their SIC code designations. Not all wastewater discharges from these operations are authorized by this GP. An individual WPDES permit may be necessary for any given operation where it is deemed necessary by the Department, such as a discharge from a facility that contains toxic pollutants that are not limited or monitoring by this permit.

Concrete Block and Brick (3271)

Concrete Products, N.E.C. (Not Elsewhere Covered) (3272)

Ready-Mix Concrete (3273)

The following is a description of each category.

A. Concrete Block and Brick

Production of concrete block and brick includes mixing, forming, and curing. The mixing operation usually takes place in a rotary mixer. Aggregate, cement, and water are weighed and mixed in batches of about four cubic yards (typical size). The type of aggregate being used will determine if a lightweight or heavyweight product is produced. Color may be added to the mix to produce decorative block. The mixture is formed into blocks by an automatic block molding machine. These machines will either ram, press, or vibrate the material into the desired shape. Following forming, the material is stacked onto iron framework curing cars. There are three basic methods of curing; 1) atmospheric curing, 2) low pressure steam curing, and 3) autoclave or high pressure steam curing.

Atmospheric curing produces a lower strength block than the other two methods of curing. Atmospheric curing is curing by ambient heat, ambient humidity, and heat of hydration. Atmospheric curing also includes curing within enclosures at ambient conditions. Curing usually takes place for about four hours. There are no additional wastewaters produced from this curing process.

Low pressure steam curing produces a structurally high-strength block in a reasonable time period. Low pressure steam curing is curing with steam at pressures less than 150 psi. The curing cars are placed in a chamber or kiln where steam is injected through perforated pipes for about 8 to 10 hours. Steam condensate is discharged from this operation. Typically the steam is produced in a boiler which requires periodic blowdown from the recycled boiler water.

The autoclave or high pressure steam curing processes produces a higher strength block with less shrinkage in less time than the low pressure steam curing process. For this process the curing cars are placed in a large horizontal, cylindrically shaped autoclave. High pressure steam (greater than 150 psi) is injected for up to eight hours. After curing the steam is released to the atmosphere. Alternately, steam can be produced using a hot oil convection method. For this method water is placed in a trough within the autoclave and hot oil heats the water into steam. Following curing, the autoclave is allowed to cool and a portion of the steam condenses back into the trough. Periodically the trough water is discharged because the alkalinity, due to the pickup of calcium oxide, makes the water corrosive to the steel racks of the curing cars. Wastewater discharges from the autoclave curing process can include boiler blowdown, autoclave blowdown condensate, and autoclave purge.

Usually the greatest source of wastewater discharge is equipment wash-off, including: delivery trucks, conveyor belts, transport buckets, and central mixers and forms. Generally only suspended solids are a problem in this wastewater and can be handled with simple settling. Other rather innocuous sources of wastewater include: accidental spill wash-down, storm water runoff, and noncontact cooling (NCCW) of bearings and compressors. Spill wash-down can be handled with other wash-waters. Storm water runoff is generally segregated and treated separately from the process wastewater. The NCCW (and other clean wastewater) can be used for concrete mixing water makeup, aggregate moisture control, and yard dust control. Most facilities will use either low or high pressure steam curing. Wastewaters resulting from low pressure steam curing include: ion exchange regeneration waste, boiler blowdown, and steam condensate. Wastewaters resulting from high pressure steam (autoclave) curing depends on the method of steam production. When the hot oil convection process is used the wastewater discharge includes: some autoclave blowdown condensate, autoclave purge, and ion exchange regeneration waste. When an external boiler is used the wastewater discharge includes: autoclave blowdown condensate, boiler blowdown, and ion exchange waste. The steam that comes in contact with the product will contain suspended solids, COD, oil and grease, and have a pH greater than 9.

B. Concrete Products N.E.C. (3272)

Concrete Products N.E.C. (Not Elsewhere Covered) include concrete pipe, precast concrete products, and prestressed concrete products.

Concrete Pipe - Concrete pipe is produced by the following three basic production methods: 1) vertical packerhead (tamping) method, 2) vertical cast method, and 3) spin casting production method. The vertical packerhead method is used to produce pipe up to five feet in diameter. A moist concrete mixture is compacted and vibrated into a steel form by a machine called a packerhead. The vertical cast method is used to produce reinforced pipe. Due to labor cost and time, this method is generally limited to production of reinforced pipe over five feet in diameter. A wet concrete mixture from a central mixture is transported by buckets and poured into a vertical steel form containing a reinforcing cage. The steel forms are stripped from the pipe after the concrete sets. The spin casting production method is used to produce reinforced pipe up to four feet in diameter. The form containing a reinforcing cage is placed horizontally and rotated at a high rate, while concrete is added by a reciprocating nozzle. During rotation the concrete dewateres and becomes more dense. The inner surface of the pipe is finished by a mechanical roller. Reinforced concrete pressure pipe, produced by spin casting, uses a hydraulically tested sheet steel cylinder form that remains as part of the finished pipe.

All concrete pipe is cured at ambient conditions or spray cured, until it reaches a certain green strength, followed by low pressure steam curing in a kiln or other similar chamber. For pipe produced by the packerhead method, the forms are usually removed before steam curing, while for the vertical cast and spin casting methods the forms usually remain on the pipe during curing. In all cases, except reinforced concrete pressure pipe, a form release oil is used. In the production of reinforced concrete pressure pipe additional processes include: hydraulic testing of the cylinder, wrapping the cured pipe with high strength steel wire, and coating the steel wire wrap with concrete grout.

