

NOTICE OF PROPOSED RULEMAKING

TITLE 18. ENVIRONMENTAL QUALITY

CHAPTER 9. DEPARTMENT OF ENVIRONMENTAL QUALITY

WATER POLLUTION CONTROL

PREAMBLE

| <b><u>1. Article, Part, or Section Affected (as applicable)</u></b>   | <b><u>Rulemaking Action</u></b> |
|---|---------------------------------|
| R18-9-101   | Amend                           |
| R18-9-110   | Amend                           |
| R18-9-A303  | Amend                           |
| R18-9-A308  | Repeal                          |
| R18-9-A309  | Amend                           |
| R18-9-A310  | Amend                           |
| R18-9-A311  | Amend                           |
| R18-9-A312  | Amend                           |
| R18-9-A314  | Amend                           |
| R18-9-A315  | Amend                           |
| R18-9-E302  | Amend                           |
| R18-9-E303  | Amend                           |
| R18-9-E304  | Amend                           |
| R18-9-E314  | Amend                           |
| R18-9-E322  | Amend                           |
| R18-9-E323  | Amend                           |
| Table 1   | Amend                           |
| <b><u>2. Citations to the agency's statutory rulemaking authority to include the authorizing statute (general) and the implementing statute (specific):</u></b> |                                 |
| Authorizing statutes: A.R.S. §§ 49-104(A)(10), (B)(10), (B)(13); 49-203(A)(4), (A)(7), (A)(10), (A)(11)   |                                 |
| Implementing statutes: A.R.S. §§ 49-241 through 49-252 (Aquifer Protection Permits program).  |                                 |
| <b><u>3. Citations to all related notices published in the <i>Register</i> as specified in R1-1-409(A) that pertain to the record of the proposed rule:</u></b> |                                 |

The Notice of Docket Opening will be published simultaneously with the Notice of Proposed Rulemaking.

## #001

Posted by **welborn.heidi@azdeq.gov** on **11/10/2021** at **6:03pm** [Comment ID: 66]

*Tags: --*

*Agree: 0, Disagree: 0*

comment - HW

## #002

Posted by **SiteAdmin** on **10/21/2021** at **3:09pm** [Comment ID: 40]

*Type: Suggestion | Tags: --*

*Agree: 0, Disagree: 0*

The language in this preamble is all new and is an explanation of the changes in the rule section. You may comment on any of the language in the preamble.

**4. The agency's contact person who can answer questions about the rulemaking:**

Name: xxx

Address: 1110 W. Washington St.

Phoenix, AZ 85007

Telephone: xxx

E-mail: xxx

Website: <http://www.azdeq.gov/draft-and-proposed-rule-water-quality-division>

<http://www.azdeq.gov/node/7737>

**5. An agency's justification and reason why a rule should be made, amended, repealed or renumbered, to include an explanation about the rulemaking:**

**General Explanation of this Rulemaking:**

The Arizona Department of Environmental Quality (ADEQ) proposes to amend 18 A.A.C. 9, Articles 1 and 3 to provide additional clarity and notice, correct previous errors, and make minimal technical updates to the On-site Wastewater Treatment Facility (OWTF) general permit program. These changes are expected to increase efficiencies in program implementation for both customers and regulators. The last rulemakings related to OWTFs were in 2001 and 2005. *See* 7 A.A.R. 237 (Jan. 12, 2001) and 11 A.A.R. 4544 (Nov. 14, 2005), respectively.

Since the last rulemaking in 2005, stakeholders have grown more vocal in their desire for change in the on-site program. In response to stakeholder feedback, ADEQ is in the process of holistically reviewing its on-site program. As a part of this process, ADEQ established an advisory group, the Wastewater Disposal Advisory Group (WDAG), to help guide ADEQ in determining the path for the next five years, and to help ADEQ determine whether a rulemaking was immediately necessary to ameliorate issues in the on-site program. Based on input from the WDAG, ADEQ published the *On-site Wastewater Treatment Regulatory Program 5-Year Plan: 2021-2025, Version 1: January 2021* (Publication Number: EQR 21-01) (hereafter the "*On-site 5-Year Plan*"). This rulemaking is an action taken to follow the *On-site 5-Year Plan*, a first phase in a series of several anticipated actions outlined in the plan.

**What are On-site Wastewater Treatment Facilities?**

An OWTF means "a conventional septic tank system or alternative system that is installed at a site to treat and dispose of wastewater of predominantly human origin that is generated at that site." A.R.S. § 49-201(29).

Essentially, the on-site general permit program allows homes and businesses that are not connected to a centralized sewer system to dispose of their treated wastewater via a conventional or alternative OWTF facility consisting of:

- (1) A treatment technology (or combination of technologies), such as an aerobic treatment system and/or a septic tank, and

## #003

Posted by **Lou Brown** on **11/12/2021** at **7:59pm** [Comment ID: 210]

*Type: Suggestion | Tags: Gen.Neg.Phase1 direction*

*Agree: 0, Disagree: 0*

As stated in paragraph 1 of the General Explanation of the Rulemaking, it "provide additional clarity and notice, correct previous errors and make minimal technical updates" to the the current rule. Some of the changes that have been proposed by the department when reviewing those proposed changes, are topics that are currently under research that the Technical Work Groups. These groups are working very hard to provide the necessary research and resources to validate changes during the Phase 2 session of the rulemaking process. Sections of the the current rule that are being reviewed and researched by these TWGs SHOULD NOT have changes made until their work is done. The individuals who make up the TWGs are all volunteers devoting the time and expertise to the APP program. The department could create a lot of enemies without listening to the TWG's advise.

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

(2) Disposal technology, such as a trench or seepage pit.

The most common example of a system is a septic tank with a soil treatment area or drainfield. Some examples of businesses or commercial properties that may have an OWTFs include apartment complexes, R.V. parks, or real estate or law offices.

The rules pertaining to regulation of OWTFs serve two overarching purposes:

- a) To prevent “environmental nuisances,” such as unsanitary conditions caused by surfacing sewage, and the “transmission of sewage or insect borne diseases,” pursuant to A.R.S. Title 49, Chapter 1, Article 3 and A.R.S. § 49-104(B)(13), respectively; and
- b) To control discharges of pollutants that may reasonably reach an aquifer, pursuant to A.R.S. §§ 49-241 through 49-252 and A.R.S. § 49-201(12).

Two common pollutants emitted from improperly installed or maintained on-site systems include (1) nitrates, which can deprive blood cells of oxygen if ingested (i.e., methemoglobinemia), mostly negatively impacting infants and rarely causing cyanosis in children or adults, and (2) pathogens, including viruses and bacterium, such as E. coli. *See generally* U.S. Department of Human Health Services, *Toxicological Profile for Nitrate and Nitrite* (2017) (for nitrates); and *see* EPA Office of Water, *Onsite Wastewater Treatment Systems Manual 1-2* (2002) (for pathogens). However, if installed and maintained properly, OWTFs adequately protect groundwater and prevent nuisances caused by disposal of sewage, and adequately treated discharge provides the environmental benefit of aquifer recharge. In this way, OWTF may provide unique long-term solutions to water scarcity in areas in Arizona.

**How Many On-site Systems Are Estimated to Exist in Arizona?**

It is estimated there will be more than 640,000 properties with on-site systems throughout the state by the end of 2022. As of 2001, the Department estimated 400,000 properties in Arizona had an on-site system. *See* 7 A.A.R. 237, 248 (Jan. 12, 2001). Based on estimates presented in the 2005 rulemaking and on best estimates extrapolated from informal county surveys, it is currently still estimated that on average just over 11,000 new systems are permitted statewide each year, after accounting for economic fluctuations between 2001 and 2022. *E.g.*, 11 A.A.R. 4544, 4547, 4589 (Nov. 14, 2005). Therefore, it is estimated that by the end of 2022, over 240,000 new systems will have been permitted and installed since the 2001 rulemaking.

**What Is Not Currently Regulated under the APP On-site Program?**

OWTFs do not include sewage collection or conveyances systems. These types of facilities are regulated under rules specific to them, namely A.A.C. R18-9-B301(J), (K), and R18-9-E301, which regulate the 1.10, 1.11, and 4.01 general permits, respectively, according to the following paraphrased applicability constraints:

- R18-9-B301(J) (1.10 General Permit) governs sewage collection systems installed before January 1, 2001, and either serve flows greater than 3000 gallons per day or serve multiple dwellings.
- R18-9-B301(K) (1.11 General Permit) governs sewage collection systems that serve 3000 gallons per day or less, and also governs an individual gravity sewer line from a single building, including a single

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family dwelling, regardless of design flow or type of the building (building type and flow is unspecified). See 11 AAR 4544, 4576 (Nov. 14, 2005).

- R18-9-E301 (4.01 General Permits) governs sewage collection systems that serve flows greater than 3000 gallons per day, unless it is a gravity sewer line conveying sewage from a single building drain. (Sewage collections systems also, by definition, do not serve a single-family dwellings, only multiple dwellings or other types of structures.)

“Sewage collection system” is a defined term under the rules and means, “a system of pipelines, conduits, manholes, pumping stations, force mains, and all other structures, devices, and appurtenances that collect, contain, and convey sewage *from its sources to the entry of a sewage treatment facility or on-site wastewater treatment facility* serving sources other than a single-family dwelling.” (*emphasis added*) A.A.C. R18-9-101(41). The definition itself indicates that a sewage collection system impacts an OWTF, but definitionally sets the OWTF apart from being part of the definition of sewage collection system itself. According to the definition, the limit of the extent of sewage collection system is the entry of either a sewage treatment facility or an OWTF. Sewage conveyances, were they defined, would be defined similarly as they serve the same purpose as a sewage collection system, just for different flows and system sizes. Likewise, the definition of OWTF does not include a sewage collection system as a part of its definition. Therefore, while the two are related, they are not in the same definitional category of regulation.

Also, except for allowing beneficial reuse of gray water, the Recycled Water program, which consists of A.A.C. Title 18, Chapter 9, Article 7, and under A.A.C. Title 18, Chapter 11, Article 3, does not currently allow OWTFs to reuse wastewater for beneficial use. Currently, only a regulatory structure regulating OWTFs for the disposal of wastewater exists. (Indeed, the regulation of gray water use is only referenced in the OWTF rules, and there is currently confusion regarding interpreting how to account for gray water when designing an on-site system. See “Table 7 of Explanation of Changes: General Design Requirements” for more information on this specific topic.

Under APP program statutory law, OWTFs are categorically assumed to be discharging facilities, and therefore must be operated under an individual or general permit, unless the exempted from APP by rule in accordance with A.R.S. § 49-250(A). See A.R.S. §§ 49-241(B) and 49-250(A). Categorically discharging facilities are assumed to add a pollutant(s) “either directly to an aquifer or to the land surface or the vadose zone in such a manner that there is a reasonable probability that the pollution will reach an aquifer.”

However, the statutory definition of “reclaimed water” is “water that has been treated or processed by a wastewater treatment plant *or an on-site wastewater treatment facility*” (*emphasis added*). Therefore, OWTFs may potentially be regulated for reuse under the Recycled Water program as well as for discharge under the Aquifer Protection Permit program (APP) (similar to regulation of larger wastewater treatment plants that also produce reclaimed water for beneficial reuse). Many facets need to be explored before this occurs, including appropriate beneficial uses for recycled water from OWTFs, as well as the type of oversight needed to manage

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such a program and ensure protection of human health and the environment. Some studies indicate there may be a net environmental benefit to reusing treated water from OWTF, as long as the regulatory program is appropriate and managed correctly. *See generally, e.g.,* Massoud, May A., et al., “Decentralized Approaches to Wastewater Treatment and Management: Applicability in Developing Countries,” 90 J. OF ENVTL. MNGMT. 652-659 (2009). For this reason, ADEQ is working with workgroups to explore the potential of regulating OWTFs to allow reuse of recycled water for appropriate beneficial uses.

In conclusion, while sewage collection or conveyances and recycled water are related to wastewater disposal, they are not technically or legally in the same category as OWTF regulation under the Aquifer Protection Program.

**Regulatory Structure of the OWTF General Permit Program**

OWTFs are generally regulated under a broader Aquifer Protection Permit program statutes in A.R.S. Title 49, Chapter 2, Article 3, and the Environmental Nuisance statutes in A.R.S. Title 49, Chapter 1, Article 3. ADEQ’s general authorizing statutes in A.R.S. Title 49, the Arizona Administrative Procedures Act in Title 41, Chapter 6, and enforcement statutes in A.R.S. Title 49, Chapter 2, Article 4 also apply to this program.

This program consists of general permits. A general permit is a “regulatory permit, license or authorization that is for facilities, activities or practices in a class that are substantially similar in nature and that is issued or granted....if the applicant meets the applicable requirements of the general permit, that requires less information than an individual or traditional permit, license or authorization....” A.R.S. § 41-1001. For a general program to operate as intended, then, each general permit should be for facilities that are similar in nature, require less information than an individual permit, and be relatively simple to process. Hence, applications with large amounts of site-specific data and technology-specific data that require excessive review times and specialized expertise may be more appropriately processed as individual permits. Those facilities that fall outside the scope of these one-size-fits all general permit rules may be able to apply for and obtain an individual Aquifer Protection Permit under Chapter 9, Article 2.

An OWTF will either be authorized to discharge under a Type 1 or Type 4 permit. *See generally*, A.A.C. R18-9-A301, -A301(A)(1) & (A)(4), -B301(I), and Part E. Type 1 and 4 authorizations are issued under the general permits to facilities for their operational life. *See* A.A.C. R18-9-A303(B). Operational life is “the designed or planned period during which a facility remains operational while being subject to permit conditions...” A.A.C. R18-9-A101(32). Under current rules, a facility must be designed to have an operational life of at least 20 years. *See* A.A.C. R18-A312(B)(1). Only the 1.09 general permit authorizes the continued discharge by grandfathered on-site wastewater treatment facilities. *See* A.A.C. R18-9-B301(I).

In terms of rules regulating general permits for OWTFs, which are the focus of this rulemaking, Arizona Administrative Code, Title 18, Chapter 9, Article 1 and Article 3 apply.

In Article 1, the most currently relevant provisions for purposes of regulation of OWTFs under general permits are the following:

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- R18-9-101 (Definitions), which contains the definitions applicable to the APP program as a whole, a subset of which are those definitions applicable to only OWTFs;
- R18-9-106 (Determination of Applicability),
- R18-9-107 (Consolidation of Aquifer Protection Permits), which essentially allows the Director to consolidate regulation of any number of facilities permitted under individual or general permits into a single individual permit if part of the same project if certain prerequisites are met; and
- R18-9-110 (Inspections, Violations, and Enforcement) is just a rule that provides additional notice of inspection and enforcement statutes, but ADEQ's and the Attorney General's respective statutory authorities and duties would supersede if the rule's description were legally too limited in scope for necessary and appropriate legal enforcement of the program. (Note: R18-9-A308 is also rule prescribing the scope of enforcement for OWTFs, but ADEQ is repealing it in this rulemaking because the enforcement statutes supersede it.)

In Article 3, the relevant provisions for purposes of regulation of OWTFs under general permits are the following:

- All of Part A – General provisions for all general permits generally (R18-9-A301 through -A308, and R18-9-A317), and OWTF-specific rules (R18-9-A309 through -A316). At a high level as applicable to OWTFs, these provisions prescribe:
  - Application process requirements, including that new Type 4 or sufficiently modified Type 1 or Type 4 facilities (*see R18-9-A301(A)(4), R18-9-A309(A)(9), and R18-9-B301(I)(2)*) must:
    - Submit a Notice of Intent (NOI) to Discharge according to requirements (*R18-9-A301(B), R18-9-A309(B), and Part E permit-specific requirements, such as the additional requirements for a 4.08 Wisconsin Mound general permit in R18-9-E308(C)*),
    - Receive a Construction Authorization (CA) from the Department or delegated agency (*R18-9-A301(D)(1)*), then
    - Submit a Request for Discharge Authorization (RFDA) according to requirements (*R18-9-A301(D)(1)(f), R18-9-A309(C), and specific Part E permit requirements*), and
    - Receive a Discharge Authorization (DA) from the Department or delegated agency in order to operate the facility (*R18-9-A301(D)(2) and R18-9-A309(C)*)
  - Site investigation requirements to be completed by an applicant to characterize the type and quality of the soil at the site, and identification of site limiting conditions that would impact the efficacy of facility treatment (*R18-9-A310 and R18-9-A312(D) & (E)*);
  - Design and operation requirements, including:
    - Design flow determination criteria (*R18-9-A309(B)(3); R18-9-A314(4), and Table 1 of the rule*),
    - What permit would apply to the facility or multiple facilities at the site based on the cumulative design flows at the site (*R18-9-A309(A)(10)*),



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- General provisions and generally applicable facility design requirements, including setback requirements, appropriate materials and manufactured components, and septic tank manufacturing requirements (*R18-9-A309*, *R18-9-A312(C)*, *R18-9-A312(F)*, and *R18-9-A314*),
- Generally applicable facility type selection requirements based on site conditions, technological limitations, and other requirements and appropriate system components (*R18-9-A311*);
- Required vertical separation distances depending on the type of facility and site investigation results (*R18-9-A312(E)*),
- Operational limitations that a design must account for (*R18-9-A309(A)(7)*),
- Process for requesting approval for alternative design, setback, installation, or operational features (*R18-9-A312(G)*), and
- Installation requirements (*R18-9-A313(A)*); and
  - Maintenance requirements (*R18-9-A313(B)*);
  - Recordkeeping requirements (*R18-9-A309(F)*);
  - Changes at the facility that require a new Notice of Intent to Discharge, including expansions (*R18-9-A309(A)(9)* and *R18-9-A305(B)*);
  - Transfer of facility ownership requirements (*R18-9-A316*);
  - Proprietary products listing for those products that may be more conveniently be used in appropriate OWTF designs (*R18-9-A309(E)*);
  - Revocation of coverage provisions (*R18-9-A307*); and
  - Closure requirements (*R18-9-A306*, *R18-9-A309(D)*);
- R18-9-B301(I) in Part B, which is the 1.09 general permit and the only Type 1 OWTF permit, and allows existing facilities installed before 2001 with 20,000 gal/day or less design flows to continue to discharge as long as the conditions in the rule are met (Note: This permit also covers similarly grandfathered “sewage treatment facilities” as defined in R19-9-101.);
- R18-9-E302 in Part E, which, in tandem with provisions in Part A, is the 4.02 general permit consisting of design requirements for conventional septic tank wastewater treatment and gravity disposal system technologies for design flows less than 3000 gal/day;
- R18-9-E303 through -E322 in Part E, which, in tandem with provisions in Part A, are the 3.03 through 4.22 general permits consisting of design requirements for alternative system technologies for design flows of less than 3000 gal/day;
- R18-9-E323 in Part E, which is a consolidating permit for new facilities at a site that has the design flow of 3000 to less than 24,000 gal/day; and
- Table 1 of the rule, which is the main table for determining design flow for flows other than single family dwellings, where as designer of a single-family dwelling would refer to R18-9-A314(4), regardless of the

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type of system. Note that Table 1 currently applies OWTF general permits, OWTF individual permits, and sewage collection and conveyance systems.

## **Section by Section Explanation of Changes in this Rulemaking**

### **Explanation of the specific changes to the rules in this rulemaking:**

Rule modifications are organized into several tables in terms of the following topics rather than by section number:

- Table 1 of Explanation of Changes: Definitions
- Table 2 of Explanation of Changes: Programmatic Implementation
- Table 3 of Explanation of Changes: Notice of Intent to Discharge
- Table 4 of Explanation of Changes: Request for Discharge Authorization
- Table 5 of Explanation of Changes: Site Investigation for Design Preparation
- Table 6 of Explanation of Changes: Design Flow – Table 1
- Table 7 of Explanation of Changes: General Design Requirements
- Table 8 of Explanation of Changes: Conventional System Designs
- Table 9 of Explanation of Changes: Alternative System Designs
- Table 10 of Explanation of Changes: Alternative Design Features Process per A312(G)
- Table 11 of Explanation of Changes: 4.23 Larger Flow Permits

*Table 1 of Explanation of Changes: Definitions*

| <b>Rule Content Summary</b> | <b>Rule(s) affected (R18-9-xxxx)</b> | <b>Type of Change</b> | <b>Explanation of Changes to: <u>Definitions</u></b>  |
|-----------------------------|--------------------------------------|-----------------------|---|
| Agent definition - add      | 101                                  | Clarification         | See “Table 4: Request for Discharge Authorization.” Initial feedback on changes to the RFDA process indicated it would be beneficial to include a generic definition of “agent” for purposes of A.A.C. Title 18, Articles 1 and 3 regulation of OWTFs only.   |
| Cesspool definition - add   | 101                                  | Clarification         | For clarity, this rulemaking change adds a definition for “cesspool.” Cesspools are prohibited under R18-9-A309(A)(4), but there is currently no definition of “cesspool.” This change clarifies the definition and provides the public with additional notice.   |
| Gray water definition - add | 101                                  | Clarification         | Finally, stakeholders have conveyed that there is confusion among the public regarding the definition of “gray water.” Therefore, ADEQ is adding the governing statutory definition in A.R.S. § 49-201 into these rules to provide additional notice to the public. See “Table 7 of Explanation of Changes: General Design Requirements” for more information on this specific topic. |
| OWTF                        | 101                                  | Correction            | ADEQ is correcting the definition of “on-site wastewater treatment  |

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| Rule Content Summary  | Rule(s) affected (R18-9-xxxx) | Type of Change | Explanation of Changes to: <u>Definitions</u>  |
|-----------------------|-------------------------------|----------------|--|
| definition correction |                               |                | facility” with minimal changes, to conform to the statutory definition in A.R.S. § 49-201. |

*Table 2 of Explanation of Changes: Programmatic Implementation*

| Rule Content Summary   | Rule(s) affected (R18-9-xxxx) | Type of Change  | Explanation of Changes to: <u>Programmatic Implementation</u>  |
|--|-------------------------------|---|--|
| Renewal - Typo   | A303(D)                       | Correction  | A303(D) contains an incorrect reference and is therefore confusing. Type 1 and Type 4 facilities are authorized for the operational life of the facility pursuant to A303(D). Therefore, the reference in A303(D) should be to A303(C) instead of (B).   |
| Enforcement  | 110; A308                     | Correction<br>(in the form of Repealing A308 and modifying 110) | A.A.C. R18-9-110 and R18-9-A308 invalidly limit statutory enforcement discretion for an entire class of facilities, namely OWTFs. Rather, OWTFs are subject to enforcement under all applicable provisions under A.R.S. Title 49, Chapter 2, Article 4. Therefore, ADEQ is repealing R18-9-A308 and modifying R18-9-110 to reflect proper application of environmental enforcement statutes. Note that other statutory provisions are also applicable to facilities, including those for environmental nuisances under A.R.S. Title 49, Chapter 1, Article 3.  |
| Proprietary Product Listing (PPL) –ADEQ may conditionally issue permits for products not listed on the PPL | A309(E)(“4”)                  | Clarification   | <p>ADEQ is clarifying that the Department may authorize products that are not listed on the proprietary product list for coverage under OWTF general permits, but only if the product allows the facility to meet all of the existing requirements of the permit for which it is submitted, and if review of the technology does not require excessive review time, research, or specialized expertise to act on the permit.</p> <p>The 2001 rulemaking indicated that a product list maintained pursuant to R18-9-A309(E) discourages unproven technologies and would work to force them out of the market. <i>See</i> Notice of Final Rulemaking (modifying APP) 7 A.A.R. 237, 251, 312 (Jan. 12, 2001). In turn, such a list would increase confidence that listed products will meet performance measures. <i>Id.</i> at 312. While these stated intentions provide a level of statewide convenience to authorize facilities using listed products, the proprietary products listing process does not currently preclude other non-listed products from being authorized under general permits. Rather, it was apparently the original intention of the rule that non-listed products may be allowed to be permitted, if appropriate. <i>E.g.</i>, A.A.C. R18-9-E315(C)(6) (where an aerobic system for nitrogen removal may be used if specifications and third party test data</p> |

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| Rule Content Summary | Rule(s) affected (R18-9-xxxx) | Type of Change | Explanation of Changes to: <u>Programmatic Implementation</u>   |
|----------------------|-------------------------------|----------------|---|
|                      |                               |                | <p>corroborate nitrogen is reduced to the intended level). ADEQ is adding language to clarify this original intention.</p> <p>ADEQ is also establishing procedural parameters on the level of technical analysis needed from the Department to approve a non-listed product in a permit. These parameters will ensure general permits will be issued more efficiently and with less information and analysis than an individual permit application would require, as is appropriate for a general permit.</p> |

*Table 3 of Explanation of Changes: Notice of Intent to Discharge*

| Rule Content Summary   | Rule(s) affected (R18-9-xxxx) | Type of Change           | Explanation of Changes to: <u>Notice of Intent to Discharge</u>  |
|--|-------------------------------|--------------------------|--|
| Addition of editorial introductory language before lists       | A309(A)(5)                    | Clarification            | Stakeholders have expressed confusion when interpreting the list in R18-9-A309(A)(5) because the introductory language precedes two subsequent lists. ADEQ agrees that while the language as it exists is technically accurate, adding limited introductory language would provide a clearer signal of the subsequent lists. This change is simply editorial in nature.  |
| Repairs (and Routine Work) (both)                              | A309(A)(9)                    | Clarification            | The actions described in A309(A)(9)(b) are those actions that <i>do</i> require a new Notice of Intent to Discharge (NOI) for the facility because the actions <i>do not</i> qualify as repairs or routine work to a facility. Changes to the rule add “routine” work along with “repairs” in the title of this section and throughout this section. These changes are editorial in nature and are intended to clarify that both repairs and routine work or maintenance are expected as a part of maintaining the facility.   |
| Simplification and Correction of Repairs and Routine Work Rule | A309(A)(9)                    | Clarification/Correction | <p>Under R18-9-A310(A)(9), a new NOI is not required for routine work. This rule also lists several actions that <i>do</i> require an NOI because those actions <i>are not</i> routine work under the rule. This rule has been extremely difficult to understand and follow over the years for both regulators and permittees. ADEQ’s rule changes here are influenced by stakeholder recommendations and are attempts to simplify the rule.</p> <p>It appears the original intent of this rule was to attempt to capture several specific actions that do not qualify as routine work. However, ADEQ has realized that the attempted specificity has overcomplicated the rule and made it difficult to comprehend. In fact, the rule appears to contradict other rules and repeats some, but not all, actions already prohibited or required by rule in the permitting process.</p> |

#004

Posted by **David\_Swanson** on **11/11/2021** at **7:49am** [Comment ID: 96]

*Type: Question | Tags: PPL*

*Agree: 0, Disagree: 0*

Will delegated agencies be able to approve systems with non-listed products?

Wouldn't it be prudent to require a monitoring period with regular testing and reporting as one of the special approval requirements? Maybe 5 years?

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| Rule Content Summary | Rule(s) affected (R18-9-xxxx) | Type of Change | Explanation of Changes to: <u>Notice of Intent to Discharge</u>  |
|----------------------|-------------------------------|----------------|--|
|                      |                               |                | <p>For a detailed example, consider the following:</p> <p>Under R18-9-A305(B), a permittee may expand a facility covered under a Type 4 <b><i>if</i></b> the permittee submits a new NOI and the Department issues a new DA. OWTFs are either Type 1 or Type 4 generally permitted facilities, and all newly permitted facilities will be Type 4.</p> <p>Subsection A309(A)(9)(b)(vi) requires a new NOI if a facility’s disposal works are extended “more than 10 feet beyond the footprint of the original disposal works.” This subsection implies that a certain level of expansion of a facility’s original footprint, up to 10 feet, is allowed without an NOI. (The Department interprets “original” in the sense of the word “origin,” meaning when the OWTF very first came into being and was first installed.) This subsection’s apparent allowance for expansion of the facility’s original footprint up to 10 feet without an NOI directly conflicts with the clear requirement in R18-9-A305(B) to submit a new NOI if a Type 4 facility is expanded at all. Further, the Department cannot offer a valid technical reason to allow expansion of the disposal works beyond its original footprint without a new NOI.</p> <p>Several of the other subsections are simply restatements of permitting requirements or prohibitions to ensure that the facility or its treatment works and disposal works are not modified in conflict with the original facility’s approval so as to negatively impact human health or the environment. However, it is unclear why some requirements were specified, and others were not.</p> <p>ADEQ is therefore simplifying the rule so that if a facility owner intends to modify or replace the treatment or disposal works of the facility, then it needs a new NOI. Also, if the owner intends to modify the facility in any way that is inconsistent from the originally approved design or installation of the facility, then it needs a new NOI (e.g., increasing the design flow above the originally approved level).</p> <p>In subsection (a), ADEQ is also more clearly stating that repair or routine work does include replacement of functionally equivalent components at a facility as long as the new components meet design, installation, and operational requirements and associated permit conditions.</p> <p>These rule changes clarify what is already required in rule, remove confusing contradictions, and do not increase burdens on the regulated community.</p> |

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

| <b>Rule Content Summary</b>                         | <b>Rule(s) affected (R18-9-xxxx)</b> | <b>Type of Change</b>           | <b>Explanation of Changes to: <u>Notice of Intent to Discharge</u></b>   |
|---|--------------------------------------|---------------------------------|--|
| NOI requirements – pretreatment report              | A309(B)(6)                           | Information collection addition | ADEQ is adding language in A309(B) (proposed as (B)(6)) requiring submittal of a design report for pretreatment equipment for a request for authorization to be administratively complete. ADEQ believes this additional information is necessary to verify that the proposed pretreatment will produce typical sewage, is appropriate for use with the chosen OWTF technology, and that the ultimate treated water will meet applicable performance standards.  |
| NOI requirements – drainage and erosion information | A309(B)(2)(b)(iv) & A309(B)(7)(a)(v) | Information collection addition | <p>ADEQ is adding language in A309(B)(2)(b)(iv) requiring submittal of drainage patterns, and as applicable, drainage controls and erosion protection for the proposed OWTF. Similar information is already required for alternative systems in A309(B)(6), so this addition makes the requirement applicable to conventional OWTFs, too. ADEQ anticipates that most designers are already reviewing this information and that a designer should be able to comply with this requirement easily. It is an important provision, however, because erosion and saturated soil can adversely affect OWTF treatment effectiveness.</p> <p>ADEQ also modified the language in A309(B)(7)(a)(v) to conform with the language in the changes above. The subsection does not change its meaning, but the phrasing is clearer.</p> |

*Table 4 of Explanation of Changes: Request for Discharge Authorization*

| <b>Rule Content Summary</b>                        | <b>Rule(s) affected (R18-9-xxxx)</b> | <b>Type of Change</b> | <b>Explanation of Changes to: <u>Request for Discharge Authorization</u></b>   |
|--|--------------------------------------|-----------------------|--|
| RFDA/COC clarifications and definition for “agent” | 101 & A309(C)(1) & A309(C)(2)        | Clarification         | <p>Components of the Request for Discharge Authorization (RFDA) for either a conventional or alternative system must be completed and submitted by the applicant or the agent of the applicant, as appropriate. For example, the Certificate of Completion (COC) for alternative systems is part of the RFDA, which is a request submitted on behalf of the applicant. Therefore, the COC must be signed by the applicant, if appropriate, or their agent. The intent of the rule as it currently exists is to maintain the regulatory thread to the owner applicant and their authorized agents when submitting an RFDA. However, the language could be clearer to demonstrate that intention. Therefore, ADEQ is making editorial changes to clarify the current rule.</p> <p>An agent is the person authorized by the owner/applicant to act on their behalf. A more detailed definition of “agent” is provided in R18-9-101.</p> |

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

| Rule Content Summary | Rule(s) affected (R18-9-xxxx) | Type of Change | Explanation of Changes to: <u>Request for Discharge Authorization</u>   |
|----------------------|-------------------------------|----------------|---|
|                      |                               |                | A representative from an agency regulating the applicant, such as a delegated agency's inspector, may not act as an agent on behalf of the applicant. 005 |

*Table 5 of Explanation of Changes: Site Investigation for Design Preparation*

| Rule Content Summary   | Rule(s) affected (R18-9-xxxx)                               | Type of Change   | Explanation of Changes to: <u>Site Investigation for Design</u>  |
|--|---|------------------|--|
| Surface limiting condition - 100-Year zone qualification       | A310(C)(2)(d)   | Technical Update | Right now, if any portion of a 100-year flood hazard zone is located on the property on which an OWTF is placed then a surface limiting condition exists. A property could be quite large. Therefore, and site investigator should further be able to inspect whether the flood zone is near the OWTF and may adversely affect the ability of the facility to function properly before it's designated a surface limiting condition. ADEQ is making changes to reflect this.   |
| Remove ASTM auger boring standard                              | A310(D)(1)(a) & (D)(3)(b)                                   | Technical Update | ADEQ is removing the ASTM auger boring standard, "Standard Practice for Soil Investigation and Sampling by Auger Borings, D1452-80" (2000), because it is rarely, if ever, used and is overall an un-useful tool when conducting site investigations.  |
| Typo – seepage pit percolation rate test methodology reference | A310(G)(3)(d)(iii)  | Correction       | The formula description for the seepage pit percolation test in subsection A312(G)(3)(d)(iii) inappropriately cites the general percolation test in subsection (F) to determining the stabilized infiltration rate, but (G) is the correct reference. This rulemaking corrects this typographical error.   |
| Typo – "consistency" to "consistence" per ASTM & USDA          | A312(D)(2)(b) – soil characterization table, line item "D." | Correction       | <p>The term "consistency" in the soil characterization table in R18-9-A312(D)(2)(b) should be changed to "consistence," because "consistence" is the correct technical soil classification term in the context of the soil characterization table.</p> <p>The rule's subsurface characterization method for classifying soil by field observable characteristics is the American Society for Testing and Materials (ASTM) D5921-96 <i>Standard Practice of Subsurface Site Characterization of Test Pits for On-Site Septic Systems</i> (1996, Reapproved 2003). This ASTM method is based upon the U.S. Department of Agriculture's (USDA) Soil Conservation Service classification system as of 1996, as stated in the ASTM method itself in the introduction and in section 1.2 of the standard. Several documents cited in ASTM 5921-96 also reflect this fact, including the citation</p> |



#005

Posted by **Jake Garrett** on **11/11/2021** at **12:43pm** [Comment ID: 104]

*Type: Suggestion | Tags: COC/RFDA/Agent*

*Agree: 0, Disagree: 0*

Applicants do not posses knowledge of the approved design or equipment. This document should be dual signed by the designer of the approved design.

