

ARIZONA POLLUTANT DISCHARGE ELIMINATION SYSTEM (AZPDES)

This document gives pertinent information concerning the reissuance of the AZPDES permit listed below. This facility is a wastewater treatment plant (WWTP) with a design capacity of 0.66 million gallons per day (MGD) and thus is considered to be a minor facility under the AZPDES program. The effluent limitations contained in this permit 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.

I. PERMITTEE INFORMATION	
Permittee's Name:	Town of Cave Creek
Permittee's Mailing Address:	37622 North Cave Creek Road Cave Creek, Arizona 85331
Facility Name:	Town of Cave Creek Water Reclamation Facility (WRF)
Facility Address or Location:	4300 E. Carefree Highway Cave Creek, Arizona 85331
County:	Maricopa County
Contact Person(s): Phone/e-mail address	Mr. Shawn Kreuzwiesner, Utilities Director (480) 488-6618 / skreuzwiesner@cavecreekaz.gov
AZPDES Permit Number:	AZ0025828
Inventory Number:	106088
LTF Number:	102541

II. STATUS OF PERMIT(S)	
AZPDES permit applied for:	Renewal
Date application received:	February 6, 2024
Date application was determined administratively complete:	March 26, 2024
Previous permit number (if different):	N/A
Previous permit expiration date:	August 4, 2024

208 Consistency:

In accordance with A.A.C. R18-9-A903(6), a permit cannot be issued for any discharge inconsistent with a plan or plan amendment approved under section 208(b) of the Clean Water Act.

Based on review of the application, there are no changes to the facility that require a new determination of consistency with the Regional Water Quality Management Plan.

Town of Cave Creek has the following permits issued by ADEQ applicable to the Town of Cave Creek WRF:

Type of Permit

Aquifer Protection Permit (APP)	P 106088	Regulates discharges to the local aquifer.
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III. GENERAL FACILITY INFORMATION

Type of Facility:	Publicly owned treatment works (POTW)
Facility Location Description:	Facility is located on the north side of the Carefree Highway, approximately ¼ mile east of the Cave Creek in the Town of Cave Creek.
Permitted Design Flow:	0.66 million gallons per day (MGD)
Treatment Level (WWTP):	Tertiary Treatment Level
Treatment Processes:	Influent screening, grit removal, sequential batch reactors with pre-equalization, biological treatment and nutrient removal, clarification, post-equalization, filtration, chlorination, dichlorination, and odor control.
Sludge Handling and Disposal:	Sludge is dewatered using a belt press for final disposal at the Northwest Regional Landfill in Surprise, Arizona.
Nature of Facility Discharge:	Domestic wastewater from residential and commercial sources.
Total Number of Significant Industrial Users (SIUs):	None
Average Flow Per Discharge:	None – will discharge only in emergency
Service Area:	Town of Cave Creek
Service Population:	Approximately 2,115 people
Reuse / Irrigation or other disposal method(s):	Currently, all treated effluent from the Cave Creek WRF is utilized for irrigation on the Rancho Manana Golf Course. Under the proposed AZPDES permit, treated effluent discharge into the Galloway Wash and another unnamed Wash, both of which flow into Cave Creek. The Town of Cave Creek specified that such discharge would occur only in emergencies.

Continuous or Intermittent Discharge:	None – will discharge only in emergency.
Discharge Pattern Summary:	There has been no discharge since the facility was built and placed in operation in November 2010.

IV. RECEIVING WATER	
The State of Arizona has adopted water quality standards to protect the designated uses of its surface waters. Streams have been divided into segments and designated uses assigned to these segments. The water quality standards vary by designated use depending on the level of protection required to maintain that use.	
Receiving Water (Federal):	<p>The Water of the U.S. Protected Surface Water (WOTUS PSW) for facility / outfall are the Galloway Wash and an unnamed wash, both listed in A. A. C. R 18-11 Appendix B. These waterways are tributaries to Cave Creek, also listed in Appendix B. However, the discharges from Outfalls 001 and 002 might eventually reach Cave Creek. The designated uses of Cave Creek are consequently applied to discharges from these outfalls.</p> <p>Outfall 001: Galloway Wash, tributary to Cave Creek (Headwaters to the Cave Creek Dam)</p> <p>Outfall 002: An unnamed Wash, tributary to Cave Creek (Headwaters to the Cave Creek Dam)</p>
River Basin:	Middle Gila River Basin
Outfall Location(s):	<p>Outfall 001: Township 6 N, Range 4 E, Section 28 Latitude 33° 50' 15" N, Longitude 111° 57' 35" W</p> <p>Outfall 002: Township 5 N, Range 4 E, Section 6 Latitude 33° 48' 02" N, Longitude 111° 59' 22" W</p>
Designated uses for the receiving water listed above:	<p><u>Applies to both Galloway Wash and Unnamed Wash:</u></p> <p>Aquatic and Wildlife effluent dependent water (A&Wedw) Partial Body Contact (PBC)</p>
Designated uses for downstream receiving water	<p>Both Galloway Wash and an Unnamed Wash are tributaries to Cave Creek and discharge from Outfalls 001 and 002 may ultimately reach this common segment of Cave Creek (Headwaters to the Cave Creek Dam). Consequently, the designated uses for this particular segment of Cave Creek are applied.</p> <p>Aquatic and Wildlife Warm Water (A&Ww) Full Body Contact (FBC) Fish Consumption (FC) Agricultural Livestock Watering (AgL)</p>

