



**TECHNICAL REVIEW AND EVALUATION  
OF APPLICATION FOR  
AIR QUALITY PERMIT No. 97084**

**I. INTRODUCTION**

This Class II synthetic minor permit is for the construction and operation of Garkane Energy Cooperative, Inc.'s Fredonia Standby Facility. A Class II permit is required because the facility's potential to emit (PTE) is greater than the Class I (Title V) major source thresholds for (nitrogen oxides) NO<sub>x</sub> and carbon monoxide (CO), but the facility has elected to take voluntary limits in accordance to keep the facility's controlled PTE under the Class I (Title V) major source thresholds for NO<sub>x</sub> and CO. Therefore, a Class II synthetic minor permit is required for this facility in accordance with Arizona Administrative Code (A.A.C.) R18-2-302.B.2.a.

**A. Company Information**

Facility Name: Garkane Fredonia Standby Facility  
Mailing Address: 1802 South Highway 89A, Kanab UT, 84741  
Facility Location: 1346 North Highway 89A, Fredonia AZ, 86022

**B. Attainment Classification**

Garkane Fredonia Standby Facility is located in Coconino County, an area classified as attainment or unclassified for all criteria pollutants.

**II. PROCESS DESCRIPTION**

**A. Process Equipment**

The Garkane Fredonia Standby Facility is comprised of one (1) 2,593 hp diesel engine manufactured in 2001 (IC1). The standard industrial classification (SIC) for Garkane is energy generation, SIC Code 4911. The facility may operate continuously for 24 hours per day (hr/day), but is limited to 6,000 hours on a 12-month rolling total. The engine will operate as part of the Western Area Power Administration (WAPA) when necessary, as part of their purchased "spinning reserves".

**B. Control Devices**

IC1 is equipped with an oxidation catalyst and selective catalytic reduction (SCR) combination provided by Safety Power to control CO and NO<sub>x</sub> emissions, respectively.

**III. EMISSIONS**

The facility's potential to emit (PTE) was calculated using elective limits, EPA Certification Data for Engine Family 1CPXL78.1ERK, Tier 1 emission standards, and AP-42 Chapter 3.4, Large Stationary Diesel and All Stationary Dual-fuel Engines. The uncontrolled emissions were greater

than the Class I (Title V) major source thresholds for NO<sub>x</sub> and CO. However, the facility has taken elective limits to remain under Class I (Title V) major source thresholds for NO<sub>x</sub> and CO.

The facility's PTE is provided in Table 1 below:

**Table 1: Potential to Emit (tpy)**

| <b>Pollutant</b>   | <b>PTE</b> | <b>Permitting Exemption Threshold</b> | <b>Significant Thresholds</b> | <b>Minor NSR Triggered?</b> |
|--------------------|------------|---------------------------------------|-------------------------------|-----------------------------|
| NO <sub>x</sub>    | 12.90      | 20                                    | 40                            | No                          |
| PM <sub>10</sub>   | 1.71       | 7.5                                   | 15                            | No                          |
| PM <sub>2.5</sub>  | 1.71       | 5                                     | 10                            | No                          |
| CO                 | 14.70      | 50                                    | 100                           | No                          |
| SO <sub>2</sub>    | 0.09       | 20                                    | 40                            | No                          |
| VOC                | 17.13      | 20                                    | 40                            | No                          |
| HAPs<br>(combined) | 0.09       | N/A                                   | 25                            | N/A                         |

#### **IV. MINOR NEW SOURCE REVIEW (NSR)**

Minor NSR is required if the emissions of a new source have the potential to emit any regulated air pollutant at an amount greater than or equal to the permitting exemption threshold (PET) in Table 1 above. No regulated air pollutants emitted are greater or equal to the respective permitting exemption threshold. Therefore, minor NSR is not triggered.

