ADEQ Arizona Department of Environmental Quality

DRAFT FACT SHEET

ARIZONA POLLUTANT DISCHARGE ELIMINATION SYSTEM (AZPDES)

This document gives pertinent information concerning the reissuance of the AZPDES permit listed below. This facility is an electric power generating station and is considered to be a major 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.

Permittee's Name:	Salt River Project Agricultural Improvement and Power District
Permittee's Mailing Address:	P.O. Box 52025 Mailstop KYS100 Phoenix, AZ 85072
Facility Name:	Kyrene Generating Station (KGS)
Facility Address or Location:	7005 South Kyrene Road Tempe, AZ 85283
County:	Maricopa
Contact Person(s): Phone/e-mail address	Tom Murray, Plant Manager (602) 236-3199
AZPDES Permit Number:	AZ0024791
Inventory Number:	100617

I. STATUS OF PERMIT(s)	
AZPDES permit applied for:	Renewal
Date application received:	**3/27/18**
Date application was determined administratively complete:	3/28/18
Previous permit expiration date:	9/23/18

208 Consistency:

208 Plan consistency is not required for industrial facilities.

SRP has the following permits issued by ADEQ applicable to the Kyrene Generating Station:		
Type of Permit	**Permit Number**	**Purpose**
Aquifer Protection Permit (APP)	P-100617	Regulates discharges to the local aquifer

II. GENERAL FACILITY INFORMATION	
Type of Facility:	Electric power generating facility
Facility Location Description:	KGS is located on the south side of the Salt River Valley Water Users' Association Western Canal (Western Canal) in Tempe, Arizona.
Nature of facility discharge:	Outfalls 001 and 002: Cooling tower blowdown, reverse osmosis reject water, low volume wastes (media filter backwash, RO filter backwash, laboratory sample drains) Outfall 003: Stormwater from K-7 Outfall 007: Excess untreated well water not used by the RO system Outfall 012: Low volume wastewater and stormwater
Average flow per discharge:	Outfall 001: No discharge from Outfall 001 during the current permit term. Outfall 002: 0.78 MGD Outfall 003: Varies- Stormwater from the plant flows to an on-site retention basin where retained water is allowed to evaporate for three days. After three days, any remaining water in the basin is pumped through outfall 003. The maximum discharge flow from Outfall 003 was 0.4 MGD. Outfall 007: Varies- The maximum flow from Outfall 007 was 1.2 MGD. Outfall 012: 0.4 MGD

KGS is an electric generating facility that is wholly owned by the Salt River Project Agricultural Improvement and Power District (SRP). The facility currently consists of six generating units with various support operations. The following describes the units:

- Units K-1 and K-2 are steam generating electric boilers rated at approximately 34.5 and 73.5 MW, respectively. K-1 and K-2 are currently in long-term storage.
- Units K-4 through K-6 are simple cycle combustion turbines, rated at approximately 53 MW (K-4) and 60 MW (K-5 and K-6 each).

- Unit K-7 is a combined cycle gas turbine consisting of a combustion turbine generator (CTG)/heat recovery steam generator (HRSG). K-7 commenced operation in 2002 and is rated at approximately 250 MW.

The primary fuel source for all of the generating units is natural gas. Diesel fuel No. 2 is maintained as a backup and emergency fuel for the three simple cycle combustion turbines (Units K-4, K-5 and K-6). K-7 operates on only natural gas. Source water used for steam electric power generation is obtained from four groundwater wells located within or adjacent to the facility boundaries.

City of Tempe water is used for all domestic purposes at the facility and is subsequently discharged to Tempe's sanitary sewer system. When operating on backup fuel oil, City of Tempe water is used for heat exchanger cooling on K-5 and K-6. K-1 and K-2 are currently in long-term cold storage.

