

FACT SHEET

FOR THE GENERAL PERMIT TO DISCHARGE WASTEWATER FROM FILTER BACKWASH OPERATION AT POTABLE WATER TREATMENT PLANTS TO WATERS OF THE UNITED STATES UNDER THE OKLAHOMA POLLUTANT DISCHARGE ELIMINATION SYSTEM (OPDES)

DEQ Permit Number: OKG380000

Issuing Office: Oklahoma Department of Environmental Quality
Water Quality Division
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Applicant: Owners/Operators of Potable Water Treatment Plants located in the State of Oklahoma

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The State of Oklahoma Department of Environmental Quality (DEQ) has made a tentative determination to re-issue the general permit for the discharge from filter backwash operation at potable water treatment facilities. The DEQ is the permitting authority and this general permit will be enforceable under both federal and state laws, rules and regulations. Permit requirements are based on NPDES regulations (40 CFR, Parts 122, 124, and 136) and the Oklahoma Pollutant Discharge Elimination System Act (OPDES Act), Title 27A O.S., § 2-6-201 *et seq.* and the rules of the DEQ adopted there under {See OAC 252:606, 616, and 626}.

I. PERMITTING BACKGROUND

The following is a chronology of permitting activities since issuance of the previous general permit.

September 21, 2007: Draft general permit and fact sheet sent to EPA for courtesy review.
January 2, 2003: Previously issued general permit became effective.
January 2, 2003: Previous general permit issued.

II. PURPOSE AND SCOPE

The purpose of this general permit is to expedite the permitting process for filter backwash operation at potable water treatment facilities (SIC 4941) that discharge generally less than one (1) million gallons per day (mgd) of filter backwash wastewater that have relatively low risks for causing water quality degradation to receiving streams. The general permit provides a uniform measure of environmental protection consistent with all the laws, rules and regulations of the DEQ and the Environmental Protection Agency (EPA).

Potable water treatment facilities that discharge filter backwash wastewater are required to obtain an Authorization to Discharge and/or Dispose of Wastewater (Authorization) from the Executive Director of the DEQ. Owners or operators of potable water treatment facilities located within the boundaries of the State of Oklahoma must make a written request to the DEQ that they be authorized to discharge and/or dispose of residuals under this general permit and receive an Authorization, prior to commencing such discharge and/or disposal. Owners or operators within the scope of this general permit who fail to make a written request to the DEQ are not authorized to discharge and/or dispose of wastewater or residuals under this general permit.

Facilities that currently have individual permits issued by the DEQ to discharge filter backwash wastewater may apply for coverage under this general permit no later than 180 days prior to the expiration of their current individual permits, or they may elect to continue coverage under their individual permits. Existing filter backwash facilities that are not currently permitted by the DEQ through individual wastewater disposal permits shall apply for coverage under this general permit within 90 days of the effective date of this Permit. New filter backwash facilities shall apply for and receive Authorization under this general permit before commencing any of the activities regulated by this general permit. Land application of residuals (sludge) must be done under an approved residuals (sludge) permit (General Permits OKG65A, OKG65L or an individual residuals permit must be obtained).

III. APPLICANT ACTIVITY

A. Description of Facility and Discharge Location

This general permit covers potable water treatment facilities (SIC Code 4941) that use lime, alum, ferric chloride to treat water; use chlorine, chlorine dioxide or ozone to disinfect the treated water in order to provide potable water to the public; and discharge wastewater generated from the backwashing of filters. The filter backwash wastewater is retained in holding ponds before being discharged. Filter backwash holding ponds must meet construction requirements set forth in OAC 252:626-13-4, and the discharge location must be specified to within 10 acres by use of legal description and specified by latitude and longitude.

B. Wastewater Generation and Characteristics

Water supply can be from both underground and surface water sources. Source water shall comply with Water Quality Criteria for potable water supply before it is approved by the DEQ to be used as a raw water source. Raw water must usually be treated, prior to distribution for domestic and industrial uses, to remove contaminants that may include, but are not limited to, iron, manganese, suspended solids and sediment.

Frequently, in order to increase treatability of the source water, certain coagulants are added to the water to facilitate flocculation of contaminants. Some of the most common coagulants include compounds containing aluminum and iron (such as alum and ferric chloride) and lime and soda ash. Once the source water is treated with one or more of the above, it is usually passed through a filter assembly to remove any suspended materials that have not settled out. In order to prevent clogging of the filters, which results a reduction in filtering capacity and efficiency, the filters are periodically backwashed to remove trapped materials. The filter backwash wastewater is usually transported via pipeline to holding ponds that are properly designed (in accordance with OAC 252-626-13-4) to provide sufficient detention time for suspended materials to settle out and for any residual of disinfectant should they present in the backwash to completely dissipate prior to discharging. Filter backwash wastewater has the potential to contain suspended solids, dissolved iron, dissolved aluminum and dissolved manganese resulting from treatment of potable water.

