

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
PERMIT FACT SHEET
August 2017

Facility/ Permittee: Colorado River Sewage System Joint Venture

Mailing Address: 12501 West Agency Rd.
Parker, AZ 85344

Facility Location: 12501 West Agency Rd.
Parker, AZ 85344

Contact Person(s): Andy Jones
General Manager
12501 West Agency Rd.
Parker, AZ 85344
(928) 669-9821

NPDES Permit No.: AZ0021415

I. STATUS OF PERMIT

Colorado River Sewage System Joint Venture (CRSSJV or “permittee”) has applied for the renewal of their National Pollutant Discharge Elimination System (NPDES) permit to authorize the discharge of the treated effluent from the existing CRSSJV wastewater treatment plant to the Irrigation Return Canal which flows to the Colorado River in Arizona. A completed application was submitted on April 29, 2014. EPA Region IX has developed this permit and fact sheet pursuant to Section 402 of the Clean Water Act, which requires point source dischargers to control the amount of pollutants that are discharged to waters of the United States through obtaining a NPDES permit.

The permittee is discharging under NPDES permit AZ0021415, previously issued on July 24, 2009. Pursuant to 40 CFR Part 122.21, the terms of the existing permits are administratively extended until the issuance of a new permit. This permittee has been classified as a Major discharger.

On March 21 and May 10, 2017, the permittee submitted materials to EPA regarding implementation of aquatic macrophyte water treatment facility (wetland) to enhance nitrate removal prior to discharge to receiving waters. The submittal describes much of the facility’s existing treatment system (within the sewage treatment building) remains the same. The modification will be: once the effluent is discharged from the UV disinfection basin, then it will flow thru an (existing) underground transport pipe, and enter the aquatic macrophyte water treatment wetland in a drainage canal owned by the Colorado River Indian Tribes. The wetland is approximately one mile long and will remove appropriate levels of nitrate via nutrient uptake into cattails and related plants; thus, discharge concentrations of nitrite+nitrate are anticipated to be well below the current effluent limit for this parameter. Permittee has already coordinated with National Resource Conservation Service (NRCS), Colorado River Indian Tribes and Bureau

of Indian Affairs regarding use of this wetland. The project is expected to provide multiple benefits, including wetland habitat for various aquatic organisms and avian species and supply cattail reeds for tribal cultural uses.

II. SIGNIFICANT CHANGES TO PREVIOUS PERMIT

This permit identifies the averaging period for the nitrate + nitrite as N to 12 month average. The previous daily maximum and monthly average limits for nitrate + nitrite as N, which have been removed.

Effluent limits for total chlorine residual, beryllium, cadmium, mercury, cyanide and bis (2-ethylhexyl) phthalate that were included in the previous permit have been eliminated in the permit as *no* reasonable potential to exceed water quality standards for these pollutants was found based on review of past 5 years of effluent data. Monitoring of these pollutants is still required.

Also, based on WET test results, which have been successfully ‘passed’ for 15 years, whole effluent toxicity testing has been reduced from semi-annual to annual monitoring. Priority pollutant scans shall also be concurrent with WET tests.

III. GENERAL DESCRIPTION OF FACILITY

CRSSJV owns and operates the POTW servicing the Town of Parker, Arizona and the Colorado River Indian Tribes, with a total population of approximately 5,000. The POTW started operations in 1974 and has a design flow of 1.2 million gallons per day (MGD). The average daily discharge is 0.63 MGD and the recent maximum daily discharge is 0.8 MGD. The treatment system consists of solids grinder, contact stabilization tanks with secondary clarifiers, aerobic digesters, and ultraviolet disinfection with backup chlorination/dechlorination. Influent solids pass through comminutor grinder and then are removed by screw auger and deposited into 55-gallon drums. Effluent solids are dried on site and then sludge is hauled off to a landfill.

The permittee does not have an approved pretreatment program but does maintain city codes and local limits to control the flow of industrial pollutants into the POTW. In the 2014 application, the permittee reported one significant industrial discharger – Evoqua Water Technologies (formerly known as Siemens Water Technologies Inc.). Evoqua Water Technologies’ average daily volume of process wastewater is 140,000 gallons per day (GPD), which represents approximately 22 percent of the POTW’s total flow of 630,000 GPD.

IV. DESCRIPTION OF RECEIVING WATER

The final treated effluent from the sewage treatment plant is discharged from Discharge Outfall No. 001 into an underground transportation pipeline for 1.2 miles and the effluent is discharged into the wetland which is the first mile of an unlined drainage canal and then flows about 12 miles prior to confluence with Colorado River. All sampling and monitoring under the permit shall be performed at Outfall No. 001, except for nitrite+nitrate as N samples which will be collected at end of wetland at the following lat/long: 34° 06' 55.5" N, 114° 19' 28.5"W.

Discharge Point No.	Latitude	Longitude	Description
001	34° 08' 36" N	114° 18' 31" W	Primary discharge point is on facility property at end of UV-disinfection basin.

Unlined drainage canal runs parallel (approx. 300ft. west) of the Main Canal for approximately 1 mile, then the Main Canal turns south, while the drainage canal turns west. The Main Canal is not specifically listed in Appendix B [*List of Surface Waters and Tributaries*] of the 2009 Arizona Water Quality Standards The Colorado River which is listed as impaired for selenium on Arizona's 2012-2014 303(d) list.

V. DESCRIPTION OF DISCHARGE

A. Application Discharge Data

As part of the application for permit renewal, the permittee provided data from an analysis of the facility's treated wastewater discharge, shown in Table 1. Pollutants believed to be absent or never detected in the effluent are not included. With the exception of nitrate+nitrite as N, arsenic, and E. coli, the data meet existing permit effluent limits (listed in Table 2). Some of the parameters that were reported in the application are not limited in the permit; e.g., mercury and zinc. This data, expressed only as maximum and average *daily* discharges, meets the existing permit maximum daily effluent limits shown in Table 2.

