

STATE OF COLORADO

COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT
WATER QUALITY CONTROL DIVISION
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RATIONALE

Colorado Discharge Permit System (CDPS)
General Permit
for Domestic Wastewater Treatment On-Site Systems
with Average Design Capacity Between 2,000 and 10,000 Gallons per Day (GPD)
With No Ground Water Monitoring Requirements
Permit COX-622000

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A. INTRODUCTION

The Water Quality Control Division (“the Division”) has recently modified Colorado’s domestic ground water discharge permit program in order to streamline the permit process, increase consistency and clarity in permit requirements, and increase and enhance effluent and/or ground water monitoring requirements to ensure the protection of State waters. As part of this effort, the Division has developed new ground water discharge general permits intended to cover the majority of ground water discharges from domestic wastewater treatment works (WWTWs) in Colorado.

This document summarizes General Permit COX-622000 for **Domestic Wastewater Treatment On-Site Systems with Design Capacity Between 2,000 and 10,000 Gallons per Day (GPD) With No Ground Water Monitoring Requirements.**

Where coverage under this general permit is applicable and appropriate to a WWTW, this general permit is designed to replace coverage under General Permits COG-620000 and COX-620000 for *Domestic Wastewater Septic System(s) Whose Design Capacity is Equal to or Greater than 2,000 Gallons per Day and Less than 10,000 Gallons per Day.*

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B. ELIGIBILITY FOR COVERAGE:

This permit covers domestic wastewater treatment on-site systems (e.g., septic systems or mechanic plants with leachfields/absorption fields) with design capacity between 2,000 and 10,000 gallons per day (GPD) that have adequately demonstrated to the Division, and have received Division-approval, that ground water monitoring is not required to ensure the protection of State waters. Coverage under General Permit 622000 will be considered only for facilities that meet the following basic criteria:

1. The WWTW shows evidence of advanced treatment to meet the nitrate standard of 10 mg/l as provided in Regulation No. 41, The Basic Standards for Ground Water.

OR

1. The depth to ground water underlying the site is greater than 100 feet,
2. The soil conditions at the site are appropriate to achieve adequate wastewater treatment, and
3. The WWTW meets the minimum set back requirements provided in the *State Board of Health Guidelines on Individual Sewage Disposal Systems (5 CCR1003-6)*.

Additional eligibility criteria are provided in Section I of the permit.

C. APPLYING FOR COVERAGE

Facilities that qualify under Section I.A of the permit, may apply for coverage under this permit by submitting a complete *CDPS Permit Application* form to the Division at least ninety (90) days prior to the anticipated date of first discharge. The *CDPS Permit Application* form is available through the Division web page at www.cdphe.state.co.us/wq/PermitsUnit/index.html or may be obtained by contacting the Division at 303-692-3500.

Discharge permit applications shall be submitted to:

Colorado Department of Public Health and Environment
Water Quality Control Division, WQCD-P-B2
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530
Attention: Permits Unit

To apply for coverage under this discharge permit, applicants must include a risk-based analysis adequately demonstrating that ground water monitoring is not required to ensure the protection of waters of the state. The risk-based analysis must be prepared in accordance with the requirements of **Attachment A**. The Division will approve or deny coverage under this general permit based on a review of the complete permit application and risk based analysis.

Additional information on the permit process is provided in Section II of the permit.

D. TERMS AND CONDITIONS OF PERMIT

D1. DETERMINATION OF EFFLUENT LIMITS

The parameters listed below are pollutants of interest and/or concern for domestic wastewater treatment on-site systems and are regulated under Regulation No. 41, *Basic Standards for Ground Water* or Regulation No. 62, *Regulations for Effluent Limitations*.

- BOD₅ – Effluent BOD₅ is a technology based limit provided in Regulation No. 62. The limits for BOD₅ are 30 mg/l (30-day average) and 45 mg/l (7-day average).

