Request to Shut Down and Relocate the Lehi (LE) Site

History

The site is located in the Salt River Pima-Maricopa Indian Community's (SRPMIC) fire station complex at 3250 North Stapley Drive, Mesa, AZ 85203. The ozone monitor is located inside the main building in the IT communication room and the PM-10 monitor is located inside a small instrument shelter on the roof of the main building. Over the past 10 years the site has experienced a list of chronic problems, which has made it difficult to maintain the site according to EPA regulations. These problems include the following:

- The building's HVAC system has had difficulty maintaining room temperature within EPA regulations;
- The ozone monitor is inside a crowded communication room and is subject to being hit, moved, or unplugged;
- The PM-10 and anemometer are located on the roof of the building with no railing, and they are only accessible via a ladder;
- The residence time for the site is 3X greater than the other sites at 9.8 seconds;
- The large trees surrounding the Lehi station grow quickly and need to be continually monitored and trimmed to maintain compliance with EPA regulations.

With these difficulties in mind, the Air Quality Program (AQP) determined that moving the site to a more optimal location would improve the representativeness of the data, the ability of AQP to operate the site effectively, and site safety.

Analysis

AQP and PW found a location that met both PW and AQP requirements. In mid-2024, SRPMIC Counsel approved the new location called the new Lehi (LE) Site, which is approximately 231 yards southwest of the original site in a vacated lot (Fig. 1).

Fig. 1 Lehi site Relocation Diagram

The new LE will have the same monitoring objective, type, and scale as the original site. The site will continue to monitor Ozone and PM-10. The AQP will be installing a continuous PM-2.5 monitor (Table. 1).

Table .1 Site Metadata

	Original Site	**New Lehi**
AQS monitor ID	04-013-7022	Proposed 04-013-7026
Site Address	3250 North Stapley Drive, Mesa, AZ 85203	No address currently (only after electricity established)
Geographic coordinates	33.47453, -111.80505	33.47377, -111.80721
Local site name	Lehi	Lehi
MSA	Phoenix-Mesa-Scottsdale MSA	Phoenix-Mesa-Scottsdale MSA
Pollutants measured	Ozone (44201) and PM10 (81102)	PM2.5 (88101), PM10 (81102), and Ozone (44201)
Basic monitoring objective(s)	NAAQS Comparison	NAAQS Comparison
Site type(s)	Ozone /PM10- Population Exposer	Ozone - Population Exposure. PM2.5 / PM10 Population Exposer
Monitor type	SLAMS (Tribal)	SLAMS (Tribal)
Spatial Scale	Neighborhood (0.5km to 4km) (Fig. 3)	Neighborhood (0.5km to 4km) (Fig. 3)
Monitors' begin & end dates	Ozone- 06/01/2003, PM10- 12/29/2004	Ozone, PM2.5 & PM10 preliminary start 01/01/2026

The new LE site will consist of two shelters. The AQM shelter will contain active instruments, and the Laboratory/Storage shelter will be used to calibrate, repair, and store equipment (Fig. 2). The shelter locations maybe switch to conform with minimum road distance requirements.

Fig. 2 Diagram of Proposed Site

Fig. 3 Site Spatial Scale

At the new LE 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 Lehi Site	**New Lehi**
Instrument names	Thermo/49i and Thermo 1405	Proposed Thermo/49i and T640X for PM-2.5/10
Map of distance from existing to proposed site	Fig. 1	Fig. 1
Map of current and proposed monitoring site spatial scale of representation, nearby roads	Fig. 1,3	Fig. 1,3
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 PM-10	Non-attainment for Ozone Attainment for PM-10
Predominant land use North, East, South, & West (e.g. industrial, residential, commercial, or agriculture)	North – Residential, vacant and Ag. South - Residential, vacant and Ag. East - Residential, vacant and Ag. West - Residential, vacant and Ag. (Fig 4)	North – Residential, vacant and Ag. South - Residential, vacant and Ag. East - Residential, vacant and Ag. West - Residential, vacant and Ag. (Fig 4)
Surrounding terrain & topographic features	Terrain – Flat all directions	Terrain - Flat all directions
Any existing or potential obstructions	None	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 2.9 miles to the Northeast	High School Site (04-013-7024) approximately 2.9 miles to the Northeast
Wind / pollution rose information	Fig. 5	Fig. 5
Distance to Roadways (m)	Stapley Dr. (18m), Oak St. (93m)	Stapley Dr. (220m), Oak St. (22m)
Traffic Count (AADT)	North South Stapley Dr. (720) 2017 East West Oak St. (2562)	North South Stapley Dr. (720) 2017 East West Oak St. (2562)
Probe height (m)	PM10 6.7m Ozone 6.0	Proposed. PM-2.5 /10 (6 m) Ozone (5m)
Airflow arch (degrees)	360	360
Distance from supporting structure (m)	Ozone 2.20m PM10 2.7 m	Ozone 2.20m PM10 2.5 m
Distance from obstructions on roof; horizontal distance + vertical height above probe for obstructions nearby (m)	Horizontal: 29.05 Vertical: 4.5	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 flu (m)	No Furnace or incinerator	No Furnace or incinerator
QA collocation requirements (m)	None	None
Tube material for reactive gases	Teflon	Teflon
Residence time for reactive gases	9.8 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