#### **V. VOLUNTARILY ACCEPTED EMISSION LIMITATIONS AND STANDARDS**

The permit contains the following voluntary emission limitations and standards:

##### **A. Nitrogen Oxides**

The facility has accepted a voluntary emission limit of 4.30 lb/hr of NO<sub>x</sub> for IC1 to stay under Class I (Title V) major source thresholds. In order to achieve this voluntary emission limit, the Permittee will install a SCR. In addition to maintaining a Class II synthetic minor permit classification, this voluntary emission limit also keeps PTE under permitting exemption thresholds to avoid triggering minor NSR.

The Permittee is required to conduct performance testing within 60 days of achieving the capability to operate at its maximum capacity, but no later than 180 days after initial start-up to demonstrate compliance this voluntary emission limit.

**B. Carbon Dioxide**

The facility has accepted a voluntary emission limit of 4.90 lb/hr of CO for IC1 to stay under Class I (Title V) major source thresholds. In order to achieve this voluntary emission limit, the Permittee will install an oxidation catalyst. In addition to maintaining a Class II synthetic minor permit classification, this voluntary emission limit also keeps PTE under permitting exemption thresholds to avoid triggering minor NSR.

The Permittee is required to conduct performance testing performance tests every 8,760 hours or 3 years, whichever comes first, to demonstrate compliance this voluntary emission limit.

**C. Hours**

The facility has accepted a voluntary limitation of 6,000 hours stay under Class I (Title V) major source thresholds for NO<sub>x</sub> and CO. Additionally, this voluntary hours limitation allows the PTE for NO<sub>x</sub>, CO, and volatile organic compounds (VOCs) to stay below the permitting exemption thresholds, thus avoiding the trigger for minor NSR.

The Permittee is required to maintain a record of monthly operating hours and calculated the 12-month rolling total of hour of operations at the end of each month to demonstrate compliance this voluntary emission limit.

**VI. APPLICABLE REGULATIONS**

Table 2 identifies applicable regulations and verification as to why that standard applies. The table also contains a discussion of any regulations the emission unit is exempt from.

**Table 2: Applicable Regulations**

| Unit & year                          | Control Device  | Rule  | Discussion  |
|--------------------------------------|---|---|---|
| Diesel Engine IC1                    | SCR;<br>Oxidation Catalyst  | A.A.C. R18-2-719<br><br>40 CFR 63 Subpart<br>ZZZZ | Standards of Performance for Existing Stationary Rotating Machinery are applicable to internal combustion engines that are existing sources as defined by R18-2-701.16. IC1 meets the applicability requirements and is therefore subject to A.A.C. R18-2-719.<br><br>National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines as defined in Code of Federal Regulations Subpart ZZZZ are applicable to stationary RICE. Therefore, IC1 is subject to 40 CRF 63 Subpart ZZZZ. |
| Fugitive Dust Sources                | Water Trucks;<br>Dust Suppressants                                    | A.A.C. R18-2 Article 6<br>A.A.C. R18-2-702        | These standards are applicable to all fugitive dust sources at the facility.  |
| Abrasive Blasting                    | Wet Blasting;<br>Dust Collecting Equipment;<br>Other Approved Methods | A.A.C. R-18-2-702<br>A.A.C. R-18-2-726            | These standards are applicable to any abrasive blasting operation.  |
| Spray Painting                       | Enclosures  | A.A.C. R18-2-702<br>A.A.C. R-18-2-727             | These standards are applicable to any spray painting operation.   |
| Demolition/<br>Renovation Operations | N/A   | A.A.C. R18-2-1101.A.8                             | This standard is applicable to any asbestos related demolition or renovation operations.  |

## VII. MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS

Table 3 contains an inclusive but not an exhaustive list of the monitoring, recordkeeping and reporting requirements prescribed by the air quality permit. The table below is intended to provide insight to the public for how the Permittee is required to demonstrate compliance with the emission limits in the permit.