Is the receiving water on the 303(d) list?	No, and there are no TMDL issues associated.
<p>Given the uses stated above, the applicable narrative water quality standards are described in A.A.C. R18-11-108, and the applicable numeric water quality standards are listed in A.A.C. R18-11-109 and in Appendix A thereof. There are two standards for the Aquatic and Wildlife uses, acute and chronic. In developing AZPDES permits, the standards for all applicable designated uses are compared and limits that will protect for all applicable designated uses are developed based on the standards.</p>	

V. DESCRIPTION OF DISCHARGE		
<p>Because the facility is in operation, effluent monitoring data are available. The following is the measured effluent quality reported in the application.</p>		
Parameters	Units	Maximum Daily Discharge Concentration
Biochemical Oxygen Demand (BOD)	mg/L	20
Total Suspended Solids (TSS)	mg/L	4
Total Kjeldahl Nitrogen (TKN)	mg/L	1.31
<i>E. coli</i>	cfu/100 mL	< 1
<p>Facility Design Removal Rates:</p>		<p>BOD 85 % TSS 85 % N 10 mg/L or less (Effluent)</p>

VI. STATUS OF COMPLIANCE WITH THE EXISTING AZPDES PERMIT	
Date of Most Recent Inspection:	03/16/2020; no potential violations were noted as a result of this inspection.
Discharge Monitoring Reports (DMR) Reviewed:	10/2019 through 01/2024
Lab Reports Reviewed:	10/2019 through 01/2024
DMR Exceedances:	None
Notice(s) of Violation (NOV) Issued:	None
NOVs Closed:	N/A
Formal Enforcement Action(s):	None

VII. PROPOSED PERMIT CHANGES

The following table lists the major changes from the previous permit in this permit.

Parameter	Existing Permit	Proposed Permit	Reason for Change
Noncompliance Reporting Hotline	(602) 771-2330	Noncompliance resulting in imminent threat to human health or the environment must be reported to (602) 771-2330, while all other noncompliance must be reported to (602) 771-1440.	Routing emergency calls to the emergency hotline, but all other calls to a non-emergency number.
Reporting Location for Effluent Characterization Monitoring	Submit results through DMRs	Report results on the EC Monitoring Data Sheet Excel form provided by ADEQ and submit annually to azpdes_data@azdeq.gov by January 28 th following each annual reporting period. See Part I.D.2 and Part II.B.3 of permit.	ADEQ is implementing this new procedure to facilitate data analysis by ADEQ and reporting by permittees. Outcomes include expedited data processing and improved data quality review, per ADEQ Surface Water Protection Quality Assurance Program Plan (2022).
Sufficiently Sensitive Test Methods and Limit of Quantitation (LOQ) Reporting Requirements	Limited explanation of analytical requirements for LOQ and sufficiently sensitive test methods.	Analytical test sensitivity requirements are specified in the footnotes of Part I Tables 1-4 of the permit and associated definitions in Appendix A. Part B. The requirement to use sufficiently sensitive test methods is specified in Part II.A.5.	The Limit of Quantitation (LOQ) must be low enough to allow comparison of the results to the applicable water quality standards (WQS) to be protective of the receiving water designated uses. New language clarifies the requirement that parameters must be analyzed using sufficiently sensitive test methods in accordance with 40 CFR 136.1(c).

