

## TECHNICAL SUPPORT DOCUMENT

### **I. GENERAL COMMENTS:**

#### **A. Company Information**

Tres Rios Water Reclamation Facility  
Pima County Regional Wastewater Reclamation Facility  
7101 North Casa Grande Highway  
Tucson, AZ 85743

#### **B. Background**

Pima County Regional Wastewater Reclamation Facility (PCRWRD) currently operates the Tres Rios Water Reclamation Facility, which provides preliminary, primary and secondary treatment of wastewater collected from Tucson metropolitan area.

The Tres Rios Water Reclamation Facility (WRF) (formerly known as The Ina Road Wastewater Reclamation Facility) was built in 1975. Initial construction was completed in 1977. Electric power for the facility was provided by seven 1,000 horsepower engines primarily fueled by digester gas generated from the wastewater treatment process. The engines also burned natural gas or propane gas when insufficient digester gas is produced. The operation of these generators and other smaller engines resulted in the facility being permitted as a Class I major source of nitrogen oxides (NO<sub>x</sub>), volatile organic compounds (VOCs) and carbon monoxide (CO) and a minor source for all other criteria pollutants.

The Tres Rios WRF has since removed the seven generator engines and it has been determined that the source is no longer a major source of regulated air pollutants. As such the facility is now a true minor source.

#### **C. Attainment Classification**

The plant is in an area that is in attainment for all pollutants.

### **II. SOURCE DESCRIPTION**

This air quality operating permit is issued to the Tres Rios WRF facility for the potential emissions from the, wastewater treatment, biosolids handling process, and the generators/boilers. The estimated potential to emit (PTE) for all emissions sources at as the facility, including insignificant activities, has been included in the permit documents.

#### **A. Process Description**

No process description is provided for the operation of the generators and boilers since the process is self-explanatory.

#### **B. Air Pollution Control Equipment**

None. The potential emissions of regulated pollutants from the source are less than major source thresholds. No controls will be added since no modifications are requested as part of this permit renewal application.

### III. REGULATORY HISTORY

#### A. Testing & Inspections

The source is currently permitted under a 5- yr renewable permit issued on September 30, 2005. There have been regular inspections, and there has not been a history of any major compliance problems. The source was last inspected in May, 2012, and was in compliance with all air quality regulations.

#### B. Excess Emissions

None reported.

### IV. EMISSIONS ESTIMATES

The methodology currently used to calculate the potential to emit (PTE) for the internal combustion engines and boilers work on the assumption that all combustion units would run 8,760 hours per year with no controls.

The following emission rates are for reference purposes only and are not intended to be enforced by direct measurement unless otherwise noted in the Specific Conditions of the permit.

<b>Pollutant</b>	<b>Potential Emissions (Tons per Year)</b>
Nitrogen Oxides (NO <sub>x</sub> )	38.17
Carbon Monoxide (CO)	48.98
Volatile Organic Compounds (VOC)	19.47
Particulate Matter (as PM <sub>10</sub> )	6.02
Sulfur Oxides (SO <sub>x</sub> )	2.94
Hazardous Air Pollutants (HAPs – total)	9.71

Detailed emission calculations are provided in PTE document.

### V. APPLICABLE REQUIREMENTS

#### Code of Federal Regulations (CFR):

**(NSPS) New Source Performance Standards, 40 CFR Part 60**

Subpart JJJJ Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

Subpart IIII Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

The following NSPS rules could, but do not apply for the following reasons:

Subpart O (Standards for Performance of Sewage Treatment Plants) does not apply because it is only applicable to plants that combust or incinerate sewage sludge. PCRWRD Tres Rios facility does not combust or incinerate sewage sludge.

### **(NESHAP) National Emission Standards for Hazardous Air pollutants, 40 CFR Part 63**

No NESHAP rules apply to the source. The following NESHAP rules could, but do not apply for the following reasons:

Subpart VVV (Publicly Owned Treatment Works) does not apply because the rule is only applicable to treatment works that are a major source for HAPs. This is a true minor source for HAPs, and therefore not subject to Subpart VVV.

Subpart ZZZZ (Stationary Reciprocating Internal Combustion Engines) does not apply because the rule is only applicable to RICE that are located at a major source for HAPs. This is an area source for HAPs, and therefore not subject to Subpart ZZZZ.

