Gila River Indian Community
2021 AMBIENT AIR MONITORING NETWORK REVIEW AND 2022 PLAN

St Johns Air Monitoring Site – May 11, 2021

Gila River Indian Community
Department of Environmental Quality

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DEFINITION OF TERMS

AMNR:	Air Quality Monitoring Network Review.
AMNRP:	Air Quality Monitoring Network Review and Plan.
AQMP:	Air Quality Management Plan. The AQMP is a collection of tribal regulations and plans to achieve healthy air quality under the Clean Air Act. For GRIC, the AQMP is synonymous with the Tribal Implementation Plan (TIP).
AQP:	Air Quality Program within the Gila River Indian Community's Department of Environmental Quality.
AQS:	Environmental Protection Agency's Air Quality System
Attainment:	This refers to the NAAQS used to comply with the federal Clean Air Act. After several years of no violations of the NAAQS, the EPA can classify the area as in attainment for that pollutant.
CFR:	Code of Federal Regulations.
Community:	Gila River Indian Community
Continuous monitoring:	A method of monitoring air pollutants that is continually measuring the quantity of the pollutant, either gaseous or particulate. Continuous monitors can be used to obtain real-time or short-term averages of pollutants.
Criteria Pollutants:	Six pollutants (Carbon Monoxide, Lead, Nitrogen Dioxide, Ozone, Particulates, and Sulfur Dioxide) that have NAAQS established by the US EPA.
DEQ:	Gila River Indian Community's Department of Environmental Quality
Design Value:	A design value is a statistic that describes the air quality status of a given area relative to the level of the NAAQS. For a concentration-based standard, the air quality design value is simply the standard-related test statistic. The design value of a pollutant monitoring network is the highest sample value in the network used to compare to the NAAQS; e.g. the 8-hour ozone design value for the network is the monitor with the highest 3-year average of the 4th highest concentrations each year.
EPA:	U. S. Environmental Protection Agency.
Exceptional Events:	An uncontrollable event caused by natural sources of pollution or an event that is not expected to recur at a given location. The AQP makes the determination of which events to classify as exceptional and those events are then flagged in the AQS. If the EPA concurs with the AQP's determination, the measured pollution event will not be used in determination of compliance with the NAAQS.

FEM:	Federal Equivalency Method. An official method, i.e. equipment and procedure, of monitoring air pollution that has been determined to produce results similar to the Federal Reference Method (FRM).
Filter-based Monitor:	A method of monitoring particulate pollution that involves exposing a pre- weighed filter to a specific flow volume of air to capture the particulates in the air. The filters are then post-weighed to determine the weight of particulates per volume, e.g. $\mu g/m^3$. Filter-based monitors used by GRIC are all FRM monitors.
FRM:	Federal Reference Method. An official method (i.e. equipment and procedure) of monitoring air pollution that has been tested and determined to produce results that accurately measure air pollution with acceptable precision. These methods are the baseline that all other methods (i.e., FEMs) refer to.
GRIC:	Gila River Indian Community
$\mu g/m^3$:	Microgram per cubic meter.
MSA:	Metropolitan Statistical Area. A geographical area designated by the federal government based on the concept of a core area with a large population nucleus, plus adjacent communities having a high degree of economic and social integration with that core. It is unclear in Appendix D 40 CFR 58 how MSAs apply to sovereign tribes. Although the areas within the Community are *geographically* part of the Phoenix-Mesa-Scottsdale MSA, for purposes of the administration of Section 107 of the Clean Air Act (42 U.S.C. § 7407), except where a specific designation has been otherwise made by the Administrator, the air quality control region for the Community is all land within the exterior boundaries of the Community. Therefore, for the purposes of this document, the MSA principle does not apply to the GRIC Air Monitoring Network.
NAAQS:	National Ambient Air Quality Standards. A health and welfare-based standard that is set by the US EPA to qualify allowable levels of criteria pollutants.
NO_2:	Nitrogen dioxide.
NO_X:	Nitrogen oxides. Sum of nitric oxide (NO), NO_2, and other nitrogen-containing compounds.
PM:	Particulate matter. Material suspended in the air in the form of minute solid particles or liquid droplets.
PM_{10}:	Particulate matter of 10 microns in diameter or smaller.
PMA:	Phoenix Metropolitan Area.
NPAP-TTP:	National Performance Audit Program – Through the Probe
POC:	Parameter Occurrence Code is an identification number distinguishing multiple instruments that may measure the same pollutant.

PPM:	Parts per million.
Primary Standard:	One portion of the NAAQS. These standards are designed to protect the public health.
Secondary Standard:	One portion of the NAAQS. These standards are designed to protect the environment.
SIP:	State Implementation Plan. SIPs are a collection of state and local regulations and plans to achieve healthy air quality under the Clean Air Act.
SLAMS:	State and Local Air Monitoring Station. The SLAMS consist of a network of approximately 5,000 monitoring stations nationwide whose size and distribution is largely determined by the needs of State, and local air pollution control agencies to meet their respective SIP requirements. The GRIC monitors operated by the AQP are not part of the SLAMS network, but the AQP operates the monitors in accordance with the requirements for SLAMS.
TAR:	Tribal Authority Rule.
TEOM:	Tapered Element Oscillating Microbalance. A continuous particulate measuring instrument used by the AQP to measure PM10.
TIP:	Tribal Implementation Plan. The TIP is a collection of tribal regulations and plans to achieve healthy air quality under the Clean Air Act. For GRIC, the TIP is incorporated into and synonymous with the Air Quality Management Plan (AQMP).
VOC:	Volatile organic compounds. VOCs are chemical compounds that can easily vaporize and enter the atmosphere. There are many natural and artificial sources of VOCs; solvents and gasoline make up some of the largest artificial sources. VOCs will react with NO_x in the presence of sunlight to create ground-level ozone pollution.

ABSTRACT

In 2021, Gila River Indian Community (GRIC) Department of Environmental Quality (DEQ) Air Quality Program (AQP) successfully continued to operate an air quality surveillance system that monitored for regulated ambient air pollutants as per 40 CFR Parts 50 and 58. This Annual Monitoring Network Review and Plan (AMNRP) documents how the system performed during 2021. The air monitoring data produced are intended for regulatory compliance determinations regarding regulated ambient air pollutants.

In addition, this document describes the changes that are planned to occur within the next 18 months. The AQP informs personnel at the Environmental Protection Agency's Region 9 (EPA R9) office of any significant data collection interruptions immediately.

During 2021, there were no significant changes to the GRIC air monitoring network; however, some notable accomplishments are as follows:

- GRIC successfully completed and certified 2021 air monitoring data with 97-100% data completeness reporting to EPA's AQS data repository.
- GRIC submitted letter to EPA R9 requesting a seasonal waiver for 2022 calendar year, requesting GRIC will monitor ozone from April 1st through October 31st in 2022.
- USEPA Region 9, Air Quality Analysis Office conducted a Technical Systems Audit (TSA) on the GRIC Air Monitoring Network on March 23-25, 2021. GRIC received preliminary audit findings and began implementing corrective action items.
- A revision to the GRIC Air Monitoring Quality Assurance Project Plan (QAPP) has been submitted for re-approval. EPA R9 sent their comments and recommendations and GRIC will work closely with EPA R9 through the approval process. A majority of changes to the QAPP are equipment and software application upgrades to new and current technology.

In 2022, there are no significant changes planned for the air monitoring network. Some notable activities that have occurred or are planned in 2022 are as follows:

- GRIC received approval for a seasonal ozone waiver from EPA for 2022 calendar year. GRIC will monitor ozone from April 1st through October 31st in 2022.
- GRIC will continue the QAPP approval process and work with EPA R9 until the QAPP (one document split into four volumes) is approved.
- GRIC received comments and recommendations from EPA R9 regarding the TSA conducted in March of 2021. GRIC will continue to work closely with the auditors and Region 9 Air Quality Analysis Office management staff to address all comments and recommendations from the TSA.
- GRIC will upgrade to new ESC 8872 data loggers and meteorological sensors at all monitoring sites.
- GRIC will submit letter to EPA R9 requesting a seasonal waiver for 2023 calendar year, requesting GRIC monitor ozone from April 1st through October 31st in 2023.

The GRIC air monitoring network and tools operated in 2021 meets the necessary requirements as mandated by Federal regulations. Except where otherwise noted, each monitor meets the

requirements of 40 CFR 58 Appendices A, B, C, D, and E, where applicable. This Annual Network Plan documents the details of the regulatory ambient air quality monitors.

1 INTRODUCTION

The Code of Federal Regulations (CFR) Title 40 Part 58.10 (40 CFR 58.10) requires an annual monitoring network plan to summarize the air quality surveillance system consisting of State and Local Air Monitoring Stations (SLAMS) and Special Purpose Monitors (SPM) operated under state and local authorities. The annual monitoring network plan must identify the purpose of each monitor and provide evidence that both the siting and the operation of each monitor meet the requirements in 40 CFR Part 58 Appendices A, C, D, and E below:

- Appendix A Quality Assurance Requirements for Monitors used in Evaluations of National Ambient Air Quality Standards
- Appendix C Ambient Air Quality Monitoring Methodology
- Appendix D Network Design Criteria for Ambient Air Quality Monitoring
- Appendix E Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring

This AMNRP meets the federal regulatory requirements set forth in 40 CFR 58.10 and Appendices A, C, D, and E.

The Gila River Indian Community (GRIC or Community) Department of Environmental Quality (DEQ) Air Quality Program (AQP) operates air quality monitors that record ambient concentrations of two criteria pollutants - particulate matter less than or equal to 10 microns (PM_{10}) and ozone (O_3). Criteria pollutants are those that the United States Environmental Protection Agency (EPA) has defined as a potential risk to health, and correspondingly defined a National Ambient Air Quality Standard (NAAQS). The NAAQS are intended to protect public health and welfare by setting limits on the allowable level of each pollutant in the ambient air. The other criteria pollutants with established NAAQS that are not monitored by the AQP are particulate matter less than or equal to 2.5 microns ($PM_{2.5}$), carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), and lead (Pb). GRIC does not monitor for these pollutants because they have been found, through discrete sampling and emission inventory, to be at background ambient air quality concentrations. Additionally, GRIC does not have major stationary pollution sources that emit these particular criteria pollutants that may affect the NAAQS within GRIC jurisdictions.

The GRIC air quality monitors are Tribal Monitors and are most closely related to SLAMS monitors. The United States Environmental Protection Agency (EPA) works closely with GRIC to adhere to the requirements for SLAMS networks with appropriate flexibility as stated in the Tribal Authority Rule (TAR).

The purpose of this document is to fulfill the requirements of 40 CFR 58.10, and has been prepared in accordance with *Annual Monitoring Network Plan* checklists and guidance documents provided by EPA. Therefore, this document contains the following sections:

- **Air Monitoring Network Design** – Describes the design requirements for an air monitoring network in accordance with Appendix D of 40 CFR 58.
- **GRIC Air Monitoring Network** – Describes the air monitoring network for the Community including monitor types, background information, summary of 2021 monitoring results, changes to the monitoring network in 2021, and proposed changes to the monitoring network.

- **Compliance Discussion** – Includes a discussion of compliance with 40 CFR 58, including a table of requirements for Network Review, minimum monitoring requirements, precision and accuracy certifications, data submittals, and audits.
- **Public Notice** – Includes information on public notices and community outreach for review and presentation of this document.
- **Appendices** – Contains the detailed monitoring site information and photographs, and a copy of the presentation that was prepared for the public outreach.

2 AIR MONITORING NETWORK DESIGN

2.1 Monitoring Objectives

Appendix D of 40 CFR 58 states that monitoring networks must be designed to meet three basic monitoring objectives:

1. Provide air pollution data to the general public in a timely manner;
2. Support compliance with ambient air quality standards and emissions strategy development; and
3. Support air pollution research studies.

