# Supporting Materials Demonstrating Enhanced Ozone and PM2.5 concentrations in Ohio Resulting from Wildfire and Prescribed Fire Influence in 2023 and 2024

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May 2026

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**Executive Summary**

Based on the results of this analysis and the widespread impact of wildfire and prescribed fire smoke on monitors throughout Ohio, including areas within ozone nonattainment areas (NAAs), Core Based Statistical Areas (CBSAs), and the broader regional airshed, it is recommended that regulatory agencies give full and consistent consideration to the treatment of affected ozone and PM2.5 data under the Exceptional Events Rule. The evidence developed and presented here for the 2023 and 2024 wildfire and prescribed fire smoke episodes demonstrates that transported smoke significantly enhanced monitored concentrations across large portions of the region beyond what would reasonably be expected under typical conditions. These impacts were neither isolated nor localized but instead represented widespread regional air quality disturbances affecting both attainment and nonattainment areas alike.

Accordingly, each date and monitor identified as having experienced wildfire or prescribed fire smoke impacts during the 2023 and 2024 periods, where ozone or PM2.5 concentrations were demonstrably enhanced by smoke intrusion, should be flagged as influenced by exceptional events and the associated concentration values removed from the regulatory record used in design value calculations and attainment determinations. Importantly, the concept of "regulatory significance" should not be narrowly interpreted solely through the lens of whether the exclusion changes an attainment or nonattainment designation. Rather, any concentration demonstrably influenced by wildfire or prescribed fire smoke should be considered appropriate for exclusion regardless of the ultimate attainment outcome. Failure to recognize and remove these influenced concentrations risks embedding atypical and non-representative conditions into long-term regulatory datasets that support multiple Clean Air Act programs.

The significance of this issue is illustrated clearly by monitor 390350060 (GT Craig NCore PAMS) in Cuyahoga County, Ohio. Analysis indicates that this monitor experienced measurable enhancement on multiple dates from both wildfire and prescribed fire smoke intrusion during the 2022–2024 period. While the monitor's current annual design value remains above the annual PM2.5 National Ambient Air Quality Standard (NAAQS) at 10.0 µg/m$^3$, removal of most Tier 1 and Tier 2 dates would reduce the annual design value sufficiently to bring the monitor into attainment (at 8.9 µg/m$^3$) with the current annual PM2.5 NAAQS. Figure ES-1 below shows this approach using EPA's PM2.5 Tiering Tool[1].

This example demonstrates the substantial regulatory implications associated with smoke-influenced concentrations and underscores the importance of fully evaluating and excluding affected data where supported by technical evidence. Beyond attainment determinations alone, retaining these concentrations within the regulatory record could influence future permitting requirements, transportation conformity analyses, State Implementation Plan obligations, emissions reduction strategies, and broader regulatory planning efforts tied to both PM2.5 and ozone programs.

[1] https://www.epa.gov/air-quality-analysis/pm25-tiering-tool-exceptional-events-analysis


**Figure ES-1. EPA's PM2.5 Tiering Tool results for monitor 390350060 removing Tier 1 and Tier 2 dates.**

Consideration should also be given to monitors located outside designated NAAs and CBSAs but within the same regional airshed that experienced impacts from the same smoke plumes during the 2023 and 2024 episodes. In many cases, smoke transport was regional in scale and crossed jurisdictional and programmatic boundaries. Therefore, states should be encouraged to reference and leverage existing exceptional events demonstrations prepared by neighboring states where proximal monitors were impacted by the same smoke episodes on the same dates. Such coordination would improve consistency, reduce redundant analytical burdens, and better reflect the regional nature of the wildfire and prescribed fire impacts observed during these events.

Finally, consideration should be given to allowing states, including Ohio and Kentucky, flexibility in satisfying the clear causal relationship criterion for wildfire and prescribed fire dates associated with smoke episodes. The collective body of evidence developed here through satellite imagery, air mass trajectory analyses, smoke modeling, surface observations, and widespread concentration enhancements has already demonstrated that Canadian wildfire smoke and domestic prescribed fires significantly impacted ozone and PM2.5 concentrations across the region.

Given the extensive number of demonstrations currently being prepared nationwide for these episodes, it would be reasonable and appropriate for regulatory agencies to permit states to adopt and reference technical analyses and supporting evidence contained within this document and related demonstrations to satisfy Tier 1 obligations. Such an approach would maintain technical rigor while promoting regulatory consistency and administrative efficiency in addressing these unprecedented regional smoke events.

**Background**

In the summer of 2023, Canada experienced its most severe wildfire season on record. Smoke from these fires was transported across the Upper Midwest region of the United States, leading to widespread increases in surface-level ozone and PM2.5 concentrations, as observed by the U.S. AQS monitoring network. The 2023 events were particularly significant because they occurred early in the fire season (May -July) and resulted in the highest regional-scale surface ozone levels ever recorded across the northern U.S.[2]

In 2024, wildfire smoke was most frequently observed in July and August, particularly in the Central US, coinciding with major wildfires in Canada, California, Idaho, and Oregon. Although the 2024 Canadian wildfires were less extensive than in 2023, they still represented the second-largest burned area in the last two decades.

Figure 1 below shows statistics extracted from the Canadian National Fire Database[3], and shows the extreme acres burned in Canada in 2023 and 2024 compared to the past five decades.

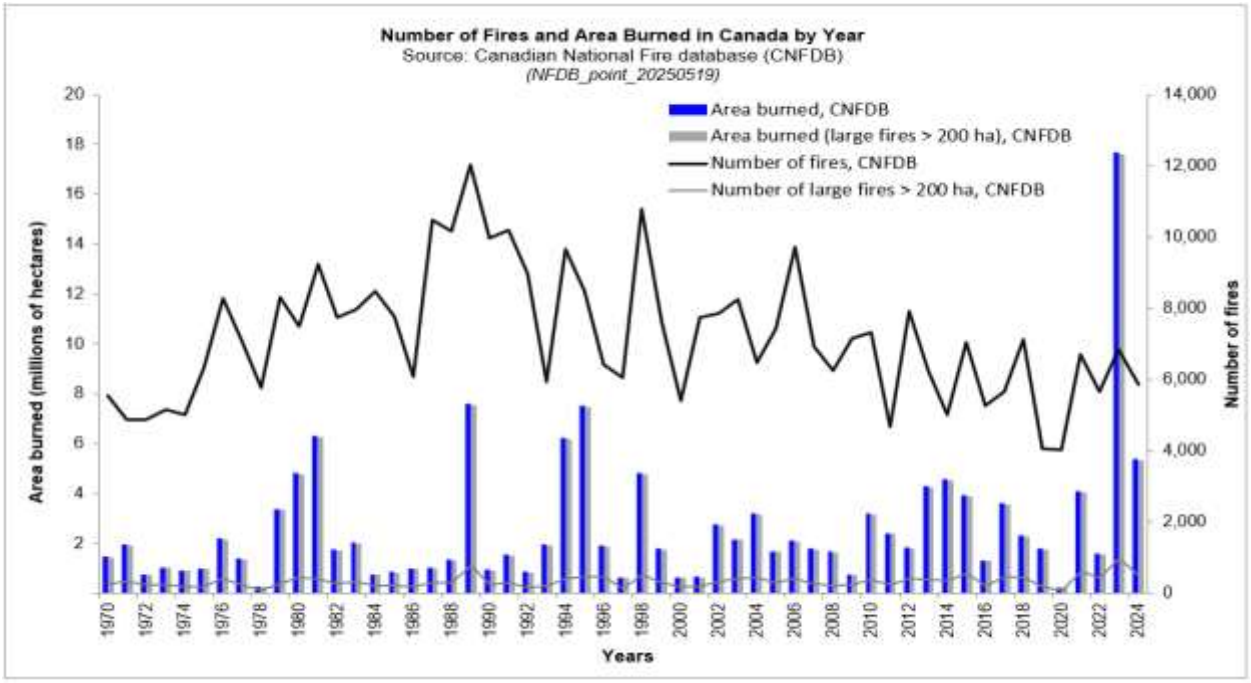



**Figure 1. Number of fires and area burned in Canada by year, 1970-2024.**

Additional studies[4] show that significant amounts of Canadian wildfire emissions were emitted into the atmosphere during the 2023 and 2024 calendar years. Table 1 presents an accounting of those emissions in 2023 as estimated using the U.S. Forest Service's BlueSky modeling framework. Much of

[2] https://doi.org/10.1029/2024GL111481
[3] https://cwfis.cfs.nrcan.gc.ca/ha/nfdb
[4] https://doi.org/10.1016/j.dib.2024.111208

those emissions eventually made their way into the northern and eastern regions of the U.S. This resulted in observable smoke coverage on most of the days during calendar year 2023 and for most of the eastern states, with significant spikes in May through September 2023 due to unprecedented levels of wildfire activity.

**Table 1. Monthly 2023 Canada wildland fire emissions (short tons)**

| Month | CO (tons) | CO2 (tons) | NOx (tons) | PM2.5 (tons) | VOC (tons) |
|---|---|---|---|---|---|
| Jan | 174,640 | 2,943,797 | 2,509 | 24,299 | 54,063 |
| Feb | 26,430 | 466,961 | 426 | 3,716 | 8,673 |
| Mar | 33,191 | 597,026 | 564 | 4,765 | 11,244 |
| Apr | 29,440 | 569,269 | 601 | 4,228 | 10,448 |
| May | 4,530,476 | 76,361,970 | 65,021 | 607,398 | 1,346,389 |
| Jun | 8,572,781 | 138,754,014 | 112,729 | 1,134,010 | 2,442,094 |
| Jul | 6,592,839 | 112,494,448 | 101,312 | 883,722 | 2,046,350 |
| Aug | 5,765,409 | 98,807,492 | 89,586 | 780,091 | 1,809,509 |
| Sep | 3,871,245 | 65,528,376 | 56,429 | 527,038 | 1,177,193 |
| Oct | 327,395 | 5,690,758 | 5,044 | 45,253 | 102,992 |
| **Total** | **29,923,847** | **502,214,113** | **434,222** | **4,014,519** | **9,008,956** |

Furthermore, based on available public data[5], the table below provides planning-level estimates for acres treated with prescribed fire in the Eastern United States (South + Appalachians + Mid-Atlantic + eastern federal lands) for calendar years 2020–2024.

These burn level estimates indicate that prescribed fire smoke from tens of millions of acres burned during the same period likely enhanced ozone/PM observations concurrently with wildfire influence.

[5] https://www.nifc.gov/fire-information/statistics/prescribed-fire

**Table 2. Annual Estimated Acres Burned (Millions) with Prescribed Fire (Eastern U.S.)**

| Year | Low (Acres) | High (Acres) | Notes |
|---|---|---|---|
| 2020 | 4.8 | 6.0 | COVID disruptions, staffing limits, weather variability likely reduced some operations |
| 2021 | 5.0 | 6.3 | Programs resumed more normal pace |
| 2022 | 5.3 | 6.6 | Strong southeastern burning activity |
| 2023 | 5.8 | 7.0 | High activity; Georgia reported ~1.3+ million acres annually range |
| 2024 | 6.0 | 7.5 | Georgia near 1.4 million/yr typical; strong regional activity |

Cumulative smoke data annual statistics are derived by aggregating daily Hazard Mapping System (HMS) smoke polygons into a grid and counting the number of days when individual cells were covered by either light, medium or heavy smoke during the year. Contour lines and labels depicting the number of observed smoke days are used to help with data interpretation. The smoke contour maps for 2023 and 2024 are presented in Figure 2 and indicate that much of the eastern U.S. was covered in observed smoke for up to 55% (~ 200 days) in 2023 and up to 50% (~180 days) in 2024.

During the late spring and summer of 2023 and in the fall of 2024, Ohio experienced some of its worst recorded air quality as smoke and unhealthy haze from wildfires found their way into the Ohio valley, as reported by multiple sources and studies at the time.[6,7,8,9,10]

[6] https://acsess.onlinelibrary.wiley.com/doi/10.1002/cft2.20299
[7] https://www.news5cleveland.com/weather/weather-news/yes-canadas-wildfire-smoke-can-be-seen-in-northeast-ohio
[8] https://www.wtol.com/article/weather/smoke-canadian-wildfires-reported-in-ohio/512-65f7a182-57e5-4eab-8c36-50a5de383aa9
[9] https://www.dispatch.com/story/news/2024/05/13/canada-wildfires-2024-map-smoke-air-quality-ohio-u-s/73670466007/
[10] https://www.nature.com/articles/s41586-025-09482-1

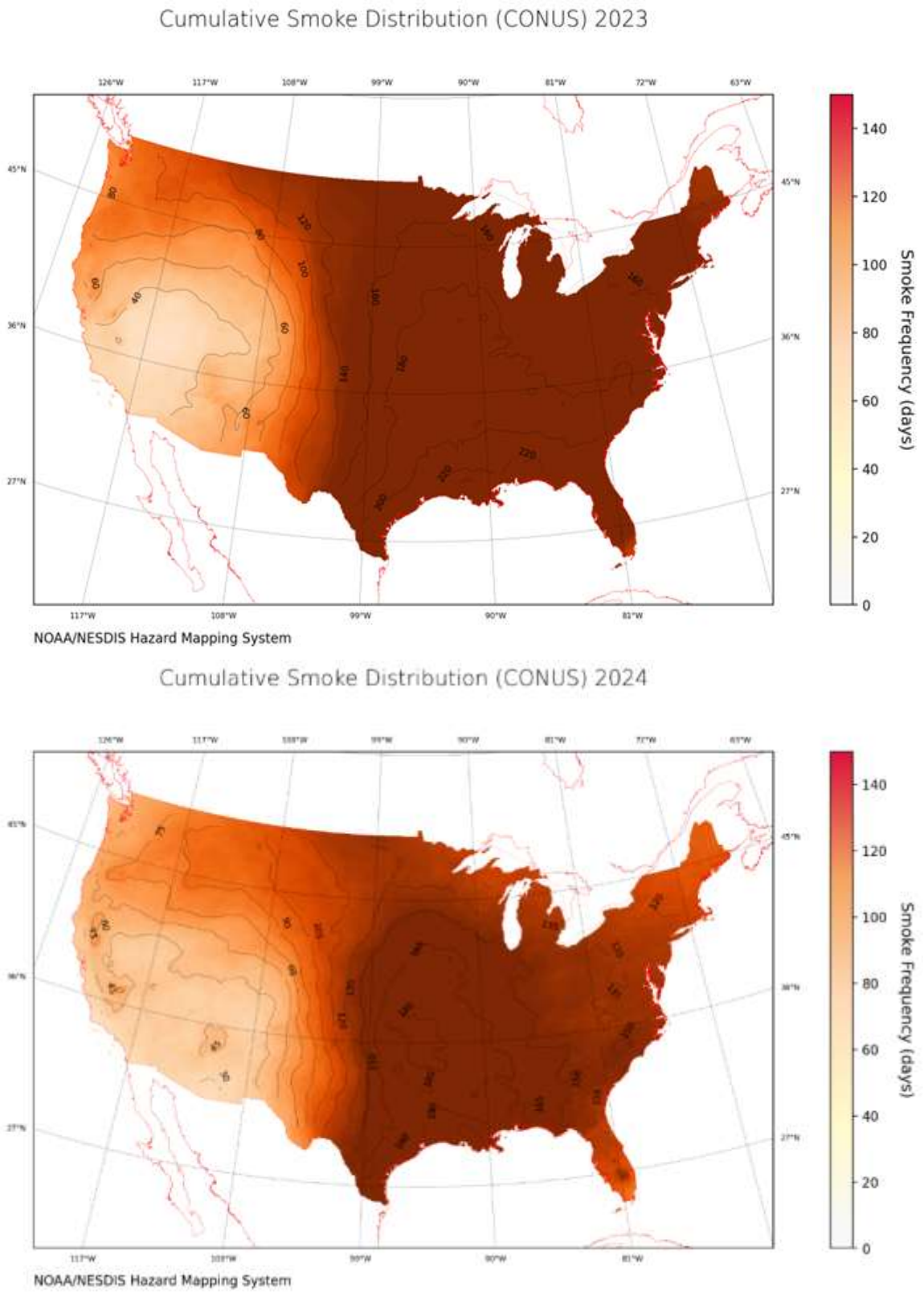



**Figure 2. Cumulative smoke distribution observed across the continental U.S. in 2023 (top) and 2024 (bottom).**

**Purpose and Presentation**

This document is intended to provide objective, technical, supporting information for ozone and PM2.5 concentrations observed within Ohio's metro Core Based Statistical Areas (CBSAs) and ozone nonattainment areas (NAAs) showing these concentrations were influenced by smoke from wildfires on multiple days during 2023 and 2024.

Using protocols established in EPA's "Guidance on the Preparation of Exceptional Events Demonstrations for Wildfire Events that May Influence Ozone Concentrations"[11] and supplemental "PM2.5 Wildland Fire Exceptional Events Tiering Document,"[12] presented here is supporting information consistent with Tier 1 and Tier 2 approaches to addressing the clear causal relationship element within a wildfire/PM2.5/ozone demonstration.

And while not a formal exceptional events demonstration, information in this document provides the following key findings and evidence supporting the need for and likely result of such a demonstration:

1. Ozone and PM2.5 concentrations in 2023 and 2024 at multiple monitors were above the 99th percentile of the 5-year distribution of ozone or PM2.5 monitoring data at the sites, were among the highest concentrations for the year, and were among the highest observations in the most recent 5-year period.
2. Considerable ozone and PM2.5 were created upstream of Ohio's airshed due to the large-scale presence of ozone and PM2.5 precursors (NOx, VOC, PM) generated during Canada's largest recorded wildfire year (2023), which were then transported into the Ohio Valley region during the late spring and summer seasons.
3. Without a Canada-scale smoke event dominating the year, 2024 allowed prescribed fire influence to be more visible as part of the regional air quality background, especially during the spring burn season (March–May), fall dormant-season burns, and with a dominant southerly flow from Southeast states
4. Satellite images captured visual smoke plumes that were transported into the region on days when the ozone and PM2.5 concentrations were highest.
5. Analysis of the National Oceanic and Atmospheric Administration's (NOAA) Hazard Mapping System (HMS) smoke product and Air Quality Index (AQI) shows an enhanced ozone and PM2.5 concentration impact at monitors along the smoke transport path that eventually culminates with excess ozone observations in Ohio NAA and CBSAs.
6. Regional upwind measurements identify multiple monitors with unusually high concentrations during the dates when the transported smoke plume passes through the region.
7. Fine particulate matter (PM2.5) was elevated during ozone events, consistent with a wildfire smoke plume.
8. PM2.5 speciated data (organic carbon and potassium ion) showed elevated wildfire attributable concentrations.

[11] https://www.epa.gov/system/files/documents/2023-12/guidance-on-the-preparation-of-ee-wf-ozone.pdf
[12] https://www.epa.gov/system/files/documents/2024-04/final-pm-fire-tiering-4-30-24.pdf

Several analytical methods were used to develop evidence that many of the 8-hour ozone concentrations above 70 parts per billion (ppb) and daily PM2.5 concentrations above 35 µg/$m^3$ recorded during the 2023 and 2024 calendar years meet the rules for data exclusion as an Exceptional Event. In summary, satellite images and data, screening tools, and speciated PM2.5 data were used to assess whether conditions were favorable for transport of smoke from the North American wildfires and prescribed fires to monitors that showed concentrations above levels of the NAQQS. The data also showed that the transported smoke enhanced ozone and PM2.5 concentrations and degraded air quality in Ohio NAA and CBSAs, as well as in many regional areas in the Midwestern U.S.

Data presented here are related to monitors in Ohio's ozone nonattainment areas and CBSAs, inclusive of ozone and PM2.5 monitors in Ohio and Kentucky. Information in this document is presented for monitors shown in Table 4 and Table 6.

**Table 3. 4th high ozone observations at monitors in Ohio nonattainment areas; 2020-2024.**

| | | | | 4th High Ozone Design Value (ppb) | | | | |
|---|---|---|---|---|---|---|---|---|
| **State** | **County** | **Site ID** | **NAA Name** | **2020** | **2021** | **2022** | **2023** | **2024** |
| OH | Butler | 390170018 | Cincinnati, OH-KY | 70 | 64 | 67 | 71 | 67 |
| OH | Butler | 390170023 | Cincinnati, OH-KY | 67 | 66 | 70 | 68 | 68 |
| OH | Butler | 390179991 | Cincinnati, OH-KY | 64 | 63 | 66 | 69 | 66 |
| OH | Clermont | 390250022 | Cincinnati, OH-KY | 64 | 65 | 63 | 68 | 68 |
| OH | Hamilton | 390610006 | Cincinnati, OH-KY | 70 | 70 | 69 | 73 | 73 |
| OH | Hamilton | 390610010 | Cincinnati, OH-KY | 70 | 64 | 68 | 73 | 70 |
| OH | Hamilton | 390610040 | Cincinnati, OH-KY | 68 | 69 | 67 | 75 | 73 |
| OH | Warren | 391650007 | Cincinnati, OH-KY | 71 | 69 | 69 | 74 | 73 |
| KY | Boone | 210150008 | Cincinnati, OH-KY | - | - | 66 | 77 | 63 |
| KY | Campbell | 210373002 | Cincinnati, OH-KY | 63 | 64 | 62 | 66 | 70 |
| OH | Cuyahoga | 390350034 | Cleveland, OH | 74 | 70 | 73 | 71 | 72 |
| OH | Cuyahoga | 390350060 | Cleveland, OH | 66 | 59 | 61 | 65 | 65 |
| OH | Cuyahoga | 390350064 | Cleveland, OH | 66 | 69 | 65 | 75 | 65 |
| OH | Cuyahoga | 390355002 | Cleveland, OH | 68 | 68 | 65 | 73 | 70 |
| OH | Geauga | 390550004 | Cleveland, OH | 65 | 67 | 64 | 66 | 66 |
| OH | Lake | 390850003 | Cleveland, OH | 75 | 72 | 76 | 72 | 71 |
| OH | Lake | 390850007 | Cleveland, OH | 68 | 63 | 62 | 73 | 69 |
| OH | Lorain | 390930018 | Cleveland, OH | 59 | 59 | 63 | 64 | 61 |
| OH | Medina | 391030004 | Cleveland, OH | 64 | 65 | 67 | 72 | 65 |
| OH | Portage | 391331001 | Cleveland, OH | 63 | 67 | 71 | 70 | 67 |
| OH | Summit | 391530026 | Cleveland, OH | 62 | 66 | 69 | 71 | 69 |
| OH | Delaware | 390410002 | Columbus, OH | 63 | 61 | 60 | 66 | 67 |
| OH | Franklin | 390490029 | Columbus, OH | 67 | 64 | 69 | 69 | 69 |
| OH | Franklin | 390490081 | Columbus, OH | 64 | 61 | 62 | 67 | 65 |
| OH | Licking | 390890005 | Columbus, OH | 60 | 60 | 60 | 65 | 63 |
| OH | Licking | 390890008 | Columbus, OH | 57 | 57 | 63 | 62 | 63 |

**Table 4. 3-yr ozone design values (ppb) at monitors in Ohio nonattainment areas; 2022-2024.**

| State | County | Site ID | NAA Name | 2020-2022 Design Value (ppb) | 2021-2023 Design Value (ppb) | 2022-2024 Design Value (ppb) |
|---|---|---|---|---|---|---|
| OH | Butler | 390170018 | Cincinnati, OH-KY | 67 | 67 | 68 |
| OH | Butler | 390170023 | Cincinnati, OH-KY | 67 | 68 | 68 |
| OH | Butler | 390179991 | Cincinnati, OH-KY | 64 | 66 | 67 |
| OH | Clermont | 390250022 | Cincinnati, OH-KY | 64 | 65 | 66 |
| OH | Hamilton | 390610006 | Cincinnati, OH-KY | 69 | 70 | 71 |
| OH | Hamilton | 390610010 | Cincinnati, OH-KY | 67 | 68 | 70 |
| OH | Hamilton | 390610040 | Cincinnati, OH-KY | 68 | 70 | 71 |
| OH | Warren | 391650007 | Cincinnati, OH-KY | 69 | 70 | 72 |
| KY | Boone | 210150008 | Cincinnati, OH-KY | 63 | 68 | 68 |
| KY | Campbell | 210373002 | Cincinnati, OH-KY | 63 | 64 | 66 |
| OH | Cuyahoga | 390350034 | Cleveland, OH | 72 | 71 | 72 |
| OH | Cuyahoga | 390350060 | Cleveland, OH | 62 | 61 | 63 |
| OH | Cuyahoga | 390350064 | Cleveland, OH | 66 | 69 | 68 |
| OH | Cuyahoga | 390355002 | Cleveland, OH | 67 | 68 | 69 |
| OH | Geauga | 390550004 | Cleveland, OH | 65 | 65 | 65 |
| OH | Lake | 390850003 | Cleveland, OH | 74 | 73 | 73 |
| OH | Lake | 390850007 | Cleveland, OH | 64 | 66 | 68 |
| OH | Lorain | 390930018 | Cleveland, OH | 60 | 62 | 62 |
| OH | Medina | 391030004 | Cleveland, OH | 65 | 68 | 68 |
| OH | Portage | 391331001 | Cleveland, OH | 67 | 69 | 69 |
| OH | Summit | 391530026 | Cleveland, OH | 65 | 68 | 69 |
| OH | Delaware | 390410002 | Columbus, OH | 61 | 62 | 64 |
| OH | Franklin | 390490029 | Columbus, OH | 66 | 67 | 69 |
| OH | Franklin | 390490081 | Columbus, OH | 62 | 63 | 64 |
| OH | Licking | 390890005 | Columbus, OH | 60 | 61 | 62 |
| OH | Licking | 390890008 | Columbus, OH | 59 | 60 | 62 |

**Table 5. Annual mean PM2.5 values (µg/m$^3$) at monitors in Ohio CBSAs; 2020-2024.**

| | | | | Annual Mean PM2.5 Value (µg/m3) | | | | |
|---|---|---|---|---|---|---|---|---|
| **State** | **County** | **Site ID** | **CBSA Name** | **2020** | **2021** | **2022** | **2023** | **2024** |
| OH | Butler | 390170015 | Cincinnati, OH-KY-IN | 8.87 | 9.79 | 8.43 | 10.54 | 8.25 |
| OH | Butler | 390170019 | Cincinnati, OH-KY-IN | 8.40 | 9.40 | 7.95 | 10.07 | 8.06 |
| OH | Butler | 390170022 | Cincinnati, OH-KY-IN | 9.76 | 11.03 | 9.53 | 12.06 | 9.39 |
| OH | Hamilton | 390610006 | Cincinnati, OH-KY-IN | 8.72 | 10.24 | 8.63 | 8.86 | 6.15 |
| OH | Hamilton | 390610014 | Cincinnati, OH-KY-IN | 10.67 | 11.10 | 8.73 | 10.87 | 8.43 |
| OH | Hamilton | 390610040 | Cincinnati, OH-KY-IN | 8.79 | 10.03 | 7.64 | 9.99 | 8.01 |
| OH | Hamilton | 390610042 | Cincinnati, OH-KY-IN | 9.48 | 10.82 | 8.15 | 10.08 | 7.82 |
| OH | Hamilton | 390610048 | Cincinnati, OH-KY-IN | 10.35 | 10.77 | 9.69 | 9.78 | 8.36 |
| KY | Campbell | 210373002 | Cincinnati, OH-KY-IN | 7.55 | 8.40 | 6.73 | 8.45 | 6.44 |
| OH | Cuyahoga | 390350034 | Cleveland-Elyria, OH | 6.78 | 7.51 | 6.66 | 8.39 | 6.40 |
| OH | Cuyahoga | 390350038 | Cleveland-Elyria, OH | 8.77 | 10.26 | 8.94 | 11.22 | 8.83 |
| OH | Cuyahoga | 390350060 | Cleveland-Elyria, OH | 7.89 | 10.38 | 8.82 | 11.92 | 9.34 |
| OH | Cuyahoga | 390350065 | Cleveland-Elyria, OH | 10.44 | 12.68 | 11.00 | 12.83 | 9.75 |
| OH | Cuyahoga | 390350073 | Cleveland-Elyria, OH | 8.99 | 9.38 | 7.57 | 9.12 | 6.40 |
| OH | Lake | 390850007 | Cleveland-Elyria, OH | 6.19 | 6.89 | 6.15 | 8.54 | 5.74 |
| OH | Medina | 391030004 | Cleveland-Elyria, OH | 6.47 | 6.93 | 6.25 | 9.10 | 6.91 |
| OH | Lucas | 390950026 | Toledo, OH | 7.33 | 8.35 | 6.94 | 8.14 | 7.49 |
| OH | Lucas | 390951003 | Toledo, OH | 9.53 | 8.88 | 8.74 | 9.46 | 9.02 |

**Table 6. Annual PM2.5 design values (µg/m$^3$) at monitors in Ohio CBSAs; 2022-2024.**

| | | | | Annual Design Value (µg/m$^3$) | | |
|---|---|---|---|---|---|---|
| **State** | **County** | **Site ID** | **CBSA Name** | **2020-2022** | **2021-2023** | **2022-2024** |
| OH | Butler | 390170015 | Cincinnati, OH-KY-IN | - | 9.6 | 9.1 |
| OH | Butler | 390170019 | Cincinnati, OH-KY-IN | - | 9.1 | 8.7 |
| OH | Butler | 390170022 | Cincinnati, OH-KY-IN | 10.1 | 10.9 | 10.3 |
| OH | Hamilton | 390610006 | Cincinnati, OH-KY-IN | 9.2 | 9.2 | 7.9 |
| OH | Hamilton | 390610014 | Cincinnati, OH-KY-IN | 9.5 | 9.9 | 9.3 |
| OH | Hamilton | 390610040 | Cincinnati, OH-KY-IN | 8.5 | 8.9 | 8.5 |
| OH | Hamilton | 390610042 | Cincinnati, OH-KY-IN | 8.9 | 9.3 | 8.7 |
| OH | Hamilton | 390610048 | Cincinnati, OH-KY-IN | 10.3 | 10.1 | 9.3 |
| KY | Campbell | 210373002 | Cincinnati, OH-KY-IN | 7.1 | 7.6 | 7.2 |
| OH | Cuyahoga | 390350034 | Cleveland-Elyria, OH | 7.0 | 7.5 | 7.2 |
| OH | Cuyahoga | 390350038 | Cleveland-Elyria, OH | 9.2 | 10.0 | 9.7 |
| OH | Cuyahoga | 390350060 | Cleveland-Elyria, OH | 8.8 | 10.2 | 10.0 |
| OH | Cuyahoga | 390350065 | Cleveland-Elyria, OH | 11.4 | 12.2 | 11.2 |
| OH | Cuyahoga | 390350073 | Cleveland-Elyria, OH | 8.2 | 8.5 | 7.7 |
| OH | Lake | 390850007 | Cleveland-Elyria, OH | 6.4 | 7.2 | 6.8 |
| OH | Medina | 391030004 | Cleveland-Elyria, OH | 6.6 | 7.4 | 7.4 |
| OH | Lucas | 390950026 | Toledo, OH | - | 7.8 | 7.5 |
| OH | Lucas | 390951003 | Toledo, OH | 9.1 | 9.0 | 9.1 |

**Ozone and PM2.5 Trends and 2023/2024 Conditions in Ohio**

Ozone has significantly decreased in many Ohio metro areas over the past 25 years due to sizeable and sustained reductions in ozone precursor emissions. This is evident in Figure 3 below, showing the number of monitor-days in each year since 2000 where monitors in many of the Ohio core based statistical area (CBSA) have exceeded the 70 ppb NAAQS for ozone on certain dates. As is demonstrated in this Figure, 2023 was exceptional in the recent historical record as more NAAQS monitor-day exceedances occurred in 2023 compared to complete years of reporting from 2019 through 2024. The number of exceedances in Figure 3 represent unique dates across all monitors, not necessarily the number of exceedances at any one monitor.

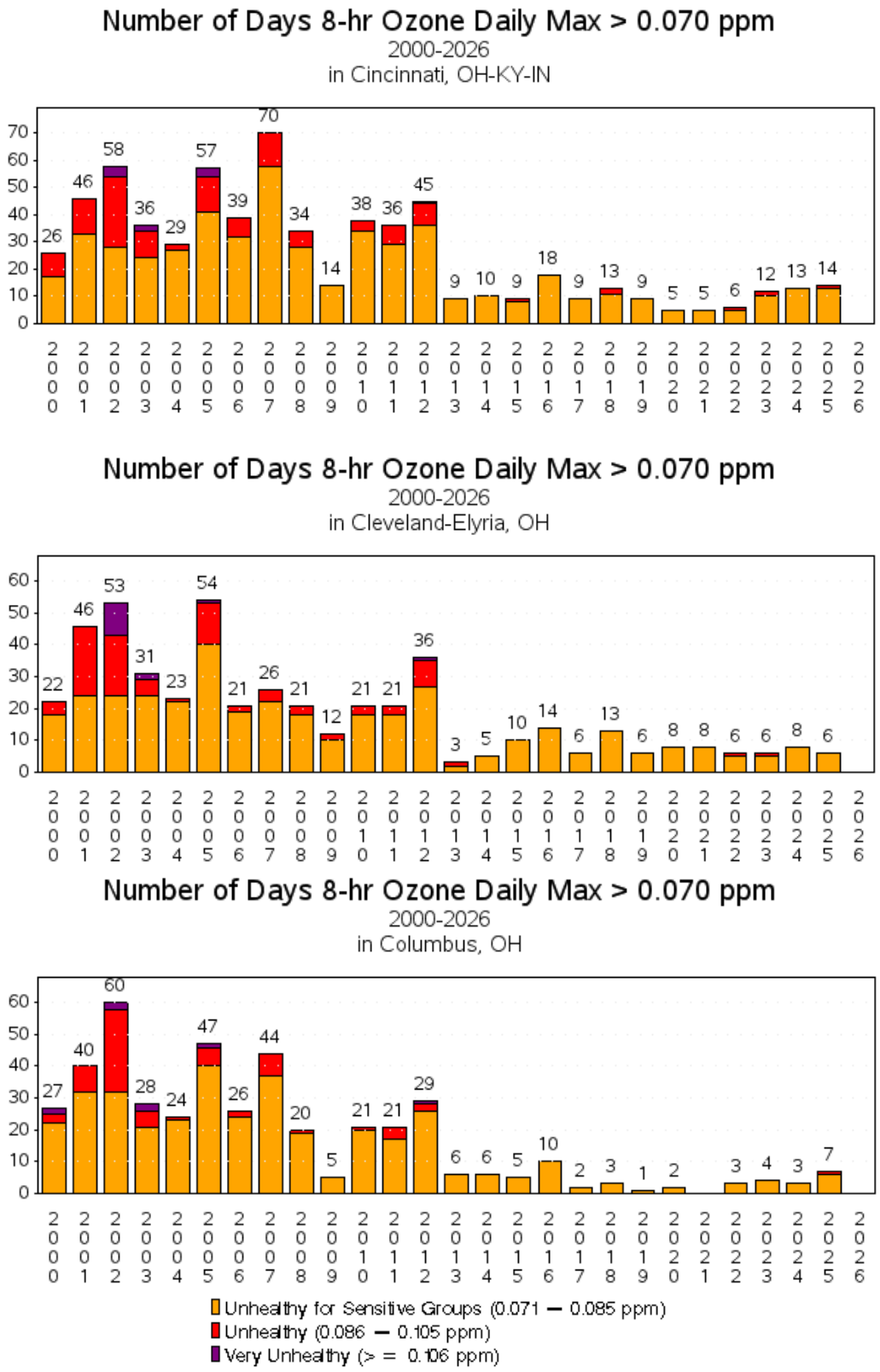



**Figure 3. Number of days where Ohio CBSA monitors exceeded the level of the current ozone NAAQS.**

However, at each of the regulatory monitors in the NAA, exceptionally high 4th high observations of maximum daily 8-hour averaged (MDA8) ozone in 2023, associated with the wildfire enhancements to ozone concentrations, resulted in estimated 3-year design values trending away from the decreases observed over the last decade. Elevated 4th high values in 2023 produced design value increases at monitors in the CBSAs. These 4th high value trends can be seen in Figure 4, Figure 5, and Figure 6. Note that future design values inclusive of the 4th high values from 2023 (through 2025) will be influenced by the excessively high observations that have been enhanced by the Canadian wildfire smoke in the spring and summer of 2023. This can already be seen in 2024 three-year design values, even though 2024 4th high observations were significantly lower than those in 2023.

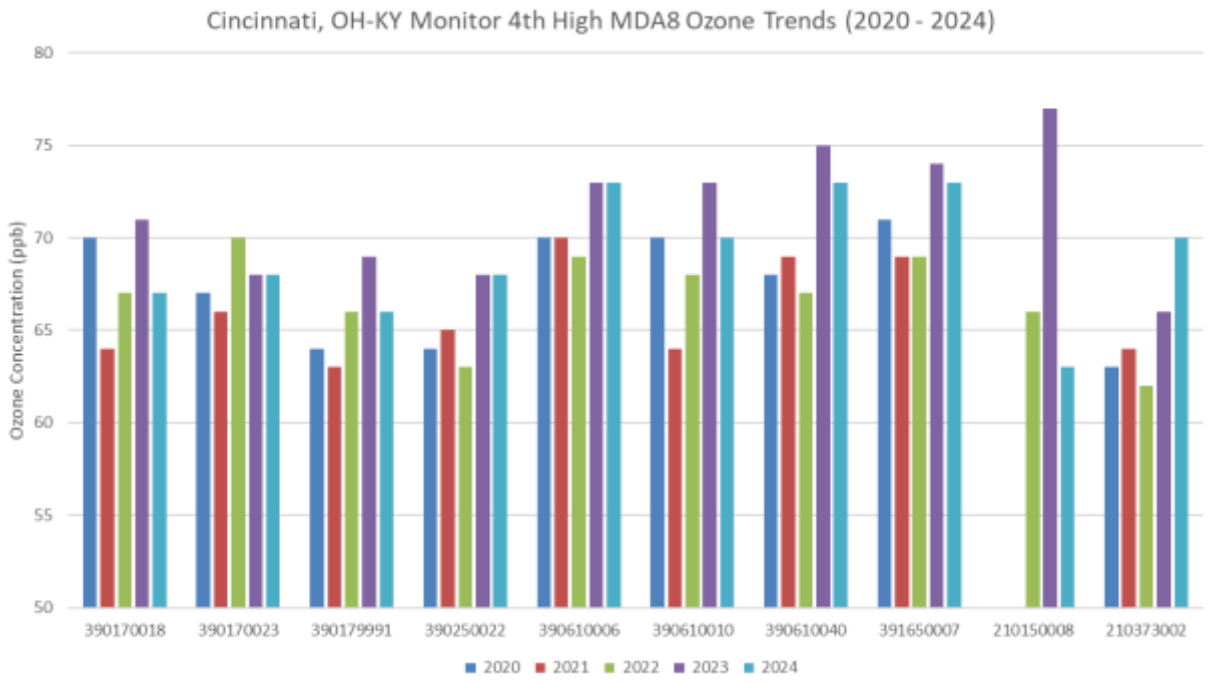



**Figure 4. 4th high ozone concentration trends at Cincinnati NAA monitors (2020-2024).**

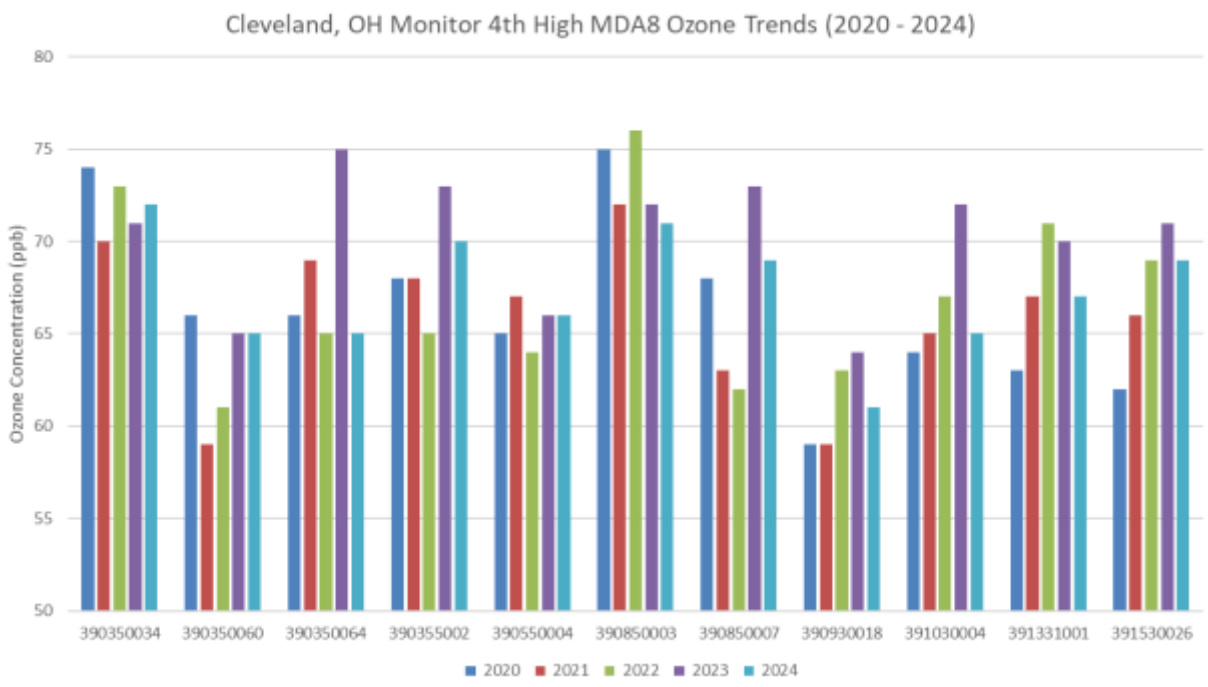



**Figure 5. 4th high ozone concentration trends at Cleveland NAA monitors (2020-2024).**

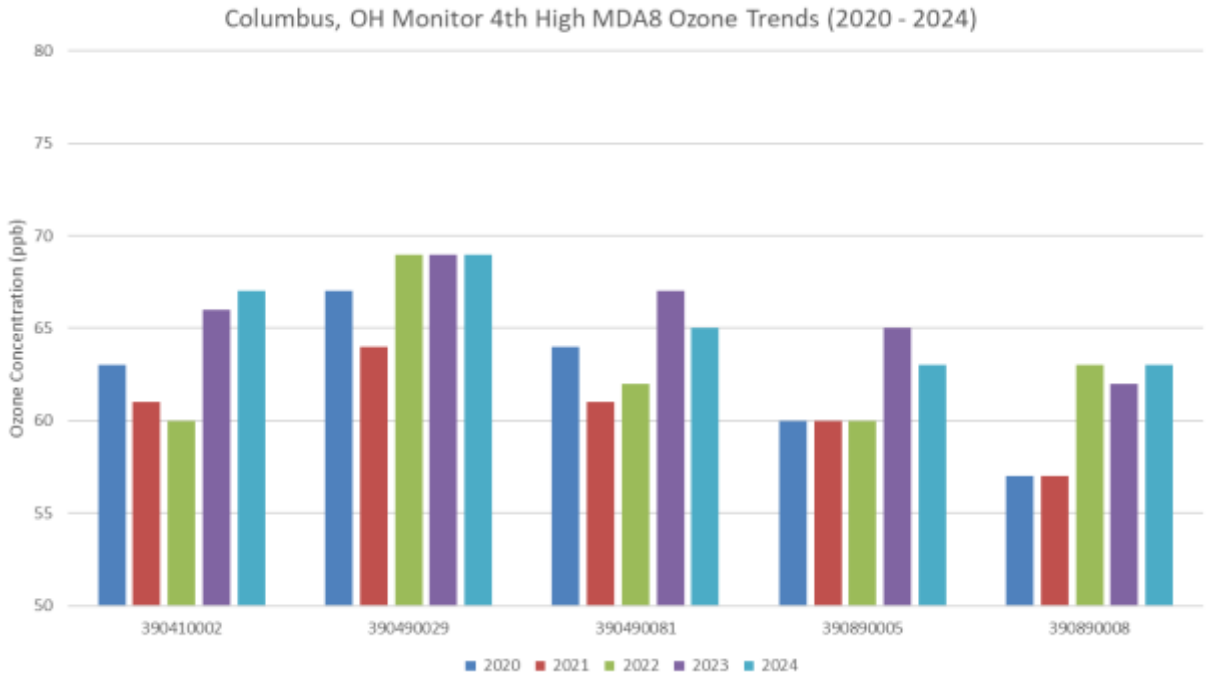



**Figure 6. 4th high ozone concentration trends at Columbus NAA monitors (2020-2024).**

We see similar trends in PM2.5 monitors in Ohio's CBSAs in 2023 with annual mean values spiking because of wildfire smoke impacts. Elevated values in 2023 produced design value increases, as seen in Table 6 at monitors in the CBSAs. These trends can be seen in Figure 7, Figure 8, and Figure 9. As with ozone, future design values inclusive of the high annual mean values from 2023 (through 2025) will be influenced by the excessively high observations that have been enhanced by the Canadian wildfire smoke in the spring and summer of 2023.