<p>Use of Metal Translators to Calculate Total Recoverable Permit Limits from Dissolved Criteria (Applicable to Cadmium, Chromium VI, Copper, Lead, Mercury, Nickel, Silver, and Zinc).</p>	<p>No metal translators were used. Assumed the ratio of dissolved to total recoverable is 1 to 1 for all metals with water quality criteria expressed as dissolved.</p>	<p>WQBELs and ALs were converted from dissolved to total recoverable using the default metal translators from the EPA's <i>The Metals Translator: Guidance for Calculating A Total Recoverable Permit Limit from A Dissolved Criterion</i>.</p>	<p>New procedure for ADEQ to incorporate default metal translators when calculating total recoverable WQBELs and ALs from dissolved criteria.</p>
<p>Iron</p>	<p>Limited</p>	<p>Effluent Characterization</p>	<p>Data submitted indicated no reasonable potential (RP) for an exceedance of a standard.</p>
<p>Zinc</p>	<p>Effluent Characterization</p>	<p>Limited</p>	<p>Data submitted indicated reasonable potential (RP) for an exceedance of a standard.</p>
<p>Antidegradation Criteria</p>	<p>Tier 2</p>	<p>Tier 1</p>	<p>The receiving water body has a designated use flow regime of perennial water but with intermittent flows, requiring only Tier 1 antidegradation protections as per A. A. C. R 18-11-107.01 (B) (1) and A. A. C. R18-11-107.01 (A) (1).</p>

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.

The limit for Iron was removed from the permit because evaluation of current data allows the conclusion that no reasonable potential (RP) for an exceedance of a standard exists.

This is considered allowable backsliding under 303(d)(4). The effluent limitations in the current permit for this parameter was based on state standards, the respective receiving waters are in attainment for these parameters, and the revisions are consistent with antidegradation requirements. See Section XII for information regarding antidegradation requirements.

No limits are less stringent due to a change in the WQS in this permit.

VIII. DETERMINATION OF EFFLUENT LIMITATIONS and ASSESSMENT LEVELS

When determining what parameters need monitoring and/or limits included in the permit, both technology-based and water quality-based criteria were compared and the more stringent criteria applied.

Technology-based Limitations: As outlined in 40 CFR Part 133:

The regulations found at 40 CFR §133 require that POTWs achieve specified treatment standards for BOD, TSS, and pH based on the type of treatment technology available. Therefore, technology-based effluent limitations (TBELs) have been established in the permit for these parameters. Additionally, oil & grease will be monitored with an assessment level based on best professional judgment (BPJ). The average monthly assessment level of 10 mg/L and daily maximum of 15 mg/L are commonly accepted values that can be achieved by properly operated and maintained WWTPs. This level is also considered protective of the narrative standard at A.A.C. R18-11-108(B).

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. The basis for the RP determination for each parameter with a WQBEL is shown in the table below.

Ammonia water quality criteria vary based on the effluent / receiving water pH and temperature at the time of effluent sampling. As a result, no single ammonia concentration can be included as a permit limit. To overcome this, an Ammonia Impact Ratio (AIR) of 1 for the monthly average and a value of 2 for the maximum daily limits has been established as the permit limits for ammonia. The AIR is calculated by dividing the ammonia concentration in the effluent by the applicable ammonia standard based on the effluent / receiving water pH and temperature at the time of sampling. AIR values will be reported on DMRs and on the Ammonia Data Log which is included as Appendix B in the permit.

It is assumed that RP exists for exceedance of water quality criteria for the pollutants *E. coli* and, if chlorine or bromine is used in the treatment process, total residual chlorine (TRC). These parameters have been shown through extensive monitoring of WWTPs to fluctuate greatly and thus are not conducive to exclusion from limitation due to a lack of RP. Therefore, the permit contains WQBELs for *E. coli* and TRC.

The proposed permit limits were established using a methodology developed by EPA. Long Term Averages (LTA) were calculated for each designated use and the lowest LTA was used to calculate the average monthly limit (AML) and maximum daily limit (MDL) necessary to protect all uses. This methodology takes into account criteria, effluent variability, and the number of observations taken to determine compliance with the limit and is described in Chapter 5 of the TSD. Limits based on A&W criteria were developed using the “two-value steady state wasteload allocation” described on page 99 of the TSD. When the limit is based on human health criteria, the monthly average was set at the level of the applicable standard and a daily maximum limit was determined as specified in Sections 5.4.4 and 5.5.3 of the TSD.