III. 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 :	Outfall 001- Discharges to the Salt River (below Tempe Town Lake to I-10 Bridge) or to the City of Tempe Sewer System Outfall 002- Discharges to the Gila Drain Outfall 003- Discharges to the Kyrene Branch Lateral, a tributary to the Gila Drain Outfalls 007 and 012- Discharge to the Western Canal
River Basin:	Middle Gila River Basin
Outfall Location(s):	Outfall 001: Township 1 S, Range 4 E, Section 10 Latitude 32˚ 21' 45" N, Longitude 111˚ 56' 35" W Outfall 002: Township 1 S, Range 4 E, Section 10 Latitude 32˚ 19' 06" N, Longitude 111˚ 56' 01" W Outfall 003: Township 1 S, Range 4 E, Section 10 Latitude 32˚ 21' 33" N, Longitude 111˚ 56' 17" W Outfall 007: Township 1 S, Range 4 E, Section 10 Latitude 32˚ 21' 24" N, Longitude 111˚ 56' 07" W Outfall 012: Township 1 S, Range 4 E, Section 10 Latitude 32˚ 21' 24" N, Longitude 111˚ 56' 07" W

The outfall discharges to, or the discharge may reach, a surface water listed in Appendix B of A.A.C. Title 18, Chapter 11, Article 1.

Designated uses for the receiving waters listed above:	Outfall 001- Salt River below Tempe Town Lake to I-10 Bridge: Aquatic and Wildlife ephemeral (A&We) Partial Body Contact (PBC) Outfall 002- Gila Drain, a Phoenix Area Canal (below municipal water treatment plant intakes and all other locations): Agricultural Irrigation (AgI) Agricultural Livestock watering (AgL) Outfall 003- SRP Kyrene Branch Lateral. The Lateral is a component of the SRP irrigation system that also flows to the Gila Drain: Agricultural Irrigation (AgI) Agricultural Livestock watering (AgL) Outfalls 007 & 012- Western Canal, a Phoenix Area Canal (below municipal water treatment plant intakes and all other locations): Agricultural Irrigation (AgI) Agricultural Livestock watering (AgL)
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 draft AZPDES permit includes discharge limitations and monitoring requirements designed to achieve compliance with A&Wedw standards. Therefore, the following uses are being applied to the receiving water for Outfall 001: • Aquatic and Wildlife effluent dependent water (A&Wedw) • Partial Body Contact (PBC)	
Is the receiving water on the 303(d) list?	No, and there are no TMDL issues associated.
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.	

IV. DESCRIPTION OF DISCHARGE

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.

Outfall 002 Parameters	**Units**	**Maximum Daily Discharge Concentration**
Free Available Chlorine (FAC)	µg/L	<50 µg/L
Total Chromium	µg/L	29.9 µg/L

Oil & Grease	mg/L	<5 mg/L
Total Suspended Solids (TSS)	mg/L	180 mg/L
Zinc	µg/L	306µg/L
Outfall 003 Parameters	**Units**	**Maximum Daily Discharge Concentration**
Oil & Grease	mg/L	2.2 mg/L
Total Suspended Solids (TSS)	mg/L	170 mg/L
Iron	µg/L	6540 µg/L
Outfall 007 Parameters	**Units**	**Maximum Daily Discharge Concentration**
Boron	µg/L	531 µg/L
Oil & Grease	mg/L	1.6 mg/L
Total Suspended Solids (TSS)	mg/L	5 mg/L
Outfall 012 Parameters	**Units**	**Maximum Daily Discharge Concentration**
Boron	µg/L	502 µg/L
Oil & Grease	mg/L	2.1 mg/L
Total Suspended Solids (TSS)	mg/L	4 mg/L

V. STATUS OF COMPLIANCE WITH THE EXISTING AZPDES PERMIT	
Date of most recent inspection:	10/18/17; no potential violations were noted as a result of this inspection.
DMR files reviewed:	January 2014 through February 2018.
Lab reports reviewed:	November 2014 through February 2018.
DMR Exceedances:	Total Suspended Solids- Exceeded daily maximum concentration limit, March and June 2015.
NOVs issued:	None
NOVs closed:	N/A
Compliance orders:	None

VI. PROPOSED PERMIT CHANGES

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

Parameter	Existing Permit	Proposed permit	Reason for change
Reporting Location	Mail in hard copies of DMRs and other attachments	DMRs and other reports to be submitted electronically through myDEQ portal. Other annual reports may be submitted by mail or email.	Language added to support the NPDES electronic DMR reporting rule that became effective on December 21, 2015.

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 draft 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. .

