ADEQ Arizona Department of Environmental Quality
Janice K. Brewer, Governor
Henry R. Darwin, Director

DRAFT PERMIT

ADEQ Inventory No. 100419 Permit No. AZ0025178
LTF No. 58205

AUTHORIZATION TO DISCHARGE UNDER THE ARIZONA POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of Arizona Revised Statutes (A.R.S.) Title 49, Chapter 2, Article 3.1; the Federal Water Pollution Control Act, (33 USC §1251 et. seq., as amended), and Arizona Administrative Code (A.A.C.) Title 18, Chapter 9, Articles 9 and 10, and amendments thereto,

The City of Casa Grande
The City of Casa Grande Water Reclamation Facility
510 E. Florence Blvd.
Casa Grande, Arizona 85122

is authorized to discharge treated domestic wastewater from the water reclamation facility located at 1194 W. Kortsen Road serving Casa Grande in Pinal County, Arizona to the Northern Branch of the Santa Cruz Wash in the Santa Cruz Basin at:

Outfall No.	Latitude	Longitude	Legal
001	32˚ 54' 57" N	111˚ 47' 13" W	Township 6 S, Range 5 E, Section 12

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein, and in the attached "Standard AZPDES Permit Conditions."

This permit shall become effective on _____, 2014.

This permit and the authorization to discharge shall expire at midnight, _____, 2019.

Signed this _____ day of _____, 2014.

_____
Michael A. Fulton, Director
Water Quality Division
Department of Environmental Quality

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PART I. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

A. Effluent Limitations and Monitoring Requirements

The permittee shall limit and monitor discharges from Outfall 001 as specified in Table 1 which follows. These requirements are based on a maximum allowable discharge flow of 22,714 m^3/day or 6 million gallons per day (MGD).

TABLE 1: Effluent Limitations and Monitoring Requirements

Parameter	Maximum Allowable Discharge Limitations						Monitoring Requirement (2)(3)	
	Mass Limits (1)			Concentration Limits				
	Monthly Average	Weekly Average	Daily Maximum	Monthly Average	Weekly Average	Daily Maximum	Monitoring Frequency	Sample Type
Discharge Flow (MGD)	REPORT (4)	- - -	6 MGD (4)	- - -	- - -	- - -	Continuous	Metered
Biochemical Oxygen Demand (BOD) (5-day)	680 kg/day	1020 kg/day	- - -	30 mg/L	45 mg/L	- - -	1x /week	24-hour Composite (5)
BOD (6)	- - -	- - -	- - -	85% REMOVAL MINIMUM	- - -	- - -	1x /week	24-hour Composite
Total Suspended Solids (TSS)	680 kg/day	1020 kg/day	- - -	30 mg/L	45 mg/L	- - -	1x /week	24-hour Composite
TSS (6)	- - -	- - -	- - -	85% REMOVAL MINIMUM	- - -	- -	1x /week	24-hour Composite
E. coli	- - -	- - -	- - -	126 cfu/100 mL (7)	- - -	575 cfu/100 mL (7)	4x /month	Discrete
Chlorine, Total Residual (TRC) (8) (9)	200 g/day	- - -	410 g/day	9.0 ug/L	- - -	18 ug/L	5x /week	Discrete
Oil and grease	230 kg/day	- - -	340 kg/day	10 mg/L	- - -	15 mg/L	1x /quarter	Discrete
Chromium	Report [g/day]	- - -	Report [g/day]	Report [ug/L]	- - -	Report [ug/L]	1x /month	Discrete
Chromium VI (11)	180 g/day	- - -	360 g/day	8.0 µg/L	- - -	16 µg/L	1x /month	Discrete
Copper (10)	300 g/day	- - -	610 g/day	13 µg/L	- - -	27 µg/L	1x /month	24-hour Composite
Cyanide	180 g/day	- - -	360 g/day	7.9 µg/L	- - -	16 µg/L	1x /month	Discrete
Mercury	0.2 g/day	- - -	0.5 g/day	0.01 µg/L	- - -	0.02 µg/L	1x /month	Discrete
Selenium	45 g/day	- - -	68 g/day	2 µg/L	- - -	3 µg/L	1x /month	24-hour Composite
Hardness ($CaCO_3$) - effluent (10)	- - -	- - -	- - -	Report [mg/L]	- - -	Report [mg/L]	1x /month	24-hour Composite
pH (9)	Not less than 6.5 standard units (S.U.) nor greater than 9.0 S.U.						5x /week	Discrete

Footnotes:
(1) Mass values are to be calculated and reported using the following formulas: 1) Mass in kilograms per day = 3.785 x flow in MGD x concentration in mg/L, and 2) mass in grams per day = 3.785 x flow in MGD x concentration in µg/L.

(2) 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.
(3) If discharge is infrequent, see Part I.D for minimum effluent characterization monitoring requirements.
(4) Monitoring and reporting required. Maximum allowable flow discharge is 6 MGD. In addition to the average and maximum flows reported on the Discharge Monitoring forms, daily discharge flow shall be recorded on the **Discharge Flow Record** provided in Appendix B. See Part II.B for reporting requirements.
(5) For the purposes of this permit, a "24-hour composite" sample has been defined as a flow-proportioned mixture of not less than three discrete samples (aliquots) obtained at equal time intervals during a 24-hour period. The volume of each aliquot shall be directly proportional to the discharge flow rate at the time of sampling.
(6) Both the influent and the effluent shall be monitored.
(7) cfu = colony forming units; "most probable number" (mpn) is considered equivalent for reporting purposes. The monthly average for *E. coli* is calculated as a geometric mean. A minimum of 4 samples are required in order to report a geometric mean. See the definition for "Monthly or Weekly Average Concentration Limit" in Appendix A.
(8) Sample when chlorine or bromine compounds are used for disinfection. See Part II.A.6 for specific monitoring requirements for chlorine.
(9) pH and TRC must be measured at the time of sampling and do not require use of a certified laboratory. Measurements must be obtained in accordance with the applicable method and must meet all method quality assurance/quality control requirements to be considered valid data.
(10) Limits listed are based on the average effluent hardness of 207 mg/L as $CaCO_3$. The effluent must be tested for hardness at the same time that this metal sample is taken. See also Part II.A.7.
(11) Sample and report chromium as an indicator for chromium VI. Effluent must be tested for hardness at the same time that this metal sample is taken. See also Part II.A.7.

B. Trace Substance Monitoring

The permittee shall monitor discharges from Outfall 001 as specified in Table 2. Monitoring results above the Assessment Levels (ALs) listed below do not constitute a permit violation, but may trigger evaluation of Reasonable Potential (RP) by ADEQ. The permittee shall use an approved analytical method with a Limit of Quantitation (LOQ) lower than the AL values as described in Part II.A.4.

TABLE 2: Trace Substance Monitoring Requirements

Parameter	Assessment Levels (1) Concentration (μg/L) unless otherwise specified		Monitoring Requirements (2) (3)	
	Monthly Average	Daily Maximum	Monitoring Frequency	Sample Type
Ammonia	(4) [mg/L]	(4) [mg/L]	2x /month	Discrete
Hydrogen sulfide (5)	2	3	1x /month (5)	Discrete
Iron	820	1640	1x /month	24-hr. Composite
pH (4) (6)	Report [S.U.] (4)	Report [S.U.] (4)	2x /month	Discrete
Sulfides (5)	(5)	(5)	1x /month(6)	Discrete
Temperature (4) (6)	Report [°C] (4)	Report [°C] (4)	2x /month	Discrete

Footnotes:
(1) Concentration values are calculated based on Arizona Water Quality Standards. Monitoring and reporting required.
(2) 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.
(3) If discharge is infrequent see Part I.D for minimum effluent characterization monitoring requirements.
(4) The ammonia assessment level is dependent on pH and temperature. In addition to reporting the ammonia values on the DMRs, the ammonia data log shall also be completed including values of pH and temperature at the time the ammonia sample is taken. See Part II.B of the permit.
(5) With a detection limit no higher than 100 ug/L, any detection of sulfides shall trigger monthly monitoring for hydrogen sulfide for the remainder of the permit term. Monitoring for hydrogen sulfide is only required if sulfide is detected.
(6) pH and temperature must be measured at the time of sampling and do not require use of a certified laboratory. Measurements must be obtained in accordance with the applicable method and must meet all method quality assurance/quality control requirements to be considered valid data.

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C. Whole Effluent Toxicity Monitoring

The permittee shall monitor discharges from Outfall 001 for Whole Effluent Toxicity (WET) as specified in Table 3 which follows. If toxicity is detected above an Action Level specified as follows, the permittee must perform follow-up testing and, as applicable, follow the TIE/TRE processes in Part IV.D of the permit.

TABLE 3: WET Testing

Effluent Characteristic (1)	Action Levels		Monitoring Requirements	
	Daily Maximum (2) (3)	Monthly Median (3)	Monitoring Frequency (4)	Sample Type
Chronic Toxicity *Pseudokirchneriella subcapitata* (Green algae) (5)	1.6 TUc	1.0 TUc	1x /6 months	24-hr Composite
Chronic Toxicity *Pimephales promelas* (Fathead minnow)	1.6 TUc	1.0 TUc	1x /6 months	24-hr Composite
Chronic Toxicity *Ceriodaphnia dubia* (Water flea)	1.6 TUc	1.0 TUc	1x /6 months	24-hr Composite

Footnotes:
(1) See Part IV for additional requirements for testing and reporting Whole Effluent Toxicity (WET).
(2) Since completion of one chronic WET test takes more than 24 hours, the daily maximum is considered to be the highest allowable test result.
(3) Any exceedance of these values requires the permittee to conduct follow-up testing. See Part IV.D of the permit for details.
(4) If discharge is infrequent see Part I.D for minimum effluent characterization monitoring requirements.
(5) Formerly known as *Selenestrum capricornutum or Raphidocelis subcapitata*

D. Effluent Characterization Testing

The permittee shall monitor to characterize the facility's effluent for the parameters listed in Tables 4.a - f, whether discharging or not. When the facility discharges, monitoring is to be conducted at the frequency indicated in Tables 1 through 3. No limits or ALs are established, but the LOQ must be low enough to allow comparison of the results to the applicable surface water quality standards (SWQS). If a LOQ below the SWQS cannot be achieved, then the permittee shall use the method expected to achieve the lowest LOQ, as defined in Appendix A of this permit. Samples are to be representative of any seasonal variation in the discharge:

TABLE 4.a: Effluent Characterization Testing – General Chemistry and Microbiology

Parameter	Reporting Units	Monitoring Requirements	
		Monitoring Frequency (1)	Sample Type
Ammonia (as N) (2)	mg/L	1x /quarter	Discrete
Biochemical Oxygen Demand (BOD-5)	mg/L	1x /quarter	24-hour Composite
Chlorine, Total Residual (TRC) (4) (5)	ug/L	1x /quarter	Discrete
Dissolved Oxygen (5)	mg/L	1x /year in years 2,3,4 of permit term	Discrete
E. coli	cfu/100 mL (3)	1x /quarter	Discrete
Nitrate/Nitrite (as N)	mg/L	1x /quarter	24-hour Composite
Nitrogen, Total Kjeldahl (TKN)	mg/L	1x /quarter	24-hour Composite

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Oil and Grease	mg/L	1x /quarter	Discrete
pH (2) (5)	S.U.	1x /quarter	Discrete
Phosphorus	mg/L	1x /quarter	24-hour Composite
Temperature (2) (5)	°Celsius	1x /quarter	Discrete
Total Dissolved Solids (TDS)	mg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
Total Suspended Solids (TSS)	mg/L	1x /quarter	24-hour Composite

Footnotes:
(1) If more frequent monitoring of any of these parameters is required by another part of this permit, those sampling results may be used to satisfy Table 4.a. requirements.
(2) When sampling for ammonia, temperature and pH must be determined concurrently and the results recorded on the **Ammonia Data Log** provided in Appendix C. See Part II.B for reporting requirements.
(3) cfu = colony forming units; "most probable number" (mpn) is considered equivalent for reporting purposes.
(4) Sample when chlorine or bromine compounds are used for disinfection. See Part II.A.6 for specific monitoring requirements for chlorine.
(5) Temperature, pH, TRC and dissolved oxygen must be measured at the time of sampling and do not require use of a certified laboratory. See Part II.A.6 for methods of analyses for chlorine. Measurements must be obtained in accordance with the applicable method and must meet all method quality assurance/quality control requirements to be considered valid data.

