

FACT SHEET
FOR THE DRAFT RENEWAL OF THE CONCRETE PRODUCTS
MANUFACTURING FACILITIES GENERAL PERMIT (NJ0108456)

The draft renewal of the Concrete Products Manufacturing Industry Specific Permit (permit) regulates the discharge of stormwater from specific industrial areas and activities to surface and ground waters of the State, as well as discharges of process wastewater and/or process wastewater co-mingled with stormwater to surface waters only, from facilities engaged in the manufacture of concrete and concrete products. The draft renewal industry specific permit encourages the concrete industry to implement Performance Standards such as: controlling drainage from the entire site; recycling of by-products and end products; the elimination of specific industrial discharges to ground water; and at the same time, incorporates flexibility in the treatment of process wastewater generated at these facilities by imposing effluent limitations for process wastewater discharges (including process wastewater co-mingled with stormwater) and monitoring requirements with benchmark concentration limits for stormwater only discharges. The draft renewal industry specific permit allows for more stringent requirements if benchmark concentration limits for stormwater only discharges are exceeded by two consecutive monitoring periods (where sampling results are produced) or if a minimum of six (6) exceedences occur within the five (5) year permit term. Additional permit conditions identify the timeframes and submittal requirements for the implementation of the Performance Standards (based on the effective date of the permit renewal), and delay the commencement of the sampling requirements until after the twenty-four implementation phase.

I. BACKGROUND

Under the Federal Water Pollution Control Act (Enacted by Public Law 92-500, October 18, 1972), as amended by the Clean Water Act of 1977 (PL 95-217, December 28, 1977) and the Water Quality Act of 1987 (PL 100-4, February 4, 1987), a facility with a stormwater discharge associated with industrial activity must obtain a National Pollutant Discharge Elimination System Permit (NPDES). The United States Environmental Protection Agency (USEPA) published final rules, dated November 16, 1990 for NPDES Permit Application Regulations for Stormwater Discharges, and as part of these rules, “*storm water discharges associated with industrial activity*” were defined as (xi) categories of facilities considered to be engaging in “industrial activity”. Category (ii) of the definition includes facilities regulated which are involved in the manufacture of stone, clay and glass products, including concrete block and brick, other concrete products: precast and preformed concrete, and ready mixed concrete, including but not strictly limited to those classified under the SIC Codes 3271, 3272 and 3273, or equivalent North American Industrial Classification System (NAICS) Code, or from any facility the Department deems a primary manufacturer of concrete and/or concrete products.

The New Jersey Department of Environmental Protection (NJDEP or Department) is the issuing authority for NPDES permits in the State of New Jersey, and issues permits under the New Jersey Pollutant Discharge Elimination System (NJPDES). The New Jersey Administrative Code, specifically N.J.A.C. 7:14A-11.5 and N.J.A.C. 7:14A-1.2, define “*stormwater discharges associated with industrial activity*” for point source discharges to surface water. The NJPDES rules also regulate stormwater discharges from point and nonpoint sources at N.J.A.C. 7:14A-1 *et seq.* Industrial stormwater discharges to ground water are regulated pursuant to New Jersey’s Water Pollution Control Act (N.J.S.A. 58:10A-1 *et seq.*), the NJPDES rules (N.J.A.C. 7:14A-7-8) and the Ground Water Quality Standards (N.J.A.C. 7:9-6).

II. TYPES OF DISCHARGES AUTHORIZED

The draft renewal Concrete GP may regulate new and existing industrial stormwater discharges to surface and/or ground waters from facilities engaging in the manufacture of concrete block or brick (SIC Code 3271 or NAICS equivalent), concrete products other than block and brick (SIC Code 3272 or NAICS equivalent), ready mixed concrete (SIC Code 3273 or NAICS equivalent), and from other facilities the Department deems a primary manufacturer of concrete and/or concrete products. Certain types of discharges are ineligible for authorization under this draft renewal Concrete GP and those types of discharges are listed in Part II, Section B.2 of the permit.

