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 707 N. Robinson P.O. Box 1677 Oklahoma City, OK 73101-1677
Applicant:	Owners/Operators of Potable Water Treatment Plants located in the State of Oklahoma
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Date Prepared:	January 27, 2012
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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 252:515, 606, 616, and 626}.

I. PERMITTING BACKGROUND

A. CHRONOLOGY OF PERMITTING ACTIVITIES

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

May 30, 2012:	*Newspaper publication of public notice*
May 23, 2012:	*Received EPA approval.*
February 21, 2012:	*Draft general permit and fact sheet sent to EPA for courtesy review.*
January 1, 2008:	*Previously issued general permit became effective.*
December 31, 2007:	*Previous general permit issued.*

B. PROPOSED PERMITTING ACTION

It is proposed that General Permit No. OKG58, which was effective January 1, 2008, and expires December 31, 2012, be reissued for a five year term in accordance with regulations promulgated at 40 CFR 122.46(a) and OAC 252:606-1-3(b).

II. PURPOSE AND SCOPE

The treatment of potable water in a conventional water treatment plant generally consists of four key steps – flocculation, sedimentation, filtration, and disinfection. The purpose of this general permit is to expedite the permitting process for filter backwash operations at potable water treatment facilities (SIC 4941) that discharge filter backwash wastewater. These dischargers have a relatively low risk for causing water quality degradation to the receiving streams. The general permit provides a uniform measure of environmental protection consistent with all the laws, rules and regulations of the Oklahoma Department of Environmental Quality (DEQ) and the Environmental Protection Agency (EPA).

In accordance with 40CFR 122.21, potable water treatment facilities that discharge filter backwash wastewater are required to obtain an Authorization to discharge and/or dispose of wastewater. This Authorization must be obtained 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.

Qualifying 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. Qualifying 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).

A. Wastewater Generation and Characteristics

Water supply for the potable water plants (source water) 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 to remove contaminants that may include, but are not limited to, iron, manganese, suspended solids and sediment, prior to distribution for domestic and industrial uses. 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 polymers, 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. The filter media complying with OAC 252:626-9-9(d) may be a single media or a combination of sand, anthracite coal, and/or garnet pebbles. A manganese green sand filter in compliance with OAC 252:626-9-7(a)(3) may also be used to remove iron and manganese from the source water.

In order to prevent clogging of the filters, which results in the reduction of the filtering capacity and efficiency, the filters are periodically backwashed with finished water to remove the contaminants trapped in the filter media. The filter backwash wastewater is usually transported via pipeline to the holding ponds that are properly designed to provide sufficient detention time for suspended materials to settle out and for dissipation of any residual of disinfectant present in the backwash prior to discharging. Filter backwash wastewater has the potential to contain suspended solids, dissolved iron, dissolved aluminum, and dissolved manganese resulting from the treatment of the source water.

B. Qualifying Requirements for Potable Water Treatment Plants:

1. The average daily discharge of wastewater produced by the filter backwash shall be less than 1 mgd.
2. The general permit covers only conventional potable water treatment facilities (SIC Code 4941) constructed in accordance with OAC 252:626, and that use lime or sodium hydroxide to correct alkalinity and/or pH; use alum, ferric chloride, or polymer to coagulate; and use chlorine, chlorine dioxide or ozone for primary disinfection. The general permit also covers packaged drinking water plants that use these chemicals and processes.
3. Drinking water plants that use ion exchange for softening, or use electrode ionization for coagulation, or use membrane filtration (microfiltration, ultrafiltration, nanofiltration or reverse osmosis) defined in OAC 252:626-9-9(f) do not qualify for discharge of filter backwash under this general permit since the concentration and composition of the contaminants in the backwash wastewater from these processes are not controlled by the limits established in the general permit.
4. Drinking water plants that use brine or Zeolite for softening do not qualify for discharge under the general permit as they generate chlorides in the wastewater and the general permit does not have limits for chlorides.
5. Facilities with a waste load allocation specified in the Water Quality Management Plan (208 Plan) that is more stringent than the limits contained in the general permit do not qualify.
6. A minimum of two lagoons are required for the detention of wastewater produced by the filter backwash and the construction of the lagoons shall comply with the requirements of OAC252:626-13-4.
7. Discharges to sensitive waters for threatened and endangered species, as identified by the U.S. Fish and Wildlife Service in http://www.fws.gov/southwest/es/oklahoma/Documents/TE_Species/Maps/Aquatic%20Dependent%20Species%20Watersheds%208Aug2011.pdf shall not be covered under the general permit for *new* facilities, nor if it is an existing facility seeking to change its point of discharge or increase the permitted design flow from its previous permit.
8. *New* discharges and existing discharges with increase in flow or change in the point of discharge to Culturally Significant Waters [OAC 785:45-5-25(c)(7)] listed in Appendix A of OAC 785:45 shall not be covered under general permit as consultation with the authorized Tribal authority may be necessary.
9. *New* discharges within five stream miles from a lake are not covered under general permit as the waste load allocation for a discharge to a lake is determined on a case by case basis.