Table 1. Application Discharge Data⁽¹⁾

Parameter	Units	Maximum Daily Discharge	Average Daily Discharge
pH	Standard Units	7.03-7.3 (min-max)	--
Flow	MGD	0.80	0.63
Biochemical Oxygen Demand (5-day)	mg/L	5	4.25
<i>E. Coli</i>	cfu/100mL	6	1.74
Total Suspended Solids (TSS)	mg/L	5	3.13
Total Residual Chlorine	µg/L	ND	ND
Total Kjeldahl Nitrogen (TKN)	mg/L as N	5.11	4.78
Nitrate and Nitrite N	mg/L as N	20.8	11.6
Oil and Grease	mg/L	ND	ND
Total Phosphorus (TP)	mg/L as P	2.85	2.52
Total Dissolved Solids (TDS) (2)	mg/L	356	233
Arsenic	mg/L	0.0056	0.004

Parameter	Units	Maximum Daily Discharge	Average Daily Discharge
Lead	mg/L	0.04	0.04
Selenium	mg/L	0.002	--
Zinc	mg/L	0.05	--

(1) Based on permittee's NPDES renewal application and supplemental data.

(2) *TDS reported as effluent gross value (not incremental increase as required in permit and DMRs).*

B. Recent Discharge Monitoring Report (DMR) Data (2009-2013)

Table 2 provides a summary of effluent limitations and monitoring data based on the facility's most recent 5 years of DMRs (2009 to 2013). The data shows elevated concentrations of total dissolved solids, oil and grease, lead and selenium. All exceedences are discussed further in Part VI.B.4.

Table 2. Discharge Monitoring Report data for years 2009-2013.

Parameter	Units	Existing Permit Effluent Limitations ⁽¹⁾			Discharge Monitoring Data			Current Monitoring Requirements	
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly	Highest Average Weekly	Highest Maximum Daily	Monitoring Frequency	Sample Type
Flow Rate	MGD	Monitoring Only	Monitoring Only	Monitoring Only	0.87	--	1.38	Continuous	Continuous
Biochemical Oxygen Demand (5-day)	mg/L	30	45	Monitoring Only	198	--	245	2/Month	Composite
	kg/day	136	204	Monitoring Only	25	--	31		
	Percent Removal	Both the influent and the effluent shall be monitored. The arithmetic mean of the BOD values, by concentration, for effluent samples collected over a calendar month shall not exceed 15 percent of the arithmetic mean, by concentration, for influent samples collected at approximately the same times during the same period (85 percent BOD removal).			96-97 (min-max)				
Total Suspended Solids	mg/L	30	45	Monitoring Only	16	16	20	2/Month	Composite
	kg/day	136	204	Monitoring Only	50	--	61		

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	Percent Removal	Both the influent and the effluent shall be monitored. The arithmetic mean of the TSS values, by concentration, for effluent samples collected over a calendar month shall not exceed 15 percent of the arithmetic mean, by concentration, for influent samples collected at approximately the same times during the same period (85 percent TSS removal).			90-99 (min-max)				
pH	Standard Units	Not < 6.5 SU, Not > 9.0 SU; discharge shall not change pH in receiving water by more than 0.5 SU			7.0 (minimum)	--	7.5	1/Week	Discrete
<i>E. coli</i>	cfu/100 mL	126	--	235	268	--	2420	1/Week	Discrete
Total Dissolved Solids ⁽¹⁾	mg/L	Incremental increase not to exceed 400mg/L.			--	--	+330	2/Month	Discrete
Oil and Grease	mg/L	10	15	--	0	--	0	1/Month	Discrete
	kg/day	45.4	68.1	--	ND	--	ND		
Arsenic	ug/L	10	--	20.1	6.1	--	12	1/Month	Composite
	kg/day	0.045		0.091	7.3	--	2.5		
Lead	ug/L	10.29		27.83	0.03	--	0.03	1/Month	Composite
	kg/day	0.05		0.13	9	--	12		
Selenium	ug/L	1.86		2.47	NR	--	5.5	1/Month	Composite
	kg/day	0.0084		0.011	0.024	--	0.0249		
Boron	ug/L	630		1270	670	--	1960	1/Month	Composite
	kg/day	2.86		5.77	NR	--	NR		
Fluoride	mg/L	4.0	--	8.04	3.9	--	3.9	2/Year	Composite
	kg/day	18.17		36.52	9.4		9.4		

Fact Sheet

Nitrate + Nitrite	mg/L	10	--	20.1	11.6	--	20.8 ⁽³⁾	1/Month	Composite
	kg/day	45.52	--	91.29	NR	--	NR		
Whole Effluent toxicity Chronic	TUc	1.0	--	1.6	1.0			2/year	Composite
		Monitoring only (no effluent limits) ⁽²⁾							
Beryllium ⁽²⁾	µg/L			n/a			ND	2/year	Composite
Cadmium ⁽²⁾	µg/L			n/a			ND	2/year	Composite
Mercury ⁽²⁾	µg/L			n/a			ND	2/year	Composite
Cyanide ⁽²⁾	µg/L			n/a			ND	2/year	Composite
Bis(2-ethylhexyl)phthalate ⁽²⁾	µg/L			n/a			ND	2/year	Composite
Total residual chlorine ⁽²⁾	ug/L						ND	1/day	grab

(1) Mass limits based on a design flow of 1.2 MGD

(2) Monitoring and reporting required for these parameters only, no effluent limits apply. Total Residual Chlorine monitoring only required if UV system not operational. Over the permit term, monitoring was only required 4 times and resulted in non-detects.

(3) Nitrate + Nitrite (average monthly) effluent concentrations have declined from highest value (75.4 mg/L in 2010) to lower values (20.8 mg/L in 2014).

Numeric receiving water limitations for temperature (no more than 3 degrees Celsius), dissolved oxygen (DO) (not lower than 6 mg/L or 90% saturation), and turbidity (not higher than 50 NTU) were included in the previous permit, but no receiving water data was reported.

C. Evoqua Water Technologies Inc.'s Discharge Data

Evoqua Water Technologies is a carbon reactivation facility that discharges process wastewater (140,000 GPD) and non-process wastewater (1,000 GPD) to the permittee's treatment system. The facility's process wastewater flow represents about 22 percent of the POTW's flow, thus discharge data from this industrial user is important for the purposes of developing this NPDES permit. Although the POTW is not required to implement a formal pretreatment program, Evoqua Water Technologies is subject to the general pretreatment regulations found in 40 CFR Part 403, and also categorical pretreatment standards, specifically the centralized waste treatment point source category in 40 CFR Part 437.