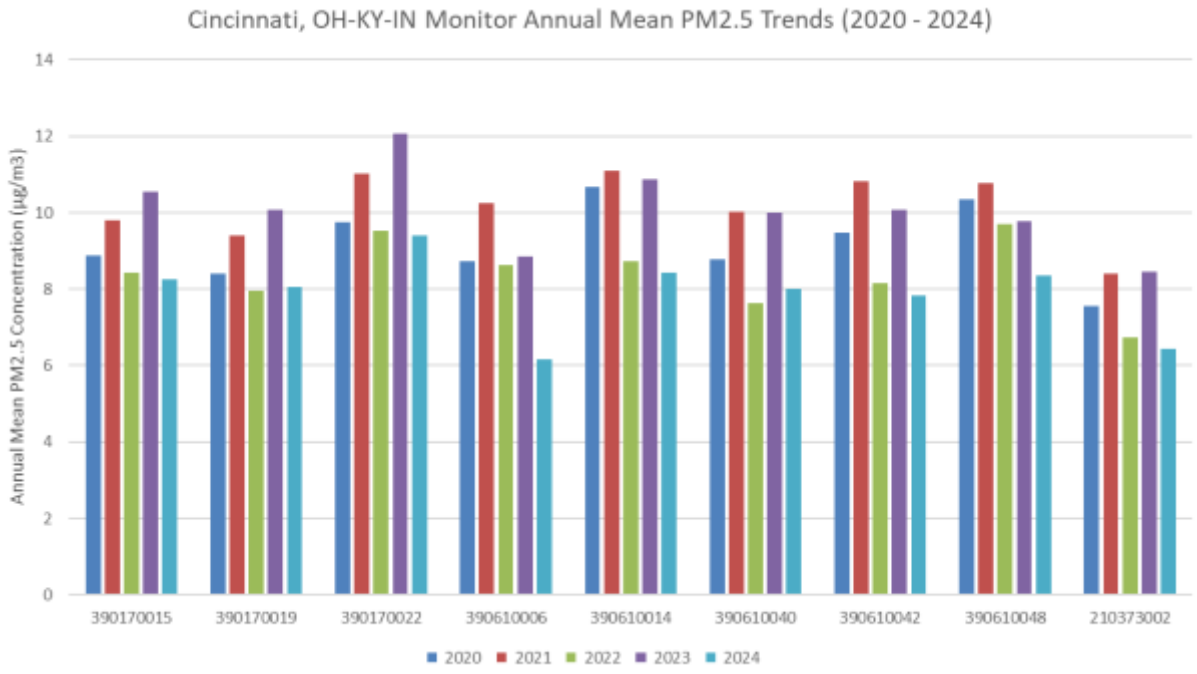



**Figure 7. Annual mean PM2.5 concentration trends at Cincinnati CBSA monitors (2020-2024).**

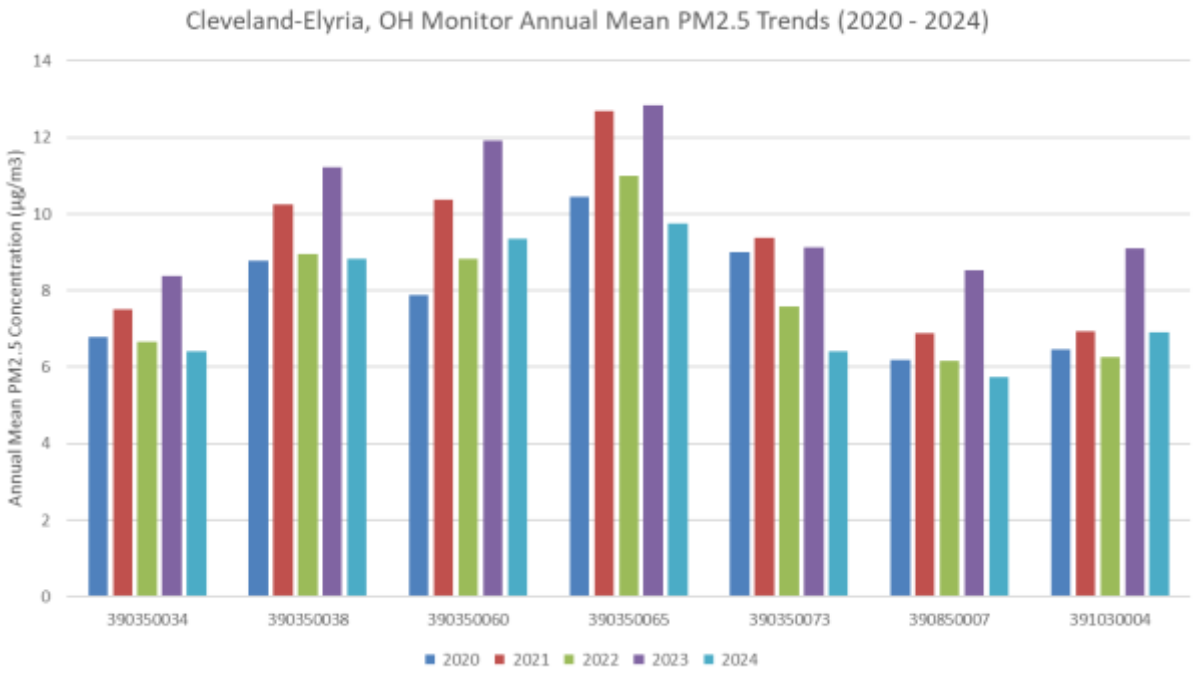



**Figure 8. Annual mean PM2.5 concentration trends at Cleveland-Elyria CBSA monitors (2020-2024).**

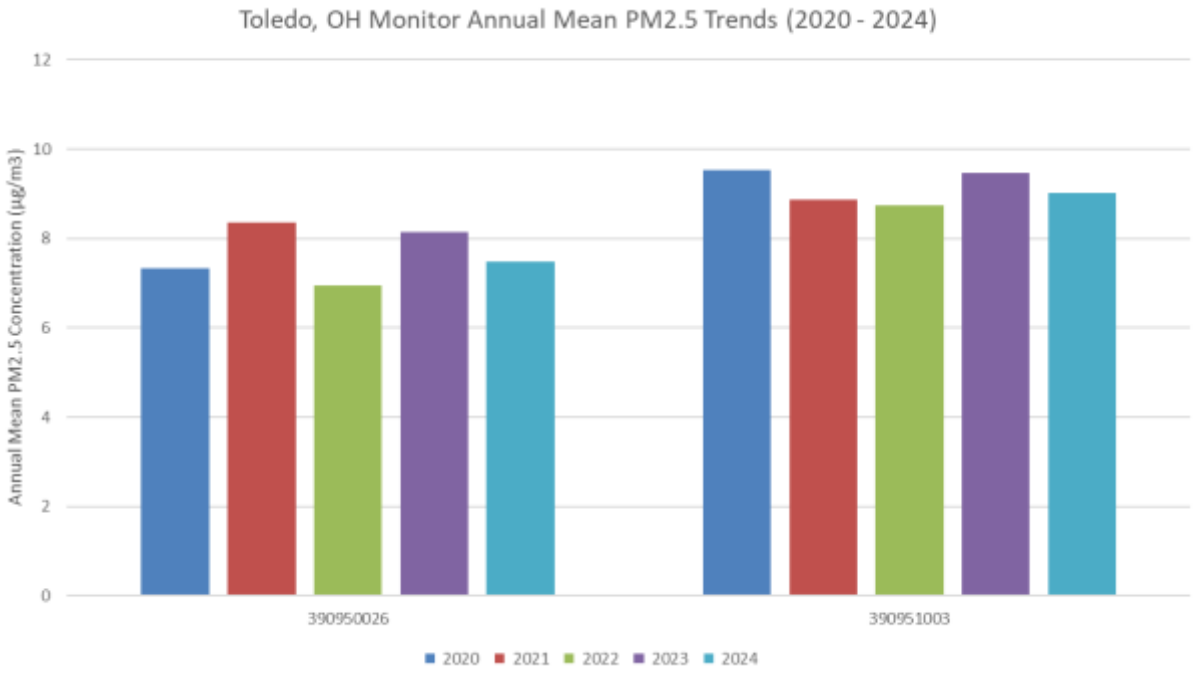



**Figure 9. Annual mean PM2.5 concentration trends at Toledo CBSA monitors (2020-2024).**

In 2023, Cincinnati, Cleveland, Columbus, and Toledo's ozone and PM2.5 daily air quality indexes (AQI), the measurement EPA uses to communicate outdoor air quality and health, were above both the 5-year average (2019-2023) as well as exceeding levels of the 24-year high (2000-2023). Figure 10 through Figure 13 present these values as generated from EPA's AirData website[13].

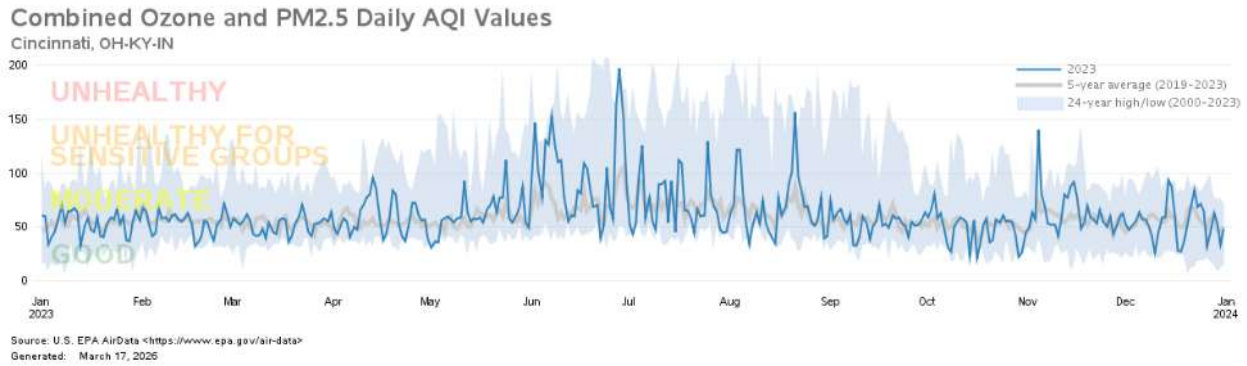



**Figure 10. Cincinnati CBSA ozone daily AQI values; 2023 compared to 5-year averages (2019-2023) and the 24-year (2000-2023) high/low values.**

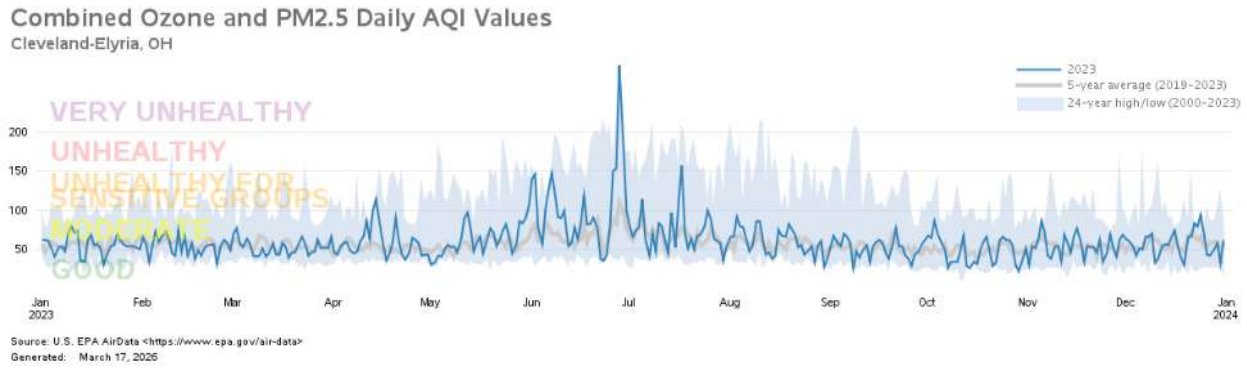



**Figure 11. Cleveland-Elyria CBSA ozone daily AQI values; 2023 compared to 5-year averages (2019-2023) and the 24-year (2000-2023) high/low values.**

[13] https://www.epa.gov/outdoor-air-quality-data

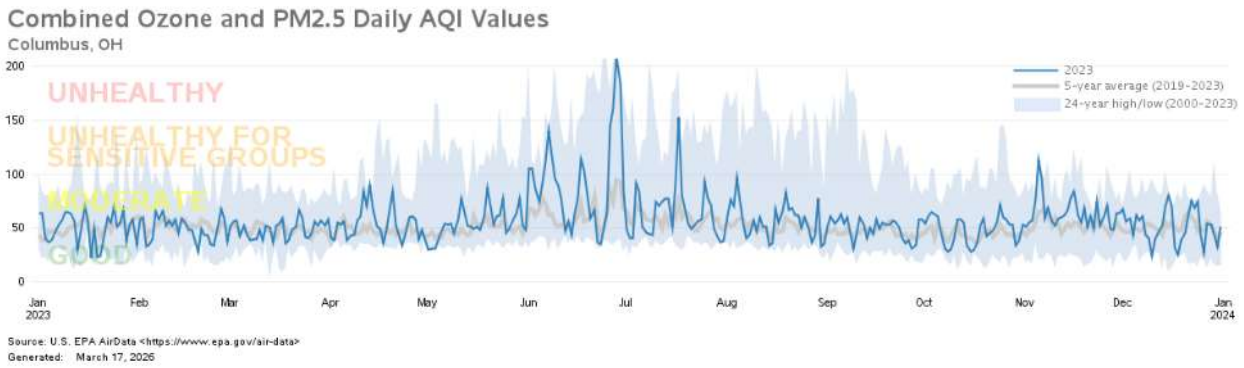



**Figure 12. Columbus CBSA ozone daily AQI values; 2023 compared to 5-year averages (2019-2023) and the 24-year (2000-2023) high/low values.**

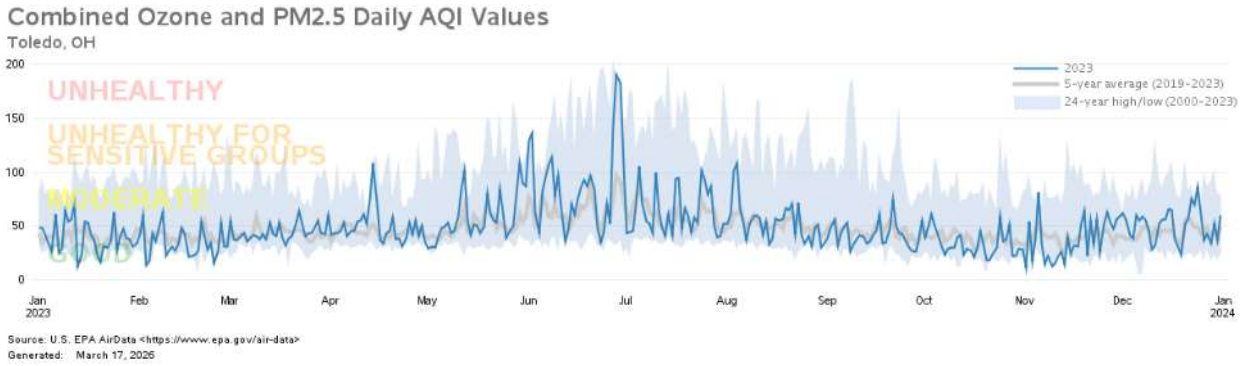



**Figure 13. Toledo CBSA ozone daily AQI values; 2023 compared to 5-year averages (2019-2023) and the 24-year (2000-2023) high/low values.**

Similarly, in 2023, Ohio CBSAs experienced an exceptionally high number of days where the AQI exceeded 100, a measure indicating that air quality is unhealthy, at first for certain sensitive groups of people, then for everyone as AQI values get higher. The cumulative number of high (> 100) AQI days in 2023 is presented in Figure 14 and is seen as greater than the 5-year average and comparable through August to high values in the 24-year period from 2000-2023.

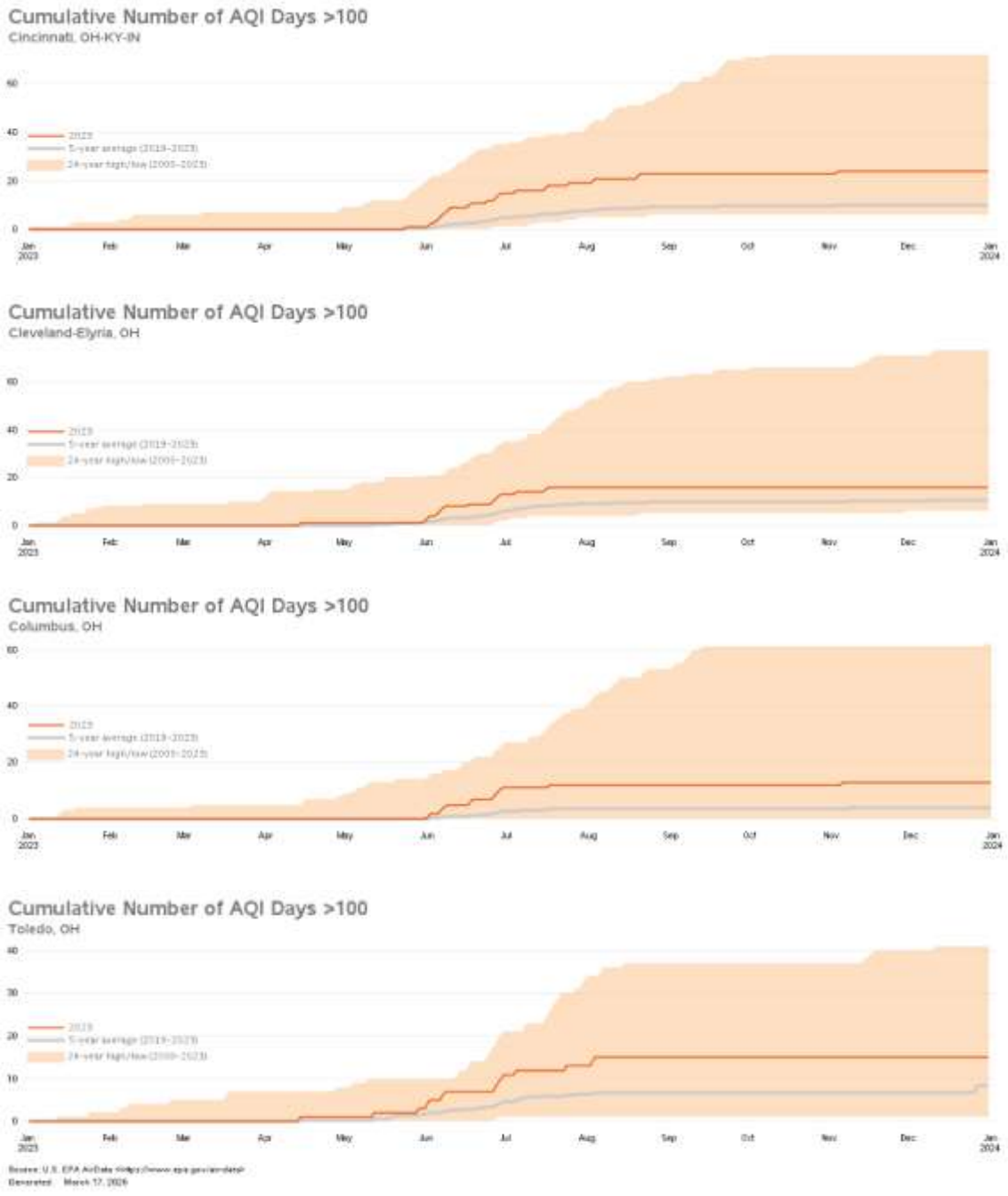



**Figure 14. Cumulative number of ozone AQI days > 100 in the Cincinnati, Cleveland, Columbus, and Toledo CBSAs; 2023 compared to 5-year averages (2019-2023) and the 24-year (2000-2023) high/low values.**

The significantly exceptional ozone episodes in 2023 are easily seen when daily AQI values are plotted for Ohio CBSAs during the years 2020-2024. In the 2023 row presented in Figure 15 through Figure 18, May through September are shown to have many more "Unhealthy for Sensitive Group" and "Unhealthy" AQI days than any other months in the five-year period.

Similarly, for PM2.5, 2023 and 2024 episodes have the most "Unhealthy for Sensitive Group" and higher AQI classifications compared to the past five years of data.

These high AQI values will be shown to correlate with dates when wildfire and prescribed smoke were present in and around the Ohio region, enhancing the observed concentrations at multiple monitors.

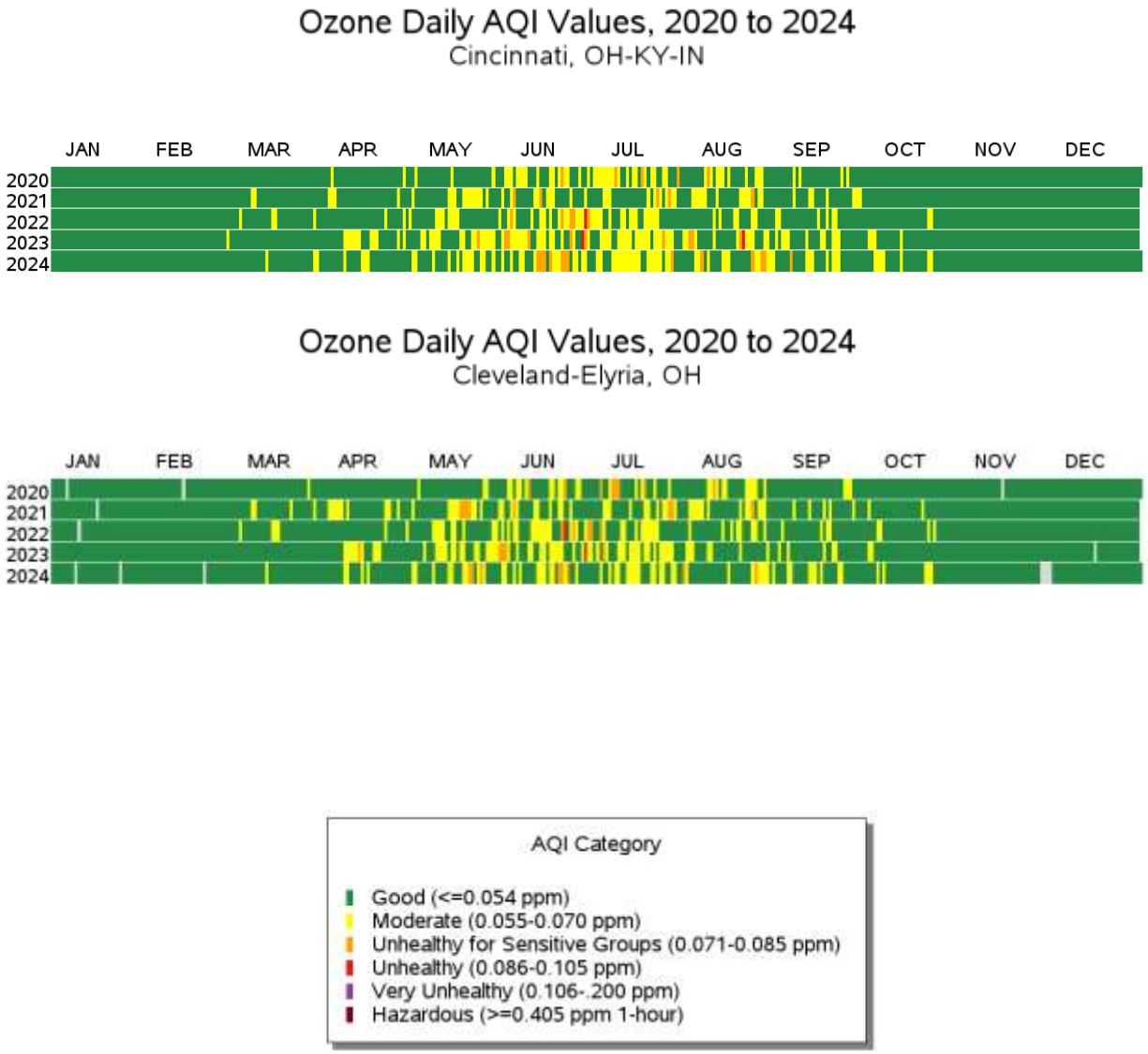



**Figure 15. Ozone daily AQI values for Cincinnati, OH-KY-IN (top) and Cleveland-Elyria, OH (bottom) CBSAs, 2020-2024.**

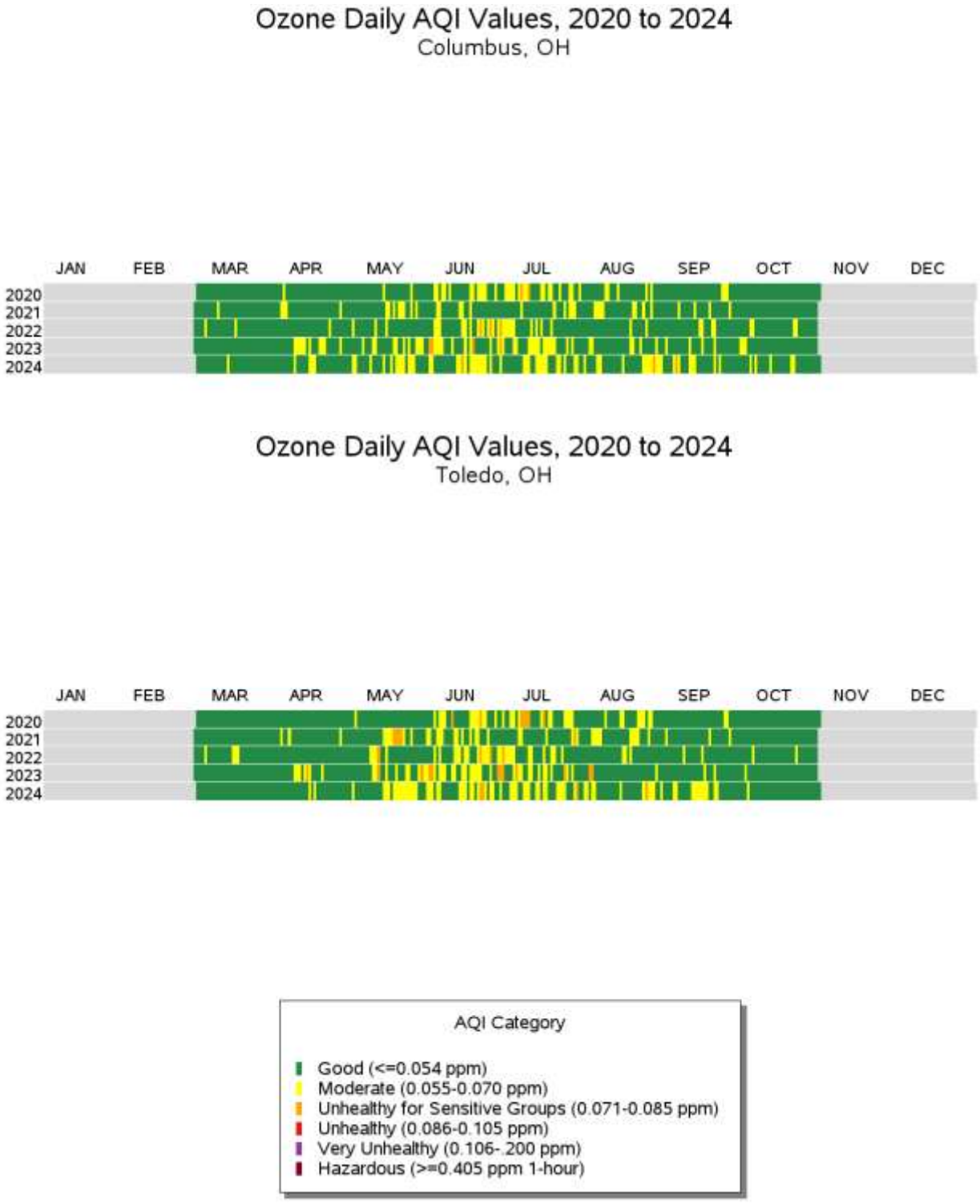



**Figure 16. Ozone daily AQI values for Columbus, OH (top) and Toledo, OH (bottom) CBSAs, 2020-2024.**

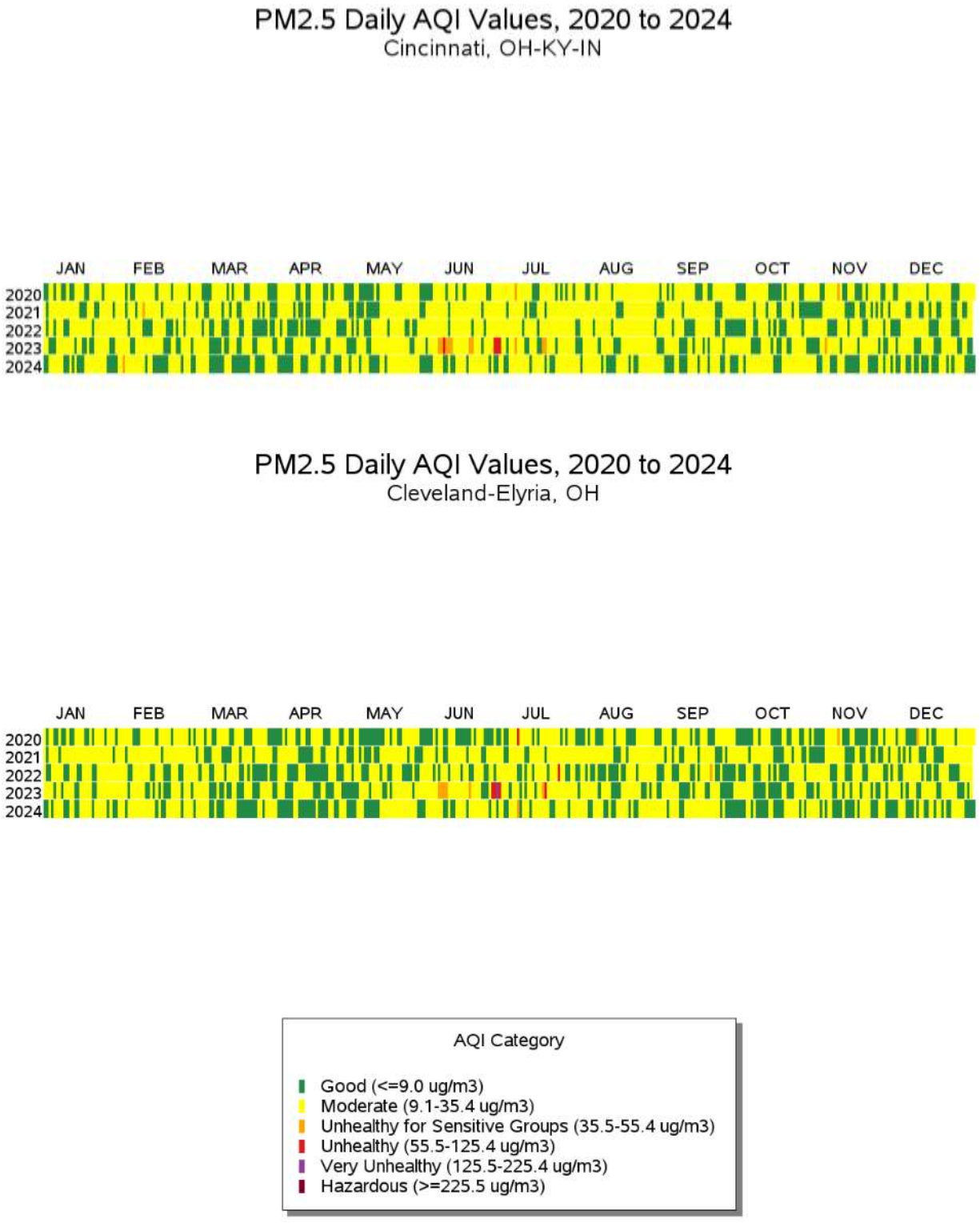



**Figure 17. PM2.5 daily AQI values for Cincinnati, OH-KY-IN (top) and Cleveland-Elyria, OH (bottom) CBSAs, 2020-2024.**

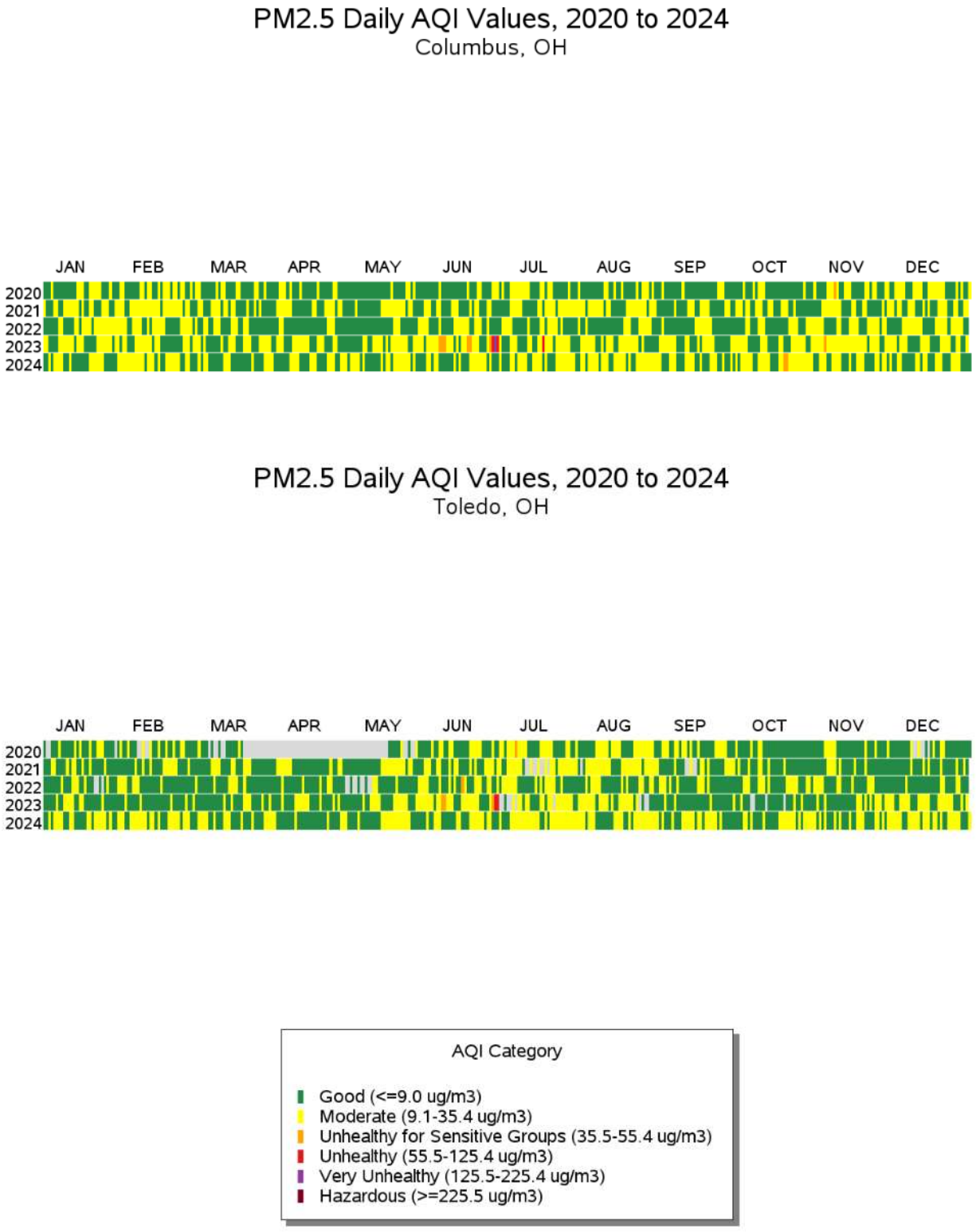



**Figure 18. PM2.5 daily AQI values for Columbus, OH (top) and Toledo, OH (bottom) CBSAs, 2020-2024.**

**Wildfire Smoke Impact on United States**

A study[14] using observed MDA8 ozone values and site-specific residuals (observed – predicted MDA8 ozone concentrations) from a Generalized Additive Model (GAM) evaluated the number of exceedance days—defined as days with MDA8 ozone above 70 ppb (≥71 ppb)—that were elevated due to smoke influence. The total observed exceedance days equaled the sum of (1) exceedance days not caused by smoke and (2) exceedance days where smoke made a significant contribution.

Figure 19 presents the annual frequency of smoke days by region across the United States, along with the monthly number of smoke days at all monitoring sites from April through October during 2019–2024. Over the six-year period, a total of 159,455 smoke days were identified across all sites, representing an overall smoke-day frequency of approximately 18%. The highest frequency occurred in 2023 (about 29%), followed by 2021 (about 22%) and 2024 (about 20%).

[14] Lee, H., & Jaffe, D. A. (2025). Impact of wildfires on O3 and air quality across the United States for 2019–2024 using generalized additive models. Journal of Geophysical Research: Atmospheres, 130, e2025JD044088.

