

## 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 0.0153 million gallons per day (mgd) and is considered to be a minor facility under the NPDES 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.

<b>I. PERMITTEE INFORMATION</b>	
Permittee's Name:	U.S Bureau of Reclamation
Permittee's Mailing Address:	P.O. Box 1477, Page, AZ 86040
Facility Name:	Glen Canyon Dam Wastewater Treatment Plant (WWTP)
Facility Address or Location:	Two miles North of Page, AZ on US89, Glen Canyon Recreation Area
County:	Coconino
Contact Person(s):	Jeff Blake or James Franklin
Phone/e-mail address	928 645 2481 x 607/ jwblake@usbr.gov, jfranklin@usbr.gov
AZPDES Permit Number:	AZ0026182
Inventory Number:	100785
LTF Number:	92513

<b>II. STATUS OF PERMIT(s)</b>	
AZPDES permit applied for:	Renewal
Date application received:	12/27/2021
Date application was determined administratively complete:	12/28/2021
Previous permit number (if different):	AZ0026069
Previous permit expiration date:	06/28/2022

**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.

U.S Bureau of Reclamation has the following permits issued by ADEQ applicable to the Glen Canyon Dam WWTP		
<b>Type of Permit</b>		
Aquifer Protection Permit (APP)	100785	Regulates discharge to the local aquifer
AZPDES minor industrial	AZ0026280	Regulates discharges from powerplant to the Colorado River

<b>III. GENERAL FACILITY INFORMATION</b>	
Type of Facility:	Minor Wastewater Treatment Plant
Facility Location Description:	Two miles North of Page, AZ on US89, Glen Canyon recreation Area
Permitted Design Flow:	0.015 MGD
Treatment Level (WWTP):	Secondary
Treatment Processes:	Treatment processes at the WWTP consist of bar screen, aeration basin, secondary clarifier and an ultraviolet light bank.
Sludge Handling and Disposal:	Sludge will be hauled to the City of Page Wastewater Treatment Plant.
Nature of Facility Discharge:	Domestic wastewater
Total Number of Significant Industrial Users (SIUs):	NA
Average Flow Per Discharge:	0.001 mgd.
Service Area:	Visitors and employees at the Glen Canyon Dam.
Service Population:	Approximately 1,080 people
Reuse / Irrigation or other disposal method(s):	N/A
Continuous or Intermittent Discharge:	Intermittent
Discharge Pattern Summary:	Pump is manually turned on one to five hours daily.

<b>IV. RECEIVING WATER</b>	
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:	The receiving water for Outfall 001 is the Colorado River.
River Basin:	Colorado – Grand Canyon River Basin.
Outfall Location(s):	Outfall 001: Township 41 N, Range 8 E, Section 24 Latitude 36° 56' 24" N, Longitude 111° 29' 12" W

Designated uses for the receiving water listed above:	<p>Aquatic and Wildlife cold water (A&amp;Wc)</p> <p>Full Body Contact (FBC)</p> <p>Fish Consumption (FC)</p> <p>Agricultural Irrigation (Agl)</p> <p>Agricultural Livestock watering (Agl)</p> <p>Domestic Water Supply (DWS)</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>	
<p>In addition to the above, the Colorado River has a salinity standard. Per A.A.C. R18-11-110, the flow-weighted average annual concentration of total dissolved solids shall not exceed 723 milligrams per liter (mg/L) in the river below Hoover Dam and above Parker Dam. In order to meet this standard, discharges must meet the plan of implementation requirements developed by the Colorado River Basin Salinity Control Forum.</p>	

<b>V. DESCRIPTION OF DISCHARGE</b>		
Because the facility is in operation and discharges have occurred, effluent monitoring data are available. The following is the measured effluent quality reported in the application.		
Parameters	Units	Maximum Daily Discharge Concentration
Biochemical Oxygen Demand (BOD)	mg/L	2
Total Suspended Solids (TSS)	mg/L	<1.0
Total Kjeldahl Nitrogen (TKN)	mg/L	<1.0
<i>E. coli</i>	cfu/100 mL	<1.0
Facility Design Removal Rates:		BOD 85% TSS 85 %