TABLE 4.b: Effluent Characterization Testing – Selected Metals, Trace Substances and WET

Parameter (1)	Reporting Units	Monitoring Requirements	
		Monitoring Frequency (2)	Sample Type
Antimony	µg/L	1x /6 months	24-hour Composite
Arsenic	µg/L	1x /6 months	24-hour Composite
Beryllium	µg/L	1x /6 months	24-hour Composite
Cadmium	µg/L	1x /6 months	24-hour Composite
Chromium	µg/L	1x /6 months	24-hour Composite
Chromium VI	µg/L	1x /6 months	Discrete
Copper	µg/L	1x /6 months	24-hour Composite
Iron	µg/L	1x /6 months	24-hour Composite
Lead	µg/L	1x /6 months	24-hour Composite
Mercury	µg/L	1x /6 months	Discrete
Nickel	µg/L	1x /6 months	24-hour Composite
Selenium	µg/L	1x /6 months	24-hour Composite
Silver	µg/L	1x /6 months	24-hour Composite
Thallium	µg/L	1x /6 months	24-hour Composite
Zinc	µg/L	1x /6 months	24-hour Composite
Hardness	mg/L	1x /6 months	24-hour Composite
Cyanide	µg/L	1x /6months	Discrete
Whole Effluent Toxicity - chronic (all 3 species) (3)	TUc	4x /permit term (4)	24-hour Composite

Footnotes:
(1) All metals analyses shall be for total recoverable metals, except chromium VI, which is dissolved.

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(2) If more frequent monitoring of any of these parameters is required by another part of this permit, those sampling results may be used to satisfy Table 4.b. requirements.
(3) If chronic toxicity is detected above the Action Levels specified in Table 4 or an acute test fails, the permittee must perform follow-up testing and, as applicable, follow the TIE/TRE processes in Part IV.E of the permit, whether discharging or not. See Part IV for additional information on requirements for testing and reporting Whole Effluent Toxicity (WET).
(4) Four tests shall be conducted during the permit term: once per year in years 1, 2, 3, and 4 of the permit term.

TABLE 4.c: Effluent Characterization Testing - Selected Volatile Organic Compounds

Parameter	Reporting Units	Monitoring Requirements	
		Monitoring Frequency	Sample Type
Acrolein	µg/L	1x year	Discrete
Acrylonitrile	µg/L	1x year	Discrete
Benzene	µg/L	1x year	Discrete
Bromoform	µg/L	1x year	Discrete
Carbon tetrachloride	µg/L	1x year	Discrete
Chlorobenzene	µg/L	1x year	Discrete
Chlorodibromomethane	µg/L	1x year	Discrete
Chloroethane	µg/L	1x year	Discrete
2-chloroethylvinyl ether	µg/L	1x year	Discrete
Chloroform	µg/L	1x year	Discrete
Dichlorobromomethane	µg/L	1x year	Discrete
1,1-dichloroethane	µg/L	1x year	Discrete
1,2-dichloroethane	µg/L	1x year	Discrete
Trans-1,2-dichloroethylene	µg/L	1x year	Discrete
1,1-dichloroethylene	µg/L	1x year	Discrete
1,2-dichloropropane	µg/L	1x year	Discrete
1,3-dichloropropylene	µg/L	1x year	Discrete
Ethylbenzene	µg/L	1x year	Discrete
Methyl bromide	µg/L	1x year	Discrete
Methyl chloride	µg/L	1x year	Discrete
Methylene chloride	µg/L	1x year	Discrete
1,1,2,2-tetrachloroethane	µg/L	1x year	Discrete
Tetrachloroethylene	µg/L	1x year	Discrete
Toluene	µg/L	1x year	Discrete
1,1,1-trichloroethane	µg/L	1x year	Discrete
1,1,2-trichloroethane	µg/L	1x year	Discrete
Trichloroethylene	µg/L	1x year	Discrete
Vinyl chloride	µg/L	1x year	Discrete

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TABLE 4.d: Effluent Characterization Testing - Selected Acid-extractable Compounds

Parameter	Reporting Units	Monitoring Requirements	
		Monitoring Frequency	Sample Type
P-chloro-m-cresol	µg/L	1x year	24-hour Composite
2-chlorophenol	µg/L	1x year	24-hour Composite
2,4-dichlorophenol	µg/L	1x year	24-hour Composite
2,4-dimethylphenol	µg/L	1x year	24-hour Composite
4,6-dinitro-o-cresol	µg/L	1x year	24-hour Composite
2,4-dinitrophenol	µg/L	1x year	24-hour Composite
2-nitrophenol	µg/L	1x year	24-hour Composite
4-nitrophenol	µg/L	1x year	24-hour Composite
Pentachlorophenol	µg/L	1x year	24-hour Composite
Phenol	µg/L	1x year	24-hour Composite
2,4,6- trichlorophenol	µg/L	1x year	24-hour Composite

TABLE 4.e: Effluent Characterization Testing - Selected Base-neutral Compounds

Parameter	Reporting Units	Monitoring Requirements	
		Monitoring Frequency	Sample Type
Acenaphthene	µg/L	1x year	24-hour Composite
Acenaphthylene	µg/L	1x year	24-hour Composite
Anthracene	µg/L	1x year	24-hour Composite
Benzidine	µg/L	1x year	24-hour Composite
Benzo(a)anthracene	µg/L	1x year	24-hour Composite
Benzo(a)pyrene	µg/L	1x year	24-hour Composite
3,4 benzofluoranthene	µg/L	1x year	24-hour Composite
Benzo(ghi)perylene	µg/L	1x year	24-hour Composite
Benzo(k)fluoranthene	µg/L	1x year	24-hour Composite
Bis (2-chloroethoxy) methane	µg/L	1x year	24-hour Composite
Bis (2-chloroethyl) ether	µg/L	1x year	24-hour Composite
Bis(2-chloroisopropyl) ether	µg/L	1x year	24-hour Composite
Bis (2-ethylhexyl) phthalate	µg/L	1x year	24-hour Composite
4-bromophenyl phenyl ether	µg/L	1x year	24-hour Composite
Butyl benzyl phthalate	µg/L	1x year	24-hour Composite
2-chloronaphthalene	µg/L	1x year	24-hour Composite
4-chlorophenyl phenyl ether	µg/L	1x year	24-hour Composite
Chrysene	µg/L	1x year	24-hour Composite
Di-n-butyl phthalate	µg/L	1x year	24-hour Composite
Di-n-octyl phthalate	µg/L	1x year	24-hour Composite

Dibenzo(a,h)anthracene	µg/L	1x year	24-hour Composite
1,2-dichlorobenzene	µg/L	1x year	24-hour Composite
1,3-dichlorobenzene	µg/L	1x year	24-hour Composite
1,4-dichlorobenzene	µg/L	1x year	24-hour Composite
3,3-dichlorobenzidine	µg/L	1x year	24-hour Composite
Diethyl phthalate	µg/L	1x year	24-hour Composite
Dimethyl phthalate	µg/L	1x year	24-hour Composite
2,4-dinitrotoluene	µg/L	1x year	24-hour Composite
2,6-dinitrotoluene	µg/L	1x year	24-hour Composite
1,2-diphenylhydrazine	µg/L	1x year	24-hour Composite
Fluoranthene	µg/L	1x year	24-hour Composite
Fluorene	µg/L	1x year	24-hour Composite
Hexachlorobenzene	µg/L	1x year	24-hour Composite
Hexachlorobutadiene	µg/L	1x year	24-hour Composite
Hexachlorocyclopentadiene	µg/L	1x year	24-hour Composite
Hexachloroethane	µg/L	1x year	24-hour Composite
Indeno(1,2,3-cd)pyrene	µg/L	1x year	24-hour Composite
Isophorone	µg/L	1x year	24-hour Composite
Naphthalene	µg/L	1x year	24-hour Composite
Nitrobenzene	µg/L	1x year	24-hour Composite
N-nitrosodi-n-propylamine	µg/L	1x year	24-hour Composite
N-nitrosodimethylamine	µg/L	1x year	24-hour Composite
N-nitrosodiphenylamine	µg/L	1x year	24-hour Composite
Phenanthrene	µg/L	1x year	24-hour Composite
Pyrene	µg/L	1x year	24-hour Composite
1,2,4-trichlorobenzene	µg/L	1x year	24-hour Composite

TABLE 4.f: Effluent Characteristic Testing Based on Designated Uses

Additional Parameters from the Arizona Surface Water Quality Standards, Appendix A: Table 1

Parameter	Reporting Units	Monitoring Requirements	
		Monitoring Frequency	Sample Type
Alachlor (1)	µg/L	1x /year in years 2 and 4 of permit term	24-hour Composite
Aldrin	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
Atrazine (1)	µg/L	1x /year in years 2 and 4 of permit term	24-hour Composite
Barium	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
Boron	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
Carbofuran (Furadan) (1)	µg/L	1x /year in years 2 and 4 of permit term	24-hour Composite
Chlordane	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
1,2-cis-Dichloroethylene	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
Chlorpyrifos	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite

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Dalapon (1)	µg/L	1x /year in years 2 and 4 of permit term	24-hour Composite
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
1,2-Dibromoethane (EDB) Ethylene dibromide	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
4,4-DDD (p,p,- Dichlorodiphenyldicholoroethane)	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
4,4-DDE (p,p- Dichlorodiphenyldichloroethylene)	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
4,4-DDT ((p,p- Dichlorodiphenyltrichloroethane)	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
2,4-Dichlorophenoxyacetic acid (2,4-D) (1)	µg/L	1x /year in years 2 and 4 of permit term	24-hour Composite
Dieldrin	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
Di (2-ethylhexyl) adipate	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
Dinoseb (1)	µg/L	1x /year in years 2 and 4 of permit term	24-hour Composite
Diquat (1)	µg/L	1x /year in years 2 and 4 of permit term	24-hour Composite
Endosulfan sulfate	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
Endosulfan (Total)	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
Endothall (1)	µg/L	1x /year in years 2 and 4 of permit term	24-hour Composite
Endrin	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
Endrin aldehyde	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
Fluoride	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
Glyphosate (1)	µg/L	1x /year in years 2 and 4 of permit term	24-hour Composite
Guthion	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
Heptachlor	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
Heptachlor epoxide	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
Hexachlorocyclohexane alpha (Alpha-BHC)	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
Hexachlorocyclohexane beta	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
Hexachlorocyclohexane delta	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
Hexachlorocyclohexane gamma (lindane)	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
Hydrogen Sulfide (2)	µg/L	1x /year in years 2,3,4 of permit term	Discrete
Iron	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
Malathion	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
Manganese	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
Methoxychlor (1)	µg/L	1x /year in years 2 and 4 of permit term	24-hour Composite
Mirex (3)	µg/L	1x /year in years 2 and 4 of permit term	24-hour Composite
Oxamyl (1)	µg/L	1x /year in years 2 and 4 of permit term	24-hour Composite
Parathion	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
Paraquat	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
Permethrin (3)	µg/L	1x /year in years 2 and 4 of permit term	24-hour Composite
Pichloram (1)	µg/L	1x /year in years 2 and 4 of permit term	24-hour Composite
Polychlorinated biphenyls (PCBs)	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
Simazine (1)	µg/L	1x /year in years 2 and 4 of permit term	24-hour Composite
Styrene	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
2,3,7,8-Tetrachlorodibenzo-p-dioxin	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite

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Toxaphene	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
2-(2,4,5,-Trichlorophenoxy) Proprionic Acid (1)	µg/L	1x /year in years 2 and 4 of permit term	24-hour Composite
Total Trihalomethanes	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
Tributyltin (3)	µg/L	1x /year in years 2 and 4 of permit term	24-hour Composite
Uranium	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite
Xylenes	µg/L	1x /year in years 2,3,4 of permit term	24-hour Composite

Footnotes:
(1) There may be no approved wastewater methods for analyses of these parameters in 40 CFR 136. As such, 500 series drinking water Methods may be used; in this case, a 10X sample dilution is acceptable for these parameters. Appropriate data qualifiers are to be used.
(2) The permittee may initially monitor for sulfide instead of hydrogen sulfide. The limit of quantification shall be no higher than 100 ug/L, and any detection of sulfides shall trigger monitoring for hydrogen sulfide for the reminder of the permit term.
(3) If no ADHS-certified analytical methods exist for these parameters, monitoring is not required.