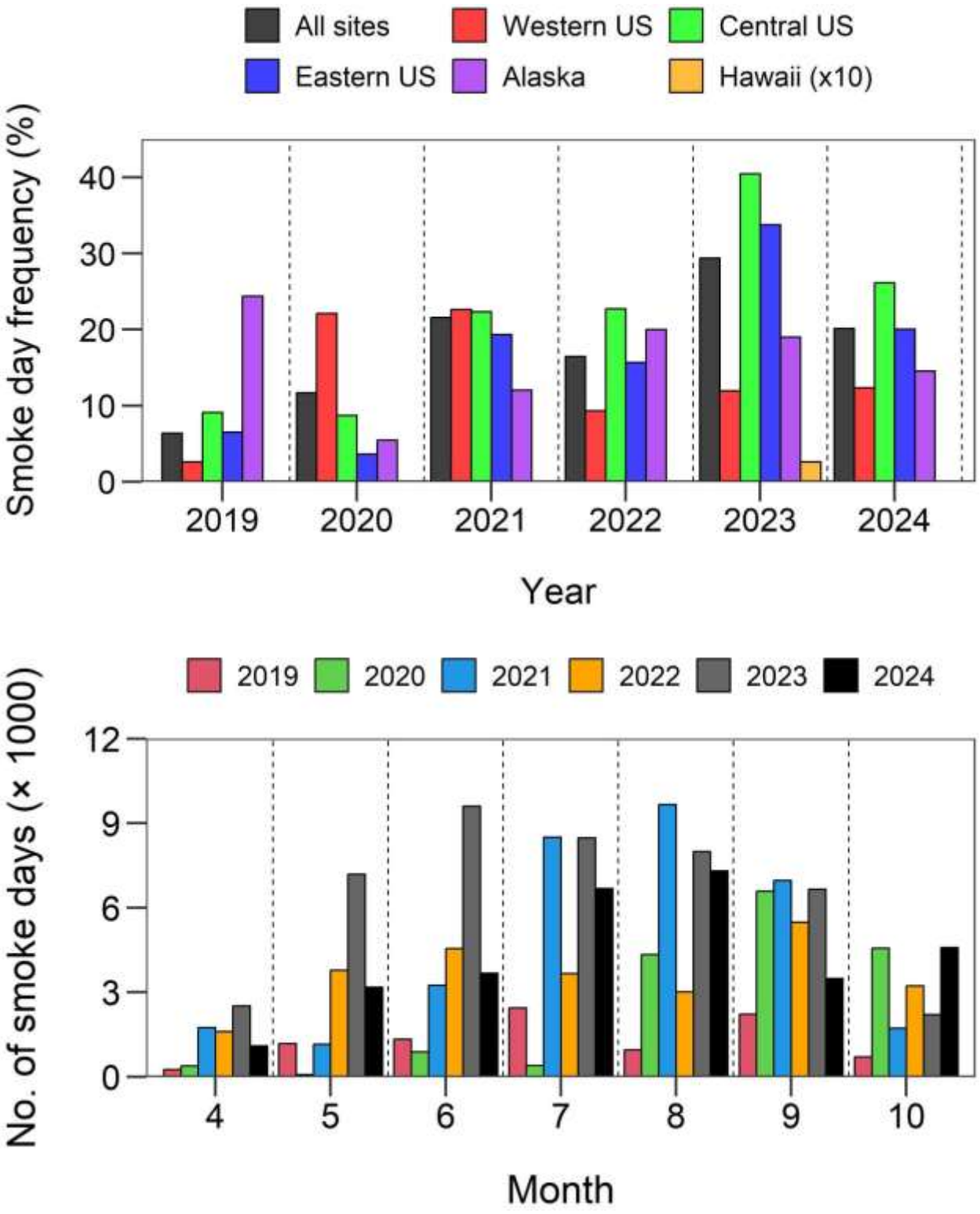



**Figure 19. Annual frequency (%) of smoke days from April to October during 2019–2024 by region (top) and monthly number of smoke days for all sites by year (bottom).**

An earlier study[15] indicated a calculated enhancement in both ozone and PM2.5 concentrations across all U.S. states during May–September for 2018–2023, with large influences in 2020 and 2021, due to California fires, and 2023, due to Canadian fires. In 2023, wildfire smoke enhanced (increased) ozone concentrations by 7.6 ppb and PM2.5 concentrations on average by 11.7 µg/m3 in the central U.S. on days when smoke was present. This is shown in Figure 20 below.

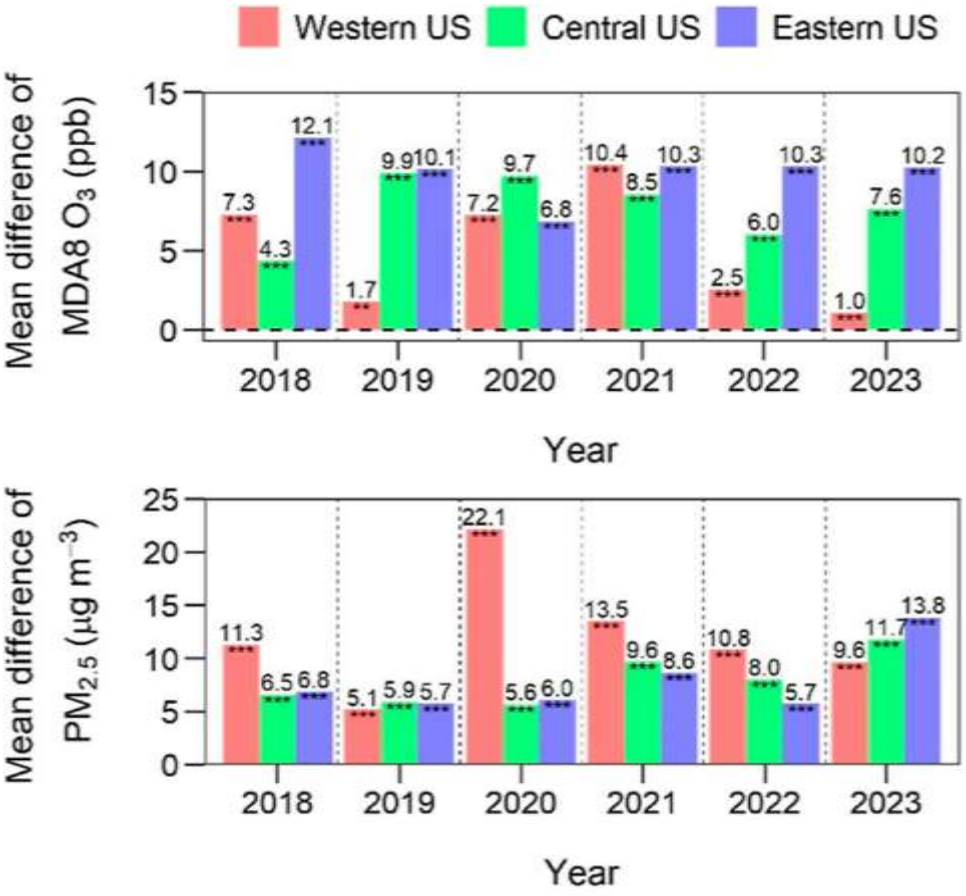



**Figure 20. Mean difference between smoke and nonsmoke days (i.e., mean of smoke days – mean of nonsmoke days) for MDA8 O3 (ppb) [top] and PM2.5 (µg m–3) [bottom] across the Central, Eastern, and Western US over the years 2018 to 2023.**

Furthermore, following U.S. EPA guidance, a 97.5th-percentile residual threshold for nonsmoke days was determined at each site. Smoke days with GAM residuals exceeding this threshold were classified as "exceedance days due to smoke." "Exceedance days not caused by smoke" were then calculated as the total exceedance days minus the exceedance days due to smoke.

Figure 21 summarizes U.S. exceedance days from 2019–2024 as calculated in the updated study. Nationwide, about 25% of all exceedance days were linked to smoke. Over the six-year period of 2019-2024, as shown in Figure 21, all sites combined recorded 16,572 exceedance days. The highest total

[15] Environ. Sci. Technol. 2024, 58, 33, 14764–14774

occurred in 2023 with 3,584 exceedance days. Annual smoke-related exceedances (SMO) ranged from year-to-year, peaking in 2023 when smoke accounted for ~32% of the total (1,576).

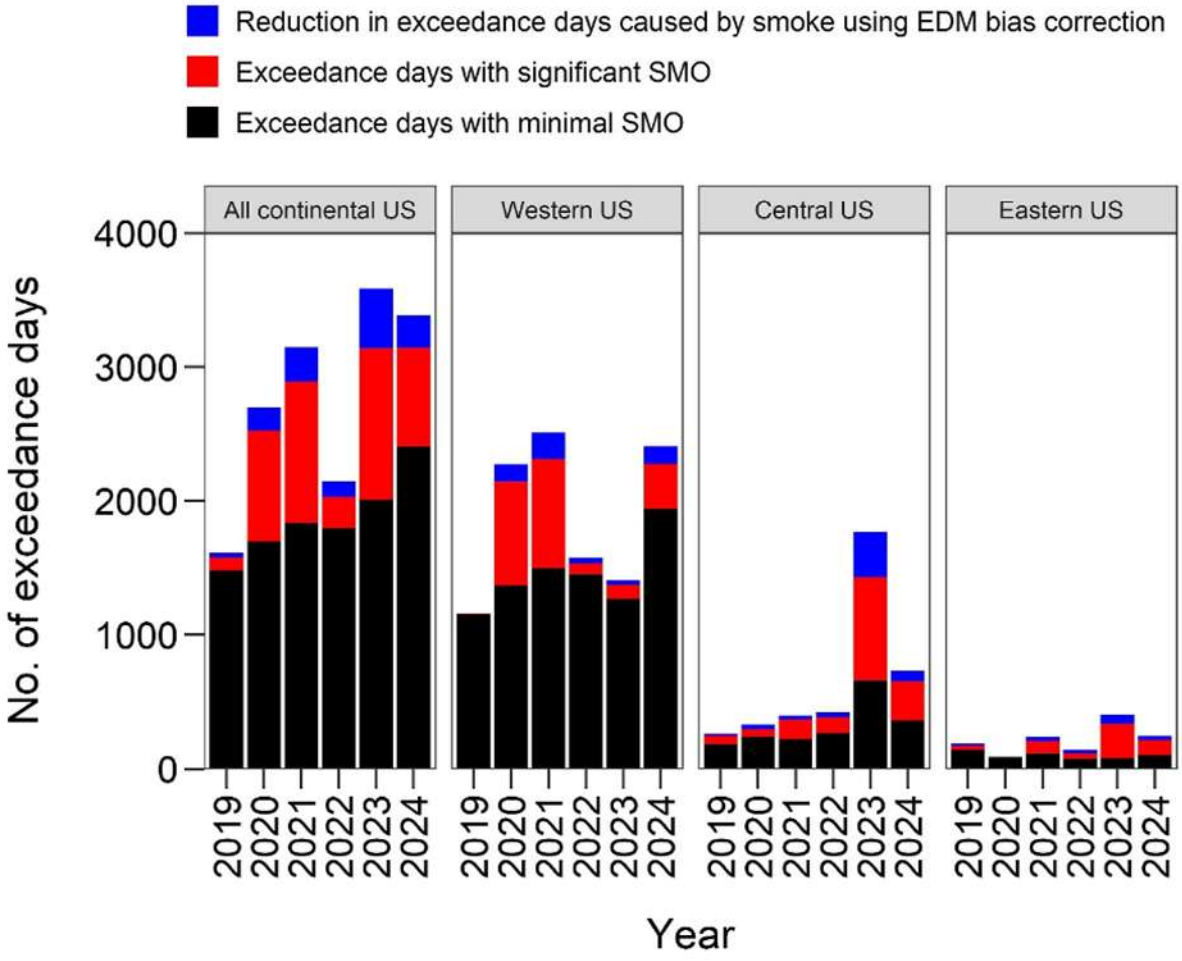



**Figure 21. Number of exceedance days (MDA8 O3 over 70 ppb) for the continental US from 2019 to 2024. The red bars show days with a significant contribution due to the presence of smoke.**

On a monitor-by-monitor basis, it can also be seen that ozone concentrations from multiple dates across the spring and summer of 2023 were influenced by the wildfire smoke as it entered the Ohio Valley airshed.

Figure 22 through Figure 42 below present the MDA8 observations at select monitors located in Ohio ozone nonattainment areas for the May through September period of the past five years (2020-2024). Each daily value is color coded to represent historical thresholds, exceedances of NAAQS levels, and the 99th or higher percentile of the five-year distribution of ozone monitoring data. This is an easy way to compare dates and to find trends and episodes that may be significantly different than historical averages.

In each figure, green cells represent MDA8 values below 70 ppb, yellow cells indicate MDA8 values greater than 70 ppb, red cells indicate MDA8 values above 75 ppb, and blue cells indicate MDA8 values greater than the 99$^{th}$ percentile of the five-year distribution of ozone monitoring data at that monitor.

What is initially noticeable is the fact that each of these monitors has multiple dates and observations that exceed the 99$^{th}$ percentile values of the past five years (blue cells). It is also notable that these 99$^{th}$ percentile dates are spread throughout the late spring and summer (May through September 2023), concurrent with known episodes of wildfire smoke intrusion.

| monitor | 210150008 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 71 <-- 99th %ile of 2020-2024 observations | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sum of value | Column Labels | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Row Labels | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| **2024** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 57 | 56 | 42 | 31 | 48 | 38 | 34 | 40 | 39 | 37 | 45 | 49 | 49 | 25 | 42 | 48 | 43 | 57 | 59 | 57 | 46 | 44 | 42 | 50 | 42 | 48 | 45 | 50 | 36 | 50 | 54 |
| 6 | 44 | 30 | 42 | 39 | 38 | 49 | 50 | 42 | 46 | 26 | 54 | 62 | 62 | 63 | 47 | 62 | 53 | 46 | 56 | 58 | 63 | 61 | 36 | 52 | 60 | 42 | 53 | 51 | 44 | 41 | |
| 7 | 46 | 54 | 44 | 31 | 45 | 47 | 59 | 52 | 55 | 52 | 51 | 55 | 53 | 50 | 53 | 53 | 45 | 37 | 57 | 62 | 56 | 58 | 51 | 47 | 55 | 57 | 70 | 34 | 34 | 44 | 39 |
| 8 | 39 | 39 | 49 | 50 | 51 | 56 | 52 | 48 | 51 | 35 | 38 | 50 | 60 | 62 | 57 | 43 | 49 | 36 | 37 | 41 | 48 | 49 | 62 | 60 | 59 | 58 | **79** | 61 | 59 | 59 | 49 |
| 9 | 46 | 41 | 44 | 47 | 61 | 49 | 30 | 42 | 44 | 65 | 61 | 58 | 45 | 44 | 43 | 47 | 47 | 49 | 56 | 60 | 60 | 42 | 41 | 36 | 29 | 28 | 33 | 28 | 22 | 26 | |
| **2023** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 33 | 40 | 39 | 49 | 51 | 53 | 38 | 48 | 56 | 55 | 59 | 40 | 45 | 53 | 34 | 36 | 52 | 53 | 46 | 39 | 53 | 56 | 55 | 71 | 55 | 54 | 54 | 50 | 61 | 40 | 48 |
| 6 | 55 | **80** | 71 | 57 | 60 | 64 | 63 | 55 | 60 | 70 | 43 | 38 | 55 | 56 | 62 | 43 | 66 | 60 | 38 | 42 | 51 | 34 | 36 | 67 | 48 | 51 | 52 | **80** | 54 | 51 | |
| 7 | 35 | 39 | 48 | 47 | 53 | 52 | 56 | 43 | 48 | 57 | 64 | 55 | 42 | 53 | 35 | 47 | 54 | 48 | 36 | 50 | 45 | 60 | 52 | 45 | 71 | 53 | 58 | 58 | 45 | 48 | 46 |
| 8 | 48 | 51 | **77** | 70 | 58 | 49 | 37 | 45 | 46 | 43 | 59 | 49 | 48 | 41 | 35 | 45 | 48 | 40 | 52 | 65 | **88** | 69 | 60 | 52 | 43 | 44 | 46 | 57 | 56 | 35 | 45 |
| 9 | 56 | 48 | 57 | 51 | 41 | 42 | 31 | 36 | 36 | 44 | 56 | 34 | 41 | 50 | 51 | 61 | 50 | 40 | 52 | 51 | 53 | 57 | 53 | 46 | 43 | 46 | 35 | 38 | 38 | 50 | |
| **2022** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 54 | 51 | 44 | 30 | 33 | 35 | 39 | 47 | 40 | 44 | 57 | 51 | 39 | 49 | 55 | 55 | 60 | 43 | 48 | 48 | 39 | 38 | 33 | 41 | 31 | 29 | 26 | 38 | 42 | 45 | 48 |
| 6 | 43 | 40 | 60 | 65 | 54 | 40 | 41 | 44 | 47 | 40 | 47 | 38 | 47 | 51 | 52 | 40 | 59 | 47 | 49 | 52 | 69 | 53 | 54 | 68 | 56 | 55 | 53 | 57 | 62 | 67 | |
| 7 | 46 | 59 | 61 | 57 | 50 | 44 | 45 | 34 | 38 | 53 | 55 | 52 | 49 | 49 | 61 | 62 | 36 | 44 | 52 | 53 | 46 | 56 | 59 | 48 | 36 | 37 | 40 | 39 | 42 | 48 | 38 |
| 8 | 45 | 46 | 40 | 38 | 30 | 33 | 37 | 42 | 38 | 33 | 52 | 43 | 46 | 31 | 47 | 49 | 51 | 66 | 52 | 40 | 35 | 37 | 44 | 53 | 50 | 41 | 48 | 44 | 37 | 41 | 44 |
| 9 | 46 | 45 | 29 | 31 | 29 | 32 | 40 | 43 | 38 | 32 | 25 | 34 | 33 | 44 | 59 | 50 | 48 | 50 | 38 | 52 | 48 | 35 | 35 | 44 | 34 | 32 | 36 | 22 | 28 | 39 | |

**Figure 22. Calendar view of MDA8 ozone observations from 2022-2024 from monitor 210150008. Green cells represent MDA8 values below 70 ppb, yellow cells indicate MDA8 values greater than 70 ppb, red cells indicate MDA8 values above 75 ppb, and blue cells indicate MDA8 values greater than the 99th percentile of the five-year distribution of ozone monitoring data.**

| monitor | 210373002 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 67 <-- 99th %ile of 2020-2024 observations | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sum of value | Column Labels | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Row Labels | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| **2024** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 55 | 50 | 38 | 30 | 47 | 27 | 30 | 38 | 37 | 36 | 44 | 47 | 45 | 20 | 39 | 47 | 34 | 49 | 60 | 53 | 41 | 36 | 33 | 43 | 43 | 43 | 45 | 50 | 37 | 41 | 49 |
| 6 | 39 | 28 | 36 | 35 | 33 | 49 | 51 | 43 | 47 | 27 | 58 | 56 | 60 | 64 | 41 | 63 | 47 | 42 | 49 | **71** | **69** | **72** | 40 | 55 | 57 | 42 | 55 | 51 | 41 | 43 | |
| 7 | 42 | 54 | 42 | 28 | 46 | 49 | 55 | 49 | 49 | 53 | 57 | 57 | 60 | 55 | 63 | 55 | 46 | 44 | 49 | 64 | 55 | 60 | 55 | 51 | 58 | 53 | 65 | 28 | 32 | 47 | 37 |
| 8 | 37 | 36 | 51 | 56 | 58 | **69** | 47 | 55 | 52 | 38 | 37 | 54 | 54 | 53 | 51 | 38 | 49 | 36 | 39 | 42 | 43 | 44 | 63 | 62 | 65 | 59 | **73** | **70** | 64 | 55 | 51 |
| 9 | 46 | 39 | 42 | 42 | 56 | 50 | 31 | 42 | 43 | 54 | 56 | 54 | 46 | 39 | 43 | 45 | 45 | 41 | 58 | 62 | 63 | 46 | 42 | 28 | 28 | 26 | 29 | 27 | 19 | 28 | |
| **2023** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 30 | 36 | 34 | 44 | 49 | 48 | 35 | 45 | 53 | 49 | 52 | 30 | 37 | 46 | 19 | 32 | 44 | 48 | 42 | 37 | 44 | 48 | 47 | 66 | 52 | 47 | 47 | 46 | 50 | 36 | 42 |
| 6 | 50 | **68** | 61 | 51 | 59 | 62 | 60 | 52 | 59 | 64 | 39 | 36 | 53 | 48 | 57 | 41 | 65 | 51 | 32 | 37 | 42 | 30 | 32 | 66 | 43 | 48 | 47 | 62 | 47 | 45 | |
| 7 | | | 44 | | 31 | 52 | 59 | 34 | 48 | 61 | 67 | 54 | 43 | 63 | 32 | 49 | 54 | 46 | 34 | 44 | 45 | 45 | 55 | 40 | 55 | 45 | 56 | 51 | 43 | 41 | 48 |
| 8 | 39 | 44 | 63 | **73** | 48 | 47 | 33 | 44 | 41 | 43 | 53 | 46 | 45 | 35 | 31 | 38 | 46 | 38 | 44 | 52 | 58 | 46 | 63 | 49 | 42 | 35 | 35 | 45 | 58 | 33 | 39 |
| 9 | 50 | 48 | 59 | 48 | 38 | 38 | 28 | 36 | 33 | 42 | 51 | 29 | 39 | 43 | 43 | 54 | 46 | 39 | 45 | 46 | 50 | 51 | 47 | 40 | 30 | 39 | 26 | 32 | 36 | 44 | |
| **2022** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 54 | 49 | 39 | 27 | 29 | 28 | 39 | 43 | 38 | 47 | 52 | 45 | 38 | 39 | 58 | 53 | 59 | 38 | 40 | 43 | 32 | 37 | 29 | 36 | 27 | 23 | 27 | 36 | 40 | 44 | 45 |
| 6 | 45 | 40 | 59 | 67 | 50 | 34 | 41 | 41 | 45 | 40 | 38 | 33 | 33 | 53 | 46 | 41 | 59 | 49 | 42 | 49 | **69** | 58 | 59 | 57 | 55 | 57 | 52 | 62 | **72** | 58 | |
| 7 | 54 | 59 | 56 | 54 | 43 | 31 | | | 34 | 44 | 46 | 54 | 51 | 48 | 56 | 55 | 33 | 44 | 45 | 45 | 48 | 54 | 53 | 46 | 39 | 36 | 40 | 41 | 45 | 38 | 31 |
| 8 | 45 | 48 | 36 | 39 | 23 | 26 | 37 | 42 | 42 | 35 | 54 | 36 | 43 | 24 | 41 | 46 | 44 | 54 | 48 | 35 | 33 | 38 | 46 | 61 | 50 | 44 | 41 | 40 | 33 | 43 | 48 |
| 9 | 43 | 44 | 27 | 27 | 22 | 30 | 41 | 38 | 34 | 27 | 24 | 35 | 36 | 45 | 52 | 46 | 46 | 49 | 40 | 50 | 50 | 35 | 35 | 42 | 36 | 33 | 35 | 21 | 27 | 39 | |
| **2021** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 48 | 49 | 37 | 40 | 36 | 40 | 43 | 38 | 34 | 41 | 34 | 37 | 45 | 52 | 54 | 46 | 31 | 42 | 50 | 50 | 52 | 59 | 53 | 63 | 59 | 32 | 41 | 26 | 28 | 29 | 42 |
| 6 | 36 | 22 | 26 | 59 | 58 | 31 | 24 | 29 | 16 | 38 | 28 | 55 | 59 | 67 | 40 | 53 | 55 | 49 | 49 | 40 | 39 | 33 | 42 | 43 | 32 | | | | | 45 | |
| 7 | 29 | 31 | 40 | 41 | 57 | 56 | 41 | 39 | 32 | 31 | 38 | 32 | 30 | 50 | 48 | 27 | 36 | 35 | 38 | 59 | 50 | 45 | 50 | 65 | 49 | 61 | **71** | 56 | 51 | 52 | 40 |
| 8 | 45 | 38 | 44 | 49 | 50 | 60 | 59 | 45 | 25 | 21 | 41 | 44 | 41 | 38 | 30 | 25 | 21 | 38 | 38 | 45 | 45 | 49 | 50 | 64 | 26 | 46 | 39 | 41 | 39 | 19 | 24 |
| 9 | 45 | 42 | 44 | 46 | 36 | 49 | 51 | 45 | 38 | 45 | 46 | 48 | 53 | 34 | 32 | 34 | 34 | 42 | 43 | 18 | 20 | 20 | 25 | 41 | 37 | 45 | 53 | 55 | 57 | 48 | |
| **2020** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 47 | 59 | 33 | 45 | 35 | 52 | 50 | 38 | 45 | 45 | 32 | 41 | 40 | 55 | 43 | 41 | 34 | 28 | 29 | 32 | 23 | 47 | 39 | 38 | 31 | 42 | 34 | 47 | 45 | 36 | 43 |
| 6 | | 59 | 51 | 39 | 59 | 63 | 51 | 50 | 25 | 46 | 48 | 53 | 45 | 42 | 45 | 48 | 58 | 40 | 61 | 65 | 48 | 49 | 45 | 42 | 48 | 51 | 25 | 28 | 44 | 37 | |
| 7 | 52 | 53 | 66 | 57 | 55 | 37 | 61 | 58 | 43 | 48 | 49 | 56 | 48 | 53 | 51 | 47 | 60 | 54 | 46 | 55 | 50 | 29 | 36 | 54 | 53 | 48 | 35 | 54 | 63 | 36 | 36 |
| 8 | 27 | 37 | 40 | 33 | 46 | 44 | 56 | **68** | 53 | 37 | 50 | 53 | 49 | 43 | 52 | 43 | 43 | 18 | 36 | 40 | 42 | 29 | 41 | 55 | 51 | 49 | 25 | 19 | 43 | 32 | 25 |
| 9 | 35 | 32 | 37 | 43 | 42 | 44 | 40 | 46 | 42 | 38 | 23 | 26 | 29 | 36 | 29 | 41 | 50 | 37 | 36 | 38 | 39 | 50 | 43 | 51 | 38 | 31 | 32 | 23 | 19 | 38 | |

**Figure 23. Calendar view of MDA8 ozone observations from 2020-2024 from monitor 210373002. Green cells represent MDA8 values below 70 ppb, yellow cells indicate MDA8 values greater than 70 ppb, red cells indicate MDA8 values above 75 ppb, and blue cells indicate MDA8 values greater than the 99th percentile of the five-year distribution of ozone monitoring data.**

| monitor | 390170018 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sum of value | Column Labels | 70 <-- 99th %ile of 2020-2024 observations | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Row Labels | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| **2024** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 52 | 63 | 43 | 41 | 49 | 38 | 35 | 51 | 39 | 36 | 46 | 46 | 56 | 27 | 40 | 55 | 48 | 53 | 58 | 64 | 55 | 48 | 52 | 58 | 55 | 49 | 47 | 56 | 42 | 49 | 58 |
| 6 | 51 | 32 | 52 | 49 | 42 | 51 | 52 | 45 | 49 | 25 | 53 | **74** | **77** | 62 | 49 | 70 | 58 | 58 | 64 | 59 | 67 | 60 | 44 | 52 | 58 | 38 | 48 | 59 | 44 | 39 | |
| 7 | 44 | 59 | 51 | 43 | 42 | 52 | 57 | 63 | 51 | 52 | 54 | 55 | 52 | 48 | 47 | 54 | 44 | 36 | 49 | 55 | 58 | 45 | 55 | 48 | 50 | 54 | 62 | 40 | 42 | 50 | 45 |
| 8 | 51 | 41 | 48 | 47 | 48 | 55 | 40 | 47 | 44 | 35 | 35 | 42 | 50 | 53 | 45 | 46 | 45 | 34 | 33 | 39 | 42 | 47 | 66 | 53 | 50 | 63 | 67 | 56 | 55 | 67 | 39 |
| 9 | 43 | 39 | 44 | 51 | 63 | 48 | 32 | 36 | 44 | 57 | 61 | 57 | 48 | 43 | 42 | 48 | 55 | 44 | 57 | 63 | 57 | 49 | 41 | 33 | 33 | 29 | 22 | 28 | 21 | 17 | |
| **2023** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 33 | 34 | 35 | 44 | 51 | 52 | 47 | 53 | 51 | 52 | 60 | 43 | 49 | 47 | 47 | 43 | 48 | 54 | 61 | 36 | 45 | 63 | 56 | 68 | 51 | 55 | 57 | 59 | 65 | 48 | 49 |
| 6 | 66 | **78** | **71** | 61 | 61 | 63 | 59 | 51 | 59 | 67 | 46 | 43 | 45 | 43 | 62 | 46 | 58 | 67 | 38 | 47 | 54 | 35 | 36 | 63 | 58 | 51 | 41 | **73** | **71** | 59 | |
| 7 | 45 | 48 | 44 | 59 | 65 | 51 | 54 | 50 | 49 | 57 | 59 | 65 | 56 | 56 | 41 | 53 | 54 | 49 | 57 | 49 | 46 | 51 | 53 | 58 | 68 | 60 | 45 | 50 | 44 | 45 | 43 |
| 8 | 51 | 52 | 68 | 64 | 57 | 46 | 35 | 49 | 45 | 50 | 53 | 50 | 47 | 39 | 33 | 36 | 44 | 37 | 67 | 58 | 52 | 50 | 55 | 51 | 42 | 38 | 39 | 49 | 55 | 26 | 40 |
| 9 | 48 | 47 | 44 | 58 | 56 | | 25 | 31 | 32 | 39 | 46 | 35 | 36 | 45 | 48 | 49 | 51 | 35 | 47 | 51 | 53 | 54 | 48 | 41 | 31 | 37 | 29 | 38 | 37 | 46 | |
| **2022** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 51 | 51 | 43 | 31 | 33 | 35 | 42 | 49 | 45 | 56 | 59 | 52 | 43 | 54 | 56 | 55 | 56 | 45 | 52 | 54 | 39 | 39 | 38 | 49 | 31 | 35 | 33 | 38 | 49 | 51 | 58 |
| 6 | 40 | 43 | 61 | 66 | 61 | 43 | 43 | 48 | 47 | 48 | 53 | 45 | 57 | | 53 | 40 | 59 | 49 | 48 | 60 | **76** | 59 | 50 | 67 | **72** | 56 | 53 | 55 | 62 | **75** | |
| 7 | 55 | 61 | 64 | 63 | 51 | 42 | 52 | 34 | 44 | 51 | 62 | 53 | 51 | 52 | 59 | 61 | 41 | 42 | 62 | 55 | 56 | 52 | 50 | 45 | 40 | 35 | 38 | 42 | 44 | 40 | 45 |
| 8 | 42 | 49 | 54 | 41 | 37 | 39 | 34 | 35 | 36 | 34 | 48 | 38 | 48 | 34 | 48 | 46 | 52 | 53 | 59 | 45 | 41 | 40 | 39 | 59 | 53 | 43 | 47 | 47 | 38 | 44 | 40 |
| 9 | 47 | 46 | 31 | 37 | 34 | 33 | 38 | 43 | 40 | 40 | 28 | 35 | 37 | 41 | 49 | 49 | 54 | 52 | 41 | 61 | 48 | 34 | 29 | 40 | 34 | 35 | 33 | 22 | 29 | 37 | |
| **2021** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 50 | 53 | 35 | 33 | 36 | 41 | 46 | 38 | 33 | 42 | 34 | 37 | 46 | 54 | 60 | 55 | 34 | 44 | 59 | 61 | 61 | 58 | 49 | 56 | 60 | 36 | 54 | 28 | 37 | 37 | 49 |
| 6 | 55 | 26 | 33 | 60 | 64 | 47 | 34 | 34 | 23 | 40 | 49 | 60 | 60 | 68 | 39 | 51 | 65 | 59 | 47 | 41 | 43 | 34 | 48 | 57 | 37 | 44 | 40 | 44 | 50 | 37 | |
| 7 | 34 | 31 | 39 | 46 | 46 | 46 | 53 | 41 | 32 | 37 | 38 | 41 | 40 | 42 | 40 | 34 | 39 | 38 | 44 | 48 | 46 | 58 | 59 | 55 | 45 | 52 | 60 | 53 | 43 | 44 | 44 |
| 8 | 41 | 40 | 44 | 52 | 56 | 60 | 52 | 53 | 37 | 38 | 37 | 45 | 44 | 43 | 36 | 35 | 26 | 33 | 38 | 49 | 49 | 54 | 45 | 68 | 40 | 42 | 50 | 38 | 32 | 26 | 28 |
| 9 | 41 | 44 | 44 | 45 | 37 | 46 | 57 | 44 | 38 | 40 | 50 | 53 | 50 | 42 | 31 | 31 | 47 | 55 | 52 | 20 | 27 | 28 | 30 | 40 | 38 | 44 | 53 | 53 | 47 | 49 | |
| **2020** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 47 | 57 | 41 | 39 | 39 | | | | | | | 42 | 42 | 44 | 42 | 48 | 40 | 36 | 36 | 37 | 28 | 43 | 44 | 52 | 35 | 43 | 42 | 50 | 41 | 35 | 40 |
| 6 | 56 | 63 | 56 | 46 | 57 | 61 | 51 | 60 | 35 | 44 | 49 | 51 | 50 | 48 | 50 | 59 | 67 | 50 | 58 | **72** | 52 | 50 | 46 | 42 | 51 | 54 | 29 | 40 | 50 | 39 | |
| 7 | 62 | 56 | 64 | 61 | 64 | 51 | 54 | **72** | 64 | 53 | 49 | 53 | 48 | 59 | 70 | 44 | **78** | 49 | 37 | 48 | | 36 | 36 | 46 | 55 | 48 | 34 | 42 | 59 | 39 | 40 |
| 8 | 37 | 34 | 44 | 32 | 38 | 49 | 55 | 60 | 68 | 52 | 43 | 51 | 58 | 43 | 52 | 47 | 39 | 20 | 37 | 42 | 53 | 49 | 44 | 46 | 48 | 46 | 26 | 23 | 42 | 40 | 43 |
| 9 | 51 | 36 | 41 | 41 | 47 | 52 | 45 | 62 | 45 | 43 | 24 | 44 | 35 | 34 | 32 | 49 | 48 | 37 | 40 | 42 | 43 | 50 | 48 | 60 | 44 | 36 | 39 | 21 | 24 | 36 | |

**Figure 24. Calendar view of MDA8 ozone observations from 2020-2024 from monitor 390170018. Green cells represent MDA8 values below 70 ppb, yellow cells indicate MDA8 values greater than 70 ppb, red cells indicate MDA8 values above 75 ppb, and blue cells indicate MDA8 values greater than the 99th percentile of the five-year distribution of ozone monitoring data.**

| monitor | 390170023 | 69 <-- 99th %ile of 2020-2024 observations |
|---|---|---|

| Sum of value / Row Labels | Column Labels 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **2024** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 49 | 62 | 43 | 35 | 46 | 39 | 34 | 53 | 37 | 37 | 43 | 46 | 53 | 26 | 42 | 51 | 46 | 53 | 54 | 61 | 53 | 45 | 48 | 56 | 50 | 45 | 44 | 54 | 42 | 48 | 56 |
| 6 | 47 | 29 | 52 | 49 | 37 | 51 | 51 | 41 | 47 | 25 | 55 | **71** | **73** | 62 | 46 | 64 | 59 | 55 | 59 | 58 | 64 | 53 | 42 | 51 | 59 | 34 | 49 | 58 | 41 | 35 | |
| 7 | 44 | 66 | 48 | 38 | 39 | 47 | 51 | 61 | 46 | 53 | 61 | 54 | 52 | 47 | 46 | 54 | 45 | 36 | 51 | 53 | 52 | 49 | 55 | 49 | 52 | 55 | 64 | 38 | 39 | 48 | 42 |
| 8 | 45 | 39 | 48 | 46 | 47 | 50 | 40 | 43 | 45 | 36 | 35 | 38 | 48 | 51 | 50 | 42 | 42 | 33 | 33 | 40 | 44 | 48 | 68 | 52 | 51 | 68 | 66 | 56 | 57 | 63 | 43 |
| 9 | 43 | 40 | 44 | 53 | 63 | 46 | 32 | 37 | 44 | 59 | 62 | 59 | 49 | 43 | 42 | 49 | 57 | 45 | 58 | 62 | 59 | 46 | 39 | 33 | 34 | 28 | 26 | 28 | 21 | 20 | |
| **2023** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 33 | 36 | 36 | 45 | 54 | 54 | 44 | 52 | 54 | 54 | 64 | 42 | 46 | 49 | 41 | 44 | 50 | 50 | 49 | 35 | 42 | 57 | 51 | 64 | 50 | 50 | 52 | 56 | 58 | 44 | 46 |
| 6 | 68 | **81** | 68 | 62 | 62 | 62 | 60 | 50 | 59 | 65 | 47 | 41 | 50 | 47 | 61 | 46 | 60 | 66 | 37 | 47 | 54 | 36 | 38 | 62 | 52 | 51 | 47 | **82** | 65 | 57 | |
| 7 | 42 | 45 | 45 | 56 | 65 | 56 | 56 | 49 | 49 | 56 | 57 | 63 | 55 | 56 | 42 | 52 | 55 | 48 | 52 | 48 | 47 | 55 | 50 | 57 | **77** | 55 | 47 | 50 | 45 | 42 | 39 |
| 8 | | 56 | 68 | 60 | 53 | 40 | 31 | 44 | 40 | 47 | 49 | 44 | 42 | 39 | 31 | 35 | 42 | 39 | 60 | 58 | 42 | 47 | 47 | 43 | 38 | 36 | 39 | 45 | 51 | 27 | 40 |
| 9 | 51 | 43 | 44 | 53 | 45 | 44 | 25 | 33 | 33 | 40 | 46 | 35 | 39 | 47 | 49 | 52 | 52 | 36 | 52 | 54 | 55 | 55 | 48 | 41 | 33 | 42 | 29 | 41 | 38 | 46 | |
| **2022** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 50 | 52 | 42 | 32 | 34 | 38 | 44 | 49 | 47 | 54 | 61 | 54 | 48 | 54 | 57 | 55 | 58 | 45 | 51 | 51 | 39 | 40 | 37 | 50 | 34 | 32 | 30 | 37 | 47 | 48 | 58 |
| 6 | 40 | 46 | 62 | 67 | 61 | 43 | 42 | 48 | 49 | 49 | 53 | 44 | 53 | 46 | 49 | 39 | 58 | 48 | 49 | 60 | **73** | 53 | 53 | **72** | **70** | 54 | 54 | 53 | 66 | **73** | |
| 7 | 49 | 59 | 64 | 63 | 49 | 41 | 54 | 33 | 44 | 53 | 60 | 54 | 51 | 51 | 61 | 59 | 38 | 45 | 58 | 52 | 56 | 55 | 51 | 45 | 39 | 30 | 37 | 41 | 44 | 40 | 45 |
| 8 | 40 | 47 | 50 | 42 | 36 | 37 | 34 | 36 | 37 | 35 | 52 | 40 | 56 | 32 | 50 | 48 | 54 | 55 | 64 | 47 | 41 | 40 | 41 | 50 | 55 | 45 | 54 | 52 | 38 | 46 | 40 |
| 9 | 50 | 55 | 34 | 40 | 37 | 34 | 38 | 41 | 40 | 41 | 30 | 32 | 35 | 40 | 48 | 51 | 53 | 51 | 39 | 53 | 45 | 33 | 32 | 40 | 32 | 33 | 33 | 23 | 30 | 38 | |
| **2021** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 48 | 52 | 32 | 29 | 37 | 42 | 46 | 37 | 33 | 44 | 36 | 41 | 48 | 56 | 61 | 57 | 39 | 51 | 58 | 62 | 62 | 59 | 51 | 62 | 63 | 39 | 53 | 30 | 38 | 37 | 52 |
| 6 | 56 | 29 | 37 | 61 | 65 | 45 | 36 | 37 | 26 | 43 | 50 | 61 | 63 | **71** | 44 | 53 | 66 | 60 | 50 | 46 | 45 | 37 | 52 | 54 | 40 | 46 | 43 | 47 | 55 | 45 | |
| 7 | 38 | 35 | 45 | 51 | 48 | 53 | 56 | 43 | 34 | 41 | 41 | 48 | 45 | 49 | | | | | | | 46 | 58 | 68 | 57 | 38 | 56 | 66 | 53 | 43 | 47 | 44 |
| 8 | 45 | 46 | 47 | 56 | 69 | 63 | 57 | 57 | 39 | 34 | 41 | 50 | 47 | 46 | 38 | 37 | 28 | 36 | 38 | 54 | 57 | 52 | 44 | 62 | 43 | 49 | 56 | 40 | 34 | 22 | 28 |
| 9 | 43 | 44 | 46 | 49 | 37 | 45 | 58 | 44 | 38 | 37 | 48 | 51 | 50 | 41 | 30 | 34 | 48 | 56 | 52 | 19 | 27 | 24 | 28 | 43 | 39 | 46 | 54 | 55 | 49 | 49 | |
| **2020** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 51 | 58 | 44 | 41 | 38 | 52 | 49 | 39 | 44 | 42 | 31 | 41 | 39 | 45 | 42 | 45 | 36 | 34 | 32 | 34 | 26 | 43 | 47 | 46 | 39 | 47 | 42 | 51 | 44 | 34 | 40 |
| 6 | 55 | 61 | 57 | 46 | 60 | 62 | 52 | 58 | 32 | 43 | 50 | 51 | 50 | 47 | 51 | 56 | 67 | 49 | 57 | 68 | 48 | 51 | 46 | 42 | 50 | 53 | 30 | 36 | 44 | 35 | |
| 7 | 64 | 57 | 62 | 62 | 64 | 54 | 53 | 69 | 63 | 52 | 50 | 51 | 47 | 61 | 63 | 43 | **77** | 48 | 36 | 49 | 57 | 33 | 37 | 44 | 54 | 44 | 34 | 43 | 62 | 39 | 41 |
| 8 | 39 | 35 | 44 | 32 | 37 | 47 | 55 | 60 | 64 | 47 | 42 | 50 | 57 | 41 | 51 | 46 | 38 | 15 | 36 | 42 | 53 | 46 | 39 | 45 | 46 | 45 | 22 | 19 | 41 | 40 | 48 |
| 9 | 47 | 32 | 36 | 40 | 44 | 49 | 43 | 56 | 49 | 43 | 24 | 37 | 33 | 34 | 32 | 46 | 47 | 38 | 39 | 42 | 43 | 53 | 46 | 57 | 45 | 32 | 35 | 18 | 22 | 37 | |