<b>VI. STATUS OF COMPLIANCE WITH THE EXISTING AZPDES PERMIT</b>	
Date of Most Recent Inspection:	04/15/2021; no potential violations were noted as a result of this inspection.
DMR Files Reviewed:	6/2017 through 3/2022
Lab Reports Reviewed:	6/2017 through 3/2022
DMR Exceedances:	No exceedances
NOVs Issued:	None

NOVs Closed:	N/A
Compliance Orders:	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.
Arsenic	Effluent Characterization (EC)	Monitoring required and an assessment level set.	Data submitted was limited. Majority of samples had high LOQ. Therefore, more data is required.
Iron	Assessment level monitoring	Effluent characterization	Data submitted indicated no reasonable potential (RP) for an exceedance of a standard.
Mercury	Assessment level monitoring	Monitoring required and a WQBEL set.	Data submitted indicates a reasonable potential for an exceedance.
Mixing Zone Study	Data for mixing zone study for copper turned in with permit renewal application.	Data to be received within one year of permit effective date.	Data not received for permit renewal.

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.

Limits for the following parameter have been removed from the permit because evaluation of current data allows the conclusion that no reasonable potential (RP) for an exceedance of a standard exists:

- Iron

This is considered allowable backsliding under 303(d)(4). The effluent limitations in the current permit for these two parameters were 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.

**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. The Glen Canyon Dam WWTP is a federally owned plant using the same technology for treatment of domestic sewage as a POTW. Therefore, technology-based effluent limitations (TBELs) have been established in the permit for these parameters. Additionally, oil & grease will be monitored with a TBEL based on best professional judgment (BPJ). The average monthly limit 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).

**Numeric Water Quality Standards:** As outlined in A.A.C. R18-11-109 and Appendix A:

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. RP refers to the possibility, 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.

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 Section 5.4.4 of the TSD.

**Mixing Zone**

Except for copper, 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.

ADEQ evaluated the request and approved establishment of the copper mixing zone. ADEQ determined the request met the requirements of the Arizona mixing zone rule policy based on the high dilution ratios associated with the effluent discharge to the Colorado River.

The following factors in Arizona mixing zones rules listed in A.A.C. R18-11-114(D) were considered upon approving the request:

Factor	Consideration
Assimilative capacity of the receiving water	The large dilution factor of the discharge to the receiving water will have no impact on the assimilative capacity of the receiving water.
Likelihood of adverse human health effects	No health-based copper standard is applied to the discharge. The most stringent health-based standard for copper is 1,300 ug/L, which is substantially greater than $C_d$ and $C_r$ in the model results below.
Location of drinking water plant intakes and public swimming areas	Copper concentrations in the effluent and receiving water are well below standards for FBC and DWS.
Predicted exposure of biota and the likelihood that resident biota will be adversely affected	There will be no likelihood the resident biota will be affected. A complete and rapid mix is assumed at the discharge point with the downstream concentration being below the aquatic and wildlife standard.
Bioaccumulation	NA - Copper does not bio accumulate.
Size of the zone of initial dilution	Due to the large dilution factor of the discharge to the receiving water and the location of the outfall immediately downstream of the dam's spillway - rapid and complete mixing will occur.
Known or predicted safe exposure levels for the pollutant for which the mixing zone is granted	Effluent concentrations are well below safe exposure levels for copper.
Size of the mixing zone	Since a complete mix is assumed, the mixing zone is at the end of pipe.
Location of the mixing zone relative to biologically sensitive areas in the surface water	A complete and rapid mix is assumed at the discharge point with the downstream concentration being below the aquatic and wildlife standard.
Concentration gradient of the pollutant within the mixing zone	A complete and rapid mix is assumed.
Sediment deposition	None
Potential to attracting aquatic life to the mixing zone	None
Cumulative impacts of other mixing zones and other discharges to the surface water	Not applicable

Rapid and complete mixing occurs when the lateral variation in the concentration of a pollutant in the direct vicinity of the outfall is small. The outfall from the WWTP enters into the tailrace area below the dam, which is also where water from Lake Powell is released after passing through the dam. Because of the extreme amount of dilution and

turbulence that occurs in this area, rapid and complete mixing is assumed and the steady state dilution model is used to calculate the mixing zone.