Furthermore, Appendix D states that in order to support air quality management work indicated in the three basic objectives above, monitoring networks must be designed with a variety of the following types of monitoring sites:

- Highest Concentration – Sites to determine the highest concentration expected to occur in the area covered by the network;
- Population Exposure – Sites to determine representative concentrations in areas of high population density;
- Source Impacts – Sites to determine the impact on ambient pollution levels of significant sources or source categories;
- Background Concentrations – Sites to determine general background concentration levels;
- Regional Transport – Sites to determine the extent of regional pollutant transport among populated areas, and in support of secondary standards; and
- Welfare Impacts – Sites to determine the welfare-related impacts in more rural and remote areas (such as visibility impairment and effects on vegetation).

2.2 Spatial Scales

The goal in designing a monitoring network is to establish monitoring stations that will provide data to meet the above monitoring objectives. The physical siting of the air monitoring station must achieve a spatial scale of representativeness that is consistent with the monitoring site type, air pollutant to be measured, and the monitoring objective. The spatial scale results from the physical location of the site with respect to the pollutant sources and categories by estimating the size of the area surrounding the monitoring site that experiences uniform pollutant concentrations. The categories of spatial scale are:

- Micro Scale - Defines the concentrations in air volumes associated with area dimensions ranging from several meters up to about 100 meters.
- Middle Scale – Defines the concentration typical of areas up to several city blocks in size with dimensions ranging from about 100 meters to 0.5 kilometer.

- Neighborhood Scale – Defines concentrations within some extended area of the city that has relatively uniform land use with dimensions in the 0.5 to 4.0 kilometers range. The neighborhood and urban scales listed below have the potential to overlap in applications that concern secondarily formed or homogeneously distributed air pollutants.
- Urban Scale – Defines concentrations within an area of city-like dimensions, on the order of 4 to 50 kilometers. Within a city, the geographic placement of sources may result in there being no single site that can be said to represent air quality on an urban scale.
- Regional Scale – Defines usually a rural area of reasonably homogeneous geography without large sources, and extends from tens to hundreds of kilometers.

The appropriate spatial scale for each of the monitoring site types is shown in Table 2-1.

Table 2-1. Relationship Among Monitoring Site Types And Scales Of Representativeness.

Monitoring Objective	Appropriate Spatial Scale				
	Micro	**Middle**	**Neighborhood**	**Urban**	**Regional**
Highest concentration	X	X	X	X	
Population Exposure			X	X	
Source Impacts	X	X	X		
Background Concentrations			X	X	X
Regional Transport				X	X
Welfare Impacts				X	X

3 GILA RIVER INDIAN COMMUNITY AMBIENT AIR MONITORING NETWORK

3.1 General

There are currently three permanent ambient air monitoring stations within the Community – Sacaton, Casa Blanca, and St. Johns (see Figure 3-1). All three monitoring stations are Tribal Monitors, but follow the requirements of SLAMS networks with appropriate flexibility as stated in the TAR.

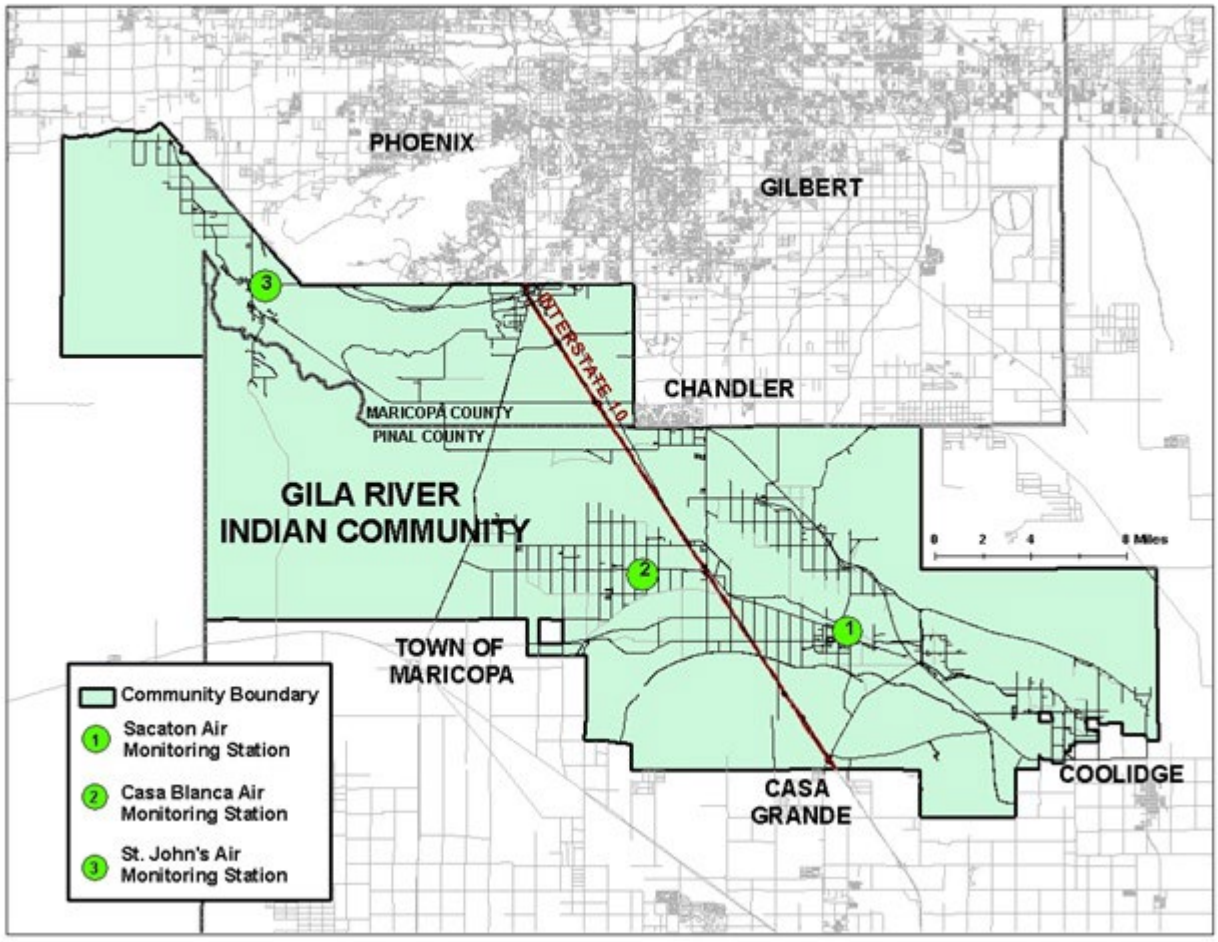


Figure 3-1: Map of Ambient Air Monitoring Stations on Gila River Indian Community

Table 3-1 lists the details regarding each monitoring site's GRIC abbreviation symbol and EPA's AQS identification number. Detailed site information is provided in Appendix A that includes photographs, site type, spatial scale, and population represented. In addition, Appendix B provides detailed monitoring technical specifications.

Table 3-1. GRIC Ambient Air Monitoring Sites for 2021

Name	GRIC Abbreviation	AQS ID
St. Johns	SJ	TT-614-7003 (Tribal Monitor)
Sacaton	Sac	TT-614-7001 (Tribal Monitor)
Casa Blanca	CB	TT-614-7004 (Tribal Monitor)

Table 3-2 lists these stations, the pollutants and meteorological parameters that are monitored at each location.

Table 3-2. Ambient Air Quality Parameters Monitored at Each Station

Parameter	Monitoring Station		
	St. Johns	Casa Blanca	Sacaton
Ozone	X		X
PM_{10} (TEOM)	X	X	X
Wind Speed	X	X	X
Wind Direction	X	X	X
Ambient Temperature	X	X	X
Ambient Barometric Pressure	X	X	X
Precipitation	X	X	X
Relative Humidity	X	X	X
Camera (Visibility)	X	X	X

Table Notes:
PM_{10} - Particulate Matter ≤ 10 microns
TEOM - Tapered Elemental Oscillating Microbalance. Continuous measuring monitor (1 hr averages).

Table 3-3 shows the NAAQS for pollutants that are currently monitored by GRIC, including ozone and PM_{10}. Additional pollutants for which EPA has established NAAQS and that are not currently monitored by GRIC include sulfur dioxide, nitrogen dioxide, carbon monoxide, $PM_{2.5}$, and lead. GRIC continues to not have significant concerns with these additional pollutants as described within the *Introduction* section of this document. EPA periodically reviews and revises these standards based on new public health and scientific information. These revisions often require changes to air monitoring networks and methodologies.

Table 3-3. National Ambient Air Quality Standards Monitored for Pollutants by GRIC

Pollutant	Primary/ Secondary	Averaging Time	Level	Form
Ozone	primary and secondary	8-hour	0.070 PPM *	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
PM_{10}	primary and secondary	24-hour	150 $\mu g/m^3$	Not to be exceeded more than once per year on average over 3 years

* October 1, 2015, the EPA promulgated revised primary and secondary eight-hour ozone NAAQS from 0.075 to 0.070 PPM.

The site types represented by each GRIC air quality monitor are shown in Table 3-4.

Table 3-4. Site Types for Each Monitoring Station

Site Type	Ozone		Particulate Matter ≤10 Microns (PM_{10})		
	St. Johns	Sacaton	St. Johns	Casa Blanca	Sacaton
Highest Concentration	X			X	
Population Exposure	X	X	X	X	X
Source Impacts				X	
Background Concentrations	X	X	X	X	X
Regional Transport	X	X	X	X	X
Welfare Impacts					

Detailed site information for each of the monitoring locations is presented in Appendix A.

3.2 Ozone Monitoring Network

Beginning in 2002, the Community started monitoring for ozone at two locations - one in Sacaton (District 3) and one in St Johns (District 6); both monitors operated on seasonal schedule from April through October.

The GRIC ozone monitoring network operated a year round schedule from January 1, 2016 through December 31, 2018. Both ozone monitors were reported as operational in AQS from January 1st to December 31st.

GRIC requested and received EPA-approval for a waiver to monitor ozone only on seasonal schedule (April – October) beginning April 1, 2019; GRIC continues to request annually and receive approval for a waiver which currently continues through 2022 calendar year.

3.2.1 Background

The following subsections provide background information on the two ozone monitoring locations. Additional detailed information for each monitor is provided in Appendix B.

3.2.1.1 Sacaton

Operated by the AQP since 2002, this site provides background and regional transport ozone monitoring on an urban scale. This site is located near the central GRIC government and business district of Sacaton, which includes four schools and a community hospital. It also provides a measurement of representative area ozone concentration for the community of Sacaton and surrounding areas. The monitor generally measures background levels of ozone during prevailing West or East winds. However, under the right wind conditions, the monitor can also detect ozone and ozone precursor transport from the Phoenix Metropolitan Area (PMA), north of the Community, in the form of elevated ozone readings. Measured concentrations at this site are often similar to those recorded at Pinal County's Casa Grande monitor (approximately 9 miles south of Sacaton).

3.2.1.2 St. Johns

Initially operated by the AQP at Vee Quiva Casino (AQS Site ID 7002) in 2002 and then relocated 2 miles south to Gila Crossing Community School Administrative Campus (AQS ID TT-614-7003) in September 2004. In July 2018, site was temporarily relocated to the Komatke Health Clinic as the Gila Crossing Community School Administrative Campus was re-constructed as the new Gila Crossing Community School (grades K-8th). The site was then moved permanently onto the new Gila Crossing Community School campus in August 2019. This site is located in District 6 on the southwest side of the South Mountain Range near the City of Phoenix and provides background and regional transport ozone monitoring on an urban scale. Ozone concentrations at this site exhibit strong diurnal fluctuations caused by oxides of nitrogen (NOx) and volatile organic compounds (VOC) from nearby neighboring jurisdictions in the City of Phoenix. The monitor generally measures background levels of ozone during prevailing West or East winds. However, under certain wind conditions, the monitor can also detect ozone and ozone precursor transport from the PMA, north and east of the monitor location, in the form of elevated ozone readings.