**Figure 25. Calendar view of MDA8 ozone observations from 2020-2024 from monitor 390170023. Green cells represent MDA8 values below 70 ppb, yellow cells indicate MDA8 values greater than 70 ppb, red cells indicate MDA8 values above 75 ppb, and blue cells indicate MDA8 values greater than the 99th percentile of the five-year distribution of ozone monitoring data.**

| monitor | 390179991 | | | | | | | | | | 66 <-- 99th %ile of 2020-2024 observations | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sum of value | Column Labels | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Row Labels | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| **2024** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 51 | 62 | 42 | 43 | 51 | 40 | 38 | 50 | 39 | 39 | 46 | 50 | 54 | 28 | 44 | 54 | 46 | 52 | 59 | 62 | 52 | 48 | 52 | 59 | 54 | 47 | 46 | 56 | 43 | 48 | 59 |
| 6 | 50 | 26 | 55 | 51 | 40 | 54 | 54 | 44 | 52 | 26 | 55 | **67** | 66 | 65 | 52 | **70** | 51 | 51 | 53 | 59 | 66 | 59 | 45 | 52 | 55 | 37 | 49 | 61 | 43 | 38 | |
| 7 | 45 | 66 | 36 | 39 | 35 | 50 | 50 | 62 | 50 | 53 | 53 | 45 | 50 | 43 | 48 | 51 | 43 | 35 | 49 | 54 | 57 | 46 | 55 | 47 | 50 | 53 | 58 | 38 | 43 | 49 | 42 |
| 8 | 40 | 39 | 48 | 44 | 48 | 53 | 37 | 43 | 42 | 34 | 34 | 41 | 47 | 55 | 44 | 41 | 41 | 33 | 35 | 39 | 41 | 50 | 66 | 50 | 49 | 55 | 57 | 50 | 51 | 60 | 37 |
| 9 | 41 | 38 | 43 | 52 | 53 | 45 | 30 | 34 | 43 | 51 | 63 | 57 | 48 | 42 | 42 | 48 | 59 | 49 | 57 | 56 | 55 | 39 | 39 | 34 | 33 | 25 | 25 | 29 | 25 | 21 | |
| **2023** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 32 | 35 | 36 | 47 | 55 | 55 | 46 | 51 | 55 | 56 | **68** | 44 | 46 | 48 | 48 | 46 | 48 | 60 | 56 | 37 | 49 | 61 | 63 | **70** | 51 | 56 | 56 | 59 | 66 | 48 | 52 |
| 6 | **68** | **77** | **70** | 60 | 66 | 61 | 59 | 51 | 57 | 66 | 47 | 41 | 47 | 48 | 61 | 44 | 59 | 66 | 40 | 46 | 55 | 35 | 40 | 63 | 54 | 50 | 45 | **69** | 66 | 54 | |
| 7 | 40 | 44 | 44 | 53 | 56 | 54 | 56 | 44 | 49 | 53 | 57 | 59 | 56 | 53 | 39 | 51 | 53 | 41 | 48 | 43 | 46 | 48 | 50 | 48 | 62 | 51 | 47 | 48 | 43 | 40 | 41 |
| 8 | 53 | 55 | 59 | 62 | 56 | 42 | 32 | 47 | 39 | 47 | 46 | 44 | 43 | 34 | 28 | 33 | 42 | 37 | 55 | 42 | 45 | 43 | 48 | 44 | 42 | 35 | 34 | 44 | 55 | 25 | 37 |
| 9 | 52 | 44 | 41 | 43 | 43 | 46 | 21 | 33 | 31 | 38 | 45 | 35 | 41 | 47 | 49 | 51 | 51 | 34 | 49 | 58 | 54 | 41 | 52 | 44 | 35 | 44 | 28 | 33 | 39 | 52 | |
| **2022** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 49 | 51 | 42 | 32 | 32 | 35 | 44 | 49 | 46 | 49 | 62 | 55 | 49 | 49 | 58 | 56 | 58 | 44 | 48 | 51 | 39 | 39 | 39 | 50 | 36 | 38 | 32 | 39 | 47 | 51 | 54 |
| 6 | 38 | 47 | 64 | 66 | 63 | 44 | 46 | 52 | 48 | 47 | 55 | 41 | 52 | 54 | 50 | 43 | 59 | 48 | 48 | 52 | **75** | 61 | 51 | 66 | **67** | 53 | 53 | 47 | 60 | 65 | |
| 7 | 55 | 58 | 64 | 64 | 54 | 43 | 56 | 32 | 43 | 48 | 55 | 48 | 51 | 50 | 52 | 55 | 37 | 40 | 56 | 52 | 57 | 53 | 49 | 42 | 36 | 31 | 37 | 41 | 43 | 40 | 46 |
| 8 | 40 | 49 | 45 | 30 | 37 | 36 | 32 | 33 | 34 | 33 | 53 | 37 | | | | 33 | 36 | 34 | | | | | | | | | | | | | |
| 9 | | 56 | 32 | 38 | 34 | 33 | 41 | 45 | 41 | 40 | 29 | 32 | 35 | 45 | 48 | 30 | 50 | 48 | 39 | 51 | 48 | 34 | 33 | 42 | 32 | 33 | 32 | 23 | 31 | 39 | |
| **2021** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 52 | 52 | 36 | 32 | 38 | 42 | 47 | 38 | 34 | 44 | 36 | 40 | 48 | 54 | 61 | 56 | 35 | 50 | 55 | 61 | 58 | 60 | 49 | 60 | 56 | 38 | 49 | 28 | 40 | 39 | 54 |
| 6 | 55 | 30 | 34 | 64 | 62 | 45 | 35 | 35 | 24 | 38 | 53 | 61 | 63 | **70** | 41 | 52 | 61 | 62 | 49 | 40 | 43 | 35 | 54 | 55 | 37 | 43 | 36 | 41 | 42 | 38 | |
| 7 | 39 | 33 | 40 | 47 | 44 | 49 | 50 | 38 | 30 | 35 | 40 | 41 | 39 | 44 | 38 | 31 | 38 | 42 | 41 | 43 | 48 | 51 | **72** | 55 | 46 | 56 | 63 | 53 | 44 | 46 | 39 |
| 8 | 42 | 41 | 44 | 55 | 62 | 55 | 52 | 50 | 41 | 37 | 36 | 41 | 41 | 44 | 39 | 41 | 33 | 36 | 37 | 61 | 61 | 54 | 45 | 51 | 40 | 42 | 51 | 34 | 32 | 28 | 31 |
| 9 | | 44 | 48 | 42 | 38 | 46 | 58 | 44 | 39 | 38 | 51 | 49 | 48 | 36 | 35 | 37 | 43 | 47 | 51 | 21 | 28 | 24 | 29 | 41 | 39 | 44 | 56 | 59 | 53 | 52 | |
| **2020** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 51 | 59 | 44 | 38 | 38 | 51 | 50 | 38 | 45 | 43 | 32 | 44 | 41 | 48 | 42 | 48 | 39 | 39 | 34 | 35 | 27 | 43 | 48 | 45 | 38 | 49 | 42 | 50 | 43 | 35 | 40 |
| 6 | 54 | 64 | 58 | 50 | 62 | 63 | 51 | 60 | 36 | 46 | 50 | 51 | 50 | 45 | 49 | 58 | 64 | 50 | 60 | **69** | 48 | 51 | 46 | 43 | 52 | 55 | 29 | 34 | 40 | 38 | |
| 7 | 60 | 54 | 62 | 57 | 63 | 50 | 42 | 60 | 61 | 52 | 48 | 46 | 44 | 60 | 62 | 41 | 64 | 47 | 39 | 44 | 52 | 37 | 39 | 44 | 48 | 45 | 34 | 42 | 52 | 38 | 37 |
| 8 | 37 | 33 | 38 | 32 | 36 | 45 | 51 | 57 | 64 | 50 | 41 | 50 | 58 | 44 | 51 | 46 | 36 | 24 | 37 | 47 | 57 | 48 | 42 | 48 | 48 | 45 | 25 | 24 | 42 | 35 | 51 |
| 9 | 51 | 35 | 40 | 40 | 44 | 48 | 40 | 57 | 41 | 42 | 26 | 39 | 37 | 36 | 35 | 46 | 48 | 39 | 42 | 43 | 46 | 52 | 50 | 61 | 47 | 37 | 35 | 19 | 25 | 36 | |

**Figure 26. Calendar view of MDA8 ozone observations from 2020-2024 from monitor 390179991. Green cells represent MDA8 values below 70 ppb, yellow cells indicate MDA8 values greater than 70 ppb, red cells indicate MDA8 values above 75 ppb, and blue cells indicate MDA8 values greater than the 99th percentile of the five-year distribution of ozone monitoring data.**

| monitor | 390250022 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 67 <-- 99th %ile of 2020-2024 observations | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sum of value | Column Labels | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Row Labels | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| **2024** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 55 | 54 | 46 | 40 | 53 | 39 | 38 | 43 | 40 | 38 | 47 | 51 | 50 | 27 | 40 | 54 | 41 | 52 | 60 | 57 | 47 | 36 | 41 | 48 | 50 | 48 | 49 | 54 | 43 | 48 | 56 |
| 6 | 47 | 30 | 39 | 38 | 32 | 51 | 51 | 43 | 48 | 27 | 56 | 58 | 60 | **75** | 42 | 65 | 43 | 46 | 44 | 67 | **76** | 65 | 42 | 52 | 53 | 42 | 52 | 52 | 38 | 44 | |
| 7 | 41 | 54 | 41 | 31 | 46 | 51 | 52 | 50 | 49 | 54 | 54 | 55 | 60 | 56 | 58 | 58 | 46 | 43 | 47 | 62 | 55 | 51 | 51 | 49 | 56 | 52 | 59 | 37 | 32 | 53 | 40 |
| 8 | 33 | 38 | 49 | 51 | **68** | **71** | 46 | 49 | 53 | 39 | 39 | 48 | 51 | 52 | 54 | 40 | 48 | 39 | 40 | 40 | 43 | 45 | 59 | 56 | 59 | 62 | 62 | 64 | 58 | 50 | 51 |
| 9 | 48 | 38 | 42 | 41 | 55 | 53 | 34 | 37 | 48 | 53 | 56 | 57 | 47 | 44 | 47 | 48 | 41 | 38 | 61 | 64 | 64 | 51 | 49 | 33 | 29 | 29 | 29 | 30 | 22 | 26 | |
| **2023** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 31 | 35 | 36 | 46 | 52 | 52 | 41 | 49 | 53 | 52 | 58 | 39 | 48 | 51 | 41 | 36 | 49 | 52 | 46 | 41 | 48 | 53 | 53 | 65 | 57 | 54 | 57 | 48 | 54 | 45 | 51 |
| 6 | 62 | **75** | 66 | 61 | 58 | **69** | 61 | 53 | 67 | **68** | 44 | 42 | 53 | 47 | 62 | 46 | 62 | 61 | 46 | 46 | 49 | 34 | 34 | 62 | 51 | 52 | 48 | 63 | 58 | 47 | |
| 7 | 36 | 41 | 44 | 58 | 52 | 49 | 63 | 45 | 50 | 67 | 66 | 56 | 46 | **68** | 34 | 55 | 57 | 44 | 35 | 44 | 49 | 44 | 56 | 45 | 63 | 45 | 50 | 41 | 48 | 41 | 43 |
| 8 | 43 | 47 | 63 | **77** | 55 | 52 | 34 | 49 | 39 | 47 | 48 | 45 | 45 | 34 | 37 | 36 | 42 | 41 | 48 | 50 | 48 | 44 | 57 | 48 | 50 | 33 | 36 | 44 | 63 | 29 | 42 |
| 9 | 48 | 53 | 58 | 52 | 43 | 33 | 32 | 35 | 32 | 36 | 52 | 32 | 39 | 46 | 44 | 52 | 51 | 43 | 44 | 50 | 52 | 53 | 48 | 38 | 28 | 37 | 31 | 33 | 38 | 47 | |
| **2022** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | 31 | 34 | 30 | 39 | 47 | 44 | 47 | 55 | 49 | 40 | 48 | 63 | 54 | 60 | 45 | 44 | 43 | 38 | 38 | 36 | 39 | 30 | 33 | 28 | 39 | 43 | 48 | 42 |
| 6 | 45 | 41 | 59 | 63 | 57 | 38 | 44 | 41 | 48 | 47 | 47 | 42 | 37 | 55 | 49 | 40 | 57 | 47 | 44 | 43 | **79** | 65 | 52 | 60 | 58 | 60 | 53 | 55 | 65 | 55 | |
| 7 | 53 | 62 | 60 | 58 | 44 | 35 | 45 | 36 | 34 | 47 | 40 | 56 | 53 | 53 | 53 | 51 | 35 | 42 | 47 | 43 | 51 | 57 | 50 | 42 | 40 | 38 | 40 | 44 | 48 | 33 | 34 |
| 8 | 43 | 50 | 39 | 33 | 25 | 32 | 34 | 37 | 45 | 37 | 55 | 34 | 42 | 25 | 43 | 42 | 44 | 51 | 52 | 36 | 32 | 35 | 46 | 43 | 51 | 43 | 39 | 40 | 27 | 44 | 48 |
| 9 | 40 | 40 | 32 | 30 | 28 | 28 | 40 | 38 | 32 | 33 | 24 | 34 | 38 | 37 | 45 | 45 | 43 | 45 | 42 | 46 | 49 | 35 | 35 | 38 | 34 | 33 | 33 | 20 | 26 | 36 | |
| **2021** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 47 | 50 | 38 | 43 | 37 | 41 | 45 | 41 | 36 | 43 | 37 | 41 | 49 | 54 | 59 | 51 | 38 | 47 | 52 | 56 | 54 | 64 | 53 | 66 | 55 | 39 | 45 | 28 | 31 | 30 | 47 |
| 6 | 39 | 29 | 33 | 65 | 58 | 37 | 29 | 32 | 22 | 36 | 38 | 55 | 63 | **69** | 43 | 53 | 58 | 54 | 46 | 38 | 43 | 36 | 48 | 50 | 38 | 45 | 35 | 32 | 38 | 45 | |
| 7 | 32 | 34 | 40 | 46 | 53 | 67 | 45 | 41 | 36 | 36 | 41 | 37 | 34 | 51 | 43 | 28 | 37 | 35 | 39 | 59 | 52 | 42 | 54 | 56 | 52 | 55 | 53 | 63 | 61 | 53 | 44 |
| 8 | 46 | 41 | 46 | 45 | 46 | 51 | 63 | 48 | 35 | 27 | 37 | 39 | 37 | 40 | 31 | 28 | 23 | 43 | 37 | 48 | 54 | 47 | 55 | 61 | 36 | 22 | 43 | 41 | 32 | 18 | 26 |
| 9 | 42 | 43 | 45 | 44 | 36 | 51 | 51 | 45 | 40 | 44 | 46 | 47 | 51 | 31 | 35 | 40 | 36 | 46 | 53 | 24 | 25 | 25 | 24 | 41 | 38 | 44 | 51 | 63 | 49 | 46 | |
| **2020** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 48 | 54 | 33 | 43 | 39 | 52 | 48 | 38 | 45 | 44 | 30 | 38 | 39 | 48 | 41 | 41 | 38 | 31 | 33 | 35 | 26 | 40 | 40 | 40 | 34 | 41 | 36 | 47 | 45 | 36 | 42 |
| 6 | 48 | 64 | 54 | 45 | 63 | 65 | 52 | 54 | 28 | 42 | 50 | 56 | 49 | 45 | 48 | 52 | 61 | 44 | 66 | **70** | 53 | 51 | 47 | 45 | 49 | 56 | 28 | 31 | 47 | 40 | |
| 7 | 53 | 55 | 62 | 62 | 58 | 57 | 57 | 60 | 52 | 52 | 52 | 60 | 54 | 56 | 56 | 50 | 63 | 51 | 48 | 60 | 49 | 33 | 38 | 61 | 56 | 53 | 35 | 53 | 58 | 40 | 39 |
| 8 | 29 | 38 | 41 | 36 | 45 | 44 | 51 | 64 | 55 | 41 | 49 | 47 | 49 | 42 | 45 | 45 | 43 | 21 | 36 | 40 | 43 | 30 | 36 | 49 | 55 | 48 | 24 | 20 | 43 | 29 | 30 |
| 9 | 37 | 32 | 38 | 42 | 43 | 45 | 38 | 48 | 38 | 38 | 25 | 27 | 26 | 36 | 30 | 36 | 50 | 36 | 37 | 39 | 42 | 50 | 41 | 49 | 35 | 32 | 28 | 26 | 18 | 35 | |

**Figure 27. Calendar view of MDA8 ozone observations from 2020-2024 from monitor 390250022. Green cells represent MDA8 values below 70 ppb, yellow cells indicate MDA8 values greater than 70 ppb, red cells indicate MDA8 values above 75 ppb, and blue cells indicate MDA8 values greater than the 99th percentile of the five-year distribution of ozone monitoring data.**

| monitor | 390610006 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sum of value | Column Labels | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Row Labels | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| **2024** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 57 | 60 | 48 | 39 | 52 | 39 | 41 | 57 | 40 | 37 | 48 | 52 | 53 | 28 | 40 | 57 | 49 | 53 | | 63 | 54 | 48 | 47 | 54 | 54 | 52 | 49 | 58 | 44 | 48 | 57 |
| 6 | 49 | 35 | 48 | 44 | 41 | 55 | 56 | 46 | 52 | 25 | 64 | 73 | 70 | 71 | 47 | 73 | 62 | 60 | 61 | 72 | 72 | 63 | 46 | 56 | 59 | 40 | 53 | 57 | 44 | 42 | |
| 7 | 45 | 59 | 52 | 40 | 49 | 53 | 61 | 56 | 47 | 55 | 65 | 61 | 57 | 53 | 52 | 58 | 51 | 42 | 49 | 61 | 55 | 57 | 60 | 53 | 57 | 54 | 67 | 40 | 37 | 52 | 47 |
| 8 | 46 | 45 | 53 | 57 | 58 | 61 | 44 | 51 | 49 | 39 | 38 | 50 | 54 | 54 | 57 | 46 | 49 | 37 | 37 | 39 | 42 | 46 | 69 | 61 | 58 | **79** | **82** | 66 | 70 | 66 | 48 |
| 9 | 45 | 40 | 40 | 48 | 69 | 49 | 32 | 41 | 47 | 58 | 59 | 56 | 48 | 43 | 42 | 46 | 51 | 42 | 59 | 64 | 63 | 52 | 41 | 35 | 35 | 27 | 28 | 30 | 25 | 28 | |
| **2023** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 31 | 36 | 36 | 46 | 52 | 54 | 45 | 53 | 54 | 53 | 61 | 40 | 49 | 50 | 44 | 41 | 48 | 55 | 54 | 38 | 48 | 57 | 56 | 70 | 52 | 53 | 57 | 57 | 62 | 46 | 50 |
| 6 | 65 | **77** | 68 | 63 | 64 | 66 | 61 | 54 | 64 | 73 | 45 | 42 | 52 | 47 | 63 | 45 | 64 | 63 | 39 | 42 | 49 | 33 | 38 | 64 | 53 | 52 | 46 | **77** | 62 | 64 | |
| 7 | 39 | 46 | 44 | 59 | 57 | 57 | 58 | 49 | 50 | 59 | 60 | 64 | 53 | 62 | 38 | 55 | 56 | 55 | 50 | 55 | 47 | 49 | 54 | 49 | **79** | 57 | 57 | 52 | 46 | 44 | 47 |
| 8 | 46 | 49 | 64 | 72 | 58 | 50 | 35 | 48 | 45 | 50 | 60 | 51 | 49 | 38 | 34 | 46 | 47 | 38 | 61 | 71 | 54 | 46 | 64 | 50 | 43 | 37 | 36 | 48 | 58 | 28 | 37 |
| 9 | 46 | 49 | 52 | 58 | 45 | 48 | 30 | 32 | 32 | 43 | 57 | 34 | 38 | 44 | 46 | 51 | 55 | 37 | 50 | 53 | 52 | 51 | 48 | 40 | 29 | 37 | 24 | 38 | 41 | 46 | |
| **2022** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 54 | 53 | 39 | 29 | 32 | 33 | 42 | 48 | 46 | 52 | 57 | 51 | 43 | 57 | 62 | 59 | 60 | 47 | 49 | 50 | 43 | 41 | 33 | 44 | 33 | 32 | 30 | 44 | 45 | 50 | 56 |
| 6 | 47 | 45 | 63 | 68 | 61 | 43 | 44 | 46 | 49 | 48 | 50 | 46 | 51 | 56 | 58 | 45 | 60 | 50 | 48 | 62 | **78** | 66 | 57 | 65 | 69 | 61 | 54 | 67 | **86** | 71 | |
| 7 | 54 | 66 | 63 | 62 | 49 | 42 | 50 | 36 | 41 | 47 | 59 | 55 | 52 | 52 | 61 | 66 | 40 | 51 | 61 | 64 | 55 | 56 | 57 | 54 | 42 | 35 | 41 | 46 | 46 | 42 | 40 |
| 8 | 46 | 51 | 49 | 46 | 31 | 39 | 40 | 44 | 43 | 35 | 52 | 35 | 46 | 26 | 42 | 43 | | 60 | 59 | 42 | 43 | 39 | 45 | 53 | 57 | 45 | 46 | 46 | 40 | 46 | 44 |
| 9 | 55 | 48 | 32 | 35 | 34 | 33 | 39 | 41 | 36 | 38 | 26 | 36 | 38 | 44 | 57 | 51 | 51 | 55 | 42 | 62 | 51 | 33 | 35 | 44 | 35 | 34 | 33 | 19 | 25 | 36 | |
| **2021** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 51 | 54 | 37 | 35 | 37 | 43 | 47 | 41 | 34 | 43 | 34 | 38 | 46 | 58 | 61 | 55 | 33 | 48 | 58 | 60 | 63 | 62 | 53 | 64 | 69 | 39 | 55 | 29 | 35 | 35 | 50 |
| 6 | 52 | 28 | 30 | 63 | 70 | 42 | 30 | 39 | 23 | 43 | 41 | 61 | 65 | 70 | 40 | 51 | 66 | 56 | 52 | 52 | 43 | 34 | 49 | 50 | 37 | 44 | 42 | 40 | 50 | 44 | |
| 7 | 36 | 33 | 43 | 47 | 59 | 53 | 50 | 42 | 30 | 38 | 42 | 40 | 42 | 51 | 45 | 35 | 41 | 39 | 43 | 58 | 50 | 49 | 58 | 67 | 51 | 63 | **74** | 57 | 52 | 53 | 45 |
| 8 | 45 | 41 | 45 | 52 | 58 | 64 | 63 | 56 | 36 | 32 | 46 | 54 | 49 | 44 | 37 | 27 | 26 | 43 | 46 | 52 | 57 | 57 | 48 | **82** | 45 | 51 | 52 | 49 | 43 | 22 | 27 |
| 9 | 42 | 42 | 45 | 52 | 39 | 48 | 58 | 48 | 39 | 43 | 50 | 54 | 60 | 42 | 32 | 36 | 48 | 50 | 52 | 22 | 27 | 25 | 28 | 44 | 40 | 49 | 58 | 58 | 52 | 48 | |
| **2020** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 50 | 60 | 43 | 41 | 37 | 52 | 52 | 38 | 47 | 45 | 31 | 42 | 41 | 51 | 43 | 44 | 38 | 32 | 33 | 34 | 25 | 48 | 43 | 52 | 39 | 43 | 40 | 53 | 45 | 35 | 42 |
| 6 | 55 | 66 | 62 | 50 | 64 | 66 | 53 | 57 | 35 | 50 | 52 | 54 | 50 | 46 | 49 | 54 | 62 | 48 | 59 | 69 | 57 | 55 | 47 | 44 | 52 | 57 | 35 | 40 | 59 | 41 | |
| 7 | 59 | 55 | 67 | 64 | 63 | 53 | 63 | 67 | 70 | 53 | 52 | 56 | 49 | 58 | 62 | 47 | **77** | 58 | 42 | 59 | 66 | 34 | 42 | 51 | 67 | 49 | 39 | 47 | **78** | 37 | 38 |
| 8 | 33 | 38 | 47 | 34 | 43 | 49 | 55 | 72 | 68 | 46 | 56 | 54 | 56 | 44 | 54 | 49 | 42 | 19 | 37 | 43 | 51 | 43 | 51 | 54 | 51 | 54 | 27 | 23 | 46 | 37 | 41 |
| 9 | 47 | 35 | 41 | 43 | 48 | 53 | 48 | 55 | 45 | 50 | 25 | 35 | 36 | 34 | 31 | 41 | 52 | 38 | 40 | 43 | 43 | 54 | 49 | 57 | 42 | 35 | 36 | 23 | 22 | 40 | |

73 <-- 99th %ile of 2020-2024 observations

**Figure 28. Calendar view of MDA8 ozone observations from 2020-2024 from monitor 390610006. Green cells represent MDA8 values below 70 ppb, yellow cells indicate MDA8 values greater than 70 ppb, red cells indicate MDA8 values above 75 ppb, and blue cells indicate MDA8 values greater than the 99th percentile of the five-year distribution of ozone monitoring data.**

| monitor | 390610010 | 71 <-- 99th %ile of 2020-2024 observations |
|---|---|---|

| Sum of value / Row Labels | Column Labels 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **2024** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 51 | 58 | 43 | 38 | 49 | 36 | 36 | 47 | 38 | 38 | 47 | 51 | 51 | 21 | 44 | 53 | 44 | 58 | 59 | 60 | 53 | 45 | 44 | 55 | 52 | 48 | 47 | 55 | 43 | 50 | 57 |
| 6 | 47 | 32 | 50 | 45 | 38 | 52 | 53 | 43 | 49 | 27 | 58 | 70 | **72** | 63 | 49 | 71 | 61 | 59 | 56 | 66 | 69 | 59 | 41 | 52 | 59 | 38 | 51 | 55 | 39 | 40 | |
| 7 | 45 | 59 | 47 | 36 | 42 | 49 | 57 | 57 | 49 | 53 | 57 | 51 | 54 | 46 | 45 | 52 | 43 | 36 | 55 | 58 | 51 | 57 | 55 | 49 | 52 | 58 | 65 | 33 | 32 | 47 | 40 |
| 8 | 40 | 40 | 49 | 53 | 47 | 51 | 48 | 46 | 49 | 38 | 37 | 45 | 56 | 62 | 51 | 41 | 46 | 36 | 37 | 41 | 47 | 48 | 68 | 55 | 54 | 71 | 66 | 57 | 64 | 58 | 46 |
| 9 | 45 | 41 | 44 | 53 | 61 | 49 | 32 | 38 | 43 | 65 | 62 | 57 | 46 | 41 | 42 | 47 | 55 | 47 | 53 | 60 | 56 | 43 | 39 | 33 | 33 | 27 | 24 | 22 | 23 | 20 | |
| **2023** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 33 | 39 | 38 | 47 | 54 | 54 | 41 | 50 | 56 | 55 | 62 | 40 | 41 | 51 | 39 | 39 | 52 | 56 | 52 | 40 | 50 | 63 | 61 | **73** | 57 | 55 | 55 | 56 | 66 | 46 | 51 |
| 6 | 61 | **84** | 71 | 59 | 56 | 63 | 63 | 53 | 61 | 69 | 46 | 41 | 53 | 52 | 61 | 44 | 63 | 64 | 34 | 41 | 52 | 38 | 39 | 70 | 51 | 53 | 49 | **83** | 61 | 57 | |
| 7 | 37 | 43 | 45 | 54 | 63 | 57 | 57 | 47 | 51 | 60 | 59 | 64 | 51 | 58 | 35 | 51 | 53 | 49 | 45 | 50 | 49 | 57 | 51 | 52 | **79** | 57 | 50 | 52 | 46 | 45 | 44 |
| 8 | 55 | 58 | 62 | 67 | 59 | 49 | 36 | 38 | 38 | 48 | 53 | 46 | 47 | 35 | 32 | 38 | 43 | 37 | 59 | 53 | 59 | 58 | 54 | 44 | 41 | 39 | 43 | 50 | 54 | 30 | 42 |
| 9 | 59 | 46 | 49 | 57 | 43 | 44 | 29 | 32 | 34 | 41 | 49 | 34 | 40 | 48 | 51 | 57 | 52 | 37 | 53 | 54 | 55 | 56 | 51 | 44 | 37 | 47 | 22 | 37 | 34 | 47 | |
| **2022** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 52 | 50 | 41 | 32 | 28 | 36 | 42 | 48 | 39 | 46 | 60 | 51 | 44 | 48 | 55 | 54 | 61 | 36 | 45 | 50 | 39 | 41 | 33 | 45 | 27 | 25 | 28 | 38 | 43 | 46 | 54 |
| 6 | 39 | 43 | 62 | 70 | 57 | 40 | 42 | 41 | 48 | 45 | 49 | 38 | 48 | 2 | 50 | 41 | 59 | 48 | 49 | 56 | 71 | 59 | 53 | 70 | 65 | 55 | 51 | 52 | 66 | 68 | |
| 7 | 46 | 58 | 63 | 58 | 51 | 39 | 55 | 31 | 42 | 52 | 56 | 54 | 40 | 50 | 63 | 61 | 38 | 44 | 58 | 56 | 53 | 54 | 56 | 46 | 38 | 33 | 37 | 43 | 47 | 44 | 45 |
| 8 | 40 | 48 | 48 | 42 | 31 | 36 | 35 | 35 | 40 | 35 | 54 | 42 | 52 | 29 | 50 | 50 | 54 | 58 | 60 | 42 | 40 | 38 | 42 | 47 | 53 | 45 | 53 | 47 | 36 | 46 | 48 |
| 9 | 52 | 54 | 31 | 36 | 35 | 35 | 41 | 44 | 41 | 37 | 26 | 33 | 37 | 42 | 51 | 50 | 49 | 52 | 41 | 52 | 47 | 36 | 33 | 39 | 35 | 34 | 35 | 24 | 29 | 39 | |
| **2021** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 50 | 50 | 35 | 34 | 38 | 42 | 47 | 38 | 35 | 44 | 37 | 41 | 47 | 58 | 58 | 54 | 33 | 44 | 52 | 55 | 59 | 60 | 53 | 60 | 59 | 35 | 49 | 28 | 36 | 35 | 50 |
| 6 | 45 | 23 | 27 | 59 | 63 | 37 | 30 | 31 | 19 | 41 | 39 | 55 | 59 | 70 | 42 | 52 | 64 | 58 | 48 | 45 | 42 | 35 | 46 | 49 | 34 | 44 | 38 | 41 | 48 | 39 | |
| 7 | 32 | 32 | 42 | 44 | 47 | 54 | 47 | 38 | 30 | 37 | 39 | 39 | 39 | 45 | 42 | 33 | 36 | 43 | 46 | 45 | 49 | 57 | **77** | 59 | 48 | 57 | 63 | 53 | 46 | 49 | 44 |
| 8 | 43 | 46 | 49 | 52 | 63 | 59 | 56 | 53 | 34 | 27 | 39 | 48 | 46 | 47 | 40 | 30 | 28 | 37 | 42 | 66 | 53 | 52 | 47 | 61 | 44 | 52 | 51 | 48 | 38 | 20 | 25 |
| 9 | 45 | 48 | 51 | 49 | 38 | 45 | 56 | 44 | 39 | 40 | 49 | 51 | 49 | 41 | 30 | 41 | 45 | 57 | 50 | 17 | 24 | 22 | 27 | 39 | 39 | 45 | 56 | 54 | 58 | 49 | |
| **2020** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 48 | 60 | 31 | 44 | 38 | 53 | 51 | 40 | 47 | 45 | 33 | 41 | 40 | 50 | 41 | 46 | 37 | 36 | 30 | 32 | 21 | 44 | 45 | 44 | 42 | 51 | 36 | 51 | 44 | 36 | 41 |
| 6 | 52 | 63 | 59 | 47 | 60 | 66 | 56 | 59 | 30 | 47 | 51 | 55 | 53 | 49 | 52 | 55 | 68 | 49 | 66 | **72** | 53 | 50 | 48 | 42 | 50 | 50 | 29 | 41 | 47 | 41 | |
| 7 | 70 | 63 | 64 | 69 | 67 | 55 | 56 | **77** | 60 | 51 | 51 | 54 | 46 | 66 | 59 | 45 | **76** | 50 | 39 | 54 | 58 | 32 | 36 | 46 | 55 | 46 | 35 | 45 | 69 | 33 | 44 |
| 8 | 35 | 36 | 41 | 34 | 39 | 52 | 58 | 66 | 70 | 43 | 46 | 56 | 65 | 35 | 50 | 47 | 44 | 14 | 41 | 49 | 61 | 46 | 42 | 50 | 53 | 50 | 22 | 21 | 46 | 42 | 43 |
| 9 | 44 | 33 | 38 | 44 | 46 | 46 | 44 | 51 | 50 | 50 | 24 | 34 | 34 | 38 | 34 | 36 | 54 | 40 | 42 | 42 | 42 | 49 | 42 | 56 | 43 | 34 | 36 | 22 | 20 | 38 | |

**Figure 29. Calendar view of MDA8 ozone observations from 2020-2024 from monitor 390610010. Green cells represent MDA8 values below 70 ppb, yellow cells indicate MDA8 values greater than 70 ppb, red cells indicate MDA8 values above 75 ppb, and blue cells indicate MDA8 values greater than the 99th percentile of the five-year distribution of ozone monitoring data.**

| monitor | 390610040 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 72 <-- 99th %ile of 2020-2024 observations | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sum of value | Column Labels | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Row Labels | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| **2024** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 57 | 58 | 46 | 33 | 51 | 38 | 37 | 50 | 40 | 40 | 48 | 52 | 53 | 26 | 42 | 55 | 47 | 57 | 65 | 61 | 51 | 48 | 44 | 55 | 52 | 52 | 48 | 56 | 44 | 50 | 57 |
| 6 | 49 | 36 | 45 | 41 | 40 | 51 | 53 | 46 | 50 | 27 | 61 | 71 | 66 | 66 | 47 | 72 | 57 | 54 | 57 | **79** | **73** | 62 | 44 | 55 | 61 | 42 | 55 | 54 | 44 | 41 | |
| 7 | 46 | 58 | 46 | 36 | 46 | 51 | 66 | 53 | 51 | 54 | 65 | 59 | 57 | 52 | 52 | 54 | 46 | 42 | 53 | 62 | 58 | 60 | 59 | 52 | 55 | 57 | **73** | 35 | 36 | 51 | 43 |
| 8 | 44 | 46 | 53 | 60 | 58 | 60 | 50 | 55 | 52 | 40 | 39 | 53 | 61 | 59 | 55 | 43 | 50 | 39 | 40 | 45 | 48 | 48 | 72 | 63 | 64 | **73** | **82** | 69 | 69 | 63 | 50 |
| 9 | 47 | 42 | 45 | 48 | 72 | 51 | 33 | 43 | 46 | 66 | 61 | 59 | 40 | 41 | 44 | 47 | 50 | 44 | 57 | 55 | 62 | 47 | 43 | 33 | 31 | 28 | 32 | 28 | 23 | 31 | |
| **2023** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 31 | 37 | 37 | 47 | 53 | 54 | 40 | 50 | 57 | 54 | 60 | 38 | 49 | 52 | 36 | 39 | 52 | 55 | 50 | 40 | 52 | 57 | 56 | **74** | 56 | 55 | 58 | 58 | 61 | 43 | 49 |
| 6 | 61 | **78** | 68 | 63 | 65 | 65 | 62 | 54 | 62 | 70 | 45 | 42 | 55 | 53 | 62 | 46 | 69 | 62 | 40 | 44 | 51 | 36 | 37 | 72 | 52 | 53 | 49 | **88** | 57 | 60 | |
| 7 | 37 | 44 | 47 | 59 | 59 | 57 | 60 | 50 | 51 | 63 | 62 | 60 | 51 | 65 | 38 | 53 | 55 | 55 | 43 | 54 | 49 | 53 | 54 | 48 | **75** | 56 | 59 | 54 | 45 | 49 | 50 |
| 8 | 48 | 51 | **75** | **73** | 59 | 50 | 35 | 48 | 45 | 48 | 60 | 49 | 49 | 43 | 35 | 47 | 49 | 40 | 56 | 70 | **73** | 55 | 62 | 52 | 46 | 42 | 41 | 55 | 59 | 34 | 43 |
| 9 | 62 | 51 | 55 | 55 | 44 | 45 | 31 | 36 | 36 | 45 | 57 | 35 | 42 | 48 | 48 | 59 | 54 | 40 | 52 | 53 | 55 | 56 | 52 | 45 | 35 | 44 | 32 | 38 | 40 | 49 | |
| **2022** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 55 | 52 | 39 | 31 | 32 | 34 | 43 | 49 | 43 | 51 | 58 | 53 | 44 | 52 | 62 | 57 | 63 | 47 | 49 | 49 | 39 | 41 | 35 | 43 | 31 | 31 | 29 | 42 | 44 | 49 | 51 |
| 6 | 46 | 45 | 63 | **74** | 59 | 42 | 44 | 42 | 49 | 48 | 47 | 41 | 40 | 55 | 54 | 42 | 61 | 50 | 46 | 59 | **74** | 62 | 58 | 66 | 66 | 60 | 55 | 64 | **83** | 67 | |
| 7 | 49 | 63 | 62 | 60 | 51 | 39 | 54 | 37 | 41 | 51 | | | 50 | 66 | 64 | 38 | 47 | 57 | 59 | 53 | 59 | 60 | 51 | 42 | 40 | 39 | 45 | 47 | 45 | 40 | |
| 8 | 44 | 50 | 44 | 44 | 30 | 35 | 39 | 44 | 44 | 37 | 53 | 41 | 49 | 32 | 49 | 51 | 51 | 66 | 54 | 44 | 39 | 39 | 45 | 59 | 53 | 44 | 47 | 44 | 38 | 42 | 48 |
| 9 | 48 | 47 | 31 | 33 | 31 | 34 | 41 | 43 | 38 | 35 | 24 | 35 | 38 | 47 | 57 | 50 | 49 | 53 | 41 | 64 | 47 | 35 | 38 | 44 | 34 | 34 | 35 | 22 | 29 | 40 | |
| **2021** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 52 | 55 | 38 | 39 | 39 | 44 | 48 | 42 | 37 | 47 | 37 | 42 | 49 | 59 | 60 | 55 | 38 | 51 | 58 | 58 | 61 | 62 | 57 | 67 | 69 | 37 | 54 | 29 | 34 | 35 | 49 |
| 6 | 47 | 27 | 31 | 64 | 68 | 40 | 27 | 36 | 23 | 40 | 41 | 67 | 65 | 71 | 44 | 56 | 65 | 57 | 51 | 54 | 42 | 37 | 49 | 49 | 38 | 45 | 41 | 37 | 44 | 46 | |
| 7 | 38 | 34 | 43 | 47 | 53 | 60 | 50 | 43 | 33 | 41 | 45 | 42 | 41 | 51 | 49 | 35 | 39 | 42 | 46 | 57 | 53 | 56 | 63 | 68 | 53 | 63 | **74** | 58 | 52 | 53 | 46 |
| 8 | 46 | 45 | 50 | 56 | 57 | 64 | 65 | 54 | 33 | 28 | 47 | 54 | 52 | 45 | 37 | 34 | 31 | 43 | 48 | 56 | 60 | 63 | 50 | **78** | 38 | 55 | 50 | 49 | 43 | 20 | 26 |
| 9 | 44 | 46 | 51 | 50 | 39 | 48 | 55 | 48 | 40 | 45 | 49 | 52 | 57 | 40 | 32 | 40 | 42 | 49 | 52 | 21 | 26 | 22 | 26 | 44 | 40 | 48 | 57 | 59 | 61 | 52 | |
| **2020** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 47 | 58 | 40 | 44 | 37 | 51 | 47 | 37 | 45 | 44 | 32 | 38 | 39 | 51 | 41 | 41 | 35 | 28 | 31 | 33 | 21 | 45 | 40 | 45 | 36 | 43 | 34 | 47 | 45 | 34 | 41 |
| 6 | 50 | 61 | 55 | 45 | 60 | 64 | 54 | 57 | 29 | 47 | 50 | 54 | 51 | 46 | 50 | 53 | 64 | 44 | 59 | 69 | 52 | 51 | 45 | 42 | 48 | 50 | 28 | 39 | 50 | 42 | |
| 7 | 58 | 55 | 68 | 67 | 59 | 48 | 62 | 68 | 56 | 48 | 50 | 55 | 46 | 56 | 56 | 45 | 70 | 50 | 39 | 58 | 58 | 31 | 38 | 48 | 55 | 50 | 34 | 48 | 67 | 38 | 43 |
| 8 | 31 | 37 | 43 | 33 | 43 | 52 | 59 | **75** | 62 | 41 | 49 | 57 | 55 | 44 | 53 | 45 | 43 | 18 | 36 | 41 | 49 | 40 | 46 | 52 | 51 | 50 | 24 | 19 | 43 | 34 | 33 |
| 9 | 41 | 30 | 36 | 42 | 44 | 48 | 44 | 50 | 44 | 46 | 25 | 29 | 30 | 36 | 32 | 39 | 51 | 36 | 38 | 40 | 41 | 45 | 43 | 50 | 39 | 31 | 33 | 21 | 19 | 37 | |

