

STATEMENT OF BASIS FOR MODIFICATION OF AZPDES PERMIT NO. AZ0026166

Pursuant to A.C.C. R18-9-B906, on April 6, 2023, ADEQ received a request from the Tucson Water Department (Tucson Water), owner of Santa Cruz River Heritage Project to modify AZPDES Permit No. AZ0026166 that was granted on April 3, 2023 and issued on June 14, 2023. This facility is a reclaimed water recharge facility in Pima County with a design capacity of 2.81 million gallons per day (MGD) and is considered to be a major facility under the AZPDES program. The modification request was to reevaluate the effluent monitoring data used to calculate reasonable potential and effluent limitations for permit reissuance. The application ID number for this modification (also known as the LTF number) is 98495. This document gives pertinent information concerning the modification. The effluent limitations contained in this permit modification will maintain the Water Quality Standards listed in Arizona Administrative Code (A.A.C.) R18-11-101 *et seq.* This permit is proposed to be issued for a period of 5 years.

Background

The application for permit reissuance received on December 8, 2022 included total residual chlorine, mercury, cyanide, and selenium data submitted to ADEQ to meet the compliance monitoring requirements for Tucson Water's aquifer protection permit (APP; P-512598). The analytical methods used were appropriate to meet the monitoring requirements for the APP, but were not sufficiently sensitive to meet the individual AZPDES permit requirements. This led to non-detect data with limits of quantification (LOQs) that exceed the lowest applicable water quality standards listed in A.A.C R18-11 Appendix A being incorporated into the reasonable potential analysis (RPA). The use of these results caused inaccurate reasonable potential (RP) in the permit issued on June 14, 2023. Samples for mercury, cyanide, and selenium were taken from the same monitoring location to meet the monitoring requirements for both the APP and AZPDES permits. APP samples for total residual chlorine were collected at a location prior to the de-chlorination process, which does not meet AZPDES monitoring requirements. In addition to the effluent monitoring data collected to meet APP compliance conditions, Tucson Water provided results for total residual chlorine, mercury, cyanide, and selenium in accordance with the sufficiently sensitive monitoring requirements of the AZPDES permit. This permit modification recalculated RPA using only results sampled for the AZPDES permit.

Nature of Facility Discharge

The Santa Cruz River Heritage Project has a design capacity of 2.81 MGD. Before being discharged at Outfall 001, treated effluent from Pima County - Agua Nueva Water Reclamation Facility (WRF; APP number P-100655 & AZPDES Permit AZ0026107) is blended with groundwater from recovery wells and water from the Silverbell Groundwater Extraction and Treatment System, filtered, and disinfected using chlorination before receiving flow contribution from the Tucson Airport Remediation Project (AZPDES Permit AZ0026417). Flow is then distributed to end users, one of which is the Heritage De-chlorination Facility, which de-chlorinates the water and discharges it at Outfall 001.

Receiving Water

The Water of the U.S. Protected Surface Water (WOTUS PSW) for Santa Cruz River Heritage Project Outfall 001 is Santa Cruz River from Tubac Bridge to Agua Nueva WRF outfall at:

Latitude 32° 17' 04" N
Longitude 111° 58' 45" W
Township 14 S, Range 13 E, Section 23

The water quality standards vary by designated use depending on the level of protection required to maintain that use. The receiving water segment is an ephemeral surface water. Per A.A.C. R18-11-113(D), the water quality standards that apply to effluent-dependent waters (EDWs) will be applied to derive discharge limitations for any point source discharge of wastewater to an ephemeral water. The AZPDES permit includes discharge limitations and monitoring requirements designed to achieve compliance with A&Wedw standards. Therefore, the following uses are applied to the receiving water:

Aquatic and Wildlife effluent-dependent water (A&Wedw)
Partial Body Contact (PBC)
Agricultural Livestock Watering (AgL)