Pursuant to the reporting requirements in 40 CFR § 403.12(e), Evoqua Water Technologies provided effluent discharge data for 2013, which included an analysis of TDS, pH, chemical oxygen demand (COD), TSS and less frequently metals. Specific effluent limitations for metals and organics applicable to this industrial user are found in Subpart D - *Multiple Wastestreams* of 40 CFR Part 437. All metals analyzed, including cadmium, lead, and mercury, which are parameters limited by the POTW's current permit, were below detection limits for the analysis. Results of TDS, COD, pH and TSS concentrations were low. These concentrations of metals are below the effluent limits required by Subpart D - *Multiple Wastestreams* (40 CFR § 437.46(b)).

VI. DETERMINATION OF NUMERICAL EFFLUENT LIMITATIONS

EPA has developed effluent limits and monitoring requirements in the permit based on an evaluation of the technology used to treat the pollutant (e.g., technology-based effluent limits) and the water quality standards applicable to the receiving water (e.g., water quality-based effluent limits). EPA has established the most stringent of applicable technology-based or water quality based standards in the permit, as described below.

A. Applicable Technology-based Effluent Limitations

EPA developed technology-based treatment standards for municipal wastewater treatment plants in accordance with Section 301(b)(1)(B) of the Clean Water Act. The minimum levels of effluent quality attainable by secondary treatment for Biochemical Oxygen Demand (BOD₅), Total Suspended Solids (TSS), and pH, as defined in 40 CFR 133.102, are listed below. Mass limits, as required by 40 CFR 122.45(f), are included for BOD₅ and TSS:

BOD₅

Concentration-based Limits

30-day average – 30 mg/L
7-day average – 45 mg/L
Removal Efficiency – minimum of 85%

Mass-based Limits

30-day average – (30 mg/L)(1.2 MGD)(3.785 conversion factor) = 136 kg/day
7-day average – (45 mg/L)(1.2 MGD)(3.785 conversion factor) = 204 kg/day

TSS

Concentration-based Limits

30-day average – 30 mg/L
7-day average – 45 mg/L
Removal efficiency – Minimum of 85%

Mass-based Limits

30-day average – (30 mg/L)(1.2 MGD)(3.785 conversion factor) = 136 kg/day
7-day average – (45 mg/L)(1.2 MGD)(3.785 conversion factor) = 204 kg/day

pH

Instantaneous Measurement: 6.0 – 9.0 standard units (S.U.)

Technology-based treatment requirements may be imposed on a case-by-case basis under Section 402(a)(1) of the Act, to the extent that EPA promulgated effluent limitations are inapplicable (i.e., the regulation allows the permit writer to consider the appropriate technology for the category or class of point sources and any unique factors relating to the applicant) (40 CFR 125.3(c)(2)).

Therefore, effluent limits for BOD₅, TSS, pH and *E. coli* are established in the permit as stated above.

Table 3. Summary of Technology-Based Effluent Limitations⁽¹⁾

Parameter	Units ¹	Technology-Based Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Biochemical Oxygen Demand (5-day)	mg/L	30	45	--	--	--
	kg/day	136	204	--	--	--
	The 30-day average percent removal shall not be less than 85 percent.					
Total Suspended Solids	mg/L	30	45	--	--	--
	kg/day	136	204	--	--	--
	The 30-day average percent removal shall not be less than 85 percent.					

<i>E. Coli</i>	CFU/ 100 mL	126	--	--	--	235
pH	Standard Units	--	--	--	6.5	9.0
Total Dissolved Solids	mg/L	Incremental increase not to exceed 400mg/L.			--	--

⁽¹⁾ Mass-based limits derived given a design flow of 1.2 MGD.

1. **Biochemical Oxygen Demand.** Pursuant to 40 CFR 133.102, effluent limitations are for BOD. Secondary treatment requirements provide that effluent concentrations of BOD shall not exceed 30 mg/L on a 30-day average and not exceed 45 mg/L based on a 7-day average. In addition, the 30-day average percent removal shall not be less than 85 percent. Based on the facility's design flow of 1.2 MGD per day, this permit includes mass-based monthly average effluent limitation of 136 kg/day and a weekly average effluent limitation of 204 kg/day for BOD. A daily maximum mass-based limit was included in the previous permit (408 kg/day), but it has been removed in this current permit as it is redundant. The monthly and weekly average limits are more stringent and the DMRs show that the facility is capable of achieving those limits.
2. **Total Suspended Solids.** Pursuant to 40 CFR 133.102 and Arizona WQS Section R18-11-109D, effluent limitations are for TSS. Secondary treatment requirements provide that effluent concentrations of TSS shall not exceed 30 mg/L on a 30-day average and 45 mg/L on 7-day average. In addition, the 30-day average percent removal shall not be less than 85 percent. Arizona WQS requires that the median value of suspended sediments of a minimum of four samples collected at least seven days apart shall be 80 mg/L for Aquatic & Wildlife, warm water. Federal regulation requires that when establishing effluent limitations, the more stringent of the technology and water-quality based limitations applies. Therefore, this permit include an average monthly effluent limitation of 30 mg/L and an average weekly effluent limitation of 45 mg/L. Based on the facility's design flow of 1.2 MGD per day, this permit also includes a mass-based monthly average effluent limitation of 136 kg/day and a weekly average effluent limitation of 204 kg/day for TSS. Narrative water quality standards for suspended solids (Arizona WQS R18-11-108C) are also included in this permit. A daily maximum mass-based limit (408 kg/day), was included in the previous permit, but it has been removed in this current permit as it is redundant. The monthly and weekly average limits are more stringent and the DMRs show that the facility is capable of achieving those limits.
3. ***E. Coli* bacteria.** Section R18-11-109A of the Arizona WQS provides requirements for bacteria for Full Body Contact. Arizona WQS requires that the geometric mean of the *E. Coli* values for effluent samples collected (a minimum of 4 samples in 30 consecutive days) shall not exceed 126 colony forming units (CFU) per 100 mL of water, and that the single sample maximum shall not exceed 235 cfu/100mL of water. The 2001 permit required a 130 cfu/100mL 30-day geometric mean and a 580 cfu/100mL single sample maximum. The Arizona WQS have since been revised (2008) and the permit has incorporated this change.