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

| Rule Content Summary                             | Rule(s) affected (R18-9-xxxx)                               | Type of Change | Explanation of Changes to: <u>Site Investigation for Design</u>  |
|--|---|----------------|--|
|  |   |                | <p>underlying “Table 7 Rupture Resistance Classes,” namely Reference 4, Soil Survey Staff, “Soil Survey Manual,” <i>USDA Agricultural Handbook No. 18</i> (1993). The 1993 Soil Survey Manual states, “Soil consistence in the general sense refers to ‘attributes of soil material as expressed in degree of cohesion and adhesion or in resistance to deformation on rupture.’” USDA Soil Survey Staff, <i>Soil Survey Manual</i> at 91 (1993) (obsolete), available at <a href="https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/ref/?cid=nrcs142p2_054261">https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/ref/?cid=nrcs142p2_054261</a> (last visited Sept. 14, 2021). The 1993 Soil Survey Manual also explains there is a difference between “consistence” and “consistency” and explains the difference. <i>Id.</i> at 92. A later version of the Soil Survey Manual explicitly states, “Consistence is <i>not</i> synonymous with consistency.” USDA Soil Science Division Staff, <i>Soil Survey Manual</i> at 180 (2017), available at <a href="https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/ref/?cid=nrcs142p2_054261">https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/ref/?cid=nrcs142p2_054261</a> (last visited Sept. 14, 2021).</p> <p>Therefore, under the ASTM 5921 standard, the USDA soil survey manual, and related documentation and literature, “consistency” is the incorrect term to use in the soil characterization table in R18-9-A312(D)(2)(b). This was apparently a typo in a previous rulemaking. Hence, ADEQ is exchanging the term “consistency” for “consistence.”</p> |
| Typo – “silty” loam to “silt” loam per ASTM 5921 | A312(D)(2)(b) – soil characterization table, line item “K.” | Correction     | <p>Tables 3 and 12 of ASTM D5921-96 indicate that the correct technical term is “silt” loam as opposed to “silty loam.” “Silt” loam is used elsewhere in this table, as well. ADEQ is simply correcting this typographical error.</p>  |

*Table 6 of Explanation of Changes: Design Flow -- Table 1 of the Rule*

| Rule Content Summary                            | Rule(s) affected (R18-9-xxxx) | Type of Change | Explanation of Changes to: <u>Design Flow – Table 1 of the Rule</u>  |
|---|-------------------------------|----------------|--|
| Table 1- General minor editorial clarifications | Table 1                       | Clarification  | <p>The section for “Restaurant/Cafeteria” seems to have an error in it in that it is the only item that has a line item directly across the title of the section (“Restaurant/Cafeteria --- Employee --- 20”). This is confusing. For this reason, ADEQ is simply moving the Employee line item to below the title of the section.</p> <p>Also, Table 1 of the rule is generally confusing in that there are no introductory instructions. ADEQ is adding minimal instructions to add each</p> |

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

| Rule Content Summary  | Rule(s) affected (R18-9-xxxx) | Type of Change | Explanation of Changes to: <u>Design Flow – Table 1 of the Rule</u>  |
|---|-------------------------------|----------------|--|
|   |                               |                | line item applicable to a facility. For example, for a restaurant that normally has 10 employees on the floor and in the kitchen, has a toilet and 100 customers a day, is full service and serves 110 meals in a day, and has a garbage disposal, then the design flow would be 1,660 gal/day $((20 \times 10) + (7 \times 100) + (6 \times 110) + (1 \times 100) = 1,660)$ . A similar approach would apply for calculating the design flow of an apartment building, as it is likely that apartment buildings have various floor plans, some with 1 bedroom, and some with 2 bedrooms, for example.   |
| Table 1 - Dwelling design flow reference                          | Table 1                       | Correction     | Currently, R18-9-A309(B)(3) refers applicant to Table 1 to calculate design flow. For single family dwellings, Table 1 refers an applicant to R18-9-A314(D)(1). This reference does not exist. The correct reference is R18-9-A314(4)(a). Also, this reference is slightly confusing because R18-9-A314 applies to septic tank design and size, but the method for calculating design flow for all single-family dwellings, whether alternative or conventional systems are used, is in R18-9-A314. Therefore, ADEQ is adding language to clarify that this method of calculation would apply for both conventional and alternative systems if used at a single family dwelling. |
| Table 1 – Hotel/motel linens                                      | Table 1                       | Clarification  | When calculating the flow for a hotel, the figure currently in Table 1 of the rule does not account for a hotel laundering its own linens. If a hotel is washing linens, this is a major impact and would need to be accounted for in the flow. The flow for “commercial laundry” would likely be an appropriate substitute if a hotel is doing their own linens. Therefore, ADEQ is clarifying that the flow figure for hotels in Table 1 does not account for linen laundry.   |
| Table 1 – Restaurant/cafeteria disposable service v. full service | Table 1                       | Clarification  | The section for restaurants is confusing as to which flow would apply for different types of restaurants. A restaurant with disposable service, such as Chipotle, would have a different flow than a restaurant that has full table service and dishes to wash, such as Olive Garden. In this rulemaking, ADEQ is slightly modifying the language in Table 1 of the rule to clarify the difference between these two types of restaurant flows.  |

*Table 7 of Explanation of Changes: General Design Requirements*

| Rule Content Summary     | Rule(s) affected (R18-9-xxxx) | Type of Change | Explanation of Changes to: <u>General Design Requirements</u>  |
|--------------------------|-------------------------------|----------------|--|
| “Design and” Operational | A309(A)(7)                    | Clarification  | ADEQ is adding clarification to the operational requirements in R18-9-A309(A)(7). In order to satisfy the operational requirements, a designer |

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

| Rule Content Summary                 | Rule(s) affected (R18-9-xxxx)                                | Type of Change | Explanation of Changes to: <u>General Design Requirements</u>   |
|--------------------------------------|--|----------------|---|
| Requirements                         |  |                | must have taken this section into account to ensure that a system would comply with these rules during its operational life. Therefore, to provide additional notice, ADEQ is adding the word “design.”   |
| Gray Water Accounting in Design Flow | A309(A)(11) & A309(B)(3) & A312(B)(3) (citing to A309(B)(3)) | Clarification  | <p>Over the years, there has been confusion as to (1) what qualifies as gray water, and (2) whether an on-site facility must be sized to process both black and gray water flows.</p> <p>First, the definition of gray water is a statutory definition, and is being proposed for addition into Article 1 of Chapter 9. “Gray water” means wastewater that has been collected separately from a sewage flow and that originates from a clothes washer or a bathroom tub, shower or sink but that does not include wastewater from a kitchen sink, dishwasher or toilet. A.R.S. § 49-201(20).</p> <p>Second, as a rule, “the use of a gray water system does not change the design, capacity, or reserve area requirements for the on-site treatment facility so the facility may handle the combined black water and gray water flow.” R18-9-D702(C)(11) (in the Type 3 gray water permit for residential or commercial gray water flows of 400 to less than 3000 gallons per day); <i>see also</i> R18-9-D701(A)(11) (in the Type 1 gray water permit for residential use for gray water flows less than 400 gallons per day). Therefore, all flows, black and gray, whether residential or commercial, must be accounted for to size an on-site wastewater treatment and disposal system. 006</p> <p>007 However, this explicit statement only exists in the gray water rule requirements in Article 7, and the current on-site rules simply cite to and mandate compliance with Article 7 in its entirety. For example, in R18-9-E303(A)(3)(a), a prerequisite to using a composting toilet is “if gray water is separated and reused, the gray water [must comply] with 18 A.A.C. 9, Article 7.” For clarity, therefore, ADEQ is adding additional notice in the rule that facilities must account for both gray water and black water flows. To further ensure clarity, ADEQ is adding references in other locations of the rule to highlight instances where the consideration wastewater characteristics of a combined gray and black water flow is necessary.</p> |
| Certified configuration conformity   | A311(A)(“1”)   | Clarification  | ADEQ is adding language to memorialize what is already required as a matter of good design judgment, that is, a proposed design and its installation must conform to the configuration of a system as tested in third-party certification testing (e.g., NSF). Stakeholders have also   |

#006

Posted by **Brad Lancaster** on **11/12/2021** at **12:35pm** [Comment ID: 173]

Type: *Suggestion* | Tags: *Gray water*

Agree: 0, Disagree: 0

Request for rule change/clarity in R18-9-D701-A-11  
11-10-2021

### Issue

In Arizona, a person can get a permit for a home that has a compost toilet, greywater reuse in the landscape, and a Kitchen Resource Drain (KRD) that reuses kitchen sink drainwater subsurface in the landscape, with no sewer or septic hook up. (See last section of this document, Kitchen Resource Drain (KRD) Described for a description of the KRD).

But we are requesting clarification of a section of confusing wording in the code to ensure Arizonans can get the correct permit and build the most simple and effective system they need, rather than a needlessly complex and costly one.

In section 3.a. of R-18-9-E303. 4.03. (the General Permit for Composting Toilet, Less Than 3000 Gallons Per Day Design Flow, which also permits the KRD) the code states, "A permittee may use a composting toilet only if: wastewater is managed as provided in this Section and, if gray water is separated and reused, the gray water reuse complies with 18 A.A.C. 9, Article 7" (section R18-9-D-701).

OK, that part is clear enough. The KRD will manage the kitchen sink blackwater, but when you go to the greywater requirements R18-9-D701—Type 1 Recycled Water General Permit for Gray Water—subsection R18-9-D701-A-11 states:

"For a residence using an on-site wastewater treatment facility for black water treatment and disposal, the use of a gray water system does not change the design, capacity, or reserve area requirements for the on-site wastewater treatment facility at the residence, and ensures the facility can handle the combined black water and gray water flow;"

The bold text above often leads to confusion. In this context, one might mistakenly interpret "facility" to mean the KRD, and thus think the KRD system must be designed and built to handle the combined black water and greywater flow. That is incorrect.<sup>4</sup> In this context, the correct interpretation of "facility" is the whole on-site wastewater system, which is made of three parts—the compost toilet, the greywater system, and the KRD. The KRD only handles the kitchen sink blackwater. The greywater system only handles the greywater. And the compost toilet ensures there is no blackwater produced by the toilet. So, the KRD system only needs to be designed and built to handle the kitchen sink black water.<sup>5</sup>

R-18-9-E303. 4.03. section E ensures the compost toilet is adequately sized; section F ensures the KRD (or similar system) is adequately designed to handle kitchen sink blackwater flows, and section A.3.a. ensures the greywater system is sized to handle the greywater flows. It was not intended in either the greywater or the compost toilet regulations for the KRD system to be designed to handle blackwater flows that might

come from a toilet.<sup>6</sup>

In a different context, where a house is connected to a septic tank—given the way the septic tank section of the code is currently written—the septic tank system must be sized to handle all household wastewater (blackwater and greywater flow), which will all be blackwater once the blackwater and greywater mix within the septic tank. Furthermore, a septic tank system is a wastewater disposal system (containing more dangerous toilet blackwater), while a greywater-harvesting system and/or a KRD system is a wastewater recycling system (devoid of any toilet blackwater), reusing that water for gravity-fed irrigation systems.<sup>7</sup>

The above text and following references were excerpted from Appendix 3, Clarifying the Code section, from the book “Rainwater Harvesting for Drylands and Beyond, Volume 2, 2nd Edition”

REFERENCES:

5. Interview with Chuck Graf, recently retired hydrologist with the Arizona Department of Environmental Quality on December 13, 2018.
6. Interview with Chuck Graf, recently retired hydrologist with the Arizona Department of Environmental Quality on December 13, 2018.
7. Interview with Chuck Graf, recently retired hydrologist with the Arizona Department of Environmental Quality on December 13, 2018.

Proposed solution/clarification

In subsection R18-9-D701-A-11 where it states:

“For a residence using an on-site wastewater treatment facility for black water treatment and disposal, the use of a gray water system does not change the design, capacity, or reserve area requirements for the on-site wastewater treatment facility at the residence, and ensures the facility can handle the combined black water and gray water flow;”

Insert the following text immediately after the text above:

For an on-site wastewater treatment facility that has separate subsystem treatment of wastewater flows which may include a composting toilet, gray water, and/or kitchen wastewater flows, each subsystem must be sized and designed to adequately process the corresponding separate flows.

David Omick, Catlow Shipek and I have field experience with the Kitchen Resource Drain (KRD), many greywater-harvesting systems, and site-built composting toilets and would be happy to work with ADEQ on the proposed rule change/clarification.

Thank you,

Brad Lancaster

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**#007**

Posted by **Brad Lancaster** on **11/12/2021** at **11:56am** [Comment ID: 172]

*Type: Suggestion | Tags: Gray water*

*Agree: 0, Disagree: 0*

Request for Rule change in R18-9-E303  
11-10-2021

The current code allows the use of a Kitchen Resource Drain (KRD) at a residence having a compost toilet (see ADEQR18-9-E303-F), but this scope is not comprehensive. To better serve the community, the code should be changed to allow the use of a KRD at a residence with or without a compost toilet. This is what we are requesting.

Additionally, we are requesting that ADEQ not adopt any rule in this current rulemaking that would be at cross-purposes with developing an eventual, workable rule regarding KRD under the Recycled Water rules.

#### Kitchen Resource Drain (KRD)

A KRD, or Kitchen Resource Drain, is a legal method (allowed by ADEQ) of on-site residential kitchen sink blackwater treatment and subsurface dispersal whereby the treated water can be used for subsurface irrigation of perennial vegetation such as trees and shrubs.

(See "The Kitchen Resource Drain (KRD) Described" section at the end of this document for more information on the KRD).

#### Why we are requesting this change

In 2004-2005, citizen stakeholders (including David Omick, Pearl Mast, and Brad Lancaster) participated in an ADEQ-facilitated process to update the code. We advocated that the KRD be made a legal option for homes like David and Pearl's that

do not have a sewer connection or septic system, but which rely on a compost toilet. At the time, we didn't realize such a KRD system would also be desired by people with sewer connections or septic systems who didn't have compost toilets, so this possibility was not considered during these rule deliberations.

Today, many people in Arizona with a sewer or septic hook up are harvesting their kitchen sink blackwater with neither guidance nor permits—thus illegally—because they don't currently have a workable permitting option.<sup>1</sup>

This is similar to what happened when thousands of people were harvesting household greywater without guidance or permits prior to the 2001 rule change that legalized simple and effective low-cost gravity-fed greywater systems in Arizona. (For more on this history see the study “Residential Graywater Reuse: The Good, The Bad, The Healthy” - <http://watercasa.org/wordpress/wp-content/uploads/2016/01/thereportv2.11.pdf>).

How we recommend the rule be changed

The following is excerpted from pages 399-400 of “Rainwater Harvesting for Drylands and Beyond, Volume 2, 2nd Edition”, documenting how Chuck Graf—who helped write ADEQ's greywater rules and who is now retired—recommends changing the rule to allow KRD use by households who have a sewage collection system, septic tank, or alternative system, rather than a compost toilet:

“KRD systems should be regulated as a Type 2 general permit in its Recycled Water rules. Under the Type 2 permit, a person would notify ADEQ of their intent to install such a system and include some salient details or plans (see next section below for an example) for the system as required by the rule. But that would be all. Once ADEQ is notified, the person could install the system and begin using it.

This new Type 2 permit would fit into ADEQ's four-permit hierarchy for general permits under its Aquifer Protection Permit program (which regulates many large and small discharges, including discharges from septic tanks and alternative onsite systems) and Recycled Water program (which regulates reclaimed water and greywater). In these programs, ADEQ has established Type 1, Type 2, Type 3, and Type 4 permits as follows:

Type 4 permits are used to regulate septic tanks, compost toilets, and alternative onsite systems under the Aquifer Protection Permit program. The Type 4 permit requires submittal of an application to ADEQ, issuance of a Construction Authorization by ADEQ upon satisfactory review of plans, then issuance of a Discharge Authorization upon satisfactory construction (i.e., this is the actual approval to use the system). Typically, there is an inspection of the construction by ADEQ or its designated authority before issuance of the Discharge Authorization. ADEQ also regulates sewage collection system construction/extensions with Type 4 permits. The Type 4 permits are found in AAC R18-9-E301 through E323 of the rules.



Type 3 permits require submittal of an application and plans to ADEQ. Upon satisfactory review of the plans, ADEQ issues a Discharge Authorization. Normally, there would not be an inspection. ADEQ uses these permits to ensure that proper pollution controls are implemented for activities that do not pose as great a threat to groundwater quality. These permits are found at AAC R18-9-D201 through D307.

Type 2 permits merely require notification to ADEQ that the applicant intends to undertake a particular type of activity that, because of the “volume and pollutant characteristics of the discharge, poses a less significant threat to groundwater quality. Typically, this permit requires submittal of relevant information about the discharge, which may include plans and other information. ADEQ is thus able to compile a list of all such entities engaging in this type of low-impact discharge. These permits are found at AAC R18-9-C301 through C306.

Type 1 permits pertain to very low impact discharges. Under this permit, the discharger is in compliance as long as whatever criteria specified in rule are followed. There is no requirement for notification, registration, or application, and there is no fee for this permit. The household gray water permit established in ADEQ’s recycled water rules is a Type 1 permit. This permit is found at AAC R18-9-D701.

Regulating KRD systems as a Type 2 permit under ADEQ’s recycled water rules would take a rule change to add this new permit to the Type 2 permits that already exist in rule.”

Mr. Graf believes that utilization of the Type 2 permitting approach under ADEQ’s recycled water rules would be far more effective for the agency, the end user, and environmental protection than trying to regulate these systems under the much more complicated Type 3 or Type 4 approach.<sup>2</sup>

Mr. Graf adds, “There will be those who disagree with making KRD systems a Type 2 permit, instead favoring a Type 3 permit. However, if it is made a Type 3 permit, which requires a fee, agency review, and issuance of an approval, we would be in the same position as the old gray water rules: everyone would simply ignore the requirement to pay a fee and get an approval.”<sup>3</sup>

Any future Type 2 permit under the Recycled Water rules could lay out good design criteria and guidance in the Type 2 permit language to ensure the effective and safe treatment and use of kitchen wastewater — and we would like to work with you to help develop this.

To see some of the guidance we are already providing see “The Kitchen Resource Drain (KRD) Described” section below:

REFERENCES:

1. "Residential Greywater Reuse Study: The Good, The Bad, the Healthy," (Tucson, AZ: Water Conservation Alliance of Southern Arizona, June 2000).
2. Email correspondence with Chuck Graf on 12-13-2018.
3. Email correspondence with Chuck Graf on 11-5-2021

David Omick, Catlow Shipek and I have field experience with the Kitchen Resource Drain (KRD), many greywater-harvesting systems, and site-built composting toilets and would be happy to work with ADEQ on the proposed rule change/clarification.

Thank you,

Brad Lancaster

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**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

| Rule Content Summary | Rule(s) affected (R18-9-xxxx) | Type of Change | Explanation of Changes to: <u>General Design Requirements</u>   |
|----------------------|-------------------------------|----------------|---|
|                      |                               |                | <p>indicated that ensuring that design configurations are installed as tested will protect products from improper de-certification, which may occur as a result of incorrect installation.</p> <p>The overarching goal of this clarification is to ensure that design configurations are proven approvable methods of adequate treatment and appropriate disposal to prevent surfacing environmental nuisances, and to protect aquifer water quality standards. Therefore, ADEQ is concerned with only those components, technologies, configurations, and sequences identified in the certification report that pertain to the results of the certification report. This means ADEQ is only concerned with those components or technologies that affect treatment of wastewater, as reflected in the third-party report.</p>   |
| Technology Stacking  | A311(A)(“5”)                  | Clarification  | <p>ADEQ is adding clarifying language to ensure that if an applicant submits design that combines multiple treatment technologies to achieve a particular value asserted assuming compound treatment, then ADEQ may only approve the technologies in series for the compound value asserted if the applicant demonstrates that this is appropriate using third party test data.</p> <p>The third-party test data test must reflect the actual configuration in the applicant’s design. In other words, this new language is not intended to provide an opportunity to theoretically prove that treatment under the configuration produces a particular compounded treatment value. For example, if an alternative treatment is used in combination with a conventional septic tank in front of the alternative treatment, ADEQ may approve this design <i>only if</i> the applicant demonstrates that the certification test protocol included a scenario where the septic tank was placed in front of the alternative treatment and the results demonstrated adequate treatment in compliance with performance measures under the rules.</p> <p>The main reasons for this change are two-fold:</p> <ol style="list-style-type: none"> <li>1. While the efficacy of the first technology in the “stack” may be known based on manufacturer testing for treating raw wastewater, the efficacy of the second technology is unknown if the only data from the manufacturer is for treating raw wastewater. The second technology may not have the same removal rate on partially treated wastewater as for raw wastewater. Therefore, even if staff expertise is available to analyze an application, without the appropriate data available, there</li> </ol> |

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

| Rule Content Summary   | Rule(s) affected (R18-9-xxxx) | Type of Change | Explanation of Changes to: <u>General Design Requirements</u>  |
|--|-------------------------------|----------------|--|
|  |                               |                | <p>may be no reliable way to verify the efficacy of the second technology in the “stack.”</p> <p>2. Evaluating an application to authorize “stacked” technologies in a design requires excessive time and specialized expertise to review. While R18-9-A311(A) allows the combination of multiple technologies, if multiple treatment technologies are combined to achieve a better performance than the rule’s performance measures prescribed for a particular treatment technology, an alternative feature approval under R18-9-A312(G) is likely required for this “stacking” of technologies. However, as a general permit program, an application should be adequately justified and should not require excessive time or specialized expertise to review a similar amount of information that would be submitted as a part of an individual permit application. <i>See</i> A.A.C. R18-9-A312(G)(6) (mandates to deny a request for alternative features); <i>see also</i> A.R.S. § 41-1001(11) (definition of general permit). Rather, an application for authorization under a general permit should clearly and simply demonstrate good design judgment pursuant to R18-9-A312(A)(2). In the absence of third-party test data, ADEQ likely would not have the appropriate data to analyze the application. Further, ADEQ would not have the time, and in some periods may not have the specialized expertise available, to evaluate the appropriateness of unverified calculations or data.</p> |
| Conventional Technologies Used with Alternative Technologies | A311(A)(“6”)                  | Clarification  | <p>Often, alternative technologies are used in tandem with conventional septic and/or gravity disposal technologies. The only location where these technologies are fully described and prescribed is in R18-9-E302. Therefore, ADEQ is adding language to ensure that as a general rule, septic tanks and disposal works are designed according to R18-9-E302, including references to R18-9-A314 for the septic tank design. However, if the rules applicable to technologies for R18-9-E303 through -E322 conflict with requirements in -E302, those requirements would apply. For example, an alternative SAR may be warranted if an alternative facility adequately treats wastewater to reduce TSS and BOD in accordance with R18-9-A312(D)(3). This alternative SAR would properly be used for the disposal works of the alternative system, even if it is a gravity disposal works. As another example, the minimum vertical separation requirements in R18-9-A312(E) that are applicable to alternative system technologies would also apply to the design for the disposal works discharging treated water from an</p>   |

#008

Posted by **Jake Garrett** on **11/11/2021** at **1:34pm** [Comment ID: 111]

*Tags: A311 Alt&Convent tandem*

*Agree: 0, Disagree: 0*

In my opinion clarification is not needed. Common sense applies in these instances. More words confuse the obvious.

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

| <b>Rule Content Summary</b>  | <b>Rule(s) affected (R18-9-xxxx)</b> | <b>Type of Change</b> | <b>Explanation of Changes to: <u>General Design Requirements</u></b>  |
|--|--------------------------------------|-----------------------|---|
|  |                                      |                       | <p>alternative system.</p> <p>ADEQ emphasizes that this provision does not alone allow the use of alternative technologies with conventional technologies. Any combination must be appropriate, and in accordance with the rules of this Chapter, including the new language proposed in R18-9-A311(A)(1) regarding the requirement that design configurations must be demonstrated to be appropriate according to third-party testing.</p>   |
| Setback (1) building “decks” includes “pool deck”                        | A312(C) setback table                | Clarification         | <p>County partners have indicated that they receive several questions about how and to what setbacks should be applied. In this rulemaking, ADEQ is clarifying the application of three types of setbacks: from buildings or decks (including pool decks), canals, and holding tanks.</p> <p>In line item “1. Building,” ADEQ’s interpretation has been that pool decks are already covered under that setback as “decks.” However, because there has been stakeholder confusion, ADEQ is adding clarifying language that the setback for “decks” applies to pool decks.</p> <p>This interpretation is appropriate and reasonable given that people wear bathing suits minimally covering the body near a pool, and given the risk of an improperly maintained or temporarily malfunctioning on-site system to cause an unsanitary nuisance that may spread disease.</p> <p>This interpretation is additionally appropriate given the likelihood of accumulation of water near a pool. Pool decks are designed to allow water to flow away from the pool to nearby ground, either during a rainstorm or when persons are utilizing the pool for water sports or otherwise entering and exiting the pool. Additional water accumulation can contribute to ponding, which may impact the pool structure, and may also adversely impact the ability of an OWTF to function properly.</p> |
| Setback (6) – canals – measured from edge                                | A312(C) setback table                | Clarification         | <p>In line item “6. Lake, reservoir, or canal,” canals are mentioned in the title but how to treat the canal water line is not prescribed. This rulemaking corrects this absence of description by prescribing that the setback is measured horizontally from the edge of a canal, a manmade artificial waterway.</p>   |
| Setback (10) – domestic water line includes domestic water holding tanks | A312(C) setback table                | Clarification         | <p>In line item “10. Domestic service water line,” ADEQ’s interpretation has been that water holding tanks would be a part of the water line system. However, the rule could be clearer to demonstrate this intention. Therefore, ADEQ is adding language to clarify that the setback in this line item applies to domestic water holding tanks.</p>  |

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

| <b>Rule Content Summary</b>  | <b>Rule(s) affected (R18-9-xxxx)</b>               | <b>Type of Change</b> | <b>Explanation of Changes to: <u>General Design Requirements</u></b>  |
|--|--|-----------------------|---|
| Typographic error in SAR conversion table introductory language        | A312(D)(2)(a) (introductory language to the table) |                       | The introduction language to the percolation rate to SAR conversion table in R18-9-A312(D)(2)(a) only cites subsection R18-9-A310(F). However, an applicant that conducts percolation testing for seepage pits according to R18-9-A310(G) would also input their results into the table. Therefore, ADEQ is adding this reference to correct this omission.   |
| Clarify why “pit” is in soil characteristics table                     | A312(D)(2)(b) (introductory language to the table) | Clarification         | Over the years, the word “pit” has been in the soil characteristics table in R18-9-A312(D)(2)(b). This table should never be used as the primary table for identifying an SAR in a pit. However, staff believes that under certain circumstances, it may be appropriate to augment and inform seepage pit percolation rate determinations. This is because an applicant is required to seepage pit is required to determine percolation rate using the procedure described in R18-9-A310(G). Therefore, ADEQ is adding clarifying language to this effect.  |
| Remove and replace “site-specific standard” term with clearer language | A312(D)(2)(a) Table & (D)(2)(b) Table & A311(C)    | Clarification         | <p>The tables in A312(D)(2)(a) serve to convert the results of a percolation test or a soil description into a soil absorption rate (SAR). For several values, the result of the conversion is an ambiguous term: “site-specific standard,” a confusing term for reviewers and applicants alike. It is unclear what an applicant should do if a percolation rate correlates to the term “site-specific standard” instead of a specific SAR, especially in the percolation rate table, since percolation testing is a site-specific test.</p> <p>The term “site-specific standard” appears at both extremes of the SAR spectrum, indicating that a subsurface limiting condition is present at the site so that the either the soil will act as a conveyance to groundwater or will obstruct drainage of effluent and cause surfacing. <i>See</i> A.A.C. R18-9-A310(D)(2). Therefore, ADEQ is modifying and adding language to the tables to clarify that a facility must be designed to overcome subsurface limiting conditions if the SAR result indicates such a condition. However, if one is using a soil characterization descriptions method to obtain an SAR via the table in A312(D)(2)(b), then one may first do a percolation test if they believe that it might produce a more accurate site-specific result. While it is possible to obtain a different result, more than likely, a showing that the system can overcome the subsurface limiting condition, either through modifying the system under R18-9-A312(G) with features that vary from rule, or from designing the system with alternative treatment and/or disposal technologies under R18-9-A303 through -E322, will be</p> |

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

| Rule Content Summary                                  | Rule(s) affected (R18-9-xxxx) | Type of Change                  | Explanation of Changes to: <u>General Design Requirements</u>  |
|---|-------------------------------|---------------------------------|--|
|   |                               |                                 | required.  |
| Require an applicant to use the most conservative SAR | R18-9-A312(D)(2)(“c”)         | Clarification /Technical Update | <p>At this time, the rule does not specify how to apply the table in R18-9-A312(D)(2)(a) when an applicant’s percolation rate determined under R18-9-A310(F) or (G), whichever is applicable, is a value that lies between two consecutive percolation rate values listed in the table. ADEQ has evaluated the silence in the rule and at this time has concluded that if the percolation rate determined under R18-9-A310(F) or (G), whichever is applicable, is a value that lies between two consecutive percolation rate values listed in subsection (2)(a) above, the applicant must use the higher of the two listed percolation rates to correlate to the most conservative SAR.</p> <p>The ADEQ has considered various other means of clarifying the silence in the rule, including allowing linear interpolation between two consecutively listed values to a correlated SAR. However, at this time, the Department and delegated agencies do not have enforceable means to allow an applicant to apply linear interpolation principles to obtain an intermediate value.</p> <p>The percolation rate is based on rule-specified measurements, and in some cases, also calculations. <i>See</i> A.A.C. R18-9-A310(F) and (G). The percolation rate is then converted into an SAR via the table in R18-9-A312(D)(2)(a). Since “SAR” is a variable in calculating the soil absorption area, allowing interpolation for the value of “SAR” would introduce even more opportunities for error. <i>See</i> A.A.C. R18-9-A312(D)(1); <i>see also, e.g.</i>, R18-9-E302(A)(4)(a) (for chambers) and R18-9-E302(5)(k) (for seepage pits). However, given the nature of percolation rate testing, there are limited practical or economical ways to ensure that measured and calculated values are precise and accurate enough to allow for an interpolated SAR at this time.</p> <p>ADEQ’s main concern is that an inappropriately low SAR would pose a threat to human health and the environment because the soil absorption area would not be adequate to accept OWTF disposal outflows. ADEQ will consider additional future input from stakeholders and workgroups, but at this time the Department will require the most conservative value for purposes of converting the percolation rate to an SAR. This approach is the most reasonable interpretation at this time to protect human health and the environment, and it should improve permit review times, as well as resolve current and future conflicts in interpreting appropriate application of the table</p> |



#009

Posted by **Jake Garrett** on **11/11/2021** at **3:24pm** [Comment ID: 119]

Type: *Suggestion* | Tags: *A312D coneservative SAR*

Agree: 0, Disagree: 0

In the Bulletin 12 days the practice of rounding up the the next slower perc rate was taught and utilized. This practice should be continued as it is conservative in a test that is not based on absolute readings but rather a perc testers best visual reading of a meniscus against a line.

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

| <b>Rule Content Summary</b>   | <b>Rule(s) affected (R18-9-xxxx)</b>   | <b>Type of Change</b> | <b>Explanation of Changes to: <u>General Design Requirements</u></b>   |
|---|--|-----------------------|--|
|   |  |                       | in R18-9-A312(D)(2)(a).  |
| Minimum vertical separation clarifications, conventional v. alternative treatment | A312(E)(1), (E)(2), (changes also impact (E)(2)(a), (E)(3)(c)(i), & (E)(4)(b)) | Clarification         | <p>After review of some stakeholder comments, ADEQ determined that the minimum coliform concentration requirements based on vertical separation distance are somewhat ambiguous in their applicability and could be slightly modified for clarity.</p> <p>The two subsections, A.A.C. R18-9-A312(E)(1) and (2), establish the maximum allowable coliform concentrations of the disposal works' outflow to the native soil based on the vertical distance from the bottom of the disposal works to the seasonal high water table at the facility's location. R18-9-A312(E)(1) applies to conventional systems, and R18-9-A312(E)(2) applies to alternative systems.</p> <p>The table in A312(E)(2) is very clear that if the effluent is nominally free of total coliform, the separation distance between the discharge point and the seasonal high water table is 0'. However, alternative systems are often combined with conventional system technologies to improve wastewater treatment or facilitate disposal, and currently the rule is unclear as to which rule table applies when conventional system technologies are combined with alternative system technologies to treat and dispose of wastewater.</p> <p>This rule change clarifies that R18-9-A312(E)(1) only applies to the situation where a septic tank and gravity disposal conventional system described in R18-9-E302 is the facility's sole method of treatment and disposal of wastewater.</p> <p>This clarification reflects the fact that conventional septic systems that are used as the sole method of treatment produce higher concentrations of coliform in treated water than alternative systems. Therefore, conventional systems' disposal works outflows pose more risk to the environment and health and safety the closer the disposal works are vertically located in relation to the water table. For this reason, the coliform concentration requirements in the table in R18-9-A312(E)(1) are more stringent than the requirements for alternative systems. In fact, at some SAR levels, conventional system disposal works are not allowed at all at any vertical distance without alternative treatment, according to the table. However, if one of the alternative technologies from R18-9-E303 through -E322 is utilized, then the coliform concentrations are decreased, as are the vertical separation requirements in R18-9-A312(E)(2). Even if conventional technologies</p> |

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|----------------------|-------------------------------|---------------------------------|--|
|                      |                               |                                 | <p>such as a septic tank and/or gravity disposal described in R18-9-E302 are appropriately utilized as a part of alternative systems, R18-9-A312(E)(2) will govern the minimum vertical separation requirements.</p> <p>This concept is also true for R18-9-A312(E)(3)(c), which governs the maximum allowable coliform concentrations at particular vertical depth to a subsurface limiting condition as applicable to alternative systems. R18-9-A312(E)(3)(c) will never apply a conventional system disposal works where the septic tank is the sole method of treatment because under that rule, unless an alternative system is used, the <i>minimum</i> required depth to a subsurface limiting condition is four feet. <i>See also</i> R18-9-A312(E)(3)(a)(i).</p> <p>Note that the 4.23 permit is not cited in this change. That is because the vertical separation requirements are specific to the technology used. The 4.23 permit described in R18-9-E323 is a consolidating umbrella permit for larger flow facilities or sites and does not introduce new technology. Therefore, unless otherwise specified in the R18-9-E323, requirements that apply to technologies described in R18-9-E302 through -E322 will also apply under the permit issued pursuant to R18-9-E323.</p>  |
| Hydraulic analysis   | A312(E)(3)(c)(ii)             | Information collection addition | <p>A hydraulic analysis is conducted to demonstrate that the soil in the proposed OWTF location of the disposal works is sufficiently permeable to conduct wastewater vertically downward and laterally without surfacing. <i>See, e.g.,</i> Tyler, E.J., <i>Hydraulic Wastewater Loading Rates to Soil</i>, Abstract for 9<sup>th</sup> International Symposium on Individual and Small Community Sewage Systems (2001) available at <a href="https://www.soils.wisc.edu/sswmp/SSWMP_4.43.pdf">https://www.soils.wisc.edu/sswmp/SSWMP_4.43.pdf</a>. ADEQ is revising R18-9-A312(E)(3)(c)(ii) to require a hydraulic analysis in all designs where the depth of soil to a subsurface limiting condition is less than 4 feet. At the present time, a hydraulic analysis is not required if the SAR value is greater than 0.63 gal/day/sf. This exclusion is based upon the assumption that the soil is adequate for conveying the effluent away from the disposal site and preventing surfacing for any given SAR value greater than 0.63 gal/day/sf for any given soil depth less than four feet. This assumption is very questionable in some cases. Therefore, a hydraulic analysis is needed to confirm that the effluent will indeed not surface during the disposal process. A hydraulic analysis is a relatively simple analysis and should be a minimal burden.</p> |
| Pipe materials       | A312(F)(2)(c)                 | Technical                       | Currently, pipe material use is limited to HDPE, PVC, ABS, and clay.   |

#010

Posted by **Jake Garrett** on **11/11/2021** at **4:52pm** [Comment ID: 130]

*Type: Suggestion | Tags: A312D Hydraulic analysis*

*Agree: 0, Disagree: 0*

ADEQ must provide a minimum number of accepted methods for use in calculating a hydraulic analysis. The list should not be considered to be the only approved methods, just some of them.