The draft renewal Concrete permit specifically regulates the discharge of stormwater from certain industrial activities and areas to surface and ground waters of the State, and process wastewater discharges (including but not limited to, concrete washout wastewater, truck and chute exterior washoff (prior to off-site deliveries) and spillage from supplying concrete trucks with water for off-site use); or process wastewater commingled with stormwater to surface waters and only through permitted outfalls identified in the facilities Drainage Control Plan.

III. POLLUTANTS IN DISCHARGES FROM THE CONCRETE PRODUCTS MANUFACTURING INDUSTRY

Concrete is produced by mixing cement with fine aggregate (sand), coarse aggregate (gravel or crushed stone), water, and various chemicals (admixtures) to control setting time and plasticity. Cement is produced using a source of calcium (usually limestone) a source of silicon (such as clay or sand), and small amounts of bauxite and iron ore. These materials are heated in a kiln, where two important reactions take place, the calcining of limestone, and the bonding of calcium oxide and silicates. After these reactions, the new materials are cooled into a solid pellet form, are ground into a fine powder and then gypsum is added to form the final product.

The production of concrete requires the storage of large quantities of raw materials. This usually occurs outdoors where the potential for exposure to precipitation is high and usually results in the quality of stormwater discharging from these facilities to be negatively impacted. The exception is cement, which cannot be exposed to water and is therefore stored indoors, but may be exposed during loading, unloading, and handling operations. The primary pollutants of concern in discharges from concrete production include Total Suspended Solids, Total Dissolved Solids, pH, Chemical Oxygen Demand, Iron, and Oil and Grease.

The first issuance of the Concrete GP included a group monitoring option. The Concrete Industry formed a group in accordance with general permit conditions and performed monitoring over a 2 year period from 15 representative facilities for the parameters of Total Suspended Solids and pH, resulting in 240 separate data points. The Department has reviewed these monitoring results and has included them in forming the basis for the draft renewal permit conditions. The results are summarized below:

Group Monitoring Results

Facility No.	11/98-1/99		2/99-4/99		5/99-7/99		8/99-10/99		11/99-1/00		2/00-4/00		5/00-7/00		8/00-10/00	
	TSS	pH	TSS	pH	TSS	pH	TSS	pH	TSS	pH	TSS	pH	TSS	pH	TSS	pH
1	5	7.7	5	8.2	10	8.2	8	7.2	90	8.9	12	7.6	3	7.2	24	8.2
2	341	11.9	--	--	132	10.9	228	10.1	--	--	<1	7.3	103	9.4	83	8.1
3	2416	9.4	<1	4.9	6	5.0	6	5.0	<1	4.7	2	4.9	<1	4.6	2	5.7
4	353	11.4	174	11.6	--	--	123	10.9	140	8.5	158	12.6	79	11.8	64	12.3
5	4	8.1	36	6.9	14	7.1	46	10.1	14	6.8	--	--	14	7.0	6	7.9
6	21	6.2	20	6.3	3	6.0	3	7.3	37	6.8	<1	6.5	2	7.2	<1	7.2
7	335	10.8	85	9.1	4	7.6	2	7.1	66	7.3	<1	7.1	20	8.6	60	7.4
8	193	11.1	550	9.6	170	9.5	1	6.8	379	12.3	<1	6.6	8	7.5	<1	7.0
9	333	9.0	14	7.4	--	--	34	8.2	11	7.7	18	7.4	19	9.6	<1	6.9
10	15	9.6	2	7.9	26	7.7	<1	7.1	45	11.9	<1	8.9	62	11.9	<1	7.5
11	5	6.6	--	--	1	6.4	<1	7.1	<1	7.1	6	6.9	<1	6.7	<1	6.9
12	17	7.7	--	--	129	9.0	--	--	--	--	47	6.9	21	10.0	--	--
13	516	11.9	98	11.6	126	11.5	74	9.7	148	9.7	--	--	272	9.8	22	10.4
14	747	9.7	--	--	584	8.9	--	--	69	9.5	--	--	46	9.7	102	9.0
15	356	9.5	105	9.2	--	--	210	9.5	543	9.9	88	8.4	1320	10.8	2489	10.2
n=	15	15	11	11	12	12	13	13	13	13	12	12	15	15	14	14
Mean Value	377	9.4	99	8.4	100	8.2	57	8.2	119	9	28	8	131	9	204	8
Maximum	2416	11.9	550	11.6	584	11.5	228	10.9	543	12.3	158	12.6	1320	11.9	2489	12.3
Minimum	5	6.2	<1	4.9	1	5.0	<1	5.0	<1	4.7	<1	4.9	<1	4.6	<1	5.7