Precast Concrete Products - Precast concrete products are simply produced by pouring the concrete mixture into steel forms. The product is cured either at ambient conditions, with low pressure steam, or with a water spray. Curing takes place in two steps, first with the form on then off. The second curing step usually takes place at ambient conditions. For the most common production method of reinforced architectural wall panels with an exposed aggregate surface, a retarder is spread in the form bottom. When removed, the surface is washed with a weak acid solution, sandblasted, or washed with high pressure water to clean away the unset surface cement and expose the coarse aggregate. The Department has determined that retarders have an extremely high oxygen demand in addition to high levels of hydrocarbons like toluene, so retarder wastewater is not suitable for discharge without extensive treatment. Retarder wastewater cannot be discharged under this general permit.

Prestressed Concrete Products - Prestressed concrete products are produced in similar fashion as precast reinforced concrete products with the substitution of steel cables under tension instead of steel rods for reinforcement. Prestressed concrete products may be either pretensioned or post-tensioned.

The wastewater discharge from concrete products N.E.C. includes transport bucket and central mixer washout, form wash-off, condensate from steam curing, spray curing wastewater, surface finishing water, spin cast wash-water, pre-wetting of imbedded pressure pipe, storm water, boiler blowdown, NCCW from bearings and compressors, and miscellaneous equipment wash-off. Pollutants in the wastewater discharge include suspended solids, oil and grease, pH, and COD.

C. Ready-Mix Concrete (3273)

Ready-mix concrete is basically produced by two methods, batch mixing and central mixing. For batch mixing, the dry aggregate and dry cement are weighed and added to a mixer truck along with the appropriate amount of water. The concrete is mixed in the truck on the way to the job. For central mixing, the concrete is prepared in a central mixer, and then transferred to a mixer or agitator truck for delivery.

Ready-mix concrete plants are of three general types: permanent, portable, or mobile. A permanent plant usually produces various types of concrete for numerous customers. The permanent plant may operate either as a dry batch mixing plant or central mixing plant. Approximately three-fourths of the permanent plants operate with batch mixing while the other one-fourth operate with central mixers. Portable plants are used on large highway and airport paving jobs. These plants usually operate with central mixers. Mobile plants have trucks that transport the aggregate and cement dry. At the job site, the material is custom measured and mixed. Mobile plants are primarily limited to small jobs where returning to the base plant is not necessary after each job.

In addition to aggregate and cement, ready-mix concrete typically contains admixtures and entrained air. Entrained air improves resistance to freezing and thawing. Admixtures include air entraining agents, reducing agents, retarders, accelerators, and others.

Air entraining agents include the following:

- (1) a saponified natural resin (soap) or stabilized wood resin derived from pulp and paper production, such as Vinsol,
- (2) a combination of a primary alkylolamide (i.e. ethanolamine) plus alkyl aryl sulfonate,
- (3) a saponin or keratin compound,
- (4) a triethanolamine salt of a sulfonated hydrocarbon or fatty acid glyceride,
- (5) vinyl acetate,
- (6) styrene copolymer of vinyl acetate,
- (7) triethanolamine and a calcium salt of modified lignosulfonic acid (this material is interground with Portland cement during manufacturing).

Water reducing agents, used to reduce the amount of mixing water required, include lignosulfonic acids and their salts. Retarding admixtures, used to increase the setting time, include hydroxylated carboxylic acids and their salts. Most retarders also act as water reducers, and therefore, are frequently referred to as water-reducing retarders. Accelerating admixtures, used to accelerate setting and increase strength, include calcium chloride.

The wastewater discharge from ready-mix concrete plants includes truck washout, truck wash-off, central mixer washout, yard runoff, boiler blowdown, and NCCW from bearings and compressors. Pollutants in the wastewater discharge include suspended solids, pH, and COD.

RATIONALE OF SPECIFIC PERMIT REQUIREMENTS

A. APPLICABILITY CRITERIA

(1) Activities Covered

This permit is applicable to all concrete product operations and associated process wastewater discharges that are able to meet the applicability criteria of the permit. This would include regulation of the solids washed from concrete cutting operations conducted at the facility.

(2) Activities Not Covered

Ineligible Process Wastewaters

The following concrete operation discharges are not eligible for coverage under this general permit:

- Wastewater from the manufacturing of cement, which requires an individual permit to incorporate effluent limit guidelines in accordance with ch. NR 228, Wis. Adm. Code and 40 CFR §411.
- Wash water containing hydrocarbons from degreasing agents.
- Wastewater from the washing of a precast concrete surface treated with retarder.

Facilities with these processes must segregate these wastewaters, then transport to a wastewater treatment facility capable of adequate treatment, or install adequate treatment and seek coverage from the Department under an individual permit.

Biocide Water Treatment Chemicals Added by the Concrete Operation

Biocides are usually toxic and the discharge of a biocide above a level of concern would typically require regulation by an individual permit. A concrete products operation should not expect to be able to discharge wastewater that contains a biocidal water treatment additive under this general permit. However, water provided by a municipal water supply usually contains certain chlorine compounds. The levels of these chlorine compounds in the municipal water supply are usually low and the chlorine will generally dissipate during use of the water in the concrete products operation. Therefore, this condition of the general permit allows the discharge of water from a municipal water supply as long as chlorine compounds are not detectable or the noncontact cooling water is discharged to on-site areas where the water seeps into the ground before leaving the concrete plant property.

