Request to Shut Down and Relocate the Senior Center Site

History

On 8/18/22, the Senior Center (SC) Air Monitoring Site was moved to a temporary location. This was due to the construction of an adjacent housing complex, replacing a water main, and leveling the site to prevent flooding. The water main was located directly underneath the monitoring site. Several temporary locations were discussed with EPA Region 9, and the best option was a site approximately 85 yards directly east of the original site, just in front of the Senior Center complex. The site did not have the electrical capacity to operate the shelter that housed the ozone monitor, and therefore the ozone monitor was not moved to the temporary site and was shut down in the Air Quality System (AQS) on 8/18/2022. The PM2.5 and PM10 monitors, however, were successfully moved to the temporary site and began operating on 8/19/22.

The EPA was notified of the temporary relocation of the site on 4/12/22. The construction was originally scheduled to be completed by March 2023. Delays in construction occurred numerous times due to infrastructure problems and newly planned additions at the SC Complex. In 2024, the Air Quality Program (AQP) was notified that needed expansion at the SC Complex would conflict with AQP plan to reestablish the original SC Site. Both the AQP and Salt River Pima-Maricopa Indian Community (SRPMIC) Public Works Department (PW) worked together to come up with alternative site locations.

Analysis

In early 2024, AQP and PW found a location that met both PW and AQP requirements. In mid-2024, SRPMIC Counsel approved the new location called the Two Waters (TW) Site, which is approximately 580 yards southwest of the original site in a recently vacated lot in the TW Government Complex (Fig. 1).

Fig. 1 Site Relocation Diagram

The TW Site will have the same monitoring objective, type, and scale as the SC Site. The Site will monitor for the same pollutants with the conversion of our (1 in 6 day) filter-based PM-2.5 monitor to continuous. In addition, the AQP will reinstate the ozone monitor that was shut down (Table 1).

Table .1 Site Metadata

	Original Site	**Two Waters**
AQS monitor ID	04-013-7020	Proposed 04-013-7025
Site Address	10510 E Osborn Rd, Scottsdale, AZ 85256	No address currently (only after electricity established)
Geographic coordinates	33.488166, -111.854933	33.48604, -111.85961
Local site name	Senior Center	Two Waters
MSA	Phoenix-Mesa-Scottsdale Metropolitan Statistical Area	Phoenix-Mesa-Scottsdale Metropolitan Statistical Area
Pollutants measured	PM2.5 (88101) and PM10 (81102)	PM2.5 (88101), PM10 (81102), and Ozone (44201)
Basic monitoring objective(s)	NAAQS Comparison	NAAQS Comparison
Site type(s)	PM2.5/PM10- Population Exposer	Ozone - Population Exposure. PM2.5 / PM10 Population Exposer
Monitor type	SLAMS (Tribal)	SLAMS (Tribal)
Spatial Scale	Neighborhood	Neighborhood
Monitors begin & end dates	Ozone- 02/10/11-8/16/23, PM2.5- 5/1/04, and PM10 1/1/14	Ozone, Continuous PM2.5 & PM10 Collocated PM.2.5 (1 in 12)

The TW Site will consist of two shelters and a retention basin. The 8’ X 20’ shelter will contain the active instruments and the 10’ X 25’ will be used to calibrate, repair, and store equipment (Fig. 2).

Fig. 2 Diagram of Proposed Site

Fig. 3 Site Spatial Scale (Neighborhood Scale)

At the TW site each monitor will meet the requirements of 40 CFR Part 58 Appendices A, B, C, D, and E, where applicable. (Table 2).

Table 2 Metadata and 40 CFR Appendix A, B, C, D, and E information

	Original Site	**Two Waters**
Instrument names	Thermo/49i and R&P/1400ab and R&P/2000FRM	Thermo/49i and T640X for PM-2.5/10 and Met-One E-FRM-DC for collocated PM-2.5
Map of distance from exiting to proposed site	Fig. 1	Fig. 1
Map of current and proposed monitoring site spatial scale of representation, (.5 km to 4km)	Fig. 3	Fig. 3
Type of property to host the monitor(s)	Tribal Owned	Tribal Owned
Attainment designation of area for relevant SLAMS parameters	Non-attainment for Ozone Attainment for PM2.5/10	Non-attainment for Ozone Attainment for PM2.5/10
Predominant land use to the North, East, South, & West (e.g. industrial, residential, commercial, or agriculture)	North - Residential South - Residential and Ag. East - Residential and Vacant West - Residential (Fig 4)	North – Two Waters Complex South - Residential and Ag. West – Gov. Buildings East – Gov. Buildings (Fig 4)
Surrounding terrain & topographic features	Terrain – Flat all directions	Terrain - Flat all directions
Any existing or potential obstructions	Senior Center Buildings to the North of the site	None
Significant nearby emission sources	Agriculture and Vacant Lot	Agriculture and Vacant Lot
Proximity to nearby monitoring sites (regardless of operating agency)	High School Site (04-013-7024) approximately 1.7 miles to the Northeast	High School Site (04-013-7024) approximately 1.93 miles to the Northeast