Mixing Zone

The limits in this permit were determined without the use of a mixing zone. Arizona state water quality rules require that water quality standards be achieved without mixing zones unless the permittee applies for and is approved for a mixing zone. Since a mixing zone was not applied for or granted, all water quality criteria are applied at end-of-pipe.

Assessment Levels (ALs)

ALs are listed in Part I.B of the permit. An AL differs from a discharge limit in that an exceedance of an AL is not a permit violation. Instead, ALs serve as triggers, alerting the permitting authority when there is cause for re-evaluation of RP for exceeding a water quality standard, which may result in new permit limitations. The AL numeric values also serve to advise the permittee of the analytical sensitivity needed for meaningful data collection. Trace substance monitoring is required when there is uncertain RP (based on non-detect values or limited datasets) or a need to collect additional data or monitor treatment efficacy on some minimal basis. A reopener clause is included in the permit should future monitoring data indicate water quality standards are being exceeded.

The requirement to monitor for these parameters is included in the permit according to A.A.C. R18-11-104(C) and Appendix A. Except for oil and grease, ALs listed for each parameter were calculated in the same manner that a limit would have been calculated (see Water Quality-Based Effluent Limitations above). The ALs for oil and grease were determined based on BPJ as described above.

The following trace substances were not included as limits or assessment levels in the permit due to a lack of RP based on best professional judgment (BPJ): barium, boron, nitrates, nitrites, and manganese. The numeric standards for these pollutants are well above what would be expected from a WWTP discharge.

Hardness

The permittee is required to sample hardness as CaCO₃ at the same time the trace metals are sampled because the water quality standards for some metals are calculated using the water hardness values. Since there is no discharge from this facility during the current permit term, the hardness value of receiving water is not available. However, an average hardness value of 287 mg/L, obtained from data on Arizona's Water Quality Assessment Dashboard, was used to calculate the applicable water quality standards and any assessment levels or limits for the hardness dependent metals (cadmium, chromium III, copper, lead, nickel, silver and zinc).

Whole Effluent Toxicity (WET)

WET testing is required in the permit (Parts I.C and IV) to evaluate the discharge according to the narrative toxic standard in A.A.C. R18-11-108(A)(5), as well as whether the discharge has RP for WET per 40 CFR 122.44(d)(iv).

WET testing for chronic and/or acute toxicity is required. The requirement to conduct chronic toxicity testing is contingent upon the frequency or duration of discharges. Since completion of the chronic WET test requires a minimum of three samples be taken for renewals, the chronic WET test is not required during any given monitoring period in which the discharge does not occur over seven consecutive calendar days and is not repeated more frequently than every thirty days.

WET testing for chronic / acute toxicity shall be conducted using the following three surrogate species:

- *Ceriodaphnia dubia* (water flea) – for evaluating toxicity to invertebrates
- *Pimephales promelas* (fathead minnow) – for evaluating toxicity to vertebrates
- *Pseudokirchneriella subcapitata* (formerly known as *Selenastrum capricornutum* or *Raphidocelis subcapitata*) (a green alga) – for evaluating toxicity to plant life

ADEQ does not have a numeric standard for Whole Effluent Toxicity. However, ADEQ adopted the EPA recommended chronic toxicity benchmark of 1.0 Toxic Unit-Chronic (TUC) for a four-day exposure period. Using this benchmark, the limitations and/or action levels for WET included in the permit were calculated in accordance with the methods specified in the *TSD*. The species chosen for WET testing are as recommended in the *TSD* and in *Regions 9 & 10 Guidance for Implementing Whole Effluent Toxicity Testing Programs*.

An exceedance of a limit or action level will trigger follow-up testing to determine if effluent toxicity is persistent. If toxicity above a limit or action level is found in a follow-up test, the permittee will be required to conduct a Toxicity Reduction Evaluation (TRE) and possibly a Toxicity Identification Evaluation (TIE) to identify the source of toxicity and reduce toxicity. These conditions are required to ensure that toxicants are not discharged in amounts that are toxic to organisms [A.A.C. R18-11-108(A)(5)]. A reopener clause is included in accordance with 40 CFR Parts 122 and 124 and A.A.C R18-9-B906.

The permit requires 8-hour composite samples be collected for WET testing. An 8-hour composite sample type was chosen over the suggested 24-hour composite for WET testing in order to have consistency with the type of sample required for other parameters requiring monitoring in this permit. WET sampling must coincide with testing for all the parameters in Parts I.A and B of the permit, when testing of those parameters is required, to aid in the determination of the cause of toxicity if toxicity is detected. Additional procedural requirements for the WET test are included in the proposed permit.