3.2.2 2021 Monitoring Results Summary

The 1-hour average ozone standard was revoked by the EPA on June 15, 2005, and has been replaced by the 8-hour average standard for compliance purposes. On March 12, 2008, the EPA lowered the eight-hour ozone NAAQS from 0.080 to 0.075 ppm.

Then again on October 1, 2015, the EPA lowered the eight-hour ozone NAAQS from 0.075 to 0.070 ppm. Compliance with the standard is determined by averaging the 4th highest of the daily maximum eight-hour average over a three-year period. This three-year average must be less than or equal to 0.070 ppm.

In 2021, there were two days where the daily maximum 8-hour ozone average exceeded the NAAQS (0.070 PPM standard) within the GRIC ozone network. The Sacaton site had no exceedance days, but there were two exceedance days at the St Johns site on 6/15/2021 and 6/29/2021. The 2021 fourth highest values for both sites did not exceed the NAAQS in 2021. Table 3-5 presents the four highest 8-hour average ozone readings for each monitor during the 2021 monitoring season (April – October).

The probable cause of exceedances were due to regional air quality events of smoke from wildfires in Arizona (Telegraph, Mescal, and Raphael fires), California, and Mexico. Preliminary analysis via National Oceanic and Atmospheric Administration (NOAA) satellite maps indicates that regional wildfire smoke plumes were over Maricopa County and Pinal County area during this time. Wildfire smoke includes ozone precursors which eventually contributes to ozone formation in the presence of sunlight and temperatures, resulting in higher ozone concentrations.

Table 3-5. 2021 8-Hour Average Ozone Summary

Site	Max (PPM) Date	2nd High (PPM) Date	3rd High (PPM) Date	4th High (PPM) Date	Number of Days >0.070
St Johns	0.076* 6/29/2021	0.072* 6/15/2021	0.069 6/11/2021	0.068 8/2/2021	2
Sacaton	0.070 7/28/2021	0.068 7/12/2021	0.067 7/1/2021	0.066 7/17/2021	0

* Data has been flagged as due to an exceptional event (wildfires in CA, MX, and AZ)

Through the end of the 2021 ozone monitoring season, GRIC continues to attain the 8-hour average NAAQS for ozone (the 8-hour average NAAQS for ozone is violated when the three-year average of the fourth highest values for each year is greater than 0.070 PPM); the EPA defines these as the Design Values. The fourth highest 8-hour average ozone reading for each of the past three years and the 3-year average is shown in Table 3-6. The statistical design value for the St. Johns site is 0.068 PPM and the design value for the Sacaton site is 0.067 PPM.

Table 3-6. Three-Year Average of 4th Highest 8-Hour Ozone through 2021

Site	2019 4th High (PPM)	2020 4th High (PPM)	2021 4th High (PPM)	3-Year Average of 4th High (PPM)
St Johns	0.066	0.072*	0.068	0.068
Sacaton	0.066	0.071*	0.066	0.067

* Includes data flagged as exceptional events

3.3 PM_{10} Particulate Monitoring Network

Beginning in 2002, the Community started monitoring for PM_{10} at one location (Casa Blanca) using a Federal Reference Method (FRM), filter-based, monitor operating on a 1-in-3 day schedule. In 2013, the Community began continuous monitoring methods for PM_{10} at all three monitoring stations (St. Johns, Casa Blanca, and Sacaton) using Federal Equivalent Method (FEM) Tapered Element Oscillating Microbalance (TEOM) monitors that provide hourly PM_{10} averages. In 2021, all three TEOM FEM monitors were reported as operational in AQS. There are no collocation requirements for EPA-approved PM_{10} FEM continuous monitors.

3.3.1 Background

The following subsections provide background information on the three PM_{10} monitoring locations. Additional detailed information for each monitor is provided in Appendix B of this document.

3.3.1.1 Casa Blanca

This site has been operated by the AQP since 2002. This monitoring site is a neighborhood scale and representative of particulate concentrations in District 5, Casa Blanca. The site consists of one TEOM monitor. Since there are no collocation requirements for EPA-approved PM_{10} FEM monitors, the two collocated FRM samplers (two identical monitors that sample separately) were discontinued on December 31, 2014.

This monitoring site was originally placed in one of the three most populated areas of the Community to measure source impacts from agricultural areas. Although located in a neighborhood of agricultural operations, it can be representative of other areas beyond the local jurisdictions. This monitoring station is located approximately 4 to 5 miles northeast of other PM_{10} sources (e.g., agricultural areas and dairy operations) that are outside of the Community's boundaries and control, and may be influenced by PM_{10} generated from those sources.

3.3.1.2 Sacaton and St. Johns

The Sacaton and St. Johns sites started reporting PM_{10} data to the AQS database beginning January 1, 2013. Both sites are currently set up to monitor PM_{10} concentrations using continuous TEOM monitors. These two sites have been approved for monitoring and reporting as established within the GRIC Quality Assurance Project Plan (QAPP).

3.3.2 2021 PM_{10} Monitoring Results Summary

The 24-hour Primary standard for PM_{10} is 150 $\mu g/m^3$ (155 $\mu g/m^3$ with mathematical rounding). The interpretation of the standard, Appendix K to Part 50, includes rounding to the nearest 10 $\mu g/m^3$ (*i.e.*, values ending in 5 or greater are to be rounded up). This standard is violated when the expected number of exceedances at a monitor is more than one per year on average over three years. A formula, as detailed in 40 CFR 50, is used to determine the expected number of exceedances. The formula takes into account the number of days sampling occurred and the number of valid samples collected. A 3-year average of these estimated days is then used to determine compliance.

In 2021, there were seven exceedances of the 24-hour primary standard (NAAQS) for PM_{10}. The Sacaton and Casa Blanca monitors exceeded the standard on 10/12/2021, only the Casa Blanca monitor exceeded on 3/3/2021 and 10/11/2021, and only the St. Johns monitor exceeded on 7/9/2021, 7/16/2021 and 8/28/2021. GRIC has flagged all of these exceedances as *exceptional events* (see Definitions of Terms). In accordance with the EPA's exceptional events policy, once approved, these data are not used in determining compliance with the NAAQS. Table 3-7 presents the summary of the 24-hour average PM_{10} readings for each monitor in 2021.

Exceedances of the 24-hour PM_{10} NAAQS at the GRIC monitors also occurred in 2019 and 2020

which also included some flagged data due to Exceptional Events by GRIC. As of the date of this report, the EPA has not issued an official concurrence with GRIC's 2019 and 2020 flagged data. Therefore, a determination of compliance with the 24-hour PM_{10} NAAQS cannot be made at this time.

Table 3-7. 2021 24-Hour Average PM_{10} Summary

Site Name (Monitor Type)	24-hr Average Max ($\mu g/m^3$)	24-hr Average 2nd High ($\mu g/m^3$)	Number of 24-hr NAAQS Exceedances	Estimated Exceedances (Including Exceptional Events requested)	Annual Average ($\mu g/m^3$)	No. of Exceptional Events	No. of valid days / days possible
St Johns (TEOM)	223* 7/16/2021	196 8/28/2021	3*	3*	28.4†	3*	362 / 365
Sacaton (TEOM)	285* 10/12/2021	108 4/1/2021	1*	1*	31.8†	1*	363 / 365
Casa Blanca (TEOM-POC3)	259* 10/12/2021	165* 3/3/2021	3*	3*	38.1†	2*	365 / 365

* Data has been flagged by GRIC as an Exceptional Event; RJ flag for high winds.
†The annual average values include exceptional events data that has not been concurred by EPA.

3.4 Meteorological Network

GRIC collects meteorological data at all three air monitoring sites to support the analysis of ambient air quality data and to provide support for exceptional event reporting.

3.5 Changes to the Network in 2021

No changes were made to the monitoring network design or instrument siting in 2021.

3.6 Proposed Network Changes and Improvements

There are no planned changes to siting of the GRIC Air Monitoring Network in 2022. The GRIC Air Monitoring Network is planning or has made the following changes to the air monitoring network in 2022:

- The AQP is currently working towards a data acquisition system upgrade from ESC 8832 data loggers to ESC 8872 system. During the transition, the AQP will also change meteorological sensors from separate sensors to the all-in-one AIO2 sensor (except for precipitation).
- The GRIC ozone monitors will continue on a seasonal schedule from April 1, 2022 through October 31, 2022. The AQP will continue to request for seasonal ozone monitoring for 2022 calendar year; a formal request with data analysis will be submitted to EPA in September 2022.

4 COMPLIANCE DISCUSSION

In accordance with 40 CFR 58.10(a)(1), the following sections provide information on compliance with the requirements of Appendices A, C, D, and E of 40 CFR 58. A cross-reference of the requirements of Appendices A, C, D, and E of 40 CFR 58 and the section(s) of this report that address those requirements is included in tables provided in Appendix B of this document for all three GRIC air monitoring sites.

4.1 Minimum Monitoring Requirements

Tables D-2 and D-4 in Appendix D of 40 CFR Part 58 define minimum monitoring requirements for ozone and PM_{10}, respectively. Tables D-2 and D-4 are reproduced as Tables 4-1 and 4-2, respectively, below. The minimum monitoring requirements are based on the population of the Metropolitan Statistical Area (MSA) and the design value for each NAAQS. MSA must contain an urbanized area of 50,000 or more populations.

Table 4-1. Ozone Monitoring Requirements for SLAMS (Number of Stations per MSA)

MSA Population	Most recent 3-year design value ≥85% NAAQS	Most recent 3-year design value <85% NAAQS
>10 million	4	2
4-10 million	3	1
350,000-<4 million	2	1
50,000-<350,000	1	0

Table 4-2. PM_{10} Monitoring Requirements for SLAMS (Number of Stations per MSA)

MSA Population	High concentration Exceeds NAAQS by 20% or more (>180 µg/m³)	Medium concentration >80% of NAAQS (>120 µg/m³)	Low concentration < 80% of NAAQS (<120 µg/m³)
>1,000,000	6-10	4-8	2-4
500,000-1,000,000	4-8	2-4	1-2
250,000-500,000	3-4	1-2	0-1
100,000-250,000	1-2	0-1	0

It is unclear in Appendix D 40 CFR 58 how MSAs and the minimum monitoring requirements in Tables D-2 and D-4 (Tables 4-1 and 4-2) apply to sovereign tribes. Although the areas within the Community are *geographically* part of the Phoenix-Mesa-Scottsdale MSA, for purposes of the administration of Section 107 of the Clean Air Act (42 U.S.C. § 7407), except where a specific designation has been otherwise made by the Administrator, the air quality control region for the Community is all land within the exterior boundaries of the Community. Therefore, for the purposes of this document, the AQP is using the data in Tables D-2 and D-4 as reference only.

The design value is a calculated value based upon the highest recorded concentration at a site in the attainment or nonattainment area. The process for computing the design value for each criteria pollutant is described in the appendices of 40 CFR Part 50. For the purpose of this document, the

design values listed are the highest calculated concentrations recorded in the Community.

The minimum monitoring requirements of 40 CFR 58 Appendix D for the ozone and PM_{10} monitors within the Community are presented in Tables 4-3 and 4-4, respectively. The GRIC Air Quality Management Plan (AQMP) does not require a minimum number of monitors for the Community.

Table 4-3. Minimum Monitoring Requirements[1] for GRIC Ozone Monitors, 2019-2021

MSA	Monitor Site: County	Population[2] (GRIC Census)	8-hour Design Value for 2019-2021 (ppm)	Site (AQS ID)	Minimum Monitors Required	Number of Active Monitors	Monitors Needed
NA[1]	St. Johns: Maricopa	13,145	0.068	St. Johns (TT-614-7003)	0[A]	2	0
	Sacaton: Pinal		0.067	Sacaton (TT-614-7001)			

Table Notes:

1. It is unclear in Appendix D 40 CFR 58 how MSAs apply to Tribal agencies. Although the areas within the Community are *geographically* part of the Phoenix-Mesa-Scottsdale MSA, for purposes of the administration of Section 107 of the Clean Air Act (42 U.S.C. § 7407), the air quality control region for the Community is all land within the exterior boundaries of the Community. Therefore, for the purposes of this document, the MSA is not applicable to GRIC.
2. Number of members who reside within GRIC, 5/31/2022 (GRIC Enrollment/Census Department).