4. **pH.** 40 CFR 133.102(c) provides secondary treatment requirements for pH, which state effluent values for pH shall be maintained within the limits of 6.0 and 9.0 standard units. Section R18-11-109B of the Arizona WQS requires that pH be maintained within the limits of 6.5 and 9.0. Federal regulation requires that when establishing effluent limitations, the more stringent of the technology and water-quality based limitations applies. Based on effluent monitoring data, pH values ranged between 6.8 and 7.4 standard units. Therefore, this permit includes the pH level of the effluent shall be not less than 6.5 or greater than 9.0 standard units.
5. **Total Dissolved Solids.** The facility reported both effluent gross values and incremental increase values for TDS. Because of the plant's influent having a high concentration of TDS, an incremental increase limit of 400 mg/L was required in the previous permit, to be calculated as the increase between the TDS levels in the community's water supply and the levels in the plant effluent. The DMRs show that the facility was unable to meet the previous permit incremental increase limit and that the effluent gross values for TDS exceed water quality standards. This limit is retained in this current permit. Section R18-11-110 of the Arizona WQS provides Salinity Standards for the Colorado River. The flow-weighted average annual salinity in the lower main stem of the Colorado River shall not exceed 747 mg/L below Parker Dam. In addition and specifically for municipal dischargers, Appendix A of the 2005 Review, Water Quality Standards for Salinity, Colorado River System requires that the discharge not exceed an incremental increase of 400 mg/L TDS.

B. Water Quality-Based Effluent Limitations

Water quality-based effluent limitations are required in NPDES permits when the permitting authority determines that a discharge causes, has the reasonable potential to cause, or contributes to an excursion above any water quality standard. (40 CFR 122.44(d)(1))

When determining whether an effluent discharge causes, has the reasonable potential to cause, or contributes to an excursion above narrative or numeric criteria, the permitting authority shall use procedures which account for existing controls on point and non-point sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity) and where appropriate, the dilution of the effluent in the receiving water. (40 CFR 122.44 (d) (1) (ii)).

EPA evaluated the reasonable potential to discharge toxic pollutants according to guidance provided in the *Technical Support Document for Water Quality-Based Toxics Control* (TSD) (Office of Water Enforcement and Permits, U.S. EPA, March 1991) and the *U.S. EPA NPDES Permit Writers Manual* (Office of Water, U.S. EPA, 1996 and 2010 editions). These factors include:

1. Applicable standards, designated uses and impairments of receiving water
2. Dilution in the receiving water
3. Type of industry
4. History of compliance problems and toxic impacts

5. Existing data on toxic pollutants - Reasonable Potential analysis

1. Applicable Standards, Designated Uses and Impairments of Receiving Water

Colorado River Indian Tribes (CRIT) does not have EPA-approved surface water quality standards. As the discharge may eventually flow into the Colorado River, the discharge must meet those downstream standards established by the State of Arizona Water Quality Standards found in Title 18, Chapter 11 of the Arizona Administrative Code. The 2008 Arizona Water Quality Standards have been partially approved by EPA. For those parts, the permit cites the 2008 standards and for those that have not been approved so far, the permit cites the 2003 standards.

Arizona Water Quality Standards include the following beneficial uses for this portion of the Colorado River:

Agency Road Irrigation Return Canal is not specifically listed in Appendix B [*List of Surface Waters and Tributaries*] of the 2011 Arizona Water Quality Standards; however, section R18-11-105 [*Tributaries; Designated Uses*] of the Arizona WQS states:

“For a surface water that is not listed in Appendix B but is a tributary to a listed surface water, is perennial or intermittent and is below 5000 feet, the aquatic and wildlife (warm water fishery) and fish consumption standards apply as well as the water quality standards that have been established for the nearest downstream surface water listed in Appendix B that is not an ephemeral water or an effluent dependent water.”

And, section R18-11-104 [*Designated Uses*] states:

“If a surface water has more than one designated use listed in Appendix B, the most stringent water quality criterion applies.”

The designated uses of the Colorado River from Topock Marsh to Morelos Dam are as follows:

A&Ww	Aquatic & Wildlife, warm water
FBC	Full Body Contact
DWS	Domestic Water Supply
FC	Fish Consumption
AgI	Agricultural Irrigation
AgL	Agricultural Livestock Watering

The agency Irrigation Return Canal is not specifically included on Arizona’s 303(d) List of Water Quality Limited Segments; however the irrigation canal is a tributary to the Colorado River which is listed as impaired for selenium on Arizona’s 2012-2014 303(d) list.

Applicable water quality standards establish water quality criteria for the protection of aquatic wildlife from acute and chronic exposure to certain metals that are hardness dependent,

with a “cap” of 400 mg/l. Based on available hardness data for the discharge, the permit establishes water quality standards for these metals based on a hardness value of 338.8 mg/L. This value, used in the previous permit, is based on STORET data for the Colorado River Indian Tribe main drainage canal, and is consistent with more recent (2009) values found in STORET for the La Paz area.

2. Dilution in the receiving water

Arizona’s water quality standards require that water quality standards be achieved without mixing zones unless the Permittee applies and is approved for a mixing zone (R18-11-114). Therefore, no dilution of the effluent has been considered in the development of the water quality-based effluent limits applicable to the discharge.

3. Type of Industry

Typical pollutants of concern in untreated and treated domestic wastewater include ammonia, nitrate, oxygen demand, pathogens, temperature, pH, oil and grease, and solids. Chlorine and turbidity may also be of concern due to treatment plant operations.

4. History of compliance problems

The facility was inspected by EPA staff on July 10, 2014. Evaluation of DMR data shows CRSSJV has consistently exceeded monthly average effluent limits for Nitrate + nitrite as N established in the 2009 permit. Less frequent exceedances of arsenic and *E. coli* were also reported. The inspection evaluated CRSSJV’s proposal to construct an off-site aquatic macrophyte tertiary treatment system to decrease nitrate + nitrite levels in effluent prior to discharge to the drainage canal. The proposed off-site treatment system currently being considered by CRSSJV and National Resource Conservation Service, will relocate the discharge point to be approx. 2.2 miles downstream of outfall 001, at the end of the wetland and into the drainage canal, approximately 12 miles upstream of the confluence with the Colorado River.