Wind / pollution rose information	Fig. 5	Fig. 5
Distance to Roadways (m)	Osborn Road (22.3), Alma School Road (156)	Osborn Road (190), Alma School Road (240)
Traffic Count (AADT)	Osborn Rd west of Alma School Rd, 2017: 2,334, using KHA AADT count	Osborn Rd east Rd, **(2244)** Alma School **(3566)** AADT count
Probe height (m)	PM10 3.5m PM2.5 3.5m	Proposed. Ozone (4.2m), PM10 & PM2.5 (4.2 m)
Airflow arch (degrees)	360	360
Distance from supporting structure (m)	PM10 17 m PM2.5 18 m	Ozone 2.20m PM10/2.5 2.2m/2.2m
Distance from obstructions on roof; horizontal distance + vertical height above probe for obstructions nearby (m)	No obstruction	No obstruction
Distance from obstructions not on roof; horizontal distance + vertical height above probe for obstructions nearby (m)	No obstruction	No obstruction
Distance from tree driplines (m)	Ozone 15.2m, PM-10 15.7m PM-2.5 14.7m	Estimate 20m after tree removal
Distance to furnace or incinerator (m)	No Furnace or incinerator	No Furnace or incinerator
QA collocation requirements (m)	3m	Estimate 3m
Sample line material for reactive gases	Teflon	Teflon
Residence time for reactive gases	3.9 sec	Estimate 3.9 sec
Public Comment Period	May 12, 2025, through June 13, 2025.	May 12, 2025, through June 13, 2025.

Fig. 4 Photos of Cardinal Direction for the new site

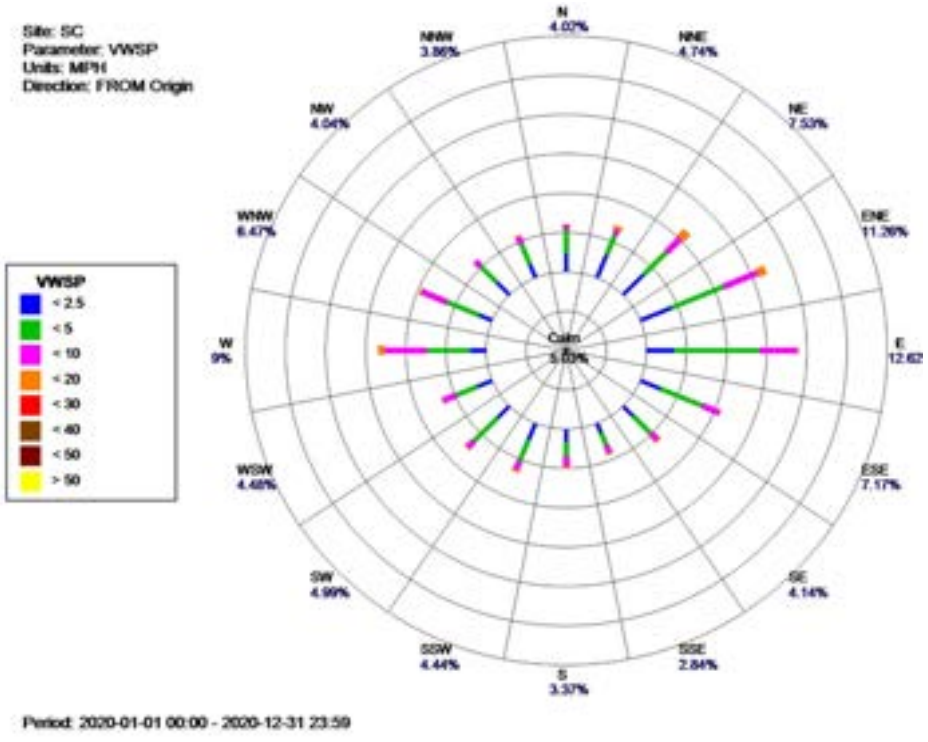
North East

South

West

The wind rose analysis for this time period shows prevailing east west wind flow patterns (Fig. 4). There are no major sources between the two sites. With the relatively short distance that the site is moving, no significate changes in the air flow pattern will occur at the new location.

Fig. 5 Wind Rose from Original Site



Regulatory Analysis

The AQP preformed the Removing of a NAAQS Compliance Monitor tests from EPA guidance (EPA-454/D-07-001).