A. A 3-year design value greater than 0.0595 would require one monitor for a population between 50,000 and 350,000 (smallest population group in Table 4-2). Since the GRIC population is below the lowest population range in Table 4-2 and Tribal requirements are unclear, the minimum monitoring requirements was assumed to be zero. For comparison, the population of the Phoenix-Mesa-Scottsdale MSA in 2017 estimate was 4,737,270 residents (Census Bureau), which would require a minimum of 3 monitors.

Table 4-4. Minimum Monitoring Requirements[1] for GRIC PM_{10} Monitors, 2019-2021

MSA	Monitor Site: County	Population[2] (GRIC Census)	GRIC Max Concentration ($\mu g/m^3$)	Site (AQS ID)	Minimum Monitors Required	Number of Active Monitors	Monitors Needed
NA[1]	St. Johns: Maricopa	13,145	285[A]	St Johns (TT-614-7003 POC1)	0[C]	3	0
	Sacaton: Pinal			Sacaton (TT-614-7001 POC1)			
	Casa Blanca: Pinal		147[B]	Casa Blanca (TT-614-7004 POC3)			

Table Notes:

1. It is unclear in Appendix D 40 CFR 58 how MSAs apply to Tribal agencies. Although the areas within the Community are *geographically* part of the Phoenix-Mesa-Scottsdale MSA, for purposes of the administration of Section 107 of the Clean Air Act (42 U.S.C. § 7407), the air quality control region for the Community is all land within the exterior boundaries of the Community. Therefore, for the purposes of this document, the MSA is not applicable to GRIC.
2. Number of members who reside within GRIC, 5/31/2022 (GRIC Enrollment/Census Department).

A. Max concentration includes data flagged as exceptional events. Sacaton site, 10/12/2021.

B. Max concentration excludes data flagged as exceptional events. Casa Blanca site, 8/11/2020.

C. A maximum concentration greater than 180 $\mu g/m^3$ would require 1-2 monitors for a population between 100,000 and 250,000 (smallest population group in Table 4-2). A maximum concentration between 120 and 180 $\mu g/m^3$ would require 0-1 monitors for a population between 100,000 and 250,000. Since the GRIC population is below the lowest population range in Table 4-2 and Tribal requirements are unclear, the minimum monitoring requirements was assumed to be zero. For comparison, the estimated population of the Phoenix-Mesa-Scottsdale MSA in 2017 was 4,737,270 (Census Bureau), which would require a minimum of 6-10 monitors for maximum concentrations >180 $\mu g/m^3$ and 4-8 monitors for maximum concentrations between 120 and 180 $\mu g/m^3$.

Based on the information contained in Tables 4-3 and 4-4, the GRIC monitoring network meets the

minimum monitoring requirements for all criteria pollutants measured (i.e., ozone and PM_{10}) as established in 40 CFR 58 Appendix D, Tables D-2 and D-4.

4.2 Data Submission Requirements

Federal regulations (Appendix A of 40 CFR 58 and 40 CFR 58.15) require air monitoring organizations to submit precision and accuracy data for the data reported to the federal database. The air monitoring precision and accuracy data for the GRIC monitors are submitted to the EPA AQS database on a quarterly basis and are up to date as of the publication of this report.

Federal regulations (40 CFR 58.15) also require the air monitoring organization to annually submit a letter certifying that data has been submitted for that year to the EPA AQS database and that the data accurately represents the air quality in the Community. The AQP certified and submitted the 2021 air monitoring data for the Community to EPA Region 9, Air Quality Analysis Office on April 29, 2021 via Email.

4.3 Air Quality Data

All of the GRIC ambient air monitoring stations are registered with the EPA and regularly report NAAQS criteria pollutant data to the EPA's AQS database. The data generated at these stations are public information and are available in various formats from the respective agencies. Table 4-5 below lists some popular sources for air quality data.

Table 4-5. Sources of Ambient Air Quality Data

Agency	Address For Data Requests	Email / Internet address	Data Available
GRIC DEQ AQP	P.O. Box 97 Sacaton, AZ 85147 Attn: GRIC DEQ Director	Ryan.Eberle@gric.nsn.us	GRIC Air Monitoring Data
United States Environmental Protection Agency	Ariel Rios Building 1200 Pennsylvania Avenue, N.W. Washington, DC 20460	www.epa.gov; www.epa.gov/outdoor-air-quality-data; https://aqs.epa.gov/aqsweb/documents/data_mart_welcome.html	National Air Monitoring Data, including GRIC data

4.4 Audits

The AQP performed audits of the monitoring equipment in 2021. The performance audit dates for the ozone monitors are shown in Table 4-6 and the semi-annual audits dates for the continuous TEOM PM_{10} monitors are shown in Table 4-7. In addition, this information is included in Appendix B that provides detailed information of air monitoring specifications.

The GRIC network also participates in the National Performance Audit Program that is conducted by the EPA. An NPAP was conducted on 8/25/2021 at the Sacaton site for ozone and the ozone monitor passed all audit points.

Table 4-6. Performance Audit Dates for GRIC Ozone Monitors

Site	AQS ID	Parameter	2021 Audit Dates
Sacaton	TT-614-7001 (Tribal Monitor)	Ozone (44201)	4/26, 7/8, and 10/22
St Johns	TT-614-7003 (Tribal Monitor)	Ozone (44201)	4/27, 7/8, and 10/25

Table 4-7. Semi-Annual Flow Rate Audit Dates for GRIC Continuous TEOM PM_{10} Monitor

Site	AQS ID	Parameter	2021 Audit Dates
Sacaton (TEOM)	TT-614-7001 (Tribal Monitor)	PM_{10} (81102)	4/26, 5/7, and 10/22
St. Johns (TEOM)	TT-614-7003 (Tribal Monitor)	PM_{10} (81102)	4/27, 5/7, and 10/25
Casa Blanca (TEOM)	TT-614-7004 POC3 (Tribal Monitor)	PM_{10} (81102)	4/27, 5/7, and 10/25

5 PUBLIC NOTICE

In accordance with 40 CFR 58.10, the annual monitoring network plan must be made available for public inspection (website, hardcopy posting in libraries and public offices, and/or newspaper listing) for at least 30 days prior to submission to EPA. If an opportunity for public comment had been provided, comments received must be included in the annual network plan submission.

The Gila River Indian Community DEQ presented a summary of this Network Review during District meetings beginning on May 2, 2022. In an effort to notify the public of the Network Review, the AQP published information through the following outlets:

- Public Notice posted on the GRIC DEQ website (www.gricdeq.org/index.php/education--outreach/public-notices).
- Public Notice posted on www.mygilariver.com and the GRIC Government Intranet.

A copy of the public announcement and handouts were posted on various Community websites and comments and questions received are included in Appendix D.

5.1 Public Meeting

The AQP provided a copy of this document to the Community at accessible District meetings and via DEQ website due to complexities of the public health concerns during the coronavirus pandemic. The comments and questions received are included in Appendix D-3.

Appendix A

2021 AIR MONITORING DATA BY SITE

(Site information includes: photographs, site type and spatial scale, and population represented.)

- St. Johns
- Casa Blanca
- Sacaton

St. Johns (SJ), TT-614-7003 (Tribal Monitor)

Location: 4665 W. Pecos Rd, Laveen Village, AZ 85339

Spatial Scale: Urban (O_3) and Neighborhood (PM_{10})

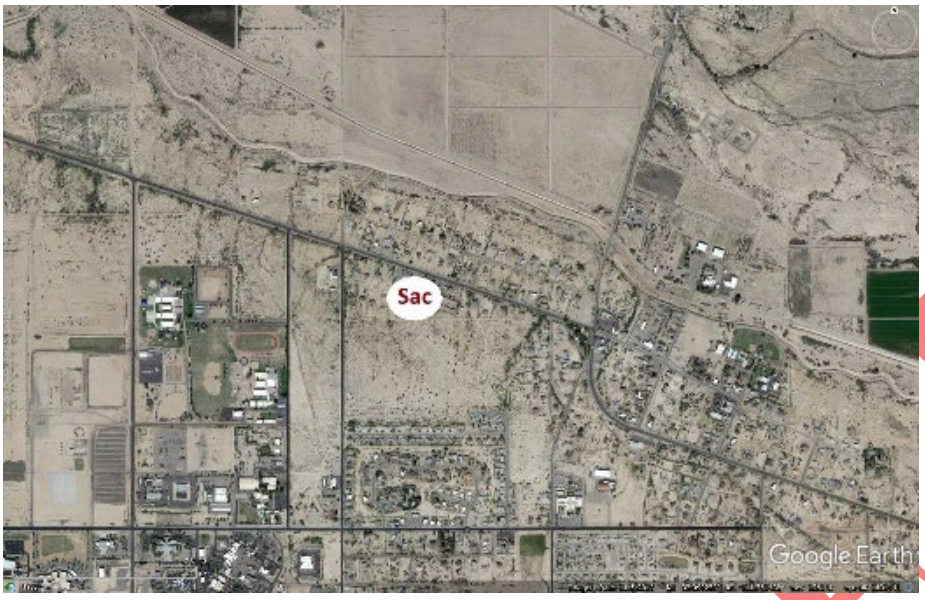
Monitoring Type: Population Exposure, Highest Concentration (O_3)

Site Description: This site has been operational since 2003. This site is located on the Gila Crossing Community School campus. This Tribal Monitoring location monitors for ozone and PM_{10}. The spatial scale for the St. Johns site is *Neighborhood* for PM_{10} and *Urban Scale* for ozone. It is located in a residential area. This site operates one gaseous ozone analyzer and one continuous PM_{10} monitor that are both FEM instruments. Meteorological monitors operating at this site include: ambient temperature, barometric pressure, wind speed/direction, relative humidity, and precipitation. This site also includes two digital cameras that take 10 minute still images.

Pollutant	Condition	2019	2020	2021
O_3	Max. 8-hr O_3 Average (PPM)	0.074	0.081	0.076
	O_3 # Daily Exceedances > 0.070 PPM	2	5	2
	O_3 3-year Average of 4th Highest (PPM)	0.066	0.068	0.068
PM_{10}	Max. 24-hr PM_{10} Average ($\mu g/m^3$)	134	195*	223*
	Number of exceedances 24-hr PM_{10}	0	1†	3†
	Annual PM_{10} Average ($\mu g/m^3$)	25.3	27.8ǂ	28.4ǂ

* Indicates an exceedance of the NAAQS
† Indicates exceptional events concurrence requested at this site and no Regional EPA assessment to date.
ǂ The annual average values include exceptional events data that has not been concurred by EPA.

Sacaton (Sac), TT-614-7001 (Tribal Monitor)



Location: 291 W. Casa Blanca Rd., Sacaton, AZ 85147

Spatial Scale: Urban (O_3) and Neighborhood (PM_{10})

Monitoring Type: Population Exposure

Site Description: This site has been operational since 2002. This Tribal Monitoring location monitors for Ozone and PM_{10}. The spatial scale for the Sacaton site is *Neighborhood* for PM_{10} and *Urban Scale* for Ozone. It is located in a community residential area. This site operates one gaseous ozone analyzer and one continuous PM_{10} monitor that are both FEM instruments. Meteorological monitors operating at this site include: ambient temperature, barometric pressure, wind speed/direction, relative humidity, and precipitation. This site also includes two digital cameras that take 10 minute still images.

Pollutant	Condition	2019	2020	2021
O_3	Max. 8-hr O_3 Average (PPM)	0.080	0.078	0.070
	O_3 # Daily Exceedances > 0.070 PPM	1	4	0
	O_3 3-year Average of 4th Highest (PPM)	0.066	0.068	0.067
PM_{10}	Max. 24-hr PM_{10} Average ($\mu g/m^3$)	128	200*	285*
	Number of exceedances 24-hr PM_{10}	0	1†	1†
	Annual PM_{10} Average ($\mu g/m^3$)	27.1	31.7ǂ	31.8ǂ

* Indicates an exceedance of the NAAQS

† Indicates exceptional events concurrence requested at this site and no Regional EPA assessment to date.