E. 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-flavor in aquatic organisms;

4. Are toxic to humans, animals, plants or other organisms;

5. 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;

F. The discharge shall be free from oil, grease and other pollutants that float as debris, foam, or scum; or that cause a film or iridescent appearance on the surface of the water; or that cause a deposit on a shoreline, bank or aquatic vegetation.

G. The discharge shall not cause an increase in the ambient water temperature of more than 3.0 degrees Celsius.

H. The discharge shall not cause the dissolved oxygen concentration in the receiving water to fall below 3 mg/L from 3 hours after sunrise to sunset and 1 mg/l from sunset to 3 hours after sunrise, unless the percent saturation of oxygen remains equal to or greater than 90%.

I. Samples taken for the monitoring requirements specified in Part I shall be collected at the following locations:

1. Influent samples shall be taken after the last addition to the collection system and prior to the first treatment process.

2. Effluent samples shall be taken downstream from the last treatment process and prior to mixing with the receiving waters.

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PART II. MONITORING AND REPORTING

A. Sample Collection and Analysis

1. The permittee is responsible for the quality and accuracy of all data required under this permit.

2. Quality Assurance (QA) Manual

The permittee shall keep a QA Manual on site that describes the sample collection and analyses processes. If the permittee collects samples or conducts sample analyses in house, the permittee shall develop a QA Manual that addresses these activities. If a third party collects and/or analyzes samples on behalf of the permittee, the permittee shall obtain a copy of the applicable QA procedures. The QA Manual shall be available for review by ADEQ upon request. The QA Manual shall be updated as necessary to reflect current conditions, and shall describe the following:

a. Project Management, including:

- Purpose of sample collection and sample frequency;
- When and where samples will be collected;
- How samples will be collected;
- Who will collect samples and their qualifications;
- Laboratory(s) that will perform analyses;
- Any field tests to be conducted (detail methods and specify equipment, including a description of any needed calibrations); and
- Pollutants or analytes being measured and for each, the permit-specific limits, Assessment Levels, or thresholds, (e.g. the associated detection limits needed.)

b. Sample collection procedures including

- Equipment to be used;
- Type and number of samples to be collected including QA/QC samples (i.e., background samples, duplicates, and equipment or field blanks);
- Types, sizes, and number of sample bottles needed;
- Preservatives and holding times for the samples (see methods under 40 CFR 136 or 9 A.A.C. 14, Article 6 or any condition within this permit that specifies a particular test method); and
- Chain of custody procedures.

c. Specify approved analytical method(s) to be used and include;

- Limits of Detection (LOD) and Limits of Quantitation (LOQs);
- Required quality control (QC) results to be reported (e.g., matrix spike recoveries, duplicate relative percent differences, blank contamination, laboratory control sample recoveries, surrogate spike recoveries, etc.) and acceptance criteria; and
- Corrective actions to be taken by the permittee or the laboratory as a result of problems identified during QC checks.

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d. How the permittee will perform data review; complete DMRs and records used to report results to ADEQ; resolve data quality issues; and identify limitations on the use of the data.

3. Sample collection, preservation and handling shall be performed as described in 40 CFR 136 including the referenced Edition of *Standard Methods for the Examination of Water and Wastewater*, or by procedures referenced in A.R.S Title 9, Chapter 14 of the Arizona Department of Health Services (ADHS) Laboratory Licensure rules. The permittee shall outline the proper procedures in the QA Manual, and samples taken for this permit must conform with these procedures whether collection and handling is performed directly by the permittee or contracted to a third-party.

4. <u>Analytical requirements</u>

a. The permittee shall use a laboratory licensed by the ADHS Office of Laboratory Licensure and Certification that has demonstrated proficiency within the last 12 months under R9-14-609, for each parameter to be sampled under this permit. However, this requirement does not apply to parameters which require analysis at the time of sample collection as long as the testing methods used are approved by ADHS and ADEQ. (These parameters may include flow, dissolved oxygen, pH, temperature, and total residual chlorine.)

b. The permittee must utilize analytical methods specified in this permit. If no test procedure is specified, the permittee shall analyze the pollutant using:

i. A test procedure listed in 40 CFR 136 which is also approved under A.A.C. R9-14-610;
ii. An alternative test procedure approved by EPA as provided in 40 CFR 136 and which is also approved under A.A.C. R9-14-610;
iii. A test procedure listed in 40 CFR 136, with modifications allowed by EPA or approved as a method alteration by ADHS under A.A.C. R9-14-610(C); or
iv. If no test procedure for a pollutant is available under (3)(b)(i) through (3)(b)(iii) above, any Method approved under A.A.C. R9-14-610(C) for wastewater may be used, except the use of field kits is not allowed unless otherwise specified in this permit. If there is no approved wastewater method for a parameter, any other method identified in 9 A.A.C. 14, Article 6 that will achieve appropriate detection and reporting limits may be used for analyses.

c. For results to be considered valid, all analytical work, including those tests conducted by the permittee at the time of sampling (see Part II.A.4.a), shall meet quality control standards specified in the approved methods.

d. The permittee shall use analytical methods with a Limit of Quantitation (LOQ) that is lower than the effluent limitations, Assessment Levels, Action Levels, or water quality criteria specified in this permit. If all methods have LOQs higher than applicable water quality criteria, the Permittee shall use the approved analytical method with the lowest LOQ.

e. The permittee shall use a standard calibration curve when applicable to the method, where the lowest standard point is equal to or less than the LOQ.

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f. If requested, the permittee shall participate in the annual NPDES DMR/QA study and submit the results of this study to ADEQ and ADHS for all laboratories used in monitoring compliance with this permit.

5. Mercury Monitoring

The permittee shall use an ADHS-certified low-level mercury analytical method such as EPA method 245.7 or 1631E to achieve a reporting limit at or below the discharge limitations or assessment levels for mercury as specified in this permit. The permittee shall also use a "clean hands/dirty hands" sampling technique such as EPA Method 1669 if necessary to achieve these reporting limits.

6. Chlorine Monitoring

Because of the short holding time for chlorine, samples may be analyzed on-site using Hach Method No. 10014. Other methods are also acceptable for chlorine if the Method has a LOQ lower than discharge limits specified in this permit.

7. Metals Analyses

In accordance with 40 CFR 122.45(c), all effluent metals concentrations, with the exception of chromium VI, shall be measured as "total recoverable metals". Discharge Limits and Assessment Levels in this permit are for total metals, except for chromium VI for which the levels listed are dissolved.

B. Reporting of Monitoring Results

1. The permittee shall report monitoring results on Discharge Monitoring Report (DMR) forms supplied by ADEQ, to the extent that the results may be entered on the forms. The permittee shall submit results of all monitoring required by this permit in a format that will allow direct comparison with the limitations and requirements of this permit. If no discharge occurs during a reporting period, the permittee shall specify "No discharge" on the DMR. The results of all discharge analyses conducted during the monitoring period shall be included in calculations of the monthly average and daily maximums reported on the DMRs if the analyses were by methods specified in Part II.A above.

2. DMRs and attachments are to be submitted (see Appendix A- definitions) by the 28th day of the month following the end of a monitoring period. For example, if the monitoring period ends January 31st, the permittee shall submit the DMR by February 28th. The permittee shall submit original copies of these and all other reports required in this Part, signed by an authorized representative, to ADEQ at the following address:

Arizona Department of Environmental Quality
Data Unit, Water Quality Compliance Section
1110 W. Washington St.
Phoenix, AZ 85007

or fax to (602) 771-4505.

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For each month, the permittee shall complete and submit a copy of the **AZPDES Discharge Flow Record** (found in Appendix B) with the DMR for that month, along with copies of the original lab results (or bench sheets or similar documentation for field parameters) for all parameters monitored during the reporting period.

3. When sampling for ammonia, the temperature and pH of the sample must be recorded at the time of sample collection. Results for all three parameters shall be recorded on the **Ammonia Data Log** provided in Appendix C, as well as on DMRs. The ammonia data log shall be submitted to ADEQ annually to the address in Part II.B.2, above.

4. If requested to participate, the permittee shall submit results of the NPDES DMR/QA study to ADEQ and ADHS for all laboratories used in monitoring compliance with this permit by December 31st of each year. The permittee shall also participate in the DMR-QA study for any DMR-QA parameters that the permittee analyzes (typically pH and chlorine) and submit the results along with the laboratory results. The results shall be submitted to the following addresses:

Arizona Department of Environmental Quality
Surface Water Permits Unit, Mailcode: 5415A-1
1110 W. Washington St.
Phoenix, AZ 85007

Arizona Department of Health Services
Attn: DMRQA Coordinator
250 N 17th Avenue
Phoenix, AZ 85007

5. For the purposes of reporting, the permittee shall use the Limit of Quantitation.

6. For parameters with Daily Maximum Limits or Daily Maximum Assessment Levels in this permit, the permittee shall review the results of all samples collected during the reporting period and report as follows:

For Daily Maximum Limits/Assessment Levels	The Permittee shall Report on the DMR
When the maximum value of any analytical result is greater than the LOQ	The maximum value of all analytical results
When the maximum value detected is greater than or equal to the laboratory's LOD but less than the LOQ (1)	The numeric result with E4 or E8 flag as applicable (AZ qualifier)
When the maximum value is less than the laboratory's LOD (2)	"< LOD" (specify the LOD level, i.e.,< 10 ug/L)

Footnotes:
(1) Not Quantifiable
(2) Below Detection

7. For parameters with Monthly Average Limits or Monthly Average Assessment Levels in this permit, the permittee shall review the results of all samples collected during the reporting period and report:

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For Monthly Average Limits/Assessment Levels		The Permittee shall Report on the DMR
If only one sample is collected during the reporting period (monthly, quarterly, annually, etc.) (In this case, the sample result **is** the monthly average.)	When the value detected is greater than the LOQ	The analytical result
	When the value detected is greater than or equal to the laboratory's LOD, but less than the LOQ	The numeric result with E4 or E8 flag as applicable (AZ qualifier)
	When the value is less than the laboratory's LOD	"< LOD" (specify the LOD level, i.e., < 10ug/L)
If more than one sample is collected during the reporting period	All samples collected in the same calendar month must be averaged. • When all results are greater than the LOQ, all values are averaged • If some results are < LOQ, use the LOD value in the averaging • Use '0' for values less than the LOD	The highest monthly average which occurred during the reporting period

8. For all field testing, or if the information below is not included on the laboratory reports required by Part II.B.2, the permittee shall attach a bench sheet or similar documentation to each DMR that includes, for all analytical results during the reporting period:

   a. the analytical result,

   b. the number or title of the approved analytical method, preparation and analytical procedure utilized by the field personnel or laboratory, and the LOD and LOQ for the analytical method for the parameter, and

   c. any applicable data qualifiers using the most current revision of the Arizona Data Qualifiers (available on line at http://www.azdhs.gov/lab/license/resources/resources.htm).

C. Twenty-four Hour Reporting of Noncompliance

The permittee shall orally report any noncompliance which may endanger the environment or human health within 24 hours from the time the permittee becomes aware of the event to:

ADEQ 24 hour hotline at (602) 771-2330

The permittee shall also notify the ADEQ Water Quality Compliance Section Manager at (602) 771-2209 by phone call or voice mail by 9 a.m. on the first business day following the noncompliance. The permittee shall also notify the ADEQ Water Quality Compliance Section in writing within 5 days of the noncompliance event. The permittee shall include in the written notification: a description of the noncompliance and its cause; the period of noncompliance, including dates and times, and, if the noncompliance has not been corrected, the time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

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D. Monitoring Records

The permittee shall retain records of the following monitoring information:

1. Date, exact location and time of sampling or measurements performed, preservatives used;

2. Individual(s) who performed the sampling or measurements;

3. Date(s) the analyses were performed;

4. Laboratory(s) which performed the analyses;

5. Analytical techniques or methods used;

6. Chain of custody forms;

7. Any comments, case narrative or summary of results produced by the laboratory. These comments should identify and discuss QA/QC analyses performed concurrently during sample analyses and should specify whether analyses met project requirements and 40 CFR 136. If results include information on initial and continuing calibration, surrogate analyses, blanks, duplicates, laboratory control samples, matrix spike and matrix spike duplicate results, sample receipt condition, or holding times and preservation, these records must also be retained.