IV. TECHNOLOGY-BASED EFFLUENT LIMITATIONS AND CONDITIONS

A. General

Regulations promulgated at 40 CFR Part 122.44(a) and OAC 252:606-5-2(a)(1) require technology-based effluent limitations to be placed in OPDES permits based on effluent limitation guidelines where applicable, on Best Professional Judgment (BPJ) of the permit writer in the absence of guidelines, or on a combination of the two.

B. Applicable Effluent Limitations Guidelines

Technology-based effluent guidelines have not been promulgated for filter backwash operations. Therefore, the following proposed permit limitations have been developed and are based on EPA Region 6’s recommendations for discharges from water treatment plants and previously issued State permits for water plants that use lime, alum or ferric chloride to treat water; use chlorine, chlorine dioxide or ozone to disinfect the treated water in order to provide potable water to the public; and discharge wastewater resulting from the backwashing of filters. The limits established for total suspended solids and pH are judged to represent the degree of effluent reduction attainable through the application of Best Conventional Technology (BCT). The limits established for dissolved iron, aluminum, and manganese are judged to represent the level of treatment attainable through the application of the Best Available Technology that is economically achievable (BAT).

BCT and BAT Effluent Limitations for Filter Backwash Wastewater

Parameter	Concentration (mg/l)	
	Monthly Average	Weekly Average
Total Suspended Solids (TSS)	20	30
Iron, Dissolved	1.0	2.0
Aluminum, Dissolved ^a	1.0	2.0
Manganese, Dissolved	1.0	2.0
pH (standard unit)	6.5 – 9.0	

^a Permit limits, monitoring and reporting requirements for aluminum shall not be required if Alum is not used as part of the water treatment process.

V. WATER QUALITY-BASED EFFLUENT LIMITATIONS AND CONDITIONS

A. General Comments

Section 101 of the Clean Water Act (CWA) states that "...it is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited..." A permit that contains technology-based permit limits alone may not adequately protect the quality of the receiving stream. Thus, additional water quality-based effluent limitations and/or conditions are considered in the general permit using State narrative and numerical water quality standards (Oklahoma's Water Quality Standards, as amended, (OAC Title 785). This is to insure that no point source discharge (1) results in in-stream aquatic toxicity; (2) causes a violation of an applicable narrative or numerical State water quality standard; or (3) results in aquatic bioaccumulation which threatens human health.

B. Receiving Stream Designated Uses

Potable water treatment facilities covered by this general permit are allow to discharge into various water bodies listed in Appendix A of OAC 785, Chapter 45. These waters have varying beneficial uses as designated by the "Oklahoma Water Quality Standards." This general permit will cover discharges to waters of the State/United States with any or all of the following designated beneficial uses as listed in OAC 785, Chapter 45.

Public and Private Water Supplies (OAC 785:45-5-10);
Emergency Public and Private Water Supplies (OAC 785:45-5-11);
Fish and Wildlife Propagation (OAC 785:45-5-12);
Agriculture/Livestock and Irrigation (OAC 785:45-5-13);
Hydroelectric Power Generation (OAC 785:45-5-14);
Industrial and Municipal Process and Cooling Water (OAC 785:45-5-15);
Primary Body Contact Recreation (OAC 785:45-5-16);
Secondary Body Contact Recreation (OAC 785:45-5-17);
Navigation (OAC 785:45-5-18); and
Aesthetics (OAC 785:45-5-19);
Fish Consumption (OAC 785:45-5-20)

C. Antidegradation Requirements

This general permit shall not cover those facilities discharging into the following waters: Outstanding Resource Waters [OAC 785:45-5-25(c)(1)], High Quality Waters [OAC 785:45-5-25(c)(3)], Sensitive Public and Private Water Supplies [OAC 785:45-5-25(c)(4)], Appendix 'B' Waters [OAC 785:45-5-25(c)(2)] as defined in Oklahoma's Water Quality Standards.

D. 303(D) List Assessment

This general permit shall not cover those facilities discharging to receiving waters included in Oklahoma's '303(d) List' of impaired water bodies caused by "Total Suspended Solids" (Cause Code 2100) or "pH" (Cause Code 1000) for which a TMDL has not been performed, or the result of the TMDL indicates that discharge limits more stringent than 30 mg/l for total suspended solids and 6.5 – 9.0 standard units for pH are required.