Method for Calculating Water Quality-Based Effluent Limitations

Per 40 CFR 122.44(d)(1)(ii), (iii), and (iv), discharge limits must be included in the permit for parameters with "reasonable potential" (RP), that is, those known to be or expected to be present in the effluent at a level that could potentially cause any applicable numeric water quality standard to be exceeded. Numeric water quality standards are outlined in A.A.C. R18-11-109 and Appendix A. RP refers to an analysis, based on the statistical calculations using the data submitted or consideration of other factors, to determine whether the discharge may exceed the Water Quality Standards. The procedures used to determine RP are outlined in the *Technical Support Document for Water Quality-based Toxics Control (TSD)* (EPA/505/2-90-001). In most cases, the highest reported value for a parameter is multiplied by a factor (determined from the variability of the data and number of samples) to determine a "highest estimated value." This value is then compared to the lowest applicable Water Quality Standard for the receiving water. If the value is greater than the standard, RP exists and a water quality-based effluent limitation (WQBEL) is required in the permit for that parameter. RP may also be determined from BPJ based on knowledge of the treatment facilities and other factors.

Proposed Fact Sheet Changes:

1. Changes to Fact Sheet Section V. Description of Discharge Table are as follows:

Table V. Description of Discharge		
Parameters	Units	Modification to Maximum Daily Discharge Concentration
Chlorine, Total Residual	µg/L	5
Cyanide	µg/L	5
Mercury	µg/L	0.0042
Selenium	µg/L	1.68

2. Changes to Fact Sheet Section VII. Proposed Permit Changes Table are as follows:

Table 1. Effluent Limitations and Monitoring Requirements			
Parameter	Current Permit	Modification	Reason for Change
Permitted Design Flow	3.57 MGD	2.81 MGD	Permitted design flow adjusted to meet 208 plan consistency
Chlorine, Total Residual	Limited	Concentration Limits Recalculated Monthly Average: 8.5 µg/L Mass Limits Recalculated Monthly Average: 91 g/day	Limits recalculated following the procedure outlined in the TSD using the most current Arizona (WQS)
Cyanide	Limited	Concentration Limits Recalculated Monthly Average: 8.6 µg/L Daily Maximum: 14 µg/L Mass Limits Recalculated Monthly Average: 91 g/day Daily Maximum: 148 g/day	Limits recalculated following the procedure outlined in the TSD using the most current Arizona (WQS)
Chlorine, Total Residual, Cyanide, Selenium, and Mercury	Limited	Mass Limits Recalculated	Mass limits recalculated based on the decrease in permitted design flow from 3.57 MGD to 2.81 MGD

3. Changes to Fact Sheet Table 1 are as follows:

Table 1 summarizes the basis for the RP determination, parameters that are limited, and the rationale for that decision for each parameter reevaluated for this permit modification. The corresponding monitoring requirements are shown for each parameter. In general, the regulatory basis for monitoring requirements is per 40 CFR §122.44(i) *Monitoring requirements*, and 40 CFR §122.48(b), *Required monitoring*, all of which have been adopted by reference in A.A.C. R18-9-A905, *AZPDES Program Standards*. The basis for RP determination for each parameter for which submitted data was reconsidered for this modification and the associated requirements WQBELs are shown in Table 1.

Table 1. Permit Limitations and monitoring requirements.

Parameter	Lowest Standard / Designated Use	Maximum Reported Daily Value	No. of Samples	Estimated Maximum Value	RP Determination	Proposed Monitoring Requirement/ Rationale (1)
Chlorine, Total Residual (TRC)	11 µg/L A&Wedw Chronic	5 µg/L	53	9.38 µg/L	RP is always expected when chlorine or bromine is used for disinfection.	TRC is to be monitored as a discrete sample following the established test procedure guidelines in 40 CFR Part 136 and a WQBEL remains in the permit.
Cyanide	9.7 µg/L A&Wedw Chronic	5 µg/L	10	10.23 µg/L	RP Exists	Monitoring is required and a WQBEL remains in the permit.
Mercury	0.01 µg/L A&Wedw Chronic	0.0042 µg/L	11	0.02 µg/L	RP Exists	Monitoring is required and a WQBEL remains in the permit.
Selenium	2 µg/L A&Wedw Chronic	1.68 µg/L	7	5.95 µg/L	RP Exists	Monitoring is required and a WQBEL remains in the permit.

Proposed Permit Changes:

Proposed changes to the permit granted on April 3, 2023 and issued on June 14, 2023 are described below.