8. Summary of data interpretation and any corrective action taken by the permittee.

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PART III. BIOSOLIDS/ SEWAGE SLUDGE REQUIREMENTS

Note: "Biosolids" refers to non-hazardous sewage sludge as defined in 40 CFR 503.9 and Arizona Administrative Code (A.A.C.) R18-9-1001.7. Sewage sludge that is hazardous as defined in 40 CFR 261 must be disposed of in accordance with the Resource Conservation and Recovery Act (RCRA). Sludge with PCB (polychlorinated biphenyls) levels greater than 50 mg/kg must be disposed of in accordance with 40 CFR 761.

A. Use or Disposal Requirements

All biosolids/sewage sludge generated and/or prepared at this facility shall be used or disposed of in compliance with the applicable portions of 18 A.A.C. 9, Article 10 and

1. 40 CFR 503 Subpart C: for biosolids that are placed on the land (surface disposal) for the purpose of disposal (dedicated land disposal sites, lagoons, or monofills).

2. 40 CFR 258: for biosolids disposed of in municipal solid waste landfills; and

3. 40 CFR 257: for all biosolids use and disposal practices not covered under 40 CFR 258 or 503.

B. Biosolids Preparer's Responsibility

The permittee is responsible for ensuring that all biosolids/sewage sludge produced or accepted at this facility are used or disposed of in accordance with 40 CFR 503 Subpart C, 257, 258 and 18 A.A.C. 9, Article 10, as applicable, whether the permittee uses or disposes of the biosolids itself or transfers them to another party for further treatment, use, or disposal. The permittee is responsible for informing any subsequent transporters, preparers, applicators, and disposers of the requirements that they must meet under 18 A.A.C. 9, Article 10.

C. Duty to Mitigate

The permittee shall take all reasonable steps to prevent or minimize any biosolids use or disposal which has a likelihood of adversely affecting human health or the environment.

D. General Requirements

The permittee shall ensure that:

1. No biosolids generated and/or prepared at this facility enter wetlands or other waters of the United States;

2. Biosolids treatment, storage, use or disposal does not contaminate surface water or groundwater. *(Note: Surface disposal or land treatment sites for biosolids must be permitted under the aquifer protection program per A.A.C. R18-9-1002(E)(2) and may also require a separate AZPDES permit. The permittee shall ensure a site has appropriate permits before directing biosolids to a surface disposal or land treatment site.)*

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3. Biosolids treatment, storage, and use or disposal does not create a nuisance such as malodorous smell or attraction of flies or other disease carrying vectors.

4. Biosolids generated and/or prepared at this facility are not applied to the land or placed on a surface disposal site if the biosolids are likely to adversely affect a threatened or endangered species as listed under section 4 of the Endangered Species Act (16 U.S.C 1533), or its designated critical habitat as defined in 16 U.S.C. 1532;

5. Land application sites receiving bulk biosolids generated and/or prepared at this facility are registered with ADEQ in accordance with A.A.C. R18-9-1004; and

6. No biosolids generated and/or prepared at this facility are incinerated in the state of Arizona.

E. Biosolids Storage

1. Biosolids shall not be stored on land for over two years from the time they are generated unless a permit for surface disposal is obtained per 18 A.A.C. 9, Article 10 and 40 CFR 503 Subpart C, or written notification has been submitted to the ADEQ Biosolids Coordinator with the information in 40 CFR 503.20(b) that sufficiently demonstrates the need for longer temporary storage.

2. For the protection of public health, biosolids shall not be stored uncovered on-site or off-site unless the permittee can demonstrate that prior to placement in storage:

   a. Biosolids meet Class A or B pathogen reduction requirements established in A.A.C. R18-9-1006(D) or (E), and

   b. Biosolids meet one of the vector attraction reduction alternatives in A.A.C. R18-9-1010 subsections (A)(1) through (A)(8).

   c. For biosolids which are classified as EQ or Class A, or as Class B through pathogen reduction Alternative 1, the permittee must also sample for pathogen reduction following storage and within 30 days prior to reuse/disposal or distribution (see Part III.J.2.d). Sampling before storage shall occur at least at the minimum frequencies given in Part III.I.1, and sampling after storage shall be conducted as specified in Part III.I.4.

3. Prior to storing biosolids at an off-site storage location, the permittee shall notify the ADEQ Biosolids Coordinator in writing where the biosolids will be stored and the expected date of final use or disposal.

F. Surface Water Protection

The permittee must design and operate all on-site treatment, disposal, or storage areas for biosolids to:

- divert surface run-on from adjacent areas to prevent contact with biosolids ;
- protect the site boundaries from erosion; and
- prevent any drainage that has contacted biosolids from escaping the site.

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These features shall be designed to be protective for at least a 25-year 24-hour storm event. If the permittee sends biosolids off-site that are not EQB, the permittee shall ensure all treatment, disposal, or storage areas that receive those biosolids have the same level of protection.

G. Facilities with Pretreatment Programs

Permittees with pretreatment programs shall:

1. Sample and analyze biosolids for all the priority pollutants listed under Section 307.a.1 of the Clean Water Act except asbestos. This shall consist of an annual full priority pollutant scan, with quarterly samples analyzed only for those pollutants detected in the full scan.

2. Sample and analyze biosolids quarterly for the following Pollutants of Concern:

Arsenic	Copper	Mercury	Selenium
Cadmium	Cyanide	Molybdenum	Silver
Chromium	Lead	Nickel	Zinc

3. If any biosolids generated and/or prepared at this facility are or will be land applied, the permittee shall design local limits to achieve the ceiling and monthly average pollutant concentration levels for pollutants given in the table at Part III.J.1.a of this permit. If pollutants in the biosolids exceed any of these monthly average pollutant concentration levels, the permittee shall revise its local limits as necessary in order to meet these levels

H. Inspection and Entry

The permittee shall allow, directly or through contractual arrangements with their biosolids management contractors, authorized representatives of ADEQ and EPA to:

1. Enter upon all premises where biosolids are treated, stored, used, or disposed, either by the permittee or by another party to whom the permittee transfers the biosolids for treatment, storage, use, or disposal;

2. Have access to and copy any records that must be kept under the conditions of this permit and per 18 A.A.C. 9, Article 10 (including those in 40 CFR 503 Subpart C) by the permittee or by another party to whom the permittee transfers the biosolids for further treatment, storage, use, or disposal; and

3. Inspect any facilities, equipment (including monitoring and control equipment), practices, or operations used in biosolids treatment, storage, use, or disposal by the permittee or by another party to whom the permittee transfers the biosolids for treatment, use, or disposal.

I. General Biosolids Monitoring Requirements (dry weight testing)

1. **Biosolids Self-monitoring Frequency**
   Unless otherwise specified in this permit, the permittee shall conduct self-monitoring events at least at the frequency listed in the table that follows for any sampling required in Part III of this permit.

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Biosolids Monitoring Frequency

Amount of Biosolids Prepared per Calendar Year (dry metric tons)	Minimum Monitoring Frequency
> 0 to < 290	One sampling event per year
≥ 290 to < 1500	One sampling event per quarter
≥ 1500 to < 15,000	One sampling event per 60 days
≥ 15,000	One sampling event per month

2. **Sampling and Analysis Methods**

The permittee shall ensure biosolids are tested using the methods specified in 40 CFR 503.8, as required in A.A.C. R18-9-1012(G) Testing shall be performed at a laboratory operating in compliance with A.R.S. 36-495. Because of the potential for re-growth of pathogens, for Class A or EQ biosolids, samples demonstrating pathogen reduction shall be taken within 30 days before biosolids are shipped off-site, so verification that requirements are met is obtained before the biosolids leave the site.

3. **Representative Sampling**

The permittee shall ensure that sampling conducted during a monitoring period adequately represents the quality of all biosolids used/treated/disposed over the monitoring period. This may entail taking several samples per sampling event and/or sampling more frequently than the minimum specified.

4. **Testing Stockpiled/Accumulated Biosolids Prior to Distribution or Use**

If, after treatment, biosolids classified as EQ or Class A, or as Class B demonstrated through Alternative 1, are stockpiled or accumulated on-site prior to reuse/disposal, the permittee shall develop a sampling plan that ensures samples representative of the entire stockpile are collected and analyzed for pathogens within 30 days before distribution or use. The plan shall detail the number and location of samples to be taken from a cross section of **each** pile or area. The plan must include at least 1 sample for each 0-290 metric dry ton increments. More sampling is appropriate when the biosolids are inconsistent in nature or non-uniformly treated.

The permittee must collect and analyze representative samples per the sampling plan. Distribution or use/disposal shall not occur until the permittee verifies that the biosolids sampled meet all applicable requirements for its use/disposal.

5. **Testing for Hazardous Waste Determination**.

The permittee shall test biosolids at least annually, and more frequently as necessary, to determine if biosolids are hazardous in accordance with 40 CFR 261. Initial screening of the biosolids may be conducted by analyzing biosolids for the total amount of a pollutant. This screening test is all that is required each monitoring period if the total amount doesn't exceed the 20X TCLP screening value in the table below. If the total amount of a pollutant exceeds the 20X TCLP screening value, then the leachable amount must be determined using the Toxicity Characteristic Leaching Procedure (TCLP). The disposal of biosolids that test hazardous is not

covered under this permit, and all such biosolids must be disposed of in accordance with the Resource Conservation and Recovery Act (RCRA).

Toxicity Characteristic Leaching Procedure Test

Parameter	TCLP Limit mg/L	20 X TCLP Screening Value mg/kg	Minimal Monitoring Frequency per Generator
Metals			
Arsenic	5	100	Once / year
Barium	100	2000	Once / year
Cadmium	1	20	Once / year
Chromium	5	100	Once / year
Lead	5	100	Once / year
Mercury	0.2	4	Once / year
Selenium	1	20	Once / year
Silver	5	100	Once / year
Volatiles and Semi-Volatiles			
Benzene	0.5	10	Once / year
Carbon Tetrachloride	0.5	10	Once / year
Chlorobenzene	100	2000	Once / year
Chloroform	6	120	Once / year
1,2-Dichloroethane	0.5	10	Once / year
1,1-Dichloroethylene	0.7	14	Once / year
Methyl ethyl ketone	200	4000	Once / year
Tetrachloroethylene	0.7	14	Once / year
Trichloroethylene	0.5	10	Once / year
Vinyl Chloride	0.2	4	Once / year
1,4-Dichlorobenzene	7.5	150	Once / year
o-cresol (1)	200	4000	Once / year
m-cresol (1)	200	4000	Once / year
p-cresol (1)	200	4000	Once / year
Cresol (total) (1)	200	4000	Once / year
2,4-Dinitrotoluene	0.13	2.6	Once / year
Hexachlorobenzene	0.13	2.6	Once / year
Hexachlorobutadiene	0.5	10	Once / year

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Hexachloroethane	3	60	Once / year
Nitrobenzene	2	40	Once / year
Pentachlorophenol	100	2000	Once / year
Pyridine	5	100	Once / year
2,4,5-Trichlorophenol	400	8000	Once / year
2,4,6-Trichlorophenol	2	40	Once / year
Herbicides / Pesticides			
2,4-D	10	200	Once / year
2,4,5-TP (Silvex)	1	20	Once / year
Chlordane	0.03	0.6	Once / year
Endrin	0.02	0.4	Once / year
Heptachlor	0.008	0.16	Once / year
Heptachlor epoxide	0.008	0.16	Once / year
Lindane	0.44	8.8	Once / year
Methoxychlor	10	200	Once / year
Toxaphene	0.5	10	Once / year

Footnotes:
(1) If o-, m-, and p-Cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 mg/L.