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

| <b>Rule Content Summary</b> | <b>Rule(s) affected (R18-9-xxxx)</b>   | <b>Type of Change</b> | <b>Explanation of Changes to: <u>General Design Requirements</u></b>  |
|-----------------------------|--|-----------------------|---|
|                             |  | Update                | ADEQ intends to add language to allow other appropriate pipe materials, and eliminate reference to piping material that is not used.  |
| Electrical code             | A312(F)(3)(“a”)  | Technical update      | Because there is a risk of electrocution or fire from installation of electrical components, ADEQ agrees with stakeholders that electrical components should meet some sort of electrical standard when installed. Delegated partners will likely be more familiar with the electrical code incorporated in the local building code in the county where the facility is located. For these reasons, ADEQ is adding language to A312(F)(3)(a), the requirements for electronic components in OWTFs, requirement that these components be compliant with the electrical code encompassed in the local building codes applicable in the county in which the OWTF is installed.   |
| Interceptor formula         | A315(B)(1) & (B)(3) – (interceptor design, generally)<br>E303(F)(1)(“a”) –(interceptor design when using a composting toilet permit) | Clarification         | <p>ADEQ is adding language to the interceptor design requirements to clarify the types of flows that an interceptor may not receive, namely human excreta or toilet wastewater. Stakeholders have expressed confusion regarding the formula for sizing interceptors for restaurants based on requirements in R18-9-A315. Specifically, it was expressed that the rule is unclear regarding the fact that an interceptor is not intended to accept human excreta or toilet wastewater. An interceptor should be placed immediately after a kitchen disposal conveyance, and before joining with any disposal conveyance from any toilet wastewater source so that no toilet wastewater is directed into an interceptor. For this reason, ADEQ is adding some minimal language to clarify this fact as a matter of good design judgment. For example, ADEQ added the word “applicable” in the equation variable definitions in R18-9-E315(B)(3)(b) to highlight that not all sources from a restaurant should be included in a restaurant flow, especially toilet flow.</p> <p>Likewise, interceptors used in the disposal works at a facility using a composting toilet are intended for use for the non-toilet wastewater and should not accept human excreta or toilet wastewater. Although the table in R18-9-E303(F)(1) indicates that the sizing for the interceptor is for non-toilet wastewater, there is no explicit statement in the rule that an interceptor may not accept human excreta or toilet wastewater. Therefore, ADEQ is adding clarifying language to that effect in E303(F)(1) to provide better notice to the public of this prohibition.</p> |

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

*Table 8 of Explanation of Changes: A312(G) Alternative Design Features Process*

| Rule Content Summary   | Rule(s) affected (R18-9-xxxx) | Type of Change | Explanation of Changes to: <u>Alternative Design Features Process per A312(G)</u>   |
|--|-------------------------------|----------------|---|
| Specified PPL approved deviations from GP do not also need an A312(G) analysis | A312(G)                       | Clarification  | ADEQ is adding language to clarify that if aspects of a technology that vary from specific general permit requirements and are already approved for listing on the proprietary products list maintained under R18-9-A309(E), then an applicant may use the listed proprietary product in a permit without requesting review under R18-9-A312(G). Currently, it is not clear that using a listed product allows an applicant to bypass the R18-9-A312(G) for the alternative features specifically approved via the proprietary product listing. However, if use of a listed product requires additional variances from a specific general permit, then the applicant must make a request for the Department to authorize use of those alternative features in the submitted design. |
| Alternative setbacks for conventional systems and 4.23 permitted facilities    | A312(G)(7)                    | Clarification  | <p>It is ADEQ's position that the current rule allows for reduced setbacks for conventional systems, if appropriately justified under the criteria in R18-9-A312(G)(1) through (G)(6). The criteria in R18-9-A312(G)(7) applies for obtaining a reduced setback for an alternative system. However, the current language is confusing as to how the requirements should apply for each system. This rulemaking attempts to clarify that the criteria in (G)(7) applies for all facilities.</p> <p>Also, setbacks that would apply for other facilities would also apply under 4.23 permits, ADEQ is adding language to clarify that OWTFs may obtain reduced setbacks for facilities authorized to operate under 4.23 permits, if appropriately justified under A312(G).</p>        |

*Table 9 of Explanation of Changes: Conventional System Designs*

| Rule Content Summary        | Rule(s) affected (R18-9-xxxx) | Type of Change   | Explanation of Changes to: <u>Conventional System Designs</u>   |
|-----------------------------|-------------------------------|------------------|---|
| Julian dating – septic tank | A314(1)(l)                    | Technical update | Currently the rule requires septic tanks to be permanently and clearly marked with, among other information, the month and year that a septic tank was manufactured. Based on comments, it appears that some current tank manufactures mark septic tanks with a Julian date, which counts the number of days since a date B.C.E., instead of using a date from the Gregorian calendar, which is the conventional calendar used on a day-to-day basis. |
| Septic tank standard update | A314(2)(d)                    | Technical update | Stakeholders have noted that the standard for fiberglass or plastic tanks is out of date and have recommended ADEQ adopt the more updated standard, “Prefabricated Septic Tanks – IAPMO/ANSI Z1000-2019,” and ADEQ is   |

## #011

Posted by **Jake Garrett** on **11/11/2021** at **6:08pm** [Comment ID: 140]

*Type: Suggestion | Tags: Setback*

*Agree: 0, Disagree: 0*

Reduced setbacks for conventional systems beyond those allowed in current rule should not be allowed.

## #012

Posted by **Bryancj1@aol.com** on **10/26/2021** at **10:33am** [Comment ID: 42]

*Type: Suggestion | Tags: Septic tank design*

*Agree: 0, Disagree: 0*

Allow other tank integrity tests in rule that conform to this standard. In addition to watertight test allow air and vacuum testing. Will save thousands of gallons of water annually. Reduce cost burden to the homeowner. Could reduce inspections also.

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

| Rule Content Summary | Rule(s) affected (R18-9-xxxx) | Type of Change | Explanation of Changes to: <u>Conventional System Designs</u>  |
|----------------------|-------------------------------|----------------|--|
|                      |                               |                | therefore proposing updating to this standard. This standard will broaden the types of plastics that may be used for septic tanks, and it is more current with the types of tanks manufactured today. The standards for tanks made of other materials, such as concrete, will remain the same as cited in R18-9-A314(2)(a) through (2)(c). |

*Table 10 of Explanation of Changes: Alternative System Designs*

| Rule Content Summary                                      | Rule(s) affected (R18-9-xxxx) | Type of Change                  | Explanation of Changes to: <u>Alternative System Designs</u>   |
|---|-------------------------------|---------------------------------|--|
| Pressurization panel location                             | E304(D)(2)(c)(i)              | Technical Update                | Currently, pressurization panels are required to be mounted in an exterior location visible from a dwelling. However, owners of an OWTF with a pressurization control panel often do not want the panel plainly visible in the middle of a landscaped yard. The change in this rulemaking simply acknowledges and allows placement of the panel on the side of a building. <span style="background-color: yellow;">013</span>  |
| Vault & Haul add “or” for prerequisites                   | E314(A)(1)                    | Correction/ Clarification       | Currently, there are two situations under which a vault and haul system is allowed to be installed pursuant to R18-9-E314(A)(1). While the prerequisites are implicitly disjunctive, the rule does not currently contain an explicit “or” between the two subsections. This rule adds an “or” to clarify when a vault and haul system may be installed.  |
| Vault and Haul – non-soil related operational constraints | E314(C)                       | Clarification/ Technical update | ADEQ has become aware that there may be operational constraints at a facility that affect treatment at a site, but have nothing to do with the soil site investigation. For example, national parks have limited ability to control what patrons insert into an OWTF, and many objects, such as diapers, can adversely impact treatment. Therefore, such facilities should not be required to do a site investigation to install a vault and haul system.  |
| Drip disposal failure prevention                          | E322(D)(4)                    | Technical update                | R18-9-E322(D)(4) specifically requires a pressure reducer valve in the drip system. However, modern drip tubes are now manufactured with pressure compensating valves that not only make the pressure reducer valve requirement obsolete, but will cause the system to fail if installed (i.e., not allow wastewater drain to the drain field and potentially cause sewage to back up into a home). Therefore, ADEQ is modifying the language so that a pressure reducer valve is not necessary if pressure compensating drip tubes are used. <span style="background-color: yellow;">015</span> |



## #013

Posted by **Jake Garrett** on **11/11/2021** at **6:35pm** [Comment ID: 143]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Panels with contactors will turn the home wall into a drum. They won't like that either. In many instances having the control panel located away from the treatment component necessitates two service technicians or at least longer and more expensive service calls.

## #014

Posted by **Jake Garrett** on **10/07/2021** at **4:30pm** [Comment ID: 13]

*Type: Question | Tags: E322 drip failure*

*Agree: 0, Disagree: 0*

What is the source of this information? I believe it is incorrect.

## #015

Posted by **Doug Disbrow** on **10/07/2021** at **10:36am** [Comment ID: 2]

*Type: Question | Tags: E322 drip failure*

*Agree: 0, Disagree: 0*

Is there drip tube manufacture approval for this change? As I understand the need for pressure regulator is that the Hi Head pumps used in drip disposal systems produce 85 to 95 psi. and the couplings / fasteners used on drip tube will let go if 75 psi is exceeded. I believe the manufactures have a specified pressure operating range.

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

*Table 6 of Explanation of Changes: 4.23 Larger Flow Permits*

| Rule Content Summary  | Rule(s) affected (R18-9-xxxx) | Type of Change                     | Explanation of Changes to: <u>4.23 Larger Flow Permits</u>  |
|---|-------------------------------|------------------------------------|---|
| 4.23 – administrative permit clarifications                     | E323(A) & (H)                 | Clarification                      | ADEQ is adding minor editorial language to further clarify that the 4.23 permit is an all-encompassing permit. It allows the construction and use of one or multiple facilities at a site having a flow of 3,000 up to 24,000 gpm as determined pursuant to R18-9-A309(A)(10), which is the cumulative flows provision. The 4.23 permit supersedes the necessity for an applicant to apply for several authorizations under specific general permits in R18-9-E302 through -E322. Rather, the 4.23 permit authorization allows design and operation of various facilities under one permit, as long as they follow the design requirements for each specific general permit as if they were permitted separately, except as otherwise specified in R18-9-E323 (e.g., limitations on disinfections other than ultraviolet treatment technologies).   |
| 4.23 – disinfection device and aerobic treatment clarifications | E323(A)(1) & (A)(3)           | Technical Update and Clarification | <p>The rule is currently not as clear as it could be with regards to when aerobic systems are allowed at a site with larger flows under a 4.23 permit. ADEQ is modifying the language to clarify that aerobic systems are allowed under a 4.23 permit, as long as they are not used in combination with surface or subsurface drip systems under R18-9-E321 and R18-9-E322, respectively.</p> <p>Also, as a technical update, ADEQ is allowing radiation disinfection devices (i.e., ultraviolet light disinfection devices) to be used under a 4.23 permit. Ultraviolet light disinfection devices require minimal maintenance, such as bulb replacement and ensuring the bulb lens remains clean. Other disinfection devices remain prohibited under a 4.23 permit because of the high level of maintenance and operational steps required for those devices in the context of the risk that a larger flow inherently poses to groundwater.</p> |

- 6. A reference to any study relevant to the rule that the agency reviewed and proposes either to rely on or not to rely on in its evaluation of or justification for the rule, where the public may obtain or review each study, all data underlying each study, and any analysis of each study and other supporting material:**  
**[To be filled out at a later date – materials are referenced in explanation section.]**
- 7. A showing of good cause why the rulemaking is necessary to promote a statewide**

## #016

Posted by **Jake Garrett** on **11/11/2021** at **7:33pm** [Comment ID: 154]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Expand the 4.23 upper limit up to and including 100,000 gpd. This is a common recommendation of industry practitioners and local and state regulators.

Conform all references to the new limits throughout rule.

## #017

Posted by **Jake Garrett** on **11/11/2021** at **7:27pm** [Comment ID: 152]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Change values to greater than 3,000 gpd up to and including 24000 gpd. This change is needed throughout the rule to simplify design calculations for facilities where the sum of flows naturally lands on 3,000 gpd and 24,00 gpd. 3,000 gpd will exclude smaller facilities from 4.23 requirements and 24,000 gpd will exclude unnecessary migration to Individual permits or downsizing a facility.

## #018

Posted by **Jake Garrett** on **11/11/2021** at **7:34pm** [Comment ID: 155]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Remove "subsurface drip" from this statement.

**interest if the rulemaking will diminish a previous grant of authority of a political subdivision of this state:**

Not applicable. The proposed amendments do not diminish a previous grant of authority of a political subdivision of this state.

**8. The preliminary summary of the economic, small business, and consumer impact:**

The overall impact of the proposed changes should be minor. The changes are intended to improve clarity, correct errors, and to better align with current industry standards. The clarifications and correction of errors should benefit everyone, but particularly OWTF permittees, who read and interpret the rules. Persons most affected by this rulemaking are current and future permittees under the OWTF permitting program. The Arizona Department of Environmental Quality (ADEQ) anticipates that a few of the rule changes may have a more specific limited impact, likely at low cost relative to benefit.

**9. The agency's contact person who can answer questions about the economic, small business and consumer impact statement:**

Name: xxxx

Address: 1110 W. Washington St.  
Phoenix, AZ 85007

Telephone: xxxx

E-mail: xxxx

Website: <http://www.azdeq.gov/draft-and-proposed-rule-water-quality-division>  
<http://www.azdeq.gov/node/7737>

**10. The time, place, and nature of the proceedings to make, amend, repeal, or renumber the rule, or if no proceeding is scheduled, where, when, and how persons may request an oral proceeding on the proposed rule:**

ADEQ has scheduled an oral proceeding to receive oral comments on the rules, in accordance with A.R.S. § 41-1023; the time, place, and location of the hearing are listed below:

Date of Hearing: xxxx

Time: xxx

Location: *[Potentially virtual]*

Arizona Department of Environmental Quality  
1110 W. Washington, Room 3175  
Phoenix, AZ 85007

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

Nature: Oral Proceeding on the proposed rules, with opportunity for formal comments on the record

Close of Comment: 5:00 p.m. on Date of Hearing

Written or emailed comments related to this rulemaking may be submitted at any time during the public comment period to the person referenced above. Close of comment period will occur on Date of Hearing at 5:00 p.m.

ADEQ will take reasonable measures to provide access to department services to individuals with limited ability to speak, write or understand English and/or to those with disabilities. Requests for language interpretation, ASL interpretation, CART captioning services or disability accommodations must be made at least 48 hours in advance by contacting [xxxx](#), Title VI Nondiscrimination Coordinator at 602-771-[xxxx](#) or [xxxx@azdeq.gov](mailto:xxxx@azdeq.gov). Teleprinter services are available by calling 7-1-1 at least 48 hours in advance to make necessary arrangements.

**11. All agencies shall list other matters prescribed by statute applicable to the specific agency or to any specific rule or class of rules. Additionally, an agency subject to Council review under A.R.S. §§ 41-1052 and 41-1055 shall respond to the following questions:**

There are no other matters prescribed by statute applicable specifically to ADEQ or this specific rulemaking.

**a. Whether the rule requires a permit, whether a general permit is used and if not, the reasons why a general permit is not used:**

Not applicable. No new permits are being established. This is a general permit program.

**b. Whether a federal law is applicable to the subject of the rule, whether the rule is more stringent than federal law and if so, citation to the statutory authority to exceed the requirements of federal law:**

Not applicable.

**c. Whether a person submitted an analysis to the agency that compares the rule's impact of the competitiveness of business in this state to the impact on business in other states:**

No such analysis was submitted.

**12. A list of any incorporated by reference material as specified in A.R.S. § 41-1028 and its location in the rules:**

[\[To be filled out at a later date\]](#)

**13. The full text of the rules follows:**

**TITLE 18. ENVIRONMENTAL QUALITY**  
**CHAPTER 9. DEPARTMENT OF ENVIRONMENTAL QUALITY**  
**WATER POLLUTION CONTROL**

019

**ARTICLE 1. AQUIFER PROTECTION PERMITS – GENERAL PROVISIONS**

Section

- R18-9-101. Definitions
- R18-9-110. Inspections, Violations, and Enforcement

**ARTICLE 3. AQUIFER PROTECTION PERMITS – GENERAL PERMITS**

**PART A. GENERAL PROVISIONS**

Section

- R18-9-A303. Renewal of a Discharge Authorization
- R18-9-A305. Facility Expansion
- R18-9-A308. Violations and Enforcement For On-site Wastewater Treatment Facilities Repealed**
- R18-9-A309. General Provisions for On-site Wastewater Treatment Facilities
- R18-9-A310. Site Investigation for Type 4 On-site Wastewater Treatment Facilities
- R18-9-A311. Facility Selection for Type 4 On-site Wastewater Treatment Facilities
- R18-9-A312. Facility Design for Type 4 On-site Wastewater Treatment Facilities
- R18-9-A314. Septic Tank Design, Manufacturing, and Installation for On-site Wastewater Treatment Facilities
- R18-9-A315. Interceptor Design, Manufacturing, and Installation for On-site Wastewater Treatment Facilities

**PART E. TYPE 4 GENERAL PERMITS**

Section

- R18-9-E302. 4.02 General Permit: Septic Tank with Disposal by Trench, Bed, Chamber Technology, or Seepage Pit, Less Than 3000 Gallons Per Day Design Flow
- R18-9-E303. 4.03 General Permit: Composting Toilet, Less Than 3000 Gallons Per Day Design Flow
- R18-9-E304. 4.04 General Permit: Pressure Distribution System, Less Than 3000 Gallons Per Day Design Flow
- R18-9-E314. 4.14 General Permit: Sewage Vault, Less Than 3000 Gallons Per Day Design Flow
- R18-9-E315. 4.15 General Permit: Aerobic System Less Than 3000 Gallons Per Day Design Flow
- R18-9-E316. 4.16 General Permit: Nitrate-Reactive Media Filter, Less Than 3000 Gallons Per Day Design Flow
- R18-9-E317. 4.17 General Permit: Cap System, Less Than 3000 Gallons Per Day Design Flow
- R18-9-E318. 4.18 General Permit: Constructed Wetland, Less Than 3000 Gallons Per Day Design Flow
- R18-9-E319. 4.19 General Permit: Sand-Lined Trench, Less Than 3000 Gallons Per Day Design Flow
- R18-9-E320. 4.20 General Permit: Disinfection Devices, Less Than 3000 Gallons Per Day Design Flow
- R18-9-E321. 4.21 General Permit: Surface Disposal, Less Than 3000 Gallons Per Day Design Flow

# #019

Posted by **colin.bishop@anua-us.com** on **11/12/2021** at **7:04pm** [Comment ID: 201]

Type: *Suggestion* | Tags: *Gen.Neg.Phase1 direction*

Agree: 0, Disagree: 0

General comments:

This needs more work and more stakeholder buy-in before it is ready. I understood Phase 1 to be quick grammatical fixes that would address some pressing issues. The scope of this seems to reach well beyond that.

As currently written, this draft will cause more market confusion and stifle the use of technology to solve problems.

Suggestions:

1. Have OWAC Task Groups (TG) write rule language. Each group will have to go through multiple iterations of drafts as input is given and vetted through a framework.
2. Use the ACDEHSA draft as starting point for TG language drafts. As I understand it, the ACDEHSA draft is a county consensus document.
3. Better clarify the scope and framework of the process
4. Participants need to realize this will take time and check their frustration. All opinions and input matter. The question is sorting out opinions vs. the best information we have at this time. We do need to drive a consensus process coupled with actually writing of rule language.

Thank you for letting me be part of the process

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

R18-9-E322. 4.22 General Permit: Subsurface Drip Irrigation Disposal, Less Than 3000 Gallons Per Day Design Flow

R18-9-E323. 4.23 General Permit: 3000 to less than 24,000 Gallons Per Day Design Flow

Table 1. Unit Design Flows

DRAFT 9/23/2021



## ARTICLE 1. AQUIFER PROTECTION PERMITS – GENERAL PROVISIONS

### R18-9-101. Definitions

In addition to the definitions established in A.R.S. § 49-201, the following terms apply to Articles 1, 2, 3, and 4 of this Chapter:

1. “**025**” means, for purposes of regulating on-site wastewater treatment facilities, a person who holds authority to act on behalf of another person within an agency relationship. An agency relationship is an express or apparent fiduciary relationship that arises when one person (a “principal”) manifests assent to another person (an “agent”) that the agent shall act on the principal’s behalf and subject to the principal’s control, and the agent manifests assent or otherwise consents to act in such capacity. A representative from an entity regulating the applicant, such as an inspector, may not act as an agent on behalf of an applicant.
- 1.2. “Aggregate” means a clean graded hard rock, volcanic rock, or gravel of uniform size, between ¾ inch and 2 ½ inches in diameter, offering 30 percent or more void space, washed or prepared to be free of fine materials that will impair absorption surface performance, and has a hardness value of three or greater on the Moh’s Scale of Hardness (can scratch a copper penny).
- 2.3. “Alert level” means a value or criterion established in an individual permit that serves as an early warning indicating a potential violation of a permit condition related to BADCT or the discharge of a pollutant to groundwater.
- 3.4. “AQL” means an aquifer quality limit and is a permit limitation set for aquifer water quality measured at the point of compliance that either represents an Aquifer Water Quality Standard or, if an Aquifer Water Quality Standard for a pollutant is exceeded in an aquifer at the time of permit issuance, represents the ambient water quality for that pollutant.
- 4.5. “Aquifer Protection Permit” means an individual permit or a general permit issued under A.R.S. §§ 49-203, 49-241 through 49-252, and Articles 1, 2, and 3 of this Chapter.
- 5.6. “Aquifer Water Quality Standard” means a standard established under A.R.S. §§ 49-221 and 49-223.
- 6.7. “AZPDES” means the Arizona Pollutant Discharge Elimination System, which is the state program for issuing, modifying, revoking, reissuing, terminating, monitoring, and enforcing permits, and imposing and enforcing pretreatment and biosolids requirements under A.R.S. Title 49, Chapter 2, Article 3.1 and 18 A.A.C. 9, Articles 9 and 10.
- 7.8. “BADCT” means the best available demonstrated control technology, process, operating method, or other alternative to achieve the greatest degree of discharge reduction determined for a facility by the Director under A.R.S. § 49-243.
- 8.9. “Bedroom” means, for the purpose of determining design flow for an on-site wastewater treatment facility for a dwelling, any room that has:
  - a. A floor space of at least 70 square feet in area, excluding closets;
  - b. A ceiling height of at least 7 feet;
  - c. Electrical service and ventilation;
  - d. A closet or an area where a closet could be constructed;

## #020

Posted by **David Swanson** on **11/12/2021** at **11:15am** [Comment ID: 170]

Type: Suggestion | Tags: typographical

Agree: 0, Disagree: 0

Comment on consistency and format. Legally defined terms should have the first letter capitalized in each word.... Chamber Technology, Design Flow, Direct Reuse Site, etc... when these legally defined terms are used in the body of the rule they should likewise be capitalized.

## #021

Posted by **colin.bishop@anua-us.com** on **10/26/2021** at **1:00pm** [Comment ID: 43]

Type: Suggestion

Agree: 0, Disagree: 0

"Inspector" must meet licensing requirements in order to perform their duties. Since "inspector" is not in definitions, refer to the licensed person such as "sanitarian" or "professional engineer". Another alternative is to use the term "regulator"

## #022

Posted by **colin.bishop@anua-us.com** on **11/05/2021** at **10:26am** [Comment ID: 51]

Type: Suggestion | Tags: Dispersal v Disposal

Agree: 0, Disagree: 0

Add definitions:

1. "Dispersal" means disposal.  
(then change "disposal" to "dispersal" throughout the rule. "Disposal" is an outdated term.
2. Black water. This is needed since gray water is defined

## #023

Posted by **Jake Garrett** on **11/11/2021** at **11:45am** [Comment ID: 97]

Type: Suggestion

Agree: 0, Disagree: 0

including loft

## #024

Posted by **colin.bishop@anua-us.com** on **11/04/2021** at **10:44am** [Comment ID: 48]

Type: Suggestion | Tags: Definitions overhaul

Agree: 0, Disagree: 0

Definitions needs overhaul for modernization and consistency with industry norms. Phase 2 should look to incorporate CIDWT glossary

## #025

Posted by **thomas.hanson** on **10/15/2021** at **5:37pm** [Comment ID: 20]

*Type: Question | Tags: Agent*

*Agree: 0, Disagree: 0*

Is there any formal method for identifying an agent? This is important because it will relate to functionality to associated processed. An applicant or applicant's agent can submit RFDA certifying the tank. We routinely have hired contractor (not identified by the applicant) submit the RFDA. Is anyone that contacts the department that self declares themselves as an agent to be considered an applicant's "agent"? Permit revisions, inspection requests, general inquiries, and other aspects of permit processing may be impacted by this answer.

**#026**

Posted by **thomas.hanson** on **10/15/2021** at **4:48pm** [Comment ID: 16]

*Type: Question | Tags: Agent*

*Agree: 0, Disagree: 0*

Should this state "expressed"?

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

- e. At least one window capable of being opened and used for emergency egress; and
  - f. A method of entry and exit to the room that allows the room to be considered distinct from other rooms in the dwelling and to afford a level of privacy customarily expected for such a room.
- 9.10. “Book net worth” means the net difference between total assets and total liabilities.
- 11.027. “cesspool” means a pit, collection structure, or subsurface fluid distribution system, which may or may not be partially lined, that receives discharged sewage. A cesspool is not an on-site wastewater treatment facility, such as a septic tank or vault permitted under Article 3 of this chapter.**
- ~~10.12.~~ “Chamber technology” means a method for dispersing treated wastewater into soil from an on-site wastewater treatment facility by one or more manufactured leaching chambers with an open bottom and louvered, load-bearing sidewalls that substitute for an aggregate-filled trench described in R18-9-E302.
- ~~11.13.~~ “CCR” means coal combustion residuals which include fly ash, bottom ash, boiler slag, and flue gas desulfurization materials generated from burning coal for the purpose of generating electricity by electric utilities and independent power producers.
- ~~12.14.~~ “CCR landfill” means an area of land or an excavation that receives CCR and which is not a municipal solid waste landfill, a surface impoundment, an underground injection well, a salt dome formation, a salt bed formation, an underground or surface coal mine, or a cave. A CCR landfill also includes sand and gravel pits and quarries that receive CCR, CCR piles, and any practice that does not meet the definition of beneficial use of CCR.
- ~~13.15.~~ “CCR surface impoundment” means a natural topographic depression, man-made excavation, or diked area, which is designed to hold an accumulation of CCR and liquids, and the unit treats, stores, or disposes of CCR.
- ~~14.16.~~ “CCR unit” means any CCR landfill which receives CCR, any CCR surface impoundment designed to hold an accumulation of CCR and liquids, and the unit treats, stores or disposes of CCR. CCR unit includes a lateral expansion of a CCR unit, or a combination of more than one of these units that receives CCR.
- ~~15.17.~~ “CMOM Plan” means a Capacity, Management, Operations, and Maintenance Plan, which is a written plan that describes the activities a permittee will engage in and actions a permittee will take to ensure that the capacity of the sewage collection system, when unobstructed, is sufficient to convey the peak wet weather flow through each reach of sewer, and provides for the management, operation, and maintenance of the permittee’s sewage collection system.
- ~~16.18.~~ “Design capacity” means the volume of a containment feature at a discharging facility that accommodates all permitted flows and meets all Aquifer Protection Permit conditions, including allowances for appropriate peaking and safety factors to ensure sustained, reliable operation.
- ~~17.19.~~ “Design flow” means the daily flow rate a facility is designed to accommodate on a sustained basis while satisfying all Aquifer Protection Permit discharge limitations and treatment and operational requirements. The design flow either incorporates or is used with appropriate peaking and safety factors to ensure sustained, reliable operation.
- ~~18.20.~~ “Direct reuse site” means an area where reclaimed water is applied or impounded.

#027

Posted by **thomas.hanson** on **10/15/2021** at **4:59pm** [Comment ID: 17]

*Type: Suggestion | Tags: Cesspool*

*Agree: 0, Disagree: 0*

“Cesspool” means a pit, collection structure, or subsurface fluid distribution system, which may or may not be partially lined, that receives untreated sewage. A cesspool is not an on-site wastewater treatment facility, such as a septic tank, vault, or other treatment structure permitted under Article 3 of this chapter.

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

- ~~19-21.~~ “Disposal works” means the system for disposing treated wastewater generated by the treatment works of a sewage treatment facility or on-site wastewater treatment facility, by surface or subsurface methods. Disposal works do not include systems for activities regulated under 18 A.A.C. 9, Article 7.
- ~~20-22.~~ “Drywell” means a well which is a bored, drilled or driven shaft or hole whose depth is greater than its width and is designed and constructed specifically for the disposal of storm water. Drywells do not include class 1, class 2, class 3 or class 4 injection wells as defined by the Federal Underground Injection Control Program (P.L. 93-523, part C), as amended. A.R.S. § 49-331(3)
- ~~21-23.~~ “Dwelling” means any building, structure, or improvement intended for residential use or related activity, including a house, an apartment unit, a condominium unit, a townhouse, or a mobile or manufactured home that has been constructed or will be constructed on real property.
- ~~22-24.~~ “Final permit determination” means a written notification to the applicant of the Director’s final decision whether to issue or deny an Individual Aquifer Protection Permit.
- 25. “Gray water” means wastewater that has been collected separately from a sewage flow and that originates from a clothes washer or a bathroom tub, shower or sink but that does not include wastewater from a kitchen sink, dishwasher or toilet. A.R.S. § 49-201(20).**
- 23-26.** “Groundwater Quality Protection Permit” means a permit issued by the Arizona Department of Health Services or the Department before September 27, 1989 that regulates the discharge of pollutants that may affect groundwater.
- ~~24-27.~~ “Homeowner’s association” means a nonprofit corporation or unincorporated association of owners created pursuant to a declaration to own and operate portions of a planned community and which has the power under the declaration to assess association members to pay the costs and expenses incurred in the performance of the association’s obligations under the declaration.
- ~~25-28.~~ “Injection well” means a well that receives a discharge through pressure injection or gravity flow.
- ~~26-29.~~ “Intermediate stockpile” means in-process material not intended for long-term storage that is in transit from one process to another at a mining site. Intermediate stockpile does not include metallic ore concentrate stockpiles or feedstocks not originating at the mining site.
- ~~27-30.~~ “Land treatment facility” means an operation designed to treat and improve the quality of waste, wastewater, or both, by placement wholly or in part on the land surface to perform part or all of the treatment. A land treatment facility includes a facility that performs biosolids drying, processing, or composting, but not land application performed in compliance with 18 A.A.C. 9, Article 10.
- ~~28-31.~~ “Mining site” means a site assigned one or more of the following primary Standard Industrial Classification Codes: 10, 12, 14, 32, and 33, and includes noncontiguous properties owned or operated by the same person and connected by a right-of-way controlled by that person to which the public is not allowed access.
- ~~29-32.~~ “Nitrogen Management Area” means an area designated by the Director for which the Director prescribes measures on an area-wide basis to control sources of nitrogen, including cumulative discharges

## #028

Posted by **colin.bishop@anua-us.com** on **11/04/2021** at **10:04am** [Comment ID: 44]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Agree with Doug Disbrow comment concerning RV kitchen sink being plumbed with gray water sources

## #029

Posted by **Doug Disbrow** on **10/07/2021** at **3:06pm** [Comment ID: 9]

*Type: Question | Tags: gray water clarification, Other, rvs*

*Agree: 0, Disagree: 0*

Additional clarification is for Gray Water discharge from RV's is needed. As the holding tank of the majority of RV's labeled "Gray Water" is combined flows of the KITCHEN and shower and bathroom sink. I discovered that the county regulator was not aware of this because he had never owned a RV. I find many RV owners discharging this tank to surface.

## #030

Posted by **colin.bishop@anua-us.com** on **11/04/2021** at **10:09am** [Comment ID: 45]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Drywell and Injection well definitions should cross reference. Drywell definitions states what it is not as an injection well. Need more clarity in injection well definition. Also, clarify seepage pits in relation to drywell or injection well

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

from on-site wastewater treatment facilities, that threaten to cause or have caused an exceedance of the Aquifer Water Quality Standard for nitrate.

~~30.33.~~ “Notice of Disposal” means a document submitted to the Arizona Department of Health Services or the Department before September 27, 1989, giving notification of a pollutant discharge that may affect groundwater.

~~31.34.~~ **“On site wastewater treatment facility” means a conventional septic tank system or alternative system installed at a site to treat and dispose of wastewater, predominantly of human origin, generated at that site. “On-site wastewater treatment facility” means a conventional septic tank system or alternative system that is installed at a site to treat and dispose of wastewater of predominantly human origin that is generated at that site. A.R.S. § 49-201(29).** An on-site wastewater treatment facility does not include a pre-fabricated, manufactured treatment works that typically uses an activated sludge unit process and has a design flow of 3000 gallons per day or more.

~~32.35.~~ “Operational life” means the designed or planned period during which a facility remains operational while being subject to permit conditions, including closure requirements. Operational life does not include post-closure activities.

~~33.36.~~ “Person” means an individual, employee, officer, managing body, trust, firm, joint stock company, consortium, public or private corporation, including a government corporation, partnership, association or state, a political subdivision of this state, a commission, the United States government or any federal facility, interstate body or other entity. A.R.S. § **49-201(26) 49-201(33).** For the purposes of permitting a sewage treatment facility under Article 2 of this Chapter, person does not include a homeowner’s association.

~~34.37.~~ “Pilot project” means a short-term, limited-scale test designed to gain information regarding site conditions, project feasibility, or application of a new technology.

~~35.38.~~ “Process solution” means a pregnant leach solution, barren solution, raffinate, or other solution uniquely associated with the mining or metals recovery process.

~~36.39.~~ “Residential soil remediation level” means the applicable predetermined standard established in 18 A.A.C. 7, Article 2, Appendix A.

~~37.40.~~ “Seasonal high water table” means the free surface representing the highest point of groundwater rise within an aquifer due to seasonal water table changes over the course of a year.

~~38.41.~~ “Setback” means a minimum horizontal distance maintained between a feature of a discharging facility and a potential point of impact.

~~39.42.~~ “Sewage” means untreated wastes from toilets, baths, sinks, lavatories, laundries, other plumbing fixtures, and waste pumped from septic tanks in places of human habitation, employment, or recreation. Sewage does not include gray water as defined in **R18-9-701(4) A.R.S. § 49-201(20),** if the gray water is reused according to 18 A.A.C. 9, Article 7.

~~40.43.~~ “Sewage collection system” means a system of pipelines, conduits, manholes, pumping stations, force mains, and all other structures, devices, and appurtenances that collect, contain, and convey sewage from its



#031

Posted by **colin.bishop@anua-us.com** on **11/04/2021** at **10:11am** [Comment ID: 46]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Delete this definition and use the CIDWT Glossary Definition or a variation instead:

"wastewater treatment system relying on natural processes and/or mechanical components to collect and treat sewage from one or more dwellings, buildings, or structures and disperse the resulting effluent on property owned by the individual or entity."

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

sources to the entry of a sewage treatment facility or on-site wastewater treatment facility serving sources other than a single-family dwelling.

41.44. “Sewage treatment facility” means a plant or system for sewage treatment and disposal, except for an on-site wastewater treatment facility, that consists of treatment works, disposal works and appurtenant pipelines, conduits, pumping stations, and related subsystems and devices. A sewage treatment facility does not include components of the sewage collection system or the reclaimed water distribution system.

42.45. <sup>033</sup> “Surface impoundment” means a pit, pond, or lagoon with a surface dimension equal to or greater than its depth, and used for the storage, holding, settling, treatment, or discharge of liquid pollutants or pollutants containing free liquids.

43.46. “Tracer” means a substance, such as a dye or other chemical, used to change the characteristic of water or some other fluid to detect movement.

44.47. “Tracer study” means a test conducted using a tracer to measure the flow velocity, hydraulic conductivity, flow direction, hydrodynamic dispersion, partitioning coefficient, or other property of a hydrologic system.

45.48. “Treatment works” means a plant, device, unit process, or other works, regardless of ownership, used for treating, stabilizing, or holding municipal or domestic sewage in a sewage treatment facility or on-site wastewater treatment facility.

46.49. “Typical sewage” means sewage conveyed to an on-site wastewater treatment facility in which the total suspended solids (TSS) content does not exceed 430 mg/l, the five-day biochemical oxygen demand (BOD<sub>5</sub>) does not exceed 380 mg/l, the total nitrogen does not exceed 53 mg/l, and the content of oil and grease does not exceed 75 mg/l.

47.50. “Underground storage facility” means a constructed underground storage facility or a managed underground storage facility. A.R.S. § 45-802.01(21).

48.51. “Waters of the United States” means:

- a. All waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide;
- b. All interstate waters, including interstate wetlands;
- c. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any waters:
  - i. That are or could be used by interstate or foreign travelers for recreational or other purposes;
  - ii. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
  - iii. That are used or could be used for industrial purposes by industries in interstate commerce;
- d. All impoundments of waters defined as waters of the United States under this definition;
- e. Tributaries of waters identified in subsections (a) through (d);
- f. The territorial sea; and

## #032

Posted by **colin.bishop@anua-us.com** on **11/04/2021** at **10:13am** [Comment ID: 47]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Add definitions for BOD5, TSS, total nitrogen, and oil and grease. Use the CIDWT Glossary for definitions

## #033

Posted by **Jake Garrett** on **11/11/2021** at **12:01pm** [Comment ID: 102]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Need definition of site

- g. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in subsections (a) through (f).

#### **R18-9-110. Inspections, Violations, and Enforcement**

- A. The Department shall conduct an inspection of a permitted facility as specified under A.R.S. § 41-1009.
- B. **Except as provided in R18-9-A303** a person who owns or operates a facility contrary to a provision of Articles 1, 2, and 3 of this Chapter, violates a condition of an Aquifer Protection Permit, or violates a condition of a Groundwater Quality Protection Permit continued under R18-9-105(A)(1) is subject to the enforcement actions established under A.R.S. Title 49, Chapter 2, Article 4.