1. Change Place ID Number

Change the Place ID Number on Page 1 of the permit from 149239 to 154239. Place ID No. 154239 is the correct ID number for Santa Cruz Heritage Project.

2. No Changes to Effluent Limitations for Mercury or Selenium

Following removal of extraneous monitoring data collected only to meet compliance conditions of the APP, RP for mercury and selenium were determined to have reasonable potential (RP) to cause an exceedance of a water quality standard. No modifications will be made to the effluent limitations and monitoring requirements for these parameters. Mass limits, concentration limits, monitoring frequency, and sample type remain unchanged.

3. Changes to Effluent Limitations for Total Cyanide

Following the removal of extraneous monitoring data collected to meet compliance conditions of the APP, Total Cyanide was still determined to have RP to cause an exceedance of a water quality standard. The reported maximum effluent concentration in the permit issued on June 14, 2023 was modified from 250 µg/L, sampled for APP using an insufficiently sensitive method, to 5 µg/L, sampled using EPA method 335.4, which has a Limit of Quantitation (LOQ) of 5 µg/L. The removal of the APP data resulted in a decreased calculated coefficient of variation within the dataset from 0.60 to 0.37. The updated maximum effluent concentration and coefficient of variation resulted in the concentration and mass limits to be recalculated. The monthly average concentration limit was increased from 7.9 µg/L to 8.6 µg/L and the daily average concentration limit was decreased from 16 µg/L to 14 µg/L. The monthly average mass limit was increased from 84 g/day to 91 g/day and the maximum daily mass limit was decreased from 169 g/day to 148 g/day.

4. Changes to Effluent Limitations for Total Residual Chlorine

Following the removal of extraneous monitoring data collected to meet compliance conditions of the APP, total residual chlorine was still determined to have reasonable potential (RP) to cause an exceedance of a water quality standard because RP is always determined to exist when chlorine is used for disinfection. The reported maximum effluent concentration in the permit issued on June 14, 2023 was modified from 2,030 µg/L, sample collected for APP prior to de-chlorination, to 5 µg/L, sample collected for AZPDES post de-chlorination. This resulted in a decreased calculated coefficient of variation within the dataset from 1.81 to 0.75. Consequently, the monthly average concentration limit and mass limit were recalculated. The monthly average concentration limit was increased from 6 µg/L to 8.5 µg/L and the monthly average mass limit was increased from 67 g/day to 91 g/day.

5. Changes to Permit Part I.A.1. Table 1 Effluent Limitations and Monitoring Requirements

Parameter	Maximum Allowable Discharge Limitations				Monitoring Requirement (2)	
	Mass Limits (1)		Concentration Limits		Monitoring Frequency	Sample Type
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum		
Chlorine, Total Residual (TRC) (5) (6)	91 g/day	201 g/day	8.5 µg/L	19 µg/L	1x/week	Discrete
Cyanide	91 g/day	148 g/day	8.6 µg/L	14 µg/L	1x/month	Discrete

Footnotes

- 5 Sample when chlorine or bromine compounds are used for disinfection. See Part II.A.7 for specific monitoring requirements for chlorine.
 6 pH, Temperature, and TRC must be measured at the time of sampling and do not require use of a certified laboratory. Measurements must be obtained in accordance with the applicable method and must meet all method quality assurance/quality control requirements to be considered valid data.

6. Changes to Permit Part 1.C.1. Effluent Characterization Testing

If groundwater level monitoring at point of compliance (POC) monitor well # 1 indicates groundwater level has exceeded its contingency groundwater level limit (CGLL) in Section 4.2 Table 12 of the facility's APP (No. P512598), the facility will cease all discharges at outfall 001. When this occurs, the facility may use NODI code 2, indicating operational shutdown, on its DMR.

7. Changes to Permit Part 5.A.1. Special Condition - Modification

The majority of water received by Santa Cruz Heritage Project is comprised of domestic wastewater treated to AZPDES standards by Agua Nueva WRF (AZ0026107). If there are process changes within Agua Nueva that result in the effluent not meeting AZPDES standards, Santa Cruz Heritage Project must apply for a permit modification.

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.