C. Restrictions for Receiving Waters:

This general permit shall not cover the facilities discharging within five stream miles of the following waters:

1. Outstanding Resource Waters and/or Scenic Rivers [OAC 785:45-5-25(c)(1)],
2. High Quality Waters [OAC 785:45-5-25(c)(3)],
3. Sensitive Public and Private Water Supplies [OAC 785:45-5-25(c)(4)],
4. Appendix 'B' Waters [OAC 785:45-5-25(c)(2)] also designated as Outstanding Resource Waters as defined in Appendix "A" of Oklahoma's Water Quality Standards.
5. Water bodies included in Oklahoma's '303(d) List' of impaired water bodies caused by turbidity, or pH; for which a TMDL has not been performed, or the result of the TMDL indicates that discharge limits more stringent than 20 mg/l for TSS or pH more stringent than 6.5 to 9.0 standard units are required.

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, ferric chloride, or polymer 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). Since New Source Performance Standards (NSPS) for discharge from filter backwash has not been developed, in the permit writer's best professional judgment, these limits also apply to new dischargers of filter backwash from the conventional potable water plants.

BCT and BAT Effluent Limitations for Filter Backwash Wastewater

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

[a] In the previous fact sheet and OKG38 permit, this column was inadvertently labeled as "Weekly Average." Incorporation of the same permit limits as daily maximum is more stringent than the previous permit and thus there is no backsliding issue with the change.

[b] 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 allowed to discharge into various water bodies listed in Appendix A of OAC 785, Chapter 45. The waters receiving these discharges have varying beneficial uses as designated by the "Oklahoma Water Quality Standards." With the exceptions listed under Section II.C, 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);
- Primary Body Contact Recreation (OAC 785:45-5-16);
- Secondary Body Contact Recreation (OAC 785:45-5-17);
- Navigation (OAC 785:45-5-18);
- Aesthetics (OAC 785:45-5-19); and
- Fish Consumption (OAC 785:45-5-20)

C. Antidegradation Requirements

To satisfy this requirement, the general permit shall not cover those facilities discharging to the following waters: outstanding resource waters; high quality resource waters; sensitive public and private water supplies; and Appendix 'B' waters [OAC 785:45-5-25(c) (2)] (see Section II - Purpose and Scope above).

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 "turbidity," or "pH" for which a TMDL has not been performed, or the result of the TMDL indicates that discharge limits more stringent than 20 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 (OAC785:45-5-10)

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 this designated use.