The required WET monitoring frequency for this facility is consistent with the WET testing frequency required for facilities with a similar design flow. The permit requires WET test results to be reported on discharge monitoring reports and submittal of the full WET lab report to ADEQ.

Effluent Characterization (EC)

In addition to monitoring for parameters assigned either a limit or an AL, sampling is required to assess the presence of pollutants in the discharge at certain minimum frequencies for additional suites of parameters, whether the facility is discharging or not. This monitoring is specified in Tables 4.a. through 4.e., *Effluent Characterization Testing*, as follows:

- Table 4.a.—General Chemistry and Microbiology: ammonia, BOD-5, *E. coli*, total residual chlorine (TRC), dissolved oxygen, total Kjeldahl nitrogen (TKN), nitrate/nitrite, oil and grease, pH, phosphorus, temperature, total dissolved solids (TDS), and total suspended solids (TSS)
- Table 4.b. —Selected Metals, Hardness, Cyanide, and WET
- Table 4.c. —Selected Volatile Organic Compounds
- Table 4.d. —Selected Acid-Extractable Compounds
- Table 4.e. —Selected Base-Neutral Compounds

NOTE: Some parameters listed in Tables 4.a. and 4.b. are also listed in Tables 1 or 2. In this case, the data from monitoring under Tables 1 or 2 may be used to satisfy the requirements of Tables 4.a. and / or 4.b., provided the specified sample types are the same. In the event the facility does not discharge to a Protected Surface Water during the life of the permit, EC monitoring of representative samples of the effluent is still required.

The purpose of EC monitoring is to characterize the effluent and determine if the parameters of concern are present in the discharge and at what levels. This monitoring will be used to assess RP per 40 CFR 122.44(d)(1)(iii)). EC monitoring is required in accordance with 40 CFR 122.43(a), 40 CFR 122.44(i), and 40 CFR 122.48(b) as well as A.R.S. §49-203(A)(7). If pollutants are noted at levels of concern during the permit term, this permit may also be reopened to add related limits or conditions.

Permit Limitations and Monitoring Requirements

Table 1 summarizes the parameters that are limited in the permit and the rationale for that decision. Also included are the parameters that require monitoring without any limitations or that have not been included in the permit at all and the basis for those decisions. 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*.

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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)
Flow	---	---	---	---	---	Discharge flow is to be monitored on a continual basis using a flow meter.
Biological Oxygen Demand (BOD) and Total Suspended Solids (TSS) (2)	30 mg/L 30-day average 45 mg/L 7-day average Technology-based limits 40 CFR 133.102	BOD: 20 mg/L TSS: 4 mg/L	BOD: 20 TSS: 20	N/A	TBELs are always applicable to WWTPs.	Monitoring for influent and effluent BOD and TSS to be conducted using composite samples of the influent and the effluent. The sample type required was chosen to be representative of the discharge. The requirement to monitor influent BOD and suspended solids is included to assess compliance with the 85% removal requirement in this permit. At least one sample must coincide with WET testing to aid in the determination of the cause of toxicity, if toxicity is detected.
Chlorine, Total Residual (TRC)	11 µg/L / A&Ww chronic	1.1 µg/L	20	N/A	RP always expected when chlorine or bromine is used for disinfection.	TRC is to be monitored as a discrete sample and a WQBEL remains in the permit. 40 CFR Part 136 specifies that discrete samples must be collected for chlorine. At least one sample per month must coincide with WET testing to aid in the determination of the cause of toxicity, if toxicity is detected.
<i>E. coli</i>	30-day geometric mean: 126 cfu /100 mL (4 sample minimum) Single sample maximum: 235 cfu /100 mL / FBC	< 1 cfu /100 mL	20	N/A	RP always expected for WWTPs. See explanation above.	<i>E. coli</i> is to be monitored as a discrete sample and a WQBEL remains in the permit.
pH	Minimum: 6.5 Maximum: 9.0 A&Ww / FBC / and AgL A.A.C. R18-11-109(B)	Min: 7.0 S.U. Max: 8.0 S.U.	Min: 365 Max 365	N/A	WQBEL is always applicable to WWTPs.	pH is to be monitored using a discrete sample of the effluent and a WQBEL is set. 40 CFR Part 136 specifies that grab samples must be collected for pH. At least one sample must coincide with WET testing to aid in the determination of the cause of toxicity if toxicity is detected. pH sampling must also coincide with ammonia sampling when required.