Wetlands

Discharges covered under this permit shall meet the wetland protection requirements of ch. NR 103, Wis. Adm. Code, and shall not significantly adversely impact wetlands. For discharges that

impact wetlands, a facility will need to submit information that allows the Department to determine if a discharge meets code requirements.

Outstanding And Exceptional Resource Waters

Discharges to outstanding and exceptional resource waters are not authorized by this permit. Regulation of discharges to outstanding and exceptional resource waters requires an individual permit which provides the oversight, monitoring and discharge limitations necessary to protect these types of receiving waters.

Surface Water Standards, Antidegradation, and Groundwater Standards

The discharges from facilities eligible for this permit are not expected to exceed any surface water or groundwater standards. Facilities with discharges that have a reasonable potential (as specified in ch. NR 106, Wis. Adm. Code) to violate surface water quality standards or ch. NR 140, Wis. Adm. Code, groundwater quality standards would normally require the increased oversight, monitoring and water quality limitations found in a site-specific individual permit. If a concrete operation would proposed a new or significantly increased pollutant discharge, evaluation of the proposed increase would begin via notification to the Department in a new request for general permit coverage or via notification of a planned change under standard requirement 2.2 of the permit. Upon notification of the proposed new or increased discharge, the Department would evaluate the proposed new or increased pollutant discharge amount to insure the antidegradation requirements of NR 207 are met. In a case where significant lowering of water quality is proposed, the Department may require the permittee to evaluate a variety of options to insure there is no significant lowering of water quality occurs in the receiving water, such as improved wastewater treatment effectiveness, wastewater reuse, directing the discharge to a seepage area, an alternate discharge location, process changes to reduce the pollutant discharge level, pollutant prevention activities, etc.

Hazardous Substances

Discharges of hazardous substances that are required to be reported under ch. NR 706, Wis. Adm. Code are not authorized by this permit. Exemptions for discharge of these substances require an individual permit which provides the oversight, monitoring and discharge limitations necessary to protect receiving waters. Section 292.11(2)(a), Wis. Stats., requires any person who possesses or controls a hazardous substance or who causes the discharge of a hazardous substance to notify the Department of Natural Resources **immediately** of any discharge not authorized by the permit.

The discharge of a hazardous substance that is not authorized by this permit or that violates this permit may be a hazardous substance spill. To report a hazardous substance spill, call DNR's 24-hour HOTLINE at 1-800-943-0003.

Endangered and Threatened Resources

Discharges that affect endangered and threatened resources are not eligible for this permit, unless the Department determines that the discharges comply with the endangered and threatened resource protection requirements of s. 29.604, Wis. Stats., and ch. NR 27, Wis. Adm. Code. Facilities with discharges that require more oversight to ensure that they do not violate these protection requirements may need to be covered by an individual permit.

Discharges within Indian Country

The Department lacks the authority to issue wastewater permits in the state delegation agreement with U.S. EPA. In such instances, the Tribe or U.S. EPA regulates the discharge and would issue a permit.

(3) Concrete Operations within a Nonmetallic Mining Site

Many nonmetallic mining operations include concrete products operations at the site. In these cases, the pollutant discharges from the concrete products operation may be covered under the nonmetallic mining operation general permit (WPDES Permit No. WI-A046515). Furthermore, since the storm water control requirements will now apply to the combined nonmetallic mining and concrete operations, coverage of the concrete operation under its associated storm water general permit will no longer be needed.

(4) Seeking Coverage under an Individual Permit

For those concrete product operation facilities that have activities not covered by the permit listed above or may not meet other requirements listed in the permit, must seek coverage under an individual WPDES permit. To apply for a new individual permit, contact the appropriate WPDES permits staff based upon the location of the proposed discharge or industry type for guidance and specific instructions for applying for new permits. Complete the New WPDES Permit Pre-application Worksheet and mail it to the appropriate DNR permits staff.

Applicants applying for new individual permits need to complete and submit a permit application far enough in advance so the Department has time to process the application and issue the permit prior to the time discharge will commence. Maximum time deadlines for Department action on applications are specified in s. NR 200.10, Wis. Adm. Code. This maximum time period approximates 6 months after the agency receives a complete application.

Applicants should also know that plans for any wastewater treatment system require Department approval (up to 90 days) prior to construction. The time periods for Department action on plan submittals may, in some cases, run concurrently with the permit processing time. The same Department contacts can provide more specific advice on plan approval requirements.

B. REQUIREMENTS FOR ALL DISCHARGERS

The following requirements apply to all facilities covered by this permit. Facilities discharging to either groundwaters or surface waters are required to meet the following requirements

(1) Request for Coverage

Any facilities that meet the activities covered under this permit must submit a request for coverage. All requests of coverage must be submitted and mailed to the Department regional office that regulates the proposed discharge location. Listing of the regional mailing addresses and phone numbers can be found at <http://dnr.wi.gov/Contact/SSbyRegion.html>. When calling the DNR regional general office phone number, ask to speak with the Wastewater Program staff person who would evaluate the request for WPDES coverage for the proposed discharge. The request for coverage can be found at the Department website: <http://dnr.wi.gov/topic/wastewater/GeneralPermits.html>.