### **ARTICLE 3. AQUIFER PROTECTION PERMITS – GENERAL PERMITS**

#### **PART A. GENERAL PROVISIONS**

#### **R18-9-A303. Renewal of a Discharge Authorization**

- A. Unless a Discharge Authorization under a general permit is transferred, revoked, or expired, a person may discharge under the general permit for the authorization period as specified by the permit type, including any closure activities required by a specific general permit.
- B. An authorization to discharge under a Type 1 or Type 4 General Permit is valid for the operational life of the facility.
- C. A permittee authorized under a Type 2 or Type 3 General Permit shall submit an application for renewal on a form provided by the Department with the applicable fee established in 18 A.A.C. 14 at least 30 days before the end of the renewal period.
  - 1. The following are the renewal periods for Type 2 and Type 3 General Permit Discharge Authorizations:
    - a. 2.01 General Permit, five years;
    - b. 2.02 General Permit, seven years;
    - c. 2.03 General Permit, two years;
    - d. 2.04 General Permit, five years;
    - e. 2.05 General Permit, five years;
    - f. 2.06 General Permit, five years; and
    - g. Type 3 General Permits, five years.
  - 2. The renewal period for coverage under a Type 2 General Permit begins on the date the Department receives the Notice of Intent to Discharge.
  - 3. The renewal period for coverage under a Type 3 General Permit begins on the date the Director issues the written Discharge Authorization.
- D. If the Discharge Authorization is not renewed within the renewal period specified in subsection **(B)(1) (C)(1)**, the Discharge Authorization expires.

#### **~~R18-9-A308. Violations and Enforcement For On-site Wastewater Treatment Facilities~~ **Repealed****

- ~~A. A person who owns or operates an on-site wastewater treatment facility contrary to the provisions of a Type 4 General Permit is subject to the enforcement actions under A.R.S. § 49-261;~~

## #034

Posted by **Jake Garrett** on **11/11/2021** at **11:51am** [Comment ID: 98]

*Type: Question*

*Agree: 0, Disagree: 0*

What replaces A308?

## #035

Posted by **David\_Swanson** on **11/12/2021** at **11:32am** [Comment ID: 171]

*Type: Question*

*Agree: 0, Disagree: 0*

49-261 (A308) gives the Director the role of issuing compliance orders and initiating legal action with the attorney general. How is this process being functionally replaced within the Department and Secretary of State?

~~B. A person who violates this Article or a specific term of a general permit for an on-site wastewater treatment facility is subject to enforcement actions under A.R.S. § 49-261.~~

#### R18-9-A309. General Provisions for On-site Wastewater Treatment Facilities

##### A. General requirements and prohibitions.

1. No person shall discharge sewage or wastewater that contains sewage from an on-site wastewater treatment facility except under an Aquifer Protection Permit issued by the Director.
2. A person shall not install, allow to be installed, or maintain a connection between any part of an on-site wastewater treatment facility and a drinking water system or supply so that sewage or wastewater contaminates the drinking water.
3. A person shall not bypass or release sewage or partially treated sewage that has not completed the treatment process from an on-site wastewater treatment facility.
4. A person shall not use a cesspool for sewage disposal.
5. A person constructing a new on-site wastewater treatment facility or replacing the treatment works or disposal works of an existing on-site wastewater treatment facility shall connect to a sewage collection system if **either (a) or (b) below apply:**
  - a. One of the following applies:
    - i. A provision of a Nitrogen Management Area designation under R18-9-A317(C) requires connection;
    - ii. A county, municipal, or sanitary district ordinance requires connection; or
    - iii. The on-site wastewater treatment facility is located within an area identified for connection to a sewage collection system by a Certified Area-wide Water Quality Management Plan adopted under 18 A.A.C. 5 or a master plan adopted by a majority of the elected officials of a board or council for a county, municipality, or sanitary district; or
  - b. A sewer service line extension is available at the property boundary and both of the following apply:
    - i. The service connection fee is not more than \$6000 for a dwelling or \$10 times the daily design flow in gallons for a source other than a dwelling, and
    - ii. The cost of constructing the building sewer from the wastewater source to the service connection is not more than \$3000 for a dwelling or \$5 times the daily design flow in gallons for a source other than a dwelling.
6. The Department shall prohibit installation of an on-site wastewater treatment facility if the installation will create an unsanitary condition or environmental nuisance or cause or contribute to a violation of an Aquifer Water Quality Standard.
7. A person shall **design and** operate the permitted on-site wastewater treatment facility so that:
  - a. Flows to the facility consist of typical sewage and do not include any motor oil, gasoline, paint, varnish, solvent, pesticide, fertilizer, or other material not generally associated with toilet flushing, food preparation, laundry, or personal hygiene;

## #036

Posted by **colin.bishop@anua-us.com** on **11/04/2021** at **1:13pm** [Comment ID: 49]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

This is outdated thinking and needs to be addressed in Phase 2

## #037

Posted by **Glawson527** on **11/09/2021** at **3:50pm** [Comment ID: 52]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

5. b. i & ii should be combined for the reason that I see in many situations people will attempt to manipulate the location of a home so that they do not connect to sewer although the total cost of sewer may be less than an onsite system. Also in some areas the service connection may be waived or is much less than \$6000 yet individuals many times still choose an onsite to avoid sewer fees even if the total cost for an onsite is more and are able to because of the \$3000 cap on home to service connection.

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

- b. Flows to the facility from commercial operations do not contain hazardous wastes as defined under A.R.S. § 49-921(5) or hazardous substances;
  - c. If the sewage contains a component of nonresidential flow such as food preparation, laundry service, or other source, the sewage is adequately pretreated by an interceptor that complies with R18-9-A315 or another device authorized by a general permit or approved by the Department under R18-9-A312(G);
  - d. Except as provided in subsection (A)(7)(c), a sewage flow that does not meet the numerical levels for typical sewage is adequately pretreated to meet the numerical levels before entry into an on-site wastewater treatment facility authorized by this Article;
  - e. Flow to the facility does not exceed the design flow specified in the Discharge Authorization;
  - f. The facility does not create an unsanitary condition or environmental nuisance, or cause or contribute to a violation of either a Aquifer Water Quality Standard or a Surface Water Quality Standard; and
  - g. Activities at the site do not adversely affect the operation of the facility.
8. A person shall control the discharge of total nitrogen from an on-site wastewater treatment facility as follows:
- a. For an on-site wastewater treatment facility operating under the 1.09 General Permit or proposed for construction in a Notice of Intent to Discharge under a Type 4 General Permit and the facility is located within a Nitrogen Management Area, the provisions of R18-9-A317(D) apply;
  - b. For an on-site wastewater treatment facility proposed for construction in a Notice of Intent to Discharge under R18-9-E323, the provisions of R18-9-E323(A)(4) apply;
  - c. For a subdivision proposed under 18 A.A.C. 5, Article 4, for which on-site wastewater treatment facilities are used for sewage disposal, the permittee shall demonstrate in the geological report required in R18-5-408(E)(1) that total nitrogen loading from the on-site wastewater treatment facilities to groundwater is controlled by providing one of the following:
    - i. For a subdivision platted for a single family dwelling on each lot, calculations that demonstrate that the number of lots within the subdivision does not exceed the number of acres contained within the boundaries of the subdivision;
    - ii. For a subdivision platted for dwellings that do not meet the criteria specified in subsection (A)(8)(c)(i), calculations that demonstrate that the nitrogen loading over the total area of the subdivision is not more than 0.088 pounds (39.9 grams) of total nitrogen per day per acre calculated at a horizontal plane immediately beneath the active treatment of the disposal fields, based on a total nitrogen contribution to raw sewage of 0.0333 pounds (15.0 grams) of total nitrogen per day per person; or
    - iii. An analysis by another means of demonstration showing that the nitrogen loading to the aquifer due to on-site wastewater treatment facilities within the subdivision does not cause or contribute to a violation of the Aquifer Water Quality Standard for nitrate at the applicable point of compliance.
9. Repairs **and Routine Work**.



**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

- a. A Notice of Intent to Discharge is not required for repair or routine work that maintains a facility. Repair or routine work includes replacement of functionally equivalent components that meet the design, installation, and operational requirements of this Article and associated existing permit conditions.
  - b. The following work is not considered routine work and a A Notice of Intent to Discharge is required for the following non-routine work:
    - i. Converting a facility from operation only under gravity to one requiring a pump or other powered equipment for treatment or disposal;
    - ~~ii. Modifying or replacing a facility operating under the 1.09 General Permit with a different type of treatment or disposal technology;~~
    - ~~iii. Changing the treatment works or disposal works of a facility authorized under one or more Type 4 General Permits to a technology covered by any other Type 4 General Permit;~~
    - ~~iv. Extending the disposal works more than 10 feet beyond the footprint of the original disposal works;~~
    - ~~iv. Reconstructing any part of the disposal works in soil that is inadequate for the treated wastewater flow or strength;~~
    - ~~v. Expanding the footprint of the facility into or within setback buffers established in R18-9-A312(C);~~
    - ~~vi. Reconstructing the disposal works so that it does not meet the vertical separation requirements specified in R18-9-A312(E);~~
    - ~~vii. Modifying a treatment works or disposal works to accommodate a daily design flow or waste load greater than the daily design flow or waste load applicable to the original facility; or~~
    - ~~viii. Replacing the treatment works.~~
    - ~~ii. Modifying or replacing a treatment works or disposal works, as defined in R18-9-101; or~~
    - ~~iii. Modifying a facility in any manner that is inconsistent with the originally approved design or installation of the facility.~~
  - ~~c. Components used in a repair shall meet the design, installation, and operational requirements of this Article.~~
  - ~~d. A permittee shall comply with any local ordinance that provides independent permitting requirements for repair or routine work.~~
  - e.d. A person, as defined in R18-9-101, shall not modify the facility so as to create an unsanitary condition or environmental nuisance or cause or contribute to an exceedance of a water quality standard.
10. Cumulative flows. When there is more than one on-site wastewater treatment facility on a property or on a site under common ownership or subject to a larger plan of sale or development, the Director shall determine whether an individual permit is required or whether the applicant qualifies for coverage to discharge under a general permit based on the sum of the design flows from the proposed installation and existing on-site wastewater treatment facilities on the property or site.
- a. If the sum of the design flows is less than 300,000 gallons per day, the Department will process the application under R18-9-E302 through R18-9-E322, as applicable.

## #038

Posted by **Jake Garrett** on **11/11/2021** at **11:57am** [Comment ID: 99]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Change limit to 3000gpd or less

## #039

Posted by **Glawson527** on **11/09/2021** at **3:57pm** [Comment ID: 53]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

I believe that the changes to the previous section have corrected many issues that led to the need for repair permits. With that said it is difficult for many small and rural counties to pass ordinances and if there is an alternate way this would be preferred not to be specified in rule.

## #040

Posted by **servin\_infiltrator** on **11/12/2021** at **2:30pm** [Comment ID: 177]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

§R18-9-A309. A. 9. b. iii. requires a Notice of Intent to Discharge when “Modifying a facility in any manner that is inconsistent with the originally approved design or installation of the facility”. This language is vague and may be difficult to enforce. On-site wastewater treatment facility designs change due to many different reasons such as the inability to procure system components, unexpected changes during construction, etc. Please consider revising this section to read:

“Modifying a facility that varies from the original as built design other than repairs or routine work as described in R18-9-A309. A. 9. a.”

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

- b. If the sum of the design flows is equal to or more than 3000 gallons per day but less than 20430 gallons per day, the Department will process the application under R18-9-E323.
- c. If the sum of the design flows is equal to or more than 24,000 gallons per day, the project does not qualify for coverage under a Type 4 General Permit and the applicant shall submit an application for an individual permit under Article 2 of this Chapter.

**11. The use of a gray water system does not change the design, capacity, or reserve area requirements for an on-site wastewater treatment facility regulated under R18-9-E302 through R18-9-E323. The design of an on-site facility shall ensure the on-site facility can treat and dispose of the combined black water and gray water flows generated at the site.**

**B. Notice of Intent to Discharge under a Type 4 General Permit.** In addition to the Notice of Intent to Discharge requirements specified in R18-9-A301(B), an applicant shall submit the following information in a format approved by the Department:

- 1. A site investigation report that summarizes the results of the site investigation conducted under R18-9-A310(B), including:
  - a. Results from any soil evaluation, percolation test, or seepage pit performance test;
  - b. Any surface limiting condition identified in R18-9-A310(C)(2); and
  - c. Any subsurface limiting condition identified in R18-9-A310(D)(2);
- 2. A site plan that includes:
  - a. The parcel and lot number, if applicable, the property address or other appropriate legal description, the property size in acres, and the boundaries of the property;
  - b. A plan of the site drawn to scale, dimensioned, and with a north arrow that shows:
    - i. Proposed and existing on-site wastewater treatment facilities; dwellings and other buildings; driveways, swimming pools, tennis courts, wells, ponds, and any other paved, concrete, or water feature; down slopes and cut banks with a slope greater than 15 percent; retaining walls; and any other constructed feature that affects proper location, design, construction, or operation of the facility;
    - ii. Any feature less than 200 feet from the on-site wastewater treatment facility excavation and reserve area that constrains the location of the on-site wastewater treatment facility because of setback limitations specified in R18-9-A312(C);
    - iii. Topography, delineated with an appropriate contour interval, showing original and post-installation grades;
    - iv. **Drainage patterns, and as applicable, drainage controls and erosion protection for the facility;**
    - ~~iv-v.~~ Location and identification of the treatment and disposal works and wastewater pipelines, the reserve disposal area, and location and identification of all sites of percolation testing and soil evaluation performed under R18-9-A310; and
    - ~~v-vi.~~ Location of any public sewer if 400 feet or less from the property line;

## #041

Posted by **David\_Swanson** on **11/11/2021** at **1:36pm** [Comment ID: 112]

*Agree: 0, Disagree: 0*

This would be a good place to address possible design flow reductions for properties with hauled water.

## #042

Posted by **colin.bishop@anua-us.com** on **11/05/2021** at **10:23am** [Comment ID: 50]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Revised language suggestion:

"The use of a gray water system must be addressed in the application through calculations for the design, capacity, hydraulic and organic loading, and reserve area requirements for an onsite wastewater treatment facility regulated under R18-9-E302 through R18-9-E323. The design of an on-site facility shall ensure the on-site facility can treat and disperse all of the combined sewage flows generated at the site."

## #043

Posted by **Jake Garrett** on **11/11/2021** at **11:58am** [Comment ID: 100]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Change upper limit to 24000 gpd or less. Rational provided earlier.

## #044

Posted by **Jake Garrett** on **11/11/2021** at **12:00pm** [Comment ID: 101]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Remove equal to

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

3. The design flow of the on-site wastewater treatment facility, consisting of gray water and black water flows, expressed in gallons per day based on Table 1, Unit Design Flows, the expected strength of the wastewater if the strength exceeds the levels for typical sewage, and:
  - a. For a single family dwelling, a list of the number of bedrooms and plumbing fixtures and corresponding unit flows used to calculate the design flow of the facility; and
  - b. For a dwelling other than for a single family, a list of each wastewater source and corresponding unit flows used to calculate the design flow of the facility;
4. A list of materials, components, and equipment for constructing the on-site wastewater treatment facility;
5. Drawings, reports, and other information that are clear, reproducible, and in a size and format specified by the Department; and
6. If pretreatment is necessary for a facility to comply with the requirements of this Chapter, including R18-9-A309(A)(7), 046 a design report approved by the on-site wastewater treatment facility manufacturer or manufacturers that specifies component capacities, control settings, and supplemental installation and operation practices necessary to produce typical sewage numerical levels before entry into an on-site wastewater treatment facility; and
- 6.7. For a facility that includes treatment or disposal works permitted under R18-9-E303 through R18-9-E323:
  - a. Construction quality drawings that show the following:
    - i. Systems, subsystems, and key components, including manufacturer's name, model number, and associated construction notes and inspection milestones, as applicable;
    - ii. A title block, including facility owner, revision date, space for addition of the Department's application number, and page numbers;
    - iii. A plan and profile with the elevations of wastewater pipelines, and treatment and disposal components, including calculations justifying the absorption area, to allow Department verification of hydraulic and performance characteristics;
    - iv. Cross sections showing wastewater pipelines, construction details and elevations of treatment and disposal components, original and finished grades of the land surface, seasonal high water table if less than 10 feet below the bottom of a disposal works or 60 feet below the bottom of a seepage pit, and a soil elevation evaluation to allow Department verification of installation design and performance; and
    - v. Drainage pattern, drainage controls, and erosion protection, as applicable, for the facility Drainage patterns, and as applicable, drainage controls and erosion protection for the fac045, and
  - b. A draft operation and maintenance manual for the on-site wastewater treatment facility consisting of the tasks and schedules for operating and maintaining performance over a 20-year operational life;
- C. Additional requirements for a Discharge Authorization under a Type 4 General Permit.
  1. If the entire on-site wastewater treatment facility, including treatment works and disposal works, will be permitted under R18-9-E302, the Director shall issue the Discharge Authorization if as a part of the Request for Discharge Authorization:

## #045

Posted by **thomas.hanson** on **10/15/2021** at **5:30pm** [Comment ID: 19]

*Type: Question | Tags: Pretreatment report*

*Agree: 1, Disagree: 0*

Is this not already stated for all submittals? Why state it again under E303-E322 permits?

## #046

Posted by **thomas.hanson** on **10/15/2021** at **5:28pm** [Comment ID: 18]

*Type: Suggestion | Tags: Pretreatment report*

*Agree: 1, Disagree: 0*

I would consider removing the word "then" from the regulation. It feels very informal.

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

- a. The site plan accurately reflects the final location and configuration of the components of the treatment and disposal works, and
  - b. The applicant **or the applicant's** <sup>0491</sup> certifies on the Request for Discharge Authorization form that the septic tank passed the watertightness test required by R18-9-A314(5)(d).
2. If the on-site wastewater treatment facility is proposed under R18-9-E303 through R18-9-E323, either separately or in any combination with each other or with R18-9-E302, the Director shall issue the Discharge Authorization if the following documents are submitted to the Department **as part of the Request for Discharge Authorization**:
- a. As-built plans showing changes from construction quality drawings submitted under subsection (B)(6)(a);
  - b. A final list of equipment and materials showing changes from the list submitted under subsection (B)(4);
  - c. A final operation and maintenance manual for the on-site wastewater treatment facility consisting of the tasks and schedules for operating and maintaining performance over a 20-year operational life;
  - d. A certification that a service contract for ensuring that the facility is operated and maintained to meet the performance and other requirements of the applicable general permits exists for at least one year following the beginning of the operation of the on-site wastewater treatment facility, including the name of the service provider, if the on-site wastewater treatment facility is permitted under:
    - i. R18-9-E304;
    - ii. R18-9-E308 through R18-9-E315;
    - iii. R18-9-E316, if the facility includes a pump; or
    - iv. R18-9-E318 through R18-9-E322;
  - e. Other documents, if required by the separate general permits in 18 A.A.C. 9, Article 3, Part E;
  - f. A Certificate of Completion signed by the **applicant or the applicant's** <sup>048,047</sup> **whichever is the** person responsible for assuring that installation of the facility conforms to the design approved under the Construction Authorization under R18-9-A301(D)(1)(c);
  - g. The name of the installation contractor and the Registrar of Contractor's license number issued to the installation contractor; and
  - h. A certification that any septic tank installed as a component of the on-site wastewater treatment facility passed the watertightness test required by R18-9-A314(5)(d).
3. The Director shall specify in the Discharge Authorization:
- a. The permitted design flow of the facility,
  - b. The characteristics of the wastewater sources contributing to the facility, and
  - c. A list of the documents submitted to and reviewed by the Department satisfying subsection (C)(2).
- D. Closure requirements.** A person who permanently discontinues use of an on-site wastewater treatment facility or a cesspool, or is ordered by the Director to close an abandoned facility shall:
1. Remove all sewage from the facility and dispose of the sewage in a lawful manner;
  2. Disconnect and remove electrical and mechanical components;

## #047

Posted by **Jake Garrett** on **11/11/2021** at **12:36pm** [Comment ID: 103]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

ADD: "and designer" to provide Knowledgeable assurance along with applicant

## #048

Posted by **thomas.hanson** on **10/15/2021** at **5:41pm** [Comment ID: 22]

*Type: Question | Tags: Agent*

*Agree: 0, Disagree: 0*

See the question listed on the definition of "agent".

## #049

Posted by **thomas.hanson** on **10/15/2021** at **5:40pm** [Comment ID: 21]

*Type: Question | Tags: Agent*

*Agree: 0, Disagree: 0*

See the question listed on the definition of "agent".



**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

3. Remove or collapse the top of any tank or containment structure.
    - a. Punch a hole in the bottom of the tank or containment structure if the bottom is below the seasonal high groundwater table;
    - b. Fill the tank or containment structure or any cavity resulting from its removal with earth, sand, gravel, concrete, or other approved material; and
    - c. Regrade the surface to provide drainage away from the closed area;
  4. Cut and plug both ends of the abandoned sewer drain pipe between the building and the on-site wastewater treatment facility not more than 5 feet outside the building foundation if practical, or cut and plug as close to each end as possible; and
  5. Notify the Department within 30 days of closure.
- E. Proprietary and other reviewed products.**
1. The Department shall maintain a list of proprietary and other reviewed products that may be used for on-site wastewater treatment facilities to comply with the requirements of this Article. The list shall include appropriate information on the applicability and limitations of each product.
  2. The list of proprietary and other reviewed products may include manufactured systems, subsystems, or components within the treatment works and disposal works if the products significantly contribute to the treatment performance of the system or provide the means to overcome site limitations. The Department will not list septic tanks, effluent filters or components that do not significantly affect treatment performance or provide the means to overcome site limitations.
  3. A person may request that the Department add a product to the list of proprietary and other reviewed products. The request may include a proposed reference design for review. The Department shall ensure that performance values in the list reflect the treatment performance for defined wastewater characteristics. The Department shall assess fees under 18 A.A.C. 14 for product review.
  4. **054** a case-by-case basis, the Department may issue a permit that utilizes a product not listed under subsection (E)(1) if both of the following are met: **053**
    - a. The product utilized in the on-site wastewater treatment facility complies with all applicable requirements of this Chapter for which the permit is submitted, and
    - b. Review of the product does not require excessive time, research, or specialized expertise by the Department to act on the permit application. **052**
- F. Recordkeeping.** A permittee authorized to discharge under one or more Type 4 General Permits shall maintain the Discharge Authorization and associated documents for the life of the facility.

**R18-9-A310.Site Investigation for Type 4 On-site Wastewater Treatment Facilities**

- A. Definition.** For purposes of this Section, “clean water” means water free of colloidal material or additives that could affect chemical or physical properties if the water is used for percolation or seepage pit performance testing.
- B. Site investigation.** An applicant shall ensure that an investigator qualified under subsection (H) conducts a site investigation consisting of a surface characterization under subsection (C) and a subsurface characterization under

## #050

Posted by **Lou Brown** on **11/12/2021** at **7:22pm** [Comment ID: 202]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

The department has had numerous products go through the PPL review and achieve approval by the department. Using a case-by-case basis for the utilization of new product(s) not having a PPL certificate is not acceptable. All products should be held to the same standards.

## #051

Posted by **David Swanson** on **11/12/2021** at **2:59am** [Comment ID: 127]

*Agree: 0, Disagree: 0*

I agree with Jake that this undermines the PPL process. If this happens these systems should be tested and monitored for a while to verify performance. 5 years.

## #052

Posted by **colin.bishop@anua-us.com** on **11/12/2021** at **4:58pm** [Comment ID: 182]

*Type: Suggestion*

*Agree: 1, Disagree: 0*

This is arbitrary. What determines "excessive time, research, etc"?

Also, this is an end around of a product listing process. Piloting or experimental studies should be welcomed, but criteria needs to be adopted. This could be part of Phase 2 but should be removed from Phase 1

## #053

Posted by **Jake Garrett** on **11/11/2021** at **12:53pm** [Comment ID: 105]

*Type: Suggestion*

*Agree: 2, Disagree: 0*

There is no justification or reasoning in the preamble for this change. After removing "case-by-case basis" as requested, this language undermines the PPL process. Additionally it is likely to cause a bifurcated permitting process as delegated partners may not possess expertise. Also, if a delegated agency refuses to permit the citizen will most definitely request that ADEQ issue the approval. What a mess this will be. I say remove this section completely.

## #054

Posted by **thomas.hanson** on **10/15/2021** at **5:50pm** [Comment ID: 23]

*Type: Suggestion | Tags: PPL*

*Agree: 0, Disagree: 0*

Remove "On a case-by-case basis,". It sounds very informal and lends to the idea that product/permits will be treated differently based on the case rather than being a "General Permit".

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

subsection (D). The applicant shall submit the results in a format prescribed by the Department. The site investigation shall provide sufficient data to:

1. Select appropriate primary and reserve disposal areas for an on-site wastewater treatment facility considering all surface and subsurface limiting conditions in subsections (C)(2) and (D)(2); and;
2. Effectively design and install the selected facility to serve the anticipated development at the site, whether or not limiting conditions exist.

**C. Surface characterization.**

1. Surface characterization method. The investigator shall characterize the surface of the site where an on-site wastewater treatment facility is proposed for installation using one of the following methods:
  - a. The “Standard Practice for Surface Site Characterization for On-site Septic Systems, D5879-95 (2003),” published by the American Society for Testing and Materials. This material is incorporated by reference and does not include any later amendments or editions of the incorporated material. Copies of the incorporated material are available for inspection at the Arizona Department of Environmental Quality, 1110 W. Washington, Phoenix, AZ 85007 or may be obtained from the American Society for Testing and Materials International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959; or
  - b. Another method of surface characterization that can, with accuracy and reliability, identify and delineate the surface limiting conditions specified in subsection (C)(2).
2. Surface limiting conditions. The investigator shall determine whether, and if so, where any of the following surface limiting conditions exist:
  - a. The surface slope is greater than 15 percent at the intended location of the on-site wastewater treatment facility;
  - b. Minimum setback distances are not within the limits specified in R18-9-A312(C);
  - c. Surface drainage characteristics at the intended location of the on-site wastewater treatment facility will adversely affect the ability of the facility to function properly;
  - d. A 100-year flood hazard zone, as indicated on the applicable flood insurance rate map, is located within the property on which the on-site wastewater treatment facility will be installed, **ar055 may adversely affect the ability of the facility to function properly;**
  - e. An outcropping of rock that cannot be excavated exists in the intended location of the on-site wastewater treatment facility or will impair the function of soil receiving the discharge; and
  - f. Fill material deposits exist in the intended location of the on-site wastewater treatment facility.

**D. Subsurface characterization.**

1. Subsurface characterization method. The investigator shall characterize the subsurface of the site where an on-site wastewater treatment facility is proposed for installation using one or more of the following methods:
  - a. The following ASTM standard **practices-practice**, which **are is** incorporated by reference and **de does** not include any later amendments or editions of the incorporated material. Copies of the incorporated material are available for inspection at the Arizona Department of Environmental Quality, 1110 W.

#055

Posted by **thomas.hanson** on **10/15/2021** at **5:53pm** [Comment ID: 24]

*Type: Suggestion | Tags: 100 yr Flood Zone*

*Agree: 1, Disagree: 0*

I suggest writing it as ", and whether it may adversely..."

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

Washington, Phoenix, AZ 85007 or may be obtained from the American Society for Testing and Materials International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959:

i. <sup>057</sup>Standard Practice for Subsurface Site Characterization of Test Pits for On-site Septic Systems, D5921-96(2003)e1 (2003),” published by the American Society for Testing and Materials; ~~and~~

ii. ~~“Standard Practice for Soil Investigation and Sampling by Auger Borings, D1452-80 (2000),” published by the American Society for Testing and Materials;~~

- b. Percolation testing as specified in subsection (F);
  - c. Seepage pit performance testing as specified in subsection (G); or <sup>056</sup>
  - d. Another method of subsurface characterization, approved by the Department, that ensures compliance with water quality standards through proper system location, selection, design, installation, and operation.
2. Subsurface limiting conditions. The investigator shall determine whether any of the following limiting conditions exist in the primary and reserve areas of the on-site wastewater treatment facility within a minimum of 12 feet of the land surface or to an impervious soil or rock layer if encountered at a shallower depth:
- a. The soil absorption rate determined under R18-9-A312(D)(2) is:
    - i. More than 1.20 gallons per day per square foot, or
    - ii. Less than 0.20 gallons per day per square foot;
  - b. The vertical separation distance from the bottom of the lowest point of the disposal works to the seasonal high water table is less than the minimum vertical separation specified in R18-9-A312(E)(1);
  - c. Seasonal saturation occurs within surface soils that could affect the performance of the on-site wastewater treatment facility;
  - d. One of the following subsurface conditions that may cause or contribute to the surfacing of wastewater:
    - i. An impervious soil or rock layer,
    - ii. A zone of saturation that substantially limits downward percolation from the disposal works,
    - iii. Soil with more than 50 percent rock fragments;
  - e. One of the following subsurface conditions that promotes accelerated downward movement of insufficiently treated wastewater:
    - i. Fractures or joints in rock that are open, continuous, or interconnected;
    - ii. Karst voids or channels; or
    - iii. Highly permeable materials such as deposits of cobbles or boulders; or
  - f. A subsurface condition that may convey wastewater to a water of the state and cause or contribute to an exceedance of a water quality standard established in 18 A.A.C. 11, Articles 1 and 4.
3. Applicability of subsurface characterization methods. The investigator shall:
- a. For a seepage pit constructed under R18-9-E302, test seepage pit performance using the procedure specified in subsection (G);

# #056

Posted by **colin.bishop@anua-us.com** on **11/12/2021** at **5:02pm** [Comment ID: 183]

*Type: Suggestion*

Agree: 0, Disagree: 0

Add saturated hydraulic conductivity ( $K_{sat}$ ) test using a constant head permeameter

# #057

Posted by **servin\_infiltrator** on **11/12/2021** at **2:35pm** [Comment ID: 178]

*Type: Suggestion*

Agree: 0, Disagree: 0

§R18-9-A310. D. 1. a. i. references the ASTM document “Standard Practice for Subsurface Site Characterization of Test Pits for On-Site Septic System, D5921-96(2003)”.

ASTM D5921-96 was revised in 2010, but is listed as withdrawn by ASTM International, as show at this web page:  
<https://www.astm.org/Standards/D5921.htm>.

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

- b. For an on-site wastewater treatment facility other than a seepage pit, characterize soil by using ~~one or more of~~ the ASTM ~~methods~~ **method** specified in subsection (D)(1)(a) if any of the following site conditions exists:
  - i. The natural surface slope at the intended location of the on-site wastewater treatment facility is greater than 15 percent;
  - ii. Bedrock or similar consolidated rock formation that cannot be excavated with a shovel outcrops on the property or occurs less than 12 feet below the land surface;
  - iii. The native soil at the surface or encountered in a boring, trench, or hole consists of more than 35 percent rock fragments;
  - iv. The seasonal high water table occurs within 12 feet of the natural land surface as encountered in trenches or borings, or evidenced by well records or hydrologic reports;
  - v. Seasonal saturation at the natural land surface occurs as indicated by soil mottling, vegetation adapted to near-surface saturated soils, or springs, seeps, or surface water near enough to the intended location of the on-site wastewater treatment facility to have a connection with potential seasonal saturation at the land surface; or
  - vi. A percolation test yields results outside the limits specified in subsection (D)(2)(a) and (b).
- c. Percolation testing. The investigator may perform percolation testing as specified in subsection (F):
  - i. To augment another method of subsurface characterization if useful to locate or design an on-site wastewater treatment facility, or
  - ii. As the sole method of subsurface characterization if a subsurface characterization by an ASTM method is not required under subsection (D)(3)(b).
- E. If an ASTM method is used for subsurface characterization, the investigator shall conduct subsurface characterization tests at the site to provide adequate, credible, and representative information to ensure proper location, selection, design, and installation of the on-site wastewater treatment facility. The investigator shall:
  - 1. Select at least two test locations in the primary area and one test location in the reserve area to conduct the tests;
  - 2. Perform the characterization at each test location at appropriate depths to:
    - a. Establish the wastewater absorption capacity of the soil under R18-9-A312(D), and
    - b. Aid in determining that a sufficient zone of unsaturated flow is provided below the disposal works to achieve necessary wastewater treatment; and
  - 3. Submit with the site investigation report:
    - a. A log of soil formations for each test location with information on soil type, texture, and classification; percentage of rock; structure; consistence; and mottles;
    - b. A determination of depth to groundwater below the land surface by test trenches or borings, published groundwater data, subdivision reports, or relevant well data; and
    - c. A determination of the water absorption characteristics of the soil, under R18-9-A312(D)(2)(b), sufficient to allow location and design of the on-site wastewater treatment facility.

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**F. Percolation testing method for subsurface characterization.**

**1. Planning and preparation. The investigator shall:**

- a. Select at least two locations in the primary area and at least one location in the reserve area for percolation testing, to provide adequate and credible information to ensure proper location, selection, design, and installation of a properly working on-site wastewater treatment facility;
- b. Perform percolation testing at each location at intervals in the soil profile sufficient to:
  - i. Establish the wastewater absorption capability of the soil under R18-9-A312(D), and
  - ii. Aid in determining that a sufficient zone of unsaturated flow is provided below the disposal works to achieve necessary wastewater treatment. The investigator shall perform percolation tests at multiple depths if there is an indication of an obvious change in soil characteristics that affect the location, selection, design, installation, or disposal performance of the on-site wastewater treatment facility;
- c. Excavate percolation test holes in undisturbed soil at least 12 inches deep with dimensions of 12 inches by 12 inches, if square, or a diameter of 15 inches, if round. The investigator shall not alter the structure of the soil during the excavation;
- d. Place percolation test holes away from site or soil features that yield unrepresentative or misleading data pertaining to the location, selection, design, installation, or performance of the on-site wastewater treatment facility;
- e. Scarify smeared soil surfaces within the percolation test holes and remove any loosened materials from the bottom of the hole; and
- f. Use buckets with holes in the sides to support the sidewalls of the percolation test hole, if necessary. The investigator shall fill any voids between the walls of the hole and the bucket with pea gravel to reduce the impact of the enlarged hole.

**2. Presoaking procedure. The investigator shall:**

- a. Fill the percolation test hole with clean water to a depth of 12 inches above the bottom of the hole;
- b. Observe the decline of the water level in the hole and record time in minutes for the water to completely drain away;
- c. Repeat the steps specified in subsection (F)(2)(a) and (b) if the water drains away in less than 60 minutes.
  - i. If the water drains away the second time in less than 60 minutes, the investigator shall repeat the steps specified in subsections (F)(2)(a) and (b).
  - ii. If the water drains away a third time in less than 60 minutes, the investigator shall perform the percolation test by following subsection (F)(3); and
- d. Add clean water to the hole after 60 minutes and maintain the water at a minimum depth of 9 inches for at least four more hours if it takes 60 minutes or longer for the water to drain away. The investigator shall protect the hole from precipitation and runoff, and perform the percolation test specified in subsection (F)(3) between 16 and 24 hours after presoaking.