According to EPA guidance a monitor can be removed (after Regional Administrator approval) if it is currently in attainment with the applicable NAAQS standard and if the following four tests can be met:

1. The PM2.5, ozone, carbon monoxide (CO), PM10, sulfate dioxide (SO2), lead, or nitrogen dioxide (NO2) monitor showed attainment during the previous five years.
    a. Answer - The design values for PM-2.5 and PM-10 have not exceeded the NAAQS for the last five years (Table 2).

2. The probability is less than 10% that the monitor will exceed 80% of the applicable NAAQS during the next three years based on the concentrations, trends, and variability observed in the past.
    a. Answer
        i. The PM-2.5 instrument passes this test (Table. 2).
        ii. The PM-10 instrument fails under the 24hr Max Concentration and passes under the 4th High 24-hr Design Concentrations (Table. 3).
        iii. The Ozone instrument fails under the 24hr Max Concentration (Table. 4).

3. The monitor is not specifically required by an attainment plan or maintenance plan.
    a. Answer - The monitors are not required by an attainment plan or maintenance plan.

4. The monitor is not the last monitor in a nonattainment area or maintenance area that contains a contingency measure triggered by air quality concentration in the latest attainment or maintenance plan adopted by the state and approved by EPA.
    a. Answer - The monitors are not the last monitors in a nonattainment area or maintenance area that contains a contingency measure triggered by an air quality concentration in the latest attainment or maintenance plan adopted by the state and approved by EPA.

Table. 2 NAAQS Removing PM2.5 Compliance Monitors Test

	PM-2.5 24hr	PM-2.5 Annual
2020 Design Value	14	7.1
2021 Design Value	14	7.0
2022 Design Value	15	7.2
2023 Design Value	14	6.8
2024 Design Value	13	6.7
Avg. Design value.	14	6.96
Standard Dev	0.71	0.21
Student T	2.13	2.13
# of Samples	5	5
NAAQS	35	9
80% NAAQS Standard	28	7.2

Prob. <10% will exceed 80% of NAAQS	14.7	7.2
Test Pass/Fail 40 CFR 58.14(c)(1)	Pass	Pass

Table. 3 NAAQS Removing PM-10 Compliance Monitors Test

3-year DV period	PM-10 24hr Max Concentration	PM-10 NAAQS 24-hr Design Concentrations (4th High)
2018-2020	168	144
2019-2021	174	115
2020-2022	74	115
2021-2023	129	115
2022-2024	82	85
Avg Design value.	125.4	114.8
Standard Dev	46.68	20.86
Student T	2.13	2.13
# of Samples	5	5
NAAQS	150	150
80% NAAQS Standard	120	120
Prob <10% will exceed 80% of NAAQS	169.9	134.7
Test Pass/Fail 40 CFR 58.14(c)(1)	Fail	Fail

* SRPMIC calculated the 24-hour PM10 design concentration using Section 6.3.1 of the PM10 SIP Development Guideline (EPA-450/2-86-001) and referred to as the “Table look-up” procedure.

Table. 4 NAAQS Removing Ozone Compliance Monitors Test

	Ozone
2018 Design Value*	0.072
2019 Design Value*	0.073
2020 Design Value	0.074
2021 Design Value	0.076
2022 Design Value	0.077
Avg. Design value.	0.074
Standard Dev	0.00
Student T	2.13
# of Samples	5
NAAQS	0.070

80% NAAQS Standard	0.056
Prob. <10% will exceed 80% of NAAQS	0.0764
Test Pass/Fail 40 CFR 58.14(c)(1)	Fail

*The ozone analysis is using design values from 2018-2022 because the instrument was temporarily shut down in 2023.

The PM-10 and Ozone instruments do not meet 40 CFR 58.14 c (1)-(5). PM-2.5 does meet the 40 CFR 58.14 c (1).

Request

AQP is requesting permission to shut down and move the Senior Center Air Monitoring Site approximately 580 yards southwest of the original site. The Ozone and PM-10 instruments are eligible to be shut down and moved under 40 CFR 58.14 (c) (6), because of the unforeseen building additions to the Senior Center complex, which were beyond our control. The PM-2.5 (filter) instruments are eligible to be relocated to the new location under 40 CFR 58.14 (c) (1) and will have a continuous data record with the old site. The Site name will be changed to the Two Waters Air Monitoring Site with site AQS ID of 04-013-7025 and will monitor for continuous PM2.5 and PM10, FRM Collocated PM2.5, Ozone, Temperature, Relative Humidity, Pressure, and Wind Speed and Direction.

The proposed location change will be publicly announced 5/12/25–6/13/25 during AQP's public comment period for its 2024 Annual Network Plan. The proposed start date for the new site is January 1st, 2026