**PCC** The following PCC rules apply:

- 17.12.010 Statutory authority
- 17.12.045 Test methods and procedures
- 17.12.050 Performance tests
- 17.12.080 Permit display or posting
- 17.12.165 Permit application processing procedures for Class II and Class III permits
- 17.12.185 Permit contents for Class II and Class III permits
- 17.12.240 Procedures for certain changes that do not require a permit revision Class II or Class III
- 17.12.255 Minor permit revisions
- 17.12.260 Significant permit revisions
- 17.12.270 Permit reopenings—Revocation and reissuance—Termination
- 17.12.520 Fees related to Class II and Class III permits
  
- 17.16.030 Odor Limiting Standards
- 17.16.040 Standards and Applicability (Visible Emissions)
- 17.16.050 Visibility Limiting Standards
- 17.16.130 Applicability
- 17.16.165 Standards of Performance for Fossil Fuel Fired Industrial and Commercial Equipment
- 17.16.340 Stationary Rotating Machinery
- 17.16.430 Standards of Performance for Unclassified Sources
  
- 17.20.010 Source sampling, monitoring, and testing

## **VI. PERMIT CONTENTS**

This section of the technical support document (TSD) describes how the permit was written, the federal, State Implementation plan (SIP) or local regulation that requires the condition. If no regulation requires the condition, the TSD explains the authority for excluding the condition and citations used.

**Section 1: Specific Conditions for NSPS (Subpart JJJJ) Spark Ignition Internal Combustion Engines**

The regulations identified within this section apply to spark ignition internal combustion engines (SI ICE) identified in Table 1, Attachment 2 of the permit.

Standard	Discussion	Authority
I.	Applicability. The provisions of this NSPS subpart JJJJ apply to rich burn LPG SI ICE engines between 25 and 500 horsepower, constructed after June 12, 2006 and manufactured on or after July 1, 2008.	40 CFR 60.4230(a)(4)(iii)
II.A	Applicable federal operational limitation requirements for owners and operators of SI ICE.	40 CFR 4233
II.A.1	Applicable federal emission standards for NO <sub>x</sub> , CO and VOC based on engine type, fuel type and manufacturing date.	40 CFR 60.4233(d), 40 CFR 60.4233(e) 40 CFR 1048
II.A.2	The opacity standard is a local regulation applicable to permitted and unpermitted sources operating within Pima County. The opacity standard states that the applicable NSPS SI ICE may not discharge gases with more than 20 percent opacity.	PCC 17.16.040.A
II.B	Applicable federal operational condition to maintain applicable SI ICE emission standards over the entire life of the engine.	40 CFR 4234
II.C	Local fuel limitation requirement identifying the specified fuel allowed to be combusted in each SI ICE.	PCC 17.12.185.A.2
II.D	Applicable federal requirements prohibiting installation of non-compliant SI ICE.	40 CFR 4236(a), (b), (c), (d) and (e)
II.E	<p>Applicable federal compliance requirements for owners and operators that purchase manufacturer-certified engines. Requirements include: recordkeeping of conducted maintenance, limitation on the operational hours for checks and readiness testing.</p> <p>Owners and operators that purchase engines that have never been certified are required to conduct an initial performance test to demonstrate compliance.</p> <p>Requirement to use air-to-fuel ratio (AFR) controllers with the operation of three-way catalysts/non-selective catalytic reduction. The AFR controller must be maintained and operated appropriately in order to ensure proper operation of the engine and control device to minimize emissions at all times.</p>	<p>40 CFR 60.4243 40 CFR 60.4243(b)(1) 40 CFR 60.4243(a)(1) 40 CFR 60.4243(a)(2) 40 CFR 60.4243(a)(2)(i) 40 CFR 60.4243(a)(2)(ii) 40 CFR 60.4243(a)(2)(iii) 40 CFR 60.4243(b)(2) and 40 CFR 60.4243(b)(2)(i) 40 CFR 60.4243(d) 40 CFR 60.4243(e) and 40 CFR 60.4233 40 CFR 60.4243(f) 40 CFR 60.4243(g)</p>
III.A	<p>PDEQ has determined that the percent of opacity of visible emissions from the stationary SI ICE while combusting natural gas fuel is inherently low thus the Permittee is not required to show a demonstration of compliance with the standard for opacity.</p> <p>The Permittee shall however operate and maintain the stationary SI ICE at all times - including periods of startup, shutdown, and malfunction - in a manner consistent with good air pollution control practices and consistent with manufacturer's guidelines.</p>	PCC 17.12.185.A.3