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- Total Suspended Solids (TSS) – Effluent TSS is a technology based limit provided in Regulation No. 62. The limits for TSS are 30 mg/l (30-day average) and 45 mg/l (7-day average).
- BOD₅ and TSS Percent Removal – In addition to the effluent limitations for BOD₅ and TSS, Regulation No. 62 also requires that the arithmetic mean of the values for effluent samples for BOD₅ and TSS collected in a period of 30 consecutive days shall not exceed 15 percent of the arithmetic mean of the values for influent samples collected at approximately the same time during the same period (85 percent removal).
- pH – This parameter is established to protect ground-water quality in accordance with Regulation Number 41. The pH standard has a range from 6.5 s.u. to 8.5 s.u. The pH limits are an instantaneous minimum and maximum, respectively. It should be noted that pH limitations are also provided in Regulation No. 62; however, the ground water standards provided in Reg. No. 41 is designed to be protective of ground water and are therefore selected as the appropriate limitation at the point of effluent discharge.
- Oil and Grease – This parameter is a technology based limit provided in Regulation No. 62. The standard for oil and grease is 10 mg/l.
- Chloride, Sulfate, and Nitrate – These limitations are to protect ground-water quality in accordance with Regulation No. 41. The ground water standards for both sulfate and chloride are 250 mg/l. The ground water standard for nitrate is 10 mg/l.
- Total Coliform – The Total Coliform limit is established protect ground-water quality in accordance with Regulation Number 41. The Total Coliform standards are established for separate methods of analysis; (1) Membrane Filter Technique (MFT) [Method 9222B], which is found in the Twentieth (20) Edition of Standard Methods for the Examination of Water and Wastewater; and (2) the Multiple Tube Fermentation Technique (MTFT) [Method 9221B]. The annual average limit for MFT method is 1.0 organism per 100 milliliters, and the annual average for the MTFT method is 2.2 organisms per 100 milliliters.
- TDS – This parameter is established to protect ground-water quality in accordance with Regulation Number 41. The TDS standard in Regulation 41 depends upon demonstrated background TDS values as follows:

Background TDS Value (mg/l)	Maximum Allowable TDS Concentrations
0 - 500	400 mg/l or 1.25 times the background level, whichever is least restrictive
501 - 10,000	1.25 times the background value
10,001 or greater	No limit

- Wasteload allocations based on the Watershed Protection Control Regulations (Regulation Nos. 71 through 75) may also be applicable to domestic wastewater on-site systems covered under this permit.

The Permits Unit evaluated the pollutants of concern and has made a determination as to whether there is a reasonable potential for the WWTW discharge to cause or contribute to an exceedance of the standards provided in Regulation No. 41, *Basic Standards for Ground Water*. If there is a reasonable potential for the discharge to contribute to an exceedance, effluent limits are included in the permit. As discussed in Section D2, below, the effluent limits included in this permit are *practice-based*, and are met at the point of compliance through a combination of treatment at the plant and attenuation/land treatment in the vadose zone.

D2. DEMONSTRATION OF COMPLIANCE WITH EFFLUENT LIMITATIONS

Compliance with the effluent limitations provided in Section D1, is predicated on attenuation of pollutant concentrations in the vadose zone and/or along the flow path in the ground water. The Division will use the following practice-based measures to ensure that WWTWs covered under this permit provide adequate attenuation of pollutant concentrations to comply with these effluent limitations at the point of compliance (i.e., a point located hydrologically down gradient of the treatment system and established in accordance with Regulation No. 41 – *The Basic Standards for Ground Water*):