No limits have been removed from the permit. Limits are retained in the permit for parameters where reasonable potential (RP) for an exceedance of a standard continues to exist or is indeterminate. In these cases, limits will be recalculated using the most current Arizona Water Quality Standards (WQS). If less stringent limits result due to a change in the WQS then backsliding is allowed in accordance with 303(d)(4) if the new limits are consistent with antidegradation requirements and the receiving water is in attainment of the new standard; see Section XII for information regarding antidegradation requirements.

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 based on the removal of non-representative APP data. A reasonable potential analysis was completed to establish limitations.

Antidegradation

Antidegradation rules have been established under A.A.C. R18-11-107 to ensure that existing surface water quality is maintained and protected. The discharge from the Santa Cruz River Heritage Project will be to an ephemeral stream which will become (for purposes of this permit) an effluent-dependent water. Except for flows resulting from rain events, the only water in the wash OR stream will be the effluent. Therefore, the discharge and the receiving water will normally be one and the same. Effluent quality limitations and monitoring requirements have been established under the proposed permit to ensure that the discharge will meet the applicable water quality standards. As long as the permittee maintains consistent compliance with these provisions, the designated uses of the receiving water will be presumed protected, and the facility will be deemed to meet currently applicable antidegradation requirements under A.A.C. R18-11-107

Administrative Information

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

The public notice is the vehicle for informing all interested parties and members of the general public of the contents of a draft AZPDES permit or other significant action with respect to an AZPDES permit or application. The basic intent of this requirement is to ensure that all interested parties have an opportunity to comment on significant actions of the permitting agency with respect to a permit application or permit. This permit will be public noticed in a local newspaper after a pre-notice review by the applicant and other affected agencies.

Public Comment Period (A.A.C. R18-9-A908):

Rules require that permits be public noticed in a newspaper of general circulation within the area affected by the facility or activity and provide a minimum of 30 calendar days for interested parties to respond in writing to ADEQ. After the closing of the public comment period, ADEQ is required to respond to all significant comments at the time a final permit decision is reached or at the same time a final permit is actually issued.

Public Hearing (A.A.C R18-9-A908(B)):

A public hearing may be requested in writing by any interested party. The request should state the nature of the issues proposed to be raised during the hearing. A public hearing will be held if the Director determines there is a significant amount of interest expressed during the 30-day public comment period, or if significant new issues arise that were not considered during the permitting process.

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.

Additional Information**Contact Information:**

Additional information relating to this proposed permit may be obtained from:

Arizona Department of Environmental Quality
Water Quality Division – Surface Water Permits Unit
Attn: Lesley Davidson
1110 West Washington Street Phoenix, Arizona 85007

Or by contacting Lesley Davidson at (520) 628 - 5018 or by e-mail at davidson.lesley@azdeq.gov

Information Sources:

While developing effluent limitations, monitoring requirements, and special conditions for the permit, the following information sources were used:

1. AZPDES Permit Application Forms 1, 2C, and 2C addendum, received December 8, 2022, along with supporting data, facility diagram, and maps submitted by the applicant with the application forms.
2. ADEQ files on Santa Cruz River Heritage Project.
3. ADEQ Geographic Information System (GIS) Web site.
4. Information provided to ADEQ staff during a facility inspection on November 8, 2021.
5. Arizona Administrative Code (AAC) Title 18, Chapter 11, Article 1, Water Quality Standards for Surface Waters, adopted December 31, 2016.
6. A.A.C. Title 18, Chapter 9, Article 9. *Arizona Pollutant Discharge Elimination System* rules.
7. Code of Federal Regulations (CFR) Title 40:
 - Part 122, *EPA Administered Permit Programs: The National Pollutant Discharge Elimination System*.
 - Part 124, *Procedures for Decision Making*.
 - Part 133, *Secondary Treatment Regulation*.
 - Part 503, *Standards for the Use or Disposal of Sewage Sludge*.
8. EPA Technical Support Document for Water Quality-based Toxics Control dated March 1991.
9. *Regions 9 & 10 Guidance for Implementing Whole Effluent Toxicity Testing Programs*, US EPA, May 31, 1996.
10. *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* (EPA /821-R-02-013).
11. U.S. EPA NPDES Permit Writers' Manual, September 2010.
12. *The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From A Dissolved Criterion*, US EPA, June 1996.