**Table 3: Permit No. 97084 Monitoring, Recordkeeping and Reporting Requirements**

| Emission Unit     | Pollutant or Parameter | Emission or Parameter Limit | Monitoring Requirements   | Recordkeeping Requirements | Reporting Requirements |
|-------------------|------------------------|-----------------------------|---|----------------------------|------------------------|
| Diesel Engine IC1 | NO <sub>x</sub>        | 4.30 lb/hr                  | Conduct performance testing within 60 days of achieving the capability to operate at its maximum capacity, but no later than 180 days after initial start-up. | N/A                        | N/A                    |
|                   | CO                     | 4.90 lb/hr                  | Conduct performance testing every 8,760 hours or 3 years, whichever comes first.  | N/A                        | N/A                    |

| Emission Unit | Pollutant or Parameter | Emission or Parameter Limit                          | Monitoring Requirements   | Recordkeeping Requirements  | Reporting Requirements   |
|---------------|------------------------|--|---|---|--|
|               | Hours                  | 6,000 hours  | Calculate the 12-month rolling total of hours of operation and the end of each month. | Maintain monthly records of operating hours.  | N/A  |
|               | PM                     | 40% opacity – for any period greater than 10 seconds | Conduct periodic opacity monitoring on a monthly basis.                               | Maintain records of the lower heating value of the fuel.  | Report all 6-minute periods which the opacity exceeded 15%.                    |
|               | SO <sub>2</sub>        | 1.0 lb/MMBtu   | N/A   | Record the daily sulfur content of the fuel used in the engines.  | Report to the Director any daily period which the sulfur content exceeds 0.8%. |
| Fugitive Dust | PM                     | 40% Opacity  | A Method 9 observer is required to conduct a monthly survey of visible emissions.     | Record of the dates and types of dust control measures employed, and if applicable, the results of any Method 9 observations, and any corrective action taken to lower the opacity of any excess emissions. | N/A  |

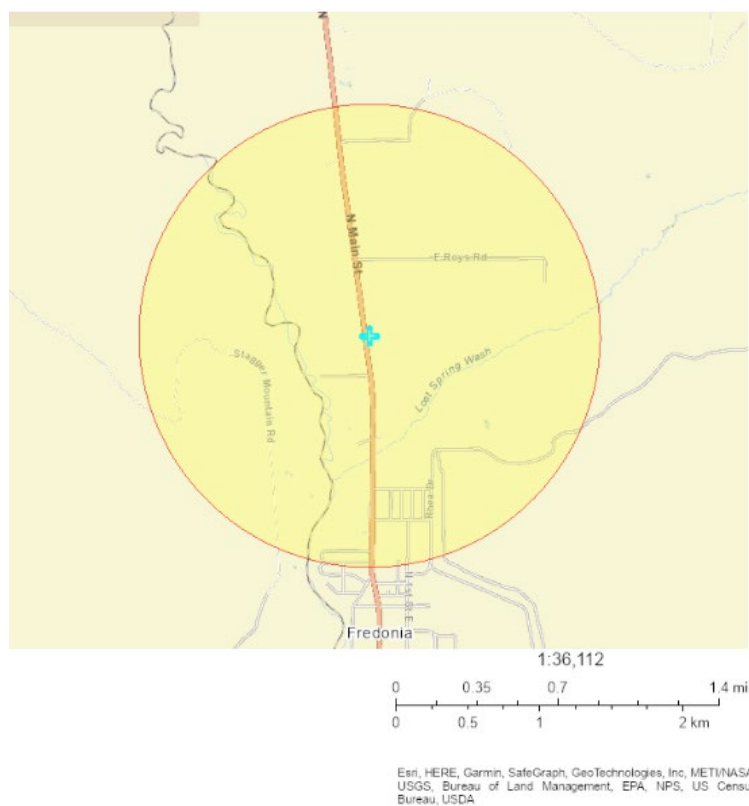
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| Emission Unit             | Pollutant or Parameter | Emission or Parameter Limit                 | Monitoring Requirements | Recordkeeping Requirements  | Reporting Requirements |
|---------------------------|------------------------|---|-------------------------|---|------------------------|
| Abrasive Blasting         | PM                     | 20% Opacity                                 | N/A                     | Record the date, duration and pollution control measures of any abrasive blasting project.  | N/A                    |
| Spray Painting            | VOC                    | 20% Opacity<br>Control 96% of the overspray | N/A                     | Maintain records of the date, duration, quantity of paint used, any applicable MSDS, and pollution control measures of any spray painting project.  | N/A                    |
| Demolition/<br>Renovation | Asbestos               |   | N/A                     | Maintain records of all asbestos related demolition or renovation projects including the “NESHAP Notification for Renovation and Demolition Activities” form and all supporting documents | N/A                    |