Note: Due to the EPA mandated electronic reporting and application rule (effective December 21, 2015), the Department is in the process of developing and requiring online requests for coverage to discharge under the Concrete Product Operations GP. The Department will notify permittees when this requirement becomes available.

(2) Department Coverage Determination

Point Source pollutant discharges from a facility engaged in concrete operations **must be authorized by the Department via a letter of determination granting coverage** to discharge under the Concrete Product Operations GP. This allows Department staff to evaluate that the facility's concrete product operations produce the expected typical pollutants and evaluate the discharge location to insure water quality standards will be met.

(3) Submittal of Monitoring Results

The Concrete Product Operations GP requires covered facilities to submit the results of all effluent monitoring that is specified by the permit. The permittee shall submit an annual report to the Department, by February 15th each year that summarizes the monitoring information and shows all of the sample results for all discharges of process wastewater during the previous calendar year. A Department monitoring form may be used to submit the annual data, or an alternate report format may be used that clearly shows the data collected during the previous calendar year. The report may be submitted to the office identified in the document granting coverage under this permit or it may be submitted to Dept. of Natural Resources, Water Permits Central Intake, PO Box 7185, Madison, WI 53707-7185. The operator of portable equipment groups specifically covered under this permit may submit the annual reporting information, including the site and county where the monitoring data was collected to either of the locations specified above.

Note: Due to the EPA mandated electronic reporting and application rule (effective December 21, 2015), the Department is in the process of requiring monitoring results to be reported on an electronic Discharge Monitoring Report (eDMR). The eDMR shall be signed by a responsible executive or municipal officer, manager, partner or proprietor as specified in s. 283.37 (3), Wis. Stats., or a duly authorized representative of the officer, manager, partner or proprietor that has been delegated signature authority with a 'eReport Certify' page that certifies that the electronic report form is true, accurate and complete. The Department will contact the permittee when this requirement becomes available.

(4) Water Treatment additives

Water treatment additives can vary from innocuous to highly toxic. The permit allows the use of non-biocide compounds that are innocuous. Non-biocide water treatment additives are defined, for the purposes of this permit, as those additives which are primarily used to control corrosion or prevent

deposition of scale, and which do not exhibit any residual toxic effects on receiving water. All biocides, excluding chlorine, are prohibited in this permit. Facilities that wish to add chlorine to their effluent, or utilize a municipal water supply containing chlorine shall comply with the requirements stated above in the “Biocide Water Treatment Chemicals Added by the Concrete Operation” section.

On April 23rd, 2015, the Department released guidance entitled “Water Quality Review Procedures for Additives” (3400-2015-03), which is available at <http://dnr.wi.gov/topic/wastewater/Guidance.html>. This guidance document establishes procedures to calculate secondary values for water-applied additives pursuant to s. NR 105.05, Wis. Adm. Code. Secondary acute values are the concentrations of a pollutant in surface water that protect aquatic life from adverse short-term effects. Therefore, facilities shall submit information regarding the toxicity of a water treatment additive as specified in the permit, so the Department can determine if it is allowable and won't negatively impact aquatic life or groundwater. The Department shall also be informed of significant changes in additive usage that would raise the potential for negative impacts on aquatic life or human health. Facilities are required to maintain records of additive use for Department inspection. Recording additive use will provide documentation for the facility and the Department to verify that the wastewater additive is being used and discharged in accordance with the permit requirements.

(5) Portable Concrete Product Operations

For portable operations, any required monitoring for flow, total suspended solids, oil and grease or pH may occur at any site where the unit is located during the specified sampling period. Samples shall be representative of the process wastewater discharge associated with operation of the portable unit. Portable concrete product operations can be covered under this general permit for multiple discharge sites as long as the wastewater pollutants are discharged to on-site seepage areas only (discharge to groundwater). If a portable concrete product operation requires authorization to discharge pollutants to surface waters of the state, a request must be made to DNR to authorize WPDES coverage for that site-specific discharge location. The Department has to check to make sure the receiving surface water does not require special protections necessary to implement site specific water quality standards, wetland protection, high quality water or Total Daily Maximum Load Requirements.

(6) Dust Suppression Control for Roads

Properly run dust suppression operations should not result in significant runoff from roadways that would result in erosion or overland flow that would impact area surface waters. For this reason, the permit does not require monitoring of dust suppression water.