ǂ The annual average values include exceptional events data that has not been concurred by EPA.

Casa Blanca (CB), TT-614-7004 (Tribal Monitor)

Location: 3455 W. Casa Blanca Road Bapchule, AZ 85121

Spatial Scale: Neighborhood

Monitoring Type: Population Exposure, Highest concentration (PM_{10})

Site Description: This site has been operational since 2002. This Tribal Monitoring location monitors for PM_{10}. The spatial scale for the Casa Blanca site is *Neighborhood*. It is located in a residential area and within a community elementary school property. This site operates one continuous PM_{10} monitor that is a FEM instrument. Meteorological monitors operating at this site include: ambient temperature, barometric pressure, wind speed/direction, relative humidity, and precipitation. In addition, this site operates two digital cameras that take images every 10 minutes.

Pollutant	Condition	2019	2020	2021
PM_{10}	Max. 24-hr PM_{10} Average ($\mu g/m^3$)	255*	221*	259*
	Number of exceedances 24-hr PM_{10}	4†	2†	3†
	Annual PM_{10} Average ($\mu g/m^3$)	40.9ǂ	43.5ǂ	38.1ǂ

* Indicates an exceedance of the NAAQS

† Indicates exceptional events concurrence requested at this site and no Regional EPA assessment to date.

ǂ The annual average values include exceptional events data that has not been concurred by EPA.

Appendix B

EPA-REQUIRED SITE METADATA

Detailed information includes: compliance information regarding air monitoring technical specifications found in 40 CFR §58.10 and Appendices A, C, D, and E (QA, monitoring methods, network design, and monitor siting)

Site Schematic Descriptions

Analysis Method (filter samples only) refers to the method used to process and analyze PM and Pb filter samples.

Distance from Supporting Structure refers to those sample probes that are attached to a supporting structure, such as the side of a building. In most cases the sample probe is located above the supporting structure, in which case the entry will show as "N/A", aka not applicable.

Distance from Obstructions refers to those obstructions, both on the roof and off the roof, which are located higher than the probe. In the case of a nearby obstruction being higher than the probe, details of its location will be listed in the entry. If there are no obstructions higher than the probe, then the entry will be N/A.

Date of Annual Performance Evaluation refers to the last 2021 QA audit on the gaseous analyzers. These evaluations are performed by the GRIC's QA personnel. Twenty-five percent of the monitors operating within each gaseous pollutant's network are evaluated quarterly; thereby, each monitor is evaluated at least once per year as per 40 CFR Part 58, Appendix A, §3.2.2.

Date of Semi-Annual Flow Rate Audit refers to the last 2021 QA audit on PM monitors as per 40 CFR Part 58, Appendix A, §§ 3.2.4 and 3.3.4, respectively. These evaluations are performed by the GRIC's QA personnel at least once every six months.

Probe Sample Line Material refers to the material makeup of the intake sample lines.

Pollutant Sample Residence Time refers to the amount of time that it takes a sample of air to travel between the probe inlet and the bulkhead of the analyzer. This residence time is calculated by a formula that is based on the sample line's diameter and length, and the flow rate of the air intake. It is important to keep residence time low to prevent gases in the air sample from reacting with the sample line material or with other gases in the sample; i.e., O_3 could react with nitrogen oxides in the sample if the residence time exceeds 20 seconds.

St. Johns
GRIC ID: SJ
AQS ID: TT-614-7003 (Tribal Monitor Code)
Address: 4665 W. Pecos Rd., Laveen Village, AZ 85339
Coordinates: N 33° 17' 25.05", W 112° 09' 37.74"; (elevation 1057 ft)

- General Information		
Pollutant (parameter code)	O_3 (44201)	PM_{10} (81102)
Parameter Occurrence Code (POC)	1	1
Sampling Schedule	Continuous	Continuous
Analysis Method (filters only)	N/A	N/A
Any Proposal to Remove or Move Monitor?	No	No
Is site suitable for comparison to $PM_{2.5}$ NAAQS per Part 58.30?	N/A	N/A
-Appendix A Requirements		
# Precision Checks Performed Annually	16	26
# Accuracy Audits Performed Annually & Date of Last 2021 Check on Gaseous Analyzers & Last Two 2021 Checks for PM	3, 10/25/2021	3, 5/7 & 10/25/2021
All Precision/Accuracy Reports Submitted to AQS?	Yes	Yes
Annual Data Certification Submitted?	April 29, 2022	April 29, 2022
Frequency of One-Point QC Check	Bi-Weekly	N/A
Frequency of Flow Rate Verification	N/A	Bi-Weekly
-Appendix C Requirements		
Sampler Make & Model (method code)	TAPI T400 (087)	TEOM 1405 (079)
Date Established	03/24/2003	01/01/2013
Monitor Type	Tribal	Tribal
Method (FRM, FEM, ARM)	FEM	FEM
-Appendix D Requirements		
Site Type	Population Exposure	Populations Exposure
Basic Monitoring Objective	NAAQS Comparison	NAAQS Comparison
Monitoring Scale	Urban	Neighborhood
Sampling Season	April - October	January – December
Network Meets Minimum Number of Monitors Required?	Yes	Yes
-Appendix E Requirements		
Distance between collocated samplers	N/A	N/A
Probe Inlet Height	4.7 meters	4.7 meters
Airflow Arc	360 degree	360 Degree
Probe Sample Line Material	Teflon	NA
Pollutant Sample Residence Time	2.5 seconds	NA
Distance from Supporting Structure	NA	NA
Distance from Obstructions	43 meters (building, below probe)	43 meters (building, below probe)
Distance to Furnace Flue	None	None
Spacing from Trees	None	None
Nearest Major Roadway	Pecos Road	Pecos Road
Distance and Direction to Road	17 meters, North	17 meters, North
Traffic Count (ADT)	1440 (2009)	1440 (2009)
Groundcover	Pavement and pea pebble landscape	Pavement and pea pebble landscape

Sacaton
GRIC ID: Sac
AQS ID: TT-614-7001 (Tribal Monitor Code)
Address: 291 W. Casa Blanca Rd., Sacaton, AZ 85147
Coordinates: N 33° 04' 53.82", W 111° 45' 08.02"; (elevation 1289 ft)

- General Information		
Pollutant (parameter code)	O_3 (44201)	PM_{10} (81102)
Parameter Occurrence Code (POC)	1	1
Sampling Schedule	Continuous	Continuous
Analysis Method (filters only)	N/A	N/A
Any Proposal to Remove or Move Monitor?	No	No
Is site suitable for comparison to $PM_{2.5}$ NAAQS?	N/A	N/A
-Appendix A Requirements		
# Precision Checks Performed Annually	17	27
# Accuracy Audits Performed Annually& Date of Last 2021 Check on Gaseous Analyzers & Last Two 2021 Checks for PM	3, 10/22/2021	3, 5/7/2021 & 10/22/2021
All Precision/Accuracy Reports Submitted to AQS?	Yes	Yes
Annual Data Certification Submitted?	April 29, 2022	April 29, 2022
Frequency of One-Point QC Check	Bi-Weekly	N/A
Frequency of Flow Rate Verification	N/A	Bi-Weekly
-Appendix C Requirements		
Sampler Make & Model (method code)	TAPI T400 (087)	TEOM 1405 (079)
Date Established	07/01/2002	01/01/2013
Monitor Type	Tribal	Tribal
Method (FRM, FEM, ARM)	FEM	FEM
-Appendix D Requirements		
Site Type	Population Exposure	Population Exposure
Basic Monitoring Objective	NAAQS Comparison	NAAQS Comparison
Monitoring Scale	Urban	Neighborhood
Sampling Season	April – October	January – December
Network Meets Minimum Number of Monitors Required?	Yes	Yes
-Appendix E Requirements		
Distance between collocated samplers	N/A	N/A
Probe Inlet Height	4.6 meters	4.7 meters
Airflow Arc	360 degree	360 Degree
Probe Sample Line Material	Teflon	NA
Pollutant Sample Residence Time	2.54 seconds	NA
Distance from Supporting Structure	NA	NA
Distance from Obstructions	17 meters (tree to NE, 2 meters above probe)	17 meters (tree to NE, 2 meters above probe)
Distance to Furnace Flue	None	None
Spacing from Trees	17 meters	17 meters
Nearest Major Roadway	Casa Blanca Rd	Casa Blanca Rd
Distance and Direction to Road	153 meters, North	153 meters, North
Traffic Count (ADT)	2,108 (daily average 2008)	2,108 (daily average 2008)
Groundcover	Gravel and natural soil	Gravel and natural soil

Casa Blanca
GRIC ID: CB
AQS ID: TT-614-7004 (Tribal Monitor Code)
Address: Casa Blanca/ Preschool Road, Bapchule, AZ 85221
Coordinates: N 33° 07' 03.14", W 111° 53' 08.93"; (elevation 1209 ft)

- General Information	
Pollutant (parameter code)	PM_{10} (81102)
Parameter Occurrence Code (POC)	3
Sampling Schedule	Continuous
Analysis Method (filters only)	N/A
Any Proposal to Remove or Move Monitor?	No
Is site suitable for comparison to $PM_{2.5}$ NAAQS per Part 58.30?	N/A
-Appendix A Requirements	
# Precision Checks Performed Annually	27
# Accuracy Audits Performed Annually& Date of Last Two 2021 Checks for PM	3, 5/7 & 10/25/2021
All Precision/Accuracy Reports Submitted to AQS?	Yes
Annual Data Certification Submitted?	April 29, 2022
Frequency of One-Point QC Check	N/A
Frequency of Flow Rate Verification	Bi-Weekly
-Appendix C Requirements	
Sampler Make & Model (method code)	TEOM 1405 (079)
Date Established	July 1, 2002
Monitor Type	Tribal
Method (FRM, FEM, ARM)	FEM
-Appendix D Requirements	
Site Type	Population Exposure
Basic Monitoring Objective	NAAQS Comparison
Monitoring Scale	Neighborhood
Sampling Season	January - December
Network Meets Minimum Number of Monitors Required?	Yes
-Appendix E Requirements	
Distance between collocated samplers	N/A
Probe Inlet Height	4.67 meters
Airflow Arc	360 Degree
Probe Sample Line Material	NA
Pollutant Sample Residence Time	NA
Distance from Supporting Structure	NA
Distance from Obstructions	20 meters (canopy/ shade to southeast, 2 meters above probe)
Distance to Furnace Flue	NA
Spacing from Trees	8 meters (tree to East, 2 meters above probe)
Nearest Major Roadway	Casa Blanca Road
Distance and Direction to Road	21 meters, to north
Traffic Count (ADT)	2,400 (daily average 2008)
Groundcover	gravel

Appendix C

EPA Approvals

- EPA Letter of Approval for GRIC's 2020 Air Monitoring Network Review and 2021 Plan, includes:
  - EPA Response / Approval Cover Letter dated October 29, 2021.
  - 2020 Annual Monitoring Network Plan Checklist for GRIC Performing Regulatory Monitoring (Not attached).
- Approval of O_3 Seasonal Waiver for St. Johns and Sacaton O_3 Monitors dated January 18, 2022.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

October 29, 2021

Ryan Eberle
Air Quality Program Manager
Department of Environmental Quality/Air Quality Program
Gila River Indian Community
Post Office Box 97
Sacaton, Arizona 85147

Dear Manager Eberle:

Thank you for your submission of the Gila River Indian Community (GRIC) *2020 Ambient Air Monitoring Network Review and 2020 Plan* on June 29, 2021. We have reviewed the submitted document based on the requirements set forth in 40 CFR Part 58. Based on the information provided in the plan, the U.S. Environmental Protection Agency (EPA) approves all portions of the network plan except those specifically identified below.