VII. DETERMINATION OF EFFLUENT LIMITATIONS and ASSESSMENT LEVELS

When determining what parameters need monitoring and/or limits included in the draft 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 423:

The regulations found at 40 CFR §423 require that steam power generating plants achieve specified treatment standards for pH, total suspended solids (TSS), oil and grease, free available chlorine, chromium, and zinc based on the type of treatment technology available. Therefore, technology-based effluent limitations (TBELs) have been established in the permit for these parameters where appropriate. No detectable amount of any of the 126 priority pollutants may be contained in any chemical added for cooling tower blowdown except for chromium and zinc at maximum levels of 200 and 1,000 µg/L, respectively. The regulations further prohibit discharge of any polychlorinated biphenyl compounds (PCBs), such as those historically used for transformer fluid. These provisions have been applied based on Best Practicable Control Technology (BPT) currently available and Best Available Technology (BAT) economically achievable. Additionally Part 8.O.7 of the *AZPDES Multi-Sector General Permit for Stormwater Discharges* requires any discharge of stormwater achieve a specified technology-based benchmark for iron.

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.

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: 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 draft permit should future monitoring data indicate water quality standards are being exceeded.

The requirement to monitor for these parameters is included in the draft 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 $CaCO_3$ 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 hardness value allowed) was used to calculate the applicable water quality standards and any assessment levels or limits for the hardness dependent metals (cadmium, copper, lead, nickel, silver and zinc).

Whole Effluent Toxicity (WET): WET testing is required for Outfall 001 in the draft 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 TUc for a four day exposure period. Using this benchmark, the limitations and action levels for WET included in the draft 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.

WET sampling must coincide with testing for all the parameters in Parts I.A and B of the draft 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.

Whole Effluent Toxicity (WET): ADEQ no longer requires WET testing if the receiving water has no aquatic and wildlife designated uses. Although the narrative standard prohibiting the discharge of toxic pollutants applies to all discharges, the test species are not appropriate for these receiving waters and no alternative tests are readily available. Therefore, WET testing is not required in this permit for discharges from Outfalls 002, 003, 007, and 012.

Discharge Characterization: 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.c., *Discharge Characterization Testing*, as follows:

- Table 4.a. – General Chemistry and Microbiology
- Table 4.b. – Selected Metals for Outfall 001
- Table 4.c. – Selected Metals for Outfalls 002, 007, and 012

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 water of the U.S. during the life of the permit, DC monitoring of representative samples of the effluent is still required.

The purpose of Discharge Characterization 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:
The table that follows 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*.

Parameter	Lowest Standard/ Designated Use	Maximum Reported Daily Value	No. of Samples	Estimated Maximum Value	RP Determination	Proposed Monitoring Requirement/ Rationale (1) (2) (5) (6)
OUTFALL 001						
Flow (MGD)	- - -	- - -	- - -	- - -	- - -	Discharge flow is to be monitored on a continual basis using a flow meter.
Antimony	600 µg/L/ A&Wedw chronic	N/A	0	N/A	No RP (BPJ)	Monitoring is not required. Discharge is not expected to contain antimony in concentrations that exceed the standard.
Arsenic	150 µg/L/ A&Wedw chronic	N/A	0	N/A	No RP (BPJ)	Monitoring required without limitations for Discharge Characterization.
Barium	98,000 µg/L/ PBC	N/A	0	N/A	No RP (BPJ)	Monitoring is not required. Discharge is not expected to contain barium in concentrations that exceed the standard.
Beryllium	5.3 µg/L/ A&Wedw chronic	N/A	0	N/A	No RP (BPJ)	Monitoring required without limitations for Discharge Characterization.
Boron	186,667 µg/L/ PBC	N/A	0	N/A	No RP (BPJ)	Monitoring is not required. Discharge is not expected to contain boron in concentrations that exceed the standard.
Cadmium (3)	6.22 µg/L/ A&Wedw chronic	N/A	0	N/A	No RP (BPJ)	Monitoring required without limitations for Discharge Characterization.
Chlorine, free available (FAC)	30-day average: 0.2 mg/L Daily maximum: 0.5 mg/L Technology-based limits 40 CFR § 423.13(d)(1)	N/A	0	N/A	Monitoring is always included if TBEL applies	Monitoring and reporting is required since TRC will be monitored with more stringent WQBEL than TBEL for FAC. FAC is a component of TRC. FAC shall be monitored within the first hour of discharge after each chlorination event if chlorination is used. See Part II.A.6 for specific monitoring requirements for chlorine. Per CFR 40 § 423.13(d)(2), FAC may not be discharged from any unit for more than two (2) hours in any one day and not more than one unit in any plant may discharge FAC at any one time.
Chlorine, total residual (TRC)	11 µg/L/ A&Wedw chronic	N/A	0	N/A	Limit is always included when chlorine is used.	Monitoring with limitations (WQBEL) is required 1x / month. TRC shall be monitored within the first hour of discharge after each chlorination event if chlorination is used. See Part II.A.6 for specific monitoring requirements for chlorine. Per CFR 40 § 423.13(d)(2), TRC may not be discharged from any unit for more than two (2) hours in any one day and not more than one unit in any plant may discharge TRC at any one time.
Chromium VI	11 µg/L/ A&Wedw chronic	N/A	0	N/A	N/A	Monitoring required with an Assessment Level.