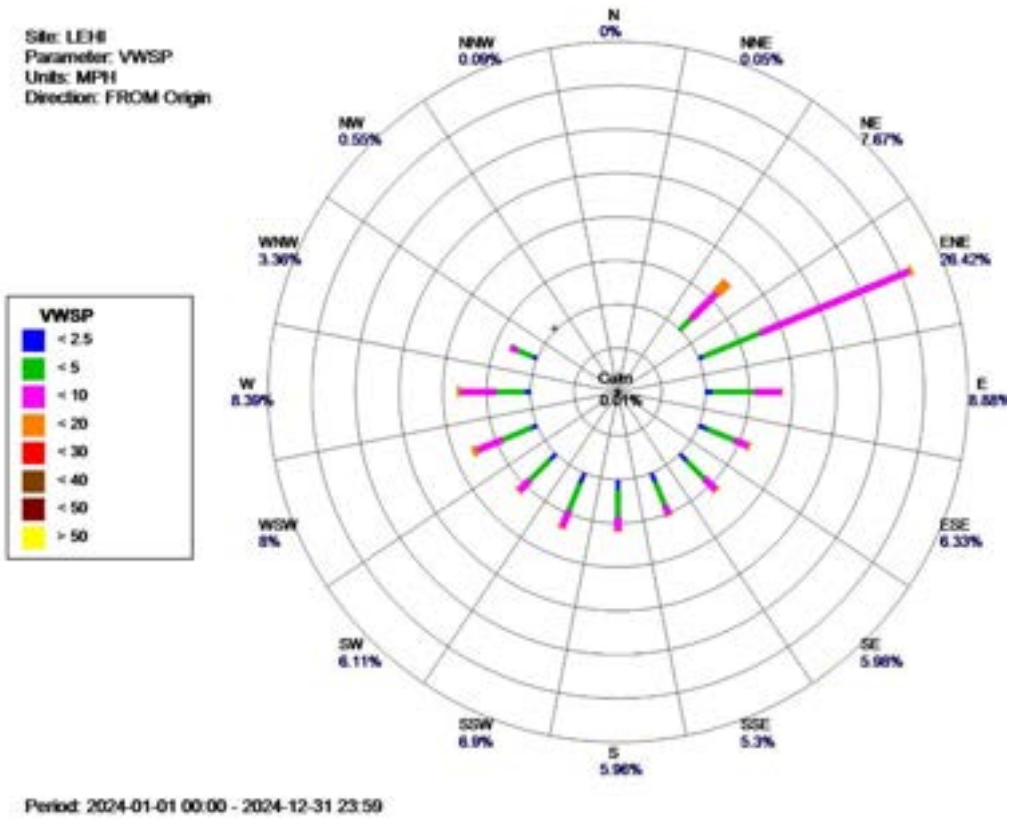
East

South

West

The wind rose analysis for this time period shows prevailing east northeast to west wind flow pattern (Fig. 5). There are no major sources between the two sites. With the relatively short distance that the site is moving, no significate change in the air flow pattern will occur at the new location.

Fig. 5 Wind Rose from Original Site



Regulatory Analysis

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-10 and Ozone have exceeded the NAAQS for the last five years (Table 2,3).

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 - The probability is not less than 10% that PM-10 and Ozone monitors will exceed 80% of the applicable NAAQS during the next three years based on the concentrations, trends, and variability observed in the past (Table. 2,3).

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 PM-10 Compliance Monitors Test

	PM-10 24hr Max Concentration	PM-10 NAAQS 24-hr Design Concentrations (4th High)
2018-2020	186.0	154.0
2019-2021	92.0	92.0
2020-2022	217.0	98.0
2021-2023	126.0	117.0
2022-2024	120.0	81.0
Avg Design value.	148.2	120
Standard Dev	51.50	28.64
Student T	2.13	3.13
# of Samples	5	5
NAAQS	150	150
80% Standard	120	120
Prob <10% will exceed 80% of NAAQS	197.2566	160.0909
Test Pass/Fail 40 CFR 58.14(c)(1)	Fail	Fail

Table. 3 NAAQS Removing Ozone Compliance Monitors Test

	Ozone
2020 Design Value	0.074
2021 Design Value	0.076
2022 Design Value	0.078
2023 Design Value	0.079
2024 Design Value	0.080
Avg Design value.	0.077
Standard Dev	0.00
Student T	2.13
# of Samples	5
NAAQS	0.070
80% Standard	0.056
Prob <10% will exceed 80% of NAAQS	0.0797
Test Pass/Fail 40 CFR 58.14(c)(1)	Fail

The Ozone and PM-10 instruments do not meet 40 CFR 58.14 C (1)-(5).

Request

AQP is requesting permission to shut down and move the Lehi Air Monitoring Site approximately 231 yards southwest of the original site. The Ozone and PM-10 instruments are eligible to be moved under 40 CFR 58.14 (c) (6), because of circumstances beyond AQP control. These include the building's HVAC system has had difficulty in maintaining room temperature within EPA regulations; the ozone monitor is inside a crowded communication room and is subject to being hit, moved, or unplugged; the PM-10 and anemometer are located on the roof of the building with no railing and is only access by ladder; the residence time for the site is 3X greater than the other sites at 9.8 seconds, and the large trees surrounding the Lehi station grow quickly and need to be continually monitored and trimmed to maintain compliance with EPA regulations.

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 site's name and number will be changed. The data from the two sites will be linked to one another in the AQS database for monitoring continuity/design value purposes. The new site will monitor Continuous PM2.5 and PM10, Ozone, Ambient Temperature, Ambient Pressure, and Wind Speed and Direction.

The proposed start date for the new site is March 1st, 2026