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)
Temperature	R18-11-109(C) the discharge shall not cause an increase in the ambient water temperature. A&Ww no more than 3.0°C	(Oct. – Mar.): 27.6 °C (Apr. – Sep.): 29.9 °C	365	N/A	N/A	Effluent temperature is to be monitored for effluent characterization by discrete sample. 40 CFR Part 136 specifies that discrete samples must be collected for temperature. Temperature sampling must also coincide with ammonia sampling when required.
Total Dissolved Solids (TDS)	No applicable standard	1,380 mg/L	20	N/A	N/A	Monitoring required for effluent characterization.
Ammonia	Standard varies with temperature and pH	< 1 mg/L (< WQS)	20	N/A	RP Indeterminate (2)	Ammonia is to be monitored by discrete sample and a WQBEL in the form of an ammonia impact ratio (AIR) of 1 is set in the permit (3). An ammonia data log with concurrent pH and temperature monitoring is also required. One sample must coincide with WET sampling to aid in the determination of the cause of toxicity, if toxicity is detected.
Nutrients (Total Nitrogen and Total Phosphorus)	No applicable standards	N: 0.25 mg/L P: 1.25 mg/L	N: 20 P: 20	N/A	N/A	Monitoring required for effluent characterization.
Oil & Grease	BPJ Technology-Based Level of 10 mg/L monthly average and 15 mg/L daily maximum	< 5 mg/L	20	N/A	RP Indeterminate (2)	Monitoring required and an assessment level remains in the permit.
Antimony	30 µg/L / A&Ww chronic	1.3 µg/L	11	2.25 µg/L	No RP	Monitoring required for effluent characterization.
Arsenic	30 µg/L / FBC	1.7 µg/L	11	2.87 µg/L	No RP	Monitoring required for effluent characterization.
Beryllium	5.3 µg/L / A&Ww chronic	< 2 µg/L	11	N/A	No RP	Monitoring required for effluent characterization.
Boron	186,667 µg/L / FBC	380 µg/L	11	587 µg/L	No RP	Monitoring required for effluent characterization.

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)
Cadmium (4)	4.9 µg/L / A&Ww chronic	< 0.2 µg/L	11	N/A	No RP	Monitoring required for effluent characterization.
Chromium (Total)	1000 µg/L / AgL	< 5 µg/L	11	N/A	No RP	Monitoring required as an indicator parameter for Chromium VI.
Chromium VI	11 µg/L / A&Ww chronic	< 15 µg/L	10	N/A	RP Indeterminate (High LOQ & BPJ based on total chromium data)	Monitoring required for effluent characterization.
Copper (4)	22 µg/L / A&Ww chronic	350 µg/L	11	5,943 µg/L	RP Exists	Monitoring is required and a WQBEL remains in the permit.
Cyanide	9.7 µg/L / A&Ww chronic	< 10 µg/L	10	N/A	RP Indeterminate (High LOQ)	Monitoring is required and a WQBEL remains in the permit.
Hardness	No applicable standard. Hardness is used to determine standards for specific metal parameters.	480 mg/L (Effluent)	11	N/A	N/A	A&W standards for cadmium, chromium III, copper, lead, nickel, silver and zinc used for RP determinations were established on the basis of an average hardness value of 287 mg/L in the receiving water. Monitoring for hardness is required whenever monitoring for hardness dependent metals is required.
Hydrogen sulfide	2 µg/L / A&Ww chronic	No Data	0	N/A	RP Indeterminate (No Data)	Monitoring is required for sulfides as an indicator parameter for hydrogen sulfide. If sulfides are detected, monitoring for hydrogen sulfide is required for the remainder of the permit term.
Iron	1,000 ug/L / A&Ww chronic	< 50 µg/L	11	N/A	No RP	Monitoring required for effluent characterization.
Lead (4)	7.8 µg/L / A&Ww chronic	< 2 µg/L	11	N/A	No RP	Monitoring required for effluent characterization.
Mercury	0.01 µg/L / A&Ww chronic	< 0.2	11	N/A	RP Indeterminate (High LOQ)	Monitoring required and an assessment level remains in the permit.
Nickel (4)	127 µg/L / A&Ww chronic	31 µg/L	11	89.87 µg/L	No RP	Monitoring required for effluent characterization.