**Figure 30. Calendar view of MDA8 ozone observations from 2020-2024 from monitor 390610040. Green cells represent MDA8 values below 70 ppb, yellow cells indicate MDA8 values greater than 70 ppb, red cells indicate MDA8 values above 75 ppb, and blue cells indicate MDA8 values greater than the 99th percentile of the five-year distribution of ozone monitoring data.**

| monitor | 391650007 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sum of value | Column Labels | 73 <-- 99th %ile of 2020-2024 observations | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Row Labels | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| **2024** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 57 | 59 | 49 | 39 | 52 | 39 | 38 | 59 | 41 | 38 | 47 | 49 | 55 | 30 | 39 | 54 | 51 | 54 | 62 | 68 | 58 | 50 | 49 | 54 | 55 | 52 | 49 | 57 | 43 | 49 | 58 |
| 6 | 52 | 37 | 47 | 46 | 41 | 54 | 54 | 47 | 50 | 25 | 60 | 71 | 73 | 67 | 48 | 73 | 56 | 62 | 55 | 68 | 71 | 65 | 44 | 55 | 55 | 38 | 52 | 57 | 47 | 41 | |
| 7 | 46 | 56 | 55 | 41 | 46 | 53 | 57 | 55 | 50 | 54 | 58 | 59 | 59 | 55 | 55 | 59 | 49 | 42 | 47 | 61 | 56 | 54 | 60 | 54 | 57 | 56 | 62 | 43 | 42 | 53 | 51 |
| 8 | 42 | 45 | 51 | 53 | 55 | 64 | 43 | 50 | 48 | 38 | 38 | 53 | 50 | 54 | 48 | 49 | 49 | 37 | 37 | 41 | 43 | 50 | 63 | 62 | 59 | **78** | **84** | 67 | 68 | 68 | 47 |
| 9 | 46 | 40 | 44 | 48 | 66 | 44 | 33 | 39 | 46 | 55 | 62 | 59 | 48 | 44 | 43 | 49 | 53 | 44 | 63 | 70 | 62 | 54 | 44 | 37 | 36 | 30 | 23 | 30 | 21 | 24 | |
| **2023** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 33 | 36 | 36 | 48 | 53 | 55 | 47 | 56 | 54 | 56 | 60 | 41 | 47 | 50 | 47 | 42 | 49 | 55 | 59 | 37 | 47 | 60 | 56 | 69 | 53 | 55 | 58 | 58 | 64 | 48 | 49 |
| 6 | 70 | **76** | 68 | 62 | 63 | 65 | 60 | 53 | 63 | **74** | 46 | 44 | 51 | 45 | 65 | 47 | 62 | 66 | 41 | 48 | 53 | 37 | 37 | 65 | 57 | 53 | 42 | **76** | 66 | 67 | |
| 7 | 41 | 48 | 43 | 61 | 58 | 50 | 56 | 51 | 50 | 61 | 62 | 68 | 56 | 64 | 38 | 56 | 55 | 53 | 55 | 57 | 47 | 45 | 55 | 49 | **76** | 58 | 54 | 36 | 45 | 43 | 43 |
| 8 | 50 | 48 | 60 | **74** | 54 | 49 | 36 | 50 | 47 | 51 | 62 | 52 | 50 | 42 | 35 | 41 | 49 | 38 | 56 | 67 | 53 | 43 | 65 | 56 | 43 | 36 | 35 | 47 | 47 | 28 | 37 |
| 9 | 45 | 50 | 48 | 60 | 46 | 48 | 28 | 34 | 32 | 43 | 53 | 33 | 37 | 46 | 49 | 51 | 55 | 37 | 48 | 52 | 54 | 54 | 49 | 39 | 30 | 36 | 29 | 38 | 45 | 48 | |
| **2022** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 54 | 53 | 39 | 29 | 33 | 32 | 42 | 47 | 48 | 47 | 59 | 43 | 40 | 51 | 63 | 56 | 57 | 44 | 48 | 50 | 43 | 41 | 37 | 49 | 32 | 36 | 34 | 41 | 47 | 51 | 60 |
| 6 | 45 | 45 | 64 | 67 | 64 | 45 | 46 | 46 | 48 | 48 | 51 | 47 | 47 | 56 | 60 | 44 | 60 | 50 | 48 | 65 | **80** | 66 | 59 | 68 | 71 | 61 | 55 | 64 | **80** | 69 | |
| 7 | 57 | 63 | 64 | 63 | 49 | 42 | 47 | 34 | 41 | 46 | 62 | 54 | 53 | 55 | 58 | 64 | 41 | 49 | 64 | 66 | 59 | 58 | 55 | 52 | 42 | 32 | 44 | 47 | 47 | 44 | 38 |
| 8 | 49 | 52 | 50 | 47 | 33 | 43 | 39 | 43 | 43 | 35 | 53 | 35 | 45 | 32 | 46 | 46 | 49 | 61 | 57 | 41 | 37 | 41 | 44 | 49 | 59 | 45 | 46 | 46 | 40 | 44 | 42 |
| 9 | 50 | 44 | 32 | 33 | 31 | 32 | 42 | 43 | 39 | 38 | 27 | 37 | 39 | 44 | 59 | 50 | 53 | 56 | 42 | 56 | 55 | 35 | 37 | 42 | 34 | 35 | 34 | 21 | 29 | 38 | |
| **2021** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 52 | 56 | 39 | 35 | 37 | 44 | 47 | 40 | 33 | 45 | 36 | 40 | 47 | 57 | 61 | 55 | 36 | 44 | 58 | 61 | 64 | 62 | 50 | 62 | 68 | 41 | 58 | 29 | 35 | 36 | 50 |
| 6 | 50 | 31 | 33 | 63 | 71 | 46 | 31 | 40 | 28 | 41 | 48 | 58 | 63 | 68 | 39 | 52 | 69 | 56 | 54 | 50 | 44 | 34 | 50 | 51 | 39 | 43 | 43 | 45 | 53 | 47 | |
| 7 | 36 | 34 | 41 | 46 | 54 | 51 | 53 | 45 | 32 | 34 | 41 | 42 | 42 | 51 | 48 | 38 | 40 | 36 | 42 | 63 | 50 | 45 | 55 | 70 | 51 | 56 | 69 | 57 | 54 | 49 | 46 |
| 8 | 43 | 38 | 44 | 51 | 53 | 68 | 62 | 55 | 38 | 36 | 48 | 56 | 51 | 42 | 34 | 31 | 25 | 37 | 42 | 51 | 46 | 52 | 47 | **76** | 50 | 44 | 47 | 54 | 40 | 27 | 27 |
| 9 | 41 | 41 | 44 | 54 | 36 | 48 | 59 | 46 | 38 | 46 | 49 | 55 | 61 | 43 | 31 | 33 | 48 | 50 | 53 | 25 | 27 | 28 | 30 | 45 | 38 | 48 | 59 | 59 | 49 | 51 | |
| **2020** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 49 | 62 | 43 | 41 | 40 | 53 | 53 | 40 | 46 | 46 | 32 | 43 | 44 | 47 | 46 | 45 | 40 | 37 | 37 | 38 | 29 | 47 | 45 | 53 | 39 | 41 | 41 | 56 | 44 | 34 | 42 |
| 6 | 55 | 66 | 63 | 53 | 64 | 64 | 52 | 60 | 35 | 46 | 52 | 53 | 48 | 46 | 50 | 57 | 64 | 49 | 61 | 19 | 60 | 57 | 48 | 44 | 54 | 58 | 39 | 41 | 58 | 45 | |
| 7 | 62 | 57 | 67 | 66 | 65 | 62 | 61 | 68 | 57 | 54 | 54 | 54 | 50 | 58 | 64 | 51 | 71 | 58 | 42 | 58 | 67 | 35 | 40 | 54 | 65 | 52 | 41 | 49 | **75** | 40 | 38 |
| 8 | 36 | 39 | 48 | 36 | 45 | 48 | 53 | 71 | 70 | 50 | 54 | 52 | 58 | 47 | 56 | 50 | 42 | 20 | 37 | 44 | 52 | 48 | 50 | 58 | 54 | 59 | 27 | 26 | 43 | 37 | 38 |
| 9 | 49 | 37 | 44 | 43 | 52 | 55 | 49 | 56 | 44 | 51 | 24 | 39 | 36 | 35 | 33 | 50 | 50 | 38 | 41 | 44 | 44 | 57 | 52 | 57 | 44 | 36 | 37 | 26 | 22 | 40 | |

**Figure 31. Calendar view of MDA8 ozone observations from 2020-2024 from monitor 391650007. Green cells represent MDA8 values below 70 ppb, yellow cells indicate MDA8 values greater than 70 ppb, red cells indicate MDA8 values above 75 ppb, and blue cells indicate MDA8 values greater than the 99th percentile of the five-year distribution of ozone monitoring data.**

| monitor | 390350034 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 74 <-- 99th %ile of 2020-2024 observations | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sum of value | Column Labels | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Row Labels | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| **2024** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 59 | 48 | 41 | 45 | 46 | 39 | 46 | 56 | 27 | 36 | 39 | 44 | 61 | 52 | 42 | 39 | 46 | 47 | 62 | **75** | 69 | 52 | 59 | 65 | 63 | 54 | 48 | 48 | 41 | 48 | 62 |
| 6 | 66 | 31 | 49 | 56 | 44 | 57 | 43 | 47 | 47 | 36 | 37 | 68 | 69 | 52 | 36 | 51 | 60 | 49 | 67 | 74 | 59 | 72 | 46 | 44 | 56 | 46 | 36 | 51 | 39 | 26 | |
| 7 | 32 | 52 | 56 | 47 | 47 | 52 | 44 | 64 | 60 | 44 | 42 | 50 | 55 | 53 | 60 | 54 | 41 | 32 | 39 | 56 | 64 | 48 | 66 | 53 | 33 | 40 | 44 | 67 | 35 | 45 | 61 |
| 8 | 57 | 49 | 50 | 44 | 50 | 35 | 32 | 35 | 50 | 39 | 39 | 37 | 42 | 44 | 51 | 50 | 45 | 40 | 31 | 33 | 33 | 30 | 57 | 72 | 53 | 54 | 59 | 53 | 32 | 55 | 45 |
| 9 | 46 | 31 | 42 | 52 | 61 | 39 | 33 | 40 | 42 | 42 | 56 | 57 | 51 | 49 | 59 | 51 | 43 | 41 | 38 | 53 | 59 | 58 | 36 | 31 | 37 | 39 | 25 | 18 | 18 | 24 | |
| **2023** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 29 | 36 | 34 | 34 | 41 | 45 | 51 | 45 | 45 | 49 | 61 | 66 | 49 | 42 | 45 | 51 | 41 | 44 | 52 | 32 | 41 | 45 | 57 | 54 | 34 | 41 | 49 | 61 | 58 | 63 | 61 |
| 6 | **75** | **79** | 45 | 44 | 43 | 51 | 46 | 43 | 36 | 67 | 68 | 39 | 40 | 52 | 54 | 30 | 47 | 47 | 54 | 57 | 56 | 35 | 20 | 38 | 56 | 35 | 43 | 44 | **87** | 57 | |
| 7 | 54 | 46 | 62 | 54 | 71 | 55 | 40 | 46 | 48 | 61 | 58 | 49 | 47 | 60 | 51 | 58 | 56 | 37 | 46 | 51 | 43 | 48 | 51 | 64 | 70 | 60 | 58 | 48 | 41 | 39 | 40 |
| 8 | 40 | 55 | 63 | 55 | 40 | 49 | 41 | 45 | 63 | 61 | 47 | 43 | 47 | 30 | 41 | 41 | 45 | 51 | 50 | 57 | 34 | 33 | 46 | 46 | 35 | 41 | 35 | 44 | 56 | 27 | 37 |
| 9 | 33 | 54 | 43 | 41 | 49 | 35 | 42 | 25 | 29 | 33 | 37 | 41 | 35 | 36 | 41 | 52 | 56 | 34 | 40 | 52 | 58 | 45 | 42 | 31 | 31 | 26 | 35 | 22 | 38 | | |
| **2022** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 38 | 29 | 41 | 20 | 27 | 37 | 46 | 47 | 60 | 65 | 63 | 63 | 45 | 48 | 62 | 55 | 35 | 22 | 55 | 48 | 45 | 30 | 34 | 39 | 45 | 32 | 40 | 39 | 57 | 56 | 54 |
| 6 | 58 | 36 | 63 | 43 | 53 | 54 | 40 | 47 | 46 | 49 | 54 | 61 | 51 | 57 | 69 | 56 | 61 | 43 | 45 | 51 | **82** | **88** | 46 | 47 | 71 | 51 | 48 | 49 | 70 | **81** | |
| 7 | 71 | 50 | 48 | 73 | 53 | 43 | 43 | 52 | 37 | 45 | 65 | 53 | 44 | 44 | 44 | 52 | 35 | 50 | 62 | 51 | 50 | 60 | 52 | 46 | 45 | 50 | 32 | 45 | 45 | 30 | 43 |
| 8 | 45 | 38 | 56 | 39 | 43 | 44 | 44 | 40 | 25 | 41 | 28 | 34 | 42 | 47 | 47 | 52 | 54 | 53 | 61 | 58 | 37 | 47 | 43 | 53 | 67 | 42 | 34 | 55 | 43 | 44 | 38 |
| 9 | 39 | 42 | 59 | 38 | 26 | 30 | 40 | 39 | 53 | 47 | 23 | 35 | 39 | 39 | 31 | 55 | 49 | 55 | 53 | 49 | 46 | 33 | 30 | 35 | 34 | 31 | 26 | 25 | 26 | 30 | |
| **2021** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 53 | 60 | 32 | 41 | 27 | 41 | 43 | 39 | 38 | | | | | | | | | 68 | 69 | 72 | 66 | 62 | 58 | 32 | 65 | 47 | 37 | 38 | 41 | 39 | 55 |
| 6 | 61 | | 34 | 62 | 70 | 65 | 33 | 41 | 47 | 39 | 49 | 50 | 62 | 51 | 41 | 43 | 66 | 47 | 46 | 53 | 45 | 32 | 53 | 54 | 41 | 43 | 42 | 49 | 50 | 34 | |
| 7 | 40 | 24 | 42 | 48 | 57 | 50 | 50 | 42 | 39 | 41 | 30 | 31 | 39 | 58 | 50 | 43 | 49 | 47 | 55 | 62 | 38 | 33 | 55 | 52 | 58 | 60 | 70 | 72 | 65 | 34 | 48 |
| 8 | 47 | 36 | 50 | 54 | 62 | 63 | 65 | 52 | 56 | 35 | 43 | 44 | 50 | 42 | 41 | 30 | 42 | 31 | 50 | 57 | 53 | 69 | | | | | | | | 49 | 44 |
| 9 | 37 | 41 | 40 | 51 | 45 | 46 | 55 | 49 | 38 | 41 | 50 | 54 | 49 | 43 | 38 | 44 | 55 | 47 | 50 | 52 | 36 | 20 | 30 | 44 | 40 | 44 | 61 | 33 | 42 | 33 | |
| **2020** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 42 | 49 | 54 | 36 | 41 | 42 | 47 | 31 | 39 | 43 | 30 | 44 | 44 | 38 | 37 | 40 | 34 | 20 | 49 | 47 | 45 | 32 | 42 | 53 | 55 | 57 | 51 | 35 | 40 | 37 | 40 |
| 6 | 50 | 65 | 55 | 44 | 69 | 53 | 36 | 49 | 74 | 40 | 40 | 41 | 39 | 31 | 39 | 49 | 63 | 46 | 62 | 60 | 72 | 49 | 45 | 41 | 56 | 57 | 48 | 36 | 42 | 45 | |
| 7 | 46 | 43 | 72 | 42 | 50 | 58 | 74 | **79** | **81** | 51 | 41 | 42 | 41 | 49 | 64 | 48 | 61 | 72 | 41 | 49 | 53 | 39 | 43 | 50 | 50 | 65 | 38 | 40 | 49 | 34 | 45 |
| 8 | 36 | 27 | 35 | 35 | 36 | 44 | 44 | 52 | 67 | 68 | 55 | 43 | 52 | 52 | 52 | 43 | 43 | 29 | 26 | 50 | 58 | 66 | 59 | 58 | 46 | 48 | 51 | 33 | 38 | 30 | 45 |
| 9 | 51 | 38 | 49 | 38 | 42 | 36 | 29 | 48 | 40 | 21 | 31 | 41 | 34 | 21 | 31 | 39 | 29 | 30 | 34 | 33 | 40 | 45 | 61 | 55 | 61 | 41 | 36 | 34 | 22 | 29 | |

**Figure 32. Calendar view of MDA8 ozone observations from 2020-2024 from monitor 390350034. Green cells represent MDA8 values below 70 ppb, yellow cells indicate MDA8 values greater than 70 ppb, red cells indicate MDA8 values above 75 ppb, and blue cells indicate MDA8 values greater than the 99th percentile of the five-year distribution of ozone monitoring data.**

| monitor | 390350060 | | | | | | | | | 64 <-- 99th %ile of 2020-2024 observations | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sum of value | Column Labels | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Row Labels | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| **2024** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 55 | 34 | 25 | 37 | 44 | 35 | 39 | 46 | 25 | 34 | 36 | 41 | 58 | 44 | 41 | 34 | 41 | 43 | 59 | **68** | 63 | 50 | 53 | 60 | 59 | 52 | 45 | 44 | 40 | 45 | 57 |
| 6 | 63 | 26 | 44 | 50 | 37 | 54 | 41 | 46 | 44 | 34 | 34 | 63 | **67** | 47 | 32 | 51 | 53 | 36 | 53 | 63 | 53 | 64 | 42 | 39 | 52 | 43 | 33 | 47 | 36 | 25 | |
| 7 | 28 | 49 | 53 | 49 | 47 | 51 | 42 | 58 | 54 | 39 | 37 | 46 | 51 | 50 | 56 | 57 | 39 | 30 | 33 | 52 | 58 | 43 | 56 | 49 | 30 | 36 | 41 | **65** | 29 | 44 | 60 |
| 8 | 55 | 42 | 49 | 41 | 45 | 29 | 27 | 32 | 47 | 38 | 37 | 38 | 39 | 40 | 48 | 47 | 46 | 40 | 29 | 33 | 32 | 29 | 53 | **65** | 52 | 53 | 62 | 50 | 31 | 51 | 44 |
| 9 | 45 | 30 | 40 | 50 | 57 | 38 | 31 | 40 | 41 | 42 | 50 | 53 | 49 | 47 | 56 | 50 | 41 | 38 | 36 | 47 | 56 | 52 | 33 | 28 | 34 | 34 | 21 | 18 | 17 | 19 | |
| **2023** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 28 | 34 | 31 | 32 | 40 | 43 | 47 | 41 | 41 | 45 | 55 | 57 | 48 | 42 | 46 | 53 | 42 | 43 | 53 | 33 | 43 | 44 | 51 | 53 | 35 | 38 | 49 | 61 | 59 | 60 | 59 |
| 6 | **71** | **76** | 46 | 45 | 43 | 51 | 46 | 42 | 38 | 64 | 59 | 36 | 38 | 52 | 50 | 30 | 52 | 56 | 52 | 54 | 53 | 35 | 26 | 43 | 63 | 40 | 41 | 43 | **78** | 52 | |
| 7 | 50 | 41 | 55 | 51 | **65** | 46 | 36 | | | 60 | 57 | 45 | 47 | 56 | 48 | 56 | 54 | 36 | 44 | 51 | 37 | 46 | 48 | 55 | 63 | 54 | 57 | 40 | 40 | 37 | 37 |
| 8 | 35 | 49 | 60 | 55 | 40 | 44 | 38 | 43 | 56 | 58 | 44 | 39 | 45 | 29 | 39 | 39 | 43 | 46 | 47 | 52 | 29 | 30 | 37 | 41 | 32 | 39 | 34 | 40 | 53 | 25 | 37 |
| 9 | 33 | 53 | 41 | 40 | 47 | 34 | 39 | 24 | 26 | 28 | 33 | 34 | 33 | 32 | 37 | 50 | 54 | 34 | 40 | 50 | 53 | 44 | 41 | 31 | 27 | 23 | 30 | 21 | 35 | 45 | |
| **2022** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 36 | 27 | 37 | 20 | 23 | 34 | 43 | 43 | 54 | 57 | 52 | 52 | 35 | 38 | 52 | 48 | 30 | 16 | 46 | 34 | 35 | 27 | 33 | 31 | 37 | 24 | 35 | 34 | 44 | 45 | 43 |
| 6 | 42 | 32 | 56 | 38 | 48 | 43 | 32 | 39 | 40 | 41 | 47 | 50 | 39 | 43 | 41 | 50 | 50 | 39 | 41 | 46 | **66** | **73** | 37 | 36 | 58 | 47 | 43 | 41 | 57 | 62 | |
| 7 | 56 | 41 | 38 | 58 | 38 | 37 | 35 | 40 | 33 | 38 | 54 | 48 | 37 | 36 | 37 | 43 | 31 | 48 | 52 | 43 | 40 | 49 | 44 | 35 | 37 | 42 | 26 | 39 | 42 | 27 | 41 |
| 8 | 44 | 38 | 53 | 40 | 41 | 40 | 40 | 39 | 24 | 39 | 28 | 32 | 41 | 40 | 44 | 48 | 49 | 46 | 55 | 52 | 35 | 46 | 44 | 50 | 61 | 41 | 34 | 51 | 37 | 40 | 33 |
| 9 | 34 | 40 | 49 | 36 | 26 | 27 | 35 | 35 | 48 | 41 | 19 | 34 | 34 | 35 | 28 | 49 | 46 | 52 | 48 | 45 | 43 | 31 | 27 | 33 | 32 | 29 | 23 | 22 | 22 | 27 | |
| **2021** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 45 | 46 | 22 | 33 | 23 | 35 | 38 | 36 | 35 | 39 | 31 | 34 | 39 | 50 | 55 | 59 | 53 | 58 | 59 | 61 | 55 | 57 | 49 | 27 | 59 | 39 | 37 | 33 | 40 | 38 | 53 |
| 6 | 56 | 25 | 27 | 56 | 63 | 54 | 19 | 22 | 30 | 26 | 38 | 42 | 52 | 47 | 39 | 44 | 61 | 38 | 40 | 39 | 35 | 31 | 49 | 46 | 29 | 31 | 30 | 31 | 29 | 16 | |
| 7 | 24 | 20 | 37 | 34 | 39 | 38 | 38 | 25 | 31 | 32 | 20 | 19 | 25 | 40 | 34 | 28 | 33 | 33 | 40 | 45 | 29 | 24 | 42 | 41 | 43 | 48 | 56 | 54 | 46 | 27 | 39 |
| 8 | 39 | 29 | 42 | 43 | 49 | 52 | 54 | 34 | 40 | 25 | 22 | 30 | 32 | 33 | 35 | 20 | 30 | 22 | 41 | 48 | 43 | 41 | 46 | 52 | 20 | 38 | 41 | 37 | 24 | 33 | 30 |
| 9 | 29 | 36 | 32 | 42 | 38 | 41 | 45 | 41 | 34 | 35 | 44 | 41 | 36 | 32 | 28 | 34 | 37 | 36 | 40 | 37 | 23 | 17 | 27 | 38 | 36 | 39 | 50 | 27 | 34 | 26 | |
| **2020** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 41 | 47 | 51 | 36 | 41 | 40 | 44 | 29 | 37 | 42 | 28 | 44 | 40 | 37 | 35 | 37 | 32 | 20 | 46 | 43 | 40 | 31 | 39 | 48 | 48 | 47 | 44 | 33 | 41 | 37 | 40 |
| 6 | 47 | 59 | 51 | 42 | 62 | 50 | 34 | 47 | 64 | 38 | 39 | 40 | 38 | 30 | 34 | 43 | 56 | 41 | 55 | 56 | **66** | 44 | 42 | 40 | 53 | 54 | 45 | 33 | 37 | 38 | |
| 7 | 42 | 38 | **66** | 37 | 45 | 50 | **65** | **72** | **75** | 48 | 39 | 38 | 37 | 42 | 64 | 48 | 58 | 64 | 39 | 44 | 47 | 38 | 38 | 42 | 47 | 61 | 39 | 43 | 47 | 29 | 38 |
| 8 | 25 | 24 | 29 | 32 | 34 | 41 | 39 | 47 | 59 | 55 | 49 | 39 | 46 | 45 | 48 | 40 | 38 | 25 | 23 | 41 | 51 | 58 | 50 | 48 | 43 | 44 | 44 | 24 | 36 | 26 | 39 |
| 9 | 43 | 34 | 44 | 37 | 40 | 34 | 23 | 38 | 33 | 19 | 29 | 33 | 34 | 19 | 29 | 39 | 27 | 30 | 34 | 33 | 38 | 44 | 54 | 47 | 50 | 36 | 33 | 30 | 21 | 29 | |

**Figure 33. Calendar view of MDA8 ozone observations from 2020-2024 from monitor 390350060. Green cells represent MDA8 values below 70 ppb, yellow cells indicate MDA8 values greater than 70 ppb, red cells indicate MDA8 values above 75 ppb, and blue cells indicate MDA8 values greater than the 99th percentile of the five-year distribution of ozone monitoring data.**

| monitor | 390350064 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 69 <-- 99th %ile of 2020-2024 observations | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sum of value | Column Labels | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Row Labels | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| **2024** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 57 | 44 | 33 | 36 | 46 | 42 | 51 | 54 | 27 | 37 | 37 | 43 | 61 | 46 | 46 | 43 | 43 | 48 | 64 | 65 | 62 | 50 | 59 | 69 | 61 | 52 | 48 | 47 | 39 | 49 | 63 |
| 6 | 65 | 31 | 52 | 49 | 36 | 56 | 43 | 48 | 45 | 31 | 38 | 65 | 68 | 55 | 37 | 59 | 50 | 37 | 41 | 54 | 61 | 59 | 38 | 39 | 51 | 39 | 32 | | | | |
| 7 | 33 | 51 | 51 | 47 | 46 | 49 | 51 | 63 | 55 | 41 | 44 | 59 | 57 | 48 | 59 | 58 | 46 | 34 | 41 | 57 | 64 | 50 | 55 | 48 | 34 | 41 | 49 | 63 | 30 | 42 | 55 |
| 8 | 53 | 41 | 48 | 42 | 44 | 34 | 31 | 40 | 47 | 38 | 38 | 38 | 40 | 48 | 55 | 46 | 46 | 40 | 32 | 36 | 36 | 37 | 59 | 67 | 47 | 59 | 63 | 54 | 37 | 55 | 43 |
| 9 | 46 | 33 | 44 | 54 | 57 | 41 | 29 | 39 | 41 | 50 | 60 | 65 | 53 | 50 | 58 | 52 | 45 | 44 | 43 | 54 | 54 | 55 | 33 | 33 | 34 | 39 | 24 | 24 | 20 | 20 | |
| **2023** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 31 | 32 | 34 | 41 | 49 | 52 | 51 | 47 | 47 | 51 | 67 | 69 | 56 | 45 | 52 | 56 | 45 | 47 | 63 | 38 | 47 | 51 | 59 | 60 | 39 | 45 | 55 | 65 | 65 | 65 | 66 |
| 6 | **80** | **76** | 53 | 45 | 48 | 54 | 47 | 45 | 41 | 66 | 65 | 38 | 41 | 57 | 55 | 37 | 56 | 63 | 63 | 61 | 61 | 41 | 26 | 44 | 64 | 43 | 38 | 56 | **79** | 55 | |
| 7 | 42 | 42 | 48 | 54 | **72** | 52 | 41 | 42 | 50 | 65 | 59 | 42 | 49 | 58 | 47 | 56 | 57 | 47 | 52 | 50 | 46 | 49 | 52 | 58 | 64 | 58 | 59 | 43 | 40 | 38 | 38 |
| 8 | 42 | 51 | 64 | 57 | 47 | 44 | 38 | 43 | 52 | 57 | 50 | 36 | 47 | 32 | 38 | 49 | 43 | 25 | 26 | 29 | 19 | 20 | 24 | 22 | 21 | 40 | 35 | 44 | 56 | 26 | 41 |
| 9 | 40 | 50 | 38 | 39 | 48 | 35 | 41 | 23 | 21 | 31 | 39 | 37 | 34 | 38 | 44 | 53 | 57 | 36 | 38 | 55 | 63 | 49 | 45 | 33 | 32 | 24 | 25 | 18 | 42 | 51 | |
| **2022** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 38 | 36 | 42 | 24 | 31 | 35 | 45 | 47 | 58 | 61 | 60 | 63 | 43 | 43 | 59 | 51 | 33 | 23 | 54 | 43 | 42 | 29 | 34 | 37 | 42 | 29 | 37 | 41 | 48 | 51 | 49 |
| 6 | 44 | 35 | 60 | 42 | 57 | 48 | 36 | 52 | 43 | 46 | 49 | 53 | 56 | 53 | 51 | 54 | 55 | 42 | 40 | 50 | **75** | **76** | 34 | 44 | 68 | 48 | 45 | 47 | 64 | 65 | |
| 7 | 61 | 44 | 48 | 59 | 45 | 42 | 44 | 54 | 33 | 49 | 64 | 54 | 45 | 41 | 48 | 43 | 35 | 53 | 57 | 50 | 50 | 58 | 49 | 41 | 39 | 49 | 30 | 45 | 46 | 30 | 44 |
| 8 | 45 | 38 | 54 | 39 | 37 | 36 | 36 | 35 | 26 | 44 | 31 | 34 | 42 | 38 | 46 | 48 | 50 | 47 | 60 | 52 | 37 | 49 | 45 | 54 | 53 | 45 | 41 | 52 | 41 | 40 | 33 |
| 9 | 39 | 42 | 48 | 34 | 25 | 30 | 39 | 38 | 53 | 42 | 23 | 33 | 32 | 33 | 32 | 54 | 47 | 51 | 49 | 50 | 44 | 32 | 30 | 33 | 32 | 29 | 23 | 20 | 26 | 30 | |
| **2021** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 49 | 52 | 31 | 38 | 25 | 38 | 42 | 38 | 33 | 42 | 34 | 37 | 47 | 54 | 62 | 67 | 60 | **71** | 61 | 69 | 63 | 63 | 56 | 40 | 65 | 48 | 42 | 36 | 42 | 40 | 56 |
| 6 | 60 | 28 | 28 | 59 | 69 | 58 | 28 | 32 | 38 | 41 | 48 | 59 | 59 | 51 | 44 | 47 | 65 | 47 | 49 | 49 | 39 | 33 | 51 | 51 | 37 | 41 | 39 | 42 | 36 | 25 | |
| 7 | 38 | 25 | 44 | 38 | 51 | 50 | 53 | 37 | 34 | 42 | 33 | 37 | 34 | 45 | 45 | 37 | 46 | 37 | 45 | 54 | 37 | 32 | 45 | 52 | 54 | 54 | 62 | 69 | 58 | 33 | 41 |
| 8 | 46 | 44 | 57 | 55 | 63 | 60 | 58 | 45 | 51 | 32 | 36 | 39 | 38 | 39 | 42 | 24 | 39 | 26 | 54 | 57 | 52 | 52 | 59 | 55 | 30 | 52 | 54 | 44 | 33 | 39 | 45 |
| 9 | 37 | 40 | 45 | 50 | 45 | 46 | 55 | 48 | 39 | 43 | 49 | 50 | 47 | 41 | 36 | 44 | 54 | 48 | 53 | 46 | 35 | 21 | 31 | 42 | 40 | 47 | 56 | 34 | 43 | 34 | |
| **2020** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 44 | 52 | 59 | 39 | 43 | 44 | 50 | 33 | 38 | 45 | 28 | 48 | 45 | 41 | 38 | | | 25 | 47 | 43 | 46 | 27 | 46 | 50 | 46 | 57 | 43 | 36 | 39 | 37 | 40 |
| 6 | 46 | 61 | 55 | 44 | 64 | 57 | 37 | 59 | 60 | 41 | 43 | 44 | 38 | 31 | 43 | 50 | 63 | 49 | 51 | 60 | 66 | 42 | 43 | 40 | 54 | 57 | 43 | 35 | 38 | 49 | |
| 7 | 48 | 38 | 56 | 34 | 48 | 62 | 65 | **70** | **76** | 49 | 39 | 32 | 36 | 50 | 63 | 46 | 64 | 67 | 36 | 40 | 50 | 37 | 36 | 40 | 51 | 57 | 37 | 42 | 46 | 34 | 43 |
| 8 | 34 | 25 | 32 | 35 | 38 | 47 | 44 | 51 | 56 | 54 | | 8 | 56 | 51 | 51 | 36 | 40 | | 23 | 49 | 54 | 63 | 47 | 48 | 50 | 46 | 39 | 26 | 35 | 29 | 45 |
| 9 | 44 | 33 | 45 | 40 | 41 | 35 | 29 | 39 | 39 | 25 | 31 | 35 | 36 | 22 | 30 | 39 | 27 | 33 | 36 | 34 | 40 | 47 | 55 | 50 | 57 | 39 | 36 | 34 | 22 | 30 | |

**Figure 34. Calendar view of MDA8 ozone observations from 2020-2024 from monitor 390350064. Green cells represent MDA8 values below 70 ppb, yellow cells indicate MDA8 values greater than 70 ppb, red cells indicate MDA8 values above 75 ppb, and blue cells indicate MDA8 values greater than the 99th percentile of the five-year distribution of ozone monitoring data.**

| monitor | 390355002 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 71 <-- 99th %ile of 2020-2024 observations | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sum of value | Column Labels | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Row Labels | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| **2024** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 58 | 44 | 34 | 41 | 46 | 42 | 52 | 53 | 26 | 35 | 37 | 42 | 60 | 46 | 42 | 45 | 43 | 51 | 64 | 69 | 67 | 52 | 58 | 66 | 62 | 52 | 46 | 45 | 40 | 45 | 60 | |
| 6 | 65 | 32 | 51 | 53 | 43 | 55 | 42 | 46 | 45 | 34 | 36 | 67 | 70 | 53 | 37 | 59 | 61 | 48 | 60 | 69 | 69 | 70 | 45 | 37 | 56 | 50 | 36 | 51 | 44 | 28 | | |
| 7 | 34 | 50 | 57 | 46 | 53 | 55 | 49 | 69 | 61 | 44 | 38 | 54 | 60 | 54 | 64 | 62 | 42 | 32 | 41 | 59 | 65 | 51 | 62 | 54 | 36 | 41 | 46 | 68 | 38 | 47 | 71 | |
| 8 | 66 | 47 | 51 | 41 | 50 | 36 | 30 | 39 | 50 | 40 | 38 | 34 | 40 | 45 | 57 | 52 | 47 | 40 | 31 | 34 | 33 | 33 | 63 | **77** | 55 | 58 | 66 | 55 | 36 | 58 | 45 | |
| 9 | 47 | 31 | 40 | 53 | 62 | 44 | 30 | 40 | 43 | 46 | 57 | 60 | 52 | 48 | 56 | 49 | 42 | 42 | 41 | 54 | 61 | 56 | 35 | 29 | 27 | 36 | 26 | 21 | 19 | 21 | | |
| **2023** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 30 | 34 | 34 | 36 | 47 | 49 | 53 | 48 | 48 | | | | | | | 58 | 45 | 47 | 56 | 36 | 46 | 50 | 61 | 60 | 39 | 47 | 52 | 63 | 63 | 65 | 65 | |
| 6 | **76** | 71 | 50 | 47 | 48 | | | | | | | | 38 | 56 | 59 | 37 | 48 | 54 | 62 | 63 | 60 | 37 | 25 | 45 | 63 | 47 | 41 | 43 | **90** | 62 | | |
| 7 | 57 | 48 | 60 | 52 | **75** | 54 | 39 | 46 | 50 | 60 | 60 | 52 | 49 | 69 | 52 | 61 | 59 | 41 | 50 | 56 | 42 | 47 | | | | | | | | | | |
| 8 | | | 61 | 52 | 44 | 47 | 40 | 45 | 62 | 61 | 53 | 44 | 49 | 29 | 43 | 42 | 46 | 47 | 49 | 56 | 36 | 34 | 46 | 46 | 32 | 39 | 34 | 39 | 56 | 25 | 38 | |
| 9 | 39 | 55 | 46 | 41 | 61 | 43 | 44 | 23 | 26 | 32 | 37 | 37 | 29 | 33 | 39 | 49 | 51 | 31 | 38 | 52 | 57 | 46 | 41 | 31 | 31 | 24 | 34 | 23 | 40 | 47 | | |
| **2022** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 38 | 32 | 44 | 27 | 33 | 37 | 46 | 46 | 58 | 61 | 56 | 57 | 43 | 43 | 57 | 51 | 32 | 23 | 54 | 44 | 41 | 28 | 33 | 37 | 43 | 32 | 38 | 37 | 51 | 50 | 50 | |
| 6 | 52 | 34 | 61 | 41 | 51 | 53 | 37 | 47 | 43 | 42 | 50 | 54 | 52 | 56 | 59 | 57 | 55 | 38 | 40 | 50 | **73** | **78** | 36 | 42 | 62 | 54 | 45 | 45 | 61 | 69 | | |
| 7 | 64 | 42 | 46 | 61 | 54 | 41 | 42 | 50 | 38 | 45 | 63 | 54 | 45 | 39 | 42 | 50 | 40 | 58 | 65 | 56 | 56 | 63 | 57 | 50 | 45 | 52 | 40 | 47 | 44 | 30 | 41 | |
| 8 | 46 | 38 | 53 | 40 | 44 | 44 | 40 | 38 | 25 | 40 | 28 | 35 | 41 | 47 | 49 | 51 | 52 | 51 | 62 | 56 | 38 | 46 | 42 | 51 | 61 | 42 | 34 | 54 | 42 | 43 | 36 | |
| 9 | 35 | 41 | 53 | 33 | 26 | 28 | 37 | 38 | 49 | 46 | 20 | 36 | 38 | 38 | 31 | 56 | 50 | 55 | 51 | 46 | 48 | 32 | 29 | 36 | 33 | 30 | 24 | 22 | 25 | 30 | | |
| **2021** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 48 | 51 | 30 | 37 | 22 | 39 | 40 | 37 | 33 | 42 | 34 | 36 | 43 | 52 | 61 | 65 | 61 | 67 | 66 | 69 | 62 | 62 | 57 | 36 | 65 | 48 | 39 | 34 | 40 | 39 | 57 | |
| 6 | 61 | 39 | 33 | 62 | 67 | 59 | 35 | 45 | 43 | 36 | 49 | 55 | 63 | 50 | 41 | 42 | 66 | 49 | 44 | 52 | 45 | 32 | 53 | 55 | 45 | 43 | 40 | 48 | 41 | 34 | | |
| 7 | 38 | 24 | 42 | 43 | 56 | 58 | 57 | 41 | 34 | 37 | 27 | 32 | 38 | 54 | 48 | 40 | 44 | 40 | 49 | 55 | 36 | 31 | 45 | 50 | 53 | 57 | 68 | 69 | 63 | 32 | 46 | |
| 8 | 45 | 30 | 43 | 49 | 59 | 60 | 61 | 49 | 52 | 35 | 43 | 48 | 47 | 40 | 38 | 26 | 39 | 31 | 44 | 50 | 49 | 54 | 59 | **75** | 40 | 53 | 60 | 54 | 42 | 46 | 43 | |
| 9 | 34 | 37 | 36 | 49 | 43 | 42 | 53 | 45 | 36 | 38 | 47 | 50 | 48 | 41 | 34 | 40 | 53 | 48 | 44 | 49 | 33 | 21 | 31 | 42 | 39 | 43 | 57 | 32 | 38 | 31 | | |
| **2020** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 43 | 50 | 56 | 36 | 43 | 42 | 47 | 31 | 38 | 44 | 29 | 47 | 44 | 43 | 40 | 42 | 42 | 37 | 49 | 46 | 47 | 30 | 43 | 50 | 50 | 54 | 47 | 35 | 39 | 36 | 39 | |
| 6 | 48 | 63 | 53 | 45 | 64 | 54 | 36 | 50 | 65 | 42 | 41 | 39 | 40 | 31 | 40 | 50 | 58 | 40 | 54 | 60 | 67 | 46 | 44 | 40 | 54 | 57 | 48 | 35 | 39 | 44 | | |
| 7 | 45 | 41 | 58 | 35 | 47 | 57 | 68 | **83** | **73** | 52 | 40 | 36 | 37 | 44 | 59 | 49 | 56 | 68 | 39 | 45 | 49 | 39 | 42 | 42 | 50 | | 42 | 45 | 48 | 34 | 43 | |
| 8 | 33 | 29 | 37 | 36 | 35 | 42 | 43 | 52 | 63 | 62 | 53 | 45 | 49 | 49 | 49 | 41 | 46 | 29 | 24 | 50 | 59 | 65 | 52 | 55 | 45 | 50 | 55 | 34 | | | 45 | |
| 9 | 50 | 41 | 50 | 38 | 43 | 38 | 33 | 46 | 45 | 23 | 30 | 37 | 37 | 22 | 32 | 42 | 28 | 32 | 34 | 33 | 39 | 48 | 59 | 59 | 61 | 42 | 38 | 37 | 24 | 32 | | |

