

**RESPONSE TO COMMENTS  
FINAL PERMITTING DECISION**

Permit No.: 0000-WG-WR  
Applicant: Land Application of Water Treatment Residuals  
Prepared by: Colby Ungerank

The following are responses to comments received regarding the draft permit number above and are developed in accordance with regulations promulgated at 40 C.F.R. § 124.17, APCEC Regulation No. 8, Administrative Procedures and A.C.A. 8-4-203 e(2).

**Introduction**

The above permit was submitted for public comment on May 31, 2016. The public comment period ended on June 30, 2016. This document contains a summary of the comments that the ADEQ received during public comment period. A summary of the changes can be found on the last page of this document.

	Commenter	# of comments raised
1.	Colene Gaston, Beaver Water District	13

**Comment 1 Draft Permit Cover Page:** The cover page states the effective date is April 1, 2018, and that the expiration date is March 31, 2023. Shouldn't the effective date be April 1, 2017, since the Current Permit expires March 31, 2017? That would also make the expiration date March 31, 2022.

**Response:** The Draft Permit that was mailed to all of the permittees had a typo on the effective date and expiration date. However, the Draft Permit that was public noticed and available on the Department's website has the correct effective date of April 1, 2017 and expiration date of March 31, 2022. The dates will be corrected on the Final Permit.

**Comment 2 Draft Permit Cover Page and Draft Permit Pagination:** It says, "Page 1 of Part I" on the cover page. Presumably this is an error as the next page of the Draft Permit says the same thing. In addition, the first page of Part II of the Draft Permit says "Page 6 of Part II." In fact, that is either the seventh (if one counts the cover page) or sixth page of the entire Draft Permit and not the sixth page of Part II. BWD recommends that the pagination be changed to be sequential for the entire Draft Permit, including the cover page (e.g, "Page 1 of 15," and so on). This will make it easier for permittees and the public to locate particular provisions in the permit.

**Response:** The Department acknowledges this comment and has corrected the page numbering. The page number is removed from the Cover Page and is in sequential order for each section.

**Comment 3 Draft Permit Part I.B.1.E.ix (on “Page 4 of Part I”):** This provision requires that the Notice of Intent (NOI) include information on the “Maximum annual loading rate calculated from the 10 dry tons per acre per year limit.” BWD questions the scientific basis for the ten (10) dry tons per acre per year limit and requests that a review of the limit be undertaken. See Comment 10 below.

**Response:** See the Response to Comment 10.

**Comment 4 Draft Permit Part I.B.1.F.v (on “Page 5 of Part I”):** This provision requires that the Waste Management Plan (WMP)/Nutrient Management Plan (NMP) include the following information: “Maximum Waste Application Rate Calculations: Application rates must be based on the 10 dry tons per acre limit and soil conditions.” BWD questions the scientific basis for the ten (10) dry tons per acre per year limit and requests that a review of the limit be undertaken. See Comment 10 below.

**Response:** See the Response to Comment 10.

**Comment 5 Draft Permit Part I.B.1.F.viii (on “Page 5 of Part I”):** This provision provides that, “Methods of sampling must be in accordance with permit condition Part II.C.12.” BWD believes that the sampling methodology is found at Part II.C.13.

**Response:** The Department acknowledges this comment and has corrected the reference in Part I.B.1.f.viii.

**Comment 6 Draft Permit Part I.B.2 (on “Page 5 of Part I”):** This provision provides that, “The NOI shall be signed in accordance with the provisions of Part II.E.21 of the permit.” BWD believes that the signatory requirements are found at Part II.E.20.

**Response:** The Department acknowledges this comment and has corrected the reference in Part I.B.2.

**Comment 7 Draft Permit Part II.B, Table I, Headings (on “Page 6 of Part II”):** There appears to be a typographical error in the second row of the table headings (it says, “Water Treatment Residuals Analysis [MB1]”).

**Response:** The Department acknowledges this comment and corrected the typo.

**Comment 8 Draft Permit Part II.B, Table I, Footnote 1 (on “Page 6 of Part II”):** Following the table headings “Ceiling Concentrations” and “Maximum Limit” there is a superscript for footnote 1. Footnote 1 states, “Refer to Condition No. 4 of Part II of the permit.” There is no such provision. There are provisions at Part II.C.4, Part II.D.4, and Part II.E.4 of the Draft Permit, but it is unclear which, if any, of these provisions applies. Also, this footnote is not in the Current Permit.

**Response:** The Department acknowledges this comment and has removed the footnote.

**Comment 9 Draft Permit Part II.B, Table I, WTR Monitoring Requirements for Aluminum and Iron (on “Page 6 of Part II”):** BWD questions whether continuing to require annual monitoring for iron and aluminum *in the WTR* is necessary. Monitoring *of the WTR once every five (5) years*, as is required for monitoring for iron and aluminum *in the soil* under both the Current Permit and the Draft Permit, would seem to be sufficient. ADEQ now has at least two permit cycles worth of annual analyses for iron and aluminum in WTR, and Page 2 of the Fact Sheet for the Draft Permit indicates that the permit records do not show any problem with resultant soil concentrations.