5. Existing data on toxic pollutants

For pollutants with effluent data available, EPA has conducted a reasonable potential analysis based on statistical procedures outlined in EPA’s *Technical Support Document for Water Quality-based Toxics Control* herein after referred to as EPA’s TSD (EPA 1991). These statistical procedures result in the calculation of the projected maximum effluent concentration based on monitoring data to account for effluent variability and a limited data set. The projected maximum effluent concentrations were estimated assuming a coefficient of variation of 0.6 for $n < 10$, and the 99 percent confidence interval of the 99th percentile based on an assumed lognormal distribution of daily effluent values (sections 3.3.2 and 5.5.2 of EPA’s TSD). For $n > 10$, a coefficient of variation of 2.3 was used. EPA calculated the projected maximum effluent concentration for each pollutant using the following equation:

Projected maximum concentration = $C_e \times \text{reasonable potential multiplier factor}$.

Where, “ C_e ” is the reported maximum effluent value and the multiplier factor is obtained from Table 3-1 of the TSD.

Table 4. Reasonable Potential Statistical Analysis using Data from Previous Permit (2009-2013)

Parameter	Maximum Observed Concentration (µg/L) or other	<i>n</i>	CV	RP Multiplier	Projected Maximum Effluent Concentration (µg/L) or other	Most Stringent Water Quality Criterion ⁽²⁾ (µg/L) or other	Statistical Reasonable Potential?
<i>E. Coli</i>	2420 cfu/100mL	59	1.9	3.0	1320 cfu/100mL	126 cfu/100mL	Yes
Total Dissolved Solids	330 mg/L decrease	24	0.3	1.3	958 mg/L incremental increase	747 mg/L	Yes
Total Residual Chlorine	ND	4	--	--	--	11	No
Arsenic	80	59	0.6	2.3	184	10	Yes
Boron	1960	59	0.6	2.3	4500	630	Yes
Fluoride	3900	59	0.6	2.3	8970	4000	Yes
Lead	12	59	0.6	2.3	27.6	190	No
Mercury	ND ⁽³⁾	4	0.6	--	--	0.01	No
Selenium	5.5	59	0.6	2.3	12.6	2.0	Yes
Zinc	57	1	0.6	13.2	280	329.7	No
Nitrate + Nitrite N	75.4 mg/L	59	0.6	2.3	198	10	Yes
Whole Effluent Toxicity, chronic	1.0 TU _C	1	0.6	13.2	13.2 TU _C	1.0 TU _C	Yes

⁽¹⁾ For purposes of RP analysis, parameters measured as Non-Detect are considered to be zeroes. Only parameters with Maximum Observed Concentration >0 are included in this analysis.

⁽²⁾ Water Quality Standards are based on 2003 Arizona WQS, or partially approved 2008 Arizona WQS.

⁽³⁾ Water Quality

C. Rationale for Effluent Limits - Reasonable Potential Analysis

EPA evaluated the typical pollutants expected to be present in the effluent and selected the most stringent of applicable technology-based standards or water quality-based effluent limitations. Where effluent concentrations of toxic parameters are unknown or are not reasonably expected to be discharged in concentration that have the reasonable potential to cause or contribute to violations of water quality standards, EPA may establish monitoring

requirements in the permit. Where monitoring is required, data will be re-evaluated and the permit may be re-opened to incorporate effluent limitations as necessary.

Flow. No limits established for flow, but flow rates must be monitored and reported. Monitoring is required weekly.

Arsenic. Based on the reasonable potential analysis, EPA has determined the discharge has a reasonable potential to cause or contribute to an exceedance for arsenic. Therefore, the permit contains effluent limits for arsenic based on the human health WQS for the Domestic Water Supply designated use. The WQBEL calculations are shown in the following table, resulting in a maximum daily limit (MDL) of 20.10 µg/L and an average monthly limit (AML) of 10 µg/L. A coefficient of variation of 0.6 was used to determine each multiplier. Monitoring is required monthly.

Table 7. WQBEL Calculations for Arsenic.

	Acute	Chronic	Human Health ¹
Freshwater Aquatic Life Criteria, µg/L	340	150	10
No Dilution Credit Authorized	0	0	0
Background Concentration, µg/L	0	0	0
WLA (Dissolved), µg/L	340	150	n/a
WLA (Total Recoverable) ² , µg/L	340	150	10
WLA Multiplier (99 th %)	0.321	0.527	n/a
LTA, µg/L	109.14	79.05	10
LTA _{MDL} Multiplier (99 th %)	--	--	2.01
MDL, µg/L	--	--	20.10
MDL, kg/day	--	--	0.091
LTA _{AML} Multiplier (95 th %) ³	--	--	n/a
AML, µg/L	--	--	10
AML, kg/day	--	--	0.045

¹Derivation of permit limit based on Section 5.4.4 of EPA's TSD

²Conversion factor for dissolved to total recoverable found in Appendix A of the National Recommended Water Quality Criteria.

³LTA multiplier based on sampling frequency of four times per month per section 5.5.3 of EPA's TSD

Boron. Based on the reasonable potential analysis, EPA has determined the discharge has a reasonable potential to cause or contribute to an exceedance for boron. Therefore, the permit contains effluent limits for boron based on the human health WQS for the Domestic Water Supply designated use. The WQBEL calculations are shown in the following table, resulting in a maximum daily limit (MDL) of 1270 µg/L and an average monthly limit (AML) of 630 µg/L. A coefficient of variation of 0.6 was used to determine each multiplier. Monitoring is required monthly.

Table 8. WQBEL Calculations for Boron.

	Human Health ¹
Freshwater Aquatic Life Criteria, µg/L	630
No Dilution Credit Authorized	0
Background Concentration, µg/L	0
WLA (Dissolved), µg/L	n/a
WLA (Total Recoverable), µg/L	630
WLA Multiplier (99 th %)	n/a
LTA, µg/L	630
LTA _{MDL} Multiplier (99 th %)	2.01
MDL, µg/L	1270
MDL, kg/day	5.77
LTA _{AML} Multiplier (95 th %)	n/a
AML, µg/L	630
AML, kg/day	2.86

¹Derivation of permit limit based on Section 5.4.4 of EPA's TSD

Fluoride. Based on the reasonable potential analysis, EPA has determined the discharge has a reasonable potential to cause or contribute to an exceedance for fluoride. Therefore, the permit contains effluent limits for fluoride based on the human health WQS for the Domestic Water Supply designated use. The WQBEL calculations are shown in the following table, resulting in a maximum daily limit (MDL) of 8,040 µg/L and an average monthly limit (AML) of 4,000 µg/L. A coefficient of variation of 0.6 was used to determine each multiplier. Monitoring is required monthly.