Note: TSS is in mg/L and pH is in Standard Units (su)

IV. SUMMARY OF BASIS FOR THE DRAFT PERMIT CONDITIONS

The renewal general permit conditions are intended to minimize environmental impact from industrial activities associated with the production of concrete and concrete products. This shall be accomplished through the establishment and implementation of Performance Standards for the industry. These performance standards focus on four basic concepts: drainage control; recycling; eliminating and minimizing discharges to groundwater; and ensuring discharge quality through treatment, the imposition of effluent limitations and/or monitoring. The Department believes that the inclusion of these performance standards will have far-reaching benefit, including: establishing clear objectives for the industry, maintaining consistency through defined compliance activities, and affording flexibility to permittees by allowing them to choose the appropriate method for handling their stormwater and/or process wastewater discharges.

This permit affords permittees the opportunity to monitor their stormwater discharges to surface water without the imposition of effluent limitations, but by utilizing benchmark concentration limits (derived from various sources). However, if any parameter associated with a benchmark concentration is exceeded twice consecutively, or within six (6) times of the five year permit term, the permittee will be subject to effluent limitations for those parameters.

Discharges to surface water of process wastewater, or stormwater co-mingled with process wastewater discharges shall be subject to effluent limitations. The regulation of process waste discharges in this general permit, is atypical, and is offered as a means to streamline the NJPDES permitting process, affording a financial savings to permittees, as well as facilitating consistent and appropriate use of BMPs and treatment devices.

The Department has included in this general permit, industry standards for controlling pollutants from leaving the site and preventing them from entering surface or ground waters of the State. These industry standards are achieved by selecting from a variety of discharge, treatment and monitoring options and implementing Industry-Wide Minimum Requirements, which include:

- the development of a Drainage Control Plan, which includes diverting non-industrial stormwater (runoff from employee parking areas and roof drainage) from industrial stormwater; assurance that all regulated stormwater and wastewater discharges through permitted outfalls only so samples are consistently representative of the industrial activities occurring on site (this may require regrading or engineering of the site); and paving all industrial areas to minimize discharges of pollutants to groundwater;
- the development of a Recycling Program which shall optimize the recycling of all industrial materials, including waste materials generated during concrete production, water recycling through the use of admixtures to reduce wash water volumes and fresh water use, and the consideration of recovery/reclamation systems to reduce and/or eliminate the discharge of concrete washout wastewater;
- the Preparation and Implementation of a Stormwater Pollution Prevention Plan, which includes a description of all Industry-Wide Minimum Requirements; the Discharge, Treatment and Monitoring Options selected; and any additional BMPs selected by the facility for implementation.

In addition to the Industry-Wide Minimum Requirements, facilities authorized under this general permit must select discharge, treatment, and monitoring options contained in the permit. The selected discharge, treatment, and/or monitoring option(s) are to be identified in the facility's Drainage Control Plan. Discharge, treatment, and monitoring options are dictated by a combination of factors including the facility's drainage patterns, type of discharge(s) (stormwater only, stormwater commingled with concrete washout wastewater, or concrete washout wastewater only). A facility may select one option or a combination of options (for more specific details on the options see Part IV, Section B of the general permit).

The Drainage Control Plan is a necessary tool for the permittee to analyze flow patterns of the discharge(s) occurring on site. During this process facilities will need to assess the quality of their discharges as an initial step in determining if a treatment option is preferable or whether stormwater quality could be best controlled through selected BMPs. Drainage control is also required to ensure all samples are consistently representative of the industrial activities occurring on site and are taken pursuant to N.J.A.C. 7:14A-6.5(a).