J. Biosolids Limitations and Monitoring Requirements for Land Application

The permittee shall monitor biosolids generated and/or prepared at this facility for land application and limit their use as follows:

1. Metals Concentrations for Land Application

a. Biosolids shall be sampled for the metals listed in the following table at a frequency not less than the minimum indicated for the amount of biosolids prepared annually. Samples shall be taken after all treatment and blending processes, but prior to land application.

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Pollutant	**Ceiling Concentrations** (milligrams/ kilogram) (1)	**Monthly Average Pollutant Concentrations** (milligrams/ kilogram) (1)	**Minimum Monitoring Frequency per Volume Prepared Annually**
Arsenic	75.0	41.0	0 to < 290 dry metric tons – 1 sampling event /year ≥ 290 to < 1500 dry metric tons – 1 sampling event /quarter ≥ 1500 to < 15,000 dry metric tons – 1 sampling event /60 days ≥ 15,000 dry metric tons – 1 sampling event /month
Cadmium	85.0	39.0	
Chromium	3000.0	Not Applicable	
Copper	4300.0	1500.00	
Lead	840.0	300.00	
Mercury	57.0	17.0	
Molybdenum	75.0	Not Applicable	
Nickel	420.0	420.00	
Selenium	100.0	100.0	
Zinc	7500.0	2800.00	

Footnotes
(1) Dry-weight basis

b. The permittee shall not land apply biosolids with pollutant concentrations that exceed any of the ceiling concentrations in the preceding table. The permittee shall not sell or give away biosolids for land application if pollutant concentrations exceed any of the ceiling concentrations in the preceding table.

c. If biosolids exceed any Ceiling Concentration in the preceding table, the permittee must:

- Notify the ADEQ Biosolids Coordinator;
- Find alternative disposal methods other than land application for the biosolids represented by that sampling event; and
- Identify the source of the pollutants and take appropriate source control measures to reduce the presence of the pollutant(s) of concern.

d. If biosolids exceed a Monthly Average Pollutant Concentration listed in the table in Part III.I.1.a above:

- The biosolids shall not be applied as bulk biosolids to a lawn or garden.
- The biosolids shall not be sold or given away if any annual pollutant loading rate listed in Table 3 of A.A.C. R18-9-1005(D) will be exceeded. The annual pollutant loading rate shall be determined using the methodology in18 A.A.C. 9, Article 10, Appendix A.
- The biosolids shall not be applied to a site if any cumulative pollutant loading rate in Table 4 of A.A.C. R18-9-1005(D) will be exceeded. The cumulative pollutant loading rate shall be determined using the methodology in A.A.C. R18-9-1005(D).

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e. The permittee shall not apply, sell, or give away biosolids for application to a lawn or garden unless they are Exceptional Quality (EQ) biosolids.

f. The permittee shall be able to demonstrate that all biosolids meet the definition of EQ biosolids in order to claim exemption from the management practices in A.A.C. R18-9-1007 and R18-9-1008. If claiming biosolids are EQ, during the first two years of EQ biosolids preparation, the permittee shall submit the results of all biosolids testing and details about the pathogen and vector control treatment processes to the ADEQ Biosolids Coordinator. The permittee shall receive written confirmation from ADEQ that the results demonstrate the biosolids meet EQ requirements prior to selling or giving away or land applying any biosolids for uses requiring an EQ biosolids classification.

2. **Pathogen Reduction Requirements for Land Application**

a. Biosolids must meet Class A or Class B pathogen reduction requirements established in A.A.C. R18-9-1006 at the time the biosolids are land applied and, if stored uncovered prior to land application, at the time the biosolids are stored. The permittee shall also verify that the reduction is met within 30 days prior to distribution (see Part III.I.4). The permittee shall document and retain records of the treatment used to achieve Class A or Class B pathogen reduction levels and, if demonstrating treatment to Class A, the fecal coliform or *Salmonella sp*. density. Retesting is required within 30 days of distribution for EQ and Class A biosolids and for Class B biosolids if pathogen reduction was demonstrated through Alternative 1.

b. Biosolids sold or given away in a bag or other container for land application, or applied on a lawn or home garden, shall meet the Class A pathogen reduction requirements established in A.A.C. R18-9-1006(D).

c. The permittee shall maintain daily records of the operating parameters for the pathogen reduction treatment alternative used. If using A.A.C. R18-9-1006(D) Alternative 4, the permittee shall demonstrate acceptable levels of enteric virus and viable helminth ova through monitoring.

d. Microbiological monitoring for fecal coliforms or *Salmonella sp.* to demonstrate pathogen reduction during a given monitoring period shall be conducted as close to the actual distribution or disposal of the biosolids as feasible. The analytical results must demonstrate effective pathogen reduction is achieved prior to distributing or disposing of the biosolids. If the permittee stores biosolids before they are distributed for use or disposal, microbiological testing must take place within 30 days prior to distribution or disposal.

e. In order to demonstrate Class B pathogen reduction using A.A.C. R18-9-1006(E) Alternative 1;

- At least seven individual grab samples must be taken and analyzed for fecal coliform during each monitoring event (unless an alternate sampling plan has been approved by ADEQ).
- The geometric mean of the results must be <2,000,000 MPN/gram or CFU/gram of total solids (dry-weight basis).

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- Samples are to be taken over a 14-day period to adequately represent sludge variability.

  (Note: A 'monitoring event' includes the period of time that samples are collected, analyzed, and the sample results provided to the permittee.)

f. In order to demonstrate Class A pathogen reduction, in addition to meeting one of the alternative pathogen treatment options in A.A.C. R18-9-1006(D);

- At least seven individual grab samples must be collected and analyzed for fecal coliform during each monitoring event (unless an alternate sampling plan has been approved by ADEQ) and all seven samples must be < 1,000 MPN/gram.; or
- At least seven individual grab samples must be collected and analyzed for *Salmonella sp*. during each monitoring event (unless an alternate sampling plan has been approved by ADEQ) and each must be <3 MPN/4 grams total solids (dry-weight basis).
- Samples are to be taken over a 14-day period to adequately represent sludge variability.

g. If demonstrating Class A pathogen reduction using A.A.C. R18-9-1006(D) Alternative 4;

- One composite sample consisting of at least seven grab samples must be collected and analyzed for enteric virus during each monitoring event and the arithmetic mean of 4 duplicate analyses of that composite must be < 1 PFU/ 4 grams total solids (dry-weight basis). Grab samples are to be taken over a 14-day period prior to compositing them to adequately represent sludge variability, and the maximum holding time is 2 weeks.

- One composite sample consisting of at least seven grab samples must be collected and analyzed for viable helminth ova during each monitoring event and the arithmetic mean of 4 duplicate analyses of that composite must be < 1 viable ova/ 4 grams total solids (dry-weight basis). Grab samples are to be taken over a 14-day period prior to compositing them to adequately represent sludge variability.

3. **Vector Attraction Reduction Requirements for Land Application**

a. The permittee shall ensure that all biosolids generated and/or prepared at this facility meet the vector attraction reduction requirements established in A.A.C. R18-9-1010 when the biosolids are land-applied. If biosolids are stored uncovered prior to land application, one of the vector attraction reduction alternatives established in A.A.C. R18-9-1010 subsections (A)(1) through (A)(8) must be met prior to storage. The permittee shall document and retain records of the operational parameters or application methods used to achieve the vector attraction reduction requirements.

b. The permittee shall ensure that all biosolids generated and/or prepared at this facility that are sold or given away in a bag or other container, or applied to a lawn or home garden, meet one of the vector attraction reduction alternatives established in A.A.C. R18-9-1010 subsections (A)(1) through (A)(8). The permittee shall document and retain records of the

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operational parameters or application methods used to achieve the vector attraction reduction requirements.

4. **Nitrogen Testing for Land Application**

The permittee shall ensure that biosolids generated and/or prepared at this facility for land application are tested for organic-N, ammonium-N, and nitrate-N at least at the applicable minimum frequency in Part III.I and that the most recent test results are provided to any subsequent preparer, user, or disposer.

K. Management Practices for Land Application

The permittee shall ensure that all non-EQ bulk biosolids generated and/or prepared at this facility are land applied in accordance with the management practices in A.A.C. R18-9-1007, unless the bulk biosolids are land applied for reclamation.

If the permittee generates or prepares non-EQ bulk biosolids that are land applied for reclamation, the permittee shall ensure that the biosolids are land applied in accordance with the management practices in A.A.C. R18-9-1008.

If the permittee generates or prepares non-EQ biosolids placed in a bag or other container for distribution/land application or reclamation, the permittee shall distribute a label or information sheet to the person receiving the material. This label or information sheet shall contain the information in A.A.C. R18-9-1007(B).

L. Biosolids/Sewage Sludge Limitations and Monitoring Requirements for Surface Disposal

The permittee shall ensure that any sewage sludge or biosolids directed to or placed in a surface disposal unit meets the requirements of 40 CFR 503 Subpart C. The permittee shall also ensure the surface disposal site is permitted under the aquifer protection program and has a valid AZPDES permit prior to disposal of any biosolids in the unit.

M. Biosolids Monitoring Requirements for Disposal in a Municipal Landfill

Biosolids placed in a municipal landfill shall be tested by the Paint Filter Test (method 9095) at the frequency in Part III.J.1 above or more often as necessary to demonstrate that there are no free liquids. The permittee shall keep records documenting that biosolids disposed in a municipal landfill did not contain free liquids.

N. On-site Management Plan

The permittee shall submit a Management Plan (Plan) within 180 days of permit issuance or maintain a previously submitted Plan for the on-site management operations.

This Plan shall detail how sludge/biosolids are managed from the time that they are generated at the facility until they are shipped off-site. The Plan shall give specific protocols to be followed to ensure that the material generated at this facility will consistently meet all applicable requirements in 18 A.A.C. 9, Article 10 and 40 CFR Part 503 Subpart C and the provisions of this permit. The Plan must address issues of potential concern such as storage areas; run-on and run-off control; odor and dust

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control; and include a professional diagram of facilities/areas used in the operation and the area surrounding the operation. The Plan shall specify how and when representative samples of biosolids will be taken and contain a contingency plan for managing biosolids that exceed the requirements for the expected end use/disposal.

O. Record Keeping

1. The permittee shall collect and retain all biosolids information required by this permit and A.A.C. R18-9-1013(A)(1) through (A)(6) for at least five years.

2. The permittee shall keep analytical test results and all documentation that supports the biosolids classification on-site and available for review.

3. All biosolid records are subject to periodic inspection, and copying by ADEQ.

P. Notification Requirements

The permittee, either directly or through contractual arrangements with their biosolids management contractors, shall comply with the following:

1. **Notification of Noncompliance**

   a. The permittee shall notify ADEQ of any noncompliance with the biosolids provisions of this permit or with 18 A.A.C. 9, Article 10, which may endanger health or the environment. The permittee shall provide the information orally within 24 hours from the time the permittee becomes aware of the circumstances (See Part II.C of this permit.)

   b. For other instances of noncompliance with the biosolids provisions, the permittee shall notify the ADEQ Biosolids Coordinator in writing within five working days of becoming aware of the circumstances.

   c. Permittees shall require their biosolids management contractors to notify ADEQ of any noncompliance within the time-frames specified in Sections P.1.a and b.

2. **Notification of Shipment to another State**

   If biosolids are shipped to another State or to Indian Lands, the permittee shall send a notice of the shipment to the NPDES permitting authorities in the receiving State or Indian Land (the EPA Regional Office for that area and the State/Indian authorities) with a copy to the Arizona Biosolids Coordinator. The notice shall be sent at least 60 days before the biosolids are planned to be shipped.