**Figure 35. Calendar view of MDA8 ozone observations from 2020-2024 from monitor 390355002. Green cells represent MDA8 values below 70 ppb, yellow cells indicate MDA8 values greater than 70 ppb, red cells indicate MDA8 values above 75 ppb, and blue cells indicate MDA8 values greater than the 99th percentile of the five-year distribution of ozone monitoring data.**

| monitor | 390550004 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 68 <-- 99th %ile of 2020-2024 observations | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sum of value | Column Labels | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Row Labels | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| **2024** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 56 | 49 | 41 | 40 | 45 | 47 | 50 | 56 | 27 | 36 | 36 | 42 | 56 | 43 | 42 | 44 | 37 | 55 | 64 | 65 | 60 | 47 | 62 | **71** | 58 | 50 | 43 | 46 | 39 | 49 | 53 |
| 6 | 62 | 30 | 46 | 51 | 37 | 56 | 41 | 43 | 43 | 32 | 37 | 66 | 62 | 51 | 38 | 55 | 48 | 43 | 50 | 63 | 68 | 65 | 41 | 37 | 56 | 49 | 35 | 50 | 40 | 28 | |
| 7 | 37 | 49 | 53 | 42 | 49 | 53 | 50 | 61 | 53 | 42 | 38 | 46 | 51 | 50 | 61 | 58 | 43 | 32 | 39 | 57 | 59 | 48 | 56 | 52 | 36 | 38 | 50 | 65 | 39 | 44 | 68 |
| 8 | 57 | 41 | 44 | 40 | 44 | 31 | | 11 | 48 | 38 | 37 | 32 | 37 | 42 | 52 | 48 | 44 | 38 | 30 | 34 | 33 | 35 | 61 | 64 | 48 | 56 | 64 | 53 | 35 | 51 | 41 |
| 9 | 45 | 32 | 41 | 53 | 64 | 45 | 28 | 43 | 44 | 48 | 54 | 62 | 54 | 50 | 57 | 50 | 42 | 44 | 42 | 52 | 63 | 58 | 36 | 28 | 31 | 39 | 27 | 24 | 24 | 23 | |
| **2023** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 27 | 32 | 31 | 36 | 43 | 48 | 44 | 43 | 46 | 49 | 62 | 63 | 57 | 48 | 55 | 52 | 42 | 51 | 47 | 33 | 46 | 47 | 51 | 58 | 38 | 44 | 49 | 57 | 58 | 59 | 60 |
| 6 | 66 | 65 | 46 | 44 | 46 | 49 | 45 | 40 | 40 | 61 | 61 | 32 | 37 | 52 | 54 | 38 | 50 | 51 | 55 | 55 | 53 | 33 | 25 | 39 | 55 | 40 | 38 | 44 | **79** | 50 | |
| 7 | 46 | 41 | 51 | 48 | 64 | 53 | 40 | 44 | 47 | 61 | 54 | 46 | 47 | 66 | 47 | 53 | 51 | 43 | 45 | 51 | 40 | 47 | 45 | 56 | 58 | 55 | 53 | 48 | 38 | 36 | 38 |
| 8 | 36 | 54 | 64 | 51 | 43 | 42 | 38 | 45 | 56 | 57 | 52 | 39 | 44 | 28 | 41 | 41 | 43 | 48 | 49 | 53 | 37 | 34 | 42 | 41 | 31 | 36 | 32 | 39 | 54 | 21 | 36 |
| 9 | 40 | 49 | 41 | 39 | 51 | 41 | 45 | 26 | 27 | 32 | 38 | 34 | 34 | 33 | 39 | 47 | 48 | 31 | 36 | 48 | 52 | 45 | 39 | 29 | 30 | 23 | 32 | 24 | 38 | 41 | |
| **2022** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 40 | 35 | 44 | 33 | 40 | 40 | 46 | 50 | 58 | 63 | 56 | 56 | 42 | 38 | 59 | 51 | 32 | 24 | 53 | 42 | 42 | 29 | 35 | 38 | 42 | 34 | 38 | 37 | 49 | 49 | 49 |
| 6 | 50 | 35 | 60 | 42 | 49 | 51 | 38 | 48 | 42 | 43 | 44 | 53 | 48 | 47 | 58 | 55 | 56 | 38 | 40 | 47 | **76** | **74** | 35 | 45 | 64 | 51 | 47 | 48 | 59 | 68 | |
| 7 | 60 | 44 | 47 | 57 | 48 | 40 | 42 | 45 | 36 | 50 | 60 | 51 | 45 | 43 | 40 | 46 | 37 | 54 | 58 | 48 | 50 | 55 | 50 | 43 | 39 | 49 | 32 | 46 | 42 | 30 | 44 |
| 8 | 44 | 39 | 56 | 41 | 43 | 38 | 41 | 40 | 29 | 43 | 27 | 36 | 39 | 43 | 43 | 49 | 47 | 48 | 55 | 50 | 35 | 46 | 40 | 49 | | | | | | | 34 |
| 9 | 35 | 42 | 47 | 29 | 25 | 27 | 37 | 41 | 44 | 43 | 21 | 36 | 30 | 39 | 33 | 53 | 49 | 52 | 49 | 46 | 45 | 32 | 32 | 38 | 31 | 30 | 22 | 19 | 27 | 30 | |
| **2021** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 49 | 52 | 34 | 40 | 24 | 40 | 43 | 38 | 35 | 44 | 36 | 39 | 49 | 54 | 62 | 64 | 61 | 67 | 64 | 62 | 65 | 61 | 53 | 40 | 67 | 47 | 40 | 34 | 39 | 43 | 57 |
| 6 | 62 | 39 | 31 | 62 | **69** | 58 | 34 | 38 | 43 | 36 | 49 | 54 | 61 | 53 | 43 | 44 | 65 | 48 | 40 | 47 | 44 | 33 | 54 | 53 | 45 | 44 | 41 | 44 | 41 | 35 | |
| 7 | 40 | 26 | 43 | 39 | 57 | 59 | 59 | 41 | 34 | 37 | 29 | 35 | 39 | 56 | 47 | 39 | 45 | 37 | 50 | 56 | 39 | 35 | 42 | 49 | 56 | 63 | **69** | 67 | 64 | 35 | 41 |
| 8 | 46 | 33 | 43 | 48 | 60 | 60 | 61 | 47 | 49 | 33 | 25 | 46 | 47 | 43 | 38 | 27 | 37 | 25 | 44 | 52 | 52 | 53 | 60 | **69** | 43 | 53 | 58 | 52 | 40 | 49 | 50 |
| 9 | 38 | 37 | 36 | 47 | 44 | 44 | 54 | 48 | 38 | 41 | 49 | 50 | 49 | 41 | 35 | 41 | 53 | 51 | 44 | 49 | 34 | 26 | 31 | 44 | 40 | 46 | 60 | 35 | 42 | 34 | |
| **2020** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 46 | 54 | 61 | 41 | 47 | 47 | 52 | 35 | 40 | 48 | 29 | 52 | 50 | 45 | 45 | 46 | 48 | 41 | 51 | 49 | 51 | 31 | 37 | 53 | 51 | 61 | 50 | 37 | 43 | 37 | 42 |
| 6 | 54 | 65 | 57 | 45 | 60 | 58 | 41 | 51 | 68 | 44 | 46 | 42 | 46 | 35 | 48 | 55 | 58 | 45 | 51 | 62 | 65 | 44 | 45 | 43 | 58 | 61 | 48 | 42 | 44 | 46 | |
| 7 | 46 | 46 | 59 | 36 | 49 | 62 | 65 | 65 | **70** | 54 | 41 | 37 | 37 | 46 | 62 | 52 | 61 | 66 | 40 | 50 | 53 | 39 | 41 | 45 | 49 | 64 | 40 | 48 | 48 | 36 | 45 |
| 8 | 34 | 29 | 40 | 40 | 37 | 42 | 45 | 51 | 57 | 64 | 55 | 46 | 49 | 50 | 49 | 38 | 45 | 31 | 30 | 45 | 60 | 65 | 45 | 54 | 46 | 50 | 56 | 32 | 38 | 31 | 45 |
| 9 | 49 | 42 | 50 | 40 | 44 | 39 | 34 | 45 | 47 | 27 | 32 | 38 | 38 | 25 | 35 | 43 | 29 | 35 | 35 | 35 | 43 | 51 | 60 | 57 | 62 | 43 | 39 | 39 | 24 | 33 | |

**Figure 36. Calendar view of MDA8 ozone observations from 2020-2024 from monitor 390550004. Green cells represent MDA8 values below 70 ppb, yellow cells indicate MDA8 values greater than 70 ppb, red cells indicate MDA8 values above 75 ppb, and blue cells indicate MDA8 values greater than the 99th percentile of the five-year distribution of ozone monitoring data.**

| monitor | 390850003 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sum of value | Column Labels | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Row Labels | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| **2024** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 61 | 41 | 38 | 43 | 44 | 42 | 49 | 58 | 31 | 38 | 40 | 44 | 62 | 57 | 46 | 41 | 47 | 46 | 62 | **81** | 73 | 53 | 61 | 68 | 64 | 54 | 48 | 49 | 44 | 49 | 29 |
| 6 | 65 | 33 | 49 | 55 | 44 | 57 | 43 | 46 | 48 | 37 | 38 | 70 | 70 | 54 | 39 | 47 | 64 | 50 | 71 | 73 | 57 | 69 | 45 | 43 | 57 | 50 | 36 | 45 | 43 | 29 | |
| 7 | 32 | 48 | 62 | 47 | 51 | 53 | 45 | 66 | 63 | 44 | 43 | 47 | 52 | 53 | 64 | 60 | 41 | 33 | 38 | 56 | 65 | 49 | 64 | 56 | 36 | 40 | 44 | 69 | 38 | 50 | 64 |
| 8 | 61 | 53 | 53 | 45 | 53 | 36 | 34 | 32 | 48 | 40 | 40 | 37 | 46 | 47 | 53 | 51 | 47 | 43 | 33 | 36 | 34 | 33 | 57 | 69 | 59 | 57 | 63 | 56 | 35 | 59 | 46 |
| 9 | 43 | 34 | 43 | 55 | 66 | 46 | 34 | 42 | 45 | 44 | 60 | 56 | 52 | 47 | 57 | 49 | 44 | 42 | 38 | 50 | 58 | 55 | 39 | 27 | 35 | 38 | 27 | 17 | 21 | 25 | |
| **2023** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 33 | 37 | 35 | 37 | 43 | 44 | 52 | 50 | 46 | 53 | 60 | 68 | 55 | 46 | 51 | 56 | 45 | 49 | 58 | 38 | 47 | 48 | 62 | 58 | 39 | 44 | 53 | 66 | 63 | 67 | 68 |
| 6 | **82** | **84** | 48 | 47 | 50 | 57 | 52 | 47 | 44 | 65 | 69 | 40 | 40 | 56 | 55 | 37 | 52 | 48 | 59 | 61 | 63 | 39 | 28 | 47 | 60 | 46 | 46 | 46 | 66 | 58 | |
| 7 | 55 | 47 | 60 | 52 | 72 | 58 | 40 | 48 | 51 | 64 | 63 | 58 | 48 | 65 | 55 | 61 | 64 | 44 | 49 | 53 | 52 | 55 | 53 | 63 | 69 | 63 | 59 | 58 | 39 | 38 | 41 |
| 8 | 41 | 56 | 63 | 55 | 44 | 45 | 43 | 46 | 66 | 63 | 48 | 45 | 47 | 29 | 45 | 44 | 47 | 51 | 53 | 59 | 36 | 35 | 48 | 47 | 36 | 43 | 37 | 42 | 55 | 29 | 42 |
| 9 | 35 | 59 | 47 | 46 | 46 | 38 | 43 | 28 | 32 | 39 | 36 | 42 | 37 | 36 | 42 | 52 | 56 | 33 | 41 | 53 | 63 | 48 | 43 | 33 | 37 | 26 | 33 | 24 | 44 | 45 | |
| **2022** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 41 | 34 | 45 | 31 | 35 | 42 | 48 | 49 | 57 | 64 | 65 | 64 | 44 | 48 | 60 | 55 | 35 | 28 | 53 | 47 | 50 | 33 | 39 | 40 | 45 | 33 | 43 | 37 | 54 | 56 | 54 |
| 6 | 59 | 38 | 62 | 42 | 54 | 55 | 41 | 48 | 48 | 49 | 56 | 62 | 49 | 54 | 68 | 64 | 58 | 40 | 41 | 47 | **80** | **85** | 42 | 42 | 61 | 64 | 48 | 46 | 66 | **78** | |
| 7 | **76** | 47 | 39 | 67 | 59 | 48 | 48 | 51 | 38 | 41 | 67 | 55 | 43 | 45 | 42 | 59 | 41 | 63 | 68 | 55 | 56 | 66 | 56 | 49 | 43 | 49 | 39 | 50 | 48 | 33 | 43 |
| 8 | 50 | 38 | 60 | 45 | 50 | 48 | 46 | 42 | 28 | 41 | 29 | 36 | 44 | 55 | 51 | 54 | 55 | 54 | 63 | 59 | 40 | 50 | 44 | 55 | 67 | 47 | 35 | 54 | 43 | 45 | 41 |
| 9 | 38 | 43 | 63 | 44 | 31 | 35 | 43 | 42 | 52 | 45 | 23 | 36 | 44 | 42 | 32 | 59 | 54 | 58 | 56 | 48 | 47 | 35 | 32 | 37 | 37 | 32 | 27 | 29 | 29 | 34 | |
| **2021** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 49 | 53 | 33 | 41 | 27 | 42 | 43 | 38 | 40 | 43 | 36 | 39 | 44 | 55 | 63 | 67 | 67 | 72 | 71 | 75 | 71 | 63 | 60 | 33 | 68 | 51 | 38 | 39 | 43 | 42 | 56 |
| 6 | 63 | 44 | 39 | 66 | 71 | 67 | 35 | 45 | 48 | 44 | 54 | 49 | 64 | 53 | 42 | 40 | 66 | 50 | 47 | 61 | 48 | 32 | 53 | 55 | 42 | 43 | 42 | 51 | 52 | 36 | |
| 7 | 42 | 26 | 42 | 52 | 60 | 62 | 58 | 40 | 37 | 41 | 31 | 29 | 39 | 55 | 50 | 45 | 50 | 44 | 52 | 60 | 40 | 32 | 47 | 52 | 55 | 64 | 72 | 64 | 61 | 34 | 44 |
| 8 | 47 | 33 | 45 | 53 | 55 | 61 | 65 | 51 | 53 | 37 | 40 | 53 | 49 | 43 | 41 | 29 | 44 | 38 | 45 | 59 | 51 | 63 | 61 | **77** | 45 | 59 | 58 | 55 | 47 | 48 | 43 |
| 9 | 37 | 41 | 37 | 46 | 43 | 45 | 54 | 48 | 36 | 39 | 49 | 55 | 45 | 43 | 40 | 41 | 52 | 47 | 45 | 49 | 36 | 26 | 31 | 43 | 40 | 42 | 59 | 33 | 39 | 34 | |
| **2020** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 42 | 50 | 54 | 38 | 44 | 41 | 48 | 34 | 40 | 43 | 32 | 44 | 46 | 41 | 40 | 42 | 36 | 31 | 46 | 46 | 47 | 41 | 44 | 52 | 56 | 58 | 48 | 36 | 42 | 37 | 39 |
| 6 | 50 | 65 | 55 | 49 | 66 | 53 | 36 | 48 | 66 | 43 | 41 | 43 | 42 | 33 | 42 | 49 | 63 | 46 | 63 | 59 | 69 | 49 | 47 | 43 | 58 | 58 | 50 | 34 | 49 | 45 | |
| 7 | 48 | 40 | 73 | 47 | 50 | 55 | 75 | **76** | **76** | 54 | 41 | 40 | 37 | 48 | 57 | 51 | 61 | 71 | 39 | 50 | 56 | 43 | 46 | 51 | 50 | 65 | 45 | 49 | 50 | 35 | 47 |
| 8 | 34 | 35 | 36 | 38 | 33 | 45 | 47 | 51 | 63 | 75 | 55 | 45 | 50 | 50 | 50 | 46 | 45 | 31 | 27 | 46 | 58 | 64 | 57 | 56 | 41 | 47 | 54 | 35 | 40 | 30 | 44 |
| 9 | 51 | 43 | 51 | 39 | 43 | 37 | 30 | 46 | 43 | 28 | 34 | 37 | 38 | 24 | 33 | 42 | 32 | 35 | 37 | 36 | 39 | 46 | 64 | 55 | 65 | 44 | 38 | 39 | 24 | 34 | |

75 <-- 99th %ile of 2020-2024 observations

**Figure 37. Calendar view of MDA8 ozone observations from 2020-2024 from monitor 390850003. Green cells represent MDA8 values below 70 ppb, yellow cells indicate MDA8 values greater than 70 ppb, red cells indicate MDA8 values above 75 ppb, and blue cells indicate MDA8 values greater than the 99th percentile of the five-year distribution of ozone monitoring data.**

| monitor | 390850007 | | | | | | | | | | | | | 69 <-- 99th %ile of 2020-2024 observations | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sum of value | Column Labels | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Row Labels | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| **2024** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 60 | 40 | 38 | 43 | 43 | 41 | 47 | 54 | 29 | 35 | 37 | 43 | 62 | 54 | 45 | 40 | 40 | 44 | 53 | **77** | 69 | 52 | 56 | 65 | 62 | 53 | 47 | 48 | 41 | 46 | 40 |
| 6 | 63 | 34 | 46 | 52 | 43 | 54 | 40 | 40 | 47 | 32 | 37 | 65 | **70** | 51 | 37 | 49 | 59 | 49 | 64 | 69 | 61 | 65 | 46 | 40 | 58 | 46 | 34 | 43 | 43 | 29 | |
| 7 | 30 | 51 | 58 | 43 | 48 | 55 | 44 | 61 | 60 | 42 | 38 | 45 | 50 | 56 | 51 | 62 | 40 | 31 | 36 | 57 | 62 | 49 | 58 | 58 | 34 | 39 | 43 | 68 | 36 | 49 | 64 |
| 8 | 59 | 48 | 48 | 40 | 46 | 37 | 35 | 32 | 49 | 41 | 40 | 34 | 41 | 43 | 48 | 52 | 44 | 40 | 31 | 34 | 33 | 33 | 58 | 67 | 58 | 57 | 59 | 56 | 35 | 55 | 46 |
| 9 | 45 | 34 | 41 | 49 | 59 | 47 | 32 | 41 | 45 | 42 | 57 | 54 | 51 | 47 | 55 | 48 | 42 | 38 | 38 | 46 | 62 | 54 | 39 | 29 | 33 | 39 | 27 | 16 | 21 | 24 | |
| **2023** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 29 | 34 | 32 | 34 | 42 | 44 | 52 | 50 | 45 | 51 | 63 | 68 | 54 | 48 | 53 | 58 | 44 | 46 | 56 | 37 | 47 | 47 | 59 | 59 | 38 | 44 | 53 | 65 | 63 | 64 | 66 |
| 6 | **78** | **81** | 48 | 48 | 48 | 54 | 48 | 43 | 40 | 67 | **70** | 37 | 41 | 58 | 58 | 37 | 51 | 49 | 58 | 62 | 61 | 36 | 25 | 47 | 62 | 45 | 46 | 42 | **71** | 57 | |
| 7 | 64 | 45 | 60 | 53 | **73** | 59 | 39 | 50 | 52 | 63 | 64 | 57 | 47 | 64 | 52 | 64 | 65 | 42 | 48 | 57 | 43 | 50 | 52 | 61 | 65 | 63 | 59 | 52 | 40 | 35 | 44 |
| 8 | 38 | 57 | 65 | 53 | 44 | 45 | 41 | 48 | 63 | 66 | 44 | 47 | 47 | 27 | 43 | 41 | 47 | 48 | 54 | 60 | 38 | 34 | 47 | 46 | 32 | 41 | 36 | 41 | 55 | 27 | 40 |
| 9 | 34 | 58 | 48 | 44 | 48 | 39 | 46 | 24 | 29 | 37 | 35 | 41 | 36 | 34 | 40 | 49 | 52 | 33 | 41 | 48 | 55 | 46 | 41 | 31 | 36 | 25 | 31 | 25 | 40 | 41 | |
| **2022** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 35 | 32 | 40 | 28 | 31 | 37 | 44 | 46 | 50 | 60 | 57 | 55 | 36 | 37 | 54 | 48 | 30 | 24 | 45 | 39 | 40 | 29 | 34 | 35 | 39 | 31 | 39 | 32 | 43 | 48 | 47 |
| 6 | 47 | 36 | 59 | 40 | 47 | 49 | 36 | 38 | 43 | 41 | 43 | 50 | 41 | 42 | 59 | 60 | 53 | 36 | 40 | 41 | **70** | 68 | 33 | 39 | 51 | 52 | 44 | 40 | 54 | 66 | |
| 7 | 62 | 41 | 33 | 56 | 47 | 39 | 39 | 44 | 34 | 35 | 58 | 48 | 34 | 38 | 37 | 46 | 31 | 53 | 56 | 47 | 48 | 55 | 51 | 44 | 44 | 46 | 34 | 46 | 42 | 31 | 38 |
| 8 | 43 | 35 | 54 | 39 | 46 | 41 | 43 | 39 | 27 | 38 | 26 | 35 | 39 | 48 | 45 | 47 | 48 | 48 | 56 | 50 | 33 | 42 | 39 | 47 | 56 | 40 | 30 | 43 | 38 | 41 | 38 |
| 9 | 34 | 36 | 52 | 31 | 22 | 27 | 37 | 39 | 45 | 42 | 19 | 35 | 40 | 37 | 29 | 49 | 48 | 53 | 47 | 44 | 40 | 34 | 31 | 39 | 33 | 29 | 24 | 25 | 26 | 31 | |
| **2021** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 48 | 49 | 30 | 38 | 24 | 38 | 39 | 34 | 34 | 41 | 34 | 36 | 43 | 49 | 59 | 60 | 56 | 61 | 59 | 63 | 59 | 56 | 51 | 30 | 63 | 45 | 35 | 36 | 40 | 39 | 53 |
| 6 | 57 | 38 | 32 | 62 | 65 | 59 | 32 | 39 | 42 | 44 | 51 | 47 | 58 | 50 | 41 | 41 | 62 | 44 | 44 | 52 | 43 | 33 | 50 | 50 | 40 | 40 | 38 | 40 | 41 | 32 | |
| 7 | 37 | 25 | 41 | 49 | 54 | 49 | 51 | 40 | 33 | 34 | 25 | 23 | 38 | 52 | 48 | 41 | 47 | 40 | 50 | 55 | 41 | 29 | 41 | 50 | 53 | 61 | 66 | 58 | 57 | 32 | 42 |
| 8 | 44 | 30 | 43 | 50 | 53 | 59 | 59 | 48 | 48 | 34 | 42 | 39 | 45 | 41 | 38 | 25 | 37 | 24 | 35 | 52 | 49 | 53 | 55 | 68 | 44 | 54 | 55 | 54 | 41 | 46 | 41 |
| 9 | 35 | 41 | 36 | 45 | 43 | 45 | 54 | 46 | 34 | 39 | 50 | 53 | 41 | 42 | 36 | 38 | 48 | 44 | 41 | 45 | 36 | 24 | 31 | 42 | 40 | 42 | 58 | 31 | 37 | 31 | |
| **2020** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 40 | 52 | 55 | 37 | 44 | 43 | 48 | 33 | 38 | 45 | 30 | 46 | 43 | 42 | 41 | 42 | 35 | 31 | 48 | 48 | 45 | 36 | 40 | 51 | 54 | 53 | 50 | 35 | 42 | 36 | 40 |
| 6 | 50 | 64 | 53 | 48 | 65 | 53 | 36 | 45 | 66 | 45 | 42 | 42 | 42 | 33 | 40 | 47 | 60 | 41 | 54 | 60 | 65 | 48 | 46 | 43 | 53 | 56 | 47 | 35 | 42 | 43 | |
| 7 | 46 | 43 | 65 | 43 | 47 | 51 | 68 | **82** | 68 | 38 | 39 | 40 | 33 | 44 | 55 | 49 | 57 | 68 | 42 | 41 | 51 | 39 | 44 | 47 | 46 | 61 | 37 | 43 | 41 | 32 | 44 |
| 8 | 31 | 37 | 36 | 36 | 30 | 41 | 44 | 47 | 60 | **70** | 52 | 41 | 46 | 45 | 49 | 38 | 44 | 31 | 25 | 43 | 53 | 57 | 49 | 53 | 37 | 38 | 44 | 34 | 36 | 29 | 43 |
| 9 | 47 | 41 | 50 | 38 | 40 | 37 | 30 | 41 | 36 | 24 | 31 | 35 | 34 | 22 | 32 | 41 | 27 | 33 | 34 | 34 | 39 | 46 | 56 | 58 | 56 | 40 | 36 | 38 | 25 | 32 | |

**Figure 38. Calendar view of MDA8 ozone observations from 2020-2024 from monitor 390850007. Green cells represent MDA8 values below 70 ppb, yellow cells indicate MDA8 values greater than 70 ppb, red cells indicate MDA8 values above 75 ppb, and blue cells indicate MDA8 values greater than the 99th percentile of the five-year distribution of ozone monitoring data.**

| monitor | 390930018 | | | | | | | | | | | | 62 <-- 99th %ile of 2020-2024 observations | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sum of value | Column Labels | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Row Labels | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| **2024** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 56 | 38 | 35 | 36 | 44 | 42 | 42 | 50 | 32 | 33 | 37 | 39 | 56 | 48 | 46 | 38 | 43 | 40 | 56 | 59 | 56 | 51 | 54 | 62 | 56 | 48 | 42 | 42 | 39 | 45 | 57 |
| 6 | 60 | 30 | 48 | 49 | 39 | 52 | 41 | 48 | 43 | 29 | 31 | 57 | 61 | 46 | 33 | 50 | 47 | 38 | 42 | 51 | 53 | 55 | 37 | 33 | 51 | 37 | 35 | 47 | 37 | 25 | |
| 7 | 28 | 46 | 50 | 44 | 49 | 50 | 48 | 57 | 57 | 47 | 38 | 48 | 48 | 46 | 56 | 55 | 42 | 33 | 38 | 53 | 57 | 45 | 52 | 47 | 31 | 37 | 42 | 60 | 34 | 43 | 55 |
| 8 | 55 | 42 | 47 | 39 | 44 | 35 | 33 | 37 | 45 | 37 | 36 | 39 | 37 | 45 | 52 | 46 | 41 | 39 | 33 | 35 | 34 | 32 | 56 | 62 | 49 | 55 | 58 | 53 | 35 | 56 | 44 |
| 9 | 43 | 35 | 44 | 51 | 60 | 35 | 29 | 38 | 41 | 42 | 55 | 62 | 54 | 48 | 58 | 51 | 46 | 43 | 41 | 53 | 54 | 52 | 32 | 32 | 31 | 38 | 26 | 23 | 22 | 22 | |
| **2023** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 28 | 31 | 30 | 36 | 42 | 44 | 48 | 44 | 41 | 46 | 57 | 58 | 50 | 42 | 45 | 48 | 39 | 43 | **63** | 33 | 42 | 44 | 55 | 43 | 37 | 39 | 49 | 57 | 58 | 58 | 59 |
| 6 | **67** | **67** | 45 | 44 | 41 | 47 | 43 | 45 | 39 | 59 | 56 | 33 | 36 | 51 | 48 | 28 | 45 | 49 | 53 | 54 | 55 | 36 | 26 | 37 | 58 | 38 | 38 | 40 | **64** | 51 | |
| 7 | 28 | 40 | 50 | 43 | 56 | 44 | 34 | 33 | 42 | 52 | 54 | 39 | 43 | 47 | 41 | 50 | 47 | 35 | 41 | 42 | 38 | 42 | 42 | 49 | 60 | 46 | 52 | 36 | 34 | 31 | 35 |
| 8 | 39 | 45 | 58 | 50 | 40 | 43 | | 39 | 47 | 53 | 46 | 38 | 45 | 28 | 34 | 39 | 43 | 41 | 43 | 43 | 30 | 31 | 46 | 41 | 38 | 36 | 31 | 40 | 48 | 27 | 36 |
| 9 | 36 | 44 | 35 | 37 | 42 | 33 | 33 | 22 | 23 | 31 | 33 | 31 | 31 | 34 | 39 | 42 | 49 | 32 | 34 | 48 | 57 | 46 | 40 | 30 | 26 | 22 | 22 | 13 | 34 | 42 | |
| **2022** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 36 | 31 | 39 | 25 | 29 | 39 | 45 | 44 | 50 | 55 | 57 | **63** | 40 | 38 | 52 | 48 | 28 | 19 | 49 | 42 | 43 | 24 | 33 | 34 | 37 | 27 | 34 | 37 | 43 | 49 | 43 |
| 6 | 36 | 32 | 54 | 35 | 50 | 43 | 34 | 44 | 39 | 40 | 52 | 49 | 46 | 44 | 48 | 57 | 53 | 41 | 38 | 54 | **69** | **75** | 37 | 42 | **64** | 49 | 43 | 43 | 62 | 61 | |
| 7 | 56 | 42 | 40 | 55 | 46 | 41 | 38 | 51 | 34 | 42 | 62 | 49 | 40 | 35 | 44 | 51 | 38 | 51 | 55 | 52 | 48 | 56 | 49 | 41 | 38 | 42 | 31 | 41 | 42 | 26 | 42 |
| 8 | 44 | 36 | 46 | 34 | 35 | 35 | 33 | 35 | 24 | 40 | 29 | 29 | 36 | 35 | 43 | 49 | 46 | 38 | 52 | 43 | 33 | 44 | 38 | 45 | 45 | 39 | 35 | 44 | 40 | 38 | 32 |
| 9 | 31 | 38 | 46 | 35 | 24 | 28 | 32 | 29 | 49 | 37 | 25 | 29 | 34 | 33 | 29 | 46 | 45 | 48 | 47 | 41 | 40 | 32 | 28 | 30 | 28 | 26 | 22 | 22 | 24 | 30 | |
| **2021** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 46 | 45 | 24 | 31 | 22 | 34 | 36 | 35 | 35 | 35 | 30 | 33 | 40 | 45 | 53 | 58 | 54 | **63** | 57 | **67** | 54 | 54 | 47 | 32 | 53 | 41 | 38 | 38 | 40 | 34 | 49 |
| 6 | 55 | 26 | 28 | 55 | 59 | 50 | 29 | 24 | 33 | 38 | 44 | 43 | 52 | 44 | 39 | 38 | 59 | 42 | 45 | 48 | 36 | 28 | 44 | 49 | 30 | 39 | 31 | 37 | 30 | 24 | |
| 7 | | | | | | 43 | 46 | 32 | 31 | 31 | 29 | 30 | 32 | 37 | 36 | 33 | 42 | 33 | 41 | 48 | 26 | 22 | 34 | 48 | 45 | 42 | | | | | |
| 8 | | | | 38 | 56 | 58 | 58 | 49 | 47 | 37 | 40 | 45 | 43 | 38 | 40 | 36 | 42 | 27 | 49 | 55 | 51 | 55 | 57 | 51 | 33 | 53 | 55 | 44 | 36 | 43 | 41 |
| 9 | 38 | 37 | 40 | 46 | 42 | 43 | 54 | 43 | 35 | 39 | 48 | 49 | 45 | 40 | 32 | 39 | 50 | 41 | 49 | 44 | 32 | 25 | 30 | 39 | 37 | 44 | 53 | 30 | 37 | 31 | |
| **2020** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 40 | 52 | 54 | 38 | 42 | 42 | 46 | 32 | 38 | 42 | 29 | 45 | 43 | 38 | 35 | 41 | 33 | 28 | 40 | 43 | 45 | 25 | 39 | 48 | 37 | 54 | 40 | 36 | 38 | 32 | 37 |
| 6 | 42 | 58 | 49 | 42 | 59 | 55 | 33 | 50 | 51 | 38 | 38 | 42 | 40 | 31 | 40 | 45 | 60 | 42 | 51 | 53 | 57 | 46 | 42 | 37 | 50 | 54 | 42 | 31 | 31 | 35 | |
| 7 | 41 | 30 | 52 | 26 | 40 | 53 | 57 | 61 | **67** | 46 | 35 | 28 | 31 | 42 | 56 | 47 | 57 | 57 | 35 | 37 | 44 | 36 | 41 | 33 | 43 | 53 | 34 | 40 | 45 | 29 | 37 |
| 8 | 34 | 23 | 29 | 31 | 34 | 43 | 38 | 42 | 48 | 49 | 44 | 37 | 44 | 46 | 48 | 33 | 40 | 26 | 22 | 37 | 49 | 56 | 46 | 43 | 42 | 45 | 21 | 21 | | | |
| 9 | | | 38 | 33 | 35 | 35 | 25 | 36 | 38 | 20 | 30 | 29 | 29 | 17 | 24 | 30 | 27 | 28 | 31 | 29 | 35 | 36 | 50 | 45 | 52 | 38 | 33 | 28 | 18 | 28 | |

**Figure 39. Calendar view of MDA8 ozone observations from 2020-2024 from monitor 390930018. Green cells represent MDA8 values below 70 ppb, yellow cells indicate MDA8 values greater than 70 ppb, red cells indicate MDA8 values above 75 ppb, and blue cells indicate MDA8 values greater than the 99th percentile of the five-year distribution of ozone monitoring data.**

| monitor | 391030004 | | | | | | | | | | | | 68 <-- 99th %ile of 2020-2024 observations | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sum of value | Column Labels | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Row Labels | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| **2024** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 59 | 61 | 49 | 40 | 47 | 42 | 46 | 54 | 27 | 38 | 39 | 42 | 58 | 43 | 46 | 53 | 44 | 53 | 63 | 63 | 63 | 49 | 57 | 68 | 60 | 51 | 47 | 48 | 37 | 49 | 60 |
| 6 | 62 | 29 | 45 | 47 | 37 | 53 | 45 | 50 | 44 | 24 | 44 | 65 | **70** | 60 | 41 | 58 | 50 | 44 | 47 | 60 | 62 | 63 | 40 | 45 | 52 | 40 | 39 | 52 | 40 | 30 | |
| 7 | 36 | 53 | 53 | 40 | 45 | 50 | 52 | 61 | 54 | 42 | 47 | 61 | 60 | 52 | 58 | 59 | 47 | 35 | 48 | 60 | 64 | 54 | 56 | 54 | 40 | 46 | 63 | 64 | 37 | 48 | 60 |
| 8 | 53 | 43 | 48 | 41 | 48 | 43 | 31 | 43 | 48 | 37 | 38 | 34 | 42 | 48 | 52 | 45 | 45 | 37 | 31 | 36 | 37 | 47 | 57 | 64 | 53 | 57 | 67 | 56 | 52 | 55 | 43 |
| 9 | 47 | 35 | 49 | 55 | 56 | 46 | 28 | 38 | 44 | 48 | 57 | 62 | 58 | 50 | 59 | 52 | 45 | 47 | 47 | 53 | 55 | 54 | 30 | 31 | 30 | 37 | 23 | 31 | 23 | 20 | |
| **2023** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 32 | 34 | 34 | 44 | 53 | 55 | 51 | 49 | 50 | 59 | 62 | 60 | 63 | 48 | 57 | 60 | 49 | 59 | 57 | 35 | 47 | 53 | | 56 | 40 | 49 | 55 | 62 | 61 | 60 | **72** |
| 6 | **74** | **70** | 60 | 47 | 49 | 56 | 48 | 44 | 37 | 62 | 58 | 38 | 38 | 58 | 52 | 38 | 53 | 60 | 64 | 61 | 61 | 36 | 21 | 41 | 62 | 40 | 37 | 61 | **73** | 55 | |
| 7 | 40 | 36 | 40 | 50 | 64 | 48 | 43 | 39 | 49 | 59 | 56 | 57 | 48 | 56 | 46 | 55 | 55 | 50 | 55 | 53 | 48 | 42 | 48 | 56 | 56 | 55 | 54 | 43 | 42 | 33 | 37 |
| 8 | 38 | 47 | 57 | 55 | 53 | 41 | 35 | 31 | 48 | 48 | 46 | 37 | 40 | 36 | 36 | 38 | 40 | 39 | 45 | 44 | 39 | 42 | 43 | 42 | 34 | 40 | 34 | 44 | 49 | 22 | 41 |
| 9 | 39 | 48 | 36 | 38 | 47 | 41 | 40 | 21 | 24 | 31 | 36 | 32 | 33 | 39 | 44 | 45 | 49 | 34 | 33 | 49 | 58 | 50 | 44 | 30 | 25 | 21 | 24 | 16 | 37 | 51 | |
| **2022** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 43 | 40 | 44 | 27 | 43 | 39 | 46 | 51 | 57 | 61 | 59 | 60 | 44 | 42 | 57 | 50 | 35 | 24 | 55 | 44 | 44 | 33 | 33 | 45 | 41 | 32 | 36 | 39 | 47 | 50 | 52 |
| 6 | 45 | 37 | 59 | 47 | 56 | 48 | 43 | 53 | 44 | 42 | 51 | 50 | 52 | 46 | 57 | 46 | 56 | 43 | 42 | 51 | **76** | **78** | 41 | 56 | 67 | 53 | 49 | 48 | 63 | 67 | |
| 7 | 64 | 49 | 52 | 60 | 50 | 48 | 49 | 44 | 42 | 52 | 64 | 54 | 48 | 46 | 53 | 48 | 37 | 51 | 54 | 53 | 50 | 54 | 47 | 45 | 36 | 48 | 39 | 46 | 45 | 37 | 44 |
| 8 | 46 | 44 | 55 | 42 | 41 | 33 | 39 | 42 | 28 | 45 | 34 | 40 | 44 | 37 | 48 | 49 | 51 | 51 | 57 | 46 | 37 | 49 | 45 | 51 | 53 | 45 | 43 | 49 | 37 | | 33 |
| 9 | 40 | 20 | 46 | 35 | 28 | 28 | 40 | 45 | 45 | 41 | 22 | 36 | 31 | 34 | 39 | 50 | 44 | 53 | 47 | 46 | 45 | 30 | 32 | 32 | 30 | 30 | 22 | 15 | 25 | 31 | |
| **2021** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 50 | 54 | 33 | 35 | 28 | 38 | 44 | 40 | 36 | 43 | 36 | 39 | 46 | 56 | 61 | 60 | 60 | 65 | 59 | 62 | 60 | 61 | 58 | 40 | 65 | 45 | 40 | 32 | 37 | 41 | 55 |
| 6 | 49 | 31 | 27 | 60 | 68 | 55 | 29 | 31 | 41 | 49 | 46 | 57 | 58 | 54 | 43 | 46 | 65 | 45 | 45 | 51 | 59 | 33 | 51 | 50 | 37 | 42 | 40 | 40 | 38 | 32 | |
| 7 | 40 | 27 | 41 | 41 | 51 | 46 | 50 | 41 | 35 | 41 | 37 | 36 | 37 | 45 | 49 | 36 | 45 | 38 | 48 | 48 | 40 | 38 | 43 | 53 | 51 | 50 | 52 | 61 | 53 | 39 | 42 |
| 8 | 47 | 33 | 50 | 58 | 56 | 60 | 56 | 48 | 50 | 34 | 37 | 45 | 44 | 42 | 40 | 22 | 31 | 26 | 54 | 54 | 48 | 52 | 54 | 57 | 37 | 47 | 58 | 48 | 37 | 35 | 54 |
| 9 | 41 | 40 | 47 | 48 | 41 | 45 | 54 | 45 | 38 | 42 | 48 | 50 | 50 | 42 | 33 | 46 | 44 | 53 | 59 | 45 | 33 | 20 | 31 | 40 | 40 | 45 | 61 | 37 | 45 | 39 | |
| **2020** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 40 | 47 | 52 | 33 | 36 | 41 | 46 | 29 | 34 | 42 | 25 | 41 | 49 | 43 | 43 | 44 | 40 | 28 | 40 | 45 | 39 | 30 | 41 | 49 | 44 | 47 | 37 | 35 | 36 | 31 | 37 |
| 6 | 41 | 55 | 47 | 32 | 47 | 52 | 33 | | | | | | | | | 55 | 62 | 43 | 40 | 52 | 61 | 42 | 43 | 39 | 49 | 53 | 41 | 40 | 45 | 53 | |
| 7 | 51 | 43 | 55 | 38 | 50 | 68 | 52 | 64 | 60 | 47 | 39 | 34 | 36 | 48 | 61 | 45 | 59 | 63 | 41 | 39 | 53 | 40 | 37 | 43 | 51 | 56 | 36 | 38 | 48 | 43 | 45 |
| 8 | 39 | 27 | 36 | 35 | 39 | 51 | 49 | 56 | 55 | 52 | 49 | 50 | 66 | 55 | 45 | 36 | 41 | 33 | 30 | 42 | 47 | 56 | 40 | 54 | 54 | 49 | 44 | 30 | 39 | 32 | 50 |
| 9 | 43 | 36 | 45 | 40 | 43 | 35 | 34 | 41 | 49 | 28 | 30 | 34 | 36 | 24 | 31 | 37 | 29 | 35 | 38 | 38 | 43 | 48 | 56 | 53 | 59 | 39 | 37 | 34 | 22 | 29 | |

