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Environmental Quality, Dept. of

Water Quality

Chapter 21: Reuse of Treated Water

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STANDARDS FOR THE REUSE OF TREATED WASTEWATER

CHAPTER 21

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Section 1. **Authority and Purpose.** It is the intent of these regulations to encourage and facilitate the productive and safe reuse of treated wastewater as a viable option in the management of the state's scarce water resources. The use of treated wastewater for non-potable purposes through "source substitution" or replacing potable water used for non-potable purposes is encouraged. This part contains the minimum standards for the reuse of treated wastewater as defined in these regulations. This chapter replaces and supersedes the portions of part E, Chapter 11, Wyoming Water Quality Rules and Regulations pertaining land application of treated wastewater.

(a) These regulations establish standards that address the primary health concerns associated with the reuse of treated wastewater. The regulations establish criteria to address the risk of pathogen exposure and infectious disease risks associated with various specified uses of treated wastewater. The regulations establish standards for the following:

- (i) The level of wastewater treatment required;
- (ii) Treatment reliability requirements;
- (iii) Upper limits for water quality parameters;
- (iv) Site access restrictions; and
- (v) Management practices.

(b) In addition, the standards in this part include the parameters to be monitored, frequency of monitoring, record keeping and reporting requirements when treated wastewater is reused.

(c) These regulations establish the degree of control required for wastewater reuse through site access limitations, management practices and crop restrictions that will be commensurate with the level of treatment provided, reliability of the treatment process, quality of the wastewater and the intended use. As the quality of the wastewater and the reliability of the treatment process increases, the regulatory controls are reduced to a level consistent with protecting public health and the environment.

(d) Pathogen reduction and public health impacts related to infectious disease agents are the major concerns associated with the reuse of treated wastewater. Chemical and toxic pollutants in treated domestic sewage are generally not a concern and are not targeted for state regulation in this chapter. There are additional constituents, such as total dissolved solids, that should be considered as part of an overall irrigation management program but are not regulated

by this chapter.

Section 2. Applicability.

(a) These regulations apply to any person who prepares or applies treated wastewater from domestic sewage.

(b) These regulations are not applicable if the primary intent is to provide treatment and/or disposal of a wastewater. Treatment and disposal are regulated under appropriate sections of Chapter 25, Wyoming Water Quality Rules and Regulations.

(c) If the reuse of treated wastewater involves the construction of facilities for the disinfection, delivery, storage or land application, a construction permit is required in accordance with the provisions of Chapters 3 and 11, Wyoming Water Quality Rules and Regulations. Such a permit constitutes approval to reuse the treated wastewater. This permit is not an operational permit and does not require periodic renewal. If there are no structural facilities requiring a construction permit, the reuse of wastewater will be authorized by a land application permit issued in accordance with these regulations. The land application permit is not an operational permit and does not require periodic renewal.

(d) These regulations are not applicable to the discharge of a treated wastewater which is subject to a discharge permit issued pursuant to Chapter 2, Wyoming Water Quality Rules and Regulations.

(e) These regulations are not applicable to treated wastewater reused at reclamation sites regulated by the Land Quality Division under Article 4 of the Wyoming Environmental Quality Act.

(f) These regulations are not applicable to treated wastewater reused for irrigation of grass, shrubs and trees at the treatment works.

(g) These regulations are not applicable to the disposal of gray water.

(h) These regulations are not applicable to groundwater recharge projects which are regulated by the Underground Injection Control Program of the Department of Environmental Quality, Water Quality Division.

Section 3. Definitions. The following definitions supplement those definitions contained in Section 35-11-103 of the Wyoming Environmental Quality Act.

(a) “Agricultural land” is land on which a food crop, a feed crop, or a fiber crop is grown. This includes range land and land used as pasture.

(b) “Agronomic rate” is the wastewater application rate designed to: (1) provide the amount of nitrogen needed by the food crop, feed crop, fiber crop, cover crop, or vegetation

grown on the land; and (2) minimize the amount of nitrogen in the treated wastewater that passes below the root zone of the crop or vegetation grown on the land to the ground water.

(c) “Class A wastewater” is treated wastewater which has received advanced treatment and/or secondary treatment and a level of disinfection so that the maximum number of fecal coliform organisms is 2.2/100 ml or less.