Please note that we cannot approve portions of the annual network plan for which the information in the plan is insufficient to judge whether the requirement has been met, or for which the information provided does not meet the requirements as specified in 40 CFR 58.10 and the associated appendices.

EPA Region 9 also cannot approve portions of the plan for which the EPA Administrator has not delegated approval authority to the regional offices. Enclosure A (Annual Monitoring Network Plan Checklist for Tribes Performing Regulatory Monitoring) is the checklist EPA used to review your plan for items that are required to be included in the annual network plan along with our assessment of whether the plan submitted by your agency addresses those requirements. Items highlighted in yellow are those EPA Region 9 is not acting on, as we either lack the authority to approve the specific item, or we have determined that a requirement is either not met or information in the plan is insufficient to judge whether the requirement has been met. Items highlighted in green in Enclosure A require attention to improve next year's plan.

All comments conveyed via this letter and enclosures should be addressed prior to submittal of next year's annual monitoring network plan to EPA. If you have any question s regarding this letter or the enclosed comments, please feel free to contact me at (415) 947-4134 or Shaye Hong at (415) 947-4104.

Sincerely,

GWEN YOSHIMURA Digitally signed by GWEN YOSHIMURA
Date: 2021.10.29 16:46:19 -07'00'

Gwen Yoshimura
Manager, Air Quality Analysis Office

Enclosure:
A. Annual Monitoring Network Plan Checklist for Tribes Performing Regulatory Monitoring

cc (via email): Leroy Williams, GRIC

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

January 18, 2022

Mr. Ryan Eberle
Air Quality Program Manager
Department of Environmental Quality/ Air Quality Program
Gila River Indian Community
Post Office Box 97
Sacaton, Arizona 85147

Dear Manager Eberle:

This letter provides the U.S. Environmental Protection Agency's (EPA) review and approval for the Gila River Indian Community's (GRIC) waiver request for an ozone (O_3) monitoring season deviation to suspend operation of the tribal O_3 air monitors at the St Johns site (Air Quality System (AQS) ID: 04-013-7003) and Sacaton site (AQS ID: 04-021-7001) from November 1, 2021 through March 31, 2022. A request for EPA approval of this O_3 monitoring season deviation was submitted to EPA on September 28, 2021. Per 40 CFR 58, Appendix D §4.1(i), monitoring agencies must have O_3 monitoring season deviations approved by EPA. If approved, the season deviations must be documented in the annual monitoring network plan and accurately reflected in EPA's AQS database. Please note that an updated request including 2021 data will be required for future O_3 monitoring season waiver approvals after March 31, 2022.

GRIC's past six years of network data from 2015-2020 show a low probability that the St Johns and Sacaton sites would measure an exceedance of the 2015 8-hour O_3 National Ambient Air Quality Standard (NAAQS) during the winter months of November-March. A comparison of data from the GRIC sites in 2015-2020 with representative sites in Maricopa and Pinal counties that operate year-round supports the conclusion of low probability of exceedances of the 2015 8-hour O_3 NAAQS during these winter months. No exceedances of the 2015 8-hr O_3 NAAQS during the months of November through March were measured at the St Johns, Sacaton, and representative sites over the past 6 years. Review of preliminary 2021 data is consistent with this finding. EPA also notes that there are logistical issues; during the off-season months, GRIC's ability to perform monitoring equipment and network maintenance is minimized due to limited air monitoring staff availability. Therefore, EPA approves the waiver for an O_3 monitoring season of April-October for calendar year 2022 for GRIC's St Johns and Sacaton O_3 monitors. Please include this letter and the relevant monitor and site information in the next GRIC annual monitoring network plan.

If you have any questions regarding this letter, please feel free to contact me at (415) 947-4134 or Shaye Hong of my staff at (415) 947-4104.

Sincerely,

GWEN YOSHIMURA

Digitally signed by GWEN YOSHIMURA
Date: 2022.01.18 08:17:17 -08'00'

Gwen Yoshimura
Manager, Air Quality Analysis Office

cc (via email): Leroy Williams, GRIC Department of Environmental Quality (DEQ)
Willard Antone II, GRIC DEQ

Appendix D

Public Notice and Comment Information

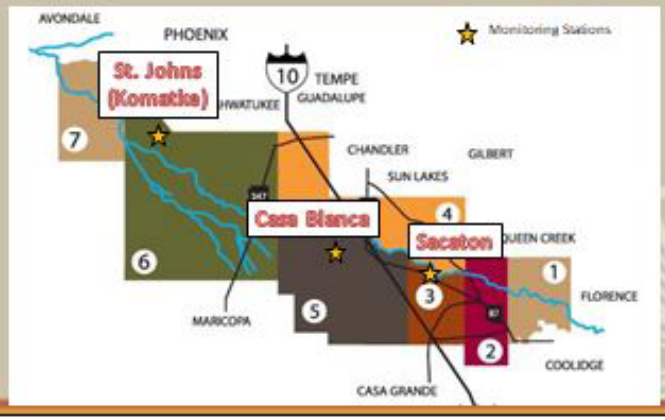
1. Figure D-1. Public Meeting PowerPoint Presentation Slides and Handouts (*5 pages*)
2. Figure D-2. Public Meeting Handout (*3 page FAQ Sheet*).
3. Figure D-3. Public comments and questions received.

Figure D-1. Public Meeting PowerPoint Presentation Slides and Handouts (*5 pages*):

GILA RIVER INDIAN COMMUNITY
DEPARTMENT OF
ENVIRONMENTAL QUALITY

2021 GRIC Air Monitoring Network Review

GRIC Air Monitoring Network



Air Monitoring Network Plan

- Requirement for Regulatory Monitoring
- Includes
  - Description of Air Monitoring Network (AMN)
  - Review of 2021 Performance/Data/Changes
  - Recommendations for 2022 Network Changes
- Requires 30-Day Public Comment Period
- Plan due to US EPA by July 1, 2022

2021 Summary

- 98-100% Data Completeness (Valid Data)
- Seasonal Monitoring for Ozone
  - April – October
- Data Management System Upgrades
- EPA audited network March 2021
  - Final report pending

2022 Activities

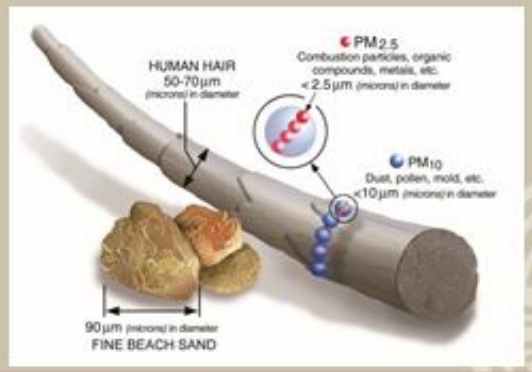
- Upgrade dataloggers & meteorological sensors
- Revise Quality Assurance Project Plan (QAPP)
- Continue Seasonal Ozone Monitoring
  - (April – October)

The Air Quality Index (AQI)

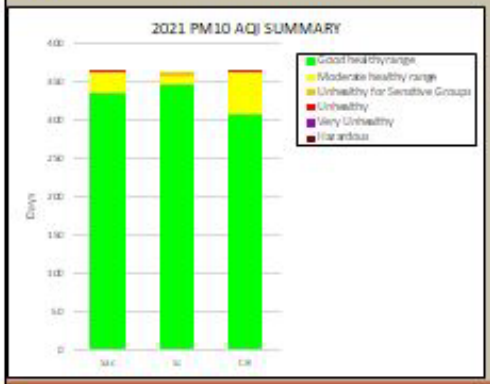
Note: Hazardous is extremely rare and not included in the Flag Program

- Indicator of how clean (or polluted) the air is
- Colors associated with health affects/action steps
- Orange ~ Exceedance of National Ambient Air Quality Standard (NAAQS)

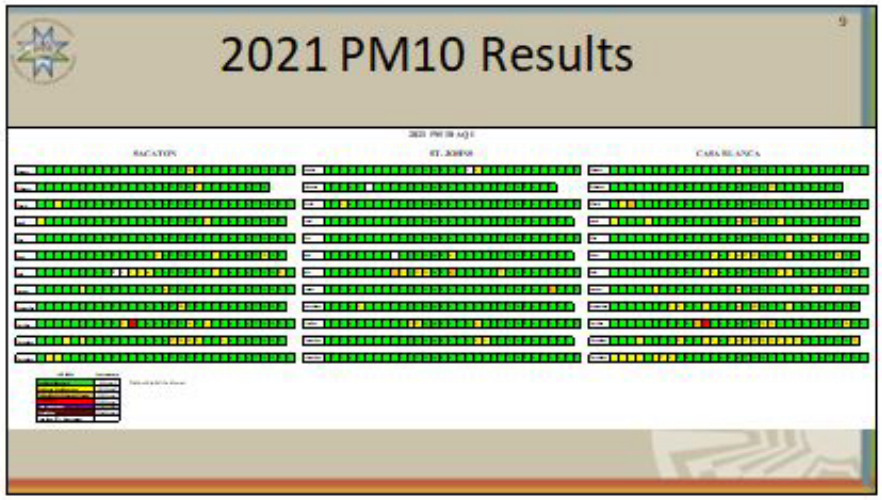
What Is PM10?