**Figure 40. Calendar view of MDA8 ozone observations from 2020-2024 from monitor 391030004. Green cells represent MDA8 values below 70 ppb, yellow cells indicate MDA8 values greater than 70 ppb, red cells indicate MDA8 values above 75 ppb, and blue cells indicate MDA8 values greater than the 99th percentile of the five-year distribution of ozone monitoring data.**

| monitor | 391331001 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 70 <-- 99th %ile of 2020-2024 observations | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sum of value | Column Labels | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Row Labels | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| **2024** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 58 | 64 | 49 | 37 | 47 | 47 | 50 | 55 | 27 | 37 | 35 | 44 | 57 | 44 | 43 | 50 | 41 | 58 | 68 | 67 | 63 | 47 | 62 | **72** | 55 | 52 | 47 | 48 | 37 | 49 | 66 |
| 6 | 64 | 34 | 46 | 51 | 39 | 52 | 42 | 48 | 45 | 29 | 44 | 66 | 67 | 56 | 40 | 58 | 48 | 49 | 54 | 60 | **73** | 66 | 42 | 40 | 54 | 42 | 38 | 54 | 41 | 32 | |
| 7 | 37 | 50 | 53 | 40 | 48 | 50 | 55 | 66 | 58 | 42 | 44 | 55 | 55 | 53 | 60 | 61 | 47 | 35 | 45 | 63 | 63 | 47 | 58 | 52 | 39 | 46 | 58 | 66 | 35 | 44 | 61 |
| 8 | 56 | 44 | 46 | 47 | 48 | 44 | 28 | 37 | 51 | 37 | 40 | 34 | 41 | 45 | 52 | 46 | 47 | 40 | 31 | 36 | 36 | 43 | 62 | 66 | 51 | 65 | 63 | 59 | 42 | 55 | 44 |
| 9 | 51 | 33 | 48 | 52 | 59 | 50 | 29 | 40 | 43 | 55 | 59 | 60 | 58 | 51 | 56 | 51 | 45 | 45 | 43 | 52 | 61 | 52 | 32 | 28 | 30 | 36 | 25 | 29 | 23 | 21 | |
| **2023** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 31 | 33 | 33 | 38 | 51 | 55 | 47 | 52 | 49 | 55 | 61 | 70 | 68 | 51 | 59 | 60 | 49 | 58 | 51 | 37 | 49 | 54 | 56 | 67 | 40 | 49 | 54 | 59 | 62 | 65 | 67 |
| 6 | **72** | 67 | 55 | 46 | 47 | 54 | 45 | 44 | 39 | 62 | 63 | 37 | 39 | 58 | 58 | 44 | 52 | 61 | 69 | 62 | 61 | 38 | 29 | 43 | 61 | 45 | 33 | 64 | **89** | 58 | |
| 7 | 46 | 37 | 45 | 50 | | 56 | 45 | 49 | 53 | 64 | 60 | 54 | 57 | 63 | 55 | 58 | 59 | 57 | 55 | 56 | 52 | 48 | 53 | 63 | 62 | 60 | 64 | 51 | 46 | 34 | 41 |
| 8 | 40 | 56 | 68 | 61 | 47 | 44 | 40 | 40 | 55 | 54 | 51 | 42 | 42 | 42 | 42 | 41 | 42 | 44 | 49 | 51 | 47 | 38 | 41 | 47 | | | 35 | 44 | 60 | 26 | 37 |
| 9 | 39 | 53 | 41 | 40 | 57 | 43 | 47 | 27 | 30 | 35 | 45 | 35 | 34 | 37 | 46 | 52 | 49 | 38 | 36 | 54 | 56 | 51 | 42 | 31 | 32 | 25 | 31 | 23 | 44 | 43 | |
| **2022** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 44 | 43 | 46 | 36 | 51 | 42 | 49 | 58 | 62 | 65 | 67 | 61 | 47 | 44 | 62 | 54 | 36 | 27 | 57 | 43 | 45 | 35 | 38 | 50 | 45 | 32 | 41 | 44 | 52 | 51 | 54 |
| 6 | 51 | 36 | 62 | 46 | 58 | 54 | 43 | 55 | 46 | 47 | 51 | 51 | 60 | 62 | 65 | 44 | 57 | 42 | 44 | 51 | **82** | **89** | 42 | 52 | **71** | 56 | 49 | 60 | 65 | **72** | |
| 7 | 68 | 52 | 53 | 64 | 46 | 44 | 47 | 45 | 42 | 49 | 59 | 55 | 47 | 46 | 45 | 46 | 35 | 32 | 55 | 51 | 48 | 54 | 51 | 47 | 38 | 49 | 36 | 46 | 49 | 37 | 47 |
| 8 | 46 | 42 | 58 | 44 | 44 | 37 | 40 | 42 | 29 | 50 | 33 | 39 | 41 | 44 | 50 | 47 | 49 | 51 | 55 | 47 | 36 | 45 | 46 | 53 | 53 | 46 | 37 | 53 | 37 | 41 | 32 |
| 9 | 47 | 42 | 49 | 31 | 28 | 26 | 41 | 43 | 44 | 43 | 19 | 37 | 29 | 38 | 38 | 58 | 48 | 55 | 46 | 51 | 50 | 27 | 33 | 36 | 32 | 30 | 23 | 13 | 26 | 29 | |
| **2021** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 46 | 54 | 32 | 32 | 23 | 39 | 42 | 37 | 33 | 42 | 33 | 37 | 43 | 52 | 60 | 62 | 58 | 63 | 61 | 61 | 60 | 60 | 58 | 46 | 66 | 42 | 40 | 28 | 31 | 42 | 53 |
| 6 | 54 | 29 | 23 | 60 | 68 | 55 | 32 | 33 | 44 | 44 | 42 | 55 | 61 | 52 | 40 | 43 | 59 | 43 | 43 | 45 | 40 | 33 | 53 | 52 | 44 | 42 | 42 | 43 | 48 | 34 | |
| 7 | 40 | 27 | 44 | 39 | 57 | 48 | 52 | 40 | 36 | 43 | 29 | 34 | 32 | 48 | 46 | 36 | 44 | 34 | 48 | 47 | 37 | 40 | 40 | 41 | 51 | 50 | 55 | **73** | 53 | 38 | 41 |
| 8 | 46 | 33 | 45 | 49 | 67 | 60 | 57 | 44 | 47 | 28 | 38 | 41 | 45 | 43 | 36 | 23 | 27 | 24 | 51 | 54 | 48 | 53 | 58 | 67 | 42 | 48 | 57 | 47 | 35 | 40 | 56 |
| 9 | 37 | 39 | 36 | 47 | 41 | 45 | 52 | 46 | 38 | 41 | 46 | 51 | 48 | 38 | 32 | 44 | 48 | 61 | 53 | 49 | 30 | 22 | 27 | 36 | 35 | 41 | 56 | 37 | 41 | 33 | |
| **2020** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 42 | 53 | 60 | 40 | 46 | 46 | 53 | 36 | 39 | 48 | 29 | 47 | 55 | 43 | 42 | 46 | 49 | 34 | 49 | 45 | 45 | 32 | 43 | 48 | 47 | 53 | 46 | 33 | 40 | 37 | 40 |
| 6 | 47 | 63 | 55 | 35 | 46 | 56 | 40 | 51 | 59 | 37 | 41 | 41 | 40 | 35 | 53 | 54 | 61 | 47 | 46 | 54 | 61 | 42 | 43 | 39 | 49 | 58 | 41 | 41 | 54 | 45 | |
| 7 | 44 | 40 | 58 | 33 | 50 | 64 | 59 | **71** | 70 | 51 | 39 | 37 | 39 | 51 | 63 | 45 | 63 | 62 | 38 | 40 | 54 | 42 | 41 | 49 | 52 | 60 | 40 | 42 | 53 | 49 | 46 |
| 8 | 38 | 27 | 41 | 37 | 43 | 49 | 47 | 60 | 61 | 62 | 57 | 45 | 59 | 56 | 49 | 41 | 42 | 34 | 29 | 48 | 60 | 60 | 46 | 56 | 56 | 52 | 43 | 27 | 39 | 33 | 45 |
| 9 | 48 | 36 | 48 | 41 | 45 | 38 | 34 | 45 | 50 | 29 | 32 | 36 | 37 | 26 | 32 | 39 | 30 | 35 | 34 | 36 | 41 | 50 | 59 | 51 | 60 | 40 | 37 | 37 | 25 | 27 | |

**Figure 41. Calendar view of MDA8 ozone observations from 2020-2024 from monitor 391331001. Green cells represent MDA8 values below 70 ppb, yellow cells indicate MDA8 values greater than 70 ppb, red cells indicate MDA8 values above 75 ppb, and blue cells indicate MDA8 values greater than the 99th percentile of the five-year distribution of ozone monitoring data.**

| monitor | 391530026 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 70 <-- 99th %ile of 2020-2024 observations | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sum of value | Column Labels | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Row Labels | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| **2024** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 54 | 64 | 46 | 39 | 47 | 48 | 48 | 53 | 27 | 37 | 37 | 42 | 53 | 44 | 44 | 52 | 43 | 57 | 70 | 63 | 61 | 46 | 59 | 68 | 59 | 51 | 46 | 48 | 36 | 48 | 65 |
| 6 | 61 | 34 | 48 | 48 | 39 | 52 | 42 | 48 | 44 | 29 | 45 | 64 | 66 | 56 | 40 | 56 | 30 | 35 | 53 | 61 | **72** | 68 | 44 | 46 | 52 | 40 | 42 | 59 | 41 | 32 | |
| 7 | 37 | 53 | 53 | 42 | 49 | 51 | 57 | 67 | 65 | 43 | 47 | 64 | 67 | 55 | 61 | 62 | 47 | 38 | 51 | 68 | 68 | 51 | 59 | 52 | 43 | 47 | 63 | 67 | 36 | 45 | 64 |
| 8 | 56 | 45 | 46 | 48 | 49 | 46 | 28 | 39 | 52 | 39 | 41 | 37 | 45 | 50 | 61 | 48 | 49 | 41 | 31 | 38 | 38 | 47 | 63 | 69 | 54 | 64 | 68 | 60 | 47 | 54 | 44 |
| 9 | 51 | 35 | 49 | 55 | 63 | 49 | 30 | 41 | 44 | 55 | 69 | 64 | 58 | 53 | 59 | 52 | 46 | 45 | 46 | 55 | 66 | 58 | 32 | 32 | 29 | 35 | 23 | 30 | 19 | 19 | |
| **2023** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 30 | 32 | 32 | 38 | 55 | 55 | 46 | 51 | 51 | 56 | 66 | 66 | 67 | 51 | 60 | 60 | 49 | 60 | 51 | 38 | 49 | 56 | 56 | 65 | 43 | 52 | 57 | 63 | 63 | 65 | **71** |
| 6 | **76** | 69 | 58 | 49 | 50 | 58 | 49 | 43 | 39 | 64 | 64 | 38 | 38 | 59 | 57 | 41 | 56 | 66 | 68 | 61 | 62 | 37 | 28 | 42 | 62 | 44 | 36 | 69 | **85** | 59 | |
| 7 | 44 | 41 | 47 | 57 | **71** | 57 | 48 | 49 | 52 | 63 | 58 | 55 | 54 | 63 | 55 | 60 | 58 | 55 | 60 | 53 | 50 | 46 | 51 | 62 | 60 | 57 | 61 | 49 | 44 | 36 | 40 |
| 8 | 40 | 54 | 68 | 60 | 53 | 46 | 41 | 38 | 56 | 54 | 51 | 41 | 44 | 41 | 41 | 43 | 41 | 44 | 51 | 52 | 45 | 42 | 42 | 47 | 34 | 39 | 35 | 47 | 60 | 24 | 38 |
| 9 | 41 | 52 | 39 | 40 | 54 | 42 | 42 | 24 | 30 | 31 | 43 | 33 | 31 | 38 | 46 | 51 | 52 | 32 | 36 | 54 | 59 | 50 | 42 | 30 | 29 | 23 | 31 | 19 | 44 | 49 | |
| **2022** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 41 | 39 | 42 | 29 | 46 | 39 | 46 | 56 | 61 | 63 | 64 | 58 | 44 | 46 | 61 | 51 | 38 | 25 | 55 | 42 | 45 | 33 | 36 | 48 | 43 | 32 | 39 | 43 | 51 | 51 | 53 |
| 6 | 47 | 34 | 60 | 49 | 60 | 51 | 42 | 58 | 45 | 44 | 52 | 52 | 56 | 55 | 58 | 38 | 56 | 43 | 46 | 52 | **80** | **78** | 44 | 54 | **74** | 52 | 49 | 56 | 64 | 69 | |
| 7 | 66 | 50 | 53 | 62 | 49 | 49 | 52 | 48 | 44 | 54 | 60 | 55 | 45 | 51 | 50 | 48 | 39 | 52 | 57 | 52 | 50 | 54 | 51 | 47 | 39 | 50 | 39 | 46 | 47 | 38 | 50 |
| 8 | 45 | 44 | 56 | 47 | 43 | 38 | 40 | 42 | 31 | 52 | 36 | 40 | 48 | 44 | 51 | 45 | 54 | 53 | 59 | 51 | 38 | 47 | 48 | 57 | 55 | 47 | 41 | 54 | 39 | 41 | 33 |
| 9 | 45 | 48 | 49 | 33 | 30 | 28 | 44 | 46 | 46 | 45 | 21 | 37 | 30 | 39 | 40 | 59 | 48 | 55 | 47 | 55 | 47 | 27 | 33 | 36 | 31 | 31 | 22 | 13 | 27 | 30 | |
| **2021** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 46 | 50 | 29 | 28 | 22 | 36 | 41 | 37 | 30 | 42 | 33 | 36 | 44 | 51 | 59 | 62 | 57 | 60 | 60 | 62 | 59 | 59 | 55 | 42 | 63 | 43 | 40 | 27 | 30 | 43 | 55 |
| 6 | 53 | 30 | 24 | 57 | 66 | 53 | 32 | | | | | | | 25 | 41 | 46 | 59 | 43 | 46 | 55 | | 10 | 51 | 50 | 43 | 44 | | | | 14 | |
| 7 | 40 | 26 | 44 | | | | | 43 | 35 | 45 | 32 | 37 | 32 | 49 | 47 | 37 | 44 | 38 | 50 | 53 | 43 | 42 | 52 | 48 | 56 | 55 | 56 | **72** | 51 | 42 | 43 |
| 8 | 48 | 38 | 46 | 54 | 67 | 61 | 60 | 48 | 49 | 29 | 33 | 44 | 44 | 45 | 38 | 20 | 26 | 27 | 55 | 58 | 46 | 53 | 59 | 61 | 44 | 46 | 57 | 48 | 36 | 39 | 56 |
| 9 | 38 | 41 | 41 | 49 | 40 | 44 | 51 | 45 | 37 | 42 | 46 | 50 | 47 | 37 | 31 | 44 | 46 | 59 | 55 | 45 | 30 | 20 | 29 | 38 | 38 | 44 | 59 | 40 | 46 | 36 | |

**Figure 42. Calendar view of MDA8 ozone observations from 2021-2024 from monitor 391530026. Green cells represent MDA8 values below 70 ppb, yellow cells indicate MDA8 values greater than 70 ppb, red cells indicate MDA8 values above 75 ppb, and blue cells indicate MDA8 values greater than the 99th percentile of the five-year distribution of ozone monitoring data.**

| monitor | 390410002 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sum of value | Column Labels | 66 <-- 99th %ile of 2020-2024 observations | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Row Labels | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| **2024** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 57 | 63 | 43 | 37 | 48 | 33 | 38 | 54 | 30 | 37 | 43 | 42 | 54 | 32 | 39 | | 46 | 52 | 58 | 63 | 56 | 47 | 60 | 61 | 59 | 46 | 45 | 48 | 41 | 49 | 54 |
| 6 | 58 | 30 | 51 | 51 | 34 | 53 | 51 | | | 18 | 51 | 64 | **68** | 61 | 41 | 61 | 55 | 56 | 58 | 58 | **67** | 62 | 43 | 52 | 45 | 33 | 41 | 56 | 37 | 37 | |
| 7 | 38 | 53 | 52 | 38 | 38 | 48 | 51 | 62 | 47 | 44 | 45 | 57 | 57 | 48 | 51 | 57 | 45 | 38 | 44 | 55 | 54 | 47 | 52 | 47 | 46 | 40 | 52 | 62 | 42 | 50 | 51 |
| 8 | 48 | 41 | 41 | 39 | 46 | 49 | 39 | 42 | 44 | 35 | 39 | 35 | 43 | 42 | 52 | 45 | 47 | 40 | 36 | 38 | 41 | 48 | 64 | 60 | 54 | 60 | **70** | 56 | 57 | 59 | 45 |
| 9 | 46 | 38 | 43 | 57 | **72** | 49 | 31 | 36 | 46 | 55 | 64 | 58 | 54 | 45 | 50 | 50 | 45 | 32 | 34 | 46 | 42 | 42 | 25 | 26 | 24 | 24 | 18 | 19 | 15 | 16 | |
| **2023** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 31 | 33 | 32 | 43 | 51 | 55 | 51 | 40 | 47 | 53 | 62 | 36 | 51 | 45 | 51 | 54 | 48 | 56 | 66 | 35 | 45 | 56 | 53 | 59 | 44 | 52 | 51 | 54 | 57 | 44 | 48 |
| 6 | 63 | 66 | 59 | 55 | 48 | 61 | 48 | 46 | 45 | 65 | 45 | 42 | 36 | 44 | 49 | 33 | 54 | **69** | 46 | 45 | 54 | 31 | 28 | 39 | 56 | 47 | 34 | 59 | **73** | 59 | |
| 7 | 43 | 40 | 36 | 54 | 58 | 42 | 41 | 41 | 45 | 59 | 55 | 60 | 56 | 56 | 39 | 54 | 50 | 49 | 56 | 54 | 49 | 43 | 46 | 49 | 52 | 50 | 50 | 37 | 41 | 38 | 39 |
| 8 | 39 | 49 | 53 | 59 | 42 | 43 | 36 | 42 | 42 | 48 | 50 | 46 | 42 | 26 | 32 | 35 | 43 | 36 | 45 | 45 | 47 | 42 | 56 | 44 | 39 | 33 | 33 | 42 | 48 | 28 | 37 |
| 9 | 36 | 46 | 34 | 48 | 44 | 35 | 26 | 20 | 28 | 36 | 42 | 28 | 31 | 40 | 39 | 45 | 49 | 32 | 35 | 49 | 49 | 48 | 46 | 34 | 21 | 22 | 16 | 19 | 30 | 42 | |
| **2022** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 47 | 49 | 36 | 27 | 32 | 32 | 41 | 48 | 51 | 53 | 52 | 51 | 39 | 39 | 56 | 52 | 41 | 22 | 51 | 45 | 44 | 39 | 36 | 46 | 31 | 29 | 32 | 38 | 44 | 48 | 52 |
| 6 | 40 | 33 | 56 | 52 | 55 | 40 | 42 | 46 | 41 | 40 | 47 | 38 | 45 | 46 | 50 | 48 | 53 | 46 | 47 | 55 | **70** | 66 | 50 | 47 | 60 | 48 | 49 | 48 | 59 | 65 | |
| 7 | 55 | 50 | 51 | 55 | 42 | 38 | 38 | 29 | 38 | 43 | 60 | 49 | 48 | 41 | 45 | 38 | 35 | 39 | 48 | 51 | 45 | 47 | 40 | 39 | 34 | 35 | 33 | 41 | 44 | 35 | 40 |
| 8 | 45 | 42 | 42 | 36 | 33 | 35 | 33 | 36 | 19 | 30 | 36 | 33 | 32 | 28 | 41 | 36 | 48 | 49 | 58 | 40 | 27 | 43 | 40 | 45 | 54 | 38 | 37 | 48 | 37 | 39 | 32 |
| 9 | 39 | 43 | 37 | 27 | 28 | 30 | 41 | 36 | 37 | 37 | 26 | 32 | 30 | 30 | 43 | 48 | 43 | 49 | 33 | 46 | 38 | 30 | 33 | 34 | 26 | 31 | 23 | 18 | 24 | 31 | |
| **2021** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 46 | 52 | 30 | 33 | 31 | 39 | 41 | 36 | 32 | 41 | 33 | 35 | 45 | 51 | 57 | 55 | 44 | 52 | 53 | 55 | 57 | 56 | 50 | 38 | 60 | 42 | 45 | 31 | 36 | 39 | 46 |
| 6 | 50 | 24 | 25 | 53 | 63 | 48 | 29 | 32 | 32 | 28 | 33 | 46 | 53 | 52 | 36 | 45 | 56 | 43 | 45 | 44 | 39 | 30 | 45 | 51 | 28 | 42 | 40 | 36 | 36 | 34 | |
| 7 | 37 | 32 | 42 | 38 | 42 | 46 | 47 | 42 | 30 | 32 | 36 | 34 | 36 | 45 | 45 | 32 | 43 | 34 | 36 | 48 | 42 | 40 | 41 | 58 | 49 | 58 | 56 | 59 | 40 | 47 | 44 |
| 8 | 40 | 32 | | | 61 | 61 | 44 | 47 | 40 | 35 | 37 | 46 | 44 | 42 | 34 | 22 | 24 | 26 | 41 | 47 | 48 | 48 | 47 | 53 | 36 | 44 | 45 | 43 | 37 | 30 | 26 |
| 9 | 41 | 39 | 39 | 45 | 38 | 47 | 55 | 44 | 38 | 39 | 44 | 52 | 51 | 40 | 34 | 43 | 45 | 50 | 52 | 33 | 26 | 21 | 33 | 37 | 37 | | 61 | 39 | 40 | 40 | |
| **2020** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 38 | 53 | 50 | 35 | 38 | 46 | 50 | 32 | 40 | 42 | 32 | 42 | 56 | 43 | 42 | 42 | 43 | 38 | 41 | 38 | 30 | 34 | 46 | 50 | 43 | 46 | 44 | 46 | 39 | 32 | 42 |
| 6 | 47 | 63 | 54 | 37 | 55 | 57 | 42 | 50 | 47 | 33 | 44 | 46 | 38 | 40 | 42 | 55 | 56 | 40 | 41 | 56 | 62 | 47 | 45 | 42 | 51 | 57 | 35 | 44 | 45 | 55 | |
| 7 | 47 | 47 | 54 | 51 | 51 | **67** | 56 | **68** | **71** | 45 | 44 | 34 | 42 | 52 | 60 | 47 | 57 | 60 | 37 | 42 | 47 | 37 | 33 | 46 | 52 | 54 | 36 | 40 | 57 | 35 | 38 |
| 8 | 34 | 28 | 33 | 31 | 35 | 44 | 48 | 55 | 61 | 51 | 45 | 50 | 55 | 44 | 40 | 40 | 41 | 35 | 32 | 40 | 50 | 48 | 43 | 50 | 51 | 52 | 34 | 27 | 38 | 29 | 50 |
| 9 | 39 | 33 | 43 | 39 | 49 | 40 | 40 | 44 | 44 | 32 | 18 | 35 | 32 | 28 | 28 | 42 | 28 | 34 | 36 | 37 | 42 | 47 | 51 | 52 | 55 | 42 | 35 | 27 | 22 | 28 | |

**Figure 43. Calendar view of MDA8 ozone observations from 2020-2024 from monitor 390410002. Green cells represent MDA8 values below 70 ppb, yellow cells indicate MDA8 values greater than 70 ppb, red cells indicate MDA8 values above 75 ppb, and blue cells indicate MDA8 values greater than the 99th percentile of the five-year distribution of ozone monitoring data.**

| monitor | 390490029 | | | | | | | | | | | | | 69 <-- 99th %ile of 2020-2024 observations | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sum of value | Column Labels | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Row Labels | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| **2024** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 59 | 64 | 51 | 41 | 49 | 31 | 41 | 57 | 33 | 37 | 43 | 44 | 57 | 35 | 39 | 59 | 53 | 55 | 62 | 67 | 61 | 45 | 56 | 61 | 61 | 51 | 51 | 50 | 45 | 49 | 55 |
| 6 | 54 | 32 | 52 | 48 | 36 | 54 | 52 | 48 | 48 | 19 | 56 | 68 | **71** | 65 | 43 | 61 | 57 | 65 | 52 | 56 | **70** | 69 | 45 | 56 | 50 | 40 | 43 | 54 | 45 | 40 | |
| 7 | 40 | 53 | 52 | 46 | 42 | 50 | 58 | 65 | 59 | 47 | 50 | 54 | 60 | 57 | 58 | 64 | 49 | 40 | 42 | 58 | 58 | 50 | 56 | 53 | 52 | 43 | 54 | 63 | 37 | 54 | 58 |
| 8 | 47 | 47 | 46 | 45 | 55 | 62 | 37 | 41 | 48 | 37 | 39 | 37 | 43 | 41 | 58 | 46 | 52 | 44 | 37 | 39 | 41 | 49 | 65 | 68 | 63 | 64 | **72** | 61 | 58 | 63 | 51 |
| 9 | 50 | 38 | 45 | 49 | 64 | 53 | 32 | 37 | 47 | 56 | 63 | 57 | 51 | 48 | 53 | 53 | 43 | 43 | 43 | 63 | 54 | 57 | 39 | 34 | 34 | 31 | 27 | 30 | 24 | 17 | |
| **2023** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 31 | 31 | 32 | 43 | 49 | 54 | 50 | 49 | 48 | 50 | 61 | 43 | 53 | 46 | 53 | 45 | 51 | 56 | 55 | 37 | 45 | 56 | 51 | 63 | 48 | 51 | 54 | 57 | 58 | 42 | 50 |
| 6 | 63 | 69 | 61 | 58 | 52 | 64 | 49 | 50 | 49 | 65 | 51 | 46 | 43 | 48 | 58 | 39 | 58 | **70** | 49 | 44 | 54 | 33 | 37 | 43 | 59 | 52 | 38 | **70** | **70** | 65 | |
| 7 | 48 | 44 | 41 | 57 | 62 | 49 | 47 | 49 | 48 | 62 | 61 | 62 | 61 | 63 | 44 | 59 | 58 | 64 | 59 | 56 | 53 | 41 | 49 | 53 | 68 | 54 | 55 | 41 | 45 | 40 | 41 |
| 8 | 46 | 48 | 56 | 65 | 45 | 46 | 43 | 48 | 49 | 51 | 53 | 50 | 51 | 30 | 37 | 39 | 43 | 40 | 57 | 55 | 51 | 46 | 57 | 54 | 43 | 36 | 37 | 45 | 60 | 30 | 37 |
| 9 | 42 | 55 | 42 | 53 | 51 | 43 | 33 | 27 | 29 | 38 | 57 | 34 | 35 | 42 | 40 | 55 | 53 | 37 | 43 | 52 | 55 | 50 | 47 | 33 | 22 | 24 | 22 | 29 | 36 | 49 | |
| **2022** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 51 | 55 | 41 | 29 | 37 | 35 | 43 | 51 | 53 | 53 | 54 | 54 | 39 | 39 | 60 | 53 | 45 | 34 | 54 | 46 | 44 | 39 | 37 | 47 | 32 | 34 | 35 | 39 | 44 | 49 | 54 |
| 6 | 48 | 40 | 60 | 58 | 60 | 42 | 48 | 50 | 45 | 47 | 52 | 46 | 54 | 55 | 60 | 47 | 56 | 46 | 48 | 52 | **83** | **70** | 53 | 48 | **73** | 59 | 53 | 59 | 69 | 66 | |
| 7 | 62 | 58 | 57 | 55 | 45 | 45 | 45 | 36 | 46 | 47 | 54 | 54 | 57 | 49 | 54 | 44 | 41 | 50 | 62 | 53 | 51 | 51 | 46 | 50 | 39 | 37 | 43 | 46 | 51 | 37 | 44 |
| 8 | 49 | 46 | 51 | 48 | 35 | 37 | 39 | 43 | 32 | 29 | 45 | 36 | 44 | 36 | 46 | 36 | 51 | 50 | 58 | 41 | 37 | 45 | 48 | 49 | 62 | 43 | 41 | 47 | 37 | 41 | 35 |
| 9 | 42 | 42 | 33 | 28 | 32 | 29 | 41 | 38 | 36 | 38 | 26 | 38 | 30 | 38 | 54 | 55 | 47 | 53 | 37 | 56 | 56 | 31 | 37 | 40 | 30 | 33 | 26 | 20 | 26 | 31 | |
| **2021** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 46 | 54 | 36 | 36 | 31 | 40 | 42 | 36 | 32 | 41 | 33 | 36 | 45 | 53 | 63 | 56 | 45 | 53 | 50 | 55 | 64 | 58 | 53 | 48 | 64 | 45 | 54 | 28 | 31 | 40 | 49 |
| 6 | 49 | 30 | 34 | 58 | 64 | 53 | 29 | 40 | 29 | 32 | 34 | 52 | 61 | 61 | 39 | 48 | 62 | 50 | 53 | 46 | 47 | 34 | 48 | 50 | 34 | 44 | 40 | 41 | 38 | 38 | |
| 7 | 36 | 31 | 41 | 43 | 52 | 45 | 55 | 47 | 32 | 35 | 38 | 38 | 37 | 49 | 47 | 35 | 42 | 32 | 38 | 55 | 43 | 39 | 48 | 59 | 51 | 56 | 66 | 64 | 46 | 47 | 47 |
| 8 | 44 | 32 | 43 | 52 | 60 | 60 | 59 | 58 | 41 | 36 | 41 | 50 | 45 | 43 | 35 | 35 | 26 | 29 | 47 | 51 | 62 | 52 | 49 | **70** | 39 | 45 | 61 | 49 | 42 | 37 | 35 |
| 9 | 45 | 41 | 40 | 49 | 39 | 48 | 56 | 48 | 39 | 45 | 46 | 53 | 57 | 42 | 28 | 45 | 46 | 52 | 54 | 38 | 31 | 25 | 36 | 43 | 39 | 48 | 63 | 49 | 41 | 43 | |
| **2020** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 35 | 50 | 47 | 35 | 36 | 43 | 52 | 37 | 40 | 45 | 31 | 45 | 54 | 44 | 46 | 46 | 46 | 44 | 43 | 39 | 30 | 36 | 49 | 55 | 44 | 46 | 43 | 51 | 45 | 35 | 45 |
| 6 | 51 | 66 | 60 | 48 | 65 | 62 | 47 | 54 | 43 | 41 | 49 | 49 | 44 | 44 | 48 | 56 | 58 | 39 | 58 | 59 | 68 | 58 | 47 | 42 | 53 | 64 | 42 | 46 | 52 | 62 | |
| 7 | 51 | 47 | 60 | 53 | 58 | **70** | 64 | 66 | 65 | 48 | 46 | 42 | 46 | 55 | 56 | 51 | 67 | 59 | 43 | 54 | 58 | 42 | 36 | 50 | 56 | 57 | 42 | 44 | 64 | 45 | 41 |
| 8 | 34 | 32 | 42 | 34 | 42 | 48 | 53 | 63 | 68 | 54 | 52 | 52 | 55 | 48 | 39 | 45 | 44 | 38 | 33 | 43 | 50 | 46 | 45 | 55 | 54 | 58 | 35 | 26 | 40 | 30 | 42 |
| 9 | 45 | 36 | 42 | 38 | 43 | 45 | 43 | 49 | 44 | 39 | 20 | 35 | 33 | 29 | 29 | 42 | 33 | 34 | 35 | 37 | 41 | 52 | 58 | 55 | 53 | 41 | 34 | 33 | 21 | 27 | |

**Figure 44. Calendar view of MDA8 ozone observations from 2020-2024 from monitor 390490029. Green cells represent MDA8 values below 70 ppb, yellow cells indicate MDA8 values greater than 70 ppb, red cells indicate MDA8 values above 75 ppb, and blue cells indicate MDA8 values greater than the 99th percentile of the five-year distribution of ozone monitoring data.**

| monitor | 390490081 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 65 <-- 99th %ile of 2020-2024 observations | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sum of value | Column Labels | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Row Labels | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| **2024** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 51 | 62 | 46 | 34 | 44 | 28 | 35 | 51 | 30 | 35 | 40 | 40 | 51 | 32 | 36 | 54 | 46 | 53 | 60 | 60 | 54 | 38 | 55 | 54 | 56 | 46 | 45 | 46 | 41 | 47 | 55 |
| 6 | 52 | 27 | 51 | 48 | 30 | 45 | 47 | 43 | 45 | 16 | 53 | 59 | 63 | 56 | 40 | 57 | 46 | 48 | 47 | 61 | 56 | 54 | 36 | 50 | 42 | 30 | 40 | 53 | 37 | 34 | |
| 7 | 38 | 51 | 43 | 42 | 40 | 46 | 50 | 65 | 59 | 40 | 46 | 55 | 53 | 46 | 47 | 53 | 35 | 35 | 39 | 52 | 55 | 47 | 50 | 43 | 44 | 41 | 52 | 60 | 32 | 45 | 46 |
| 8 | 39 | 38 | 39 | 38 | 44 | 48 | 37 | 39 | 39 | 31 | 34 | 33 | 44 | 42 | 54 | 38 | 41 | 35 | 34 | 37 | 39 | 49 | **66** | 59 | 54 | 55 | 65 | 53 | 56 | 53 | 41 |
| 9 | 43 | 36 | 44 | 50 | **66** | 45 | 28 | 31 | 39 | 51 | 62 | 54 | 48 | 43 | 49 | 50 | 39 | 40 | 44 | 55 | 48 | 51 | 33 | 27 | 30 | 28 | 24 | 27 | 19 | 16 | |
| **2023** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 27 | 29 | 31 | 40 | 50 | 56 | 46 | 45 | 47 | 52 | 63 | 37 | 51 | 47 | 50 | 43 | 52 | 58 | 56 | 37 | 45 | 58 | 53 | 62 | 49 | 53 | 55 | 57 | 57 | 42 | 50 |
| 6 | 63 | **67** | 59 | 58 | 54 | 62 | 49 | 48 | 48 | 63 | 45 | 43 | 38 | 45 | 54 | 37 | 56 | **71** | 47 | 42 | 53 | 32 | 34 | 40 | 56 | 46 | 34 | **67** | **68** | 59 | |
| 7 | 39 | 38 | 39 | 52 | 65 | 41 | 45 | 44 | 45 | 58 | 56 | 56 | 56 | 57 | 40 | 54 | 51 | 57 | 59 | 48 | 48 | 43 | 45 | 48 | 60 | 46 | 46 | 35 | 38 | 36 | 39 |
| 8 | 46 | 51 | 58 | 61 | 47 | 42 | 37 | 45 | 45 | 48 | 50 | 46 | 47 | 27 | 33 | 42 | 40 | 38 | 51 | 50 | 51 | 45 | 52 | 50 | 40 | 36 | 36 | 44 | 54 | 29 | 37 |
| 9 | 43 | 51 | 38 | 48 | 47 | 37 | 27 | 28 | 29 | 38 | 50 | 32 | 33 | 43 | 40 | 57 | 51 | 36 | 41 | 52 | 56 | 50 | 47 | 33 | 21 | 23 | 21 | 23 | 37 | 47 | |
| **2022** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 47 | 50 | 35 | 27 | 35 | 33 | 42 | 52 | 52 | 52 | 55 | 54 | 39 | 41 | 56 | 52 | 43 | 33 | 48 | 41 | 39 | 38 | 39 | 47 | 30 | 30 | 30 | 36 | 44 | 46 | 49 |
| 6 | 43 | 38 | 56 | 58 | 60 | 41 | 45 | 51 | 43 | 52 | 49 | 41 | 51 | 39 | 51 | 42 | 53 | 46 | 48 | 49 | **74** | 62 | 51 | 53 | **70** | 53 | 50 | 61 | 62 | 64 | |
| 7 | 57 | 55 | 55 | 57 | 39 | 38 | 41 | 32 | 44 | 47 | 50 | 50 | 52 | 47 | 57 | 41 | 36 | 44 | 55 | 47 | 45 | 46 | 41 | 43 | 35 | 35 | 37 | 39 | 48 | 37 | 43 |
| 8 | 42 | 43 | 44 | 44 | 31 | 32 | 34 | 34 | 26 | 28 | 41 | 35 | 45 | 35 | 44 | 36 | 49 | 53 | 60 | 39 | 33 | 41 | 42 | 51 | 55 | 38 | 41 | 45 | 36 | 37 | 32 |
| 9 | 39 | 45 | 30 | 28 | 30 | 29 | 42 | 37 | 37 | 37 | 24 | 32 | 28 | 34 | 56 | 57 | 41 | 48 | 32 | 58 | 46 | 29 | 35 | 34 | 26 | 29 | 24 | 18 | 26 | 31 | |
| **2021** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 42 | 50 | 33 | 34 | 31 | 37 | 40 | 35 | 32 | 40 | 32 | 37 | 46 | 52 | 61 | 59 | 43 | 56 | 54 | 57 | 63 | 56 | 51 | 45 | 59 | 42 | 55 | 30 | 36 | 40 | 52 |
| 6 | 50 | 29 | 30 | 53 | 61 | 49 | 27 | 35 | 26 | 31 | 33 | 51 | 56 | 60 | 39 | 50 | 59 | 44 | 49 | 43 | 43 | 33 | 50 | 49 | 32 | 42 | 37 | 37 | 40 | 35 | |
| 7 | 34 | 31 | 40 | 42 | 47 | 42 | 50 | 42 | 31 | 35 | 34 | 34 | 34 | 46 | 43 | 30 | 42 | 34 | 38 | 52 | 43 | 42 | 53 | 56 | 49 | 58 | 61 | 61 | 36 | 48 | 44 |
| 8 | 40 | 32 | 44 | 52 | 62 | 54 | 53 | 50 | 41 | 31 | 38 | 43 | 40 | 43 | 35 | 30 | 25 | 27 | 47 | 50 | 58 | 51 | 46 | 63 | 33 | 44 | 54 | 41 | 37 | 31 | 29 |
| 9 | 43 | 41 | 42 | 44 | 36 | 45 | 51 | 44 | 36 | 41 | 42 | 49 | 54 | 35 | 28 | 46 | 44 | 53 | 57 | 32 | 29 | 21 | 34 | 38 | 36 | 42 | 58 | 46 | 43 | 43 | |
| **2020** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 36 | 51 | 48 | 38 | 38 | 45 | 48 | 33 | 37 | 41 | 29 | 41 | 52 | 37 | 40 | 45 | 42 | 39 | 42 | 37 | 28 | 36 | 49 | 46 | 40 | 42 | 40 | 44 | 40 | 31 | 43 |
| 6 | 45 | 59 | 54 | 43 | 62 | 58 | 45 | 54 | 46 | 36 | 46 | 46 | 41 | 41 | 44 | 54 | 56 | 36 | 52 | 60 | 60 | 52 | 43 | 37 | 49 | 54 | 35 | 42 | 51 | 62 | |
| 7 | 49 | 46 | 56 | 51 | 55 | **71** | 56 | **70** | 65 | 42 | 44 | 39 | 43 | 55 | 57 | 45 | 59 | 55 | 35 | 48 | 54 | 34 | 30 | 47 | 55 | 52 | 35 | 40 | 58 | 41 | 39 |
| 8 | 31 | 29 | 39 | 30 | 36 | 48 | 51 | 64 | 62 | 48 | 46 | 54 | 56 | 46 | 41 | 43 | 40 | 36 | 33 | 43 | 52 | 46 | 39 | 50 | 50 | 51 | 30 | 22 | 37 | 30 | 43 |
| 9 | 39 | 30 | 36 | 34 | 39 | 42 | 39 | 48 | 48 | 37 | 20 | 32 | 31 | 29 | 29 | 39 | 32 | 33 | 35 | 36 | 41 | 49 | 50 | 52 | 54 | 39 | 32 | 27 | 20 | 23 | |

**Figure 45. Calendar view of MDA8 ozone observations from 2020-2024 from monitor 390490081. Green cells represent MDA8 values below 70 ppb, yellow cells indicate MDA8 values greater than 70 ppb, red cells indicate MDA8 values above 75 ppb, and blue cells indicate MDA8 values greater than the 99th percentile of the five-year distribution of ozone monitoring data.**

| monitor | 390890005 | | | | | | | | | 64 <-- 99th %ile of 2020-2024 observations | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sum of value | Column Labels | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Row Labels | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| **2024** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 54 | 60 | 39 | 33 | 42 | 24 | 32 | 55 | 28 | 34 | 41 | 41 | 51 | 35 | 33 | 45 | 48 | 48 | 58 | 64 | 53 | 40 | 48 | 56 | 57 | 47 | 49 | 46 | 45 | 47 | 52 |
| 6 | 53 | 34 | 46 | 43 | 29 | 48 | 47 | 44 | 45 | 20 | 49 | 61 | **65** | 62 | 37 | 52 | 46 | 46 | 38 | 54 | 61 | 64 | 41 | 50 | 45 | 39 | 38 | 48 | 38 | 38 | |
| 7 | 36 | 48 | 48 | 39 | 37 | 48 | 53 | 57 | 51 | 42 | 44 | 51 | 60 | 52 | 51 | 60 | 43 | 37 | 39 | 51 | 55 | 45 | 51 | 47 | 51 | 41 | 57 | 59 | 31 | 49 | 50 |
| 8 | 39 | 38 | 39 | 40 | 50 | 53 | 33 | 33 | 46 | 38 | 40 | 33 | 41 | 39 | 50 | 42 | 47 | 42 | 32 | 36 | 38 | 45 | 31 | | | 63 | 60 | 58 | 50 | 54 | 49 |
| 9 | 48 | 35 | 43 | 47 | 53 | 61 | 31 | 35 | 47 | 52 | 58 | 54 | 50 | 45 | 51 | 49 | 39 | 42 | 38 | 58 | 53 | 54 | 36 | 31 | 32 | 28 | 19 | 26 | 19 | 16 | |
| **2023** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 31 | 31 | 30 | 42 | 51 | 55 | 47 | 48 | 50 | 50 | 62 | 40 | 53 | 48 | 51 | 42 | 52 | 53 | 51 | 38 | 44 | 53 | 52 | 63 | 48 | 50 | 56 | 57 | 60 | 42 | 52 |
| 6 | 63 | 64 | 58 | 53 | 45 | 62 | 48 | 45 | 46 | **66** | 43 | 43 | 46 | 46 | 53 | 45 | 54 | **67** | 42 | 43 | 51 | 32 | 30 | 41 | 57 | 50 | 35 | 64 | **68** | 58 | |
| 7 | 46 | 39 | 39 | 55 | 58 | 45 | 43 | 46 | 46 | 60 | 59 | 58 | 63 | 57 | 30 | 45 | 53 | 53 | 53 | 43 | 49 | 33 | 38 | 45 | 50 | 42 | 43 | 40 | 46 | 39 | 41 |
| 8 | 44 | 46 | 52 | 63 | 44 | 42 | 44 | 47 | 46 | 50 | 49 | 46 | 48 | 32 | 39 | 40 | 41 | 39 | 50 | 51 | 49 | 45 | 53 | 46 | 41 | 34 | 35 | 46 | 63 | 30 | 38 |
| 9 | 41 | 51 | 42 | 50 | 49 | 41 | 34 | 27 | 31 | 38 | 50 | 33 | 36 | 41 | 40 | 53 | 50 | 40 | 44 | 50 | 52 | 50 | 41 | 30 | 19 | 21 | 22 | 31 | 32 | 43 | |
| **2022** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 49 | 53 | 41 | 30 | 35 | 34 | 44 | 52 | 51 | 54 | 52 | 53 | 38 | 38 | 58 | 50 | 45 | 29 | 49 | 38 | 40 | 36 | 34 | 44 | 31 | 34 | 31 | 36 | 42 | 46 | 50 |
| 6 | 47 | 36 | 56 | 54 | 56 | 40 | 45 | 46 | 42 | 47 | 48 | 43 | 43 | 39 | 58 | 43 | 50 | 41 | 45 | 45 | **75** | **65** | 48 | 45 | 60 | 55 | 48 | 49 | **72** | 60 | |
| 7 | 56 | 53 | 53 | 54 | 40 | 39 | 41 | 29 | 41 | 41 | 45 | 50 | 56 | 44 | 48 | 40 | 35 | 43 | 51 | 46 | 46 | 49 | 42 | 42 | 37 | 30 | 37 | 42 | 49 | 32 | 36 |
| 8 | 42 | 43 | 46 | 40 | 31 | 29 | 33 | 33 | 30 | 24 | 40 | 33 | 37 | 30 | 43 | 30 | 43 | 47 | 51 | 35 | 34 | 41 | 46 | 44 | 48 | 39 | 35 | 39 | 28 | 35 | 32 |
| 9 | 38 | 37 | 27 | 21 | 22 | 22 | 34 | 34 | 32 | 29 | 18 | 35 | 22 | 33 | 42 | 46 | 40 | 47 | 32 | 44 | 44 | 28 | 32 | 35 | 28 | 30 | 23 | 17 | 22 | 24 | |
| **2021** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 45 | 51 | 32 | 35 | 30 | 39 | 41 | 35 | 30 | 40 | 32 | 35 | 40 | 47 | 58 | 54 | 44 | 49 | 47 | 52 | 54 | 56 | 53 | 39 | 60 | 44 | 46 | 26 | 23 | 38 | 47 |
| 6 | 45 | 28 | 27 | 55 | 61 | 44 | 24 | 32 | 24 | 23 | 25 | 36 | 53 | 57 | 35 | 46 | 59 | 46 | 47 | 38 | 42 | 33 | 46 | 46 | 35 | 40 | 37 | 33 | 31 | 32 | |
| 7 | 28 | 27 | 37 | 40 | 51 | 52 | 44 | 32 | 33 | 33 | 29 | 33 | 31 | 45 | 41 | 31 | 37 | 29 | 38 | 52 | 43 | 39 | 43 | 49 | 48 | 52 | 62 | 59 | 44 | 42 | 44 |
| 8 | 43 | 30 | 40 | 49 | 54 | 54 | 60 | 55 | 41 | 32 | 39 | 46 | 40 | 44 | 34 | 30 | 21 | 28 | 43 | 45 | 53 | 47 | 47 | 59 | 41 | 44 | 50 | 47 | 32 | 38 | 28 |
| 9 | 42 | 38 | 37 | 47 | 34 | 45 | 51 | 44 | 39 | 38 | 43 | 49 | 47 | 36 | 29 | 40 | 37 | 48 | 51 | 41 | 31 | 22 | 34 | 40 | 37 | 44 | 54 | 45 | 38 | 39 | |
| **2020** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 35 | 51 | 47 | 36 | 39 | 46 | 50 | 38 | 39 | 45 | 31 | 43 | 52 | 40 | 41 | 42 | 44 | 29 | 41 | 37 | 28 | 35 | 43 | 51 | 38 | 42 | 38 | 41 | 43 | 33 | 41 |
| 6 | 47 | 63 | 59 | 44 | 55 | 59 | 42 | | 39 | 35 | 46 | 47 | 37 | 41 | 45 | 53 | 54 | 35 | 48 | 50 | 62 | 51 | 44 | 39 | 46 | 62 | 38 | 44 | 42 | 51 | |
| 7 | 44 | 42 | 52 | 47 | 54 | 60 | 50 | 52 | 49 | 41 | 40 | 36 | 40 | 45 | 50 | 43 | 53 | 51 | 42 | 48 | 48 | 35 | 29 | 39 | 47 | 53 | 36 | 40 | 54 | 30 | 39 |
| 8 | 28 | 29 | 36 | 32 | 13 | 43 | 48 | 53 | 59 | 41 | 48 | 48 | 47 | 42 | 29 | 33 | 38 | 34 | 30 | 37 | 42 | 34 | 36 | 44 | 40 | 47 | 27 | 19 | 35 | 26 | 34 |
| 9 | 35 | 29 | 33 | 35 | 39 | 36 | 37 | 39 | 35 | 35 | 19 | 29 | 25 | 27 | 25 | 33 | 30 | 32 | 32 | 34 | 39 | 44 | 49 | 47 | 50 | 35 | 32 | 32 | 21 | 26 | |