(d) “Class B wastewater” is treated wastewater which has received the equivalent of secondary treatment and a level of disinfection so that the maximum fecal coliform level is greater than 2.2/100 ml but less than 200/100 ml.

(e) “Class C wastewater” is treated wastewater which has received the equivalent of primary treatment and a level of disinfection so that the maximum fecal coliform level is 200/100 ml or greater but less than 1000/100 ml.

(f) “Contaminate a groundwater aquifer” means to introduce a substance that causes the maximum contaminant level for water quality parameters specified in Chapter 8, Wyoming Water Quality Rules and Regulations to be exceeded or that causes the existing concentration of pollutants in ground water to increase when the existing concentration of the parameters in the ground water exceeds the maximum contaminant level specified in Chapter 8, Wyoming Water Quality Rules and Regulations.

(g) “Direct human consumption food crops” are crops consumed directly by humans. These include, but are not limited to fruits, vegetables and grains grown for human consumption.

(h) “Domestic sewage” is waste and wastewater that is primarily from human or household operations that is discharged to or otherwise enters a treatment works.

(i) “Forest” is a tract of land thick with trees and underbrush.

(j) “Ground water” is subsurface water that fills available openings in rock or soil material such that they may be considered water saturated under hydrostatic pressure.

(k) “Indirect human consumption crop” are crops utilized by grazing animals and are thereby one step removed from human consumption.

(l) “Land application” is the spraying or spreading of wastewater onto the land surface or the injection of wastewater below the land surface.

(m) “Land with a high potential for public exposure” is land that the public uses frequently and there are no restrictions or limitations on public access during irrigation periods. This includes, but is not limited to public parks, ball fields, cemeteries, plant nurseries, turf farms, golf courses and a reclamation site located in a populated area (e.g., a construction site located in a city).

(n) “Land with moderate potential for public exposure” is land that is accessible to the public but access is limited during irrigation periods. This would include the facilities in (n) where signing and fencing is provided to restrict access.

(o) “Land with a low potential for public exposure” is land that the public uses infrequently. This includes, but is not limited to agricultural land, forest, and a reclamation site located in an unpopulated area (e.g., a strip mine located in a rural area).

(p) “Municipal wastewater” means the discharge from a publicly owned or controlled treatment system receiving primarily domestic wastewater or a combination of domestic, commercial and industrial wastewater that is normally treated in a primary, secondary or advanced wastewater treatment process.

(q) “Pathogenic organisms” are disease-causing organisms. These include, but are not limited to certain bacteria, protozoa, viruses, and viable helminth ova.

(r) “Pasture” is land on which animals feed directly on feed crops such as legumes, grasses, grain stubble, or stover.

(s) “Permitting authority” is the Department of Environmental Quality, Water Quality Division.

(t) “Pollutant” is an organic substance, an inorganic substance, a combination of organic and inorganic substances, or a pathogenic organism that, after discharge and upon exposure, ingestion, inhalation, or assimilation into an organism either directly from the environment or indirectly by ingestion through the food chain, could, on the basis of information available to the permitting authority, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions in reproduction), or physical deformations in either organisms or offspring of the organisms.

(u) “Pollutant limit” is a numerical value that describes the amount of a pollutant allowed per unit amount of wastewater (e.g., milligrams per liter).

(v) “Range land” is open land used for grazing by livestock and/or wildlife on which the natural potential plant community is dominated by grasses, grasslike plants, forbs and shrubs.

(w) “Reclamation site” is drastically disturbed land that is reclaimed using wastewater. This includes, but is not limited to, strip mines and construction sites.

(x) “Runoff” is rainwater, leachate, or other liquid that drains overland on any part of a land surface and runs off of the land surface.

(y) “Treated wastewater” is domestic sewage discharged from a treatment works after completion of the treatment process.

(z) “Treatment works” is either a publicly or privately owned device or system used to treat either domestic sewage or a combination of domestic sewage and commercial or industrial waste of a liquid nature.

Section 4. Compliance with Other Laws and Regulations. Nothing in these regulations or the permits issued pursuant to these regulations shall be construed to relieve the recipient of a permit of the need to comply with any other law, rule or regulation. It is the duty of the permittee to comply with all applicable federal, state and local laws or regulations in the exercise of activities authorized pursuant to these regulations. Specifically, the permittee is responsible for complying with the water right requirements of the Wyoming State Engineers Office.