Parameter	Lowest Standard/ Designated Use	Maximum Reported Daily Value	No. of Samples	Estimated Maximum Value	RP Determination	Proposed Monitoring Requirement/ Rationale (1) (2) (5) (6)
Chromium, total	100 µg/L/ PBC --- 30-day average: 0.2 mg/L Daily maximum: 0.2 mg/L Technology-based limits 40 CFR § 423.13(d)(1)	N/A	0	N/A	N/A --- Technology-based limit is always included.	Monitoring required with a WQBEL. Limits are based on WQBEL since it is more stringent than TBEL.
Copper (3)	29 µg/L/ A&Wedw chronic	N/A	0	N/A	Indeterminate (No Data)	Monitoring required with a WQBEL.
Cyanide	9.7 µg/L/ A&Wedw chronic	N/A	0	N/A	No RP (BPJ)	Monitoring is not required. Discharge is not expected to contain cyanide in concentrations that exceed the standard.
E. coli	30-day geometric mean: 126 cfu /100 mL (4 sample minimum) Single sample maximum: 575 cfu /100 mL/ PBC	N/A	0	N/A	No RP (BPJ)	Monitoring required without limitations for Discharge Characterization.
Fluoride	140,000 µg/L/ PBC	N/A	0	N/A	No RP	Monitoring is not required. Discharge is not expected to contain fluoride in concentrations that exceed the standard.
Hardness as CaCO3	No Applicable Standard. Hardness is used to determine standards for specific metal parameters.	N/A	0	N/A	N/A	A&W standards for cadmium, copper, lead, nickel, silver and zinc used for RP determinations were based on the 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&Wedw chronic	N/A	0	N/A	Indeterminate (No data)	Monitoring is required for sulfides as an indicator parameter for hydrogen sulfide. If sulfides are detected, monitoring with assessment levels for hydrogen sulfide is required for the remainder of the permit term.
Iron	1000 µg/L/ A&Wedw chronic	N/A	0	N/A	Indeterminate (No Data)	Monitoring required without limitations for Discharge Characterization.
Lead (3)	10.9 µg/L/ A&Wedw chronic	N/A	0	N/A	Indeterminate (No Data)	Monitoring required without limitations for Discharge Characterization.
Manganese	130,667 µg/L/ PBC	N/A	0	N/A	No RP	Monitoring is not required. Discharge is not expected to contain manganese in concentrations that exceed the standard.
Mercury	0.01 µg/L/ A&Wedw chronic	N/A	0	N/A	Indeterminate (No Data)	Monitoring required with an Assessment Level.
Nickel (3)	168 µg/L/ A&Wedw chronic	N/A	0	N/A	Indeterminate (No Data)	Monitoring required without limitations for Discharge Characterization.
Nitrate	3,733,333 µg/L/ PBC	N/A	0	N/A	No RP	Monitoring is not required. Discharge is not expected to contain nitrate in concentrations that exceed the standard.