**Response:** The Department acknowledges this comment and understands the position of the commenter; however, the monitoring of requirements of iron and aluminum will not change at this time. Alum and ferric flocculants are commonly used in the drinking water treatment process. As a result, WTR may contain high concentrations of aluminum and iron. The monitoring requirement of iron and aluminum in the WTR was placed in the permit to keep track of the correlation between the WTR and the soil. The annual monitoring of these parameters is required in order to get an accurate count of the amount of iron and aluminum is land applied.

**Comment 10 Draft Permit Part II.B, Table I, “Total WTR Applied” Limit (on “Page 6 of Part II”):** BWD questions the scientific basis for the ten (10) dry tons of WTR per acre per year limit and believes that a review and reconsideration of the limit is warranted during the 2017 to 2023 permit cycle. ADEQ contends on Page 2 of the Fact Sheet for the Draft Permit that the limit is necessary to prevent “excessive concentrated disposal.” The only technical support that ADEQ provides in the Fact Sheet for the Draft Permit is a 1991 article titled “Agronomic Effects of Land Application of Water Treatment Sludges” in the American Water Works Association (AWWA) Journal (hereinafter referred to as the “AWWA Article”) (copy attached). ADEQ simply notes at page 2 of the Fact Sheet that the AWWA Article “states [sic] application rate of 10 dry tons per acre is still protective of the environment.” The cited article, however, does not say or even imply that land application of WTR at a rate higher

than ten (10) dry tons per acre is excessive and will cause environmental degradation. The AWWA Article does state on page 128 under the section titled "Impact on soil fertility" that ". . . levels of N and other nutrients in the grain and leaves of corn and soybeans were not significantly changed for applications of up to 20 tons/acre of an alum sludge containing 0.47 percent N."

ADEQ's own review of the WTR and soil data submitted by the permittees under the previous State General Permits 0000-WG-WR with a limit of ten (10) dry tons WTR per acre per year shows no environmental impact from years of land application of WTR. For example, page 3 of the Fact Sheet for the Draft Permit states, ". . . a review of lab analysis indicated that the metals in the soil are not increasing, or not increasing at a rate that requires annual monitoring."

Beginning in approximately 1995, BWD in conjunction with ADEQ undertook a land application of WTR study. BWD's records of the study are minimal, but it appears that WTR were land applied at rates of twenty-six to twenty-seven (26 to 27) dry tons per acre per year for several years without any adverse effects. See attached letter dated April 10, 1997, from Alan Fortenberry, BWD, to Henry Insua, ADEQ. Based on the study results, the ten (10) dry tons per acre per year limit originally included in the WTR land-application permit by Mr. Henry Insua of ADEQ was an overly conservative limit.

The AWWA Article cited by ADEQ was based on a project that produced a 1990 AWWA Report, "Land Application of Water Treatment Sludges: Impact and Management" (hereinafter referred to as the "AWWA Report") (copy attached). The AWWA Report provides further support for an application rate higher than the ten (10) dry tons per acre per year limit. In a discussion of hydrous metal oxides, the AWWA Report on page 9 states:

Buildup of Al or Fe due to extended applications of WTS [water treatment sludge] is not expected to cause any serious problem. It is nonetheless informative to make a quick calculation regarding the increase in Al after addition of a typical alum sludge (10% Al by dry weight), *at reasonable application rates* (20 years at 2% loading or 20 tons per acre per year for 20 years), to as [sic] soil containing 4% Al. The Al concentration would be 5.7% after the 20 years of application or an increase of 1.7% over the background level. This variation is well within the range of natural variation in native soils. [Emphasis added].

Further, the AWWA Report's discussion of the agricultural use of WTR in the AWWA Report at page 58 provides:

Too much sludge may be detrimental to plant growth due to tie-up of phosphorus. The idea behind application of water treatment plant sludges on agricultural land is to spread *at judicious rates (less than 50 dry tons per acre)*, and add supplemental lime and fertilizers to promote a healthy crop. *For land reclamation projects, higher rates (100-300 dry tons/acre)* can be applied depending on site-and WTS-specific considerations. [Emphasis added].

The AWWA Report, therefore, provides support for a limit of up to fifty (50) dry tons per acre per year, and even more justification for a limit of up to twenty (20) dry tons per acre per year. ADEQ should keep in mind that whatever the limit is, as is common practice among responsible wastewater dischargers, prudent permittees will endeavor to land apply at a rate that is safely below the maximum.

A large number of factors can affect how much WTR a permittee needs to apply in a given year and several of these factors are outside the control of the permittee. For example, significant storm events can result in exponential increases in the turbidity of the raw water being treated, which then causes corresponding increases in the amount of WTR produced. In some parts of the state, including Northwest Arkansas, finding land on which to apply WTR is becoming increasingly difficult. Following periods of high raw water turbidity, the problem is further amplified.