The group monitoring data submitted to the Department indicates that the quality of stormwater discharged from the participating facilities, varied greatly. The maximum value for TSS reported was 2,489 mg/L, while the minimum value reported was <1 mg/L. pH values also fluctuated from a maximum value of 12.6 su to a minimum value of 4.6 su. The primary control of stormwater quality in the first rendition of the general permit was the requirement to implement various BMPs designed to eliminate or minimize (to the greatest extent practicable) exposure of source materials to stormwater. Permittees now will have the opportunity to evaluate whether the sole use of BMPs is adequate or whether treating the stormwater, or a combination of both, will be sufficient in meeting the conditions of this renewal general permit.

Facilities that choose to implement BMPs (without providing treatment) for stormwater only discharges will be subject to benchmark concentration limits (see Table 2 of the permit) If a

parameter exceeds a benchmark concentration twice consecutively, or six (6) times within the five year permit term (or before the permit is officially renewed) shall be subject to effluent limitations (see Table 3 of the permit). It is the permittees responsibility to notify the Department if either of these scenarios occur.

Benchmark concentration limits for stormwater only discharges to surface water include: a daily maximum of 100 mg/L Total Suspended Solids (TSS), daily maximum of 500 mg/L for Total Dissolved Solids (TDS), daily maximum of 15 mg/L for Oil and Grease, and pH range of 6.0 to 9.0 standard units. Chemical Oxygen Demand (COD) and Iron will be monitor only parameters.

The benchmark concentration proposed in this general permit for TSS of 100 mg/L, is based partly on group monitoring results, which indicated that 71 out of 120 samples taken for TSS were less than 100 mg/L, and 5 of 15 facilities monitored never exceeded 100 mg/L in the 8 quarterly monitored periods. e Runoff is 50 mg/L (best conventional pollutant control technology and best practicable control technology). While the EPA effluent limitation guideline is not applicable to the concrete industry, it does illustrate that technology is available to meet an effluent limitation of 100 mg/L TSS. The group monitoring data also indicates that for properly maintained facilities, 100 mg/L limit for TSS is attainable for facilities that only implemented BMPs, therefore the Department deems this proposed effluent limitation for TSS of 100 mg/L is justified.

Similarly, a pH range of 6-9 su was achieved by facilities that participated in the group monitoring, of which 55 out of 120 samples and 3 out of 15 facilities met the pH range during the 8 quarterly monitored periods. Also the EPA effluent limitation guideline at 40 CFR Part 411.32 for the Cement Manufacturing Facility for pH is 6-9 su. While meeting a pH limitation of 6-9 su may prove to be more difficult relying solely on BMPs, the Department is comfortable with the basis for inclusion of the limitation, as alkaline discharges are directly attributable to the concrete manufacturing process. Additionally, the inclusion of an Oil and Grease limitation of 15 mg/L is pursuant to N.J.A.C. 7:14A-12.8.

Facilities may otherwise choose to treat stormwater only discharges by installing a wet pond, designed in accordance with the Standards for Soil Erosion and Sediment Control in New Jersey or another engineered system for a design storm of 3.5" of rain, falling uniformly during a 24-hour period (2yr/24hr storm) with a retention of at least 36 hours. The Department accepts the performance standard that properly engineered wet ponds are capable of removing 80% TSS. The engineered treatment system shall be designed to meet the following effluent characterization: Total Suspended Solids (100 mg/L as a daily max.), pH (6-9 su), Oil and Grease (15 mg/L daily max.), Iron (1.0 mg/L daily max.), and Chemical Oxygen Demand (120 mg/L daily max.). Both of these options will require the installation of a chemical metering system designed to achieve a pH in the stormwater discharge between 6-9 su. Facilities that implement either option will be required to monitor the stormwater only discharges in accordance with Part III of the permit.

Discharges of concrete washout wastewater or stormwater commingled with concrete washout wastewater discharges are of particular concern as they generally contain significant TSS loading and have a high pH. These discharges are, by regulation, a process wastewater discharge and not considered stormwater, however the Department is streamlining the NJPDES permitting process by regulating this discharge in the general permit. Concrete washout

wastewater that is discharged to surface water solely, and/or commingled with stormwater, shall meet the effluent limitations for the following parameters: pH (6.0-9.0 standard units), Oil and Grease (10 mg/L daily max), Total Suspended Solids (40 mg/L daily max), Iron (1.0 mg/L daily max) and Chemical Oxygen Demand (30 mg/L monthly average, 45 mg/L weekly max). The following parameters are proposed for monitoring only: Flow (monthly average/daily max), Total Suspended Solids (monthly average) and Surfactants (monthly max).