Parameter	Lowest Standard/ Designated Use	Maximum Reported Daily Value	No. of Samples	Estimated Maximum Value	RP Determination	Proposed Monitoring Requirement/ Rationale (1) (2) (5) (6)
Nitrite	233,333 µg/L/ PBC	N/A	0	N/A	No RP (BPJ)	Monitoring is not required. Discharge is not expected to contain nitrite in concentrations that exceed the standard.
Oil and grease	30-day average: 15 mg/L Daily maximum: 20 mg/L Technology-based limits 40 CFR § 423.12(b)(3)	N/A	0	N/A	Technology-based limit is always included.	Monitoring required with a TBEL.
pH	Minimum: 6.5 Maximum: 9.0 A&Wedw and PBC A.A.C.R 18-11-109(B) --- Minimum: 6.0 Maximum: 9.0 Technology-based limits 40 CFR § 423.12(b)(1)	N/A	0	N/A	Limit is always included. Technology-based limit exists in addition to the limit in A.A.C.R 18-11-109(B).	Monitoring required with a WQBEL.
Selenium	2 µg/L/ A&Wedw chronic	N/A	0	N/A	Indeterminate (No Data)	Monitoring required with a WQBEL.
Silver (3)	35 µg/L/ A&Wedw chronic	N/A	0	N/A	No RP	Monitoring required without limitations for Discharge Characterization.
Sulfides	No Applicable Standard	N/A	0	N/A	N/A	Indicator parameter for hydrogen sulfide. If sulfides are detected, monitoring with assessment levels for hydrogen sulfide is required for the remainder of the permit term.
Thallium	75 µg/L/ PBC	N/A	0	N/A	No RP	Monitoring is not required. Discharge is not expected to contain thallium in concentrations that exceed the standard.
Total suspended solids (TSS)	30-day average: 30 mg/L Daily maximum: 100 mg/L Technology-based limits 40 CFR § 423.12(b)(3)	N/A	0	N/A	Technology-based limit is always included.	Monitoring required with a TBEL.
Zinc (3)	379 µg/L/ A&Wedw acute --- 30-day average: 1.0 mg/L Daily maximum: 1.0 mg/L Technology-based limits 40 CFR § 423.13(d)(1)	N/A	0	N/A	Indeterminate (Insufficient data) --- Technology-based limit is always included.	Monitoring required with a WQBEL. Limits are based on WQBEL since it is more stringent than TBEL.
Organic compounds	Various	N/A	0	N/A	N/A	Monitoring is not required. Discharge is not expected to contain organic compounds in concentrations that exceed the standard.

Parameter	Lowest Standard/ Designated Use		Maximum Reported Daily Value	No. of Samples	Estimated Maximum Value	RP Determination	Proposed Monitoring Requirement/ Rationale (1) (2) (5) (6)
Chronic Toxicity *Pseudokirchneriella subcapitata* (Green algae)	No toxicity (A.A.C. R18-11-108(A)(6)	N/A	N/A	0	N/A	Indeterminate (No Data)	Monitoring required with action levels.
Chronic Toxicity *Pimephales promelas* (Fathead minnow)		N/A	N/A	0	N/A	Indeterminate (No Data)	Monitoring required with action levels.
Chronic Toxicity *Ceriodaphnia dubia* (Water flea)		N/A	N/A	0	N/A	Indeterminate (No Data)	Monitoring required with a WQBEL.
OUTFALL 002							
Flow (MGD)	- - -		- - -	- - -	- - -	- - -	Discharge flow is to be monitored on a continual basis using a flow meter.
Arsenic	200 µg/L/ AgL		7.9 µg/L	4	44.24 µg/L	No RP	Monitoring required without limitations for Discharge Characterization.
Boron	1,000 µg/L/ AgI		1080 µg/L	20	2470 µg/L	RP exists	Monitoring is required and a WQBEL remains.
Cadmium	50 µg/L/ AgL		<1 µg/L	4	2.8 µg/L	No RP	Monitoring required without limitations for Discharge Characterization.
Chlorine, free available (FAC)	30-day average: 0.2 mg/L Daily maximum: 0.5 mg/L Technology-based limits 40 CFR § 423.13(d)(1)		< 0.05 mg/L	50	N/A	Technology-based limit is always included.	Monitoring required with a TBEL.
Chromium, total	1,000 µg/L/ AgI, AgL --- 30-day average: 0.2 mg/L Daily maximum: 0.2 mg/L Technology-based limits 40 CFR § 423.13(d)(1)		29.9 µg/L	22	80.73 µg/L	No RP --- Technology-based limit is always included.	Monitoring required with a TBEL.
Copper	500 µg/L/ AgL		6 µg/L	2	44.4 µg/L	No RP	Monitoring required without limitations for Discharge Characterization.
Cyanide	200 µg/L/ AgL		<50 µg/L	1	37.0 µg/L	No RP	Monitoring is not required. Discharge is not expected to contain cyanide in concentrations that exceed the standard.