Table 9. WQBEL Calculations for Fluoride.

	Human Health ¹
Freshwater Aquatic Life Criteria, µg/L	4,000
No Dilution Credit Authorized	0
Background Concentration, µg/L	0
WLA (Dissolved), µg/L	n/a
WLA (Total Recoverable), µg/L	4,000
WLA Multiplier (99 th %)	n/a
LTA, µg/L	4,000
LTA _{MDL} Multiplier (99 th %)	2.01
MDL, µg/L	8,040
MDL, kg/day	36.52
LTA _{AML} Multiplier (95 th %)	n/a
AML, µg/L	4,000
AML, kg/day	18.17

¹Derivation of permit limit based on Section 5.4.4 of EPA's TSD

Nitrate + Nitrite as N. Based on the reasonable potential analysis, EPA has determined that the discharge has a reasonable potential to cause or contribute to an exceedance for nitrate +

nitrite as N. Therefore, the permit retains effluent limits for nitrate + nitrite as N based on the WQS for the Domestic Water Supply designated use. The WQS (10 mg/L) applies to human health protection and is evaluated via long-term exposure; therefore the nitrate + nitrite as N limit is modified to an annual average, based on 12 months. EPA has removed the maximum daily and average monthly limits. Monitoring is required monthly.

Selenium. Based on the reasonable potential analysis, EPA has determined the discharge has a reasonable potential to cause or contribute to an exceedance for selenium. Therefore, the permit contains effluent limits for selenium based on chronic and acute WQS for the protection of the Aquatic and wildlife, warmwater designated use. The WQBEL calculations are shown in the following table, resulting in a maximum daily limit (MDL) of 2.47 µg/L and an average monthly limit (AML) of 1.86 µg/L. A coefficient of variation of 0.2 (based on the standard deviation divided by the mean of the selenium effluent data) was used to determine each multiplier. Monitoring is required monthly.

Table 6. WQBEL Calculations for Selenium.

	Acute	Chronic ¹
Freshwater Aquatic Life Criteria, µg/L	20	2.0
No Dilution Credit Authorized	0	0
Background Concentration, µg/L	0	0
WLA (Dissolved), µg/L	n/a	n/a
WLA (Total Recoverable) ² , µg/L	20	2.0
WLA Multiplier (99 th %)	0.643	0.797
LTA, µg/L	12.86	1.59
LTA _{MDL} Multiplier (99 th %)	--	1.55
MDL, µg/L	--	2.47
MDL, kg/day	--	0.011
LTA _{AML} Multiplier (95 th %) ³	--	1.17
AML, µg/L	--	1.86
AML, kg/day	--	0.0084

¹Derivation of permit limit based on Section 5.4.1 of EPA's TSD

²Conversion factor for dissolved to total recoverable found in Appendix A of the National Recommended Water Quality Criteria.

³LTA multiplier based on sampling frequency of four times per month per section 5.5.3 of EPA's TSD

Whole Effluent Toxicity (Chronic). Section R18-11-108 of the Arizona WQS provides narrative toxicity requirements that limit the adverse effects of toxic substances in effluents. The existing permit requires semi-annual chronic whole effluent toxicity testing using cladoceran (*Ceriodaphnia dubia*) and the fathead minnow (*Pimephales promela*). Based EPA's review of laboratory results from 2009-2013, toxicity test results indicate a "pass" of 1.0 TUC for each species, EPA has determined that the effluent has reasonable potential to exceed water quality criteria and is including annual chronic toxicity monitoring with numeric chronic whole effluent toxicity limitations. For this discharge, the chronic WET permit limits are 1.6 TU_c (MDL: the highest allowable value for the discharge measured during a calendar day or 24-hour period representing a calendar day), and 1.0 TU_c (Median Monthly Limit or MML: highest allowable value for the median of daily discharges obtained

over a calendar month). Monitoring is required annually; priority pollutant monitoring should occur concurrently.

Barium, Beryllium, Cadmium, Cyanide, Iron, Mercury, Lead, Total Residual Chlorine.

Based on the reasonable potential analysis, EPA has determined the discharge does not have reasonable potential to cause or contribute to an exceedance for these parameters; therefore no effluent limits are included for these parameters in this permit. Monitoring is continued.

D. Anti-Backsliding

Section 402(o) of the CWA prohibits the renewal or reissuance of an NPDES permit that contains effluent limits less stringent than those established in the previous permit, except as provided in the statute. The effluent limitations in this permit are at least as stringent as the effluent limitations in the previous permit, with the exception of nitrate + nitrite as N. The modification of WQBEL for nitrate + nitrite as N to a 12 month average is not expected to cause a change in the chemical nature of the effluent discharge, impact designated uses, or lower existing receiving water quality.

E. Antidegradation Policy

EPA's antidegradation policy at 40 CFR 131.12 and Section R18-11-107 of the 2008 Arizona Water Quality Standards require that existing water uses and the level of water quality necessary to protect the existing uses be maintained.

As described in this document, the permit establishes effluent limits and monitoring requirements to ensure that all applicable water quality standards are met. Based on new information (recent monitoring data) and consistent with federal policy at 40 CFR 131.12, this permit removes limits for Barium Beryllium, Cadmium, Cyanide, Iron, Mercury, Lead, Total Residual Chlorine. Also, the permit does not include a mixing zone, therefore these limits will apply at the end of discharge pipe without consideration of dilution in the receiving water. A priority pollutant scan has been conducted of the effluent, demonstrating that most pollutants will be discharged below detection levels. Furthermore, the waterbody is not listed as an impaired waterbody for total suspended solids, turbidity or oil and grease under section 303(d) of the CWA.

Therefore, due to the low levels of toxic pollutants present in the effluent, high level of treatment being obtained, and water quality based effluent limitations, it is not expected that the discharge will adversely affect receiving water bodies.