(7) Outside Washing Activities

The discharge of wastewater to surface waters or groundwaters from the outside washing of vehicles, equipment, and other objects from operations covered by this permit shall comply with the discharge requirements listed in the permit, specifically sections 4 and 5, Table 1 and Table 2. Phosphorus free biodegradable soaps shall be used, and the washing of road deicing chemicals to surface waters shall be minimized. Phosphorus contributes to algae growth in surface waters, thus making it important to limit the amount of phosphorus discharged to lakes and streams. Chloride ions can have a detrimental effect on both surface waters and groundwater. A concentration of 757 mg/L is the level of concern for discharges to surface waters. This is approximately the concentration at which chloride can be toxic to aquatic life as a result of short-term exposure (acute toxicity). Impact on aquatic life associated with long term exposure

(chronic toxicity) to chloride is lower than 757 mg/L, but since washing operations are intermittent, chronic toxicity is not considered a significant concern. For discharges to groundwater from washing operations, 250 mg/L is the level of concern based on the enforcement standard for drinking water which is Wisconsin's groundwater quality standard from ch. NR 140, Wis. Adm. Code. This assumes that there will be no dilution of the washwater as it percolates down through the soil and mixes with groundwater. More study is needed to determine if chlorides discharged from vehicle washing are near these concentration levels. Facilities are encouraged to discharge washwater with high chloride concentrations to a Public-Owned Treatment Works (POTW), if allowed by the POTW. Where this is not possible, reducing the amount of chloride discharged to surface waters or groundwaters can be accomplished by limiting the frequency and number of vehicles and equipment washed at a site.

(8) Dikes and Berms

Leakage through or over dikes or berms may cause sloughing or washouts; the integrity of the containment area must be maintained.

(9) Adequate Design

Chapter NR 205, Wis. Adm. Code, identifies the design rainfall amount and probable intensity of 10-year and 25-year, 24-hour rainfall events for locations in Wisconsin. For facilities where a wastewater disposal or treatment facility is needed to meet permit requirements, this permit only requires that treatment systems be capable of handling the water resulting from a storm having a 10-year, 24-hour event frequency which falls within or flows into the area of the treatment/disposal system. This design parameter is common to industrial treatment facilities in Wisconsin. Treatment systems must have sufficient capacity to allow adequate retention time for settling. Precipitation must be taken into account for exposed settling systems.

C. REQUIREMENTS FOR SURFACE WATER DISCHARGES

(1) Requirements for Discharges to 303(d) Listed Impaired Surface Waters and TMDL allocations

The permittee is required to report, in the annual discharge monitoring report, that the facility has a detectable pollutant of concern discharge to an impaired surface water or a surface water with a State and EPA approved Total Daily Maximum Load (TMDL) allocation. If a facility discharges a pollutant of concern to an 303(d) listed impaired water body, the goal is to minimize the pollutant discharge as much as possible as part of an overall state effort to reduce the pollutant loading to the water body. The 303(d) list of Wisconsin impaired water bodies may be identified by contacting the Department or by searching for the 303(d) list on the Department's Internet site. The current link to the 303(d) list is: http://dnr.wi.gov/topic/impairedwaters/2016IR_IWList.html. For an existing concrete products operation, the most common pollutant of concern may be a total suspended solids (TSS) discharge to a sediment impaired water body. The above Department internet page contains county based maps that show the location of Wisconsin waters impaired by excessive sediment/solids levels.

Facilities discharging a pollutant of concern under this permit shall meet the requirements of a State and Federally Approved Total Daily Maximum Load (TMDL) allocation for their discharge location that is in effect on the effective date of this permit. Existing concrete product operation pollutant discharges covered under this permit are expected to be consistent with the baseline allocation granted to Wisconsin General Permit discharges in all State and EPA approved TMDLs in effect on the effective date of this permit.

The Concrete Product Operations GP does not authorize a new or increased discharge of a pollutant of concern to an impaired water body unless the discharge is consistent with an EPA and Department approved total maximum daily load (TMDL) allocation for the impaired water body. "Pollutant(s) of concern" means a pollutant that is causing impairment of a listed water body. Approved TMDLs can be found at <http://dnr.wi.gov/topic/tmdls/tmdlreports.html>.

Federal Statutes, 40 CFR 122.4, prohibit the issuance of a WPDES permit to a new source or new discharger that will contribute to a violation of a water quality standard in a 303(d) listed water. Also, an increased discharge of a pollutant of concern that would cause or contribute to a violation of a water quality standard in a 303(d) listed water is not to be allowed. Therefore, this general permit specifies that a permittee may not establish a new pollutant of concern discharge to a 303(d) listed impaired water body or significantly increase the discharge of a pollutant of concern to an impaired water body unless the new or increased discharge does not contribute to the receiving water impairment, or the new discharge is consistent with a Department finalized total maximum daily load (TMDL) allocation for the impaired water body. The general permit cannot be used if this requirement is not met for a new discharge. In response to a request for coverage, the Department will evaluate the proposed pollutant discharge amount and receiving water to determine if the above requirement can be met. A variety of options are available to the applicant to reduce the discharge of the pollutant of concern, with the goal of eliminating the pollutant discharge, such as on-site capture, an alternate discharge location or wastewater reuse.

(2) NR 207 Requirements for New or Increased Pollutant Discharges to Fish & Aquatic Life Waters

The permittee may not establish a new discharge of pollutants to a fish and aquatic life water if the discharge will result in the significant lowering of water quality of the fish and aquatic life water. Significant lowering of water quality is defined within ch. NR 207, Wis. Adm. Code. If the permittee's facility has an existing discharge to a fish and aquatic life water, it may not increase the discharge of pollutants if the increased discharge would result in a significant lowering of water quality. Any increased or new discharge of storm water or wastewater authorized under this permit shall be related to important economic or social development.

