

STATEMENT OF BASIS FOR MODIFICATION
OF AZPDES PERMIT NO. AZ0026328

Pursuant to A.C.C. R18-9-B906, ADEQ is modifying Arizona Pollutant Discharge Elimination System (AZPDES) Permit No. AZ0026328 which became effective on November 28, 2022. The purpose of this permit modification is to re-evaluate the effluent limitations for boron.

Facility Information:

The Former Perryville Feed Store is a Leaking Underground Storage Tank (UST) Site that is being investigated and remediated under the ADEQ's Leaking UST Program - State Lead Corrective Action Unit. The site is a groundwater pump-and-treat system that remediates gasoline contamination in groundwater caused by releases from a former leaking UST system. The groundwater treatment system (GWTS) that was installed that consists of cartridge filters, a shallow tray air stripper (STAS), bag filters, and liquid phase granular activated carbon (LGAC). Vapor from the STAS is treated by vapor phase granular activated carbon (VGAC).

Receiving Water:

The treated effluent from the GWTS will be discharged into a Roosevelt Irrigation District (RID) pipeline that will convey the water into the RID's open canal, located approximately 0.79-mile north of the former Perryville Feed Store site. Approval from RID to tie-in to the pipeline is currently pending. The receiving water for Outfall 001 is the RID Canal, which is a Phoenix Area Canal in the Middle Gila River Basin.

The applicable designated uses for the RID Canal are Agricultural Irrigation (AgI) and Agricultural Livestock watering (AgL). The RID Canal is not on the Clean Water Act Section 303(d) list. However, there is a Total Maximum Daily Load (TMDL) for total boron and total selenium (chronic) for the Gila River-Centennial Wash to Gillespie Dam. Dischargers identified in "Zone 1" (which includes portions of the RID Canal) are determined to have a likelihood of impacting the impaired reach of the Gila River and are required to have a waste load allocation (WLA).

Description of Modification:

After the 2022 issuance of AZPDES Permit No. AZ0026328, ADEQ Waste Programs Division (WPD) determined there was a high natural background concentration of boron present in the groundwater that the facility is pumping/treating and requested a WLA re-evaluation.

Boron WLAs for point source discharges to the Gila River-Centennial Wash to Gillespie Dam are set at the AgI water quality standard of 1,000 micrograms per liter ($\mu\text{g/L}$) in the absence of available data during development of the TMDL. However, during the public comment period, ADEQ allowed the City of Buckeye to submit data and completed a then-current performance analysis for the Central Buckeye Wastewater Treatment Plant (WWTP) (AZPDES Permit No. AZ0025313). The resulting boron WLA calculated for the Central Buckeye WWTP was greater than the default WLA for boron originally allocated to Central Buckeye WWTP and decreased the TMDL's margin of safety by 1%.

The procedure used in the TMDL to calculate effluent limitations for boron based on current-performance analysis is as follows:

1. Determine the average (mean) effluent concentration.
2. Calculate the probable error of the data set (a statistical measure of the interval to which measurements are expected to fall into 50% of the time, calculated as 0.6745 times the standard deviation).
3. Set the WLA equal to the average effluent concentration plus probable error.
4. Set the average monthly limit (AML) equal to the WLA.
5. The maximum daily limit (MDL) is calculated from the AML using the conversion multiplier, which is calculated using methods from the Environmental Protection Agency (EPA) Technical Support Document for Water Quality-based Toxics Control (TSD) (Table 5-3, Section 5.5.1 on page 106):

$$\frac{\text{MDL}}{\text{AML}} = \frac{\exp[z_m \sigma - 0.5 \sigma^2]}{\exp[z_a \sigma_n - 0.5 \sigma_n^2]}$$

Where

- σ_n^2 = $\ln(CV^2/n + 1)$
- σ^2 = $\ln(CV^2 + 1)$
- CV = the coefficient of variation of the effluent concentration, use a default value of 0.60 for less than 10 samples
- n = the number of samples per month
- z_m = the percentile exceedance probability for the MDL
- z_a = the percentile exceedance probability for the AML

ADEQ's current procedure is to set n equal to 4 if the monitoring frequency is once per month or less frequent, per Section 5.5.3 of the EPA TSD when determining the conversion multiplier. However, the TMDL used n = 1 for any facility with monthly monitoring. For the calculations in this modification, n = 1 was used to be consistent with the TMDL. This results in more stringent limits than using n = 4.

Boron permit limitations for the Former Perryville Feed Store Leaking UST GWTS were recalculated using the current-performance analysis procedure described above:

Boron Data Submitted by ADEQ WPD:

Date	Result (µg/L)
2/15/2022	925
9/29/2022	5,380
10/7/2022	2,600

Calculations:

Average Effluent Concentration	2,968 µg/L
Standard Deviation	2,250 µg/L
Probable Error (0.6745 x Standard Deviation)	1,518 µg/L
WLA (Average + Probable Error)	4,486 µg/L
Monthly Average Limit (set equal to WLA)	4,486 µg/L
MDL conversion factor using n = 1	1.459
Maximum Daily Limit	6,545 µg/L

This permit modification will update the boron permit limitations using these calculations.

The average flow is 0.1224 million gallons per day (mgd). The modified permit limits correspond to an additional average load of 2.08 kilograms per day (kg/day) of boron. This would decrease the explicit margin of safety of the TMDL by approximately 0.5%.

ADEQ proposes to modify the permit as follows:

Current Permit	Modification	Reason for Change
Boron limited as water quality-based effluent limit (WQBEL)	Boron limited based on current performance analysis per Gila River-Centennial Wash to Gillespie Dam TMDL	Permittee requested re-evaluation of limits required by TMDL

Anti-Backsliding Considerations:

“Anti-backsliding” refers to statutory (Section 402(o) of the Clean Water Act) and regulatory (40 CFR 122.44(l)) requirements that prohibit the renewal, reissuance, or modification of an existing NPDES permit that contains effluent limits, permit conditions, or standards that are less stringent than those established in the previous permit. The rules and statutes do identify exceptions to these circumstances where backsliding is acceptable. This permit has been reviewed and drafted with consideration of anti-backsliding concerns. 40 CFR 122.44(l)(2)(i)(B)(1) allows a permit to be modified to contain a less stringent effluent limitation if information becomes available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance. This permit modification is not removing limitations from the permit, but establishing different limitations solely for boron based on the current-performance analysis allowed by the Gila River-Centennial Wash to Gillespie Dam TMDL.

Public Notice (A.A.C. R18-9-A907) / Public Comment Period:

These changes are considered a major modification. This proposed modification will be public noticed for a 30-day comment period prior to issuance of the final permit decision.

EPA Review (A.A.C. R18-9-A908(C))

A copy of this draft permit modification and any revisions made to this draft as a result of public comments received will be sent to EPA Region 9 for review. If EPA objects to a provision of the draft, ADEQ will not issue the permit until the objection is resolved.

Information Sources

1. ADEQ. Gila River – Centennial Wash to Gillespie Dam Reach 15070101-008 TMDLs for: Total Boron & Total Selenium (Chronic). November 2015.
2. EPA Technical Support Document for Water Quality-based Toxics Control dated March 1991.