**3. Conducting the test. The investigator shall:**



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- a. Conduct the percolation test before soil hydraulic conditions established by the presoaking procedure substantially change. The investigator shall remove loose materials in the percolation test hole to ensure that the specified dimensions of the hole are maintained and the infiltration surfaces are undisturbed native soil;
  - b. Fill the test hole to a depth of six inches above the bottom with clean water;
  - c. Observe the decline of the water level in the test hole and record the time in minutes for the water level to fall exactly 1 inch from a fixed reference point. The investigator shall:
    - i. Immediately refill the hole with clean water to a depth of 6 inches above the bottom, and determine and record the time in minutes for the water level to fall exactly 1 inch,
    - ii. Refill the hole again with clean water to a depth of 6 inches above the bottom and determine and record the time in minutes for the water to fall exactly 1 inch, and
    - iii. Ensure that the method for measuring water level depth is accurate and does not significantly affect the percolation rate of the test hole;
  - d. If the percolation rate stabilizes for three consecutive measurements by varying no more than 10 percent, use the highest percolation rate value of the three measurements. If three consecutive measurements indicate that the percolation rate results are not stabilizing or the percolation rate is between 60 and 120 minutes per inch, the investigator shall use an alternate method based on a graphical solution of the test data to approximate the stabilized percolation rate;
  - e. Record the percolation rate results in minutes per inch; and
  - f. Submit the following information with the site investigation report:
    - i. A log of the soil formations encountered for all percolation tests including information on texture, structure, consistence, percentage of rock fragments, and mottles, if present;
    - ii. Whether and which test hole was reinforced with a bucket;
    - iii. The locations, depths, and bottom elevations of the percolation test holes on the site investigation map;
    - iv. A determination of depth to groundwater below the land surface by test trenches or borings, published groundwater data, subdivision reports, or relevant well data; and
    - v. A determination of the water absorption characteristics of the soil, under R18-9-A312(D)(2)(a), sufficient to allow location and design of the on-site wastewater treatment facility.
- G. Seepage pit performance testing method for subsurface characterization. The investigator shall test seepage pits described in R18-9-E302 as follows:** 058
1. Planning and Preparation. The investigator shall:
    - a. Identify the disposal areas at the site and drill a test hole at least 18 inches in diameter to the depth of the proposed seepage pit, at least 30 feet deep, and
    - b. Scarify soil surfaces within the test hole and remove loosened materials from the bottom of the hole.
  2. Presoaking procedure. The investigator shall:
    - a. Fill the bottom 6 inches of the test hole with gravel, if necessary, to prevent scouring;

#058

Posted by **Jake Garrett** on **11/11/2021** at **6:01pm** [Comment ID: 139]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Please add any clarifying language needed to eliminate all ambiguities and mistakes for seepage pit design and installation along with seepage pit testing, uncovered during development of the seepage pit substantive statement.

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- b. Fill the test hole with clean water up to 3 feet below the land surface;
  - c. Observe the decline of the water level in the hole and determine the time in hours and minutes for the water to completely drain away;
  - d. Repeat the procedure if the water drains away in less than four hours; If the water drains away the second time in less than four hours, the investigator shall conduct the seepage pit performance test by following subsection (G)(3);
  - e. Add water to the hole and maintain the water at a depth that leaves at least the top 3 feet of hole exposed to air for at least four more hours if the water drains away in four or more hours; and
  - f. Not remove the water from the hole before the seepage pit performance test if there is standing water in the hole after at least 16 hours of presoaking.
3. Conducting the test. The investigator shall:
- a. Fill the test hole with clean water up to 3 feet below land surface;
  - b. Observe the decline of the water level in the hole and determine and record the vertical distance to the water level from a fixed reference point every 10 minutes. The investigator shall ensure that the method for measuring water level depth is accurate and does not significantly affect the rate of fall of the water level in the test hole;
  - c. Measure the decline of the water level continually until three consecutive 10-minute measurements indicate that the infiltration rates are within 10 percent. If measurements indicate that infiltration is not approaching a steady rate or if the rate is close to a numerical limit specified in R18-9-A312(E)(1), the investigator shall use, an alternate method based on a graphical solution of the test data to approximate the final stabilized infiltration rate;
  - d. Percolation test rate. Calculate the stabilized infiltration rate for a seepage pit determined by the test hole procedure specified in subsection (G)(1)(a) using the formula  $P = (15 / DS) \times IS$  to determine an equivalent percolation test rate. Once "P" is determined, the investigator shall use R18-9-A312(D)(2)(a) to establish the design SAR for wastewater treated under R18-9-E302 and to calculate the required minimum sidewall area for the seepage pit using the equation specified in R18-9-E302(C)(5)(k).
    - i. "P" is the percolation test rate (minutes per inch) tabulated in the first column of the table in R18-9-A312(D)(2)(a),
    - ii. "DS" is the diameter of the seepage pit test hole in inches, and
    - iii. "IS" is the seepage pit stabilized infiltration rate (minutes per inch) determined by the procedure specified in **R18-9-A310(F)(3)(e) R18-9-A310(G)(3)(c);**
  - e. Submit the following information with the site investigation report:
    - i. The results of the seepage pit performance testing including data, calculations, and findings on a form provided by the Department;
    - ii. The log of the test hole indicating lithologic characteristics and points of change;
    - iii. The location of the test hole on the site investigation map;

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- iv. A determination of depth to groundwater below the land surface by borings, published groundwater data, subdivision reports, or relevant well data.
  - f. Fill the test hole so that groundwater quality and public safety are not compromised if the seepage pit is drilled elsewhere or if a seepage pit cannot be sited at the location because of unfavorable test results.
- H. Qualifications.** An investigator shall not perform a site investigation under this Section unless the investigator has knowledge and competence in the subject area and is licensed in good standing or otherwise qualified in one of the following categories:
- 1. Arizona-registered professional engineer,
  - 2. Arizona-registered geologist,
  - 3. Arizona-registered sanitarian,
  - 4. A certificate of training from a course recognized by the Department as sufficiently covering the information specified in this Section, or
  - 5. Qualifies under another category designated in writing by the Department.

**R18-9-A311.Facility Selection for Type 4 On-site Wastewater Treatment Facilities**

- A.** A person shall select, design, and install an on-site wastewater treatment facility that is appropriate for the site's geographic location, setback limitations, slope, topography, drainage and soil characteristics, wastewater infiltration capability, depth to the seasonal high water table, and any surface or subsurface limiting condition.

1. 067 design and installation of an on-site wastewater treatment facility, including each component and technology used for treatment at the facility, must align with the technological configuration and sequence described in the third-party testing certification report applicable to each component or technology used for treatment at a facility. 064 063 065

1-2. A person may use on-site treatment and disposal technologies covered by a Type 4 General Permit alone or in combination with another Type 4 General Permit to overcome site limitations.

2-3. An applicant may submit a single Notice of Intent to Discharge for an on-site wastewater treatment facility consisting of components or technologies covered by multiple general permits if the information submittal requirements of all the general permits are met.

3-4. The Director shall issue a single Construction Authorization under R18-9-A301(D)(1) and a single Discharge Authorization under R18-9-A301(D)(2) for an on-site wastewater treatment facility that consists of components or technologies covered by multiple general permits.

5. 068 cept as specifically authorized in this Article, the Department shall not approve a design that utilizes two or more treatment technologies in series for a compounded treatment value unless the applicant demonstrates, using third-party test data, that the specific combination and configuration in the submitted design meets the performance parameters in the general permit for which the applicant submits a Notice of Intent to Discharge. To justify the compounded treatment value, the third-party certification test report provided must reflect the specific combination and configuration utilized in the design submitted for Department approval. 062 061 059

6. 066 Con066ditional technologies used with alternative technologies. If either a septic tank or disposal method, or both, as identified in R18-9-E302, is appropriately used in combination with an alternative technology 060

## #059

Posted by **Doug Disbrow** on **11/10/2021** at **1:19pm** [Comment ID: 56]

*Type: Suggestion*

*Agree: 2, Disagree: 0*

This statement counter dicks other areas of the rule and creates confusions and other hardships in developing systems. This should be postponed for more study.

## #060

Posted by **Jake Garrett** on **11/11/2021** at **1:39pm** [Comment ID: 113]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

This wording seems to define common sense and as such is not needed in rule.

## #061

Posted by **colin.bishop@anua-us.com** on **11/12/2021** at **5:17pm** [Comment ID: 185]

*Type: Suggestion*

*Agree: 1, Disagree: 0*

Major changes should not be in Phase 1. This is a major change and should be thoroughly discussed by all stakeholders.

Again, it is not possible to third party test all the possibilities of configurations. The financial burden is off the charts. This is where standard engineering practice, best applied science, best management practices, and monitoring come into play.

The rules already allow for matching up technologies to achieve treatment outcome (e.g. septic tank-->treatment-->disinfection). It's actually a foundational principle in the 2001 rule adoption-->allow flexibility to solve problems with technology. This language will create a rule conflict that would invite legal action to get corrected.

## #062

Posted by **Jake Garrett** on **11/11/2021** at **1:28pm** [Comment ID: 109]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Exclude any reference to stacking in Phase 1. Leave status quo as used today.

## #063

Posted by **colin.bishop@anua-us.com** on **11/12/2021** at **5:11pm** [Comment ID: 184]

*Type: Suggestion*

*Agree: 1, Disagree: 0*

This language would eliminate proprietary treatment systems as viable options in Arizona and is at the extreme end of over-burdensome. I'm sure this is inadvertent. I suggest deleting this section in Phase 1 as it is a major change.

Each manufacturer only tests one model during third party testing. NSF, for example, has scale-up policies and equivalent components policies. It's not possible to test every configuration using different tank materials, different models of electro-mechanical motors, etc.

## #064

Posted by **Jake Garrett** on **11/11/2021** at **1:24pm** [Comment ID: 107]

*Type: Question*

*Agree: 1, Disagree: 0*

Does this language mean that all technologies must be designed and installed as tested; such as Engineered Pad, peat filter, or media filter systems that use underdrains to collect treated effluent during testing? Will these testing configurations be supplied in the PPL listing?

## #065

Posted by **Jake Garrett** on **11/12/2021** at **6:33pm** [Comment ID: 195]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

This statement will eliminate scale-up opportunities for manufacturers in testing, will handcuff designers in development of solutions, and should require septic tanks have reports.

## #066

Posted by **thomas.hanson** on **10/15/2021** at **5:59pm** [Comment ID: 25]

*Type: Suggestion | Tags: Conventl w/ alternative*

*Agree: 0, Disagree: 0*

The beginning of this is confusing because it is a sentence fragment.

## #067

Posted by **servin\_infiltrator** on **11/12/2021** at **2:39pm** [Comment ID: 179]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

§R18-9-A311. A. 1. states "The design and installation of an on-site wastewater treatment facility, including each component and technology used for treatment at the facility, must align with the technological configuration and sequence described in the third-party testing certification report applicable to each component or technology used for treatment at a facility."

We respectfully submit that as written this subsection, if strictly interpreted, will have a significant and immediate negative impact. System designers will be unnecessarily constrained and property owners will face hardship and increased

costs.

NSF/ANSI 40 and 245 are the most common certifications for onsite wastewater treatment products. These standards allow for changes to the originally tested configuration through engineering reviews. Once the review, and testing if required, is completed NSF provides a determination letter to the manufacturer stating the change is allowed and the product will continue to meet the certification. These reviews can include, but are not limited to, alternate blowers, compressors and or control panels, type of tank (concrete vs. plastic), changes in system size that allow scaling up and down, changes in materials, etc.

As an example, an electromechanical treatment system may have been tested in a concrete tank using blower A at a flow of 500 gpd. The manufacturer subsequently requested authorization from the certifying organization to allow the system in fiberglass and thermoplastic tanks. The manufacturer also received authorization to use blowers B and C, which provide equivalent operating performance to blower A. Finally, the system was scaled up from 500 gpd in increments of 250 gpd to allow flow of up to 1500 gpd using larger tanks, larger equipment, and larger blowers. The proposed language does not consider allowances for these authorized types of routine, common changes that are made within the industry on a continuous basis. In fact, if strictly interpreted, it will prevent such allowances for taking place at all. If implemented, this rule language would prohibit the use of many of the electromechanical treatment products regularly permitted and in use in Arizona today.

Another example is combined treatment and dispersal (CTD) systems such as Eljen GSF and Presby AES. This system category is tested for certification to a given standard using a certain wastewater loading per linear foot of proprietary product within the surrounding sand envelope of specific dimensions. The treated effluent discharged from the bottom of the system sand provides verification that standard-compliant treatment was achieved. CTD systems occupy a large footprint at certification testing centers, which are often challenged for available space (applicable to the Massachusetts Alternative Systems Testing Center in Buzzards Bay, MA), meaning that row lengths of proprietary product may be longer or shorter as tested than as constructed in the field on an actual residential system. The manufacturer may not have a choice in how the system is configured when tested due to space constraints. ADEQ currently allows row lengths and system arrangements that deviate from the tested arrangement, provided that the quantity of wastewater flow is less than the tested, demonstrated flow volume that produced acceptable water quality data. In addition to this concern, manufacturers are allowed scale up or scale down system size for varying flow volumes, which would not be allowed under the draft rule revision. Lastly, some certification organizations specifically state on their product listings that the certification does not include management methods for effluent discharged from the system. The Presby AES NSF International listing states: "While the Presby treatment system includes design

specifications similar to a dispersal field, the scope of the NSF/ANSI Standard 40 Class I Certification does NOT include management methods for the treated effluent discharged from the system.” The proposed language does not consider allowances for these authorized types of routine, common changes that are made within the industry. If implemented, this rule language would prohibit virtually all combined treatment and dispersal system layouts that are being used in Arizona today.

Please consider revising the language to account for how the treatment industry operates and how ADEQ has regulated this industry in the past such that markets that are functioning and serving the needs of Arizonans are not unnecessarily disrupted:

“The design and installation of an on-site wastewater treatment facility, including each component and technology used for treatment at the facility, must align with the technological configuration or magnitude of wastewater loading to the system and sequence described in the third-party testing certification report, or any authorized allowances and modifications, applicable to each component or technology used for treatment at a facility.”

## #068

Posted by **servin\_infiltrator** on **11/12/2021** at **2:43pm** [Comment ID: 180]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

§R18-9-A311. A. 5. requires a third-party certification test report that reflects the specific combination and configuration utilized in the design be submitted for approval. One of the most common instances of the use of a combination of technologies is the use of a disinfection unit in conjunction with an ATU. This requirement as currently worded has the potential to limit choices and significantly increase costs to the consumer. The State of Washington had similar language in rule and is currently working on revising this language due to the challenges encountered. Infiltrator Water Technologies strongly encourages ADEQ to revise or remove this language from the rule revision. Additionally, this section is vague regarding the component type. Disinfection units are tested and certified to the NSF/ANSI 46 (phased out of NSF/ANSI 46 and into NSF/ANSI 385 that will be complete in 2023) and wastewater treatment systems are tested and certified to the NSF/ANSI 40 and 245. The NSF/ANSI 46 test protocol is specific for the disinfection unit and is not dependent on the unit installed in conjunction with a specific secondary treatment system and states:

This section establishes requirements for UV devices used to irradiate and disinfect secondary treated residential wastewater to less than 200 fecal coliform organisms per 100 mL. It is intended for devices that deliver UV light radiation to secondary treated wastewater from small sources such as individual homes or similar capacity commercial sources and provide an exposure chamber for fecal coliform reduction



(hereafter referred to as UV disinfection devices). The rated capacities for UV disinfection devices considered in this section shall be between 1,514 L/d (400 gal/d) and 5,678 L/d (1,500 gal/d).

Suggested change:

“Except as specifically authorized in this Article or when each component has a third-party certification report, the Department shall not approve a design that utilizes two or more treatment technologies in series for a compounded treatment value unless the applicant demonstrates, using third-party test data, that the specific combination and configuration in the submitted design meets the performance parameters in the general permit for which the applicant submits a Notice of Intent to Discharge.”

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permitted under R18-9-E303 through R18-9-E322, the applicant shall apply the design requirements specified in R18-9-E302, except that the specific requirements for R18-9-E303 through R18-9-E323, as applicable, supersede requirements in R18-9-E302 if the rules conflict. If additional modifications are necessary and appropriate to ensure adequate treatment, the applicant may request review under R18-9-A312(G) to allow the Department to approve the application.

- B.** A person may install a septic tank and disposal works system described in R18-9-E302 as the sole method of wastewater treatment and disposal at a site if the site investigation conducted under R18-9-A310 indicates that no limiting condition identified under R18-9-A310(C) or R18-9-A310(D) exists at the site.
1. A person may install a seepage pit only in valley-fill sediments in a basin-and-range alluvial basin and only if the seepage pit performance test results meet the criteria specified in R18-9-A312(E).
  2. The person shall specify in the Notice of Intent to Discharge that no limiting conditions described in R18-9-A310(C) and (D) were identified at the site.
- C.** If any surface or subsurface limiting condition is identified in the site investigation report, an applicant may propose installation of a **modified version**<sup>071</sup> septic tank and disposal works system described in R18-9-E302 **as the sole method of wastewater treatment and disposal at a facility** only if:
1. The applicant submits information under R18-9-A312(G) that describes:
    - a. How the design of the septic tank and disposal works system specified in R18-9-E302 was modified to overcome limiting conditions;
    - b. How the modified design meets the criteria of R18-9-A312(G)(3); and
    - c. **A site specific The SAR under R18-9-A312(D)(2)(a) or (b), as applicable, after accou**<sup>070</sup> **for the modifications to the facility design; and**
  2. None of the following surface or subsurface limiting conditions are identified at the site:
    - a. An outcropping of rock that cannot be excavated or will impair the function of soil receiving the discharge exists in the intended location of the on-site wastewater treatment facility, as described in R18-9-A310(C)(2)(e);
    - b. The vertical separation distance from the bottom of the lowest point of the disposal works to the seasonal high water table is less than the minimum vertical separation distance, as described in R18-9-A310(D)(2)(c); or <sup>072</sup>
    - c. A subsurface condition that promotes accelerated downward movement of insufficiently treated wastewater as described in R18-9-A310(D)(2)(e).
- D.** If a site can accommodate a septic tank and disposal works system described in R18-9-E302, the applicant shall not install a treatment works or disposal works described in R18-9-E303 through R18-9-E322 unless the applicant submits a statement to the Department with the Notice of Intent to Discharge acknowledging the following:
1. The applicant is aware that although a septic tank and disposal works system described in R18-9-E302 is appropriate for the site, the applicant desires to install a treatment works or disposal works authorized under R18-9-E303 through R18-9-E322; and

## #069

Posted by **David\_Swanson** on **11/11/2021** at **5:08am** [Comment ID: 73]

*Agree: 0, Disagree: 0*

Is there a less complicated way to say that surface and subsurface limitations described in A310(C)(2)(a,b,c,d,f) and A310(D)(2)(a,c,d) can be addressed in the A312G variance process, for 302 systems?

## #070

Posted by **thomas.hanson** on **10/15/2021** at **6:04pm** [Comment ID: 27]

*Type: Question | Tags: Site-specific SAR*

*Agree: 0, Disagree: 0*

How does one account for design modifications with the SAR? Is this an adjusted SAR as in A312(D)(2)(c)?

## #071

Posted by **thomas.hanson** on **10/15/2021** at **6:01pm** [Comment ID: 26]

*Type: Suggestion | Tags: Site-specific SAR*

*Agree: 0, Disagree: 0*

"modified version of a"

## #072

Posted by **David\_Swanson** on **11/11/2021** at **4:51am** [Comment ID: 69]

*Agree: 0, Disagree: 0*

A311(C)(2)(b) should cite A310(D)(2)(b) not A310(D)(2)(c).

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

2. The applicant is aware that a treatment works or disposal works authorized under R18-9-E303 through R18-9-E322 may result in higher capital, operation, and maintenance costs than a septic tank and disposal works system described in R18-9-E302.

**R18-9-A312.Facility Design for Type 4 On-site Wastewater Treatment Facilities**

**A.** General design requirements. An applicant shall ensure that the person designing an on-site wastewater treatment facility:

1. Signs the design documents submitted as part of the Notice of Intent to Discharge to obtain a Construction Authorization, including plans, specifications, drawings, reports, and calculations; and
2. Locates and designs the on-site wastewater treatment facility project using good design judgment and relies on appropriate design methods and calculations.

**B.** Design considerations and flow determination. An applicant shall ensure that the person designing the on-site wastewater treatment facility shall:

1. Design the facility to satisfy a 20-year operational life;
2. Design the facility based on the provisions of one or more of the general permits in R18-9-E302 through R18-9-E322 for facilities with a design flow of less than 3000 gallons per day, and R18-9-E323 for facilities with a design flow of 3000 gallons per day to less than 24,000 gallons per day;
3. Design the facility based on the facility's design flow and wastewater characteristics as specified in **1073-A309(A)(5), (7), (10) and (11) and** R18-9-A309(B)(3);
4. For on-site wastewater treatment facilities permitted under R18-9-E303 through R18-9-E323, apply the following design requirements, as applicable:
  - a. Include the power source and power components in construction drawings if electricity or another type of power is necessary for facility operation;
  - b. If a hydraulic analysis is required under subsection (E), perform the analysis based on the location and dimensions of the bottom and sidewall surfaces of the disposal works that are identified in the design documentation;
  - c. Design components, piping, ports, seals, and appurtenances to withstand installation loads, internal and external operational loads, and buoyant forces. Design ports for resistance against movement, and cap or cover openings for protection from damage and entry by rodents, mosquitoes, flies, or other organisms capable of transporting a disease-causing organism;
  - d. Design tanks, liners, ports, seals, piping to and within the facility, and appurtenances for watertightness under all operational conditions;
  - e. Provide adequate storage capacity above high operating level to:
    - i. Accommodate a 24-hour power or pump outage, and
    - ii. Contain wastewater that is incompletely treated or cannot be released by the disposal works to the native soil;
  - f. If a fixed media process is used, provide in the construction drawings the media material, installation specification, media configuration, and wastewater loading rate of the media at the daily design flow;

# #073

Posted by **thomas.hanson** on **10/15/2021** at **6:09pm** [Comment ID: 28]

Type: Suggestion | Tags: Gray water

Agree: 0, Disagree: 0

(A)(5) is the requirement to connect to sewer. One would not be designing a facility if they are connecting to sewer.

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

- g. Provide a fail-safe wastewater control or operational process, if required by the general permit to prevent discharge of inadequately treated wastewater; and
- h. Reference design. If using a reference design on file with the Department, indicate the reference design within the information submitted with the Notice of Intent to Discharge.

**C. Setbacks.** The following setbacks apply unless the Department:

- 1. Specifies alternative setbacks under Article 3, Part E of this Chapter;
- 2. Approves a different setback under the procedure specified in subsection (G); or
- 3. Establishes a more stringent setback on a site- or area-specific basis to ensure compliance with water quality standards.

| <b>Features Requiring Setbacks</b>   | <b>Setback For An On-Site Wastewater Treatment Facility, Including Reserve Area (In Feet)</b> | <b>Special Provisions</b>  |
|--|---|--|
| 1. Building  | 10  | Includes porches, decks <b>(including pool decks)</b> , and steps (covered or uncovered), breezeways, roofed patios, carports, covered walks, and similar structures and appurtenances.  |
| 2. Property line shared with any adjoining lot or parcel not served by a common drinking water system* or an existing water well | 50  | A person may reduce the setback to a minimum of 5 feet from the property line if: <ul style="list-style-type: none"> <li>a. The owners of any affected undeveloped adjacent properties agree, as evidenced by an appropriately recorded document, to limit the location of any new well on their property to at least 100 feet from the proposed treatment works and primary and reserve disposal works; and</li> <li>b. The arrangements and documentation are approved by the Department.</li> </ul> |
| 3. All other property lines  | 5   | None   |
| 4. Public or private water supply well   | 100   | None   |

074

#074

Posted by **David\_Swanson** on **11/12/2021** at **4:47am** [Comment ID: 165]

*Agree: 0, Disagree: 0*

The justification provided in the preamble actually makes a good argument to increase the setback to a pool (excavation), #13 in this list, from 5 feet to 10 feet. Deck or not, it is likely water will splashed from the pool giving it an opportunity to pond around the perimeter, bathers will be present, they could possibly be walking around the perimeter of the pool, etc..

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

|  |     |   |
|--|-----|---|
| 5. Perennial or intermittent stream  | 100 | Measured horizontally from the high water line of the peak streamflow from a 10-year, 24-hour rainfall event.   |
| 6. Lake, reservoir, or canal   | 100 | Measured horizontally from the high water line from a 10-year, 24-hour rainfall event at the lake or reservoir and measured horizontally from the edge of the ca076   |
| 7. Drinking water intake from a surface water source (includes an open water body, downslope spring or a well tapping streamside saturated alluvium) | 200 | Measured horizontally from the on-site wastewater treatment facility to the structure or mechanism for withdrawing raw water such as a pipe inlet, grate, pump, intake or diversion box, spring box, well, or similar structure.  |
| 8. Wash or drainage easement with a drainage area of more than 20 acres  | 50  | Measured horizontally from the nearest edge of the defined natural channel bank or drainage easement boundary. A person may reduce the setback to 25 feet if natural or constructed erosion protection is approved by the appropriate flood plain administrator.  |
| 9. Water main or branch water line   | 10  | None  |
| 10. Domestic service water line (including domestic water holding tanks)   | 5   | Measured horizontally between the water line and the wastewater pipe, except that the following are allowed:<br>a. A water line may cross above a wastewater pipe if the crossing angle is between 45 and 90 degrees and the vertical separation distance is 1 foot or more.<br>b. A water line may parallel a wastewater pipe with a horizontal separation distance of 1 foot to 5 feet if the bottom of the water line is 1 foot or more above the top of the |



## #075

Posted by **Doug Disbrow** on **10/07/2021** at **12:42pm** [Comment ID: 7]

*Type: Suggestion | Tags: Setback, Other*

*Agree: 2, Disagree: 0*

A setback to lined and unlined ponds is needed.  
with definition of what is a acceptable lining,  
(i.e. clay; plastic and thickness of lining)  
also include stock ponds.

## #076

Posted by **thomas.hanson** on **10/15/2021** at **6:12pm** [Comment ID: 29]

*Type: Question | Tags: Canal*

*Agree: 0, Disagree: 0*

Previous guidance from ADEQ is allowed closer installation of facilities when the system is installed below the elevation of the bottom of the canal or when berming is placed to prevent sewage overflows from entering the canal. Has this changed?

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

|  |    |  |
|--|----|--|
|  |    | wastewater pipe and is in a separate trench or on a bench in the same trench.  |
| 11. Downslopes or cut banks greater than 15 percent, culverts, and ditches from: |    |  |
| a. Treatment works components  | 10 | Measured horizontally from the bottom of the treatment works component to the closest point of daylighting on the surface.                                       |
| b. Trench, bed, chamber technology, or gravelless trench with:                   |    | Measured horizontally from the bottom of the lowest point of the disposal pipe or drip lines, as applicable, to the closest point of daylighting on the surface. |
| i. No limiting subsurface condition specified in R18-9-A310(D)(2),               | 20 |  |
| ii. A limiting subsurface condition.   | 50 |  |
| c. Subsurface drip lines.  | 3  | Measured horizontally from the bottom of the lowest point of the disposal pipe or drip lines, as applicable, to the closest point of daylighting on the surface. |

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

|  |     |   |
|--|-----|---|
| 12. Driveway   | 5   | Measured horizontally to the nearest edge of an on-site wastewater treatment facility excavation. A person may place a properly reinforced and protected wastewater treatment facility, except for disposal works, at any location relative to a driveway if access openings, risers, and covers carry the design load and are protected from inflow. |
| 13. Swimming pool excavation   | 5   | Except if soil loading or stability concerns indicate the need for a greater separation distance.   |
| 14. Easement (except drainage easement)  | 5   | None  |
| 15. Earth fissures   | 100 | None  |
| * A “common drinking water system” means a system that currently serves or is under legal obligation to serve the property and may include a drinking water utility, a well-sharing agreement, or other viable water supply agreement. |     |   |

**D. Soil absorption rate (SAR) and disposal works sizing.**

1. An applicant shall determine the soil absorption area by dividing the design flow by the applicable soil absorption rate. If soil characterization and percolation test methods yield different SAR values or if multiple applications of the same approach yield different values, the designer of the disposal works shall use the lowest SAR value unless a higher SAR value is proposed and justified to the Department’s satisfaction in the Notice of Intent to Discharge.
2. The SAR used to calculate disposal works size for systems described in R18-9-E302 is as follows:
  - a. The SAR by percolation testing as described in R18-9-A310(F) or (G), as applicable, is determined as follows:

| <b>Percolation Rate from Percolation Test (minutes per inch)</b> | <b>SAR, Trench, Chamber, and Pit (gal/day/ft<sup>2</sup>)</b> | <b>SAR, Bed (gal/day/ft<sup>2</sup>)</b> |
|--|---|--|
| Less than 1.00   | A site specific SAR is required                               | A site specific SAR is required          |

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

|                        |                                 |                                 |
|------------------------|---------------------------------|---------------------------------|
| 1.00 to less than 3.00 | 1.20                            | 0.93                            |
| 3.00                   | 1.10                            | 0.73                            |
| 4.00                   | 1.00                            | 0.67                            |
| 5.00                   | 0.90                            | 0.60                            |
| 7.00                   | 0.75                            | 0.50                            |
| 10.0                   | 0.63                            | 0.42                            |
| 15.0                   | 0.50                            | 0.33                            |
| 20.0                   | 0.44                            | 0.29                            |
| 25.0                   | 0.40                            | 0.27                            |
| 30.0                   | 0.36                            | 0.24                            |
| 35.0                   | 0.33                            | 0.22                            |
| 40.0                   | 0.31                            | 0.21                            |
| 45.0                   | 0.29                            | 0.20                            |
| 50.0                   | 0.28                            | 0.19                            |
| 55.0                   | 0.27                            | 0.18                            |
| 55.0+ to 60.0          | 0.25                            | 0.17                            |
| 60.0+ to 120           | 0.20                            | 0.13                            |
| Greater than 120       | A site-specific SAR is required | A site-specific SAR is required |

| <u>Percolation Rate from Percolation Test (minutes per inch)</u> | <u>SAR, Trench, Chamber, and Pit (gal/day/ft<sup>2</sup>)</u>   | <u>SAR, Bed (gal/day/ft<sup>2</sup>)</u> |
|--|---|--|
| <u>Less than 1.00</u>  | <u>Indicative of a subsurface limiting condition under (D)(2). A design under either A311(A)(1) or (C) is required.</u> |  |

078 077 079

## #077

Posted by **Lou Brown** on **11/12/2021** at **7:26pm** [Comment ID: 203]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

SARs and SARA's are currently being discussed in one of the TWGs. There should be NO CHANGES to this until the TWG has given it's review. This is a major change and should wait for the Phase 2 changes

## #078

Posted by **colin.bishop@anua-us.com** on **11/12/2021** at **5:44pm** [Comment ID: 186]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Less than 1mpi historically has been considered a soil where water movement is "too fast". This creates issue of effluent not being treated to a minimum standard. Less than 1mpi and over 60mpi = alternative system. 311 is for conventional. Less than 1mpi may or may not be an issue, depending on site conditions on the property and in the surrounding area. The design must simply address the limiting conditions as well as mitigating the effects of rapid vertical movement of water.

This language won't get there

## #079

Posted by **Jake Garrett** on **11/11/2021** at **2:50pm** [Comment ID: 115]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

This language is burdensome and perc tests are unwieldy, inaccurate and costly at both ends of the spectrum. Rather than attempt to produce meaningful loading rates, why not use published data to fill in both ends of the chart or specify that percolation testing, published data or other testing methods may be used to provide values at both ends of the chart.

DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.

|                               |  |             |
|-------------------------------|--|-------------|
| <u>1.00 to less than 3.00</u> | <u>1.20</u>  | <u>0.93</u> |
| <u>3.00</u>                   | <u>1.10</u>  | <u>0.73</u> |
| <u>4.00</u>                   | <u>1.00</u>  | <u>0.67</u> |
| <u>5.00</u>                   | <u>0.90</u>  | <u>0.60</u> |
| <u>7.00</u>                   | <u>0.75</u>  | <u>0.50</u> |
| <u>10.0</u>                   | <u>0.63</u>  | <u>0.42</u> |
| <u>15.0</u>                   | <u>0.50</u>  | <u>0.33</u> |
| <u>20.0</u>                   | <u>0.44</u>  | <u>0.29</u> |
| <u>25.0</u>                   | <u>0.40</u>  | <u>0.27</u> |
| <u>30.0</u>                   | <u>0.36</u>  | <u>0.24</u> |
| <u>35.0</u>                   | <u>0.33</u>  | <u>0.22</u> |
| <u>40.0</u>                   | <u>0.31</u>  | <u>0.21</u> |
| <u>45.0</u>                   | <u>0.29</u>  | <u>0.20</u> |
| <u>50.0</u>                   | <u>0.28</u>  | <u>0.19</u> |
| <u>55.0</u>                   | <u>0.27</u>  | <u>0.18</u> |
| <u>55.0+ to 60.0</u>          | <u>0.25</u>  | <u>0.17</u> |
| <u>60.0+ to 120</u>           | <u>0.20</u>  | <u>0.13</u> |
| <u>Greater than 120</u>       | Indicative of a subsurface limiting condition under (D)(2). A design under either A311(A)(1) or (C) is required. |             |

- b. The SAR using the soil evaluation method described in R18-9-A310(E) is determined by answering the questions in the following table. The questions are read in sequence starting with “A.” The first “yes” answer determines the SAR. A seepage pit is required to determine percolation rate under the procedure described in R18-9-A310(G) and would only use this table to augment the percolation test results, if appropriate.

| Sequence of Soil Characteristics Questions  | SAR, Trench, Chamber, and Pit gal/day/ft <sup>2</sup> | SAR, Bed gal/day/ft <sup>2</sup> |
|---|---|----------------------------------|
| A. Is the horizon gravelly coarse sand or coarser?  | A site specific SAR is required                       | A site specific SAR is required  |
| B. Is the structure of the horizon moderate or strongly platy?  | A site specific SAR is required                       | A site specific SAR is required  |
| C. Is the texture of the horizon sandy clay loam, clay loam, silty clay loam, or finer and the soil structure weak platy? | A site specific SAR is required                       | A site specific SAR is required  |

## #080

Posted by **colin.bishop@anua-us.com** on **11/12/2021** at **5:51pm** [Comment ID: 189]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

It appears this draft is "gutting" soil science methods in favor of perc tests. Also, assigning site specific SARs is an appropriate practice on difficult sites that may have several factors that need to be considered.

The other option is to add additional SARs to the tables to address either "fast" or "slow" soils

## #081

Posted by **Lou Brown** on **11/12/2021** at **7:31pm** [Comment ID: 205]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

SARs, SARA's & soil characterization methods are currently being discussed in one of the TWGs. There should be NO CHANGES to this until the TWG has given it's review. This is a major change and should wait for the Phase 2 changes.

## #082

Posted by **colin.bishop@anua-us.com** on **11/12/2021** at **5:48pm** [Comment ID: 188]

*Type: Question*

*Agree: 0, Disagree: 0*

The USEPA has discouraged the use of seepage pits with sewage or septic tank effluent for years and years. The proposed language in Phase 1 appears to cause issues and potentially dollars for the more technically sound parts of the rule. Why do seepage pits continue to get a "pass" environmentally? California, Hawaii, and New York are all now requiring systems that reduce nitrogen in order to use seepage pits.

## #083

Posted by **Lou Brown** on **11/12/2021** at **7:27pm** [Comment ID: 204]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

SARs and SARA's are currently being discussed in one of the TWGs. There should be NO CHANGES to this until the TWG has given it's review. This is a major change and should wait for the Phase 2 changes.

## #084

Posted by **colin.bishop@anua-us.com** on **11/12/2021** at **5:45pm** [Comment ID: 187]

*Type: Suggestion*

*Agree: 1, Disagree: 0*

Less than 1mpi historically has been considered a soil where water movement is "too fast". This creates issue of effluent not being treated to a minimum standard. Less than 1mpi and over 60mpi = alternative system. 311 is for conventional. Less than 1mpi may or may not be an issue, depending on site conditions on the property and in the surrounding area. The design must simply address the limiting conditions as well as mitigating the effects of rapid vertical movement of water.

This language won't get there

**#085**

Posted by **Jake Garrett** on **11/11/2021** at **2:51pm** [Comment ID: 116]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

This language is burdensome and perc tests are unwieldy, inaccurate and costly at both ends of the spectrum. Rather than attempt to produce meaningful loading rates, why not use published data to fill in both ends of the chart or specify that percolation testing, published data or other testing methods may be used to provide values at both ends of the chart.