Most receiving waters of the state are classified as a fish and aquatic life waters and this classification includes all surface waters of the state except Outstanding Resource Waters (ORW), Exceptional Resource Waters (ERW), Great Lakes system waters and variance waters identified within ss. NR 104.05 through s. 104.10, Wis. Adm. Code. The Department may be consulted if the permittee is not certain of the receiving surface water classification. "New discharge" means a discharge that would first occur after the permittee's coverage date under this permit to a surface water to which the facility did not previously discharge, and does not include an increased discharge to a surface water to which the facility discharged on or before coverage under this permit.

(3) Persistent, Bio-accumulating Toxic Pollutants

In accordance with s. NR 102.12 Wis. Adm. Code, a new discharge and increased discharge as defined in ch. NR 207, Wis. Adm. Code, of persistent, bio-accumulating toxic substances to the Great Lakes waters or their tributaries shall be avoided or limited to the maximum extent practicable. Any new or increased discharge of these substances is prohibited unless the permittee certifies that the new or increased discharge is necessary after utilization of best technology in process or control using waste minimization, pollution prevention, municipal pretreatment programs, material substitution or other means of commercially available technologies which have demonstrated capability for similar applications.

(4) Floating Solids and Foam

The floating solids and foam narrative limitation is a Best Professional Judgment (BPJ) condition dating back to the Refuse Act Permit Program and the Corp of Engineer's River and Harbor Act of 1899. This condition is achievable by application of best practicable control technology.

(5) Suspended Solids Treatment and Solids Removal

Wastewaters from operations covered by this permit are expected to contain suspended solids that must be removed prior to discharge to surface waters. For most of the operations, permit effluent limits for suspended solids are achievable through the use of simple gravity separation (settling) treatment technology. Over time, settling equipment fills up with settled solids, resulting in decreased volume and residence time for wastewater and ultimately, ineffective solids treatment.

D. ADDITIONAL REQUIREMENTS FOR DISCHARGES TO GROUNDWATER

A discharge to groundwater in Wisconsin includes wastewater infiltration from irrigation, drain fields, ditches, and ponds that may impact water beneath the ground surface.

Table 1 - Discharge Limitations and Monitoring Requirements for Groundwater Discharges

Fact Sheet for WPDES Permit No. WI-0046507-6

Limitations for Groundwater Discharges		Monitoring Requirements	
Parameter	Daily ^(a) Maximum	Sample Frequency	Sample Type
Flow - Gallons Per Day	-	Quarterly ^(b)	Estimate ^(e)
Flow - Number of Days Discharged	-	Quarterly ^(b)	Record
Oil and Grease	15 mg/l	Quarterly ^(c)	Grab
pH	6.0 – 9.0	Quarterly ^(d)	Grab
Water Treatment Additives	-	Monthly	Record Usage

(a) Daily maximum effluent limitation means the limitation placed on each effluent characteristic which is to be compared with each single daily analysis. Compliance is achieved when the result of each analysis is less than the maximum daily effluent limitation.

(b) Quarterly sample frequency means performing the associated monitoring four times per year; once anytime during each of the four annual quarters (Jan.-Feb.-March, April-May-June, July-Aug.-Sept., and Oct.-Nov.-Dec.). If there is no discharge during a quarter, the permittee shall state this on the discharge monitoring report form. Refer to section 4.2 for conditions necessitating more frequent monitoring.

(c) Refer to permit section 4.3 for conditions necessitating different monitoring frequency.

(d) Refer to permit section 4.4 for conditions necessitating different monitoring frequency.

(e) Estimate means a reasonable approximation of the average daily flow of process wastewater to groundwater based on amounts of makeup water added to a pond, estimates of pond seepage based on hydraulic conductivity and head, meter measurements of discharge to a seepage area, or any other method specified in s. NR 218.05(1), Wis. Adm. Code. Seepage flow estimates need not include storm water that falls within the boundaries of or diffusely enters a pit or infiltration area.

Note: Since concrete product operations may not occur year round and may not have process wastewater discharges at every site, discharge monitoring is not required during sampling periods when a discharge does not occur at a given site or in association with a given portable operation. Obtaining a representative sample of the discharge means obtaining a sample that is typical of the discharge.

Sample Frequency for Flow: The sample frequency for flow shall be quarterly, except that the permittee shall monitor flow each month for 12 months starting the month following a recorded discharge flow value greater than 200,000 gal/day. These flow estimates would allow the facility and the Department to evaluate the potential for the discharge to impact groundwater.

Oil and Grease: The oil and grease daily maximum effluent limit is 15 mg/l. The oil and grease limit is based on the ability of simple oil/water separator equipment to easily remove oil and grease from the discharge to concentrations below 15 mg/l. Oil and grease may be associated with these discharges as a result of machinery and equipment used in the operation of the facility. Ch. NR 219, Wis. Adm. Code specifies that the Freon Oil & Grease test method is no longer approved and shall not be used.