Parameter	Lowest Standard/ Designated Use	Maximum Reported Daily Value	No. of Samples	Estimated Maximum Value	RP Determination	Proposed Monitoring Requirement/ Rationale (1) (2) (5) (6)
Lead	100 µg/L/ AgL	3 µg/L	4	14.1 µg/L	No RP	Monitoring required without limitations for Discharge Characterization.
Manganese	10,000 µg/L/ AgI	4 µg/L	1	52.8 µg/L	No RP	Monitoring is not required. Discharge is not expected to contain manganese in concentrations that exceed the standard.
Mercury	10 µg/L/ AgL	0.008	1	0.099 µg/L	No RP	Monitoring is not required. Discharge is not expected to contain mercury in concentrations that exceed the standard.
Oil and grease	30-day average: 15 mg/L Daily maximum: 20 mg/L Technology-based limits 40 CFR § 423.12(b)(3)	<5 mg/L	50	N/A	Technology-based limit is always included.	Monitoring required with a TBEL.
pH	Minimum: 6.5 Maximum: 9.0 AgL - A.A.C.R 18-11-109(B) ---------- Minimum: 6.0 Maximum: 9.0 Technology-based limits 40 CFR § 423.12(b)(1)	Min.: 7.36 S.U. Max.: 8.52 S.U.	Numerous	N/A	Limit is always included. Technology-based limit exists in addition to the limit in A.A.C.R 18-11-109(B).	Monitoring required with a WQBEL.
Selenium	20 µg/L/ AgI	6 µg/L	27	10 µg/L	No RP	Monitoring required without limitations for Discharge Characterization.
Total suspended solids (TSS)	30-day average: 30 mg/L Daily maximum: 100 mg/L Technology-based limits 40 CFR § 423.12(b)(3)	84 mg/L (Outfall I-006)	Numerous	N/A	Technology-based limit is always included.	Monitoring required with a TBEL.
Zinc	10,000 µg/L/ AgI ---------- 30-day average: 1.0 mg/L Daily maximum: 1.0 mg/L Technology-based limits 40 CFR § 423.13(d)(1)	16 µg/L (Outfall 002) ---------- 0.22 mg/L (Outfall I-004)	2 (Outfall 002) ---------- 48 (Outfall I-004)	118.4 µg/L (Outfall 002) ---------- N/A	No RP ---------- Technology-based limit is always included.	Monitoring required with a TBEL.
Organic compounds	No Applicable Standard (except for a few pesticides)	Non-detect	1	N/A	N/A	Monitoring is not required.
STORMWATER OUTFALL 003 (Unit K7)						
Flow (MGD)	- - -	- - -	- - -	- - -	- - -	Stormwater flow is to be estimated 1x / discharge event.
Iron	1.0 mg/L Benchmark: Part 8.O.7 AZPDES Multi-Sector General Permit For Stormwater Discharges (2010)	6.54 mg/L	2	N/A	Sector- based benchmark (not an ELG) is always included.	Monitoring required with an Assessment Level.

Parameter	Lowest Standard/ Designated Use	Maximum Reported Daily Value	No. of Samples	Estimated Maximum Value	RP Determination	Proposed Monitoring Requirement/ Rationale (1) (2) (5) (6)
Oil and grease	No Applicable Standard	<5 mg/L	1	N/A	N/A	Monitoring without limitations or assessment levels is required 1x / stormwater discharge event. Based on best professional judgment (BPJ), oil and grease is a common pollutant in stormwater discharge.
pH	Minimum: 6.5 Maximum: 9.0 AgL - A.A.C.R 18-11-109(B)	9 S.U.	1	N/A	Limit is always included.	Monitoring with limitations (WQBEL) is required 1x / stormwater discharge event.
Total suspended solids (TSS)	No Applicable Standard	149 mg/L	1	N/A	N/A	Monitoring without limitations or assessment levels is required 1x / stormwater discharge event. Based on best professional judgment, total suspended solids is a common pollutant in stormwater discharge.
OUTFALLS 007 (KGS)						
Flow (MGD)	- - -	- - -	- - -	- - -	- - -	Discharge flow is to be estimated 1x / day.
Arsenic	200 µg/L/ AgL	5.7 µg/L	2	N/A	No RP	Monitoring required without limitations for Discharge Characterization.
Boron	1,000 µg/L/ AgI	531 µg/L	7	1,009 µg/L	RP exists	Monitoring required with a WQBEL.
Cadmium	50 µg/L/ AgL	<1 µg/L	2	N/A	No RP (BPJ)	Monitoring required without limitations for Discharge Characterization.
Chromium, total	1,000 µg/L/ AgI, AgL	2.4 µg/L	2	N/A	No RP (BPJ)	Monitoring required without limitations for Discharge Characterization.
Copper	500 µg/L/ AgI & AgL	2.4 µg/L	2	N/A	No RP (BPJ)	Monitoring required without limitations for Discharge Characterization.
Cyanide	200 µg/L/ AgL	No data	0	N/A	No RP (BPJ)	Monitoring is not required. Discharge is not expected to contain cyanide in concentrations that exceed the standard.
Lead	100 µg/L/ AgL	<1 µg/L	2	N/A	No RP (BPJ)	Monitoring required without limitations for Discharge Characterization.
Manganese	10,000 µg/L/ AgI	No data	0	N/A	No RP (BPJ)	Monitoring is not required. Discharge is not expected to contain manganese in concentrations that exceed the standard.
Mercury	10 µg/L/ AgL	No data	0	N/A	No RP (BPJ)	Monitoring is not required. Discharge is not expected to contain mercury in concentrations that exceed the standard.