3. **Notification of Change in Land Application Sites, Applicators, or Disposal Methods**

   a. Prior to sending, placing or applying any bulk biosolids generated and/or prepared at this facility to a site that the permittee has not previously utilized for biosolids use/disposal within the last five years, the permittee must verify that the application site has been registered in accordance with A.A.C. R18-9-1004 and shall notify the ADEQ Biosolids Coordinator of the planned change. The notification shall include a description and topographic map of the proposed site(s), latitude and longitude coordinates at the center of

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each field/site, slope of land surface, names and addresses of the applicator(s) and site owner(s), a listing of any state or local permits which must be obtained, a description of the crops or vegetation to be grown at each site, proposed loading rates and determination of agronomic rates.

b. Prior to selling or giving away bulk biosolids for land application to an applicator that the permittee has not sold or given biosolids to within the last five years, the permittee shall notify the ADEQ Biosolids Coordinator of the planned change. The notification shall include: the name, address, and telephone number of the applicator and any agent of the applicator; the name and telephone number of a primary contact person who has specific knowledge of the land application activities of the applicator; and whether the applicator holds a NPDES or AZPDES permit, and, if so, the permit number.

c. Prior to changing the method of biosolids use, treatment or disposal that was identified in the permittee's application for this permit, the permittee shall notify the ADEQ Biosolids Coordinator of the planned change in writing. If ADEQ determines that the newly proposed practice is not covered under this permit, the permittee shall request and receive a permit modification prior to making the change.

d. The permittee shall keep records of site registration verifications and of all notifications made to ADEQ.

4. **Notification of Land Application of Biosolids that Exceed Monthly Average Pollutant Concentrations**

The permittee must notify the ADEQ Biosolids Coordinator and any subsequent biosolids handlers if biosolids generated and/or prepared at this facility do not meet any of the Monthly Average Pollutant Concentration values listed at Part III.J.1.a above. The permittee shall ensure that bulk biosolids exceeding a monthly average pollutant concentration will not be applied to a site if any cumulative pollutant loading rate (Table 4 in A.A.C. R18-9-1005) will be exceeded per A.A.C. R18-9-1005(D)(2).

5. **Notification to Subsequent Land Applicators**

The permittee shall notify the applicator of all the applicator's requirements under Title 18 Chapter 9 Article 10 including the requirement that the applicator certify that management practices, site restrictions, and any applicable vector attraction reduction requirements have been met.

6. **Notification of Surface Disposal**

Prior to disposal in a new or previously unreported surface disposal site, the permittee shall notify the Biosolids Coordinator in writing. Notice shall include a description and a topographic map of the proposed site; the names of the site operator and site owner; whether the site has any permits; and shall include a description of procedures for ensuring public access and grazing restrictions until three years following site closure. The permittee shall not direct biosolids to the surface disposal site without prior written approval from ADEQ.

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Q. Annual Report for All Permittees

The permittee shall submit an annual biosolids report to ADEQ by **February 19 of each year** for the period covering the previous calendar year. The report shall be filled out on forms prescribed by ADEQ and shall include:

1. The amount of biosolids received/generated the previous calendar year and the amount stored at the beginning and end of the previous calendar year, in dry tons or dry metric tons (prefer metric tons), and the amount distributed.

2. The results of all biosolids analytical monitoring conducted during the previous calendar year and copies of the laboratory analytical reports. Metals (other than TCLP metals) shall be reported on a 100% dry weight basis. Note: make certain microbiological testing submitted meets required holding times.

3. Descriptions of pathogen reduction methods and vector attraction reduction methods used during the previous calendar year. The permittee must submit sludge processing data used to demonstrate how treatment alternative(s) in A.A.C. R18-9-1006 and R18-9-1010 were attained, (such as time, temperature, percent solids, pH etc.) as applicable.

4. Names, mailing addresses, and street addresses of all persons who received biosolids generated and/or prepared at this facility for storage, further treatment, disposal in a municipal waste landfill, or for other use/disposal methods not covered under 40 CFR 258 or 503, and the amount delivered to each.

5. Except for biosolids that are demonstrated to be EQ, the following information shall be submitted by the permittee for land application sites, unless the permittee requires its biosolids management contractors to report this information directly to ADEQ:

    a. Locations of land application sites (with field names and numbers) used that calendar year, size of each field applied to, applier, and site owner;

    b. Volumes applied to each field (in wet tons and dry metric tons), nitrogen applied, calculated plant available nitrogen;

    c. Crop(s) planted, date of planting, harvesting;

    d. For any biosolids exceeding A.A.C. R18-9-1005 Table 2 metals concentrations, the locations of sites where applied and cumulative metals loading at each of these sites to date;

    e. Certifications of management practices in A.A.C. R18-9-1007 or A.A.C. R18-9-1008; and

    f. Certifications of site restrictions in A.A.C. R18-9-1009.

6. For surface disposal sites, the permittee shall ensure that the following information is submitted, the permittee requires its biosolids management contractors to report this information directly to ADEQ:

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a. Locations of sites, site operator, site owner, size of parcel on which disposed;

b. Results of any required groundwater monitoring;

c. A description of and certifications of management practices in 40 CFR 503.24; and

d. For closed sites, date of site closure and certifications of management practices for the three years following site closure.

R. Reporting Location

ADEQ Biosolids Coordinator
Water Quality Compliance Section
1110 W. Washington St.
Phoenix, AZ 85007
602-771-7674

PART IV. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

A. General Conditions

1. The permittee shall conduct chronic toxicity tests once every 6 months on a 24-hour composite samples of the final effluent at the frequencies specified in Part I.

2. Final effluent samples must be taken following all treatment processes, including chlorination and dechlorination, and prior to mixing with the receiving water. The required WET tests must be performed on unmodified samples of final effluent. **WET tests conducted on samples that are dechlorinated after collection are not acceptable for compliance with this permit.**

3. Chemical testing for all the parameters listed in Parts I.A and B of this permit whose required sample type is a composite shall be performed on a split of at least one of the three composite samples taken for one chronic WET test. For those parameters listed in Parts I.A and B of this permit whose required sample type is discrete, the testing shall be performed on a discrete sample collected concurrently with one sample, discrete or composite, collected for an acute or chronic WET test.

4. Definitions related to toxicity are found in Appendix A.

B. Chronic Toxicity

1. The permittee shall conduct short-term chronic toxicity tests on three species: the waterflea, *Ceriodaphnia dubia* (survival and reproduction test); the fathead minnow, *Pimephales promelas* (larval survival and growth test); and the green alga, *Pseudokirchneriella subcapitata* (formerly known as *Selenastrum capricornutum* or *Raphidocelis subcapitata)* (growth test).

2. The permittee must follow the USEPA 4th edition manual, "*Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* (EPA/821-R-02-013) for all chronic compliance toxicity testing.

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3. The chronic toxicity action levels are any one test result greater than 1.6 TUc or any calculated monthly median value greater than 1.0 TUc. If chronic toxicity is detected above these values, follow-up testing is required per Part IV, Section D. A chronic toxicity unit (TUc) shall be calculated as TUc = 100/NOEC.

4. The chronic WET test shall be conducted using a series of five dilutions and a control. The following dilution series must be used: 12.5, 25, 50, 75, and 100% effluent.

C. Quality Assurance

1. Effluent samples must be maintained between 0 and 6°C from collection until utilized in the toxicity testing procedure. When a composite sample is required, each aliquot making up the composite must be chilled after collection and throughout the compositing period. The single allowable exception is when a grab sample is delivered to the performing laboratory for test initiation no later than 4 hours following the time of collection.

2. Control and dilution water should be receiving water or lab water as appropriate, as described in the 40 CFR Part 136.3 approved method. If the dilution water used is different from the culture water, a second control, using culture water shall also be used.

3. Reference toxicity tests, (a check of the laboratory and test organisms' performance), shall be conducted at least 1 time in a calendar month for each toxicity test method conducted in the laboratory during that month. Additionally, any time the laboratory changes its source of test organisms, a reference toxicity test must be conducted before or in conjunction with the first WET test performed using the organisms from the newer source. Reference toxicant testing must be conducted using the same test conditions as the effluent toxicity tests (i.e., same test duration, etc.).

4. If either the reference toxicant test or the effluent test does not meet all test acceptability criteria as specified in the 40 CFR Part 136.3 approved WET methods, then the permittee must re-sample and re-test within 14 days of receipt of the test results. The re-sampling and re-testing requirements include laboratory induced error in performing the test method.

5. The chronic reference toxicant and effluent tests must meet the upper and lower bounds on test sensitivity as determined by calculating the percent minimum significant difference (PMSD) for each test result. The test sensitivity bound is specified for each test method (see Section 10, Table 6 in EPA/821-R-02-013). There are five possible outcomes based on the PMSD result.

   a. *Unqualified Pass*- The test's PMSD is within bounds and there is no significant difference between the means for the control and the effluent. The regulatory authority would conclude that there is no toxicity.

   b. *Unqualified Fail*- The test's PMSD is larger than the lower bound (but not greater than the upper bound) in Table 6 and there is a significant difference between the means for the control and the effluent. The regulatory authority would conclude that there is toxicity.

   c. *Lacks Test Sensitivity*- The test's PMSD exceeds the upper bound in Table 6 and there is no significant difference between the means for the control and the effluent. The test is

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considered invalid. An effluent sample must be collected and another toxicity test must be conducted within 14 days of receipt of the test results.

d. *Lacks Test Sensitivity*- The test's PMSD exceeds the upper bound in Table 6 and there is a significant difference between the means for the control and the effluent. The test is considered valid. The regulatory authority will conclude that there is toxicity.

e. *Very Small but Significant Difference*- The relative difference between the means for the control and effluent is smaller than the lower bound in Table 6 and this difference is statistically significant. The test is acceptable and the NOEC should be determined.

D. Toxicity Identification Evaluation (TIE)/Toxicity Reduction Evaluation (TRE) Processes

1. If chronic toxicity is detected above a WET action level or Limit specified in this permit and the source of toxicity is <u>known</u> (for instance, a temporary plant upset), the permittee shall conduct one follow-up test within two weeks of receipt of the sample results that exceeded the action level. The permittee shall use the same test and species as the failed toxicity test. For intermittent discharges, the follow-up test shall be conducted whether discharging or not. If toxicity is detected in the follow-up, the permittee shall immediately begin developing a TRE plan and submit the plan to ADEQ for review and approval within 30 days after receipt of the toxic result. Requirements for the development of a TRE are listed in paragraph 3 below. The permittee must implement the TRE plan as approved and directed by ADEQ.

2. If chronic toxicity is detected above an action level or Limit specified in this permit and the source of toxicity is <u>unknown</u>, the permittee shall begin additional toxicity monitoring within two weeks of receipt of the sample results that exceeded the action level. The permittee shall conduct one WET test approximately every other week until either a test exceeds an action level (or limit) or four tests have been completed. The follow-up tests must use the same test and species as the failed toxicity test. For intermittent discharges, the first follow-up test shall be conducted whether discharging or not; the subsequent three follow-up tests shall be conducted during the next three discharge events.

   a. If none of the four tests exceed a WET action level or limit, then the permittee may return to the routine WET testing frequency specified in this permit.

   b. If a WET action level or limit is exceeded in any of the additional tests, the permittee shall immediately begin developing a TRE plan and submit the plan to ADEQ for review and approval within 30 days after receipt of the toxic result. Requirements for the development of a TRE are listed in subsection 3, below. The permittee must implement the TRE plan as approved and directed by ADEQ.

3. The permittee shall use the EPA guidance manual *Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants*, 1999 (EPA/833/B-99/002) in preparing a TRE plan. The TRE plan shall include, at a minimum, the following:

   a. Further actions to investigate and identify the causes of toxicity, if unknown. The permittee may initiate a TIE as part of the TRE process using the following EPA manuals as guidance: *Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I*, 1992 (EPA/600/6-91/005F); *Methods for Aquatic Toxicity*

Identification Evaluations: Phase I, Toxicity Characterization Procedures, 2nd Edition, 1991 (EPA/600/6-91/003); *Methods for Aquatic Toxicity Identification Evaluations: Phase II, Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity*, 1993 (EPA/600/R-92/080); and *Methods for Aquatic Toxicity Identification Evaluations: Phase III, Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity*, 1993 (EPA/600/R-92/081).

b. Action the permittee will take to mitigate the impact of the discharge and to prevent the recurrence of toxicity; and

c. A schedule for implementing these actions.

E. WET Reporting

1. The permittee shall report chronic toxicity results on DMRs in Chronic Toxicity Units (TUc). The TUc for DMR reporting shall be calculated as TUc = 100/NOEC.