Sample Frequency for Oil and Grease: Oil & grease shall be monitored quarterly, except that: (1) the monitoring frequency shall be each month for 12 months starting the month following receipt of any sample result showing an oil & grease discharge above 15 mg/L, and (2) further quarterly oil & grease monitoring is not required if the four consecutive quarterly sample results are less than 7.5 mg/L. This increased monitoring frequency is independent of the Department's enforcement response to permit noncompliance. More frequent monitoring may be specified in an order or stipulation resulting from enforcement of permit noncompliance. For portable operations, any required monitoring for oil and grease may occur at any site where the unit is located during the specified sampling period. Samples shall be representative of the process wastewater (i.e., washwater or cooling water) discharge associated with operation of the portable unit.

pH: Process wastewater pH shall be monitored quarterly prior to seepage, except that the sampling frequency shall be once each month for 12 months starting the month following any sample result showing a discharge pH of less than 6.5 standard units (s.u.) or greater than 8.5 s.u. Further quarterly pH sampling is not required if the four consecutive quarterly sample results are greater than 6.5 s.u. and less than 8.5 s.u. These pH limits are based on the ability of chemical addition to adjust the discharge pH to within the acceptable range. Wastewater pH changes may be associated with these discharges as a result of raw materials and chemical reactions utilized in the operation of a concrete products facility. Concrete product process wastewater with a pH outside the range of 6.0 to 9.0 s.u. (such as concrete block curing condensate or concrete truck washwater) shall be treated with an approved additive to maintain the pH within the acceptable range prior to seepage to groundwater, or shall be passed through a soil zone that moderates the pH to within the range of 6.0 to 9.0 s.u. More detailed pH sampling may be required by the Department to determine potential impacts to groundwater.

Water Treatment Additives: The facility shall keep a monthly record of the daily maximum and monthly average quantity of each additive used. This will provide the necessary information to the facility and the Department to determine if additive usage is remaining within Department approved levels. Facilities where it is not feasible to meet the pH limitations of a general permit may apply for a site specific WPDES permit that will incorporate additional monitoring needed to assure the pH of the state groundwater is maintained within NR 140 groundwater standards.

Solids Removal: Occasional removal of solids from seepage areas is necessary to insure that these areas can continue to absorb wastewater. Solids in wastewater can cover soils and clog spaces between soil particles, resulting in decreased seepage capacity.

Monitoring for Portable Concrete Operations: For portable operations, any required monitoring may occur at any site where the unit is located during the specified sampling period. Samples shall be representative of the process wastewater (i.e. washwater or cooling water) discharge associated with operation of the portable unit.

F. ADDITIONAL REQUIREMENTS FOR DISCHARGES TO SURFACE WATERS

Surface water discharges include ditches, storm sewers and pipes that convey wastewater to creeks, streams, rivers and lakes in Wisconsin.

Table 2 - Discharge Limitations and Monitoring Requirements for Surface Water Discharges

Limitations for Surface Water Discharges	Monitoring Requirements
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Fact Sheet for WPDES Permit No. WI-0046507-6

Parameter	Daily Minimum	Daily ^(a) Maximum	Sample Frequency	Sample Type
Flow - Gallons Per Day	-	-	Quarterly ^(b)	Estimate ⁽ⁱ⁾
Flow - Number of Days Discharged	-	-	Quarterly ^(b)	Record
Total Suspended Solids	-	40 mg/l	Quarterly ^(c)	Grab
pH	6.0 s.u.	9.0 s.u.	Quarterly ^(d)	Grab
Temperature, Maximum	-	-	Quarterly ^(e)	Grab
Oil and Grease	-	15 mg/l	Quarterly ^(f)	Grab
Phosphorus, Total	-	-	Quarterly ^(g)	Grab
Chlorine, Total Residual	-	-	Quarterly ^(h)	Grab
Water Treatment Additives	-	-	Monthly	Record Usage

- (a) Daily maximum effluent limitation means the limitation placed on each effluent characteristic which is to be compared with each single daily analysis. Compliance is achieved when the result of each analysis is less than the maximum daily effluent limitation.
- (b) Quarterly sample frequency means collecting a sample representative of the discharge during facility operation four times per year; once during a discharge day during each of the four annual quarters (Jan.-March, April-June, July-Sept., and Oct.-Dec.). If there is no discharge during a quarter, the permittee shall enter zero for the number of days of discharge on the discharge monitoring report form. Refer to section 5.1 for conditions necessitating more frequent monitoring.
- (c) Refer to permit section 5.2 for conditions necessitating more frequent total suspended solids monitoring.
- (d) Refer to permit section 5.3 for conditions necessitating different pH monitoring frequency.
- (e) Refer to permit section 5.4 for temperature monitoring conditions.
- (f) Refer to permit section 5.5 for conditions necessitating more frequent oil & grease monitoring.
- (g) Refer to permit section 5.6 for conditions necessitating more frequent total phosphorus monitoring.
- (h) Refer to permit section 5.7 for chlorine monitoring conditions.
- (i) Estimate means a reasonable approximation of the average daily flow based on s. NR 218.05(1), Wis. Adm. Code, or any other method approved by the Department.

Note: Since concrete product operations may not occur year round and may not have process wastewater discharges at every site, discharge monitoring is not required during sampling periods when a discharge does not occur at a given site or in association with a given portable operation. Obtaining a representative sample of the discharge means obtaining a sample that is typical of the discharge in an unbiased basis (random day selection).

Sample Frequency and Sample Type for Total Suspended Solids: Total suspended solids (TSS) shall be monitored with a grab sample each quarter, except that the TSS monitoring frequency shall be once each month for 12 months starting the month following receipt of a sample result showing a discharge TSS above 40 mg/L. When monthly sampling is required, a representative composite sample shall be created by combining at least 3 individual grab samples of equal volume, taken at approximately equal intervals over a 3 hour period. This increased monitoring frequency is independent of the Department's enforcement response to permit noncompliance. More frequent monitoring or a different sample type may be specified in an order or stipulation resulting from enforcement of permit noncompliance.