Parameter	Lowest Standard/ Designated Use	Maximum Reported Daily Value	No. of Samples	Estimated Maximum Value	RP Determination	Proposed Monitoring Requirement/ Rationale (1) (2) (5) (6)
Oil and grease	30-day average: 15 mg/L Daily maximum: 20 mg/L Technology-based limits 40 CFR § 423.12(b)(3)	<5 mg/L	27	N/A	Technology-based limit is always included.	Monitoring required with a TBEL.
pH	Minimum: 6.5 Maximum: 9.0 AgL - A.A.C.R 18-11-109(B) --- Minimum: 6.0 Maximum: 9.0 Technology-based limits 40 CFR § 423.12(b)(1)	Min.: 6.9 S.U. Max.: 8.1 S.U.	Numerous	N/A	Limit is always included. Technology-based limit exists in addition to the limit in A.A.C.R 18-11-109(B).	Monitoring required with a WQBEL.
Selenium	20 µg/L/ AgI	1.6 µg/L	2	11.84 µg/L	No RP	Monitoring required without limitations for Discharge Characterization.
Total suspended solids (TSS)	30-day average: 30 mg/L Daily maximum: 100 mg/L Technology-based limits 40 CFR § 423.12(b)(3)	5 mg/L	27	N/A	Technology-based limit is always included.	Monitoring required with a TBEL.
Zinc	10,000 µg/L/ AgI	No data	0	N/A	No RP (BPJ)	Monitoring is not required. Discharge is not expected to contain zinc in concentrations that exceed the standard.
Organic compounds	No Applicable Standard (except for a few pesticides which are not associated with the discharges)	No data	0	N/A	N/A	Monitoring is not required.
OUTFALLS 012 (KGS)						
Flow (MGD)	- - -	- - -	- - -	- - -	- - -	Discharge flow is to be estimated 1x / day.
Arsenic	200 µg/L/ AgL	5.8 µg/L	2	32.5 µg/L	No RP (BPJ)	Monitoring required without limitations for Discharge Characterization.
Boron	1,000 µg/L/ AgI	502 µg/L	7	1,757 µg/L	RP exists	Monitoring required with a WQBEL.
Cadmium	50 µg/L/ AgL	<1 µg/L	2	3.7 µg/L	No RP (BPJ)	Monitoring required without limitations for Discharge Characterization.
Chromium, total	1,000 µg/L/ AgI, AgL	2.5 µg/L	2	18.5 µg/L	No RP	Monitoring required without limitations for Discharge Characterization.
Copper	500 µg/L/ AgI & AgL	26.7 µg/L	2	197.6 µg/L	No RP	Monitoring required without limitations for Discharge Characterization.