E. Water Quality – Based Effluent Limitations by Designated Uses**1. Public and Private Water Supply Use**

Based on the characteristics of filter backwash wastewater being discharged from potable water treatment facilities, the discharge is not expected to contain pollutants at levels which would require limits or monitoring requirements to protect the designated use.

2. Fish and Wildlife Propagation**a. DO and DO-Demanding Substances**

Based on the characteristics of filter backwash wastewater being discharged from potable water treatment facilities, DO and DO-demanding substances are not expected to present in the discharge. Therefore, neither effluent limits nor monitoring requirements for DO and DO-demanding substances are needed in this general permit.

b. pH

OAC 785:45-1-12(f)(3) states, "pH values shall be between 6.5 and 9.0 in waters designated for fish and wildlife propagation; unless pH values outside that range are due to natural conditions." This pH range is established in this general permit.

c. Oil and Grease

Based on the characteristics of filter backwash wastewater being discharged from potable water treatment facilities, oil and grease is not expected to present in the discharge. Therefore, neither effluent limits nor monitoring requirements for oil and grease are needed in this general permit.

d. Toxicity from Halogenated Oxidants

Water being used for backwashing filters at potable water treatment facilities might contain residual of disinfectant resulting from the treatment and disinfection of water prior to distribution to the public. Filter backwash wastewater must be allowed with enough detention time in the proper designed holding ponds (in accordance with OAC 252:626-13-4) so that disinfectant residual be completely dissipated. Thus, no disinfectant residual should be present in the discharge.

e. Toxic Substances

Based on the characteristics of filter backwash wastewater being discharged from potable water treatment facilities, toxic substances are not expected to present in the discharge. Therefore, neither effluent limits nor monitoring requirements for toxic substances are needed in this general permit.

3. Agriculture/Livestock and Irrigation

Based on the characteristics of filter backwash wastewater being discharged from potable water treatment facilities, chlorides, sulfates and total dissolved solids are not expected to present in the discharge. Therefore, neither effluent limits nor monitoring requirements for these pollutants are needed in this general permit.

4. Hydroelectric Power Generation Use

Hydroelectric power generation use criteria are determined in accordance with OAC 785:45-5-15, which states that this beneficial use is not generally dependent upon water quality.

5. Industrial and Municipal Process and Cooling Water Use

Industrial and municipal process and cooling water use criteria is determined in accordance with OAC 785:45-5-15, which states that this use will be protected by application of the criteria for other beneficial uses.

6. Primary Body Contact Recreation

Based on the characteristics of filter backwash wastewater being discharged from potable water treatment facilities, bacteria are not expected to present in the discharge at levels that could affect the designated use. Therefore, neither effluent limits nor monitoring requirements for bacteria are needed in this general permit.

7. Aesthetics Use

Aesthetics use is determined in accordance with OAC 785:45-5-19. A narrative requirement will be established in the draft permit prohibiting the discharge of floating solids or visible foam in other than trace amounts.

8. Fish Consumption

In accordance with OAC 785:45-5-20(a), "surface waters of the state shall be maintained so that toxicity does not inhibit ingestion of fish and shellfish by humans". Based on the characteristics of filter backwash wastewater being discharged from potable water treatment facilities, the discharge does not contain pollutants at levels at levels which would require fish consumption water quality limits or monitoring.

F. Residual (Sludge) Requirements

Residuals (sludge) generated at a potable water treatment facility may be applied to land only if the facility has an approved residuals (sludge) permit that defines the location and operating conditions and other requirements to be met. Current residuals (sludge) permits available include General Permits OKG65A (for Alum) and OKG65L (for Lime) or an individual residuals permit. The constituents to be monitored for and the sampling frequency of each is also defined in the residual (sludge) management plan. Analysis results shall be kept at the facility for a period of five (5) years and shall be made available to DEQ staff upon request.

G. Protection of Endangered and Threatened Species and Critical Habitat

For new facilities or existing facilities with change in the discharge volume or location of the discharge point that discharge into water designated by the U.S Fish and Wildlife Service as sensitive for endangered or candidate species or critical habitat, the DEQ will consult with the U.S. Fish and Wildlife to identify endangered or candidate species or critical habitat that may be associated with the stream segment to which the discharge will occur. For existing discharging facilities with no change in discharge volume or location of the discharge point, the DEQ has determined that issuance of this general permit does not adversely affect any endangered or candidate species or critical habitat.