Section 5. Compliance Period.

(a) Compliance with the standards in these regulations shall be achieved as expeditiously as practicable, but in no case later than one year after final adoption. When compliance with the standards requires construction of new or modified treatment facilities, compliance with the standards shall be achieved as expeditiously as practicable, but in no case later than two years after final adoption.

(b) Water reuse facilities operating under authority granted by the Department of Environmental Quality are required to notify the department of the nature and requirements of the existing authorization. Existing authorized facilities are not required to comply with the requirements of these regulations unless the administrator determines it is necessary to revise the existing authorization in order to protect public health and the environment. Existing facilities are required to comply with the monitoring and reporting requirements of Sections 13, 14, 15 and 16.

Section 6. Permits, Enforceability and Applications.

(a) The requirements in these regulations may be implemented through:

(i) A land application permit issued by the Department of Environmental Quality, Water Quality Division in accordance with these regulations;

(ii) A construction and operation permit issued by the Department of Environmental Quality, Water Quality Division in accordance with Chapters 11 and 3I, Wyoming Water Quality Rules and Regulation; or

(iii) A general statewide operation permit issued by the Water Quality Division, Department of Environmental Quality for the Land Application of Treated Wastewater.

(b) No person shall prepare or use treated wastewater except in accordance with the requirements of these regulations.

(c) Applications for permits shall be submitted to the Department of Environmental Quality, Water Quality Division in accordance with the requirements of Chapter 3, Wyoming Water Quality Rules and Regulations. The application materials submitted shall be adequate to demonstrate compliance with all requirements of this part. It shall be the responsibility of the applicant to demonstrate that the proposed reuse of treated wastewater will not endanger public health or the environment.

(d) The person who prepares treated wastewater and makes it available to another person for reuse shall provide, as part of the application required by Section 6 (c), a demonstration that all of the requirements of this chapter will be met. This will include access restrictions, management practices, record keeping and reporting requirements which may be the responsibility of another person who will apply the treated wastewater. This demonstration may be in the form of either a written agreement with the applier specifying his or her responsibilities or a separate permit application from the applier. If the method selected is an agreement, the agreement must cover appropriate access restrictions, management practices, record keeping and reporting requirements of this chapter. If the method selected is a separate permit for the applier the permit application by the applier must address the same requirements.

(e) Any person who prepares treated wastewater outside of the state to be applied within the state must either obtain a permit to land apply in accordance with this chapter or provide the wastewater to a person who has a permit.

(f) Any person who prepares treated wastewater outside of the State of Wyoming that is to be applied to land within the State of Wyoming and opts not to obtain a permit shall provide written notice, prior to the initial application of treated wastewater to the reuse site by the applier, to the Department of Environmental Quality, Water Quality Division. The notification shall include the following:

(i) The location, by either street address or latitude and longitude, of each reuse site;

(ii) The approximate time period the treated wastewater will be applied to the site;

(iii) The name, address, telephone number, and National Pollutant Discharge Elimination System permit number (if appropriate) for the person who prepares the treated wastewater;

(iv) The name, address, telephone number of the person who will reuse the treated wastewater; and

(v) Documentation that the requirements of this regulation have been met.

Section 7. Exclusions.

- (a) Treatment processes. These regulations do not establish requirements for processes used to treat wastewater.
- (b) Selection of a reuse practice. This chapter does not require the selection of a reuse practice. The determination of the manner in which treated wastewater is to be reused is a local determination.

Section 8. General Management Practices.

- (a) Treated wastewater shall be applied for the purpose of beneficial reuse and shall not exceed the irrigation need or demand of the vegetation at the site. Winter irrigation is considered to be beneficial reuse.
- (b) Treated wastewater shall not be applied to agricultural land, forest, a public contact site, or a reclamation site at a application rate that is greater than the agronomic rate for the vegetation at the site.
- (c) Treated wastewater shall not be applied in a manner that will contaminate a groundwater aquifer.
- (d) Treated wastewater will be applied in a manner and time that will not cause any surface runoff to leave the application site and enter surface waters of the state.
- (e) Direct human consumption food crops shall not be harvested for 30 days after application of treated wastewater.
- (f) Animals shall not be allowed to graze on the land for 30 days after application of Class C treated wastewater.
- (g) Fencing and signing shall be provided at sites where Class B treated wastewater is proposed for reuse on land with a moderate potential for public exposure.
- (h) Signing shall be provided at sites where Class B or Class C treated wastewater is proposed for reuse on land with a low potential for public exposure in order to protect the health and safety of workers.