Parameter	Lowest Standard/ Designated Use	Maximum Reported Daily Value	No. of Samples	Estimated Maximum Value	RP Determination	Proposed Monitoring Requirement/ Rationale (1) (2) (5) (6)
Cyanide	200 µg/L/ AgL	No data	0	N/A	No RP (BPJ)	Monitoring is not required. Discharge is not expected to contain cyanide in concentrations that exceed the standard.
Iron	1.0 mg/L Benchmark: Part 8.O.7 AZPDES Multi-Sector General Permit For Stormwater Discharges (2010)	8.91 mg/L	0	25.8 mg/L	Sector- based benchmark (not an ELG) is always included.	Monitoring required with a WQBEL.
Lead	100 µg/L/ AgL	0.2 µg/L	2	N/A	No RP (BPJ)	Monitoring required without limitations for Discharge Characterization.
Manganese	10,000 µg/L/ AgI	No data	0	N/A	No RP (BPJ)	Monitoring is not required. Discharge is not expected to contain manganese in concentrations that exceed the standard.
Mercury	10 µg/L/ AgL	No data	0	N/A	No RP (BPJ)	Monitoring is not required. Discharge is not expected to contain mercury in concentrations that exceed the standard.
Oil and grease	30-day average: 15 mg/L Daily maximum: 20 mg/L Technology-based limits 40 CFR § 423.12(b)(3)	<5 mg/L	27	N/A	Technology-based limit is always included.	Monitoring required with a TBEL.
pH	Minimum: 6.5 Maximum: 9.0 AgL - A.A.C.R 18-11-109(B) --- Minimum: 6.0 Maximum: 9.0 Technology-based limits 40 CFR § 423.12(b)(1)	Min.: 6.9 S.U. Max.: 8.1 S.U.	Numerous	N/A	Limit is always included. Technology-based limit exists in addition to the limit in A.A.C.R 18-11-109(B).	Monitoring required with a WQBEL.
Selenium	20 µg/L/ AgI	1.6 µg/L	2	9.9 µg/L	No RP	Monitoring required without limitations for Discharge Characterization.
Total suspended solids (TSS)	30-day average: 30 mg/L Daily maximum: 100 mg/L Technology-based limits 40 CFR § 423.12(b)(3)	4 mg/L	27	N/A	Technology-based limit always included	Monitoring required with a TBEL.
Zinc	10,000 µg/L/ AgI	No data	0	N/A	No RP (BPJ)	Monitoring is not required. Discharge is not expected to contain zinc in concentrations that exceed the standard.
Organic compounds	No Applicable Standards (except for a few pesticides which are not associated with the discharges)	No data	0	N/A	N/A	Monitoring is not required.

Footnotes:
(1) Testing must coincide with the Whole Effluent Toxicity Test (WET) samples, if any, taken during that monitoring period as per Part I.C, Table 3 of the permit. See Part IV of the permit.
(2) The monitoring frequencies above are required when the facility is discharging to the receiving water. No monitoring is required if there is no discharge during the monitoring period.
(3) The standard for this parameter is based on the maximum allowable hardness value of 400 mg/ L.
(4) Formerly known as *Selenastrum capricornutum* or *Raphidocelissubcapitata*.
(5) Monitoring at Outfall 003 is required on a storm event that results in a discharge from the facility (“measurable storm event”)

that follows the preceding measurable storm event by at least 72 hours (3 calendar days).

(6) Sampling type for all parameters and at all outfalls is discrete.

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 draft 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 second term 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.

Discrete (i.e., grab) samples are specified in the permit for all parameters. The quality of the discharge is not expected to be highly variable.

Monitoring locations are specified in the permit (Part I.A and Part I.K) 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.2) 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, Sections B.1 and 2 of the permit, including completion and submittal of Discharge Monitoring Reports (DMRs), 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.

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

X. BIOSOLIDS REQUIREMENTS (Part III in Permit)

Not applicable.

XI. SPECIAL CONDITIONS (Part V in Permit)

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 Kyrene Generating Station Outfalls 002, 003, 007 and 012 will be to a canal which is subject to Tier 1 antidegradation protection. The discharge from Outfall 001 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 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.

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 draft 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 – AZPDES Individual Permits Unit
Attn: Richard Mendolia
1110 West Washington Street
Phoenix, Arizona 85007

Or by contacting Richard Mendolia at (602) 771 – 4374 or by e-mail at rjm@azdeq.gov.

XVI. INFORMATION SOURCES

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

1. AZPDES Permit Application Forms 1 and 2C, received March 27, 2018, along with supporting data, facility diagram, and maps submitted by the applicant with the application forms.

2. ADEQ files on SRP Kyrene Generating Station.

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.