H. Reopener Clause

This general permit may be reopened for modification or revocation and/or reissuance to require additional monitoring and/or effluent limitations where actual or potential exceedances of State water quality criteria are

determined to be the result of the permittees' discharge(s) to the receiving water(s), or a Total Maximum Daily Load is established for the receiving waters, or when required as technology. Modification or revocation and/or reissuance of the permit shall follow regulations listed at 40 CFR Part 124.5.

VI. SUMMARY OF PROPOSED PERMIT EFFLUENT LIMITATIONS

A. General

In accordance with 40 CFR 122.44(a), (d) and (l), pollutant limitations and monitoring requirements are established in the general permit based on the more stringent of technology-based, water quality-based or previous general permit requirements. Both concentration and mass (loading) limits are established unless it is impractical to specify loading limits because of the units in which concentration limits are expressed (e.g., standard units for pH). Such loading limitations are calculated using the facility's backwash discharge flow and the following equation:

$$\text{Mass loading limit (in lb/day)} = \text{Conc limit (in mg/l)} \times Q_{e(30)} \text{ (in mgd)} \quad 8.34$$

B. Effluent Limitations and Monitoring and Reporting Requirement

1. Effluent Limitations and Monitoring Requirements

Effluent limits and monitoring requirements are effective on the effective date and last through the expiration date of this general permit.

Pollutants	Discharge Limitations			Monitoring Requirements	
	Mass (lbs/day)	Concentration (mg/l)		Measurement Frequency	Sample Type
	Monthly Avg.	Monthly Avg.	Weekly Avg.		
Flow [50050]	Report (mgd)	---	---	Daily ^a	Instantaneous
Total Suspended Solids (TSS) [00530]	To be specified	20	30	1/month ^{a, b}	Grab
Iron, Dissolved [01046]	To be specified	1.0	2.0	1/month ^{a, b}	Grab
Aluminum, Dissolved [01106] ^c	To be specified	1.0	2.0	1/month ^{a, b}	Grab
Manganese, Dissolved [01056]	To be specified	1.0	2.0	1/month ^{a, b}	Grab
pH [00400]	---	6.5 – 9.0 s.u.		1/week ^{a, b}	Grab

^a When discharging.

^b Readings may be averaged for the month if an individual sample is in excess of the monthly average.

^c If no alum is used for an entire reporting period, the permittee shall report a value of “zero” for the monthly average and enter “No alum used this reporting period” in the comments section on the DMR for that reporting period.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the discharge from the final treatment unit.

NOTE: See Parts II and III for Additional Requirements.

2. Reporting Requirements

Monitoring results shall be reported in accordance with provisions of Part III.E.4 of this general permit. Monitoring results obtained during the previous month shall be summarized and reported on the Discharge Monitoring Report (DMR) forms that is postmarked no later than the 10th day of the following month. If no discharge occurs during the reporting period, DMR forms stating “No Discharge” shall be submitted according to the above schedule.

VII. SUMMARY OF CHANGES FROM PREVIOUS PERMIT

The following change is made to this general permit:

Analysis results for residuals (sludge) generated at potable water treatment plants shall be kept at the facilities for a period of five (5) years.

VIII. REVIEW BY OTHER AGENCIES AND FINAL DETERMINATION

A draft general permit and draft public notice will be sent to the District Engineer, Corps of Engineers, State Historical Preservation Office and to the Field Supervisor of the U.S. Fish and Wildlife Service upon the publication of the notice. If comments are received from these agencies or other State or Federal agencies with jurisdiction over fish, wildlife, or public health, the general permit may be denied or additional conditions may be included in accordance with regulations promulgated at 40 CFR 124.59.

The public notice describes the procedures for the formulation of the final determination.

IX. ADMINISTRATIVE RECORD

The following sources were used to prepare this general permit and constitute a part of the administrative record for this general permit:

A. DEQ Records

Permit files containing permits, applications and monitoring data for potable water treatment facilities
Fact Sheets from individual permits previously issued by the DEQ

B. Federal Water Pollution Control Act (Clean Water Act), 33 U.S.C. 1251 et. seq.

Section 301, 303 and 402(a).

C. Federal Rules and Regulations

40 CFR Parts 122, 124, and 136.

D. State Law, Standards, and Rules and Regulations

Oklahoma Pollutant Discharge Elimination System (OPDES) Act, 27A O.S. 2-6-201 et. seq.
OAC 252:606, 616, 626, and 690, and OAC 785:45
Oklahoma’s Water Quality Standards, as amended
Oklahoma Continuing Planning Process Document (CPP).