The following steady-state mass balance formula was used to determine reasonable potential for copper in consideration of the applicant's request for a mixing zone:

$$Q_s C_s + Q_d C_d = Q_r C_r$$

Where:  $Q_s$ =background in-stream flow above discharge point during critical conditions (7-day low flow value over the past 10 years);  $C_s$ =background in-stream copper concentration;  $Q_d$ =facility design capacity was used for maximum waste discharge flow;  $C_d$ = highest estimated maximum effluent concentration for copper (using the highest reported value and a multiplier to account for variability of data);  $Q_r$ = low-flow (7Q10) value; and  $C_r$ =resultant in-stream pollutant concentration.

Model Results:

$$Q_s = 5171 \text{ MGD}$$

$$C_s = 10 \text{ } \mu\text{g/L}$$

$$Q_d = 0.015 \text{ MGD}$$

$$C_d = 203 \text{ } \mu\text{g/L}$$

$$Q_r = 5171 \text{ MGD}$$

$$C_r = 10 \text{ } \mu\text{g/L}$$

RP is determined based on the projected maximum receiving water concentration at the edge of the mixing zone. This is determined by solving for  $C_r$  using the critical inputs into the steady-state mass balance formula.

Solving for  $C_r$  to determine RP yields:

$$C_r = (Q_s C_s + Q_d C_d) / Q_r$$

$$C_r = 10 \text{ } \mu\text{g/L}$$

Because the  $C_r$  value of 10  $\mu\text{g/L}$  is less than the copper standard of 29.3 it was determined that there would not be RP for an exceedance of the chronic copper standard.

### **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.

Ammonia water quality criteria vary based on the 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 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.



The requirement to monitor for these parameters is included in the permit according to A.A.C. R18-11-104(C) and Appendix A. ALs listed for each parameter were calculated in the same manner that a limit would have been calculated (see Numeric Water Quality Standards Section above).

**Hardness**

The permittee is required to sample hardness as CaCO<sub>3</sub> at the same time the trace metals are sampled because the water quality standards for some metals are calculated using the water hardness values. The hardness value of 400 mg/L (the maximum value allowed) 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 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 AAC 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. & 4.b., *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

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*.

**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: 2 mg/L TSS: <1.0 mg/L	BOD: 3 TSS: 1	N/A	TBELs for BOD and TSS 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&Wc chronic	N/A	0	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	<1.0	12	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 (2)	Minimum: 6.5 Maximum: 9.0 A&Wc and FBC A.A.C. R18-11-109(B)	7.8	85	N/A	WQBEL or TBEL 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.
Temperature	R18-11-109C the discharge shall not cause an increase in the ambient water temperature.  A&Wc: no more than 1°C	25°C	46	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.

**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)
Total Dissolved Solids (TDS)	723 mg/L flow-weighted annual average/ A.A.C. R18-11-110 Colorado River Basin Salinity Control Forum requirements apply above Imperial Dam	374 mg/L	1	N/A	RP Indeterminate (Insufficient data)	Monitoring required and an assessment level is set; both the source water and the effluent shall be monitored for TDS to determine compliance with Colorado River Basin Salinity Control Forum requirements.
Ammonia	Standard varies with temperature and pH	<0.100 mg/L (< WQS)	3	N/A	No RP	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 (6). 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)	N- 10,000 µg/L/ DWS P-no applicable standard	146 mg/L 11 mg/L	5	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	<5.0 mg/L	1	N/A	RP Indeterminate (High LOQ)	Monitoring required and a TBEL remains in the permit
Antimony	6 µg/L DWS	<0.5 µg/L	3	N/A	No RP	Monitoring required for effluent characterization.
Arsenic	10 µg/L DWS	1.9 µg/L	3	11.4	RP Indeterminate (High LOQ)	Monitoring required and an assessment level has been set.
Beryllium	4 µg/L DWS	<2 µg/L	3	N/A	No RP	Monitoring required for effluent characterization.
Cadmium (2)	0.64 µg/L A&Wc chronic	<0.1 µg/L	3	N/A	No RP	Monitoring required for effluent characterization.
Chromium (Total)	100 µg/L DWS	<5.0 µg	3	N/A	RP Indeterminate (High LOQ)	Monitoring required as an indicator parameter for Chromium VI.
Chromium VI	11 µg/L A&Wc chronic	No Data	0	N/A	No RP (Based on total chromium data)	Monitoring required and an assessment level remains in the permit.
Copper (2)	29.3 µg/L A&Wc chronic	53 µg/L	3	in-stream pollutant concentration = 10 µg/L(6)	No RP. Mixing Zone Approved	Monitoring required for effluent characterization.
Cyanide	5.2 µg/L A&Wc chronic	<10 µg/L	6	N/A	RP Exists	Monitoring is required and a WQBEL remains in the permit.