Section 9. Site Isolation Requirements. No person shall reuse treated wastewater on an application site except in accordance with the restrictions specified below.

- (a) Isolation of spray irrigation systems.
 - (i) Wind drift shall not leave the application site.

(ii) If Class A or Class B wastewater is reused for irrigation, a 30 foot buffer zone is required between the reuse site and adjacent property lines. Public right-of-ways may be utilized to meet this requirement for a buffer zone.

(iii) If Class C wastewater is reused for irrigation a 100 foot buffer zone is required between the reuse site and adjacent property lines and any public right-of-way.

(iv) A 30 foot separation distance is required between reuse sites and all surface waters.

(v) A 100 foot separation distance is required between reuse sites and all potable water supply wells.

(vi) Surface runoff shall not leave the application site.

(b) Isolation distances between reuse sites irrigated by flood irrigation systems.

(i) Surface runoff shall not leave the application site.

(ii) If Class A or Class B wastewater is reused for irrigation, a 30 foot buffer zone is required between the reuse site and adjacent property lines. Public right-of-ways may be utilized to meet this requirement for a buffer zone.

(iii) If Class C wastewater is reused for irrigation, a 30 foot buffer zone is required between the reuse site and adjacent property lines and any public right-of-way.

(iv) A 30 foot separation distance is required between reuse sites and all surface waters.

(v) A 100 foot separation distance is required between reuse sites and all potable water supply wells.

(c) Drip irrigation systems. The buffer zone requirements of Section 9 (a) (ii) and 9 (b) (ii) for Class A and B wastewaters may be met by the use of drip irrigation systems.

Section 10. Minimum Level of Wastewater Treatment. Treated wastewater must receive the equivalent of primary treatment and a maximum fecal coliform value of less than 1000/100 ml in order to be reused in accordance with these regulations.

Section 11. Treatment Reliability.

(a) The ability of the treatment process to deliver the class of treated wastewater required for a particular use will be considered by the permitting authority when approving or denying wastewater reuse in accordance with Section 6. The criteria for evaluating treatment reliability may include the following as appropriate:

- (i) Multiple units and equipment;
- (ii) Alternative power sources;
- (iii) Alarm systems and instrumentation;
- (iv) Operator certification and stand-by capability;
- (v) Bypass and dewatering capability;
- (vi) Frequency of sampling;
- (vii) Hydraulic and organic loading design capabilities; and
- (viii) Emergency storage.

(b) Where treatment reliability cannot be provided by existing facilities, the reuse may be approved based upon the preparer's ability to dispose of the treated wastewater in an acceptable alternative manner or to reuse the treated wastewater for a less restrictive authorized reuse as indicated in Section 12.

Section 12. **Authorized Reuse.**

- (a) Class A wastewater may be used for the following purposes:
 - (i) Irrigation of land with a high potential for public exposure;
 - (ii) Irrigation of land with a moderate potential for public exposure;
 - (iii) Irrigation of land with a low potential for public exposure;
 - (iv) Irrigation of direct human consumption food crops; and
 - (v) Irrigation of indirect human consumption food crops.
- (b) Class B wastewater may be used for the following purposes:
 - (i) Irrigation of land with a moderate potential for public exposure;
 - (ii) Irrigation of land with a low potential for public exposure;
 - (iii) Irrigation of direct human consumption food crops; and
 - (iv) Irrigation of indirect human consumption food crops.

- (c) Class C wastewater may be used for the following purposes:
 - (i) Irrigation of land with a low potential for public exposure; and
 - (ii) Irrigation of indirect human consumption food crops.

Section 13. Monitoring.

(a) **Sampling.** Representative samples of the treated wastewater that is to be reused shall be collected and analyzed by the person who prepares the wastewater.

(b) **Methods.** Waste constituents shall be analyzed in accordance with 40 CFR Part 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants.