2. In addition to reporting WET results on DMRs, the permittee shall submit a copy of the full lab report(s) for all WET testing conducted during the monitoring period covered by the DMR. The lab report should report TUc as 100/NOEC **and** as $100/IC_{25}$. If the lab report does not contain any of the following items, then these must also be supplied in a separate attachment to the report: 1) sample collection and test initiation dates, 2) the results of the effluent analyses for all parameters required to be tested concurrently with WET testing as defined in Part I.A and B, Tables 1 and 2, and Part IV.A.3 of this permit, and 3) copies of completed "AZPDES Discharge Flow Records" for the months in the WET monitoring period.

3. WET lab reports and any required additional attachments shall be submitted to ADEQ by the 28th day of the month following the end of the WET monitoring period, or upon request, via e-mail to AZPDES@azdeq.gov or by mail to the following address:

Arizona Department of Environmental Quality
Surface Water Permits Unit, Mailcode: 5415A-1
1110 W. Washington St.
Phoenix, AZ 85007

(NOTE: This is not the same ADEQ address as the one specified under Part II.B.2 of this permit.)

PART V. SPECIAL CONDITIONS

A. OPERATION

The permittee shall ensure that the facilities or systems are operated by or under the supervision of an operator currently certified by ADEQ at the level appropriate for the facility or system.

B. PRETREATMENT CONDITIONS

1. The City shall be responsible and liable for the performance of all Control Authority pretreatment requirements contained in 40 CFR Part 403, including any subsequent regulatory revisions to Part 403. Where Part 403 or subsequent revision places mandatory actions upon the

City as Control Authority but does not specify a timetable for completion of the actions, the City shall complete the required actions within six months from the issuance date of this permit or the effective date of the Part 403 revisions, whichever comes later. For violations of pretreatment requirements, the City shall be subject to enforcement actions, penalties, fines and other remedies by ADEQ, the U.S. Environmental Protection Agency (EPA) or other appropriate parties as provided in the Act. ADEQ or EPA may initiate enforcement action against a nondomestic user for noncompliance with applicable standards and requirements as provided in the Act.

2. The City shall enforce the requirements promulgated under sections 307(b), 307(c), 307(d) and 402(b) of the Act with timely, appropriate and effective enforcement actions. The City shall cause all nondomestic users subject to federal categorical standards to achieve compliance no later than the date specified in those requirements or, in the case of a new nondomestic user, upon commencement of the discharge.

3. The City shall perform the pretreatment functions as required in 40 CFR Part 403 including, but not limited to:
   a. Implement the necessary legal authorities as provided in 40 CFR Part 403.8(f)(1);
   b. Enforce the pretreatment requirements under 40 CFR Part 403.5 and 403.6;
   c. Implement the programmatic functions as provided in 40 CFR Part 403.8(f)(2); and
   d. Provide the requisite funding and personnel to implement the pretreatment program as provided in 40 CFR Part 403.8(f)(3).

4. The City shall submit annually a report to ADEQ and EPA, Region 9 describing its pretreatment activities over the previous year. In the event the City is not in compliance with any conditions or requirements of this permit, then the City shall also include the reasons for noncompliance and state how and when the City shall comply with such conditions and requirements. This annual report shall cover operations from January 1 through December 31 and is due on February 28 of each year. The report shall contain, but not be limited to, the following information:

   a. A summary of analytical results from representative, flow proportioned, 24-hour composite sampling of the POTW's influent and effluent for those pollutants EPA has identified under section 307(a) of the Act which are known or suspected to be discharged by nondomestic users. This will consist of an annual full priority pollutant scan, with quarterly samples analyzed only for those pollutants detected in the full scan. The City is not required to sample and analyze for asbestos. Sludge sampling and analysis are covered in the sludge section of this permit. The City shall also provide any influent or effluent monitoring data for nonpriority pollutants which the City believes may be causing or contributing to interference or pass through. Sampling and analysis shall be performed with the techniques prescribed in 40 CFR Part 136;

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b. A discussion of Upset, Interference or Pass Through incidents, if any, at the treatment plant which the City knows or suspects were caused by nondomestic users of the POTW system. The discussion shall include the reasons why the incidents occurred, the corrective actions taken and, if known, the name and address of the nondomestic user(s) responsible. The discussion shall also include a review of the applicable pollutant limitations to determine whether any additional limitations, or changes to existing requirements, may be necessary to prevent pass through or interference;

c. An updated list of the City's significant industrial users (SIUs) including their names and addresses, and a list of deletions, additions and SIU name changes keyed to the previously submitted list. The City shall provide a brief explanation for each change. The list shall identify the SIUs subject to federal categorical standards by specifying which set(s) of standards are applicable to each SIU. The list shall also indicate which SIUs are subject to local limitations;

d. The City shall characterize the compliance status of each SIU by providing a list or table which includes the following information:

   i. Name of the SIU;

   ii. Category, if subject to federal categorical standards;

   iii. The type of wastewater treatment or control processes in place;

   iv. The number of samples taken by the POTW during the year;

   v. The number of samples taken by the SIU during the year;

   vi. For an SIU subject to discharge requirements for total toxic organics, whether all required certifications were provided;

   vii. A list of the standards violated during the year. Identify whether the violations were for categorical standards or local limits;

   viii. Whether the facility is in significant noncompliance (SNC) as defined at 40 CFR 403.12(f)(2)(vii) at any time during the year; and

   ix. A summary of enforcement or other actions taken during the year to return the SIU to compliance. Describe the type of action, final compliance date, and the amount of fines and penalties collected, if any. Describe any proposed actions for bringing the SIU into compliance;

e. A brief description of any programs the POTW implements to reduce pollutants from nondomestic users that are not classified as SIUs;

f. A brief description of any significant changes in operating the pretreatment program which differ from the previous year including, but not limited to, changes concerning the program's administrative structure, local limits, monitoring program or monitoring frequencies, legal authority, enforcement policy, funding levels, or staffing levels;

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g. A summary of the annual pretreatment budget, including the cost of pretreatment program functions and equipment purchases; and

h. A summary of activities to involve and inform the public of the program including a copy of the newspaper notice, if any, required under 40 CFR 403.8(f)(2)(vii).

5. The City shall submit the annual report pertaining to pre-treatment activities to the following EPA Region 9 and ADEQ Pretreatment Coordinator addresses:

Pretreatment Coordinator
EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

Pretreatment Coordinator
Arizona Department of Environmental Quality
Mail Code: 5415B-1
1110 West Washington Street
Phoenix, AZ 85007

C. REOPENER

This permit may be modified per the provisions of A.A.C. R18-9-B906, and R18-9-A905 which incorporates 40 CFR Part 122. This permit may be reopened 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.

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APPENDIX A PART A: ACRONYMS

A.A.C.	Arizona Administrative Code
ADEQ	Arizona Department of Environmental Quality
ADHS	Arizona Department of Health Services
EQ	Exceptional Quality (biosolids)
AL	Assessment Level
AZPDES	Arizona Pollutant Discharge Elimination System
A.R.S.	Arizona Revised Statutes
CFR	Code of Federal Regulations
CFU	Colony Forming Units
Director	The Director of ADEQ or any authorized representative thereof
DMR	Discharge Monitoring Report
EPA	The U.S. Environmental Protection Agency
kg/day	kilograms per day
MGD	Million Gallons per Day
mg/L	milligrams per Liter, also equal to parts per million (ppm)
MPN	Most Probable Number
NPDES	National Pollutant Discharge Elimination System
PFU	Plaque-Forming Unit
PMSD	Percent Minimum Significant Difference
POTW	Publicly Owned Treatment Works
QA	Quality Assurance
SNC	Significant Noncompliance
RP	Reasonable Potential
SIU	Significant Industrial User
SSU	Sewage Sludge Unit
SWQS	Surface Water Quality Standards
TBEL	Technology-based effluent limitation
TCLP	Toxicity Characteristic Leaching Procedure
mg/kg	micrograms per kilogram
ug/L	micrograms per Liter, also equal to parts per billion (ppb)
WQBEL	Water quality-based effluent limitation

APPENDIX A PART B: DEFINITIONS

ACTIVE SEWAGE SLUDGE UNIT means a sewage sludge unit that has not closed.

ACUTE TOXICITY TEST is a test used to determine the concentration of effluent or ambient waters that produces an adverse effect (lethality) on a group of test organisms during a short-term exposure (e.g., 24, 48, or 96 hours). Acute toxicity is measured using statistical procedures (e.g., point estimate techniques or hypothesis testing) and is reported as PASS/FAIL or in TUas, where TUa = $100/LC_{50}$.

ACUTE-to-CHRONIC RATIO (ACR) is the ratio of the acute toxicity of an effluent or a toxicant to its chronic toxicity. It is used as a factor for estimating chronic toxicity on the basis of acute toxicity data, or for estimating acute toxicity on the basis of chronic toxicity data.

AGRONOMIC RATE means the whole biosolids application rate on a dry-weight basis that meets the following conditions: a.) The amount of nitrogen needed by existing vegetation or a planned or actual crop has been provided, and b.) The amount of nitrogen that passes below the root zone of the crop or vegetation is minimized.

ANNUAL POLLUTANT LOADING RATE means the maximum amount of a pollutant that can be applied to an acre or hectare of land during a 365-day period.

APPLICATOR means a person who arranges for and controls the site-specific land application of biosolids in Arizona.

BASE FLOOD means a flood that has a one percent chance of occurring in any given year (or a flood that is likely to occur once in 100 years).

BULK BIOSOLIDS means biosolids that are transported and land-applied in a manner other than in a bag or other container holding biosolids of 1.102 short tons or 1 metric ton or less.

CHRONIC TOXICITY TEST is a test in which sublethal effects (e.g., reduced growth or reproduction) are measured in addition to lethality. Chronic toxicity is measured as TUc = 100/NOEC or TUc = 100/Ecp or 100/ICp. The ICp and ECp value should be the approximate equivalent of the NOEC calculated by hypothesis testing for each test method.

COMPOSITE SAMPLE means a sample that is formed by combining a series of individual, discrete samples of specific volumes at specified intervals. Composite samples characterize the quality of a discharge over a given period of time. Although, composite samples can be time-weighted or flow-weighted, this permit requires the collection of flow-proportional composite samples. This means that samples are collected and combined using aliquots in proportion to flow rather than time. Also see Flow-Proportional Composite.

CUMULATIVE POLLUTANT LOADING RATE means the maximum amount of a pollutant applied to land application site.

DAILY MAXIMUM CONCENTRATION LIMIT means the maximum allowable discharge of a pollutant in a calendar day as measured on any single discrete sample or composite sample.

DAILY MAXIMUM MASS LIMIT means the maximum allowable total mass of a pollutant discharged in a calendar day.

DISCRETE or GRAB SAMPLE means an individual **sample of at least 100 mL** collected from a single location~~,~~ or over a period of time not exceeding 15 minutes.

DRY-WEIGHT BASIS means the weight of biosolids calculated after the material has been dried at 105 ˚C until reaching a constant mass.

EFFECT CONCENTRATION POINT (ECP) is a point estimate of the toxicant (or effluent) concentration that would cause an observable adverse effect (e.g., survival or fertilization) in a given percent of the test organisms, calculated from a continuous model (e.g., USEPA Probit Model).

EXCEPTIONAL QUALITY BIOSOLIDS means biosolids certified under R18-9-1013(A)(6) as meeting the pollutant concentrations in R18-9-1005 Table 2, Class A pathogen reduction in R18-9-1006, and one of the vector attraction reduction requirements in subsections R-18-9-1010(A)(1) through R18-9-1010(A)(8).

FLOW PROPORTIONAL COMPOSITE SAMPLE means a sample that combines discrete samples collected over time, based on the flow of the discharge being sampled. There are two methods used to collect this type of sample. One collects a constant sample volume at time intervals that vary based on stream flow. The other collects discrete samples that are proportioned into aliquots of varying volumes based on stream flow, at constant time intervals (i.e. flow-weighted composite sample).

HARDNESS means the sum of the calcium and magnesium concentrations, expressed as calcium carbonate ($CACO_3$) in milligrams per liter.