**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)	
Hardness	No applicable standard. Hardness is used to determine standards for specific metal parameters.	820 mg/L	3	N/A	N/A	A&W standards for cadmium, chromium III, copper, lead, nickel, silver and zinc used for RP determinations were based on water hardness value of 400 mg/L. Monitoring for hardness is required whenever monitoring for hardness dependent metals is required.	
Hydrogen sulfide	2 µg/L A&Wc chronic	<20 ug/L	1	N/A	RP Indeterminate (High LOQ)	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&Wc chronic	63 µg/L	6	126 µg/L	No RP	Monitoring required for effluent characterization.	
Lead (2)	7.7 µg/L A&Wc chronic	<1 µg/L	3	N/A	No RP	Monitoring required for effluent characterization.	
Mercury	0.01 µg/L A&Wc chronic	0.004 µg/L	5	0.02 µg/L	RP Exists	Monitoring required and a WQBEL is set.	
Nickel (2)	140 µg/L DWS	<20 µg/L	3	N/A	No RP	Monitoring required for effluent characterization.	
Selenium	2 µg/L A&Wc chronic	<2 µg/L	7	N/A	RP Exists	Monitoring required and a WQBEL remains in the permit.	
Silver (2)	4.4 µg/L A&Wc chronic	<0.1 µg/L	3	N/A	No RP	Monitoring required for effluent characterization.	
Sulfides	100 ug/L A&Wc acute	<0.2 µg/L	7	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	2 µg/L DWS	<0.5 µg/L	3	N/A	No RP	Monitoring required for effluent characterization.	
Zinc (2)	379.3 µg/L A&Wc acute and chronic	28 µg/L	3	157 µg/L	No RP	Monitoring required for effluent characterization.	
Whole Effluent Toxicity (WET)	No toxicity (A.A.C. R18-11-108(A) (6))	<i>Pseudo-kirchneriella subcapitata</i> (3)	1.0 TUC	1	N/A	RP Indeterminate (4)	Monitoring required and an action level is set.
		<i>Pimephales promelas</i>	1.0 TUC	1	N/A	RP Indeterminate (4)	Monitoring required and an action level is set.
		<i>Ceriodaphnia dubia</i>	1.0 TUC	1	N/A	RP Indeterminate (4)	Monitoring required and an action level is set.

**Footnotes:**

1. The monitoring frequencies are as specified in the permit.
2. Hardness-dependent metal - the standard is for this parameter is based on the average hardness value of the effluent or receiving water as indicated above.
3. Formerly known as *Selenastrum capricornutum* or *Raphidocelis subcapitata*.
4. Monitoring with ALs or Action Levels always required for WWTPs for these parameters unless RP exists and limits are set.
5. An AIR will be calculated by dividing effluent ammonia concentration by the applicable standard using the receiving water pH and temperature.
6. Concentration based on the application of a mixing zone for copper.

### 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, Sections E and F 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 not less than three 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.) 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), and Ammonia Data Logs. 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.3). 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.C.3 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 discharge from the Glen Canyon Dam and Power Plant WWTP will be to a perennial water with Tier 2 antidegradation protection. This is a renewal permit for an existing facility with no new or expanded discharge, and the existing uses have been maintained. Therefore, an antidegradation review is not required at this time. 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.

**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: Julia A. Rowe  
400 W Congress Street, Suite 433  
Phoenix, Arizona 85701

Or by contacting Julia A. Rowe at (520) 628 – 6721 or by e-mail at [rowe.julia@azdeq.gov](mailto:rowe.julia@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 December 27, 2021, along with supporting data, facility diagram, and maps submitted by the applicant with the application forms.
2. Supplemental information to the application received by ADEQ on March 9, 2022.
3. ADEQ files on Glen Canyon Dam Power Plant and WWTP.
4. ADEQ Geographic Information System (GIS) Web site
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.

DRAFT