Standard	Discussion	Authority
III.B	The Permittee has been provided an option to demonstrate compliance with the local fuel limitation condition by either physically showing that only commercially available pipeline quality natural gas was fired in the stationary SI ICE listed, or making available to the Control Officer for his inspection, documentation, such as invoices or statements from the fuel supplier, showing that only commercial natural gas was purchased for use in the equipment.	PCC 17.12.185.A.3
IV.A	Applicable federal notifications, reports and recordkeeping requirements to comply with subpart JJJJ.	40 CFR 60.4245(a) 40 CFR 60.4245(a)(2) 40 CFR 60.4245(a)(3) 40 CFR 60.4245(a)(4) and 40 CFR 60.4243(a)(2)
V	Applicable federal requirement for the Permittee to submit a copy of each performance test conducted on all subject SI ICE.	40 CFR 60.4245(d)
VI.	Condition requiring the Permittee to submit the proper notification and follow the required permit revision procedures identified in PCC.	PCC 17.12.240, PCC 17.12.255.B and PCC 17.12.260
VII	Approved local and federal test methods and procedures for the purpose of establishing whether or not the facility has violated or is in violation of any provision of this permit.	PCC 17.20.010
VII.A	Visible emissions observations shall be performed in accordance to EPA Reference Method 9.	PCC 17.16.130.B
VII.B	The requirement limiting the sulfur content in fuel used in the SI ICE shall not be required to be determined if the Permittee demonstrates that pipeline quality gas was the only fuel fired in the SI ICE. Pipeline quality natural gas is a fuel regulated by the Federal Energy Regulatory Commission which inadvertently limits the sulfur content below the applicable sulfur content limitation in PCC.	PCC 17.12.185.A.3 and PCC 17.20.010
VII.C	Allowance for the use of alternative test methods following approval from the Control Officer	PCC 17.12.045.D
VII.D	Applicable federal performance testing procedures identified in subpart JJJJ.	40 CFR 60.4244
VIII	Applicable additional federal requirement for all regulated emission units subject to subpart JJJJ.	40 CFR 60.4246

**Section 2: Specific Conditions for NSPS (Subpart III) Compression Ignition Internal Combustion Engines**

The regulations identified within this category apply to stationary compression ignition internal combustion engines (CI ICE) identified in Table 2, Attachment 2 of the permit.

Standard	Discussion	Authority
I.	Applicability. The provisions of this NSPS subpart III apply to the single emergency stationary compression ignition engine (CI ICE) at the facility; The specific applicable unit is identified in Table 2 and 3, Attachment 2 of this permit.	40 CFR: 60.4200(a)(2)(i), and 60.4200(a)(3)
II.A.1-3	Operational limitations that specify the emission standards for the applicable stationary CI ICE, identified in Table 2 and Table 3, Attachment 2 of the permit. These emission standards are derived directly from subpart III.	40 CFR 60.4205(a), 40 CFR 60.4203 and Table 1 of Subpart III
II.A.4	Operational condition ensuring that the Permittee operates and maintains the applicable NSPS CI ICE according to manufacturer's written instructions over the entire life of the engine. Restriction preventing the Permittee from altering the settings on the CI ICE that are not permitted by the manufacturer.	40 CFR: 60.4206, and 60.4211(a)
II.B	Fuel requirements for diesel fired CI ICE engines are provided in subpart III to limit the sulfur content in the fuel.	40 CFR 60.4207(b), 80.510(b), and 60.4207(c)
II.C	Installations restrictions - graduated prohibitions by year from the installation of units that do not meet the applicable standards with certain allowances for certain categories of equipment.	40 CFR 60.4208
II.D	Emergency Designation – Specific conditions applicable to maintain emergency designation on the applicable CI ICE	40 CFR 60.4211(e)
II.E	Compliance requirements – limitations and provisions affecting the operation of the CI ICE.	40 CFR 60.4211
III	Monitoring requirements –The operational hour meter and particulate filter installation requirement are derived directly from subpart III.	40 CFR 60.4209(a) and 40 CFR 60.4209(b)
IV.A	Applicable federal recordkeeping requirement identified in subpart III. Recordkeeping – the facility is provided numerous optional methods for demonstrating compliance with the applicable emission standard.	PCC 17.12.185.A.4
IV.B	Requirement to maintain records verifying compliance with the diesel fuel requirements.	PCC 17.12.185.A.4
V.	Applicable federal testing requirement identified in subpart III. Requirement to report any excess emissions in excess of the limits to the Control Officer.	40 CFR 60.4212 and PCC 17.12.185.A.5
VI	Applicable federal general provisions for all sources subject to subpart III.	40 CFR 60.4218 and 40 CFR 60.4214(b)]
V.II	Requirement to maintain all records for five years reference in Pima County Code.	PCC 17.12.185.A.4

### Section 3: Fossil Fuel Fired Industrial and Commercial Equipment

The provisions of this Category apply to equipment specifically listed in Table 4, Attachment 2 of the permit (Non-NSPS equipment).