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)	
Selenium	2 µg/L / A&Ww chronic	< 4 µg/L	11	N/A	RP Indeterminate (High LOQ)	Monitoring is required and a QBEL remains in the permit.	
Silver (4)	19.7 µg/L / A&Ww acute	< 0.2 µg/L	11	N/A	No RP	Monitoring required for effluent characterization.	
Sulfides	No applicable standard	40 µg/L	10	N/A	N/A	Indicator parameter for hydrogen sulfide. Monitoring required. If sulfides are detected, monitoring for hydrogen sulfide is required for the remainder of the permit term.	
Thallium	7.2 µg/L / FC	< 1 µg/L	11	N/A	No RP	Monitoring required for effluent characterization.	
Zinc (4)	286 µg/L / A&Ww acute and chronic	150 µg/L	11	586 µg/L	RP Exists	Monitoring required and a QBEL is set in the permit.	
Bromodichloro methane	17 µg/L / FC	18.7 µg/L	8	62.3 µg/L	RP Exists	Monitoring required and a QBEL remains in the permit.	
Dibromochloro methane	13 µg/L / FC	4.28 µg/L	8	14.3 µg/L	RP Exists	Monitoring required and a QBEL remains in the permit.	
Whole Effluent Toxicity (WET)	No toxicity (A.A.C. R18-11-108(A) (6))	<i>Pseudo-kirchneriella subcapitata</i> (5)	1 TUc	1	N/A	RP Indeterminate (2)	Monitoring required and an action level remains in the permit.
		<i>Pimephales promelas</i>	1 TUc	1	N/A	RP Indeterminate (2)	Monitoring required and an action level remains in the permit.
		<i>Ceriodaphnia dubia</i>	1 TUc	1	N/A	RP Indeterminate (2)	Monitoring required and an action level remains in the permit.

Footnotes:

1. The monitoring frequencies are as specified in the permit.
2. Monitoring with ALs or Action Levels always required for WWTPs for these parameters unless RP exists and limits are set.
3. An AIR will be calculated by dividing effluent ammonia concentration by the applicable standard using the receiving water pH and temperature.
4. Hardness-dependent metals - The standards or limits for hardness dependent metals parameters are established based on an average hardness value of 287 mg/L for the receiving water.
5. Formerly known as *Selenastrum capricornutum* or *Raphidocelis subcapitata*

VIII. NARRATIVE WATER QUALITY STANDARDS

All narrative limitations in A.A.C. R18-11-108 that are applicable to the receiving water are included in Part I, Section E of the permit.

IX. MONITORING AND REPORTING REQUIREMENTS (Part II of Permit)

Section 308 of the Clean Water Act and 40 CFR Part 122.44(i) require that monitoring be included in permits to determine compliance with effluent limitations. Additionally, monitoring may be required to gather data for future effluent limitations or to monitor effluent impacts on receiving water quality.

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Monitoring frequencies for some parameters may be reduced in subsequent permits if all monitoring requirements have been met and the limits or ALs for those parameters have not been exceeded during the first permit term.

For the purposes of this permit, an "8-hour composite" sample has been defined as a flow-proportioned mixture of two or more discrete samples (aliquots) obtained at equal time intervals over an 8-hour period (if only two samples are collected, they should be taken approximately 8 hours apart). The volume of each aliquot shall be directly proportional to the discharge flow rate at the time of sampling.

These criteria for composite sampling are included in order to obtain samples that are representative of the discharge given the potential variability in the duration, frequency and magnitude of discharges from this facility.

Discrete (i.e., grab) samples are specified in the permit for parameters that for varying reasons are not amenable to compositing.

Monitoring locations are specified in the permit (Part I.A and Part II.A.1) in order to ensure that representative samples of the influent and effluent are consistently obtained.

The requirements in the permit pertaining to Part II, Monitoring and Reporting, are included to ensure that the monitoring data submitted under this permit is accurate in accordance with 40 CFR 122.41(e). The permittee has the responsibility to determine that all data collected for purposes of this permit meet the requirements specified in this permit and is collected, analyzed, and properly reported to ADEQ.

The permit (Part II.A.3) requires the permittee to keep a Quality Assurance (QA) manual at the facility, describing sample collection and analysis processes; the required elements of the QA manual are outlined.

Reporting requirements for monitoring results are detailed in Part II, Section B of the permit, including completion and submittal of Discharge Monitoring Reports (DMRs), Ammonia Data Logs, and AZPDES Flow Record forms. The permittee is responsible for conducting all required monitoring and reporting the results to ADEQ on DMRs or as otherwise specified in the permit.