VII. NARRATIVE WATER QUALITY-BASED EFFLUENT LIMITS

Section R18-11-108 of the 2008 Arizona WQS contains narrative water quality standards applicable to the receiving water. Therefore, the permit incorporates the following applicable narrative water quality standards:

- A. The discharge shall be free from pollutants in amounts or combinations that:
 - 1. Settle to form bottom deposits that inhibit or prohibit the habitation, growth, or propagation of aquatic life;
 - 2. Cause objectionable odor in the area in which the surface water is located;
 - 3. Cause off-taste or odor in drinking water;
 - 4. Cause off-flavor in aquatic organisms;
 - 5. Are toxic to humans, animals, plants, or other organisms;
 - 6. Cause the growth of algae or aquatic plants that inhibit or prohibit the habitation, growth, or propagation of other aquatic life or that impair recreational uses;
 - 7. Cause or contribute to a violation of an aquifer water quality standard prescribed in R18-11-405 or R18-11-406; or
 - 8. Change the color of the surface water from natural background levels of color.
- B. The discharge shall be free from oil, grease or other pollutant that floats as debris, foam, or scum; or that causes a film or iridescent appearance on the surface of the water; or that cause a deposit on a shoreline, bank, or aquatic vegetation. The discharge of lubricating oil or gasoline associated with the normal operation of a recreational watercraft is not a violation of this narrative standard.
- C. The discharge shall be free from suspended solids in quantities or concentrations that interfere with the treatment processes at the nearest downstream potable water treatment plant or substantially increase the cost of handling solids produced at the nearest downstream potable water treatment plant.
- D. The discharge shall be free from refuse, rubbish, demolition or construction debris, trash, garbage, motor vehicles, appliances, tires, or other solid waste into a surface water or onto its banks.
- E. The discharge shall not cause degradation so that a wadeable, perennial stream cannot support and maintain a community of organisms having taxa richness, species composition, tolerance, and functional organization comparable to that of a reference stream in Arizona.
- F. In addition, the discharge shall not:
 - a) raise the natural ambient water temperature of the receiving water more than three (3) degrees Celsius;
 - b) cause the turbidity of the receiving water to exceed 50 nephelometric turbidity units; or
 - c) lower the dissolved oxygen concentration of the receiving water to less than six (6) mg/L or 90% saturation, whichever is less.

VIII. MONITORING AND REPORTING REQUIREMENTS

The permit requires the permittee to conduct monitoring for all pollutants or parameters where effluent limits have been established, at the minimum frequency specified. Additionally, where effluent concentrations of toxic parameters are unknown or where data is insufficient to determine reasonable potential, monitoring may be required for pollutants or parameters where effluent limits have not been established.

A. Effluent Monitoring and Reporting

The permittee shall conduct effluent monitoring as specified in the permit to evaluate compliance with the permit conditions. The permittee shall perform all monitoring, sampling and analyses in accordance with the methods described in the most recent edition of 40 CFR 136, unless otherwise specified in the permit. All monitoring data shall be reported on monthly netDMR forms and submitted quarterly as specified in the permit.

B. Priority Toxic Pollutants Scan

The permit requires that monitoring for Priority Pollutants be conducted once per year using a 24-hour composite sample (use grab samples where appropriate) of the final effluent, concurrent with Whole Effluent Toxicity testing. The permittee shall perform all effluent sampling and analyses for the priority pollutants scan in accordance with the methods described in the most recent edition of 40 CFR 136, unless otherwise specified in the permit or by EPA. 40 CFR 131.36 provides a complete list of Priority Toxic Pollutants.

C. Whole Effluent Toxicity Testing

Chronic WET testing shall be conducted annually, in winter months, using a 24-hour composite sample (use grab samples where appropriate) of the final effluent, concurrent with a Priority Pollutants scan.

Chronic toxicity testing evaluates reduced growth/reproduction at 100 percent effluent. Chronic toxicity is to be reported based on the No Observed Effect Concentration (NOEC). The permittee shall conduct short-term tests with the water flea, *Ceriodaphnia dubia* (survival and reproduction test), the fathead minnow, *Pimephales promelas* (larval survival and growth test) and the green alga, *Raphidocelis subcapitata* (growth test). The presence of chronic toxicity shall be estimated as specified by the methods in the 40 CFR Part 136 as amended on November 19, 2002.

IX. SPECIAL CONDITIONS

A. Biosolids

Standard requirements for the monitoring, reporting, recordkeeping, and handling of biosolids in accordance with 40 CFR Part 503 are incorporated into the permit.

B. Pretreatment

The permittee is not required to have a formal pretreatment program; however, one of the industrial users that discharges process wastewater to the POTW has a history of violations and may be contributing to the concentration of metals, such as arsenic, in the POTW's effluent. Therefore, quarterly monitoring of the industrial user's effluent, to determine compliance with categorical pretreatment standards, and annual inspections and reporting are required in the permit.

C. Capacity Attainment and Planning

The permit requires that a written report be filed within ninety (90) days if the average dry-weather wastewater treatment flow for any month exceeds 90 percent of the annual dry weather design capacity of the waste treatment and/or disposal facilities.

D. Development and Implementation of Best Management Practices

Pursuant to 40 CFR 122.44(k)(4), EPA may impose Best Management Practices (BMPs) which are "reasonably necessary...to carry out the purposes of the Act." The pollution prevention requirements or BMPs in the permit operate as technology-based limitations on effluent discharges that reflect the application of Best Available Technology and Best Control Technology. Therefore, the permit requires that the permittee develop (or update) and implement a Pollution Prevention Plan with appropriate pollution prevention measures or BMPs designed to prevent pollutants from entering the irrigation canal and downstream surface waters while performing normal processing operations at the facility.

The permittee shall develop and implement BMPs that are necessary to control TDS.

E. Development of an Initial Investigation TRE Workplan for Whole Effluent Toxicity

In the event effluent toxicity is triggered from WET test results, the permit requires the permittee to develop and implement a Toxics Reduction Evaluation (TRE) Workplan. For acute toxicity, unacceptable effluent toxicity is found when "Fail" is determined, as indicated by a statistically significant difference between a test sample of 100 percent effluent and a control using a t-test. For chronic toxicity, unacceptable effluent toxicity is found in a single test result greater than 1.6 TU_c, or when any one or more monthly test results in a calculated median value greater than 1.0 TU_c. The permit also requires additional toxicity testing if a chronic toxicity monitoring trigger is exceeded. Within 90 days of the permit effective date, the permittee shall prepare and submit a copy of their Initial Investigation TRE Workplan (1-2 pages) for acute and chronic toxicity to EPA for review.