- Site Approval Process: WWTWs covered under this permit must obtain prior site application approval under the provisions of Regulation No. 22 – *Site Location and Design Approval Regulations for Domestic Wastewater Treatment Works*. The site approval process includes the development of preliminary effluent limitations (PELs) for the WWTW and review and assessment of the treatment design to ensure that these PELs can be met under approved operating conditions.
- Eligibility for Permit Coverage Requirements: WWTWs covered under this permit must meet the following minimum eligibility requirements designed to ensure adequate attenuation of pollutant concentrations:
 - 1) The WWTW must show evidence of advanced treatment to meet the nitrate standard of 10 mg/l as provided in Regulation No. 41, The Basic Standards for Ground Water.OR
 - 2) The depth to ground water underlying the site is greater than 100 feet,
 - 3) The soil conditions at the site are appropriate to achieve adequate wastewater treatment, and
 - 4) The WWTW meets the minimum set back requirements provided in the State Board of Health Guidelines on Individual Sewage Disposal Systems (5 CCR1003-6).
- Risk-Based Analysis: WWTWs covered under this permit must submit a *risk-based analysis* prepared in accordance with the requirements of Appendix A. This analysis must include an evaluation of existing ground water quality and calculation of the ground water quality changes due to the permitted activity. (e.g., mixing zone calculations, mass loading analysis, site-specific modeling, or similar demonstration of potential impacts to ground water). The analysis must demonstrate to the Divisions satisfaction that ground water quality standards will be achieved after the permitted discharge.
- Operation and Maintenance Requirements: WWTWs covered under this permit must demonstrate ongoing compliance with the operation and maintenance requirements and best management practices provided in the permit and discussed in Section D3, below. Proper operation and maintenance of the treatment system is critical for the WWTW to achieve the level of treatment for which it was designed.

D3. OPERATION AND MAINTENANCE REQUIREMENTS

WWTWs certified under this permit must comply with the operation and maintenance requirements specified in Section IV of the permit and in the permit Certification. A brief description of requirements is provided below.

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D.3.a. Proper Operations and Maintenance

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee as necessary to achieve compliance with the conditions of this permit.

Best management practices that must be implemented are provided in Section IV.B. of the permit.

D.3.b. Flow Limitation and Monitoring

Per Section IV.C of the permit, the Permittee is subject to the a flow limitation equal to the facility's approved design capacity, or as specified in the Certification. The Permittee shall install a continuous flow measuring device(s) to determine the throughput and treatment of the wastewater system. The metering device for the influent in the water supply line shall be equipped with a local flow indication instrument and a flow indication-recording-totalization device suitable for providing permanent flow records, unless specifically exempted by the Division.

Where influent flow metering is not practicable, the Division may approve on a case-by-case basis flow metering at the effluent end of the septic tank or treatment facility or flow metering by some other means.

D4. REPORTING

WWTWs certified under this permit must comply with the reporting requirements specified in Section V of the permit and in the permit Certification. A brief description of reporting requirements is provided below

D.4.a. Annual Compliance Report

The Permittee shall submit an annual self-certification form to demonstrate compliance with the terms and conditions of this permit. The Division shall utilize the information provided in the compliance self-certification form when making determinations to approve or deny requests for reduced monitoring at the treatment plant.

D.4.b. Special Reports

Special reports are required in the event of a spill (the CDPHE spill hotline number is 877-518-5608), bypass, or other noncompliance.

E. CERTIFICATION

If facility conditions change while certified under this general permit, such that the conditions for coverage under this general permit are no longer met, the Permittee is required to apply for an individual permit, or seek coverage under a different general permit. Coverage will continue under this permit until issuance of a different permit or certification.

Receipt by the Division of additional information pertaining to the facility that indicates that coverage under this general permit is not applicable, whether before or after the facility has been certified under this permit, will also result in changing permit coverage. Any such permit changes may be initiated by the Division.

This general permit shall not exceed five years in duration. The Permittee's authority to discharge under this general permit is approved until the expiration date. At that time the Division may extend the general permit or require the facility to reapply for certification under this same general permit or to apply for an individual permit based upon the information provided to the Division.

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F. VIOLATIONS/PENALTIES

Dischargers to State waters who do not obtain coverage under this or other Colorado Discharge Permit System (CDPS) permits will be in violation of the Colorado Water Quality Control Act, 25-8-101. For facilities covered under a CDPS permit, failure to comply with any CDPS permit requirement constitutes a violation.