Electronic reporting

The US EPA has published a final regulation that requires electronic reporting and sharing of Clean Water Act National Pollutant Discharge Elimination System (NPDES) program information instead of the current paper-based reporting (Federal Register, Vol. 80, No. 204, October 22, 2015). Beginning December 21, 2016 (one year after the effective date

of the regulation), the Federal rule required permittees to make electronic submittals of any monitoring reports and forms called for in their permits. ADEQ has created an online portal called myDEQ that allows users to submit their discharge monitoring reports and other applicable reports required in the permit.

The permit also requires annual submittal of an Ammonia Data Log that records the results for temperature, pH, and ammonia samples and date of sampling (Part II.B.4). Because the ammonia standards in 18 A.A.C. 11, Article 1, Appendix A are contingent upon the pH and temperature at the time of sampling for ammonia, the permittee must determine the applicable ammonia standard using the ammonia criteria table(s) and calculate the Ammonia Impact Ratio for that ammonia sample result. The AIR is recorded on the DMR.

Requirements for retention of monitoring records are detailed in Part II.D.1 of the permit.

X. BIOSOLIDS REQUIREMENTS (Part III in Permit)

Standard requirements for the monitoring, reporting, record keeping, and handling of biosolids, as well as minimum treatment requirements for biosolids according to 40 CFR Part 503 are incorporated in the permit.

XI. SPECIAL CONDITIONS (Part V in Permit)

Operation

This permit condition requires the permittee to ensure that the WWTP has an operator who is certified at the appropriate level for the facility, in accordance with A.A.C. R18-5-104 through -114. The required certification level for the WWTP operator is based on the class (Wastewater Treatment Plant) and grade of the facility, which is determined by population served, level of treatment, and other factors.

Permit Reopener

This permit may be modified based on newly available information; to add conditions or limits to address demonstrated effluent toxicity; to implement any EPA-approved new Arizona water quality standard; or to re-evaluate reasonable potential (RP), if assessment levels in this permit are exceeded [A.A.C. R18-9-B906 and 40 CFR Part 122.62 (a) and (b)].

XII. 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 Cave Creek is classified as a water body with a perennial designated use flow regime, but exhibits intermittent flows. Consequently, this classification necessitates only Tier 1 antidegradation protection as specified in A. A. C. R 18-11-107.01 (A) (1) and (B) (1). Tier 2 antidegradation protection applies to perennial waters with existing water quality that is better than the applicable water quality standards. However, since Cave Creek is listed in subsection A. A. C. R 18-11-107.01 (A) (1) as a water body with a perennial designated use flow regime and exhibits intermittent flows, it does not qualify for Tier 2 antidegradation protection for pollutants of concern. Therefore, only Tier 1 antidegradation protection is required for Cave Creek WRF discharges. 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.

XIII. STANDARD CONDITIONS

Conditions applicable to all NPDES permits in accordance with 40 CFR, Part 122 are attached as an appendix to this permit.

XIV. 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.

No comments were received during the 30-day public comment period. OR Comments were received during the 30-day public comment period. See the Response to Public Comments document for more detail.

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 permit 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.

XV. ADDITIONAL 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: Swathi Kasanneni
1110 West Washington Street
Phoenix, Arizona 85007

Or by contacting Swathi Kasanneni at (602) 771 – 4577 or by e-mail at kasanneni.swathi@azdeq.gov.

XVI. INFORMATION SOURCES

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

1. AZPDES Permit Application Form(s) 2A and 2S, received February 6, 2024, along with supporting data, facility diagram, and maps submitted by the applicant with the application forms.
2. ADEQ files on Town of Cave Creek Water Reclamation Facility (WRF).
3. ADEQ Geographic Information System (GIS) Web Site.
4. Arizona Administrative Code (AAC) Title 18, Chapter 11, Article 1, *Water Quality Standards for Surface Waters*, adopted December 31, 2016.
5. A.A.C. Title 18, Chapter 9, Article 9. *Arizona Pollutant Discharge Elimination System* rules.
6. 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*.
7. EPA Technical Support Document for Water Quality-based Toxics Control dated March 1991.
8. *Regions 9 & 10 Guidance for Implementing Whole Effluent Toxicity Testing Programs*, US EPA, May 31, 1996.
9. *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* (EPA /821-R-02-013).
10. U.S. EPA NPDES Permit Writers' Manual, September 2010.
11. *The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From A Dissolved Criterion*, US EPA, June 1996.
12. Arizona's 2024 Water Quality Assessment Dashboard for Arizona's Clean Water Act Assessment.