- (c) **Parameters.** The treated wastewater shall be analyzed for the following:
 - (i) Fecal coliform;
 - (ii) Nitrate as N;
 - (iii) Ammonia as N;
 - (iv) pH;
 - (v) Parameters identified in 40 CFR Part 122, Appendix D, Table III, when required by the NPDES permit; and
 - (vi) Other parameters identified in the permit.
- (d) **Frequency for monitoring for these pollutants shall be:**
 - (i) For lagoon systems, once per month or the frequency specified in the NPDES discharge permit whichever is more frequent;
 - (ii) For mechanical plants, once per week or the monitoring frequency specified in the NPDES discharge permit whichever is more frequent; and
 - (iii) For monitoring of parameters identified in Section 13 (c) (v), shall be conducted at the frequency specified in the NPDES discharge permit.

Section 14. Noncompliance Actions, Reporting and Monitoring Requirements.
In the event that the monitoring program identified in Section 13 indicates noncompliance with the fecal coliform levels associated with the class of wastewater and the appropriate authorized reuse identified in Section 12, the responsible party shall take the following actions.

(a) Discontinue the reuse of treated wastewater immediately. The responsible party may discharge in compliance with the requirements of an NPDES permit or convert to any authorized reuse which is consistent with the quality of the treated wastewater.

(b) Report the noncompliance to the permitting authority as soon as possible, but no later than the next working day.

(c) Initiate monitoring of the parameter in noncompliance on a daily or more frequent basis in order to adequately demonstrate that the treated wastewater can reliably meet the reuse criteria.

(d) Report the results on the noncompliance monitoring to the permitting authority. Upon adequate demonstration by the responsible party that the reuse criteria can be reliably met, the permitting authority may grant verbal and written authorization to re-institute the discontinued reuse.

(e) The responsible party shall provide a written report within 15 days of the resolution of the event which will contain the following:

- (i) A description of the noncompliance and its cause;
- (ii) The period of the noncompliance, including dates and times;
- (iii) All monitoring data related to the noncompliance and the return to compliance; and
- (iv) Steps taken or planned to reduce, eliminate or prevent reoccurrence of the noncompliance.

Section 15. Record Keeping.

(a) A person who prepares treated wastewater shall develop the following information and shall retain the information for five (5) years.

(i) The concentration of each applicable pollutant listed in Section 13 (c) in the treated wastewater at the frequency specified in Section 13 (d).

(ii) A description of how the minimum level of treatment requirements in Section 10 are met.

(iii) A description of how the treatment reliability requirements in Section 11 are met.

(iv) The following certification statement: "I certify, under penalty of law, that the level of treatment requirements in Section 10 of Chapter 21, Wyoming Water Quality Rules and Regulations, the treatment reliability requirements in Section 11 and the water quality

parameters have been met. This determination has been made under my direction and supervision. I am aware that there are significant penalties for false certification."

(b) A person who prepares treated wastewater shall obtain the following information from any person who reuses the treated wastewater and shall retain the information for five years.

(i) The location, by either street address or latitude and longitude, of each site on which treated wastewater is applied.

(ii) The number of acres on each site on which treated wastewater is applied.

(iii) The date and time treated wastewater is applied to each site.

(iv) The cumulative amount of treated wastewater applied to each site.

(v) The following certification statement: "I certify, under penalty of law, that the general management practices in Section 8 of Chapter 21, Wyoming Water Quality Rules and Regulations, and the site isolation requirements in Section 9 have been met. This determination has been made under my direction and supervision. I am aware that there are significant penalties for false certification."

Section 16. Reporting.

(a) A person preparing treated wastewater shall submit the information in Section 15 (a) and (b) to the permitting authority on an annual basis.

(b) A person who reuses treated wastewater shall submit the information in Section 15 (b) to the person who prepares the treated wastewater on an annual basis if he or she is operating under an agreement with the applier. If the application is regulated by a permit, the information shall be submitted to the permitting authority.

Section 17. Operation and Maintenance Manual.

(a) Any person responsible for the application of treated wastewater shall provide an operation and maintenance manual as part of the agreement or permit application required by Section 5 (d).

(b) The operation and maintenance manual shall include the following:

(i) Description of the facilities;

(ii) Description of the application system;

(iii) Procedures for emergency operation and spill events;

(iv) Procedures for meeting permit and regulatory requirements;

(v) Maintenance and operation requirements for any mechanical equipment;

and

(vi) Description of how the monitoring, record keeping and reporting requirements of this chapter will be met.