Flow: The general permit does not include a numerical limitation for flow. Monitoring conditions are applied pursuant to N.J.A.C. 7:14A-13.13.

The USEPA, in their review of the concrete manufacturing industry, indicated the following parameters were pollutants of concern for concrete washing activities at these facilities:

Chemical Oxygen Demand (COD)
Total Suspended Solids (TSS)
pH
Oil & Grease

Chemical Oxygen Demand (COD): The concentration limitations are based on the most stringent effluent standards for the Atlantic Coastal Plain / Delaware River / Hackensack River / Passaic River / Wallkill River / Hudson River / Kill Van Kull / Arthur Kill River Basins at N.J.A.C. 7:14A-12.4. N.J.A.C. 7:14A-12.4(c) allows for the substitution of COD for BOD₅, when COD is a more appropriate parameter to limit, by assuming that COD is normally found in wastewater at a 2:1 ratio to BOD₅.

Total Suspended Solids (TSS): The concentration limitations are based on the NJSWQS for fresh and saline waters.

pH: The effluent limitations of 6.0 standard units (minimum) and 9.0 standard units (maximum) are deemed sufficient to protect the receiving water body.

Oil and Grease: The effluent limitations are based on N.J.A.C. 7:14A-12.8(c).

Monitoring frequencies and sample types are in accordance with N.J.A.C. 7:14A-14.

V. COMPLIANCE SCHEDULES

This draft permit will grant twenty-four (24) months from the effective date of the final permit for new and existing permittees to fully implement the proposed Industry-Wide Minimum Requirements including the implementation of the discharge, treatment and monitoring options.

The facility shall submit Attachment C (certifying the SPPP has been developed or revised incorporating all additional requirements of this permit) within six (6) months from the effective date of the final permit along with the Drainage Control Plan.

The Implementation and Inspection Certification (Attachment D) shall be submitted to the Department within twenty-four (24) months from the effective date of the final permit, certifying the SPPP is fully implemented and that the facility is in compliance with all permit conditions.

Newly constructed facilities shall submit a Drainage Control Plan, the SPPP Preparation Certification Attachment C and the SPPP Implementation and Inspection Certification Attachment D, with the request for authorization (RFA). Industry-Wide Minimum Requirements shall be implemented prior to the commencement of industrial activities occurring on site. Discharge sampling shall begin within twenty-five days after the effective date of permit authorization.

Monitoring for new and existing permittees shall begin twenty-four months from the effective date of the final permit.

VI. DISCHARGES TO GROUND WATER

The concrete general permit regulates the discharge of stormwater and concrete washout wastewater to ground waters of the state. To prevent the discharge of pollutants to groundwater from concrete operations, facilities are required to minimize the discharge of pollutants by paving all areas of industrial activity. In addition, any basin that receives concrete washout wastewater or concrete washout wastewater commingled with stormwater must be lined in accordance with permit conditions. Basins that receive stormwater only discharges do not have to be lined.

VII. RESIDUALS CONDITIONS

Generally, operations that generate sludge resulting from treatment of the stormwater will be subject to the monitoring and reporting requirements contained in Part III. In accordance with the Sludge Quality Assurance Regulations (SQAR, N.J.A.C. 7:14C), the frequency of monitoring is based upon the amount of sludge generated. Consequently, the frequency of monitoring found in Part III may be reduced for individual authorizations. Also in accordance with the SQAR, the parameters to be monitored in Part III may change in individual authorizations pursuant to N.J.A.C. 7:14C-1.9(b).

All treatment works with a discharge regulated under N.J.A.C. 7:14A must have permits that implement applicable technical standards for residual management. Generally, the permit issued to the treatment works generating the residual will include applicable residual quality monitoring as well as other general conditions required by N.J.A.C. 7:14A-6. In addition, the permit may include conditions related to any aspect of residual management developed on a case-by-case basis where the Department determines that such conditions are necessary to protect public health and the environment.