2. Fish and Wildlife Propagation

a. DO and DO-Demanding Substances – Fish and Wildlife Propagation Use (OAC 785:45-5-12)

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 – Fish and Wildlife Propagation Use (OAC 785:45-5-12)

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 – Fish and Wildlife Propagation Use (OAC 785:45-5-12)

OAC 785:45-5-12(f)(4) states "All waters having the designated beneficial use of any subcategory of fish and wildlife propagation shall be maintained free of oil and grease to prevent a visible sheen of oil or globules of oil or grease on or in the water. Oil and grease shall not be present in quantities that adhere to stream banks and coat bottoms of water courses or which cause deleterious effects to the biota." A narrative condition prohibiting the discharge of any visible sheen of oil or globules of oil or grease will be included in the permit.

d. Toxicity from Halogenated Oxidants – Fish and Wildlife Propagation Use (OAC 785:45-5-12)

Water being used for backwashing filters at potable water treatment facilities might contain residuals of disinfectant resulting from the treatment and disinfection of water prior to distribution to the public. Filter backwash wastewater must be allowed enough detention time in the properly designed holding ponds so that disinfectant residual is completely dissipated. The draft permit contains monitoring of the residual chlorine in the effluent to confirm that disinfectant is being dissipated.

e. Toxic Substances – Fish and Wildlife Propagation (OAC 785:45-5-12) and Fish Consumption (OAC 785:45-5-20) Uses

Based on the characteristics of the filter backwash wastewater being discharged from potable water treatment facilities, toxic substances are not expected to be 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 (OAC785:45-5-13)

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

4. Primary Body Contact Recreation (OAC 785:45-5-16) and Secondary Body Contact Recreation (OAC 785:45-5-17)

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.

5. Aesthetics Use – (OAC 785:45-5-19)

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.

6. Fish Consumption – (OAC 785:45-5-20)

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 which would require fish consumption water quality limits or monitoring.

F. Residuals (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

Existing facilities with a change in the discharge volume or location of the discharge point or new facilities that discharge into water designated by the U.S Fish and Wildlife Service (USFWS) as sensitive for endangered or candidate species or critical habitat will be required to obtain an individual permit. This is because 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 sensitive stream segment to which the discharge will occur. Therefore, a general permit will not be issued in these cases. For existing discharging facilities with no change in the 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; and consultation with USFWS is not necessary.

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:

Mass loading limit *(in lb/day)* = Conc. limit *(in mg/l)* × Q_e *(in mgd)* × 8.34

Where Q_e is the monthly average effluent flow stated in the application, not exceeding 10% of the potable water production. For new facilities applying for this general permit, the Engineering Report will be used to estimate the Qe flow.

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.	Daily Max.		
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
Total Residual Chlorine (TRC) [50060] [d]	---	Report	Report	Weekly	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.

[d] If no chlorine is used for an entire reporting period, the permittee shall report a value of "zero" for the monthly average and daily maximum and enter "No chlorine used this reporting period" in the comments section on the DMR for that reporting period in lieu of the indicated testing. For any week in which chlorine is used, the indicated testing shall be done until the chlorine is no longer in use.

2. Other Year Round Requirements

- There shall be no discharge of floating solids or visible foam in other than trace amounts.
- There shall be no discharge of any visible sheen of oil or globules of oil or grease**.**
- Samples taken in compliance with the monitoring requirements specified above shall be taken at the discharge from the final treatment unit.
- All monitoring and reporting requirements shall also be in compliance with Part III of this permit. Monitoring results obtained during the previous month shall be summarized and reported on the Discharge Monitoring Report (DMR) forms that are 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 changes are made to this general permit:

- Treatment plants that use membrane filters or reverse osmosis are excluded. Also, treatment plants that use brine solution, Zeolite, or ion exchange for softening are excluded.
- New facilities discharging to culturally sensitive waters are excluded.
- Facilities with more stringent limits than the general permit are excluded.
- Weekly concentration limits for TSS, aluminum, iron, and manganese in the effluent are changed to daily maximum limit to correct a typographical error in the previous permit.
- Weekly monitoring of total residual chlorine (TRC) in the effluent has been added.
- TSS has been removed from the list of 303 (d) impairments of the receiving streams qualifying for the general permit.
- Effluent flow stated in the application, not exceeding 10% of potable water production, will be used for mass loading calculation instead of $Q_{e(30)}$ in the previous permit.

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 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 252:515, OAC 252:606, OAC 252:616, OAC 252:626, and OAC 252:690.
- OAC 785:45 and OAC 785:46.
- Oklahoma's Water Quality Standards, as amended.
- Oklahoma Continuing Planning Process Document (CPP).