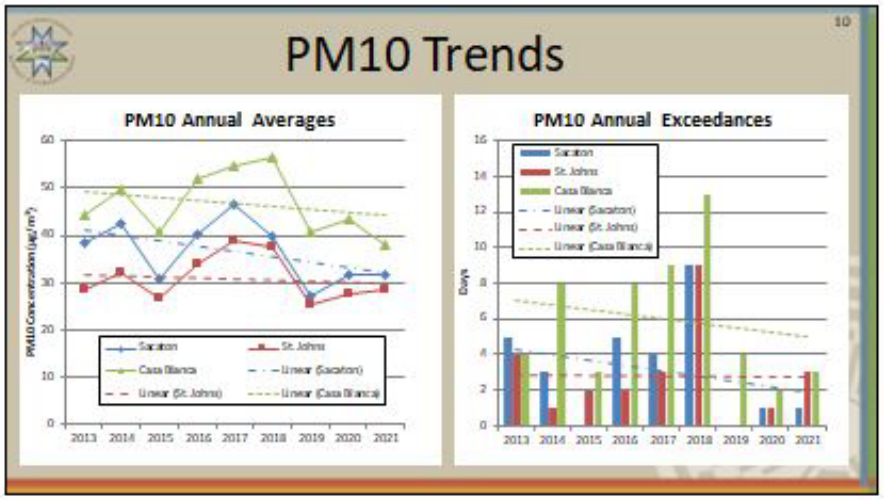


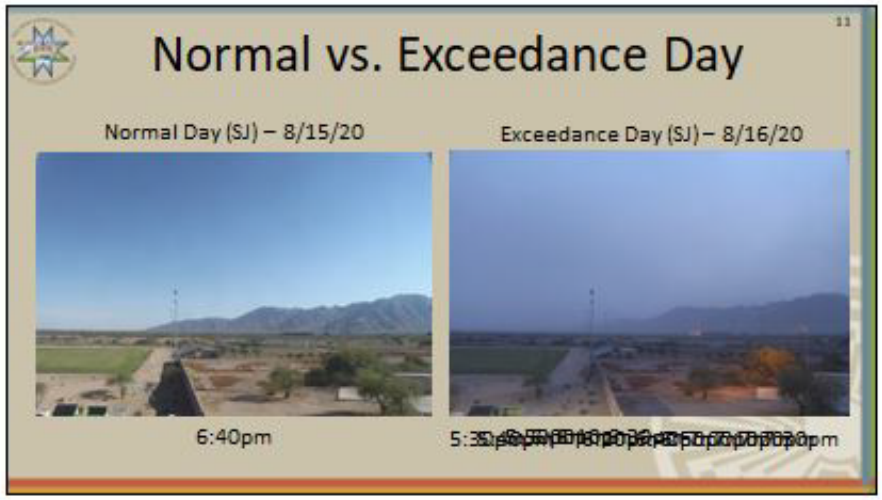
2021 PM10 Results

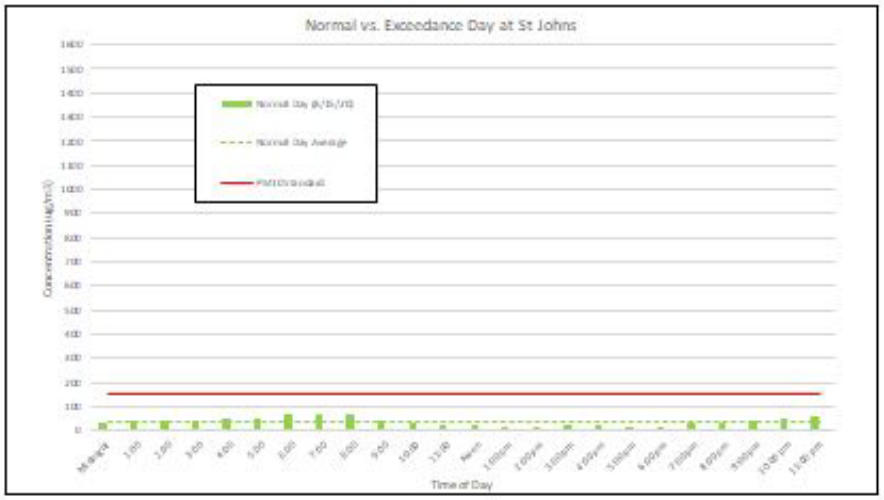


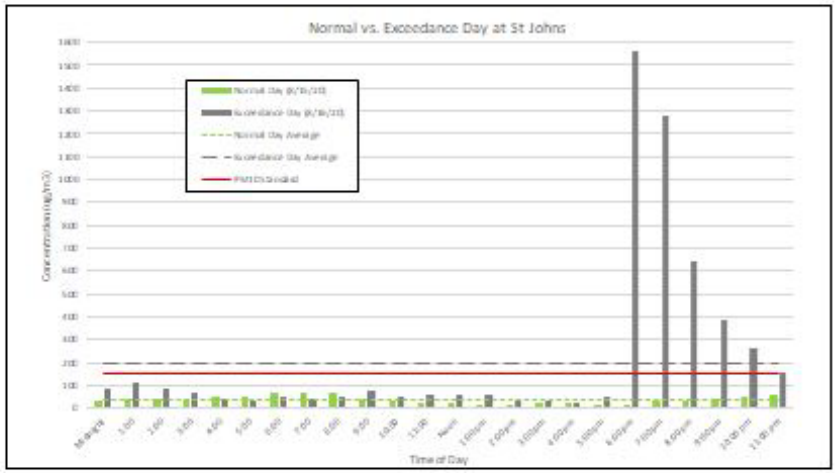
- Most days good/moderate
- CB has more moderate days due to surrounding agricultural activities

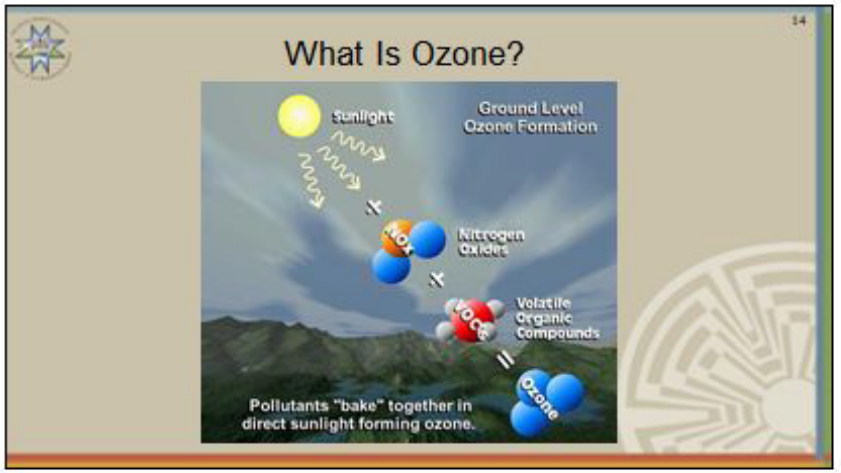

2021 PM10 Results
9

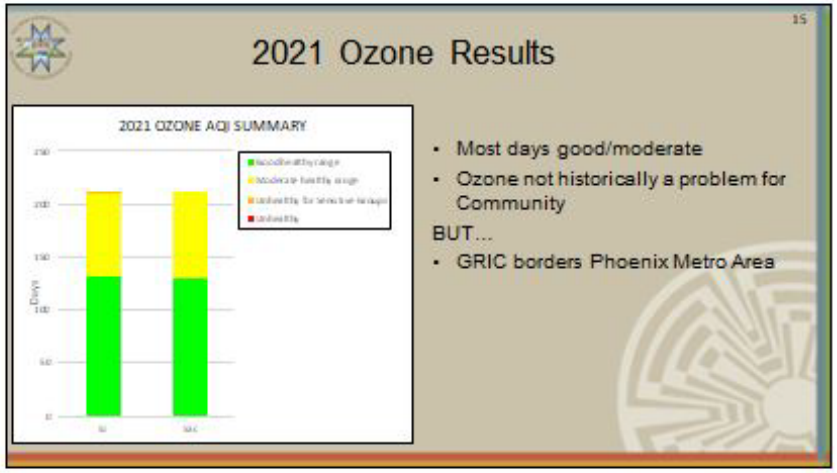

PM10 Trends
10
PM10 Annual Averages
PM10 Annual Exceedances
Sacaton
St. Johns
Casa Blanca
Linear (Sacaton)
Linear (St. Johns)
Linear (Casa Blanca)
Days

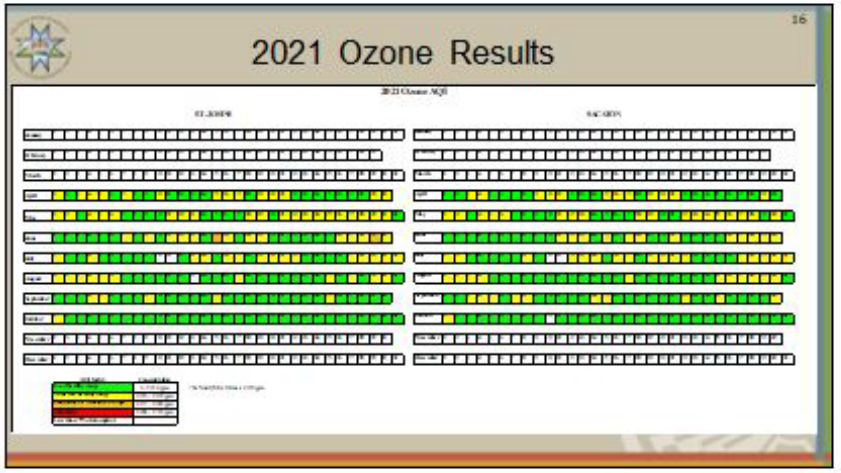

Normal vs. Exceedance Day
11
Normal Day (SJ) – 8/15/20
Exceedance Day (SJ) – 8/16/20
6:40pm

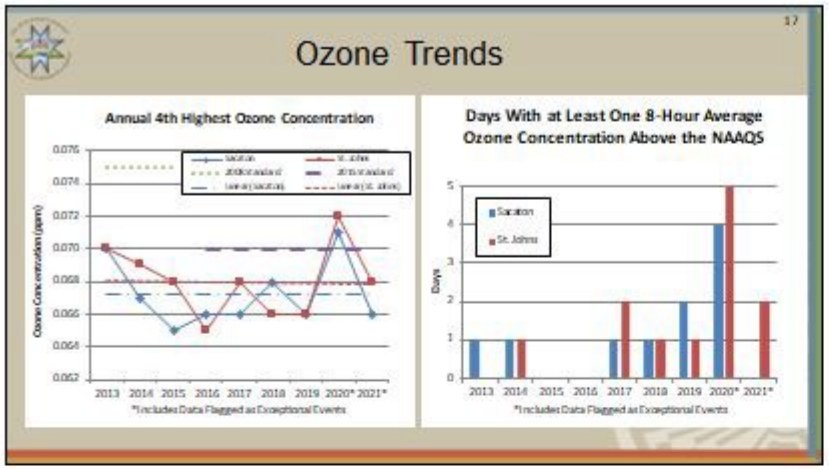

Normal vs. Exceedance Day at St Johns
Time of Day

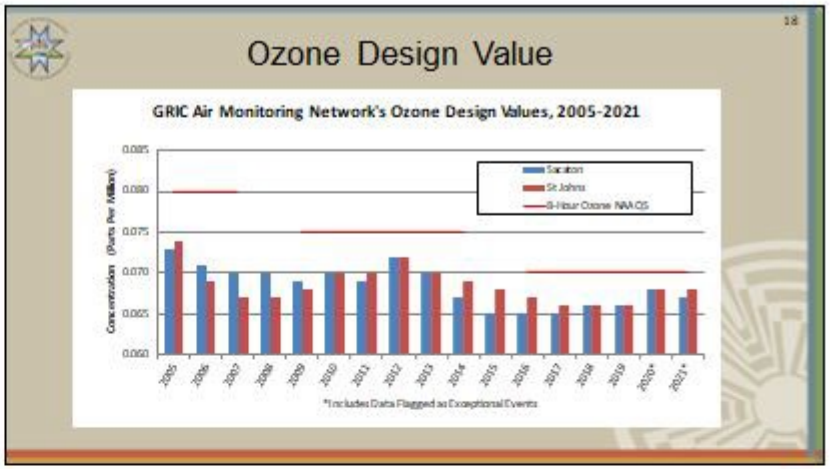

Normal vs. Exceedance Day at St Johns
Time of Day

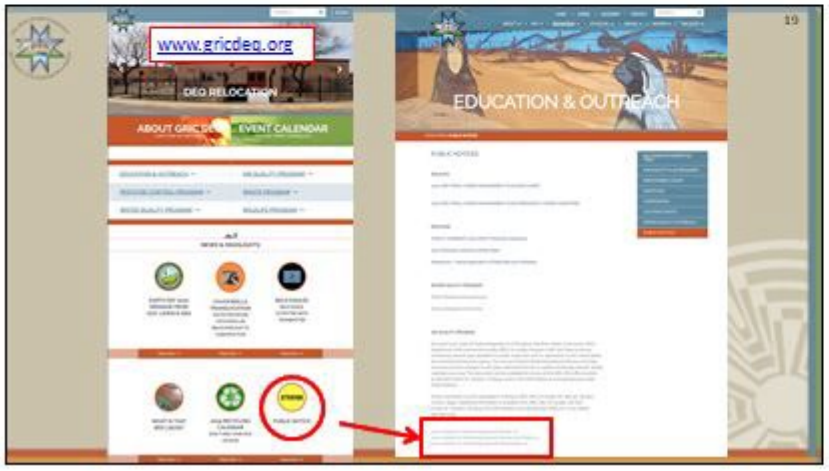

14
What Is Ozone?
Sunlight
Ground Level Ozone Formation
NOx
Nitrogen Oxides
VOCs
Volatile Organic Compounds
Ozone
Pollutants "bake" together in direct sunlight forming ozone.