X. OTHER CONSIDERATIONS UNDER FEDERAL LAW

A. Impact to Threatened and Endangered Species

Section 7 of the Endangered Species Act of 1973 (16 U.S.C. § 1536) requires federal agencies to ensure that any action authorized, funded, or carried out by the federal agency does not jeopardize the continued existence of a listed or candidate species, or result in the destruction or adverse modification of its habitat.

In 2008, EPA sent a letter to the US Fish and Wildlife Service (USFWS) to request updated species information. EPA did not receive a response; however EPA found updated species information on USFWS's website. EPA prepared a biological evaluation of the listed species that may be potentially affected by the discharge. This biological evaluation was sent to USFWS for review.

From the USFWS Southwest Region's Threatened and Endangered Species Online Database, EPA found there are currently 7 Federally-listed endangered (E) species and 1 Federally-listed threatened (T) species in La Paz and Yuma Counties.

Table 12. ESA Species List for La Paz and Yuma Counties, Arizona

Status	Species (Common Name/ <i>Scientific Name</i>)
E	Bonytail chub/ <i>Gila elegans</i>
E	Razorback sucker/ <i>Xyrauchen texanus</i>
E	Southwestern willow flycatcher/ <i>Empidonax traillii extimus</i>
E	Yuma clapper rail/ <i>Rallus longirostris yumanensis</i>
E	Lesser long-nosed bat/ <i>Leptonycteris curasoae yerbabuenae</i>
E	Sonoran pronghorn/ <i>Antilocapra Americana sonoriensis</i>
T	Bald eagle/ <i>Haliaeetus leucocephalus</i>

EPA's biological evaluation for these eight species found that the discharge "may affect, but is not likely to adversely affect" the bonytail chub, razorback sucker, and Yuma clapper rail and will have "no effect" on the southwestern willow flycatcher, lesser long-nosed bat, sonoran pronghorn, and bald eagle. The wetland already exists within the drainage canal; thus there is no change in the surrounding habitat. The proposed change in NPDES monitoring location for nitrate+nitrite samples will not affect any endangered or threatened species in the area.

B. Impact to National Historic Properties

Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies to consider the effect of their undertakings on historic properties that are either listed on, or eligible for listing on, the National Register of Historic Places. Pursuant to the NHPA and 36 CFR § 800.3(a)(1), EPA is making a determination that issuing this NPDES permit does not have the potential to affect any historic properties or cultural properties. As a result, Section 106 does not require EPA to undertake additional consulting on this permit issuance.

C. Consideration of Environmental Justice Impact

EPA conducted a screening level evaluation of the potential impact of the permitted wastewater treatment facility and other permitted facilities within the immediate area on local residents through use of EPA's EJSCREEN tool. Specifically, we used EJSCREEN to identify facilities near the wastewater treatment plan that could pose risk to local residents through discharge of environmental contaminants. We also evaluated whether demographic characteristics of the population living in the vicinity of the wastewater treatment facility indicate that the local population might be particularly susceptible to such environmental risks. The results showed that at the time of this analysis, conducted in January, 2015, the area in which the wastewater facility is located also is home to several "Treatment, Storage, and Disposal Facilities" (TSDFs), which are hazardous water waste management facilities, in addition to the wastewater treatment facility. The EJSCREEN analysis of demographic characteristics of the community living near the facility indicates the local population may be at relatively higher risk if exposed to environmental contaminants than the general population. Demographic indices that showed high scores were low income population and population with less than high school education.

We also considered the characteristics of the wastewater facility operation and discharges, and whether those discharges, in combination with discharges from local TSDFs, pose exposure risks that the NPDES permit needs to further address. The wastewater plant does not utilize, generate, or discharge hazardous materials or pollutants (i.e., the treatment process uses ultraviolet radiation in lieu of gaseous chlorine for disinfection). We found no evidence to indicate the wastewater facility discharge poses any significant risk to local residents. EPA concludes that this facility is not likely to cause or contribute to any potential community impacts from proximity to TSDFs. Furthermore, EPA believes that by implementing and requiring compliance with the provisions of the Clean Water Act, which are designed to ensure full protection of human health, the permit is sufficient to ensure the facility discharges do not cause or contribute to human health risk in the vicinity of the wastewater facility.

XI. STANDARD CONDITIONS

A. Reopener Provision

In accordance with 40 CFR 122 and 124, this permit may be modified by EPA to include effluent limits, monitoring, or other conditions to implement new regulations, including EPA-approved water quality standards; or to address new information indicating the presence of effluent toxicity or the reasonable potential for the discharge to cause or contribute to exceedances of water quality standards.

B. Standard Provisions

The permit requires the permittee to comply with EPA Region IX Standard Federal NPDES Permit Conditions, dated July 1, 2001.

XII. ADMINISTRATIVE INFORMATION

A. Public Notice (40 CFR 124.10)

The public notice is the vehicle for informing all interested parties and members of the general public of the contents of a draft NPDES permit or other significant action with respect to an NPDES permit or application.

B. Public Comment Period (40 CFR 124.10)

Notice of the draft permit was placed in Parker Pioneer newspaper on December 24, 2014, and provided a minimum of 30 days for interested parties to respond in writing to EPA. No comments were received on the proposed permit for this facility.

C. Public Hearing (40 CFR 124.12(c))

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 EPA determines there is a significant amount of interest expressed during the 30-day public comment period or when it is necessary to clarify the issues involved in the permit decision.

XIII. CONTACT INFORMATION

Comments, submittals and additional information relating to this permit may be directed to:

U.S. Environmental Protection Agency, Region IX
NPDES Permits Office (WTR-2-3)
75 Hawthorne Street
San Francisco, California 94105
ATTN: Peter Kozelka
kozelka.peter@epa.gov

XIV. REFERENCES

EPA. 1991. *Technical Support Document for Water Quality-based Toxics Control*. Prepared by EPA, Office of Water Enforcement and Permits, in March 1991. EPA/505/2-90-001.

EPA. 1996. *Regions IX & X Guidance for Implementing Whole Effluent Toxicity Testing Programs*, Interim Final, May 31, 1996.

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