Flow Monitoring: The sample frequency for flow shall be quarterly, except that the permittee shall monitor flow each month for 12 months starting the month following a recorded discharge flow value greater than 200,000 gal/day. These flow estimates would allow the facility and the Department to evaluate the potential for the discharge to impact surface waters. A flow estimate means a reasonable approximation of flow based on any of the following: (a) water balance, (b) an uncalibrated weir, (c) calculations from the velocity and cross section of the discharge, (d) intake water meter readings where the intake, or a specific portion of it, is discharged, (e) discharge water meter readings, and (f) any of the more complex methods listed in section NR 218.05(1), Wis. Adm. Code. The Department may approve additional methods for estimating flow.

pH: The pH is limited to the range of 6.0 to 9.0 standard units. This is consistent with the water quality based pH range for waters classified for fish and aquatic life. Any wastewater with a pH outside the range of 6.0 to 9.0 s.u. shall not be discharged directly to surface waters, but shall be treated or mixed with other process wastewaters to bring the mixed water pH to within the 6.0 to 9.0 acceptable range. The sample frequency for pH shall be quarterly, except that pH monitoring is reduced to annually if four consecutive quarterly samples are within the pH range of 6.7 to 8.3.

Oil and Grease: The oil and grease daily maximum effluent limit is 15 mg/l. The oil and grease limit is based on the ability of simple oil/water separator equipment to easily remove oil and grease from the discharge to concentrations below 15 mg/l. Oil and grease may be associated with these discharges as result of machinery and equipment used in the operation of a facility. Ch. NR 219, Wis. Adm. Code specifies that the Freon Oil & Grease test method is no longer approved and shall not be used.

Oil & Grease Monitoring: The sample frequency for oil & grease shall be quarterly, except that: (1) the monitoring frequency shall be once each month for 12 month beginning the month following receipt of any sample result showing an oil & grease discharge above 15 mg/L, and (2) further quarterly oil & grease monitoring is not required if the four consecutive sample results are less than 7.5 mg/L. More frequent monitoring or a different sample type may be specified in an order or stipulation resulting from enforcement of permit noncompliance.

Temperature and Total Phosphorus: The proposed permit includes monitoring for daily maximum temperature and Total Phosphorus based on new standards for these pollutants since the previous general permit was issued. Since concrete product operations are not expected to add significant amounts of heat or phosphorus to their wastewater, the permit does not contain site specific effluent limits for these pollutants. If monitoring data indicates a water quality concern for a concrete products operation, the facility would be moved to a site specific WPDES permit with water quality based effluent limits or the facility may modify the operation or treatment system to continue general permit coverage.

Temperature Sampling Frequency: A sample that is representative of the effluent discharge temperature for an unbiased sample day shall be monitored during each of the four annual quarters (Jan.-March, April-June, July-Sept, Oct-Dec.). If there is no discharge during a quarter, the permittee is not required to report a discharge temperature for that quarter on the discharge monitoring report form.

Sample Frequency & Sample Type for Total Phosphorus: Total Phosphorus shall be monitored with an annual grab sample, except that the Total Phosphorus monitoring frequency shall be once each month for 12 months starting the month following receipt of a sample result showing a Total Phosphorus discharge above 0.1 mg/L. When monthly sampling is required, a representative composite sample shall be created by combining at least 3 individual grab samples of equal volume, taken at approximately equal intervals over a 3-hour period.

Total Residual Chlorine (TRC) Sampling Frequency:

TRC shall be monitored with a grab sample that is representative of the effluent discharge for an unbiased sample day during each of the four annual quarters (Jan. March, April June, July Sept., and Oct.-Dec.). If there is no discharge during a quarter, the permittee is not required to report a TRC result for that quarter on the discharge monitoring report form.

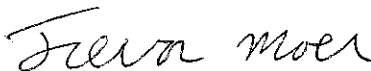
Water Treatment Additives: The facility shall keep a monthly record of the daily maximum and monthly average quantity of each additive used. This will provide the necessary information to the facility and the Department to determine if additive usage is remaining within Department approved levels.

G. STANDARD REQUIREMENTS

The "Standard Requirements" are a group of permit conditions from ss. NR 205.07(1) and NR 205.07(3), Wis. Adm. Code, that apply to all industrial wastewater pollutant dischargers, including requirements related to the Department's rights to enter and inspect facilities, the permittee's responsibility to inform the Department of changes at a facility, sampling procedures and other general conditions typically associated with a WPDES general permit. These requirements are included by reference into the permit. The permittee shall comply with all of these requirements, except for s. NR 205.07(1)(n), Wis. Adm. Code which does not apply to facilities covered under general permits.

Some "Standard Requirements" sections were modified due to recent finalized rule changes. These sections include "Noncompliance Reporting", "Bypass", and "Planned Changes". Other sections were added or modified for clarification purposes. These sections include: "Sampling and Testing Procedures", "Reporting of Monitoring Results", "Records Retention", "Other Information", "Permittee-Determined Limit of Quantitation Incorporated in this Permit", and "Appropriate Formulas for Effluent Calculations".

Respectfully submitted,



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Bureau of Water Quality