Standard	Discussion	Authority
I.A	Opacity Standard - By law, the Permittee cannot allow any equipment under his control to emit effluents (such as exhaust from the boiler/flare) that exceed specific values of opacity (the degree to which light cannot pass through the plume of effluent/exhaust.) The value of opacity that cannot be exceeded is stated in the permit for the boiler/flare.	PCC 17.16.040
I.B	Fuel Limitation - Each type of fuel burned in equipment powered by combustion has a unique blend of constituents. When burned, each fuel results in the release of regulated pollutants to the atmosphere at characteristic levels. This permit is written to account for the fuel specified for the boilers/flare. Use of fuels other than those specified would result in different rates of pollutant emission. Therefore, the Permittee must only burn the designated fuels identified in the permit to remain in compliance with the conditions of this permit.	PCC 17.12.190.B
II.A	Opacity Monitoring - The Permittee demonstrates compliance with this regulation to PDEQ by checking the exhaust from the boilers and flares under his/her control quarterly, and keeping complete records of these checks	PCC 17.12.185.A.3
II.B	Compliance with the specified fuel combusted in the boilers and flares may be made by actual inspection of the equipment showing that the specified fuel is the only fuel supply plumbed to the equipment for firing.	PCC 17.12.185.A.3
III	Reporting excess any emissions is required pursuant to Pima County Code	PCC 17.12.185.A.5 & PCC 17.12.040
IV	When required, the Control Officer may request the Permittee demonstrate compliance with the visible emissions requirement using the reference EPA Reference Method 9, Appendix A in 40 CFR 60.	PCC 17.12.045, PCC 17.12.050 & PCC 17.20.010

### VII. Insignificant Activities

Two emergency digester gas flares used to burn off excess digester gas generated at the facility by the wastewater treatment process are designated as insignificant activities. The plant typically burns the flares for one hour each month for testing purposes only, to ensure that the system is in good working order.

#### Acid Rain Provisions

The units at this facility are not subject to Acid Rain provisions because they are exempt under an applicability determination as described in 40CFR70.6.(b)(3). Not affected units subject to the requirements of the Acid Rain Program: ...(3) Any unit that, during 1985, did not serve a generator that produced electricity for sale and that did not, as of November 15, 1990, and does not currently, serve a generator that produces electricity for sale.

This unit does not, never has and does not plan to produce electricity for sale. All electric power generated by the plant is for use by the same facility, on site.

## **CAM Provisions**

CAM provisions will not apply to this source. 40 CFR Part 64, §64.2(a) defines the applicability of CAM to emissions units. For CAM to apply, the unit must be subject to an emission limit or standard for the applicable regulated pollutant, the unit must use a control device to achieve compliance with that limitation or standard, and the unit must have a pre-control emission potential that would classify it as a major source. The source is not subject to emission limits under this permit. Since the unit is not subject to emission limits, it is not subject to the CAM provisions, i.e. the treatment plant does not use any Control Technologies.

### **VII. IMPACTS TO AMBIENT AIR QUALITY**

Not a major source thus no studies are required.

### **VIII. CONTROL TECHNOLOGY DETERMINATION**

No control technologies needed to be determined; source is not subject to BACT or LAER.

### **IX. PREVIOUS PERMIT CONDITIONS**

The following changes were made to the previous permit conditions so as to enable the source to operate with the maximum flexibility.

The Pima county Regional Wastewater Reclamation Department (PCRWRD) was previously permitted as a Class I source. The removal of seven 1000 HP generator engines, that were the largest source of emissions, resulted in the potential to emit for the facility to fall below major source thresholds. The October 2013 permit renewal application sought to reclassify the permit as a Class II true minor facility; the potential to emit for all emission sources demonstrated that the source met the requirements of this classification.