15
2021 Ozone Results
2021 OZONE AQI SUMMARY
Days
• Most days good/moderate
• Ozone not historically a problem for Community
BUT…
• GRIC borders Phoenix Metro Area


16
2021 Ozone Results


17
Ozone Trends
Annual 4th Highest Ozone Concentration
Ozone Concentration (ppm)
0.076
0.074
0.072
0.070
0.068
0.066
0.064
0.062
2013 2014 2015 2016 2017 2018 2019 2020* 2021*
*Includes Data Flagged as Exceptional Events
Days With at Least One 8-Hour Average Ozone Concentration Above the NAAQS
Days
Sacaton
St. Johns
2013 2014 2015 2016 2017 2018 2019 2020* 2021*
*Includes Data Flagged as Exceptional Events


18
Ozone Design Value
GRIC Air Monitoring Network's Ozone Design Values, 2005-2021
Concentration (Parts Per Million)
0.085
0.080
0.075
0.070
0.065
0.060
Sacaton
St Johns
8-Hour Ozone NAAQS
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020* 2021*
*Includes Data Flagged as Exceptional Events


19
www.gricdeq.org
DEQ RELOCATION
EVENT CALENDAR
EDUCATION & OUTREACH


20
Realtime Air Quality Info
www.gricdeq.org → Air → Ambient Air Monitoring OR
Map
Satellite
Phoenix

Air Quality Notifications (EnviroFlash)

http://www.enviroflash.info/signup.cfm

Need help signing up? Contact:

Tison Gill
Education/Outreach Specialist
Tison.Gill.DEQ@gric.nsn.us
520-610-9950

Contact Information

Ryan Eberle
Air Quality Program
(520) 562-2234
Ryan.Eberle@gric.nsn.us

Leroy Williams
Air Monitoring Network Review
(520) 562-2234
Leroy.WilliamsJR@gric.nsn.us

DEQ Air Quality Office:
168 Skill Center Rd.
Sacaton, AZ 85147
air@gric.nsn.us
www.gricdeq.org

Figure D-2. Public Meeting Handout (3 page FAQ Sheet):

Gila River Indian Community
2021 Ambient Air Quality Monitoring Network Review
FAQ Sheet

What is an Ambient Air Quality Monitoring Network Review?
It is a document that describes the air monitoring network for the Community including monitor types, background information, summary of annual monitoring results, and changes and future recommendations to the monitoring network. This annual document identifies the purpose of each monitor and provides evidence that the operation of each monitor meet the requirements in the Federal Regulations. In other words, it fulfills requirements needed for a regulatory air monitoring program.

What are the pollutants monitored in our network?
GRIC Department of Environmental Quality (DEQ) Air Quality Program(AQP) operates air quality monitors that record ambient concentrations of two criteria air pollutants- particulate matter less than or equal to 10 microns (PM_{10}) and ozone (O_3).

What are Criteria Air Pollutants?
Criteria Air Pollutants are those that the United States Environmental Protection Agency (EPA) has defined as a potential risk to human health and the environment. These six common air pollutants include particulate matter, ground-level ozone, carbon monoxide, lead, sulfur dioxide, and nitrogen dioxide. Due to the health risks of these pollutants, EPA has set National Ambient Air Quality Standards (NAAQS) for them.

Why do we only monitor two of the six criteria air pollutants?
The Clean Air Act (CAA) requirements are designed for high population areas and emission sources. Consequently, GRIC and other tribes do not fit all of the CAA monitoring requirements. Furthermore, tribes are not required to conduct ambient air monitoring. GRIC does not monitor for these pollutants because they have been found, through discrete sampling and emission inventories, to be at background ambient (outdoor) air quality concentrations. Additionally, GRIC does not have major stationary pollution sources that emit these particular criteria pollutants that may significantly affect the NAAQS within GRIC jurisdiction.

What is the NAAQS?
The National Ambient Air Quality Standards (NAAQS) are intended to protect public health and welfare by setting limits on the allowable level of each criteria pollutant in the ambient air. These standards, also known as public health standards, were developed through scientific-based studies that indicate the level or amount of air in which the public can safely breathe. The NAAQS for Ozone (O_3) is 0.070 parts per million (ppm) based on the annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years. The NAAQS for PM_{10} is to not exceed 150 micrograms per cubic meter (µg/m3) more than once per year on average over 3 years.

What is Particulate Matter?
It is particle pollution that comes from many different types of sources. Coarse particles (between 2.5 and 10 micrometers) that GRIC monitors come from crushing and grinding operations, road dust, and agricultural operations. Particulate matter can be a problem at any time of the year and can cause serious health problems (asthma attacks, heart attacks, and strokes).

What is Ozone?
Ozone is a colorless gas found in the air we breathe. Ozone can be good or bad, depending where it occurs. Good ozone is present in the Earth's upper atmosphere shielding us from the sun's harmful ultraviolet rays. Bad ozone is present at ground level, where we breathe, because it can harm human health. Ozone forms when two types of pollutants (VOCs and NO_x) react in sunlight, usually on hot summer days. These pollutants come from sources such as vehicles, industries, power plants, and products like solvents and paints.

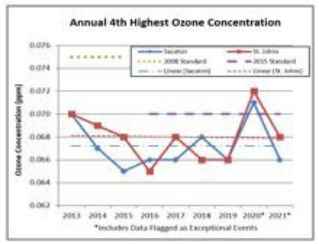
Where are the GRIC ambient air monitors located?
There are currently three permanent ambient air monitoring stations within the Community.

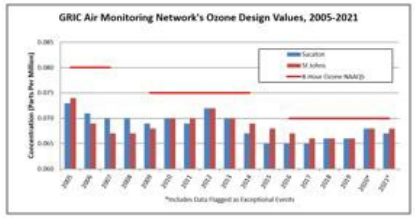
1. St. Johns (SJ) (District 6) - located in a residential area within Gila Crossing Community School property. This site location monitors for Ozone and PM_{10}.
2. Casa Blanca (CB) (District 5) - located in a residential area within Casa Blanca Community School property. This site location monitors for PM_{10}.
3. Sacaton (Sac) (District 3) - located within the GRIC Office of Land Use Planning and Zoning. This site location monitors for Ozone and PM_{10}.

Meteorological data is collected at all three air monitoring sites which include measurements of ambient temperature, barometric pressure, wind speed/direction, relative humidity, and precipitation.

Why are they located there?
Air monitoring sites are strategically based throughout the Community to provide data that meets monitoring objectives: Highest Concentrations, Population Exposure, Source Impacts, Background Concentrations, Regional Transport, and Welfare Impacts. For example, the Casa Blanca site analyzes for PM_{10} in the agricultural center of the Community and all three monitors are placed in locations within the highest population centers on the Community.

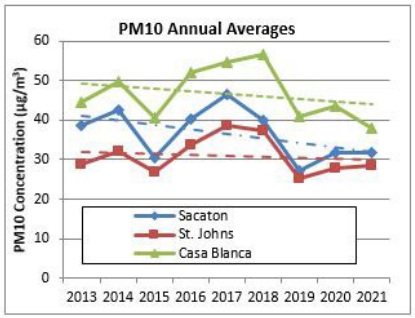
How does the 2021 Ozone monitoring data compare with previous years' data?
Prior to 2016, ozone levels were below the 2008 NAAQS of 0.075 ppm. Then on October 1st, 2015, the EPA lowered the 8-hour ozone NAAQS from 0.075 to 0.070 ppm, which was applicable starting with the 2016 data. It is important to know that compliance with the ozone NAAQS is determined by averaging the annual fourth highest concentration for the previous three years. For example, for Sacaton in 2021, the fourth highest concentration was 0.066 ppm, so the three-year average of 2019 (0.066 ppm), 2020 (0.068 ppm), and 2021 is 0.068 ppm. Therefore the three-year average was below the NAAQS and the air monitoring network continues to show compliance with the ozone standard.

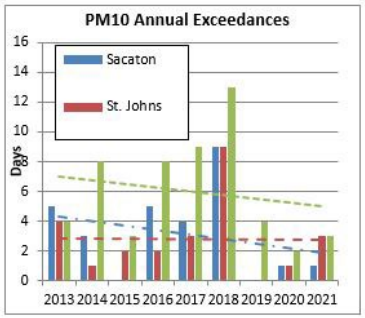




How does the 2021 PM10 monitoring data compare with previous years' data?

Looking at the PM_{10} graphs below, one can see the PM10 annual average concentrations are similar to last year and significantly lower than 2016-2018. In order to be compliant with the PM10 NAAQS, each monitoring site must not have more than one daily exceedance per year over a three-year period. The three-year average exceedance is known as the design value. Since 2013, each of the three sites has a design value greater than one as shown in the chart below. However, both figures below include flagged data for exceptional events in the calculation. An exceptional event is uncontrollable and caused by natural sources of pollution or an event that is not expected to recur at a given location. The AQP assesses any exceedances and makes an initial determination whether or not they were caused by an exceptional event. Those events that are determined to be exceptional are then flagged by the AQP in the AQS database. If EPA concurs that the events are exceptional, then the exceedances are removed from the calculation to determine compliance with the NAAQS. GRIC experienced multiple exceedances in the past seven years (13 in 2013, 12 in 2014, 5 in 2015, 15 in 2016, 16 in 2017, 31 in 2018, 4 in 2019, 4 in 2020 and 7 in 2021) from a combination of the three monitors with some that occurred on the same day at different monitors. However, GRIC has flagged 103 of the 107 exceedances as exceptional events. In the past three years, GRIC has flagged 15 of the 15 exceedances as exceptional events. Once approved, these data are not used in determining compliance with the NAAQS.





Is the air getting cleaner?

This is a difficult question to answer because there are so many variables to factor in from year-to-year. Based on the ozone graphs above, ozone concentrations appear to be on a stable or downward trend. However, ozone on the Community is largely influenced by the Phoenix metropolitan area, day of the week, and weather conditions. A period of hot, stagnant air can easily cause ozone concentrations to become elevated. Similarly, PM_{10} measurements are influenced by weather and local and upwind activities within the area (such as agriculture and construction). A warmer, drier season means less moisture in the soil, which may make smaller soil particles (e.g., PM_{10}) more susceptible to entrainment at lower wind speeds. Based on the PM_{10} graphs above, the PM_{10} concentrations appear to be on a stable or downward trend; however, this data also includes the exceptional events.

Can we get a monitor in our district?

Regulatory air quality monitors are expensive to operate and maintain and the EPA continually places additional requirements and responsibilities on air monitoring programs. Additionally, the existing air monitoring stations already exceeds the minimum monitoring objectives outlined in Federal regulations. Therefore, there are currently no plans to expand the monitoring network. In the future, pending the availability of resources, the AQP may be able to conduct short-term informational monitoring in other Districts in the Community.

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Figure D-3. Public comments and questions received

Table D. Summary of Comments and Questions Received from GRIC members and visitors		
District	Date	Comments / Questions Received
1	N/A	Submitted request to be put on agenda for District 1 Community Meeting in-person on 6/13/22 but district meeting was cancelled.
2	5/2/2022	District 2 Community Meeting in-person 1. Are the exceedances increasing due to wind? Seems like we are getting more wind, so wondering if that increases the concentration of dust? 2. Are you tracking rainfall? We hear a lot about climate changes and drought in the west, but what are we actually seeing here on the Community? 3. Are you tracking respiratory distress and valley fever with respect to air quality concentrations, especially post-COVID? 4. Are you following the air quality ordinance and regulating dust from home construction activities? 5. The AQI activity guidance you passed out is great, but how do we know what the color is currently…how do we know what the current conditions are? 6. How proactive are you being in informing the districts to refer dust complaints to you (the Air Quality Program)? Do the districts know to refer the dust complaints they receive to you (Air Quality Program)? 7. Do the air monitors you have cover the entire Community? The dust is thick out here in District 2, so it seems we need more monitors out here to cover District 2. Every district should have a monitor. 8. Do you supply extra flags? The yellow flag at the Governance Center is really faded 9. Can the AQI outdoor activity guidance be applied to COVID?
3	5/17/2022	District 3 Community Meeting in-person with Zoom option available. Presentation made on Zoom. No questions asked in-person or on Zoom.
4	5/31/2022	District 4 Community Meeting on Zoom. No questions asked at meeting.
5	5/31/2022	District 5 Community Meeting on WebEx. No questions asked at meeting.
6	5/16/2022	District 6 Community Meeting on WebEx 1. Does the new 202 freeway affect the St. Johns Monitor? 2. Is monitoring done on a fiscal year and calendar year?

		3. Has there been any significant differences in data recently regarding the pandemic and less vehicles on the road due to city shutdowns and increase in work-from-home personnel?
7	5/31/2022	District 7 Community Meeting in-person. 1. Where are the monitoring sites? 2. Is there anything we can do to help air quality?