## VIII. ENVIRONMENTAL JUSTICE ANALYSIS

The EPA (Environmental Protection Agency) defines Environmental Justice (EJ) to include the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The goal of completing an EJ assessment in permitting is to provide an opportunity for overburdened populations or communities to allow for meaningful participation in the permitting process. Overburdened is used to describe the minority, low-income, tribal and indigenous populations or communities that potentially experience disproportionate environmental harms and risks due to exposures or cumulative impacts or greater vulnerability to environmental hazards. The permit does not allow or permit any increases in emissions and will not result in any additional impacts.

The EPA developed EJSCREEN, a publicly available tool that uses nationally consistent data, to produce maps and reports detailing environmental and demographic indicators that can be used to evaluate EJ concerns. The EPA selected an 90<sup>th</sup> percentile threshold for this action to evaluate the potential for EJ concerns in a community, meaning that if the area of interest exceeds the 90<sup>th</sup> percentile for one or more of the EJ indexes, the EPA considers that area to have a high potential for EJ concerns. The ADEQ mapped the location of the Garkane Fredonia Standby Facility and reviewed a 1-mile radius around the facility for potential environmental justice concerns (see Figure 1 below).



**Figure 1: 1-mile Radius Around Garkane Fredonia Standby Facility**



**A. Demographics**

The ADEQ relied on data from the EPA EJ Screen tool to assess the demographics of the communities near the initial location for this proposed facility. The EJSCREEN report shows that the Demographic Indicators: People of Color, Low Income Population, Limited English Speaking Population, Population Under 5 years of age, and Population over 64 years of age, are all below the 90<sup>th</sup> percentile threshold.

**B. Summary of Air Quality**

All air quality related environmental indicators within a 1-miles radius of the facility were below the 90<sup>th</sup> percentile for both Arizona and the USA averages. ADEQ has determined that the issuance of the air quality permit will not have an adverse impact on the community.

**C. Conclusion**

The ADEQ concludes that the protections afforded by Arizona Revised Statutes (A.R.S.) § 49-426, which is imposed through the permit, ensure that the public health and environment in Arizona are protected and that the public notice and comment opportunities afforded to the community on this new permit application satisfy the public participation component of the EPA EJ Guidance.

**IX. LIST OF ABBREVIATIONS**

|                   |  |
|-------------------|--|
| A.A.C.            | Arizona Administrative Code                                      |
| ADEQ              | Arizona Department of Environmental Quality                      |
| A.R.S.            | Arizona Revised Statutes   |
| CFR               | Code of Federal Regulations                                      |
| CO                | Carbon Monoxide  |
| EPA               | Environmental Protection Agency                                  |
| HAP               | Hazardous Air Pollutant  |
| hp                | Horsepower   |
| hr                | Hour   |
| IC                | Internal Combustion  |
| NO <sub>x</sub>   | Nitrogen Oxides  |
| PM                | Particulate Matter   |
| PM <sub>10</sub>  | Particulate Matter less than 10 µm nominal aerodynamic diameter  |
| PM <sub>2.5</sub> | Particulate Matter less than 2.5 µm nominal aerodynamic diameter |
| PTE               | Potential to Emit  |
| SCR               | Selective Catalytic Reduction                                    |
| SO <sub>2</sub>   | Sulfur Dioxide Significant Impact Levels                         |
| TPY               | Tons per Year  |
| VOCs              | Volatile Organic Compounds                                       |
| yr                | Year   |