**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

|   |                                 |                                 |
|---|---------------------------------|---------------------------------|
| D. Is the moist consistency stronger than firm or any cemented class?                                       | A site specific SAR is required | A site specific SAR is required |
| E. Is the texture sandy clay, clay, or silty clay of high clay content and the structure massive or weak?   | A site specific SAR is required | A site specific SAR is required |
| F. Is the texture sandy clay loam, clay loam, silty clay loam, or silty loam and the structure massive?     | A site specific SAR is required | A site specific SAR is required |
| G. Is the texture of the horizon loam or sandy loam and the structure massive?                              | 0.20                            | 0.13                            |
| H. Is the texture sandy clay, clay, or silty clay of low clay content and the structure moderate or strong? | 0.20                            | 0.13                            |
| I. Is the texture sandy clay loam, clay loam, or silty clay loam and the structure weak?                    | 0.20                            | 0.13                            |
| J. Is the texture sandy clay loam, clay loam, or silty clay loam and the structure moderate or strong?      | 0.40                            | 0.27                            |
| K. Is the texture sandy loam, loam, or silty loam and the structure weak?                                   | 0.40                            | 0.27                            |
| L. Is the texture sandy loam, loam, or silt loam and the structure moderate or strong?                      | 0.60                            | 0.40                            |
| M. Is the texture fine sand, very fine sand, loamy fine sand, or loamy very fine sand?                      | 0.40                            | 0.27                            |
| N. Is the texture loamy sand or sand?   | 0.80                            | 0.53                            |
| O. Is the texture coarse sand?  | 1.20                            | A site specific SAR is required |

| <u>Sequence of Soil Characteristics Questions</u>   | <u>SAR, Trench, Chamber, and Pit</u><br><u>gal/day/ft<sup>2</sup></u>  | <u>SAR, Bed</u><br><u>gal/day/ft<sup>2</sup></u> |
|---|--|--|
| A. Is the horizon gravelly coarse sand or coarser?  | <p>Indicative of a subsurface limiting condition under (D)(2). One of the following is required:</p> <p>i. Conduct a percolation test under R18-9-A310(F) and follow the instructions and table in A312(D)(2)(a); or</p> |  |
| B. Is the structure of the horizon moderate or strongly platy?  |  |  |
| C. Is the texture of the horizon sandy clay loam, clay loam, silty clay loam, or finer and the soil structure weak platy? |  |  |

## #086

Posted by **Lou Brown** on **11/12/2021** at **7:33pm** [Comment ID: 206]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

SARs, SARA's & soil characterization methods are currently being discussed in one of the TWGs. There should be NO CHANGES to this until the TWG has given it's review. This is a major change and should wait for the Phase 2 changes

## #087

Posted by **colin.bishop@anua-us.com** on **11/12/2021** at **5:59pm** [Comment ID: 190]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Assigning site specific SARs is an appropriate practice on difficult sites that may have several factors that need to be considered. The other option is to add additional SARs to the tables to address either "fast" or "slow" soils

## #088

Posted by **Doug Disbrow** on **11/10/2021** at **1:40pm** [Comment ID: 57]

*Type: Suggestion*

*Agree: 1, Disagree: 0*

Having done soil test and perc test for 15 years I see this as a complication to the site evaluation that will only cost the property owner twice as much for additional testing, specifically in massive clay soils. That will result at the same results of a site-specific SAR required at the "Greater than 120 min" row. I do not believe there is justification for this change. This table has worked well except for a couple of wording glitches.

## #089

Posted by **Doug Disbrow** on **11/12/2021** at **7:44am** [Comment ID: 168]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

After the conversation at the last Design work group meeting, I would like to add; I understand the intent of this change for the site specific SAR. But requiring a perc test will be greatly burdensome to the customer both financially and logistically. The perc test will not work is massive clay soil which we deal with quit frequently. I propose that this change be withdrawn from Phase 1 for further study and research. I think we can come up with specific sar numbers that are reasonable and safe. There are in state engineers and regulators that have been dealing with these problem soils for at least 15 years and should be able to add valuable content to this subject.

## #090

Posted by **Jake Garrett** on **11/11/2021** at **2:49pm** [Comment ID: 114]

*Type: Suggestion*

*Agree: 1, Disagree: 0*

This language is burdensome and perc tests are unwieldy, inaccurate and costly at both ends of the spectrum. Rather than attempt to produce meaningful loading rates, why not use published data to fill in both ends of the chart or specify that percolation testing, published data or other testing methods may be used to provide values at both ends of the chart.

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

|   |  |   |
|---|--|---|
| D. Is the moist <u>consistence</u> stronger than firm or any cemented class?                                  | ii. Submit a design pursuant to A311(A)(1) or (C), as appropriate. |   |
| E. Is the texture sandy clay, clay, or silty clay of high clay content and the structure massive or weak?     |  |   |
| F. Is the texture sandy clay loam, clay loam, silty clay loam, or <u>silt</u> loam and the structure massive? |  |   |
| G. Is the texture of the horizon loam or sandy loam and the structure massive?                                | 0.20   | 0.13  |
| H. Is the texture sandy clay, clay, or silty clay of low clay content and the structure moderate or strong?   | 0.20   | 0.13  |
| I. Is the texture sandy clay loam, clay loam, or silty clay loam and the structure weak?                      | 0.20   | 0.13  |
| J. Is the texture sandy clay loam, clay loam, or silty clay loam and the structure moderate or strong?        | 0.40   | 0.27  |
| K. Is the texture sandy loam, loam, or silt loam and the structure weak?                                      | 0.40   | 0.27  |
| L. Is the texture sandy loam, loam, or silt loam and the structure moderate or strong?                        | 0.60   | 0.40  |
| M. Is the texture fine sand, very fine sand, loamy fine sand, or loamy very fine sand?                        | 0.40   | 0.27  |
| N. Is the texture loamy sand or sand?   | 0.80   | 0.53  |
| O. Is the texture coarse sand?  | 1.20   | Indicative of a subsurface limiting condition under (D)(2). One of the following is required:<br>i. Conduct a percolation test under R18-9-A310(F) and follow the instructions and table in A312(D)(2)(a); or<br>ii. Submit a design pursuant to A311(A)(1) or (C), as appropriate. |

c. If the percolation rate determined under R18-9-A310(F) or (G), whichever is applicable, is a value that lies between two consecutive percolation rate values listed in subsection (2)(a) above, the applicant must use the higher of the two listed percolation rates to obtain the most conservative SAR.

## #091

Posted by **colin.bishop@anua-us.com** on **11/12/2021** at **6:02pm** [Comment ID: 192]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Same comments as previously stated relating to "fast" soils

## #092

Posted by **Jake Garrett** on **11/11/2021** at **2:52pm** [Comment ID: 117]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

This language is burdensome and perc tests are unwieldy, inaccurate and costly at both ends of the spectrum. Rather than attempt to produce meaningful loading rates, why not use published data to fill in both ends of the chart or specify that percolation testing, published data or other testing methods may be used to provide values at both ends of the chart.

## #093

Posted by **Jake Garrett** on **11/11/2021** at **3:27pm** [Comment ID: 120]

*Agree: 0, Disagree: 0*

In the Bulletin 12 days the practice of rounding up the the next slower perc rate was taught and utilized. This practice should be continued as it is conservative in a test that is not based on absolute readings but rather a perc testers best visual reading of a meniscus against a line.

## #094

Posted by **colin.bishop@anua-us.com** on **11/12/2021** at **6:01pm** [Comment ID: 191]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

The proposal to go to 311 does not address these specific soil conditions. These soils put one into an alternative system, not conventional.

I would suggest leaving all the soil tables and SARs unchanged in Phase 1.

## #095

Posted by **Jake Garrett** on **11/11/2021** at **3:28pm** [Comment ID: 121]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

This language is burdensome and perc tests are unwieldy, inaccurate and costly at both ends of the spectrum. Rather than attempt to produce meaningful loading rates, why not use published data to fill in both ends of the chart or specify that percolation testing, published data or other testing methods may be used to provide values at both ends of the chart.

## #096

Posted by **Jake Garrett** on **11/11/2021** at **3:36pm** [Comment ID: 122]

*Type: Question*

*Agree: 0, Disagree: 0*

What about Silt clay loam?

## #097

Posted by **Jake Garrett** on **11/11/2021** at **3:38pm** [Comment ID: 125]

*Type: Question*

*Agree: 0, Disagree: 0*

What about Silt clay loam?

## #098

Posted by **Jake Garrett** on **11/11/2021** at **3:37pm** [Comment ID: 123]

*Type: Question*

*Agree: 0, Disagree: 0*

What about Silt clay loam?

## #099

Posted by **Jake Garrett** on **11/11/2021** at **3:37pm** [Comment ID: 124]

*Type: Question*

*Agree: 0, Disagree: 0*

What about Silt clay loam?

## #100

Posted by **Jake Garrett** on **11/11/2021** at **3:39pm** [Comment ID: 126]

*Type: Question*

*Agree: 0, Disagree: 0*

What about low clay content?

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

3. For an on-site wastewater treatment facility described in a general permit other than R18-9-E302, the SAR is dependent on the ability of the facility to reduce the level of TSS and BOD<sub>5</sub> and is calculated using the following formula:

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- a. "SAR<sub>a</sub>" is the adjusted soil absorption rate for disposal works design in gallons per day per square foot,
  - b. "TSS" is the total suspended solids in wastewater delivered to the disposal works in milligrams per liter,
  - c. "BOD<sub>5</sub>" is the five-day biochemical oxygen demand of wastewater delivered to the disposal works in milligrams per liter, and
  - d. "SAR" is the soil absorption rate for septic tank effluent determined by the subsurface characterization method described in R18-9-A310.
4. An applicant shall ensure that the facility is designed so that the area of the intended installation is large enough to allow for construction of the facility and for future replacement or repair and is at least as large as the following:
- a. For a dwelling, a primary area for the disposal works sized according to subsection (D)(1) and a reserve area of 100 percent of the primary area, excluding the footprint of the treatment works. A reserve area is not required for a lot in a subdivision approved before 1974 if the lot conforms to its original approved configuration;
  - b. For other than a dwelling, a primary area for the disposal works sized according to subsection (D)(1) and a reserve area of 100 percent of the primary area, excluding the footprint of the treatment works.
5. An applicant shall ensure that the subsurface disposal works is designed to achieve the design flow established in R18-9-A309(B)(3) through proper hydraulic function, including conditions of seasonally cold and wet weather.

**E. Vertical separation distances.**

1. Minimum vertical separation to the seasonal high water table for a disposal works described in R18-9-E302 receiving septic tank effluent. For a disposal works described in R18-9-E302 receiving septic tank effluent at a facility where the septic tank and disposal system described in R18-9-E302 is the sole method of treatment and disposal of wastewater, the minimum vertical separation distance between the lowest point in the disposal works and the seasonal high water table is dependent on the soil absorption rate and is determined as follows:

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| <b>Soil Absorption Rate<br/>(gallons per day per square foot)</b> | <b>Minimum Vertical Separation Between The<br/>Bottom Of The Disposal Works And The<br/>Seasonal High Water Table<br/>(feet)</b> |
|---|--|
|---|--|

## #101

Posted by **Lou Brown** on **11/12/2021** at **7:35pm** [Comment ID: 207]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Vertical separation distances is also another topic that is being discussed in a TWG. There should be NO CHANGES until the TWG has presented it's review.

## #102

Posted by **Jake Garrett** on **11/11/2021** at **4:37pm** [Comment ID: 128]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

It would also be advisable to limit the TYSS & BOD in the equation to the rule values of the treatment technology rather than the TSS & BOD numbers now provided in the PPL Listing Document.

## #103

Posted by **Jake Garrett** on **11/11/2021** at **2:56pm** [Comment ID: 118]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

The values produced by this formula are too high!! This formula must be returned to the 2001 version and capped at the application rate to sand.



**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

| Trench and Chamber | Bed            | Seepage Pit    | Trench, Chamber, and Bed             | Seepage Pit |
|--------------------|----------------|----------------|--------------------------------------|-------------|
| 1.20+              | 0.93+          | 1.20+          | Not allowed for septic tank effluent | Not Allowed |
| 0.63+ to 1.20      | 0.42 to 0.93   | 0.63+ to 1.20  | 10                                   | 60          |
| 0.20 to 0.63       | 0.13 to 0.42   | 0.36 to 0.63   | 5                                    | 60          |
| Less than 0.20     | Less than 0.13 | Less than 0.36 | Not allowed for septic tank effluent | Not Allowed |

2. Minimum vertical separation to the seasonal high water table for treatment and disposal works **technology** described in R18-9-E303 through R18-9-E322. If the minimum vertical separation distance to the seasonal high water table for a disposal works receiving septic tank effluent specified in subsection (E)(1) is not met, the applicant shall comply with the following:
- a. Employ one or more technologies described in R18-9-E303 through R18-9-E322 to achieve a reduced concentration of harmful microorganisms, expressed as total coliform in colony forming units per 100 milliliters (cfu/100 ml) delivered to native soil at the bottom of the disposal works. The applicant shall use the following table to select works that achieve a reduced total coliform concentration corresponding to the available vertical separation distance between the bottom of the disposal works and the seasonal high water table:

| Available Vertical Separation Distance Between the Bottom of The Disposal Works and the Seasonal High Water Table (feet) |                         | Maximum Allowable Total Coliform Concentration, 95 <sup>th</sup> Percentile, Delivered to Natural Soil by the Disposal Works (Log <sub>10</sub> of coliform concentration in cfu per 100 milliliters) |
|--|-------------------------|---|
| For SAR*, 0.20 to 0.63   | For SAR*, 0.63+ to 1.20 |   |
| 5  | 10                      | 8**   |
| 4  | 8                       | 7   |
| 3.5  | 7                       | 6   |

## #104

Posted by **colin.bishop@anua-us.com** on **11/12/2021** at **6:06pm** [Comment ID: 193]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Adding the word "technologies" is not needed and possibly more confusing due to definitions of "treatment works" and "disposal works"

## #105

Posted by **thomas.hanson** on **10/15/2021** at **6:30pm** [Comment ID: 30]

*Type: Suggestion | Tags: Other, seasonal water table separation*

*Agree: 0, Disagree: 0*

While probably not in the scope of change, the below table of Log 8 (standard conventional effluent) allows seepage pit disposal to have 10' separation from seasonal high water with no to little treatment.

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

|     |   |      |
|-----|---|------|
| 3   | 6 | 5    |
| 2.5 | 5 | 4    |
| 2   | 4 | 3    |
| 1.5 | 3 | 2    |
| 1   | 2 | 1    |
| 0   | 0 | 0*** |

\* Soil absorption rate from percolation testing or soil characterization, in gallons per square foot per day.

\*\* Nominal value for a standard septic tank and disposal field ( $10^8$  colony forming units per 100 ml).

\*\*\* Nominally free of coliform bacteria.

- b. Include a hydraulic analysis with the Notice Of Intent To Discharge, based on the dimensions of the absorption surfaces specified in R18-9-A312(B)(4)(b), showing that the soil is sufficiently permeable to conduct wastewater downward and laterally without surfacing for the site conditions at the disposal works.
  3. Vertical separation from a subsurface limiting condition described in R18-9-A310(D)(2)(d) that may cause or contribute to surfacing of wastewater. If a subsurface limiting condition described in R18-9-A310(D)(2)(d) exists at the location of the disposal works, the applicant shall ensure that the design for the on-site wastewater treatment facility meets one of the following:
    - a. A zone of acceptable native soil with the following characteristics exists between the bottom of the disposal works and the top of the subsurface limiting condition:
      - i. The zone of soil is at least 4 feet thick, and
      - ii. The zone of soil is sufficiently permeable to conduct wastewater released from the disposal works vertically downward and laterally without causing surfacing of the wastewater as documented by a hydraulic analysis submitted with the Notice of Intent to Discharge that is based on the dimensions of the absorption surfaces specified in R18-9-A312(B)(4)(b);
    - b. The subsurface limiting condition is thin enough to allow placement of a disposal works into acceptable native soil beneath the subsurface limiting condition if the following criteria are met:
      - i. The bottom of the subsurface limiting condition is not deeper than 10 feet below the land surface, and
      - ii. The vertical separation distance from the bottom of the disposal works to the seasonal high water table complies with subsection (E)(1) or (2), as applicable; or
    - c. If the disposal works is placed above the subsurface limiting condition and the depth to the subsurface limiting condition is less than 4 feet below the bottom of the disposal works, the design for the on-site wastewater treatment facility shall comply with all of the following:
      - i. Employ one or more technologies described in R18-9-E303 through R18-9-E322 to achieve a reduced concentration of harmful microorganisms, expressed as total coliform in colony forming

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

units per 100 milliliters (cfu/100 ml), delivered to acceptable native soil at the bottom of the disposal works, as follows:

| Available Vertical Separation Distance from the Bottom of the Disposal Works to the Subsurface Limiting Condition (feet) | Maximum Allowable Total Coliform Concentration, 95 <sup>th</sup> Percentile, Delivered to Acceptable Native Soil by the Disposal Works (Log <sub>10</sub> of coliform concentration in cfu per 100 milliliters) |
|--|---|
| 3.5  | 7   |
| 3  | 6   |
| 2.5  | 5   |
| 2  | 4   |
| 1.5  | 0*  |
| 1  | 0*  |
| 0.5  | 0*  |
| 0  | 0*  |

\* Nominally free of coliform bacteria.

- ii. If the SAR of the native soil into which the disposal works is placed is not more than 0.63 gallons per day per square foot, include a hydraulic analysis with the Notice of Intent to Discharge, based on the location and dimensions of the absorption surfaces specified in R18-9-A312(B)(4)(b), showing that the soil is sufficiently permeable to conduct wastewater vertically downward and laterally without surfacing for the site conditions at the disposal works; and
  - iii. If a disinfection device under R18-9-E320 is proposed but is not used with surface disposal of wastewater under R18-9-E321 or “Category A” drip irrigation disposal under R18-9-E322, provide a justification with the Notice of Intent to Discharge stating why the selected type of disposal works is favored over disposal under R18-9-E321 or R18-9-E322.
4. Vertical separation from a subsurface limiting condition described in R18-9-A310(D)(2)(e) that promotes accelerated downward movement of insufficiently treated wastewater. If a subsurface limiting condition described in R18-9-A310(D)(2)(e) exists at the location of the proposed disposal works, the applicant shall ensure that the design for the on-site wastewater treatment facility meets one of the following:

## #106

Posted by **Jake Garrett** on **11/11/2021** at **4:54pm** [Comment ID: 131]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

ADEQ must provide a minimum number of accepted methods for use in calculating a hydraulic analysis. The list should not be considered to be the only approved methods, just some of them.

## #107

Posted by **David Swanson** on **11/11/2021** at **5:57am** [Comment ID: 93]

*Agree: 0, Disagree: 0*

A312(E)(3)(a)(ii) should be worded similarly to ii for consistency.

- Include a hydraulic analysis with NOID to ensure soil is .....

## #108

Posted by **Jake Garrett** on **11/11/2021** at **4:46pm** [Comment ID: 129]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

These 0\* Log numbers should return to the chart in the 2001 rule to allow for disinfection reduction of log and associated MVS requirement. The log values should continue 3, 2, 1. The table as is is overly burdensome and unnecessarily restrictive. This error in the 2005 rule MUST BE CORRECTED.

## #109

Posted by **David Swanson** on **11/12/2021** at **6:08am** [Comment ID: 166]

*Agree: 0, Disagree: 0*

This table should be completed to assist designers OR the asterisk disclaimer should say "Treatment to nominally free of coliform is required ." A Tyler LLR analysis, to ensure hydraulic performance, can be applied to soils as shallow as 8" so it seems like at least the 1.5 and 1 foot distances should have a log associated.

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

- a. A zone of naturally occurring soil with the following characteristics exists between the bottom of the disposal works and the top of the subsurface limiting condition:
    - i. The zone of soil is at least 2 feet thick, and
    - ii. The SAR of the soil is not less than 0.20 gallons per day per square foot nor more than 1.20 gallons per day per square foot; or
  - b. The on-site wastewater treatment facility employs one or more technologies described in R18-9-E303 through R18-9-E322 that produces treated wastewater that meets a total coliform concentration of 1,000,000 (Log **113** colony forming units per 100 milliliters, 95<sup>th</sup> percentile).
- F. Materials and manufactured system components.**
1. Materials. An applicant shall use aggregate if no specification for disposal works material is provided in this Article.
  2. Manufactured components. If manufactured components are used, an applicant shall design, install, and operate the on-site wastewater treatment facility following the manufacturer's specifications. The applicant shall ensure that:
    - a. Treatment and containment components, mechanical equipment, instrumentation, and controls have monitoring, inspection, access and cleanout ports or covers, as appropriate, for monitoring and service;
    - b. Treatment and containment components, pipe, fittings, pumps, and related components and controls are durable, watertight, structurally sound, and capable of withstanding stress from installation and operational service; and
    - c. Distribution lines for disposal works are constructed **of clay tile laid with open joints, perforated clay pipe, perforated high density polyethylene pipe, perforated ABS pipe, or perforated PVC pipe, or of** **pipe material**, if the pipe is suitable for wastewater disposal use and sufficient openings are available for distribution of the wastewater into the trench or bed area. **110**
  3. Electronic components. When electronic components are used, the applicant shall ensure that:
    - a. The components are compliant with the electrical code encompassed in the local building codes applicable in the county in which the facility is installed.** **112** **111**
    - a.b.** Instructions and a wiring diagram are mounted on the inside of a control panel cover;
    - b.c.** The control panel is equipped with a multimode operation switch, red alarm light, buzzer, and reset button;
    - e.d.** The multimode operation switch operates in the automatic position for normal system operation; and
    - d.e.** An anomalous condition is indicated by a glowing alarm light and sounding buzzer. The continued glowing of the alarm light after pressing the reset button shall signal the need for maintenance or repair of the system at the earliest practical opportunity.
  4. If a conflict exists between this Article and the manufacturer's specifications, the requirements of this Article apply. Except for the requirements in subsection (D) and (E), which always apply, if the conflict voids a manufacturer's warranty, the applicant may submit a request under subsection (G) justifying use of the manufacturer's specifications.

## #110

Posted by **thomas.hanson** on **10/15/2021** at **6:33pm** [Comment ID: 31]

*Type: Suggestion | Tags: Pipe material*

*Agree: 0, Disagree: 0*

"or other durable pipe material,"

## #111

Posted by **colin.bishop@anua-us.com** on **11/12/2021** at **6:28pm** [Comment ID: 194]

*Type: Question*

*Agree: 0, Disagree: 0*

What is the intent? Is this referring to incoming power supply? Total wiring of system? Manufactured components that are already UL listed?

What is the problem to be solved by this language?

## #112

Posted by **Jake Garrett** on **11/11/2021** at **4:59pm** [Comment ID: 132]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

These words should not be applied to components supplied by proprietary product manufacturers as the supplied electric components a part of a proprietary warrantied product.

## #113

Posted by **David\_Swanson** on **11/12/2021** at **1:14pm** [Comment ID: 175]

*Agree: 0, Disagree: 0*

Not in the scope of this change but doesn't Log 6 seem like a low treatment level given the limitations it's meant to overcome?

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

- G. Alternative design, setback, installation, or operational features. When an applicant submits a Notice of Intent to Discharge, the applicant may request that the Department review and approve a feature of improved or alternative technology, design, setback, installation, or operation that differs from a general permit requirement in this Article. Designs incorporating alternative features already approved in a current listing on the “proprietary and other reviewed product list” pursuant to R18-9-A309(E) do not need additional approval under this subsection for those specific alternative features already approved in the proprietary products listing 116'15
1. The applicant shall make the request for an improved or alternative feature of technology, design, setback, installation, or operation on a form provided by the Department and include:
    - a. A description of the requested change;
    - b. A citation to the applicable feature or technology, design, setback, installation, or operational requirement for which the change is being requested; and
    - c. Justification for the requested change, including any necessary supporting documentation.
  2. The applicant shall submit the appropriate fee specified under 18 A.A.C. 14 for each requested change. For purposes of calculating the fee, a requested change that is applied multiple times in a similar manner throughout the facility is considered a single request if submitted for concurrent review.
  3. The applicant shall provide sufficient information for the Department to determine that the change achieves equal or better performance compared with the general permit requirement, or addresses site or system conditions more satisfactorily than the requirements of this Article.
  4. The Department shall review and may approve the request for change.
  5. The Department shall deny the request for the change if the change will adversely affect other permittees or cause or contribute to a violation of an Aquifer Water Quality Standard.
  6. The Department shall deny the request for the change if the change:
    - a. Fails to achieve equal or better performance compared to the general permit requirement;
    - b. Fails to address site or system conditions more satisfactorily than the general permit requirement;
    - c. Is insufficiently justified based on the information provided in the submittal;
    - d. Requires excessive review time, research, or specialized expertise by the Department to act on the request; or
    - e. For any other justifiable cause.
  7. The Department may approve a reduced setback for a facility authorized to discharge under one or more of the general permits in R18-9-E303 through R18-9-E327, R18-9-E302 through R18-9-E323, either separately or in combination with a septic tank system authorized under R18-9-E302, if the applicant additionally demonstrates that at least one of the following: 117  
    - a. The treatment performance is significantly better than that provided under R18-9-E302(B),
    - b. The wastewater loading rate is reduced, or 118
    - c. Surface or subsurface characteristics ensure that reduced setbacks are protective of human health or water quality.

**R18-9-A314. Septic Tank Design, Manufacturing, and Installation for On-site Wastewater Treatment Facilities**



## #114

Posted by **Jake Garrett** on **11/11/2021** at **5:05pm** [Comment ID: 134]

*Type: Suggestion*

*Agree: 1, Disagree: 0*

I disagree with the inclusion of E302 in this language. NO A312G's beyond those now available for 4.02 use should be added. This is a slippery slope leading to bad outcomes which I have observed first hand.

## #115

Posted by **Jake Garrett** on **11/11/2021** at **5:01pm** [Comment ID: 133]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

The second half of the last sentence is redundant.

## #116

Posted by **thomas.hanson** on **10/15/2021** at **6:35pm** [Comment ID: 32]

*Type: Suggestion | Tags: PPL, A312G*

*Agree: 0, Disagree: 0*

Some of the PPL's state to submit for A312G's for some of the alternative designs.

## #117

Posted by **thomas.hanson** on **10/15/2021** at **6:37pm** [Comment ID: 33]

*Type: Question | Tags: A312G*

*Agree: 0, Disagree: 0*

I thought ADEQ expressed that this section is only applicable to E303-E322 and that E302 permits could already practice setback reductions. Has this changed?

## #118

Posted by **David\_Swanson** on **11/12/2021** at **1:26pm** [Comment ID: 176]

*Agree: 0, Disagree: 0*

Disposal fields that receive septic tank effluent should not be eligible for most, if not all setback reductions. Disposal Fields receiving higher treated effluent are considerably less of a health risk and should qualify. This was not a prudent change.

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

A person shall not install a septic tank in an on-site wastewater treatment facility unless the tank meets the following requirements:

1. The tank is:
  - a. Designed to produce a clarified effluent and provide adequate space for sludge and scum accumulations;
  - b. Watertight and constructed of solid durable materials not subject to excessive corrosion or decay;
  - c. Manufactured with at least two compartments unless two separate structures are placed in series. The tank is designed so that:
    - i. The inlet compartment of any septic tank not placed in series is nominally 67 percent to 75 percent of the total required capacity of the tank,
    - ii. Septic tanks placed in series are considered a unit and meet the same criteria as a single tank,
    - iii. The liquid depth of the septic tank is at least 42 inches, and
    - iv. A septic tank of 1000 gallon capacity is at least 8 feet long and the tank length of septic tanks of greater capacity is at least 2 times but not more than 3 times the width;
  - d. Manufactured with at least two access openings to the tank interior, each at least 20 inches in diameter. The tank is designed so that:
    - i. One access opening is located over the inlet end of the tank and one access opening is located over the outlet end;
    - ii. Whenever a first compartment exceeds 12 feet in length, another access opening is provided over the baffle wall; and
    - iii. Access openings and risers are constructed to ensure accessibility within 6 inches below finished grade; 120
  - e. Manufactured so that the sewage inlet and wastewater outlet openings are not smaller than the connecting sewer pipe. The tank is designed so that:
    - i. The vertical leg of round inlet and outlet fittings is at least 4 inches but not smaller than the connecting sewer pipe, and
    - ii. A baffle fitting has the equivalent cross-sectional area of the connecting sewer pipe and not less than a 4 inch horizontal dimension if measured at the inlet and outlet pipe inverts;
  - f. Manufactured so that the inlet and outlet pipe or baffle extends 4 inches above and at least 12 inches below the water surface when the tank is installed according to the manufacturer's instructions consistent with this Chapter. The invert of the inlet pipe is at least 2 inches above the invert of the outlet pipe;
  - g. Manufactured so that the inlet and outlet fittings or baffles and compartment partitions have a free vent area equal to the required cross-sectional area of the connected sewer pipe to provide free ventilation above the water surface from the disposal works or seepage pit through the septic tank, house sewer, and stack to the outer air;
  - h. Manufactured so that the open space extends at least 9 inches above the liquid level and the cover of the septic tank is at least 2 inches above the top of the inlet fitting vent opening;

## #119

Posted by **Doug Disbrow** on **10/07/2021** at **3:29pm** [Comment ID: 10]

*Type: Suggestion | Tags: Septic tank risers, Other*

*Agree: 2, Disagree: 0*

Access openings risers need to be 2in. above grade so that;

1 - effluent filters can be service without digging.

2 - property owners know where their septic tank as to not place sheds on top of them and drive on their tanks.

## #120

Posted by **Peter Gavin** on **10/19/2021** at **1:33pm** [Comment ID: 36]

*Type: Suggestion | Tags: Septic tank risers, Other*

*Agree: 2, Disagree: 0*

Regardless of riser and cover material a secondary means of protection, IE: Kid Catcher shall be used in all riser stacks below the primary lid to stop unwanted entry.

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

- i. Manufactured so that partitions or baffles between compartments are of solid durable material (wooden baffles are prohibited) and extend at least 4 inches above the liquid level. The open area of the baffle shall be between one and 2 times the open area of the inlet pipe or horizontal slot and located at the midpoint of the liquid level of the baffle. If a horizontal slot is used, the slot shall be no more than 6 inches in height;
  - j. Structurally designed to withstand all anticipated earth or other loads. The tank is designed so that:
    - i. All septic tank covers are capable of supporting an earth load of 300 pounds per square foot; and
    - ii. If the top of the tank is greater than 2 feet below finish grade, the septic tank and cover are capable of supporting an additional load of 150 pounds per square foot for each additional foot of cover;
  - k. Manufactured or installed so that the influent and effluent ends of the tank are clearly and permanently marked on the outside of the tank with the words “INLET” or “IN,” and “OUTLET” or “OUT,” above or to the right or left of the corresponding openings; and
  - l. Clearly and permanently marked with the manufacturer’s name or registered trademark, or both, the month and year, **or Julian date**, of manufacture, the maximum recommended depth of earth cover in feet, and the design liquid capacity of the tank. The tank is manufactured to protect the markings from corrosion so that they remain permanent and readable for the operational life of the tank.
2. Materials used to construct or manufacture septic tanks.
- a. A septic tank cast-in-place at the site of use shall be protected from corrosion by coating the tank with a bituminous coating, by constructing the tank using a concrete mix that incorporates 15 percent to 18 percent fly ash, or by any other Department-approved means. The tank is designed so that:
    - i. The coating extends at least 4 inches below the wastewater line and covers all of the internal area above that point; and
    - ii. A septic tank cast-in-place complies with the “Building Code Requirements for Structural Concrete and Commentary ACI 318-02/318R-02 (2002),” and the “Code Requirements for Environmental Engineering Concrete Structures and Commentary, ACI 350/350R-01 (2001),” published by the American Concrete Institute. This material is incorporated by reference and does not include any later amendments or editions of the incorporated material. Copies of the incorporated material are available for inspection at the Arizona Department of Environmental Quality, 1110 W. Washington Street, Phoenix, AZ 85007 or may be obtained from American Concrete Institute, P.O. Box 9094, Farmington Hills, MI 48333-9094.
  - b. A steel septic tank shall have a minimum wall thickness of No. 12 U.S. gauge steel and be protected from corrosion, internally and externally, by a bituminous coating or other Department-approved means.
  - c. **121** refabricated concrete septic tank shall meet the “Standard Specification for Precast Concrete Septic Tanks, C1227-03,” published by the American Society for Testing and Materials. This information is incorporated by reference and does not include any later amendments or editions of the incorporated material. Copies of the incorporated material are available for inspection at the Arizona Department of

# #121

Posted by **servin\_infiltrator** on **11/12/2021** at **2:50pm** [Comment ID: 181]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

§R18-9-A314. 2. c. The ASTM C1227 standard was most recently republished in 2020, as indicated on the ASTM web site: <https://www.astm.org/Standards/C1227.htm>. We respectfully suggest that this subsection be revised as follows:

A prefabricated concrete septic tank shall meet the “Standard Specification for Precast Concrete Septic Tanks, C1227-20,” published by the American Society for Testing and Materials.

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

Environmental Quality, 1110 W. Washington Street, Phoenix, AZ 85007 or may be obtained from the American Society for Testing and Materials International West.

- d. A septic tank manufactured using fiberglass or polyethylene thermoplastic shall meet the requirements set forth in "Material and Property Standards for Prefabricated Septic Tanks, IAPMO PS-1 2004," "Prefabricated Septic Tanks – IAPMO/ANSI Z1000-2012" published by the International Association of Plumbing and Mechanical Officials. This information is incorporated by reference, does not include any later amendments or editions of the incorporated material, and may be viewed at the Arizona Department of Environmental Quality, 1110 W. Washington Street, Phoenix, AZ 85007 or obtained from International Association of Plumbing & Mechanical Officials, 20001 E. Walnut Drive, South Walnut, CA 91789-2825 4755 E. Philadelphia Street, Ontario, CA 91761.
3. Conformance with design, materials, and manufacturing requirements.
    - a. If any conflict exists between this Article and the information incorporated by reference in subsection (2), the requirements of this Article apply.
    - b. The Department may approve use of alternative construction materials under R18-9-A312(G). Tanks constructed of wood, block, or bare steel are prohibited.
    - c. The Department may inspect septic tanks at the site of manufacturing to verify compliance with subsections (1) and (2).
    - d. The septic tank sale documentation includes:
      - i. A certificate attesting that the septic tank conforms with the design, materials, and manufacturing requirements in subsections (1) and (2); and
      - ii. Instructions for handling and installing the septic tank.
  4. The septic tank's daily design flow is determined as follows:
    - a. For a single family dwelling:
      - i. The design liquid capacity of the septic tank and the septic tank's daily design flow are determined based on the number of bedrooms and fixture count as follows:

| Criteria for Septic Tank Size and Design Flow |               |  |                       |
|---|---------------|--|-----------------------|
| Number of Bedrooms                            | Fixture Count | Minimum Design Liquid Capacity (gallons) | Design Flow (gal/day) |
| 1   | 7 or less     | 1000                                     | 150                   |
|   | More than 7   | 1000                                     | 300                   |
| 2   | 14 or less    | 1000                                     | 300                   |

## #122

Posted by **David Swanson** on **11/11/2021** at **1:32pm** [Comment ID: 110]

*Agree: 1, Disagree: 0*

For the future..... some jurisdictions already allow design flow reductions for hauled water. At some point this should be addressed and standardized by the Department so A312G isn't needed each time. I mention it here because it looks like it could show up in this section.

## #123

Posted by **Doug Disbrow** on **10/07/2021** at **12:15pm** [Comment ID: 5]

*Type: Suggestion | Tags: Fixture Counts, Other*

*Agree: 1, Disagree: 0*

The 1 bedroom / 150 gpd is not obtainable because the fixture count of 7 is too low. The 150 gpd design flow was determined using up to 2 people performing normal daily living functions within the home. A full bathroom + kitchen + laundry = 10 fixture count. Property owners who desire smaller homes and properties with less maintenance (affordable live) are automatically penalized to spend more money on a disposal field that is twice as large.

I suggest this category be change to 10 or less and more than 10

## #124

Posted by **Jake Garrett** on **11/11/2021** at **5:42pm** [Comment ID: 135]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Two options exist to remove a myriad of problems and unnecessary delays and expenditures resulting from building manufacturers, architects and building designers not relating to fixtures and equating the home size to wastewater design flow sizes measured in bedrooms and fixture units (especially when calculated by other methods than those they normally use in plumbing applications). They are:

- 1) KISS Method (Keep It Simple Stu\_\_\_\_) - eliminate fixtures completely and rely on good design judgment when designing for a high sewage generating home, or
- 2) Use an 8 fixture increment for each bedroom beginning with 2 bedrooms.

## #125

Posted by **Lou Brown** on **11/12/2021** at **7:40pm** [Comment ID: 208]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Design Flows are another topic that is being investigated in a TWG. Therefore, any changes to "Design Flow" should wait until the TWG has presented their findings. This should be a Phase 2 change

## #126

Posted by **thomas.hanson** on **10/15/2021** at **6:41pm** [Comment ID: 34]

Type: Question | Tags: Septic tank design

Agree: 0, Disagree: 0

The small 500 gallon infiltrator tank does not meet this or the previous standard. It is classified as a waste holding tank. Will ADEQ still encourage DA's to allow these in series?