HYPOTHESIS TESTING is a statistical technique (e.g., Dunnetts test) that determines what concentration is statistically different from the control. Endpoints determined from hypothesis testing are NOEC and LOEC. The two hypotheses commonly tested in WET are:

- Null hypothesis (H_0): The effluent is not toxic.
- Alternative hypothesis (H_a): The effluent is toxic.

INHIBITION CONCENTRATION (IC) is a point estimate of the toxicant concentration that would cause a given percent reduction in a non-lethal biological measurement (e.g., reproduction or growth) calculated from a continuous model (e.g., USEPA Interpolation Method). IC25 is a point estimate of the toxicant concentration that would cause a 25% reduction in a non-lethal biological measurement.

LAND APPLICATION or LAND APPLY means spraying or spreading biosolids on the surface of the land, injecting biosolids below the land's surface, or incorporating biosolids into the soil to amend, condition, or fertilize the soil.

LAND TREATMENT FACILITY means an operation designed to treat and improve the quality of waste, wastewater, or both, by placement wholly or in part on the land surface to perform part or all of the treatment. A land treatment facility includes a facility that performs biosolids drying, processing, or composting, but not land application performed in compliance with 18 A.A.C. 9, Article 10.

LC50 is the toxicant (or effluent) concentration that would cause death in 50 percent of the test organisms.

LIMIT OF QUANTITATION (LOQ) means the minimum levels, concentrations, or quantities of a target variable such as an analyte that can be reported with a specific degree of confidence. The calibration point shall be at or below the LOQ. The LOQ is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all of the method-specified sample weights, volumes, and processing steps have been followed.

LIMIT OF DETECTION (LOD) means an analyte and matrix-specific estimate of the minimum amount of a substance that the analytical process can reliably detect with a 99% confidence level. This may be laboratory dependent and is developed according to R9014-615(C)(7).

METHOD DETECTION LIMIT (MDL) - See LOD.

MIXING ZONE is an area where an effluent discharge undergoes initial dilution and may be extended to cover the secondary mixing in the ambient waterbody. A mixing zone is an allocated impact zone where water quality criteria can be exceeded as long as acutely toxic conditions are prevented.

MONTHLY OR WEEKLY AVERAGE CONCENTRATION LIMIT, other than for bacteriological testing, means the highest allowable average calculated as an arithmetic mean of consecutive measurements made during calendar month or week, respectively. The "monthly or weekly average concentration limit" for *E. coli* bacteria means the highest allowable average calculated as the geometric mean of a minimum of four (4) measurements made during a calendar month or week, respectively. The geometric mean is the nth root of the product of n numbers. For either method (CFU or MPN), when data are reported as "0" or non-detect then input a "1" into the calculation for the geometric mean.

MONTHLY OR WEEKLY AVERAGE MASS LIMITATION means the highest allowable value that shall be obtained by taking the total mass discharged during a calendar month or week, respectively, divided by the number of days in the period that the facility was discharging. Where less than daily sampling is required by this permit, the monthly or weekly average value shall be determined by the summation of all the measured discharges by mass divided by the number of days during the month or week, respectively, when the measurements were made.

NO OBSERVED EFFECT CONCENTRATION (NOEC) is the highest tested concentration of effluent or toxicant, that causes no observable adverse effect on the test organisms (i.e., the highest concentration of toxicant at which the values for the observed responses are <u>not</u> statistically significant different from the controls).

PATHOGEN means a disease-causing organism.

POINT ESTIMATE TECHNIQUES such as Probit, Interpolation Method, Spearman-Karber are used to determine the effluent concentration at which adverse effects (e.g., fertilization, growth or survival) occurred. For example, concentration at which a 25 percent reduction in fertilization occurred.

REFERENCE TOXICANT TEST is a toxicity test conducted with the addition of a known toxicant to indicate the sensitivity of the organisms being used and demonstrate a laboratory's ability to obtain consistent results with the test method. Reference toxicant data are part of the routine QA/QC program to evaluate the performance of laboratory personnel and test organisms.

RUNOFF means rainwater, leachate, or other liquid that drains over any part of a land surface and runs off of the land surface.

SEWAGE SLUDGE UNIT means land on which only sewage sludge is placed for final disposal. This does not include land on which sewage sludge is either stored or treated. Land does not include navigable waters.

SIGNIFICANT DIFFERENCE is defined as statistically significant difference (e.g., 95% confidence level) in the means of two distributions of sampling results.

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SINGLE CONCENTRATION ACUTE TEST is a statistical analysis comparing only two sets of replicate observations. In the case of WET, comparing only two test concentrations (e.g., a control and 100% effluent). The purpose of this test is to determine if the 100% effluent concentration differs from the control (i.e., the test passes or fails).

STORE BIOSOLIDS or STORAGE OF BIOSOLIDS means the temporary holding or placement of biosolids on land before land application.

SURFACE DISPOSAL SITE means an area of land that contains one or more active sewage sludge units.

SUBMIT, as used in this permit, means post-marked, documented by other mailing receipt, or hand-delivered to ADEQ.

TEST ACCEPTABILITY CRITERIA (TAC) are specific criteria for determining whether toxicity tests results are acceptable. The effluent and reference toxicant must meet specific criteria as defined in the test method.

TON means a net weight of 2000 pounds and is known as a short ton.

TOTAL SOLIDS means the biosolids material that remains when sewage sludge is dried at 103° C to 105° C.

TOXIC UNIT (TU) is a measure of toxicity in an effluent as determined by the acute toxicity units or chronic toxicity units measured. Higher the TUs indicate greater toxicity.

TOXIC UNIT ACUTE (TUa) is the reciprocal of the effluent concentration that causes 50 percent of the organisms to die by the end of an acute toxicity test (i.e., TUa = 100/LC50).

TOXIC UNIT CHRONIC (TUc) is the reciprocal of the effluent concentration that causes no observable effect on the test organisms by the end of a chronic toxicity test (i.e., TUc = 100/NOEC).

TOXICITY IDENTIFICATION EVALUATION (TIE) is a set of procedures used to identify the specific chemical(s) causing effluent toxicity.

TOXICITY REDUCTION EVALUATION (TRE) is a site-specific study conducted in a stepwise process designed to identify the causative agents of effluent toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in effluent toxicity.

TOXICITY TEST is a procedure to determine the toxicity of a chemical or an effluent using living organisms. A toxicity test measures the degree of effect of a specific chemical or effluent on exposed test organisms.

VECTORS means rodents, flies, mosquitoes, or other organisms capable of transporting pathogens.

WHOLE EFFLUENT TOXICITY is the total toxic effect of an effluent measured directly with a toxicity test.

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APPENDIX B

AZPDES Discharge Flow Record

City of Casa Grande WRF- AZ0025178

Discharge to Northern Branch Santa Cruz Wash in the Santa Cruz River Basin At:

Outfall No.: 001

Location: Lat 32º 54' 57" Long 111º 47' 13"

Month: **Year:**

DATE	Flow Duration (1) (Total hours per day)	Flow Rate(2) (Total MGD per day)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		

Comment:

footnotes:

(1) Total time of discharge in hours per day. If actual time is not available, use an estimate of flow duration.

(2) Report flow discharged in MGD. If no discharge occurs on any given day, report 'ND' for the flow for that day

Signature of Authorized Representative:

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APPENDIX C

Ammonia Data Log

City of Casa Grande WRF - AZ0025178

Date of Sample	Ammonia Value In Effluent (mg/L N)	pH In Effluent (S.U.)	Temperature In Effluent (Celsius)	Ammonia Standard as Determined from Ammonia Criteria Tables (attached)

Please copy and complete for each month of each year for permit term. Attach any additional pages as necessary.

Signature of Authorized Representative_____

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APPENDIX C - AMMONIA SPECIAL REPORTING REQUIREMENTS

The Arizona Administrative Code, Title 18, Chapter 11 Department of Environmental Quality Water Quality Standards contains acute and chronic ammonia standards that are contingent upon temperature and/or pH values. The chronic criteria are more stringent than the acute ammonia criteria, so the effluent ammonia will be compared to the chronic ammonia standards. The chronic table for Aquatic and Wildlife warm follows below. The permittee may refer to these tables to determine the ammonia standard that applies each time an ammonia sample is taken. The permittee must record all data results for ammonia, pH, temperature and sampling dates in the Ammonia Data Log. The required minimum sampling frequency for these parameters may be found in Table 2 of this permit. Anytime an ammonia sample is found to be above the corresponding ammonia standard for the pH and temperature at the time the sample was taken, the permittee must highlight this on the ammonia data log. These results must also be reported on DMRs with any exceedances noted. Annual submittal of the ammonia data log is required (See Part II.B.3)

A&W Designated Uses

Determination of Chronic Total Ammonia Criteria as N in mg / L

Based on pH and Temperature at Time of Sampling (1) (2)

pH	Temperature, °C									
	0	14	16	18	20	22	24	26	28	30
6.5	6.67	6.67	6.06	5.33	4.68	4.12	3.62	3.18	2.80	2.46
6.6	6.57	6.57	5.97	5.25	4.61	4.05	3.56	3.13	2.75	2.42
6.7	6.44	6.44	5.86	5.15	4.52	3.98	3.5	3.07	2.7	2.37
6.8	6.29	6.29	5.72	5.03	4.42	3.89	3.42	3	2.64	2.32
6.9	6.12	6.12	5.56	4.89	4.3	3.78	3.32	2.92	2.57	2.25
7	5.91	5.91	5.37	4.72	4.15	3.65	3.21	2.82	2.48	2.18
7.1	5.67	5.67	5.15	4.53	3.98	3.5	3.08	2.7	2.38	2.09
7.2	5.39	5.39	4.9	4.31	3.78	3.33	2.92	2.57	2.26	1.99
7.3	5.08	5.08	4.61	4.06	3.57	3.13	2.76	2.42	2.13	1.87
7.4	4.73	4.73	4.3	3.78	3.33	2.92	2.57	2.26	1.98	1.74
7.5	4.36	4.36	3.97	3.49	3.06	2.69	2.37	2.08	1.83	1.61
7.6	3.98	3.98	3.61	3.18	2.79	2.45	2.16	1.9	1.67	1.47
7.7	3.58	3.58	3.25	2.86	2.51	2.21	1.94	1.71	1.5	1.32
7.8	3.18	3.18	2.89	2.54	2.23	1.96	1.73	1.52	1.33	1.17
7.9	2.8	2.8	2.54	2.24	1.96	1.73	1.52	1.33	1.17	1.03
8.0	2.43	2.43	2.21	1.94	1.71	1.50	1.32	1.16	1.02	0.897

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Determination of Chronic Total Ammonia Criteria as N in mg / L

Based on pH and Temperature at Time of Sampling (1) (2)

8.1	2.1	2.1	1.91	1.68	1.47	1.29	1.14	1.00	0.879	0.773
8.2	1.79	1.79	1.63	1.43	1.26	1.11	0.973	0.855	0.752	0.661
8.3	1.52	1.52	1.39	1.22	1.07	0.941	0.827	0.727	0.639	0.562
8.4	1.29	1.29	1.17	1.03	0.906	0.796	0.7	0.615	0.541	0.475
8.5	1.09	1.09	0.99	0.87	0.765	0.672	0.591	0.52	0.457	0.401
8.6	0.92	0.92	0.836	0.735	0.646	0.568	0.499	0.439	0.386	0.339
8.7	0.778	0.778	0.707	0.622	0.547	0.48	0.422	0.371	0.326	0.287
8.8	0.661	0.661	0.601	0.528	0.464	0.408	0.359	0.315	0.277	0.244
8.9	0.565	0.565	0.513	0.451	0.397	0.349	0.306	0.269	0.237	0.208
9	0.486	0.486	0.442	0.389	0.342	0.3	0.264	0.232	0.204	0.179

Footnotes:

(1) pH and temperature are field measurements taken at the same time and location as the water samples destined for the laboratory analysis of ammonia.

(2) If field measured pH and/or temperature values fall between the Chronic Total Ammonia tabular values, round field measured values according to standard scientific rounding procedures to nearest tabular value to determine the ammonia standard.

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