The permit may also include conditions establishing requirements for treatment works that send residuals to other facilities for final use or disposal. Thus, ALL residual preparers (that is, generators as well as persons who manage the residual) are required to submit basic information concerning their residual use and disposal practices. This basic information is submitted by compliance with the Sludge Quality Assurance Regulations (N.J.A.C. 7:14C).

The documents listed below have been used to establish the residual conditions of this draft permit:

- a. United States Environmental Protection Agency “Standards for the use or disposal of sewage sludge” (40 CFR Part 503),
- b. "New Jersey Pollutant Discharge Elimination System" (N.J.A.C. 7:14A),
- c. Technical Manual for Residuals Management, May 1998,
- d. USEPA Part 503 Implementation Guidance, EPA 833-R-95-001, October 1995. This document is a compilation of federal requirements, management practices and EPA recommended permit conditions for sewage sludge use and management practices,
- e. USEPA A Plain English Guide to the EPA Part 503 Biosolids Rule, EPA/832/R-93/003, September 1994,
- f. New Jersey “Statewide Sludge Management Plan”, November 1987 and
- g. New Jersey “Sludge Quality Assurance Regulations” (SQAR), N.J.A.C. 7:14C.

VIII. REQUESTED VARIANCES OR ALTERNATIVE STANDARDS

There are no variances available or alternative standards contained in this permit.

IX. ADDITIONAL INFORMATION

Additional information may be obtained from Vicki Margulies within the Bureau of Nonpoint Pollution Control at 609-633-7021, Monday through Thursday between the hours of 9:00 AM and 5:00 PM.

CONTENTS OF THE ADMINISTRATIVE RECORD

The following items were used to establish the basis for this Draft Renewal Permit:

1. The existing NJPDES Industry Specific General Permit NJ0108456, effective August 1, 1995, expired on July 31, 2000.
2. The Draft Permit for NJ0108456 (effective August 1, 1995).
3. EPA Office of Compliance Sector Notebook Project, *Profile of the Stone, Clay, Glass and Concrete Industry*, dated September 1995. *NPI
4. Appendix A – Summary of Responses to Public Comments on the November 19, 1993 Draft Multi Sector General Permit. *NPI
4. 33 U.S.C. 1251 et seq., Federal Water Pollution Control Act. *NPI
5. N.J.S.A. 58:10A-1 et seq., New Jersey Water Pollution Control Act. *NPI
6. 40 CFR Part 122, National Pollutant Discharge Elimination System. *NPI
8. N.J.A.C. 7:14A-1 et seq., New Jersey Pollutant Discharge Elimination System Regulations. *NPI
9. N.J.A.C. 7:9B-1 et seq., New Jersey Surface Water Quality Standards. *NPI
10. 40 CFR Part 131, Federal Water Quality Standards. *NPI
11. "Field Sampling Procedures Manual", published by the NJDEP. *NPI
12. "Discharge Monitoring Report (DMR) Instructional Manual", published by the NJDEP. *NPI
13. Delaware River Basin Commission Water Quality Regulations. *NPI
14. USEPA Vehicle Washing BMPs, Region VI, February 16, 1996. *NPI
15. South Carolina Department of Health and Environmental Control NPDES General Permit for Vehicle Wash Water Dischargers, effective April 1, 1996. *NPI
16. Recommended Pollution Prevention Practices for the Mobile Power Wash Industry, Greater Kansas City Metropolitan Area, September 1997. *NPI
17. Oregon Department of Environmental Quality Draft NPDES General Permit for Wash Wastewater Discharges to Surface Water. *NPI
18. Nationwide Urban Runoff Program, USEPA and consultants, 1983. *NPI
19. Group Sampling Data submitted by the National Concrete Manufacturer's Association, Group # 1224, 1993. *NPI
20. Various industry technical reports. *NPI (available upon request)
21. Various existing relevant NJPDES permittees. *NPI (available upon request)

*NPI: Denotes officially part of the Administrative Record, but not necessarily a physical part thereof.