## #127

Posted by **Doug Disbrow** on **10/07/2021** at **12:34pm** [Comment ID: 6]

Type: Suggestion | Tags: Fixture Counts, Other

Agree: 1, Disagree: 0

The 14 or less fixture count for 2 bedroom homes is to low and causes additional stress to the pre-manufactured home industry and penalizes the home owner from having the convenience and privacy of 2 full bathrooms. Pre manufactured 2 bedroom homes are planned / designed with 2 full bathrooms which requires homeowners to spend more money and lose more yard for a large leach field. When purchasing such a home from a manufacture a special order has to be created for a bathroom change to a 1-1/2 bath. If this is not caught at time of order then modifications on property have to be made at additional expense to owner. Suggest a change to 16 or less and more than 16 fixture count for 2 bedroom homes.



**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

|   |              |      |      |
|---|--------------|------|------|
|   | More than 14 | 1000 | 450  |
| 3 | 21 or less   | 1000 | 450  |
|   | More than 21 | 1250 | 600  |
| 4 | 28 or less   | 1250 | 600  |
|   | More than 28 | 1500 | 750  |
| 5 | 35 or less   | 1500 | 750  |
|   | More than 35 | 2000 | 900  |
| 6 | 42 or less   | 2000 | 900  |
|   | More than 42 | 2500 | 1050 |
| 7 | 49 or less   | 2500 | 1050 |
|   | More than 49 | 3000 | 1200 |
| 8 | 56 or less   | 3000 | 1200 |
|   | More than 56 | 3000 | 1350 |

ii. Fixture count is determined as follows:

| <b>Residential<br/>Fixture Type</b> | <b>Fixture<br/>Units</b> | <b>Residential<br/>Fixture<br/>Type</b>   | <b>Fixture<br/>Units</b> |
|-------------------------------------|--------------------------|---|--------------------------|
| Bathtub                             | 2                        | Sink, bar                                 | 1                        |
| Bidet                               | 2                        | Sink, kitchen<br>(including<br>dishwasher | 2                        |
| Clothes washer                      | 2                        | Sink, service                             | 3                        |

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

|   |   |  |   |
|---|---|--|---|
| Dishwasher<br>(Separate from<br>kitchen)    | 2 | Utility tub or<br>sink                             | 2 |
| Lavatory,<br>single                         | 1 | Water closet,<br>1.6<br>gallons per<br>flush (gpf) | 3 |
| Lavatory,<br>double in<br>master<br>bedroom | 1 | Water closet,<br>>1.6 to<br>3.2 gpf                | 4 |
| Shower, single<br>stall                     | 2 | Water closet,<br>greater than<br>3.2 gpf           | 6 |

- b. For other than a single family dwelling, the design liquid capacity of a septic tank in gallons is 2.1 times the daily design flow into the tank as determined from Table 1, Unit Design Flows. If the wastewater strength exceeds that of typical sewage, additional tank volume is required.
- c. A person may place two septic tanks in series to meet the septic tank design liquid capacity requirements if the capacity of the first tank is at least 67 percent of the total required tank capacity and the capacity of the second tank is at least 33 percent of the total required tank capacity.
5. The following requirements regarding new or replacement septic tank installation apply:
  - a. Permanent surface markers for locating the septic tank access openings are provided for maintenance;
  - b. A septic tank installed under concrete or pavement has the required access openings extended to grade;
  - c. A septic tank effluent filter is installed on the septic tank. The filter shall:
    - i. Prevent the passage of solids larger than 1/8 inch in diameter while under two feet of hydrostatic head; and
    - ii. Be constructed of materials that are resistant to corrosion and erosion, sized to accommodate hydraulic and organic loading, and removable for cleaning and maintenance; and
  - d. The septic tank is tested for watertightness after installation by the water test described in subsections (5)(d)(i) and (5)(d)(ii) and repaired or replaced, if necessary.
    - i. The septic tank is filled with clean water, as specified in R18-9-A310(A), to the invert of the outlet and the water left standing in the tank for 24 hours and:
      - (1) After 24 hours, the tank is refilled to the invert, if necessary;
      - (2) The initial water level and time is recorded; and
      - (3) After one hour, water level and time is recorded.

## #128

Posted by **Jake Garrett** on **11/11/2021** at **5:50pm** [Comment ID: 136]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Manufactured homes and many stick built designs show up at building department counters with master bathrooms with tubs, showers, bidets, his and hers toilets and anything else the home owners might dream of having. Most times this requires a modification of the house plans or enlargement of the sewage system due to excess fixture count. If fixtures are kept this extra expense, delay and aggravation can be avoided by including a fixture count of 6 for a master bathroom of any configuration.

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

- ii. The tank passes the water test if the water level does not drop over the one-hour period. Any visible leak of flowing water is considered a failure. A damp or wet spot that is not flowing is not considered a failure.

**R18-9-A315.Interceptor Design, Manufacturing, and Installation for On-site Wastewater Treatment Facilities**

- A.** Interceptor requirement. An applicant shall ensure that an interceptor as required by R18-9-A309(A)(7)(c) or necessary due to excessive amounts of grease, garbage, sand, or other wastes in the sewage is installed between the sewage source and the on-site wastewater treatment facility.
- B.** Interceptor design. An applicant shall ensure that:
1. An interceptor has not less than two compartments with fittings designed for grease retention and capable of removing excessive amounts of grease, garbage, sand, or other similar wastes. An interceptor may not accept human excreta or toilet wastewater. Applicable structural and materials requirements prescribed in R18-9-A314 apply;
  2. Interceptors are located as close to the source as possible and are accessible for servicing. The applicant shall ensure that access openings for servicing are at grade level and gas-tight;
  3. The interceptor size for grease and garbage from non-residential kitchens is calculated using by the following equation: Interceptor Size (in gallons) =  $M \times F \times T \times S$ .
    - a. "M" is the number of meals per peak hour;
    - b. "F" is the applicable waste flow rate from Table 1, Unit Design Flows.
    - c. "T" is the estimated retention time:
      - i. Commercial kitchen waste, dishwasher or disposal: 2.5 hours; or
      - ii. Single service kitchen with utensil wash disposal: 1.5 hours;
    - d. "S" is the estimated storage factor:
      - i. Fully equipped commercial kitchen, 8-hour operation: 1.0;
      - ii. Fully equipped commercial kitchen, 16-hour operation: 2.0;
      - iii. Fully equipped commercial kitchen, 24-hour operation: 3.0; or
      - iv. Single service kitchen, 1.5;
  4. The interceptor size for silt and grease from laundries and laundromats is calculated using the following equation: Interceptor Size (in gallons) =  $M \times C \times F \times T \times S$ .
    - a. "M" is the number of machines;
    - b. "C" is the machine cycles per hour (assume 2);
    - c. "F" is the waste flow rate from Table 1, Unit Design Flows; **129**
    - d. "T" is the estimated retention time (assume 2); and
    - e. "S" is the estimated storage factor (assume 1.5 that allows for rock filter).
- C.** The applicant may calculate the size of an interceptor using different factor values than those given in subsections (B)(3) and (4) based on the values justified by the applicant in the Notice of Intent to Discharge submitted to the Department for the on-site wastewater treatment facility.

#129

Posted by **Jake Garrett** on **11/11/2021** at **5:52pm** [Comment ID: 137]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Add "or manufacturers data sheet"

- D.** The Department may require installation of a sampling box if the volume or characteristics of the waste will impair the performance of the on-site wastewater treatment facility.

**PART E. TYPE 4 GENERAL PERMITS**

**R18-9-E302.4.02 General Permit: Septic Tank with Disposal by Trench, Bed, Chamber Technology, or Seepage Pit, Less Than 3000 Gallons Per Day Design Flow**

- A.** A 4.02 General Permit allows for the construction and operation of a system with less than 3000 gallons per day design flow consisting of a septic tank dispensing wastewater to an approved means of disposal described in this Section. Only gravity flow of wastewater from the septic tank to the disposal works is authorized by this general permit.
1. The standard septic tank and disposal works design specified in the 4.02 General Permit serves sites where no site limitations are identified by the site investigation conducted under R18-9-A310.
  2. If site conditions allow, this general permit authorizes the discharge of wastewater from a septic tank meeting the requirements of R18-9-A314 to one of the following disposal works:
    - a. Trench,
    - b. Bed,
    - c. Chamber technology, or
    - d. Seepage pit.
- B.** Performance. An applicant shall design a system consisting of a septic tank and one of the disposal works listed in subsection (A)(2) so that treated wastewater released to the native soil meets the following criteria:
1. TSS of 75 milligrams per liter, 30-day arithmetic mean;
  2. BOD<sub>5</sub> of 150 milligrams per liter, 30-day arithmetic mean;
  3. Total nitrogen (as nitrogen) of 53 milligrams per liter, five-month arithmetic mean; and
  4. Total coliform level of 100,000,000 (Log<sub>10</sub> 8) colony forming units per 100 milliliters, 95<sup>th</sup> percentile.
- C.** Design and installation requirements.
1. General provisions. In addition to the applicable requirements in R18-9-A312, the applicant shall:
    - a. Ensure that the septic tank meets the requirements specified in R18-9-A314;
    - b. Before placing aggregate or disposal pipe in a prepared excavation, remove all smeared or compacted surfaces from trenches by raking to a depth of 1 inch and removing loose material. The applicant shall:
      - i. Place aggregate in the trench to the depth and grade specified in subsection (C)(2);
      - ii. Place the drain pipe on aggregate and cover it with aggregate to the minimum depth specified in subsection (C)(2); and
      - iii. Cover the aggregate with landscape filter material, geotextile, or similar porous material to prevent filling of voids with earth backfill;
    - c. Use a grade board stake placed in the trench to the depth of the aggregate if the disposal pipe is constructed of drain tile or flexible pipe that will not maintain alignment without continuous support;

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

- d. Disposal pipe. If two or more disposal pipes are installed, install a distribution box approved by the Department of sufficient size to receive all lateral lines and flows at the head of each disposal works and:
    - i. Ensure that the inverts of all outlets are level and the invert of the inlet is at least 1 inch above the outlets;
    - ii. Design distribution boxes to ensure equal flow and install the boxes on a stable level surface such as a concrete slab or native or compacted soil; and
    - iii. Protect concrete distribution boxes from corrosion by coating them with an appropriate bituminous coating, constructing the boxes with concrete that has a 15 to 18 percent fly ash content, or by using other equivalent means;
  - e. Construct all lateral pipes running from a distribution box to the disposal works with watertight joints and ensure that multiple disposal laterals, wherever practical, are of uniform length;
  - f. Lay pipe connections between the septic tank and a distribution box on natural ground or compact fill and construct the pipe connections with watertight joints;
  - g. Construct steps within distribution line trenches or beds, if necessary, to maintain a level disposal pipe on sloping ground. The applicant shall construct the lines between each horizontal section with watertight joints and install them on natural or unfilled ground; and
  - h. Ensure that a disposal works consisting of trenches, beds, chamber technology, or seepage pits is not paved over or covered by concrete or any material that can reduce or inhibit possible evaporation of wastewater through the soil to the land surface or oxygen transport to the soil absorption surfaces.
2. Trenches.
- a. The applicant shall calculate the trench absorption area as the total of the trench bottom area and the sum of both trench sidewall areas to a maximum depth of 48 inches below the bottom of the disposal pipe.
  - b. The applicant shall ensure that trench bottoms and disposal pipe are level. The applicant shall calculate trench sizing from the soil absorption rate specified under R18-9-A312(D) and the design flow established in R18-9-A312(B).
  - c. The following design criteria for trenches apply:

| <b>Trenches</b>  | <b>Minimum</b>        | <b>Maximum</b> |
|--|-----------------------|----------------|
| 1. Number of trenches  | 1 (2 are recommended) | No Maximum     |
| 2. Length of trench <sup>1</sup>   | ----                  | 100 feet       |
| 3. Bottom width of trench  | 12 inches             | 36 inches      |
| 4. Trench absorption area (sq. ft. of absorption area per linear foot of trench) | No Minimum            | 11 sq. ft.     |

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

|   |   |                        |
|---|---|------------------------|
| 5. Depth of cover over aggregate surrounding disposal pipe  | 9 inches  | 24 inches <sup>2</sup> |
| 6. Thickness of aggregate material over disposal pipe   | 2 inches  | 2 inches               |
| 7. Thickness of aggregate material under disposal pipe  | 12 inches   | No Maximum             |
| 8. Slope of disposal pipe   | Level   | Level                  |
| 9. Disposal pipe diameter   | 3 inches  | 4 inches               |
| 10. Spacing of trenches (measured between nearest sidewalls)  | 2 times effective depth <sup>3</sup> or five feet, whichever is greater | No Maximum             |
| Notes:<br>1. If unequal trench lengths are used, proportional distribution of wastewater is required.<br>2. For more than 24 inches, Standard Dimensional Ratio 35 or equivalent strength pipe is required.<br>3. The effective depth is the distance between the bottom of the disposal pipe and the bottom of the trench bed. |   |                        |

- d. The applicant may substitute clean, durable, crushed, and washed recycled concrete for aggregate if noted in design documents and the trench absorption area calculation excludes the trench bottom.

3. Beds. An applicant shall:

- a. If a bed is installed, use the soil absorption rate specified in R18-9-A312(D) for “SAR, Bed.” The applicant may, in computing the bed bottom absorption area, include the bed bottom and the perimeter sidewall area not more than 36 inches below the disposal pipe;
- b. Comply with the following design criteria for beds:

| <b>Gravity Beds</b>         | <b>Minimum</b> | <b>Maximum</b> |
|-----------------------------|----------------|----------------|
| 1. Number of disposal pipes | 2              | No Maximum     |
| 2. Length of bed            | No Minimum     | 100 feet       |



**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

|  |  |            |
|--|--|------------|
| 3. Distance between disposal pipes   | 4 feet   | 6 feet     |
| 4. Spacing of beds measured between nearest sidewalls  | 2 times effective depth <sup>1</sup> or 5 feet, whichever is greater | No Maximum |
| 5. Width of bed  | 10 feet  | 12 feet    |
| 6. Distance from disposal pipe to sidewall   | 3 feet   | 3 feet     |
| 7. Depth of cover over disposal pipe   | 9 inches   | 14 inches  |
| 8. Thickness of aggregate material under disposal pipe   | 12 inches  | No Maximum |
| 9. Thickness of aggregate material over disposal pipe  | 2 inches   | 2 inches   |
| 10. Slope of disposal pipe   | Level  | Level      |
| 11. Disposal pipe diameter   | 3 inches   | 4 inches   |
| Note:<br>1. The effective depth is the distance between the bottom of the disposal pipe and the bottom of the bed. |  |            |

4. Chamber technology. An applicant shall:

- a. Calculate an effective chamber absorption area to size the disposal works area and determine the number of chambers needed. The effective absorption area of each chamber is calculated as follows:

$$A = (1.8 \times B \times L) + (2 \times V \times L)$$

- i. "A" is the effective absorption area of each chamber,
  - ii. "B" is the exterior width of the bottom of the chamber,
  - iii. "V" is the vertical height of the louvered sidewall of the chamber, and
  - iv. "L" is the length of the chamber;
- b. Calculate the disposal works size and number of chambers from the effective absorption area of each chamber and the soil absorption rates specified in R18-9-A312(D);

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

- c. Ensure that the sidewall of the chamber provides at least 35 percent open area for sidewall credit and that the design and construction minimizes the movement of fines into the chamber area. The applicant shall not use filter fabric or geotextile against the sidewall openings.
5. Seepage pits. If allowed by R18-9-A311(B)(1), the applicant shall: 131 130
- a. Design a seepage pit to comply with R18-9-A312(E)(1) for minimum vertical separation distance;
  - b. Ensure that multiple seepage pit installations are served through a distribution box approved by the Department or connected in series with a watertight connection laid on undisturbed or compacted soil. The applicant shall ensure that the outlet from the pit has a sanitary tee with the vertical leg extending at least 12 inches below the inlet;
  - c. Ensure that each seepage pit is circular and has an excavated diameter of 4 to 6 feet. If multiple seepage pits are installed, ensure that the minimum spacing between seepage pit sidewalls is 12 feet or three times the diameter of the seepage pit, whichever is greater. The applicant may use the alternative design procedure specified in R18-9-A312(G) for a proposed seepage pit more than 6 feet in diameter;
  - d. For a gravel filled seepage pit, backfill the entire pit with aggregate. The applicant shall ensure that each pit has a breather conductor pipe that consists of a perforated pipe at least 4 inches in diameter, placed vertically within the backfill of the pit. The pipe shall extend from the bottom of the pit to within 12 inches below ground level;
  - e. For a lined, hollow seepage pit, lay a concrete liner or a liner of a different protective material in the pit on a firm foundation and fill excavation voids behind the liner with at least 9 inches of aggregate;
  - f. For the cover of a lined seepage pit, use an approved one or two piece reinforced concrete slab with a minimum compressive strength of 2500 pounds per square inch. The applicant shall ensure that the cover:
    - i. Is at least 5 inches thick and designed to support an earth load of at least 400 pounds per square foot;
    - ii. Has a 12-inch square or diameter minimum access hole with a plug or cap that is coated on the underside with an protective bituminous seal, constructed of concrete with 15 percent to 18 percent fly ash content, or made of other nonpermeable protective material; and
    - iii. Has a 4 inch or larger inspection pipe placed vertically not more than 6 inches below ground level;
  - g. Ensure that the top of the seepage pit cover is 4 to 18 inches below the surface of the ground;
  - h. Install a vented inlet fitting in every seepage pit to prevent flows into the seepage pit from damaging the sidewall. An applicant may use a 1/4 bend fitting placed through an opening in the top of the slab cover if a one or two piece concrete slab cover inlet is used;
  - i. Bore seepage pits five feet deeper than the proposed pit depth to verify underlying soil characteristics and backfill the five feet of overdrill with low permeability drill cuttings or other suitable material;
  - j. Backfill seepage pits that terminate in gravelly, coarse sand zones five feet above the beginning of the zone with low permeability drill cuttings or other suitable material;

## #130

Posted by **colin.bishop@anua-us.com** on **11/12/2021** at **6:43pm** [Comment ID: 196]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

See my previous comment on seepage pits

## #131

Posted by **Jake Garrett** on **11/11/2021** at **6:00pm** [Comment ID: 138]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Please add any clarifying language needed to eliminate all ambiguities and mistakes for seepage pit design and installation along with seepage pit testing, uncovered during development of the seepage pit substantive statement.

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

- k. Determine the minimum sidewall area for a seepage pit from the design flow and the soil absorption rate derived from the testing procedure described in R18-9-A310(G). The effective absorption surface for a seepage pit is the sidewall area only. The sidewall area is calculated using the following formula:

$$A = 3.14 \times D \times H$$

- i. "A" is the minimum sidewall area in square feet needed for the design flow and soil absorption rate for the installation,
- ii. "D" is the diameter of the proposed seepage pit in feet,
- iii. "H" is the vertical height in feet in the seepage pit through which wastewater infiltrates native soil.

The applicant shall ensure that H is at least 10 feet for any seepage pit.

- D. Operation and maintenance. The permittee shall follow the applicable operation and maintenance requirements in R18-9-A313.

**R18-9-E303.4.03 General Permit: Composting Toilet, Less Than 3000 Gallons Per Day Design Flow**

- A. A 4.03 General Permit allows for the use of a composting toilet with less than 3000 gallons per day design flow.

1. Definition. For purposes of this Section, "composting toilet" means a manufactured turnkey or kit form treatment technology that receives human waste from a waterless toilet directly into an aerobic composting chamber where dehydration and biological activity reduce the waste volume and the content of nutrients and harmful microorganisms to an appropriate level for later disposal at the site or by other means.
2. An applicant may use a composting toilet if:
  - a. Limited water availability prevents use of other types of on-site wastewater treatment facilities,
  - b. Environmental constraints prevent the discharge of wastewater or nutrients to a sensitive area,
  - c. Inadequate space prevents use of other systems,
  - d. Severe site limitations exist that make other forms of treatment or disposal unacceptable, or
  - e. The applicant desires maximum water conservation.
3. A permittee may use a composting toilet only if:
  - a. Wastewater is managed as provided in this Section and, if gray water is separated and reused, the gray water reuse complies with 18 A.A.C. 9, Article 7; and
  - b. Soil conditions support subsurface disposal of all wastewater sources.

**B. Restrictions.**

1. A permittee shall ensure that no more than 50 persons per day use the composting toilet.
2. A composting toilet shall only receive human excrement unless the manufacturer's specifications allow the deposit of kitchen or other wastes into the toilet.

**C. Performance.** An applicant shall ensure that:

1. The composting toilet provides containment to prevent the discharge of toilet contents to the native soil except leachate, which may drain to the wastewater disposal works described in subsection (F);
2. The composting toilet limits access by vectors to the contained waste; and
3. Wastewater is disposed into the subsurface to prevent any wastewater from surfacing.

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

- D.** Notice of Intent to Discharge. In addition to the Notice of Intent to Discharge requirements specified in R18-9-A301(B) and R18-9-A309(B), the applicant shall submit the following information:
1. Composting toilet.
    - a. The name and address of the composting toilet system manufacturer;
    - b. A copy of the manufacturer's warranty, and the specifications for installation operation, and maintenance;
    - c. The product model number;
    - d. Composting rate, capacity, and waste accumulation volume calculations;
    - e. Documentation of listing by a national listing organization indicating that the composting toilet meets the stated manufacturer's specifications for loading, treatment performance, and operation, unless the composting toilet is listed under R18-9-A309(E) or is a component of a reference design approved by the Department;
    - f. The method of vector control;
    - g. The planned method and frequency for disposing the composted human excrement residue; and
    - h. The planned method for disposing of the drainage from the composting unit; and
  2. Wastewater.
    - a. The number of bedrooms in the dwelling or persons served on a daily basis, as applicable, and the corresponding design flow of the disposal works for the wastewater;
    - b. The results from soil evaluation or percolation testing that adequately characterize the soils into which the wastewater will be dispersed and the locations of soil evaluation and percolation testing on the site plan; and
    - c. The design for the disposal works in subsection (F), including the location of the interceptor, the location and configuration of the trench or bed used for wastewater dispersal, the location of connecting wastewater pipelines, and the location of the reserve area.
- E.** Design requirements for a composting toilet. An applicant shall ensure that:
1. The composting chamber is watertight, constructed of solid durable materials not subject to excessive corrosion or decay, and is constructed to exclude access by vectors;
  2. The composting chamber has airtight seals to prevent odor or toxic gas from escaping into the building. The system may be vented to the outside;
  3. The capacity of the chamber and rate of composting are calculated based on:
    - a. The lowest monthly average chamber temperature; or
    - b. The yearly average chamber temperature, if the composting toilet is designed to compost on a yearly cycle or longer; and
  4. The composting system provides adequate storage of all waste produced during the months when the average temperature is below 55°F, unless a temperature control device is installed to increase the composting rate and reduce waste volume.
- F.** Design requirements for the disposal works.

## #132

Posted by **David Omick** on **11/10/2021** at **11:36pm** [Comment ID: 67]

*Type: Suggestion*

*Agree: 1, Disagree: 0*

Request for Rule change in R18-9-E303

11-3-2021

David Omick

### Issue and Rationale:

An applicant for an R18-9-E303 permit may, in some instances, desire to have a composting toilet that incorporates an integral urine diverter, which diverts urine via a drain to subsurface disposal. The urine diverter prevents urine contact with excreta or leachate, thus the urine is nominally free of coliform. A notable exception would be bacteria from a urinary tract infection.

E303 does not address disposal of urine from a urine diverter. Some counties (i.e. Cochise) are requiring the urine drain to be plumbed to an approved onsite wastewater facility constructed according to R18-9-E302.

In the event that the applicant desires an outdoor composting toilet, the location may be unsuitable for connection to the approved onsite wastewater system.

The issue then is that although the design flow of urine is 1.2 liters per adult per day and the urine is nominally free of coliform, R18-9-A310 requires a 12' deep trench to be dug for the purpose of detecting limiting conditions and for soil analysis. This seems to be an inappropriate requirement for such a small design volume and pathogen load.

### Relevant characteristics of urine:

--Design flow of urine = 1.2 liters per person per day (Composting Toilet Demonstration Feasibility Study, Volume 2: Appendix A, Table A6)

--Total suspended solids (TSS) = 0 grams per liter (Composting Toilet Demonstration Feasibility Study, Volume 2: Appendix A, Table A6)

--5 day biological oxygen demand (BOD5) = 7.5 grams per liter (Composting Toilet Demonstration Feasibility Study, Volume 2: Appendix A, Table A6)

--Total Nitrogen (TN) = 10 grams per liter (Composting Toilet Demonstration Feasibility Study, Volume 2: Appendix A, Table A6)

### Proposed Rule language:

R18-9-E303(E)(5) If an approved composting toilet incorporates an integral urine diversion system, the system should be designed to safely dispose of the design volume (with a safety factor) into the subsurface.

Brad Lancaster, Catlow Shipek, and I have field experience with composting toilets incorporating urine diversion and would be happy to work with ADEQ on developing design criteria for onsite subsurface disposal (e.g. infiltration chambers) of urine from composting toilets.

Thank you,  
David Omick  
Sustainable System Designer  
[http://www.omick.net/composting\\_toilets/composting\\_toilets.htm](http://www.omick.net/composting_toilets/composting_toilets.htm)  
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**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

1. Interceptor. An applicant shall ensure that the design complies with the following:

**a. An interceptor may not accept human excreta or toilet wastewater;**

**a.b.** Wastewater passes into an interceptor before it is conducted to the subsurface for dispersal;

**b.c.** The interceptor is designed to remove grease, oil, fibers, and solids to ensure long-term performance of the trench or bed used for subsurface dispersal;

**e.d.** The interceptor is covered to restrict access and eliminate habitat for mosquitoes and other vectors; and

**d.e.** Minimum interceptor size is based on design flow.

i. For a dwelling, the following apply:

| No. of Bedrooms                    | Design Flow (gallons per day) | Minimum Interceptor Size (gallons)  |  |
|------------------------------------|-------------------------------|---|--|
|                                    |                               | Kitchen Wastewater Only<br>(All gray water sources are collected and reused)<br>133 | Combined Non-Toilet Wastewater<br>(Gray water is not separated and reused) |
| 1 (7 fixture units or less)        | 90                            | 42  | 200  |
| 1-2 (greater than 7 fixture units) | 180                           | 84  | 400  |
| 3                                  | 270                           | 125   | 600  |
| 4                                  | 330                           | 150   | 700  |
| 5                                  | 380                           | 175   | 800  |
| 6                                  | 420                           | 200   | 900  |
| 7                                  | 460                           | 225   | 1000   |

ii. For other than a dwelling, minimum interceptor size in gallons is 2.1 times the design flow from Table 1, Unit Design Flows.

2. Dispersal of wastewater 134n applicant shall ensure that the design complies with the following:

a. A trench or bed is used to disperse the wastewater into the subsurface;



## #133

Posted by **Jake Garrett** on **11/11/2021** at **6:18pm** [Comment ID: 142]

*Type: Question*

*Agree: 0, Disagree: 0*

Specify that disposal trenches must be provided for reuse gray water as has been clarified recently. If this is not done the pressure for interpretations will continue. This section must be clearly consistent with D701.

## #134

Posted by **Jake Garrett** on **11/11/2021** at **6:15pm** [Comment ID: 141]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Add "and graywater". This then accounts for all water in the facility.

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

- b. Sizing of the trench or bed is based on the design flow of wastewater as determined in subsection (F)(1)(d) and an SAR determined under R18-9-A312(D);
  - c. The minimum vertical separation from the bottom of the trench or bed to a limiting subsurface condition is at least 5 feet; and
  - d. Other aspects of trench or bed design follow R18-9-E302, as applicable.
3. Setback distances. Setback distances are no less than 1/4 of the setback distances specified in R18-9-A312(C), but not less than 5 feet, except the setback distance from wells is 100 feet.
- G. Operation and maintenance requirements. A permittee shall:**
- 1. Composting toilet.
    - a. Provide adequate mixing, ventilation, temperature control, moisture, and bulk to reduce fire hazard and prevent anaerobic conditions;
    - b. Follow manufacturer's specifications for addition of any organic bulking agent to control liquid drainage, promote aeration, or provide additional carbon;
    - c. Follow the manufacturer's specifications for operation and maintenance regarding movement of material within the composting chamber;
    - d. If batch system containers are mounted on a carousel, place a new container in the toilet area if the previous one is full;
    - e. Ensure that only human waste, paper approved for septic tank use, and the amount of bulking material required for proper maintenance is introduced to the composting chamber. The permittee shall remove all other materials or trash. If allowed by the manufacturer's specifications the permittee may add, other nonliquid compostable food preparation residues to the toilet;
    - f. Ensure that any liquid end product is:
      - i. Sprayed back onto the composting waste material;
      - ii. Removed by a person who licensed a vehicle under 18 A.A.C. 13, Article 11; or
      - iii. Is drained to the interceptor described in subsection (F);
    - g. Remove and dispose of composted waste as necessary, using a person who licensed a vehicle under 18 A.A.C. 13, Article 11 if the waste is not placed in a disposal area for burial or used on-site as mulch;
    - h. Before ending use for an extended period take measures to ensure that moisture is maintained to sustain bacterial activity and free liquids in the chamber do not freeze; and
    - i. After an extended period of non-use, empty the composting chamber of solid end product and inspect all mechanical components to verify that the mechanical components are operating as designed;
  - 2. Wastewater Disposal Works.
    - a. Ensure that the interceptor is maintained regularly according to manufacturer's instructions to prevent grease and solid wastes from impairing performance of the trench or bed used for dispersal of wastewater, and
    - b. Protect the area of the trench or bed from soil compaction or other activity that will impair dispersal performance.

**H. Reference design.**

1. An applicant may use a composting toilet that achieves the performance requirements in subsection (C) by following a reference design on file with the Department.
2. The applicant shall file a form provided by the Department for supplemental information about the proposed system with the applicant's submittal of the Notice of Intent to Discharge.

**R18-9-E304.4.04 General Permit: Pressure Distribution System, Less Than 3000 Gallons Per Day Design Flow**

**A. A 4.04 General Permit allows for the use of a pressurized distribution of wastewater system with a design flow less than 3000 gallons per day that treats wastewater to a level equal to or better than that specified in R18-9-E302(B).**

1. Definition. For purposes of this Section, a "pressure distribution system" means a tank, pump, controls, and piping that conducts wastewater under pressure in controlled amounts and intervals to a bed or trench or other means of distribution authorized by a general permit for an on-site wastewater treatment facility.
2. An applicant may use a pressure distribution system if a gravity flow system is unsuitable, inadequate, unfeasible, or cost prohibitive because of site limitations or other conditions, or if needed to optimally distribute wastewater.

**B. Performance. An applicant shall ensure that a pressure distribution system:**

1. Disperses wastewater so that:
  - a. Loading rates are optimized for the intended purpose, and
  - b. The wastewater is delivered under pressure and evenly distributed within the disposal works, and
2. Prevents ponding on the land surface.

**C. Notice of Intent to Discharge. In addition to the Notice of Intent to Discharge requirements specified in R18-9-A301(B) and R18-9-A309(B), the applicant shall submit:**

1. A copy of operation, maintenance, and warranty materials for the principal components; and
2. A copy of dosing specifications, including pump curves, dispersing component details, and float control settings.

**D. Design requirements.**

1. Pumps. An applicant shall ensure that pumps used in the on-site wastewater treatment facility:
  - a. Are rated for wastewater service by the manufacturer and certified by Underwriters Laboratories;
  - b. Achieve the minimum design flow rate and total dynamic head requirements for the particular site; and
  - c. Incorporate a quick disconnect using compression-type unions for pressure connections. The applicant shall ensure that:
    - i. Quick-disconnects are accessible in the pressure piping, and
    - ii. A pump has adequate lift attachments for removal and replacement of the pump and switch assembly without entering the dosing tank or process chamber.
2. Switches, controls, alarms, timers, and electrical components. An applicant shall ensure that:
  - a. Switches and controls accommodate the minimum and maximum dose capacities of the distribution network design. The applicant shall not use pressure diaphragm level control switches;

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- b. Fail-safe controls that can be tested in the field are used to prevent discharge of inadequately treated wastewater. The applicant shall include counters or flow meters if critical to control functions, such as timed dosing;
  - c. Control panels and alarms:
    - i. Are mounted in an exterior location visible from the **dwelling structure served or are mounted on the side of the structure served,**
    - ii. Provide manual pump switch and alarm test features, and
    - iii. Include written instructions covering standard operation and alarm events;
  - d. Audible and visible alarms are used for all critical control functions, such as pump failures, treatment failures, and excess flows. The applicant shall ensure that:
    - i. The visual portion of the signal is conspicuous from a distance 50 feet from the system and its appurtenances;
    - ii. The audible portion of the signal is between 70 and 75 db at 5 feet and is discernible from a distance of 50 feet from the system and its appurtenances; and
    - iii. Alarms, test features, and controls are on a non-dedicated electrical circuit associated with a frequently used household lighting fixture and separate from the dedicated circuit for the pump;
  - e. All electrical wiring complies with the National Electrical Code, 2005 Edition, published by the National Fire Protection Association. This material is incorporated by reference and does not include any later amendments or editions of the incorporated material. Copies of the incorporated material are available for inspection at the Arizona Department of Environmental Quality, 1110 W. Washington, Phoenix, AZ 85007 or may be obtained from the National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101. The applicant shall ensure that:
    - i. Connections are made using National Electrical Manufacturers Association (NEMA) 4x junction boxes certified by Underwriters Laboratories; and
    - ii. All controls are in NEMA 3r, 4, or 4x enclosures for outdoor use.
3. Dosing tanks and wastewater distribution components.
- a. An applicant shall:
    - i. Design dosing tanks to withstand anticipated internal and external loads under full and empty conditions, and design concrete tanks to meet the “Standard Specification for Precast Concrete Water and Wastewater Structures, C913-02 (2002),” published by the American Society for Testing and Materials. This material is incorporated by reference and does not include any later amendments or editions of the incorporated material. Copies of the incorporated material are available for inspection at the Arizona Department of Environmental Quality, 1110 W. Washington, Phoenix, AZ 85007 or may be obtained from the American Society for Testing and Materials International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959;
    - ii. Design dosing tanks to be easily accessible and have secured covers;
    - iii. Install risers to provide access to the inlet and outlet of the tank and to service internal components;

## #135

Posted by **Jake Garrett** on **11/11/2021** at **6:38pm** [Comment ID: 144]

*Type: Suggestion*

*Agree: 1, Disagree: 0*

Panels with contactors will turn the home wall into a drum. They won't like that either. In many instances having the control panel located away from the treatment component necessitates two service technicians or at least longer and more expensive service calls.

The added language takes away flexibility of location and is detrimental to good operation and observation.

## #136

Posted by **colin.bishop@anua-us.com** on **11/12/2021** at **6:46pm** [Comment ID: 197]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

The circuit on a light fixture has been a source of issues since 2001. Although not highlighted, this would be a Phase 1 correction that would be helpful. With modern controls and monitoring methods, the purpose of this sentence is served by other means

## #137

Posted by **Jake Garrett** on **11/11/2021** at **6:45pm** [Comment ID: 145]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

It is a violation of electrical codes to double lug onto a household lighting circuit. CHANGE LANGUAGE to require an "always on green light" mounted on the cover of the control panel indicating that there is power to the alarm/control circuit. This has been required for years by the Gila County Building Department and is done routinely on every installation.