For the reasons outlined above, there is scientific justification for a higher limit than ten (10) dry tons per acre per year. *BWD, therefore, requests that ADEQ partner with BWD and other interested water utilities to study the issue so that a more appropriate limit can be included in the 2023 renewal general permit. We look forward to working with ADEQ in the near future to develop a plan to make that happen.*

**Response:** The Department acknowledges this comment and understands the position of the commenter. The Department is willing to study the loading rate of the WTR and review any research conducted by interested water utilities during the next renewal cycle.

**Comment 11 Draft Permit Part II.C.5 (on “Page 7 of Part II”):** The Draft Permit prohibits land application “when precipitation is imminent (50% chance of precipitation predicted by the nearest National Weather Service Station).” BWD objects to the parenthetical, which defines imminent precipitation as being a fifty percent chance of precipitation predicted by the nearest National Weather Service. Such predictions are imprecise as to location and timing, among other things. Making the determination as to when

precipitation is imminent is best left to the judgment of those on location at the time of the planned land application.

**Response:** When the nearest National Weather Service station predicts a 50% chance of precipitation, the Department believes there is a good chance of rain which could cause pollution to the waters of the State. In order to protect waters of the State, additional measures must be taken to ensure contamination via runoff is prevented. Therefore, the Department adapted the associated condition from APC&EC Regulation No. 5.406(B) that governs the liquid animal waste management systems. Land application of WTR is prohibited during a precipitation event or when significant precipitation is imminent. When land applying WTR there is a critical time to prevent runoff to the waters of the State, which is during land application and right after land application before the WTR has had time to absorb into the soil or to be incorporated into the soil. In order to protect the environment, the Department defined the word “imminent” to mean a 50% chance of precipitation predicted by the nearest National Weather Service station.

**Comment 12 Draft Permit Part II.C.12 (on “Page 8 of Part II”):** There should be a period instead of a comma at the end of the sentence.

**Response:** The Department acknowledges this comment and has corrected the typo.

**Comment 13 Draft Permit Part II.E.13.A (on “Page 13 of Part II”):** The first sentence of this provision requires that “any violations” must be reported within 24 hours. This requirement to report immediately seems overly broad. It would apply to minor paperwork or other violations that have no detrimental impact on the environment, as well as violations that are not immediately ascertainable.

**Response:** The Department acknowledges this comment and changed the condition to state the following:

Any violations, *which may endanger health or the environment*, to this permit must be reported to the Enforcement Branch of the Department immediately (within 24-hours). Any leaks or seeps shall be reported to the Department and appropriately corrected. Any discharge from the waste storage system such as an overflow, a broken pipe, etc., shall be immediately (within 24-hours) reported to the Department.

## Summary of Changes

<b>Part</b>	<b>Draft Permit (<del>strikethrough</del>)</b>	<b>Final Permit (<i>italics</i>)</b>
Cover Page	Effective Date: April 1, 2018 Expiration Date: March 31, 2023	Effective Date: April 1, 2017 Expiration Date: March 31, 2022
Cover Page	Page 1 of Part I	<i>Removed</i>
I.B.1.F.viii	Methods of sampling must be in accordance with permit condition Part II.C.12.	Methods of sampling must be in accordance with permit condition Part II.C.13.
I.B.2	The NOI shall be signed in accordance with the provisions of Part II.E.24 of the permit.	The NOI shall be signed in accordance with the provisions of Part II.E.20 of the permit.
II.B Table I	Water Treatment Residuals Analysis <del>[MB1]</del>	Water Treatment Residuals Analysis
II.B Table I	Refer to Condition No. 4 of Part II of the permit.	<i>Removed</i>
II.C.12	If the analytical results for any parameter required to be sampled exceeds the ceiling concentration or limit specified in Section B Table I of Part II, the permittee shall cease land application of the WTR until additional analysis shows compliance with Section B Table I of Part II.	If the analytical results for any parameter required to be sampled exceeds the ceiling concentration or limit specified in Section B Table I of Part II, the permittee shall cease land application of the WTR until additional analysis shows compliance with Section B Table I of Part II.
II.E.13.A	Any violations to this permit must be reported to the Enforcement Branch of the Department immediately (within 24-hours). Any leaks or seeps shall be reported to the Department and appropriately corrected. Any discharge from the waste storage system such as an overflow, a broken pipe, etc., shall be immediately (within 24-hours) reported to the Department.	Any violations, <i>which may endanger health or the environment</i> , to this permit must be reported to the Enforcement Branch of the Department immediately (within 24-hours). Any leaks or seeps shall be reported to the Department and appropriately corrected. Any discharge from the waste storage system such as an overflow, a broken pipe, etc., shall be immediately (within 24-hours) reported to the Department.