G. REFERENCES

- "Site Location and Design Approval Regulations for Domestic Wastewater Treatment Works" Regulation No. 22 (5 CCR 1002-22)"; Water Quality Control Commission; effective June 30, 2004.
- "The Basic Standards for Ground Water", Regulation No. 41 [5 CCR 1002-41]; Water Quality Control Commission; effective March 22, 2005.
- "Site-Specific Water Quality Classifications and Standards for Ground Water", Regulation No. 42 [5 CCR 1002-42]; Water Quality Control Commission; effective December 30, 2004.
- "Colorado Discharge Permit System Regulations", Regulation No. 61 [5 CCR 1002-61]; Water Quality Control Commission, effective May 30, 2005.
- "Regulations for Effluent Limitations", Regulation No. 62 (5 CCR 1002-62)"; Water Quality Control Commission; effective December 30, 1998.
- "Biosolids Regulation", Regulation No. 64, Colorado Water Quality Control Commission, effective June 30, 2003.
- "Colorado Water Quality Control Act" Updated June, 2003.
- "Design Criteria for Wastewater Treatment Works", Policy 96-1; Water Quality Control Commission, Expires May 31, 2007.

Permit Writer:

Margo Griffin

April 25, 2007

H. PUBLIC NOTICE CHANGES

In response to internal comments received during Public Notice, the rationale was expanded to include Section D1. - *Effluent Limitations for Parameters of Concern* and Section D2. - *Demonstration of Compliance with Effluent Limitations*.

Also in response to internal comments received during Public Notice, the applicability criterion in Section I.A.4 of the permit was modified to state: "Facilities that can demonstrate to the Division's satisfaction that there is a low potential for ground water standards to be exceeded at the point of compliance (i.e., a point located hydrologically down gradient of the treatment system and established in accordance with Regulation No. 41 – The Basic Standards for Ground Water)."

ATTACHMENT A

REQUIREMENTS FOR RISK-BASED ANALYSIS

In order to apply for coverage under General Permit 622000, the applicant must submit a complete ground water discharge permit application and a site-specific risk based assessment. The risk-based assessment should be a stand-alone document that provides all information necessary to demonstrate that ground water monitoring is not necessary to ensure the protection of State waters. The risk-based analysis must be prepared by professional engineer, qualified geologist, or hydrologist. Coverage under General Permit 62200 will be considered only for facilities that meet the following basic criteria:

- a. The WWTW shows evidence of advanced treatment to meet the nitrate standard of 10 mg/l as provided in Regulation No. 41, The Basic Standards for Ground Water.

OR

- b. The depth to ground water underlying the site is greater than 100 feet,
- c. The soil conditions at the site are appropriate to achieve adequate wastewater treatment, and
- d. The WWTW meets the minimum set back requirements provided in the *State Board of Health Guidelines on Individual Sewage Disposal Systems (5 CCR1003-6)*.

The following outline is provided as a guide for preparing a risk based analysis that meets the expectations of the Division. The information provided in this analysis will be used by the Division to evaluate whether the “no monitoring option” is protective of ground water and appropriate for the treatment system. Each item shown in the outline should be adequately discussed in the plan. If an item is omitted, the applicant should explain why the information is not relevant. Where the Division denies coverage under General Permit 622000 based review of a WWTW’s discharge permit application and risk based analysis, the WWTW may seek coverage under General Permit 621000 for Domestic Wastewater Treatment On-Site Systems with Design Capacity Equal to or Greater than 2,000 Gallons Per Day (GPD) or an individual ground water discharge permit.

Example – Risk Based Analysis Contents

1. A description of the extent, depth and types of soils located at the site. This information can be taken from existing maps and documents (e.g. NRCS or USDA soil surveys, USGS maps and reports, county extension office information, etc.).
2. The depth to ground water and the local ground water flow direction at the site.
3. A stratigraphic column with associated descriptions of the lithology of all unsaturated and saturated geologic units at the site.
4. The horizontal and vertical hydraulic conductivity of the geologic units present at the site. This information can be taken from existing documents and reports, or appropriate literature values.
5. A map of all existing wells, springs, and other surface water features within one-mile of the site.
6. An estimate of the site specific ground water recharge due to precipitation, other site activities, and the proposed discharge to be covered under the permit.
7. An assessment of existing ground water quality and calculation of the ground water quality changes due to the permitted activity. (e.g. mixing zone calculations, mass loading analysis, site-specific modeling, or similar demonstration of potential impacts to ground water). This analysis will need to indicate that ground water quality standards will be achieved after the permitted discharge.