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

- iv. Ensure that the volume of the dosing tank accommodates bottom depth below maximum drawdown, maximum design dose, including any drainback, volume to high water alarm, and a reserve volume above the high water alarm level that is not less than the daily design flow volume. If the tank is time dosed, the applicant shall ensure that the combined surge capacity and reserve volume above the high water alarm is not less than the daily design flow volume;
      - v. Ensure that dosing tanks are watertight and anti-buoyant;
      - vi. Design the wastewater distribution components to withstand system pumping pressures;
      - vii. Design the wastewater distribution system to allow air to purge from the system;
      - viii. Design pressure piping to minimize freezing during cold weather;
      - ix. Ensure that the end of each wastewater distribution line is accessible for maintenance;
      - x. Ensure that orifices emit the design discharge rate uniformly throughout the wastewater distribution system; and
      - xi. Design orifices using orifice shields to provide proper distribution of wastewater to the receiving medium.
    - b. An applicant may use a septic tank second compartment or a second septic tank in series as a dosing tank if all dosing tank requirements of this Section are met and a screened vault is used instead of the septic tank effluent filter.
  4. Design SAR. If the site conditions of the property for the on-site wastewater treatment facility do not require pressure distribution, but an applicant chooses to use pressure distribution, the applicant shall use a design SAR for the absorption surfaces in the disposal works that is not more than 1.10 times the adjusted SAR determined in R18-9-A312(D).
- E.** Additional Discharge Authorization requirements. An applicant shall obtain copies of instructions for the critical controls of the system from the person who installed the pressure distribution system. The applicant shall submit one copy of the instructions with the information required in subsection (C).
- F.** Operation and maintenance requirements. In addition to the applicable requirements specified in R18-9-A313(B), a permittee shall ensure that:
1. The operation and maintenance manual for the on-site wastewater treatment facility that supplies the wastewater to the pressure distribution system specifies inspection and maintenance needed for the following items:
    - a. Sludge level in the bottom of the treatment and dosing tanks,
    - b. Watertightness,
    - c. Condition of electrical and mechanical components, and
    - d. Piping and other components functioning within design limits;
  2. All critical control functions are specified in the operation and maintenance manual for testing to demonstrate compliance with design specifications, including:
    - a. Alarms, test features, and controls;
    - b. Float switch level settings;

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

- c. Dose rate, volume, and frequency, if applicable;
  - d. Distal pressure or squirt height, if applicable; and
  - e. Voltage test on pumps, motors, and controls, as applicable;
3. The finished grade is observed and maintained for proper surface drainage. The applicant shall observe the levelness of the tank for differential settling. If there is settling, the applicant shall grade the facility to maintain surface drainage.

**R18-9-E314.4.14 General Permit: Sewage Vault, Less Than 3000 Gallons Per Day Design Flow**

- A.** A 4.14 General Permit allows for the use of a sewage vault that receives sewage.
- 1. An applicant may use a sewage vault if a severe site or operational constraint prevents installation of a conventional septic tank and disposal works or any other on-site wastewater treatment facility allowed under this Article; or
  - 2. An applicant may install a sewage vault as a temporary measure if connection to a sewer or installation of another on-site wastewater treatment facility occurs within two years of the connection or installation.
- B.** Performance. An applicant shall:
- 1. Not allow a discharge from a sewage vault to the native soil or land surface, and
  - 2. Pump and dispose of vault contents at a sewage treatment facility or other sewage disposal mechanism allowed by law.
- C.** Notice of Intent to Discharge. The applicant shall comply with the Notice of Intent to Discharge requirements in R18-9-A301(B) and R18-9-A309(B), except that a site investigation under R18-9-A309(B)(1) is not required if the reason for using a sewage vault is an operational constraint that exists irrespective of the results of a site investigation conducted under R18-9-A310(B).
- D.** Design requirements. In addition to the requirements in R18-9-A312, an applicant shall:
- 1. Install a sewage vault with a capacity that is at least 10 times the daily design flow determined by R18-9-A314(4)(a)(i),
  - 2. Use design elements to prevent the buoyancy of the vault if installed in an area where a high groundwater table may impinge on the vault,
  - 3. Test the sewage vault for leakage using the procedure under R18-9-A314(5)(d). The tank passes the water test if the water level does not drop over a 24-hour period,
  - 4. Install an alarm or signal on the vault to indicate when 85 percent of the vault capacity is reached, and
  - 5. Contract with a person who licensed a vehicle under 18 A.A.C. 13, Article 11 to pump out the vault on a schedule specified within the contract to ensure that the vault is pumped before full.
- E.** Installation, operation, and maintenance requirements. The applicant shall comply with the applicable installation, operation, and maintenance requirements in R18-9-A313(A) and (B).
- F.** Reference design.
- 1. An applicant may use a sewage vault that achieves the performance requirements in subsection (B) by following a reference design on file with the Department.

## #138

Posted by **Jake Garrett** on **11/11/2021** at **6:56pm** [Comment ID: 147]

*Type: Suggestion*

*Agree: 1, Disagree: 0*

ADEQ MUST provide reference designs when this statement is included in rule.

## #139

Posted by **Jake Garrett** on **11/11/2021** at **6:55pm** [Comment ID: 146]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

The reasoning provided in the preamble applies to specific uses, CONSIDER the use of an A312G to avoid persistent attempts to utilize the "operational" exemption for direct discharge of gray water rather than prove the site is unacceptable for any form of disposal. Without this there will be pressure to allow Vaults as a perceived low cost solution, that will result in illegal discharges of sewage by pump once the real cost of pumping and hauling the septage away is actually experienced.



**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

2. The applicant shall file a form provided by the Department for supplemental information about the proposed storage vault with the applicant's submittal of the Notice of Intent to Discharge.

**R18-9-E322.4.22 General Permit: Subsurface Drip Irrigation Disposal, Less Than 3000 Gallons Per Day Design Flow**

A. A 4.22 General Permit allows for the construction and use of a subsurface drip irrigation disposal works that receives high quality wastewater from an on-site wastewater treatment facility to dispense the wastewater to an irrigation system that is buried at a shallow depth in native soil. A 4.22 General Permit includes a pressure distribution system under R18-9-E304.

1. The subsurface drip irrigation disposal works is designed to disperse the treated wastewater into the soil under unsaturated conditions by pressure distribution and timed dosing. The applicant shall ensure that the pressure distribution system meets the requirements specified in R18-9-E304, and the Department shall consider whether the requirements of R18-9-E304 are met when processing the application under R18-9-A301(B).
2. A subsurface drip irrigation disposal works reduces the downward percolation of wastewater by enhancing evapotranspiration to the atmosphere.
3. An applicant may use a subsurface drip irrigation disposal works to overcome site constraints, such as high groundwater, shallow soils, slowly permeable soils, or highly permeable soils, or if water conservation is needed.
4. The subsurface drip irrigation disposal works includes pipe, pressurization and dosing components, controls, and appurtenances to reliably deliver treated wastewater to driplines using supply and return manifold lines.

B. Performance. An applicant shall ensure that:

1. Treated wastewater that meets the following criteria is delivered to a subsurface drip irrigation disposal works:
  - a. Performance Category A.
    - i. TSS of 20 milligrams per liter, 30-day arithmetic mean;
    - ii. BOD<sub>5</sub> of 20 milligrams per liter, 30-day arithmetic mean;
    - iii. Total nitrogen (as nitrogen) of 53 milligrams per liter, five-month arithmetic mean; and
    - iv. Total coliform level of one colony forming unit per 100 milliliters, 95th percentile; or
  - b. Performance Category B.
    - i. TSS of 30 milligrams per liter, 30-day arithmetic mean;
    - ii. BOD<sub>5</sub> of 30 milligrams per liter, 30-day arithmetic mean;
    - iii. Total nitrogen (as nitrogen) of 53 milligrams per liter, five-month arithmetic mean; and
    - iv. Total coliform level of 300,000 (Log<sub>10</sub> 5.5) colony forming units per 100 milliliters, 95th percentile; and
2. The subsurface drip irrigation works is designed to meet the following performance criteria:
  - a. Prevention of ponding on the land surface, and

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

- b. Incorporation of a fail-safe wastewater control or operational process to prevent inadequately treated wastewater from being discharged.
- C. Notice of Intent to Discharge. In addition to the Notice of Intent to Discharge requirements in R18-9-A301(B), R18-9-A309(B), and R18-9-E304, the applicant shall submit:
  - 1. Documentation of the pretreatment method proposed to achieve the wastewater criteria specified in subsection (B)(1), such as the type of pretreatment system and the manufacturer's warranty;
  - 2. Initial filter and drip irrigation flushing settings;
  - 3. Site evapotranspiration calculations if used to reduce the size of the disposal works; and
  - 4. If supplemental irrigation water is introduced to the subsurface drip irrigation disposal works, an identification of the cross-connection controls, backflow controls, and supplemental water sources.
- D. Design requirements. In addition to the applicable design requirements specified in R18-9-A312, an applicant shall ensure that:
  - 1. The design requirements of R18-9-E304 are followed, except that:
    - a. The requirement for quick disconnects in R18-9-E304(D)(1)(c) is not applicable, and
    - b. The applicant may provide the reserve volume specified in R18-9-E304(D)(3)(a)(iv) in an oversized treatment tank or a supplemental storage tank;
  - 2. Drip irrigation components and appurtenances are properly placed.
    - a. Performance category A subsurface drip irrigation disposal works. The applicant shall ensure that:
      - i. Driplines and emitters are placed to prevent ponding on the land surface, and
      - ii. Cover material and placement depth follow manufacturer's requirements to prevent physical damage or ultraviolet degradation of components and appurtenances; or
    - b. Performance category B subsurface drip irrigation disposal works. The applicant shall ensure that:
      - i. Driplines and emitters are placed at least 6 inches below the surface of the native soil;
      - ii. A cover of soil or engineered fill is placed on the surface of the native soil to achieve a total emitter burial depth of at least 12 inches;
      - iii. Cover material and placement depth follow manufacturer's requirements to prevent physical damage or ultraviolet degradation of components and appurtenances; and
      - iv. The drip irrigation disposal works is not used for irrigating food crops;
  - 3. Wastewater is filtered upstream of the dripline emitters to remove particles 100 microns in size and larger;
  - 4. A pressure regulator is provided to limit the pressure of wastewater in the drip irrigation disposal works, **unless pressure compensating tubing is used;**
  - 5. Wastewater pipe meets the approved pressure rating in "Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120, D1785-04a (2004)," or "Standard Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe, Schedules 40 and 80, F441/F441M-02 (2002)," published by the American Society for Testing and Materials. This material is incorporated by reference and does not include any later amendments or editions of the incorporated material. Copies of the incorporated material are available for inspection at the Arizona Department of Environmental Quality, 1110 W.

## #140

Posted by **Doug Disbrow** on **10/07/2021** at **3:51pm** [Comment ID: 11]

*Type: Suggestion | Tags: E322 drip failure*

*Agree: 0, Disagree: 0*

pressure regulators are used to prevent drip tube fittings from blowing apart. hi head pumps produce 85 to 95 psi.. One brand manufacture spec is not to exceed 75 psi.

## #141

Posted by **David\_Swanson** on **11/11/2021** at **6:23am** [Comment ID: 94]

*Agree: 0, Disagree: 0*

... unless not required by the drip tubing manufacturer.

## #142

Posted by **colin.bishop@anua-us.com** on **11/12/2021** at **6:49pm** [Comment ID: 198]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

PC tubing addresses uniform distribution of effluent. It does not address high operating pressure that may cause damage

## #143

Posted by **Jake Garrett** on **10/07/2021** at **4:22pm** [Comment ID: 12]

*Type: Suggestion | Tags: E322 drip failure*

*Agree: 0, Disagree: 0*

All drip tubing has a maximum allowable pressure before tube damage occurs. A pressure regulator must be present. Remove this language or consult with drip tubing manufacturers to develop language that addresses the problem that initiated this change, which likely relates to reliability of the PC dripper itself over time.

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

Washington, Phoenix, AZ 85007 or may be obtained from the American Society for Testing and Materials International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959;

6. The system design flushes the subsurface drip irrigation disposal works components with wastewater at a minimum velocity of 2 feet per second, unless the manufacturer's manual and warranty specify another flushing practice. The applicant shall ensure that piping and appurtenances allow the wastewater to be pumped in a line flushing mode of operation with discharge returned to the treatment system headworks;
7. Air vacuum release valves are installed to prevent water and soil drawback into the emitters;
8. Driplines.
  - a. Driplines are placed from 12 to 24 inches apart unless other configurations are allowed by the manufacturer's specifications;
  - b. Dripline installation and design requirements, including the allowable deflection, follow manufacturer's requirements;
  - c. The maximum length of a single dripline follows manufacturer's specifications to provide even distribution;
  - d. The dripline incorporates a herbicide to prevent root intrusion for at least 10 years; 145 144
  - e. The dripline incorporates a bactericide to reduce bacterial slime buildup;
  - f. Disinfection does not reduce the life of the bactericide or herbicide in the dripline;
  - g. Any return flow from a drip irrigation disposal works to the treatment works does not impair the treatment performance; and
  - h. When dripline installation is under subsection (E)(1)(b) or (c), backfill consists of the excavated soil or similar soil obtained from the site that is screened for removal of debris and rock larger than 1/2-inch;
9. Emitters.
  - a. Emitters are spaced no more than 2 feet apart, and
  - b. Emitters are designed to discharge from 0.5 to 1.5 gallons per hour;
10. A suitable backflow prevention system is installed if supplemental water for irrigation is introduced to the pumping system. The applicant shall not introduce supplemental water to the treatment works;
11. The drip irrigation disposal works is installed in soils classified as:
  - a. Sandy clay loam, clay loam, silty clay loam, or finer with weak platy structure or in soil with a percolation rate from 45 to 120 minutes per inch;
  - b. Sandy clay loam, clay loam, silty clay loam, or silt loam with massive structure or in soil with a percolation rate from 31 to 120 minutes per inch; and
  - c. Other soils if an appropriate site-specific SAR is determined;
12. The minimum vertical separation distances are 1/2 of those specified in R18-9-A312(E)(2) if the design evapotranspiration rate during the wettest 30-day period of the year is 50 percent or more of design flow, except that the applicant shall not use a minimum vertical separation distance less than 1 foot;
13. In areas where freezing occurs, the irrigation system is protected as recommended by the manufacturer;

## #144

Posted by **Doug Disbrow** on **11/10/2021** at **12:47pm** [Comment ID: 55]

*Type: Suggestion*

*Agree: 1, Disagree: 0*

The EPA stops short of banning the herbicide that is commonly used in some manufactures drip tubing.

Counties have used this statement to prevent the use of drip tube brands that use newer technology to prevent root invasion. This wording should change.

## #145

Posted by **Doug Disbrow** on **10/07/2021** at **4:41pm** [Comment ID: 14]

*Type: Question | Tags: Other, drip other herbicide*

*Agree: 0, Disagree: 0*

What type of herbicide is being introduced into the environment? What about after 10 years what happens? Our designs are intended for a 20 year life span or greater.

Is this not a contradiction to the purpose of protecting the environment?

Additionally this prevents other manufactures of drip tube out of Arizona because they use a mechanical method to keep out roots and not a chemical.

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

14. If drip irrigation components are used for a disposal works using a shaded trench constructed in native soil, the following requirements are met:
  - a. The trench is between 12 and 24 inches wide;
  - b. The trench bottom is between 12 and 30 inches below the original grade of native soil and level to within 2 inches per 100 feet of length;
  - c. Two driplines are positioned in the bottom of the trench, not more than 4 inches from each sidewall;
  - d. The trench with the positioned driplines is filled to a depth of 6 to 10 inches with decomposed granite C-33 sand or a mixture of both, with mixture composition, if applicable, and placement specified on the construction drawing; <sup>147</sup>
  - e. A minimum of 8 inches of backfill is placed over the decomposed granite or C-33 sand fill to an elevation of 1 to 3 inches above the native soil finished grade; <sup>148</sup>
  - f. Observation ports are placed at both ends of each shaded trench to confirm the saturated wastewater level during operation; and <sup>149</sup>
  - g. A separation distance of 24 inches or more is maintained between the nearest sidewall of an adjacent trench; and
15. The soil absorption area used for design of a drip irrigation works is calculated using:
  - a. For a design that uses the shaded trench method described in subsection (D)(14), the bottom and sidewall area of the shaded trench not more than 4 square feet per linear foot of trench; or
  - b. For all other designs, the number of emitters times an area for each emitter where the emitter area is a square centered on each emitter with the side dimension equal to the emitter separation distance selected by the designer in accordance with R18-9-E322(D)(9)(a), excluding all areas of overlap of adjacent squares. <sup>146</sup>
- E. Installation requirements. In addition to the applicable requirements in R18-9-A313(A) and R18-9-E304, the applicant shall ensure that:
  1. The dripline is installed by:
    - a. A plow mechanism that cuts a furrow, dispenses pipe, and covers the dripline in one operation;
    - b. A trencher that digs a trench 4 inches wide or less;
    - c. Digging the trench with hand tools to minimize trench width and disruption to the native soil; or
    - d. Without trenching, removing surface vegetation, scarifying the soil parallel with the contours of the land surface, placing the pipe grid, and covering with fill material, unless prohibited in subsection (D)(2)(b)(ii);
  2. Drip irrigation pipe is stored to preserve the herbicidal and bactericidal characteristics of the pipe;
  3. Pipe deflection conforms to the manufacturer's requirements and installation is completed without kinking to prevent flow restriction;
  4. A shaded trench drip irrigation disposal works is installed as specified in the design documents used for the Construction Authorization; and

## #146

Posted by **Jake Garrett** on **11/11/2021** at **7:21pm** [Comment ID: 151]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Simplify this language and calculate the same as all other drip irrigation design configurations. This installation method is not intended to be a trench, but only a method if installation is rocky soils. sidewall introduces confusion. use 4 ft sq per lineal foot of 24" trench.

## #147

Posted by **Jake Garrett** on **11/11/2021** at **7:09pm** [Comment ID: 148]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Change specification from 6"-10"od sand or decomposed granite to C-33, DG or screened native material free of rocks and protecting the drip tube with at least 4" of this cover material. Then backfill to the depth specified in plans with native material as specified in the plans.

## #148

Posted by **Jake Garrett** on **11/11/2021** at **7:13pm** [Comment ID: 149]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Must meet the specifications for cover of Category A or B . Change wording to avoid confusion. Drip tubing manufacturers recommend this method rather than the shaded trench now in rule. This conforms to the original shaded trench design noted above, originating in Gila County and still used by A312G on most drip installations as rocks prohibit the use of 4" trenchers.

## #149

Posted by **Jake Garrett** on **11/11/2021** at **7:16pm** [Comment ID: 150]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Gila County experience has shown that inspection ports are needed in only the lowest shaded trench.

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

5. The pressure piping and electrical equipment are installed according to the Construction Authorization in R18-9-A301(D)(1)(c) and any local building codes.
- F. Operation and maintenance requirements. In addition to the applicable requirements in R18-9-A313(B) and R18-9-E304, the permittee shall:
  1. Test any fail-safe wastewater control or operational process quarterly to ensure proper operation to prevent discharge of inadequately treated wastewater, and
  2. Maintain the herbicidal and bacteriological capability of the drip irrigation disposal works.

**R18-9-E323.4.23 General Permit: 3000 to less than 24,000 Gallons Per Day Design Flow** 153

- A. A 4.23 General Permit is a consolidated permit that 157 allows for the construction and use of an on-site wastewater treatment facility with a design flow from 3000 gallons per day to less than 24,000 gallons per day or more than one on-site wastewater treatment facility on a property or on adjacent properties under common ownership with an a combined design flow from 3000 to less than 24,000 gallons per day if all of the following apply:
1. Except as specified in subsection (A)(3), the treatment and disposal works consists of technologies or designs that are would be covered under other general permits, but are either sized larger to accommodate increased flows or, will be located at a site that cumulatively accommodates flows between 3000 gallons per day to less than 24,000 gallons per day as determined pursuant to R18-9-A309(A)(10); 154
  2. The on-site wastewater treatment facility complies with all applicable requirements of Articles 1, 2, and 3 of this Chapter;
  3. The facility is not a system or a technology that would be covered by one of the following general permits available for a design flow of less than 3000 gallons per day:
    - a. An aerobic system described in R18-9-E315 that is used in combination with subsurface or surface or subsurface disposal described in R18-9-E315, R18-9-E321 and R18-9-E322, respectively; 151 152
    - b. A disinfection device described in R18-9-E320, except that a radiation disinfection device is allowed; or 155
    - c. A seepage pit or pits described in R18-9-E301 156
  4. The discharge of total nitrogen to groundwater is controlled.
    - a. An applicant shall:
      - i. Demonstrate that the nitrogen loading calculated over the property served by the on-site wastewater treatment facility, including streets, common areas, and other non-contributing areas, is not more than 0.088 pounds (39.9 grams) of total nitrogen per day per acre calculated at a horizontal plane immediately beneath the zone of active treatment of the on-site wastewater treatment facility including its disposal field; or
      - ii. Justify a nitrogen loading that is equally protective of aquifer water quality as the nitrogen loading specified in subsection (A)(4)(a)(i) based on site-specific hydrogeological or other factors.
    - b. For purposes of the demonstration in subsection (A)(4)(a)(i), the applicant may assume that 0.0333 pounds (15.0 grams) of total nitrogen per day per person is contributed to raw sewage and may determine the nitrogen concentration in the treated wastewater at a horizontal plane immediately beneath the zone of active treatment of the on-site wastewater treatment facility including its disposal field.



## #150

Posted by **David Swanson** on **11/12/2021** at **8:00am** [Comment ID: 169]

*Agree: 0, Disagree: 0*

Originally, large aerobic systems (meaning multiple or clustered residential aerobic treatment units described in E315 being used in a larger system) were prohibited due to instances groundwater pollution. (So I've been told) Snowbird mobile home parks, RV parks etc., are often vacant for long periods during the year. When residents return in large numbers flows are large and it can take weeks before the ATUs reestablish stated treatment levels in their discharges. Basically a sustained period of high flow and low treatment. It is also difficult to provide the food and flows in the off-season to maintain performing systems.

## #151

Posted by **colin.bishop@anua-us.com** on **11/12/2021** at **6:54pm** [Comment ID: 199]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

David Swanson is correct on the history of why this section is written the way it was. In the 1980s and 1990s, ADEQ was faced with many aeration package plants up to 20,000 GPD that were often out of compliance. This was due to the seasonal nature of most Arizona communities. ATUs generally need to be evenly fed, both hydraulically and organically. Other technologies, such as media filters, do not have this same limitation. This section was written the way it was to better protect groundwater and to provide owners with systems that didn't require constant operator oversight.

## #152

Posted by **Jake Garrett** on **11/11/2021** at **7:37pm** [Comment ID: 156]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Change this verbiage to allow subsurface drip irrigation with aerobic system effluent.

## #153

Posted by **Lou Brown** on **11/12/2021** at **7:45pm** [Comment ID: 209]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

I believe there is a TWG working on the over 3,000 gpd systems also. This is another section that should have no changes made until the TWG has presented their finding. This should wait and be a Phase 2 change.

## #154

Posted by **Jake Garrett** on **11/11/2021** at **7:28pm** [Comment ID: 153]

*Type: Suggestion*

Agree: 0, Disagree: 0

Change values to greater than 3,000 gpd up to and including 24000 gpd. This change is needed throughout the rule to simplify design calculations for facilities where the sum of flows naturally lands on 3,000 gpd and 24,00 gpd. 3,000 gpd will exclude smaller facilities from 4.23 requirements and 24,000 gpd will exclude unnecessary migration to Individual permits or downsizing a facility.

Expand the 4.23 upper limit up to and including 100,000 gpd. This is a common recommendation of industry practitioners and local and state regulators.

Conform all references to the new limits throughout rule.

## #155

Posted by **colin.bishop@anua-us.com** on **11/12/2021** at **6:55pm** [Comment ID: 200]

Type: Question

Agree: 0, Disagree: 0

By "radiation" do you mean ultraviolet (UV)?

## #156

Posted by **Jake Garrett** on **11/11/2021** at **7:40pm** [Comment ID: 157]

Type: Suggestion

Agree: 0, Disagree: 0

Add: " except as replacements for existing pits when upgrading to 4.23 permits from an existing 1.09 system."

## #157

Posted by **thomas.hanson** on **10/15/2021** at **6:48pm** [Comment ID: 35]

Type: Question | Tags: 4.23

Agree: 1, Disagree: 0

A site with five 1000 gpd conventional systems. Does this mean that a site would apply for just this permit or would apply for this permit in addition to five 4.02 GPs? This change does not add clarity.

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

- B.** Notice of Intent to Discharge. In addition to the Notice of Intent to Discharge requirements specified in R18-9-A301(B) and R18-9-A309(B), an applicant shall submit:
1. A performance assurance plan consisting of tasks, schedules, and estimated annual costs for operating, maintaining, and monitoring performance over a 20-year operational life; **158**
  2. Design documents and the performance assurance plan, signed, dated, and sealed by an Arizona-registered professional engineer;
  3. Any documentation submitted under the alternative design procedure in R18-9-A312(G) that pertains to achievement of better performance levels than those specified in the general permit for the corresponding facility with a design flow of less than 3000 gallons per day, or for any other alternative design, construction, or operational change proposed by the applicant; and
  4. A demonstration of total nitrogen discharge control specified in subsection (A)(4).
- C.** Design requirements. The applicant shall comply with the applicable requirements in R18-9-A312 and the applicable general permits for the treatment works and disposal works used in the design of the on-site wastewater treatment facility.
- D.** Installation requirements. The applicant shall comply with the applicable requirements in R18-9-A313(A) and the applicable general permits for the treatment works and disposal works used in the design of the on-site wastewater treatment facility.
- E.** Operation and maintenance requirements. The applicant shall comply with the applicable requirements in R18-9-A313(B) and the applicable general permits for the treatment works and disposal works used in the design of the on-site wastewater treatment facility.
- F.** Additional Discharge Authorization requirements. In addition to any other requirements, the applicant shall submit the following information before the Discharge Authorization is issued.
1. A signed, dated, and sealed Engineer's Certificate of Completion in a format approved by the Department affirming that:
    - a. The project was completed in compliance with the requirements of this Section and as described in the plans and specifications, or
    - b. Any changes are reflected in as-built plans submitted with the Engineer's Certificate of Completion.
  2. The name of the service provider or certified operator that is responsible for implementing the performance assurance plan.
- G.** Reporting requirement. The permittee shall provide the Department with the following information on the anniversary date of the Discharge Authorization:
1. A form signed by the certified operator or service provider that:
    - a. Provides any data or documentation required by the performance assurance plan,
    - b. Certifies compliance with the requirements of the performance assurance plan, and
    - c. Describes any additions to the facility during the year that increased flows and certifies that the flow did not exceed 24,000 gallons per day during any day; and
  2. Any applicable fee required by 18 A.A.C. 14.

#158

Posted by **Jake Garrett** on **11/11/2021** at **7:42pm** [Comment ID: 158]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Add: "the required O&M manual may be incorporated into the Performance Assurance Program".

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

**H. Facility expansion.** If an expansion of an on-site wastewater treatment facility **site** operating under this Section involves the installation of a separate on-site wastewater treatment facility on the property with a design flow of less than 3000 gallons per day, the applicant shall submit the applicable Notice of Intent to Discharge and fee required under 18 A.A.C. 14 for the separate on-site wastewater treatment **facility in order to add the facility to the existing site operating under this section.** **159**

1. The applicant shall indicate in the Notice of Intent to Discharge the Department's file number and the issuance date of the Discharge Authorization previously issued by the Director under this Section for the property.
2. Upon satisfactory review, the Director shall reissue the Discharge Authorization for this Section, with the new issuance date and updated information reflecting the expansion.
3. If the expansion causes the accumulative design flow from on-site wastewater treatment facilities on the property to equal or exceed 24,000 gallons per day, the Director shall not reissue the Discharge Authorization, but shall require the applicant to submit an application for an individual permit addressing all proposed and operating facilities on the property.

**Table 1. Unit Design Flows**

| <b>Wastewater Source</b><br><b>(Add together all wastewater source line items applicable to the facility.)</b> | <b>Applicable Unit</b>                       | <b>Sewage Design Flow per Applicable Unit, Gallons Per Day</b> |
|--|--|--|
| Airport  | Passenger (average daily number)<br>Employee | 4<br>15  |
| Auto Wash  | Facility                                     | Per manufacturer, if consistent with this Chapter              |
| Bar/Lounge   | Seat   | 30   |
| Barber Shop  | Chair  | 35   |
| <b>162</b> Beauty Parlor   | Chair  | 100  |
| Bowling Alley (snack bar only)   | Lane   | 75   |
| Camp   |  |  |
| Day camp, no cooking facilities  | Camping unit                                 | 30   |
| Campground, overnight, flush toilets   | Camping unit                                 | 75   |
| Campground, overnight, flush toilets and shower  | Camping unit                                 | 150  |
|  | Person                                       | 100-150  |
| Campground, luxury   | Person                                       | 50   |

## #159

Posted by **Jake Garrett** on **11/11/2021** at **7:46pm** [Comment ID: 159]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Please provide an explanation of this change in the preamble.

## #160

Posted by **Jake Garrett** on **11/11/2021** at **7:54pm** [Comment ID: 163]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Add clarification that the flow figures in Table 1 do not include any peaking factors unless specifically stated.

This is a constant question and misunderstanding. It MUST BE FIXED NOW!!!

## #161

Posted by **Jake Garrett** on **11/11/2021** at **7:48pm** [Comment ID: 160]

*Agree: 0, Disagree: 0*

Please rearrange the preamble to place Table 1 changes in the proper sequence.

## #162

Posted by **Mirela Hromatka** on **10/21/2021** at **2:49pm** [Comment ID: 37]

*Type: Suggestion | Tags: Other, Table 1 Phase 2*

*Agree: 1, Disagree: 0*

Add a Butcher Shop - this type of business often involves meat processing which requires high water consumption. Applicable Units may include but are not limited to: Employee (20 gpd), Customer (7 gpd), Facility (per producer, if consistent with this Chapter).

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

|  |   |  |
|--|---|--|
| Camp, youth, summer, or seasonal   |   |  |
| Church   |   |  |
| Without kitchen  | Person (maximum attendance)   | 5  |
| With kitchen   | Person (maximum attendance)   | 7  |
| Country Club   | Resident Member   | 100  |
|  | Nonresident Member  | 10   |
| Dance Hall   | Patron  | 5  |
| Dental Office <sup>165</sup>   | Chair   | 500  |
| Dog Kennel   | Animal, maximum occupancy   | 15   |
| Dwelling<br>For determining design flow for sewage treatment facilities under R18-9-B202(A)(9)(a) and sewage collection systems under R18-9-E301(D) and R18-9-B301(K), excluding peaking factor.   | Person  | 80 <sup>163</sup>  |
| Dwelling <sup>166</sup><br>For on-site wastewater treatment facilities per <sup>164</sup> R18-9-E302 through R18-9-E323:<br>Apartment Building<br>1 bedroom<br>2 bedroom<br>3 bedroom<br>4 bedroom<br><br>Seasonal or Summer Dwelling (with recorded seasonal occupancy restriction)<br><br>Single Family Dwellings (for both conventional and alternative systems)<br><br>Other than Single Family Dwelling, the greater flow value based on: | <br><br><br>Apartment<br>Apartment<br>Apartment<br>Apartment<br><br>Resident<br><br>see R18-9-A314(D)(1) R18-9-A314(4)(a) | <br><br><br>200<br>300<br>400<br>500<br><br>100<br><br>see R18-9-A314(D)(1) R18-9-A314(4)(a) |

## #163

Posted by **Mirela Hromatka** on **10/21/2021** at **3:24pm** [Comment ID: 39]

*Type: Suggestion | Tags: Other, Table 1 Phase 2*

*Agree: 1, Disagree: 0*

Consider reducing the gpd/person (e.g. 70 gpd) as a result of water conservation efforts across the region and utilization and/or replacement of conventional faucets with water-efficient faucets.

## #164

Posted by **Mirela Hromatka** on **10/21/2021** at **3:19pm** [Comment ID: 41]

*Type: Suggestion*

*Agree: 0, Disagree: 0*

Consider adding "septic" next to "on-site", or make "on-site" bold so it stands out - often times applicants confuse septic design flows with sewage treatment facilities design flows (one category above).

## #165

Posted by **Mirela Hromatka** on **10/21/2021** at **2:55pm** [Comment ID: 38]

*Type: Suggestion | Tags: Other, Table 1 Phase 2*

*Agree: 0, Disagree: 0*

Recent water use data show that new dental technology utilizes much less water than 500 gpd per chair, suggesting the Applicable Unit for Dental Office be revised to: Employee (20 gpd), Customer (7 gpd), or other.

## #166

Posted by **Jake Garrett** on **11/11/2021** at **7:50pm** [Comment ID: 161]

*Type: Question*

*Agree: 0, Disagree: 0*

Add a comment that these dwelling flows include an appropriate peaking factor.



**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

|   |                 |   |
|---|-----------------|---|
| Bedroom count   |                 |   |
| 1-2 bedrooms  | Bedroom         | 300   |
| Each bedroom over 2                                     | Bedroom         | 150   |
| Fixture count   | Fixture unit    | 25  |
| Fire Station  | Employee        | 45  |
| Hospital  |                 |   |
| All flows   | Bed             | 250   |
| Kitchen waste only                                      | Bed             | 25  |
| Laundry waste only                                      | Bed             | 40  |
| Hotel/motel (assuming outsourced linen laundry service) |                 |   |
| Without kitchen   | Bed (2 person)  | 50  |
| With kitchen  | Bed (2 person)  | 60  |
| Industrial facility                                     |                 |   |
| Without showers   | Employee        | 25  |
| With showers  | Employee        | 35  |
| Cafeteria, add  | Employee        | 5   |
| Institutions  |                 |   |
| Resident  | Person          | 75  |
| Nursing home  | Person          | 125   |
| Rest home   | Person          | 125   |
| Laundry   |                 |   |
| Self service  | Wash cycle      | 50  |
| Commercial  | Washing machine | Per manufacturer, if consistent with this Chapter |
| Office Building   | Employee        | 20  |

## #167

Posted by **Glawson527** on **11/09/2021** at **4:06pm** [Comment ID: 54]

*Type: Suggestion*

*Agree: 1, Disagree: 0*

In Table 1. Unit Design Flows some items are being clarified such as Hotel/Motel outsource linen and Restaurant/Cafeteria items. I would strongly suggest clarifying items in Institutions so that it is clear that they take into account: employees, food service, and laundry, etc.. Currently there is nothing other than person with a 75 or 125 gpd df number.

Reply by **David\_Swanson** on **11/11/2021** at **1:14pm** [Comment ID: 106]

*Tags: --*

*Agree: 0, Disagree: 0*

I strongly agree.

Reply by **Jake Garrett** on **11/11/2021** at **7:51pm** [Comment ID: 162]

*Tags: --*

*Agree: 0, Disagree: 0*

I agree as well

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

|  |                             |               |
|--|-----------------------------|---------------|
| Park (temporary use)                                   |                             |               |
| Picnic, with showers, flush toilets                    | Parking space               | 40            |
| Picnic, with flush toilets only                        | Parking space               | 20            |
| Recreational vehicle, no water or sewer connections    | Vehicle space               | 75            |
| Recreational vehicle, with water and sewer connections | Vehicle space               | 100           |
| Mobile home/Trailer                                    | Space                       | 250           |
| Restaurant/Cafeteria                                   | <del>Employee</del>         | <del>20</del> |
| <u>For each employee, add</u>                          | <u>Employee</u>             | <u>20</u>     |
| With toilet, add                                       | Customer                    | 7             |
| Kitchen waste – full service, add                      | Meal                        | 6             |
| <u>Kitchen waste – disposable service, add</u>         | <u>Meal</u>                 | <u>2</u>      |
| Garbage disposal, add                                  | Meal                        | 1             |
| Cocktail lounge, add                                   | Customer                    | 2             |
| <u>Kitchen waste disposal service, add</u>             | <u>Meal</u>                 | <u>2</u>      |
| Restroom, public                                       | Toilet                      | 200           |
| School   |                             |               |
| Staff and office                                       | Person                      | 20            |
| Elementary, add  | Student                     | 15            |
| Middle and High, add                                   | Student                     | 20            |
| with gym & showers, add                                | Student                     | 5             |
| with cafeteria, add                                    | Student                     | 3             |
| Boarding, total flow                                   | Person                      | 100           |
| Service Station with toilets                           | First bay                   | 1000          |
|  | Each additional bay         | 500           |
| Shopping Center, no food or laundry                    | Square foot of retail space | 0.1           |
| Store  | Employee                    | 20            |
| Public restroom, add                                   | Square foot of retail space | 0.1           |
| Swimming Pool, Public                                  | Person                      | 10            |
| Theater  |                             |               |
| Indoor   | Seat                        | 5             |
| Drive-in   | Car space                   | 10            |

**DISCUSSION DRAFT: ADEQ is seeking comment on the rule changes highlighted in yellow and their corresponding explanations.**

Note: Unit flow rates published in standard texts, literature sources, or relevant area or regional studies are considered by the Department, if appropriate to the project.

DRAFT 9/23/2021