**Figure 46. Calendar view of MDA8 ozone observations from 2020-2024 from monitor 390890005. Green cells represent MDA8 values below 70 ppb, yellow cells indicate MDA8 values greater than 70 ppb, red cells indicate MDA8 values above 75 ppb, and blue cells indicate MDA8 values greater than the 99th percentile of the five-year distribution of ozone monitoring data.**

| monitor | 390890008 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 62 <-- 99th %ile of 2020-2024 observations | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sum of value | Column Labels | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Row Labels | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| **2024** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 53 | 56 | 46 | 38 | 42 | 24 | 35 | 52 | 31 | 35 | 39 | 40 | 52 | 33 | 39 | 53 | 48 | 51 | 58 | 59 | 52 | 39 | 49 | 53 | 57 | 46 | 47 | 46 | 41 | 45 | 54 | |
| 6 | 50 | 31 | 44 | 43 | 30 | 49 | 47 | 43 | 44 | 19 | 55 | 58 | 62 | 60 | 38 | 54 | 49 | 54 | 43 | 52 | **70** | **63** | 41 | 51 | 45 | 38 | 40 | 49 | 41 | 37 | | |
| 7 | 37 | 51 | 46 | 39 | 36 | 46 | 55 | 56 | 53 | 44 | 50 | 52 | 57 | 50 | 51 | 59 | 45 | 39 | 41 | 55 | 56 | 47 | 51 | 45 | 47 | 38 | 50 | 51 | 29 | 47 | 48 | |
| 8 | 37 | 43 | 45 | 42 | 52 | 60 | 36 | 39 | 45 | 33 | 35 | 36 | 44 | 41 | 54 | 43 | 45 | 39 | 36 | 37 | 40 | 46 | 58 | **65** | **63** | **66** | 62 | 59 | 58 | 56 | 48 | |
| 9 | 46 | 37 | 46 | 45 | 56 | 53 | 30 | 35 | 45 | 55 | 61 | 52 | 47 | 43 | 50 | 51 | 43 | 44 | 41 | 51 | 46 | 48 | 35 | 29 | 30 | 29 | 26 | 30 | 21 | 18 | | |
| **2023** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 24 | 26 | 28 | 38 | 47 | 51 | 44 | 45 | 47 | 47 | 57 | 41 | 49 | 46 | 51 | 39 | 50 | 50 | 46 | 35 | 42 | 49 | 47 | 58 | 45 | 48 | 52 | 54 | 53 | 36 | 42 | |
| 6 | 59 | 62 | 53 | 53 | 47 | 58 | 46 | 45 | 44 | 60 | 42 | 39 | 39 | 42 | 50 | 38 | 52 | 61 | 42 | 39 | 46 | 30 | 32 | 38 | 51 | 48 | 32 | **66** | 62 | 54 | | |
| 7 | 41 | 37 | 38 | 48 | 54 | 40 | 44 | 46 | 44 | 58 | 57 | 53 | 57 | 59 | 35 | 54 | 53 | 52 | 55 | 45 | 48 | 35 | 41 | 51 | 55 | 48 | 47 | 36 | 41 | 37 | 40 | |
| 8 | 46 | 45 | 54 | **69** | 47 | 43 | 40 | 46 | 44 | 47 | 47 | 44 | 46 | 28 | 35 | 36 | 38 | 38 | 48 | 47 | 50 | 44 | 50 | 47 | 40 | 33 | 35 | 43 | 58 | 29 | 37 | |
| 9 | 39 | 50 | 40 | 48 | 42 | 39 | 31 | 27 | 29 | 37 | 50 | 33 | 33 | 40 | 39 | 54 | 52 | 36 | 44 | 48 | 54 | 49 | 43 | 31 | 19 | 23 | 21 | 28 | 38 | 46 | | |
| **2022** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 47 | 47 | 37 | 27 | 35 | 34 | 43 | 49 | 52 | 48 | 51 | 52 | 35 | 37 | 56 | 48 | 43 | 36 | 47 | 43 | 40 | 36 | 35 | 43 | 27 | 32 | 32 | 33 | 38 | 44 | 46 | |
| 6 | 44 | 38 | 56 | 56 | 56 | 38 | 45 | 47 | 41 | 50 | 45 | 42 | 45 | 49 | 53 | 40 | 53 | 45 | 45 | 46 | **75** | **63** | 50 | 48 | **66** | 57 | 49 | 57 | **70** | 60 | | |
| 7 | 57 | 56 | 56 | 51 | 42 | 34 | 42 | 33 | 42 | 45 | 47 | 48 | 53 | 46 | 53 | 37 | 36 | 41 | 52 | 46 | 47 | 48 | 43 | 45 | 38 | 29 | 38 | 44 | 50 | 34 | 38 | |
| 8 | 45 | 40 | | 44 | 30 | 33 | 34 | 37 | 34 | 27 | 42 | 32 | 40 | 30 | 44 | 33 | 46 | 48 | 52 | 37 | 33 | 42 | 44 | 51 | 55 | 40 | 40 | 44 | 31 | 37 | 33 | |
| 9 | 37 | 40 | 30 | 24 | 27 | 28 | 39 | 35 | 33 | 34 | 21 | 35 | 25 | 37 | 50 | 48 | 41 | 47 | 33 | 52 | 48 | 28 | 34 | 37 | 27 | 29 | 23 | 19 | 24 | 30 | | |
| **2021** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 44 | 46 | 31 | 31 | 28 | 36 | 37 | 31 | 30 | 38 | 30 | 35 | 42 | 49 | 56 | 51 | 40 | 45 | 45 | 53 | 55 | 54 | 49 | 49 | 56 | 40 | 49 | 29 | 31 | 40 | 46 | |
| 6 | 44 | 29 | 30 | 53 | 56 | 44 | 26 | 35 | 28 | 27 | 30 | 46 | 58 | 58 | 40 | 48 | 57 | 51 | 50 | 41 | 44 | 34 | 46 | 48 | 36 | 41 | 38 | 33 | 30 | 35 | | |
| 7 | 33 | 30 | 38 | 38 | 48 | 49 | 46 | 41 | 34 | 34 | 35 | 34 | 35 | 46 | 40 | 31 | 42 | 30 | 37 | 56 | 41 | 37 | 45 | 52 | 47 | 54 | **66** | 57 | 41 | 45 | 45 | |
| 8 | 41 | 31 | 41 | 50 | 54 | 47 | 50 | 44 | 33 | 29 | 30 | 40 | 40 | 42 | 33 | 34 | 23 | 28 | 40 | 45 | 48 | 48 | 47 | 57 | 38 | 42 | 49 | 42 | 36 | 35 | 32 | |
| 9 | 43 | 39 | 39 | 44 | 35 | 44 | 50 | 44 | 37 | 46 | 43 | 48 | 51 | 37 | 26 | 43 | 38 | 51 | 53 | 37 | 30 | 21 | 31 | 40 | 34 | 43 | 56 | 49 | 43 | 42 | | |
| **2020** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 34 | 50 | 46 | 37 | 37 | 46 | 46 | 31 | 32 | 42 | 25 | 38 | 50 | 39 | 41 | 39 | 39 | 42 | 40 | 35 | 25 | 32 | 40 | 46 | 38 | 40 | 37 | 43 | 41 | 31 | 42 | |
| 6 | 45 | 59 | 54 | 44 | 56 | 56 | 42 | 51 | 35 | 38 | 44 | 45 | 39 | 41 | 43 | 52 | 55 | 36 | 53 | 53 | 58 | 52 | 42 | 35 | 47 | 54 | 37 | 39 | 47 | 55 | | |
| 7 | 44 | 41 | 53 | 46 | 54 | 56 | 55 | 55 | 52 | 40 | 41 | 35 | 39 | 48 | 46 | 44 | 60 | 47 | 38 | 48 | 50 | 36 | 32 | 44 | 51 | 48 | 37 | 40 | 57 | 34 | 37 | |
| 8 | 28 | 29 | 36 | 29 | 38 | 44 | 46 | 53 | 56 | 43 | 47 | 46 | 49 | 38 | 32 | 37 | 37 | 33 | 29 | 38 | 43 | 36 | 36 | 47 | 44 | 51 | 27 | 21 | 35 | 25 | 35 | |
| 9 | 35 | 32 | 35 | 35 | 37 | 39 | 38 | 39 | 38 | 34 | 17 | 15 | 28 | 27 | 25 | 34 | 28 | 31 | 31 | 34 | 36 | 45 | 43 | 47 | 47 | 36 | 30 | 29 | 21 | 25 | | |

**Figure 47. Calendar view of MDA8 ozone observations from 2020-2024 from monitor 390890008. Green cells represent MDA8 values below 70 ppb, yellow cells indicate MDA8 values greater than 70 ppb, red cells indicate MDA8 values above 75 ppb, and blue cells indicate MDA8 values greater than the 99th percentile of the five-year distribution of ozone monitoring data.**

**Comparison of Fire-Influenced Ozone Exceedances with Historical Concentrations**

U.S. EPA's Exceptional Events Guidance indicates that a clear causal demonstration should include a comparison of the event-related exceedance with historical concentrations measured at each monitor requested for data exclusion. Examples of supporting documentation include time-series plots overlaying five years of data and five-year percentiles. The Exceptional Events Guidance indicates that if the flagged data is above the 99$^{th}$ or higher percentile of the five-year distribution of ozone monitoring data, or is one of the four highest ozone concentrations within one year, these data can be considered outliers and provide strong evidence for the event.

Figure 48 shows the MDA8 ozone concentrations (solid blue line) from May through August 2023 (top) and 2024 (bottom) at the Kentucky Nature Center (210150008) monitor in the Cincinnati NAA where smoke enhancements are observed. Increased ozone above the 5-year 99$^{th}$ percentile (red dotted line) is evident on multiple dates, as indicated within grey columns. The grey columns indicate dates when smoke was observed to be present at the monitor location using NOAA's Hazardous Mapping System (HMS) Fire Detect and Smoke Plume Data overlay. Ozone concentrations were elevated at all sites in Ohio NAAs during these dates (Figure 48 through

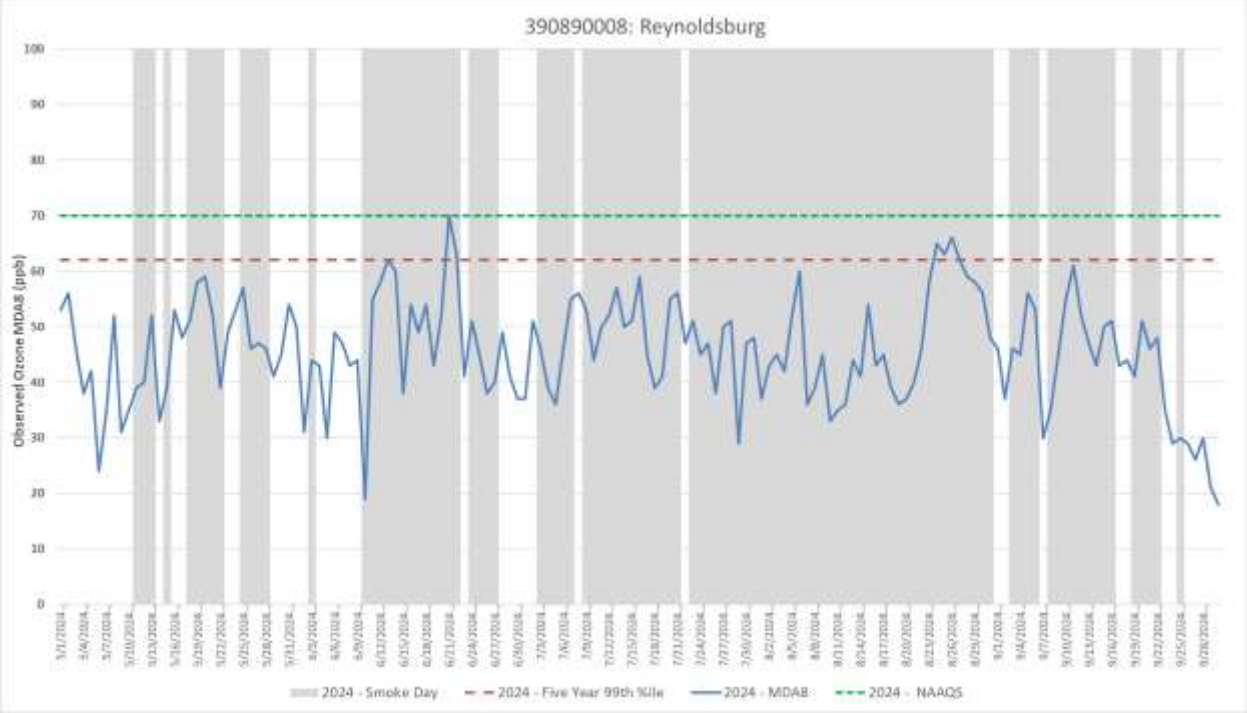
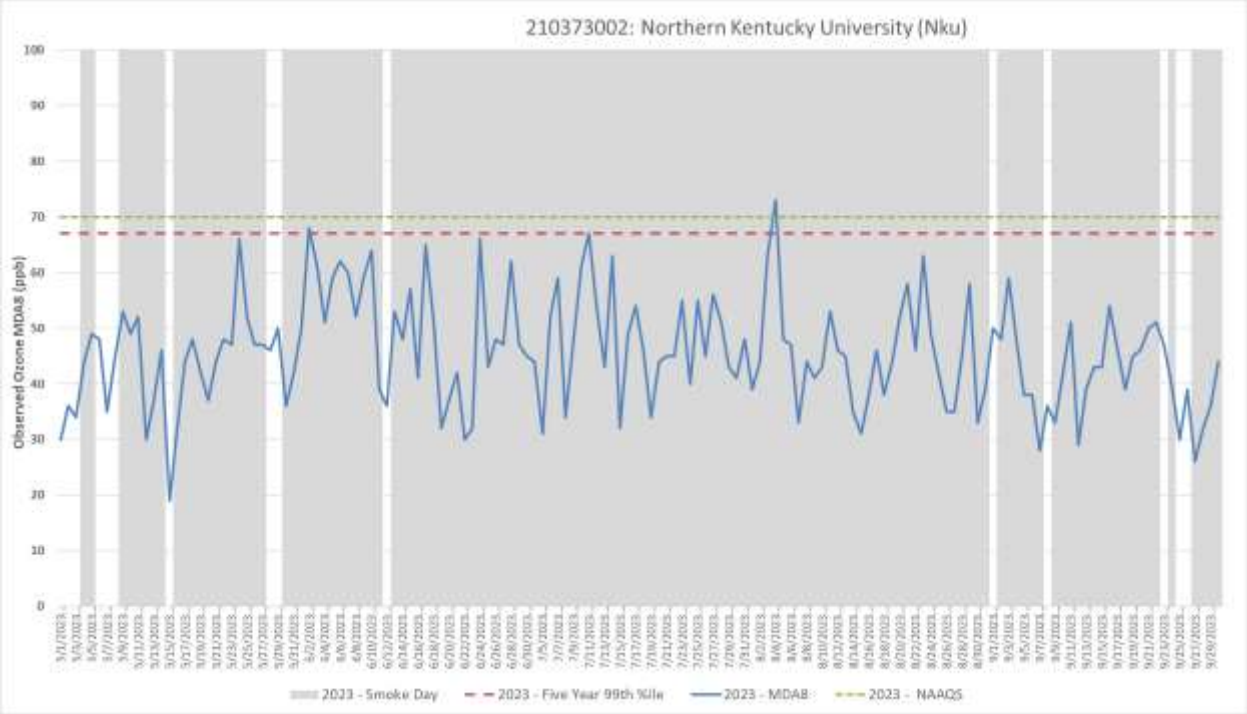



Figure 73), demonstrating that the region was impacted by area-wide events.

All the Ohio NAA monitors recorded multiple MDA8 ozone concentrations above their 99th percentile values during the period of May through August 2023 or 2024, indicating rare ozone episodes. At all monitors, the observations from many of these days were in the top five days of the five-year period between 2020 and 2024, in many locations they were the single top value.


**Figure 48. May-September 2023 (top) and 2024 (bottom) time series of MDA8 ozone concentrations, 5-year 99th percentile values, and dates with NOAA HMS smoke indications at monitor 210150008.**



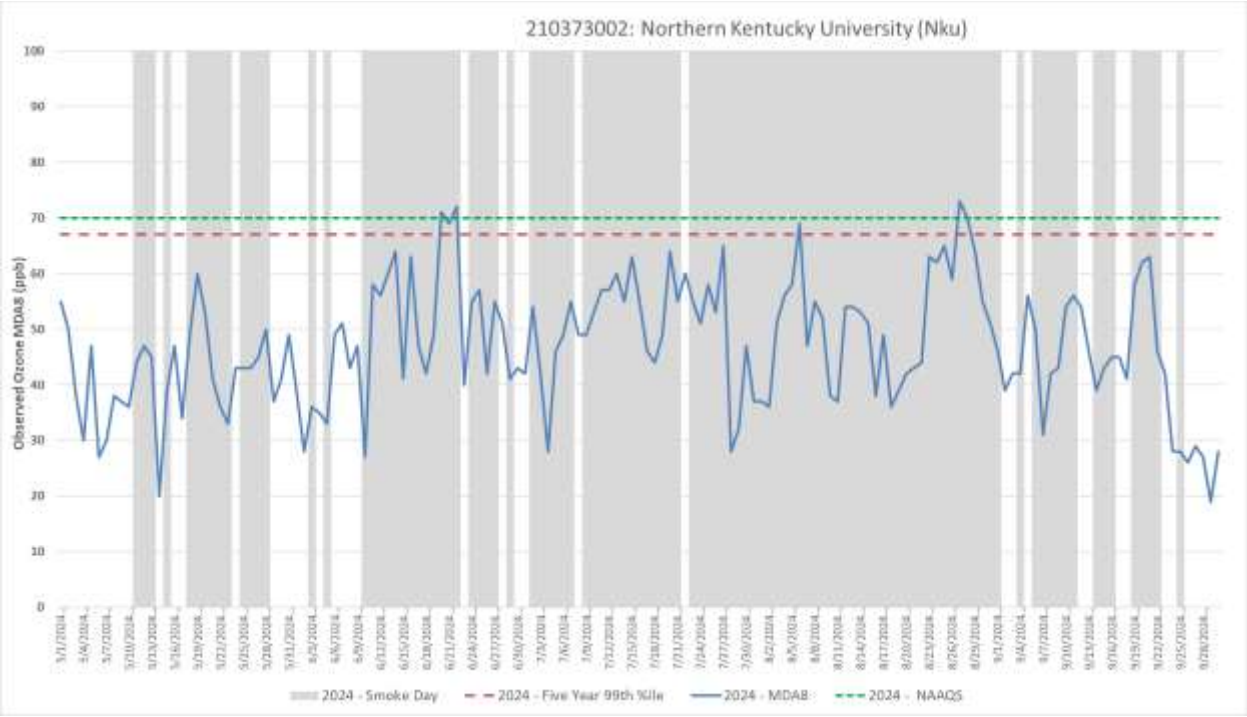
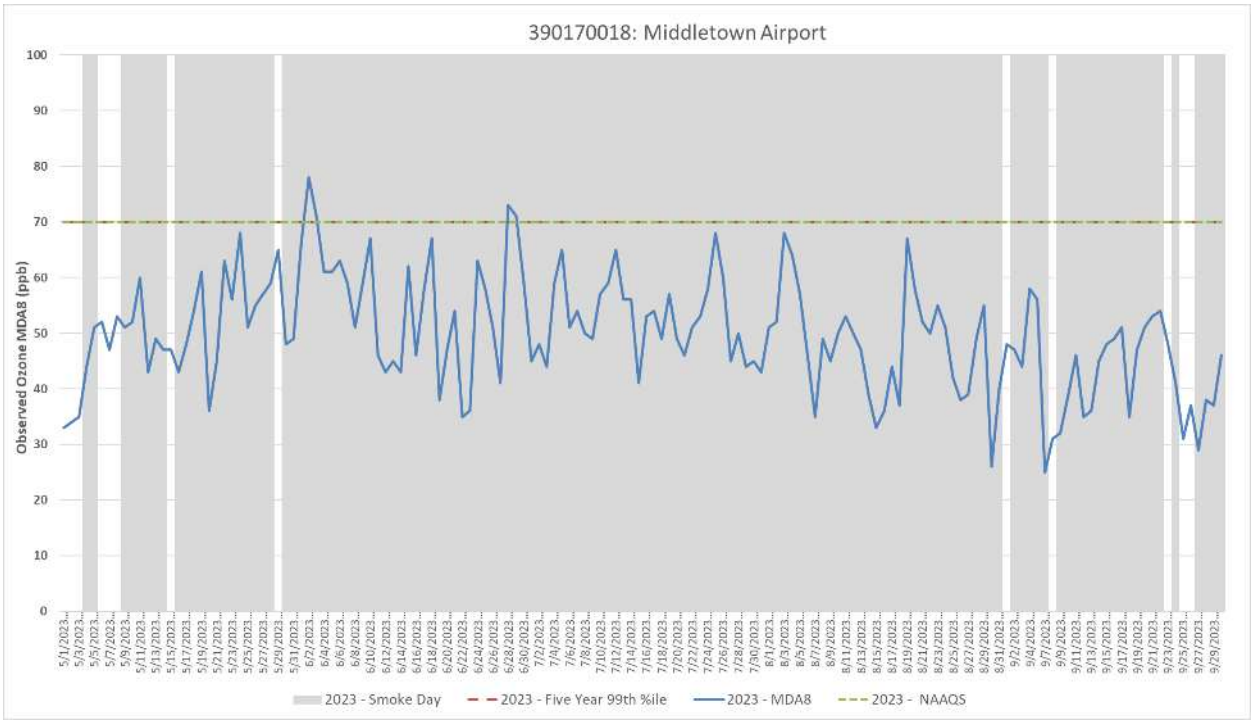




**Figure 49. May-September 2023 (top) and 2024 (bottom) time series of MDA8 ozone concentrations, 5-year 99$^{th}$ percentile values, and dates with NOAA HMS smoke indications at monitor 210373002.**



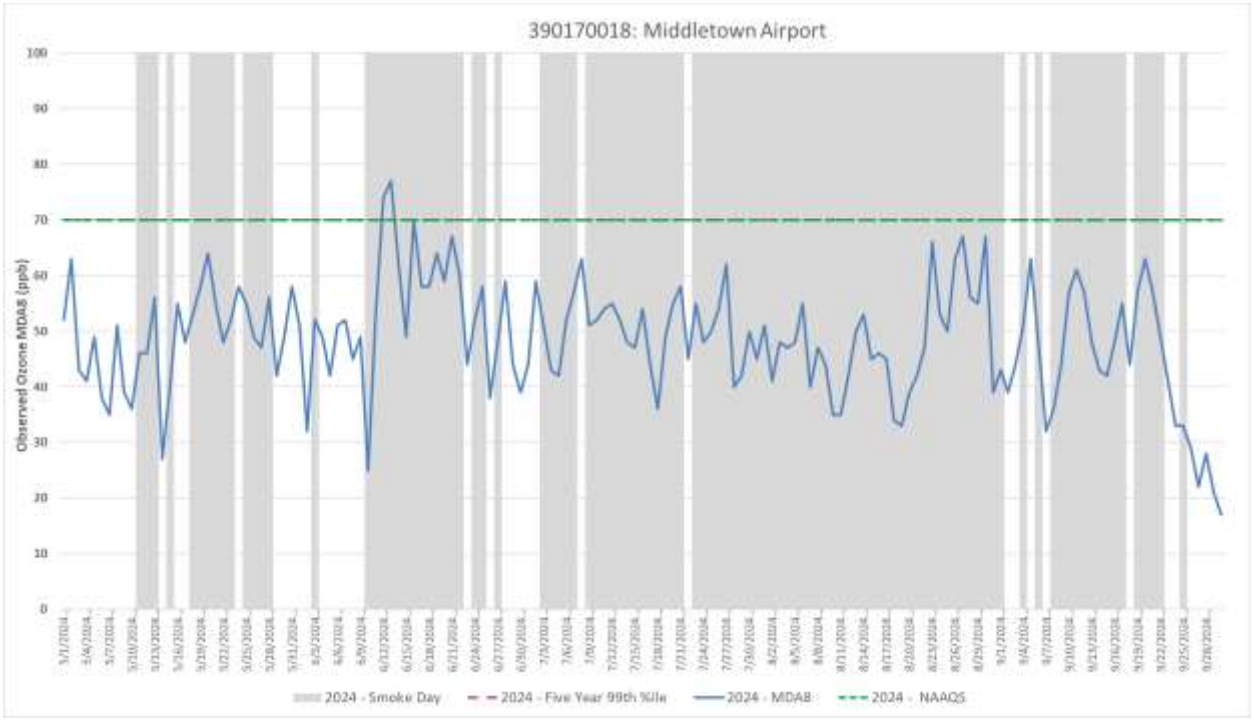
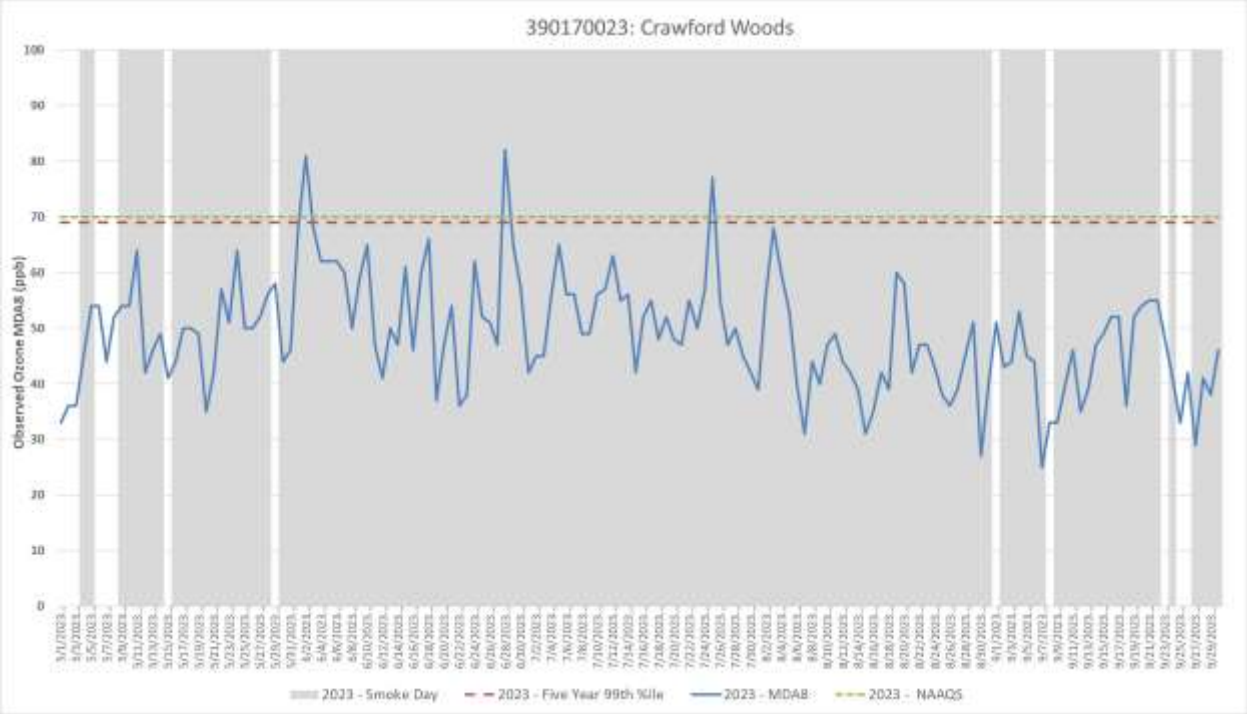




**Figure 50. May-September 2023 (top) and 2024 (bottom) time series of MDA8 ozone concentrations, 5-year 99th percentile values, and dates with NOAA HMS smoke indications at monitor 390170018.**



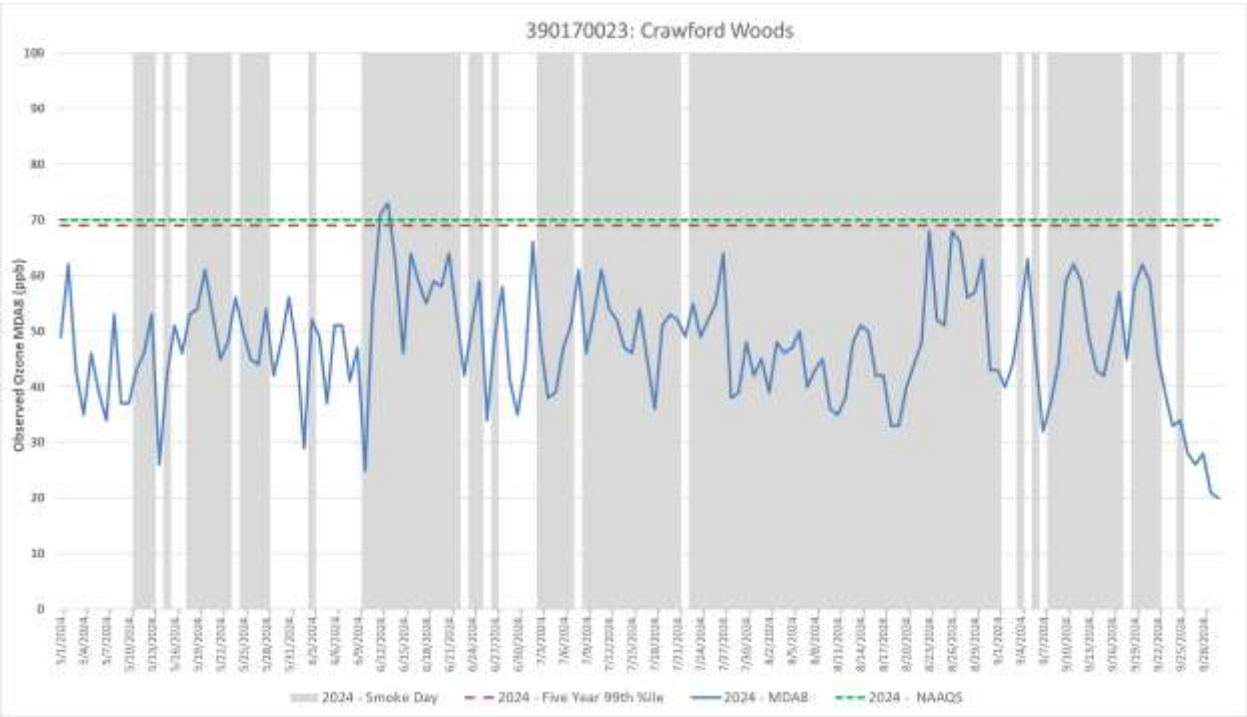
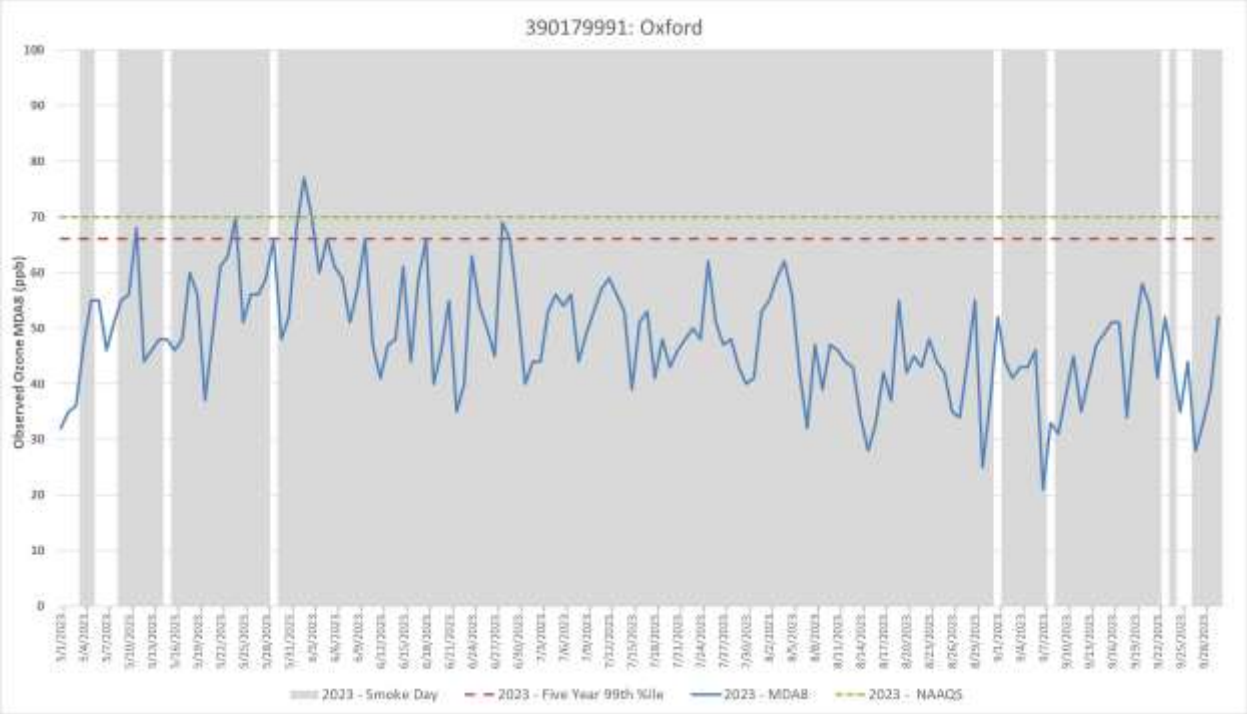




**Figure 51. May-September 2023 (top) and 2024 (bottom) time series of MDA8 ozone concentrations, 5-year 99$^{th}$ percentile values, and dates with NOAA HMS smoke indications at monitor 390170023.**



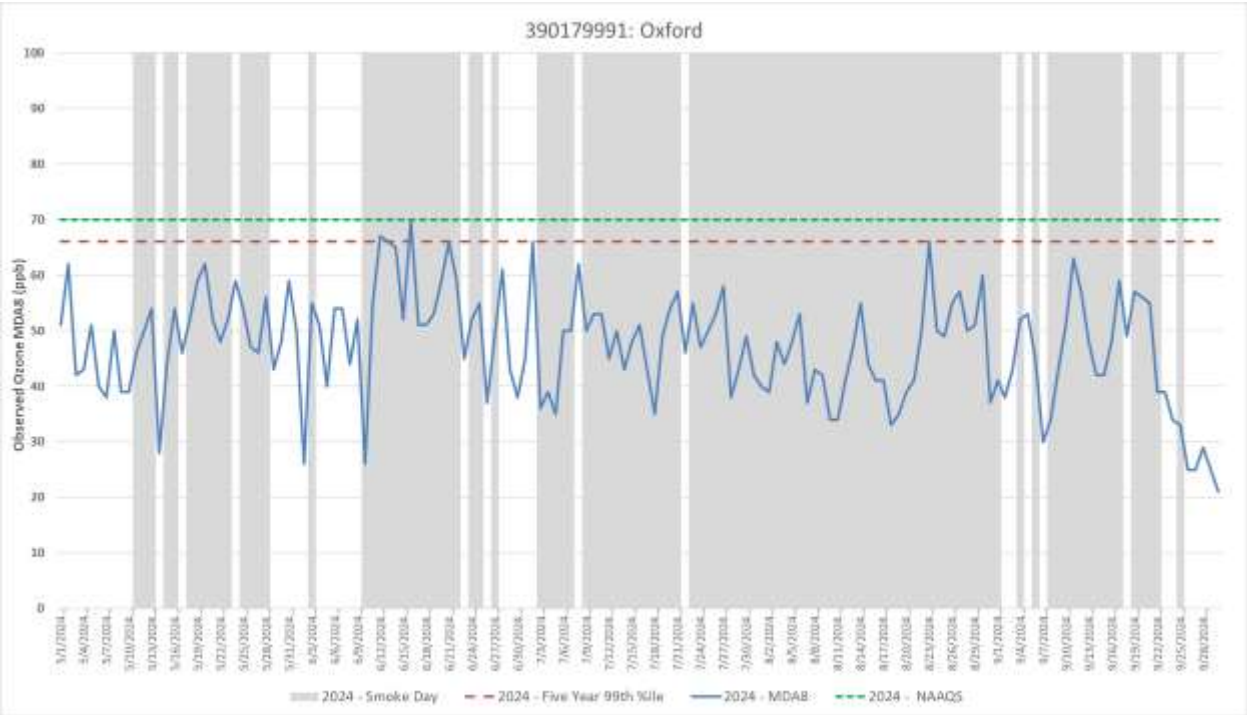
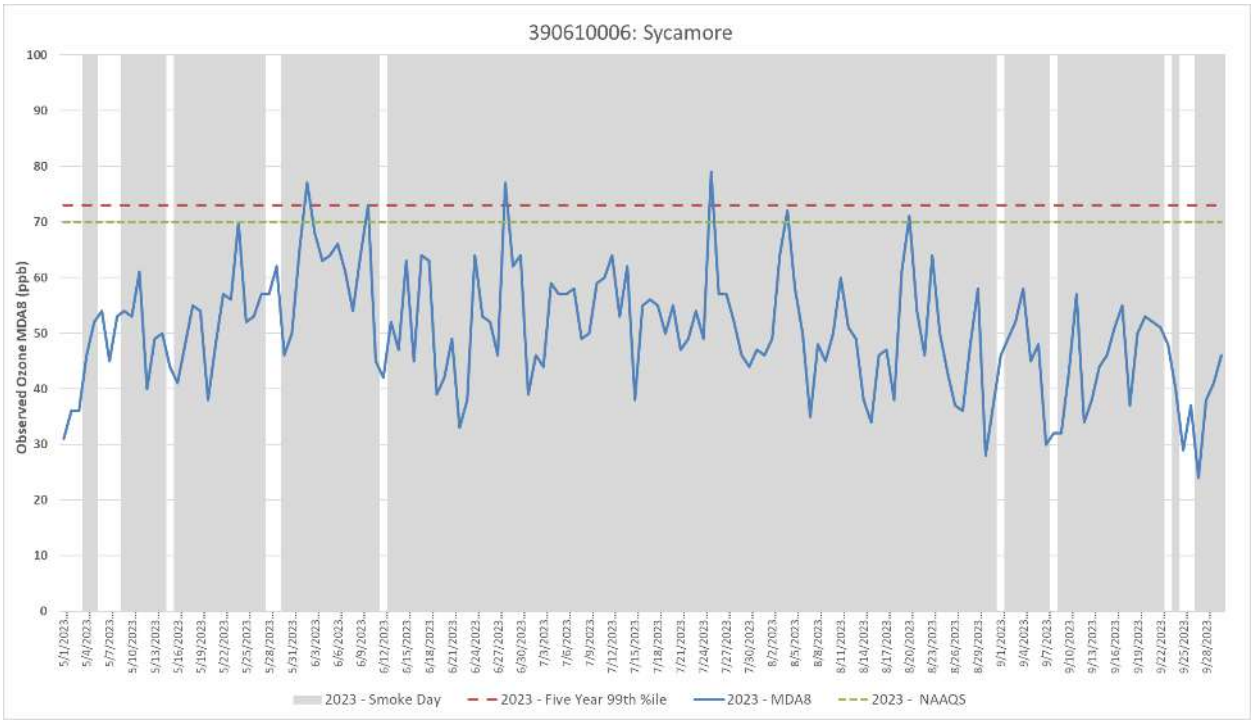




**Figure 52. May-September 2023 (top) and 2024 (bottom) time series of MDA8 ozone concentrations, 5-year 99$^{th}$ percentile values, and dates with NOAA HMS smoke indications at monitor 390179991.**


**Figure 53. May-September 2023 (top) and 2024 (bottom) time series of MDA8 ozone concentrations, 5-year 99$^{th}$ percentile values, and dates with NOAA HMS smoke indications at monitor 390250022.**



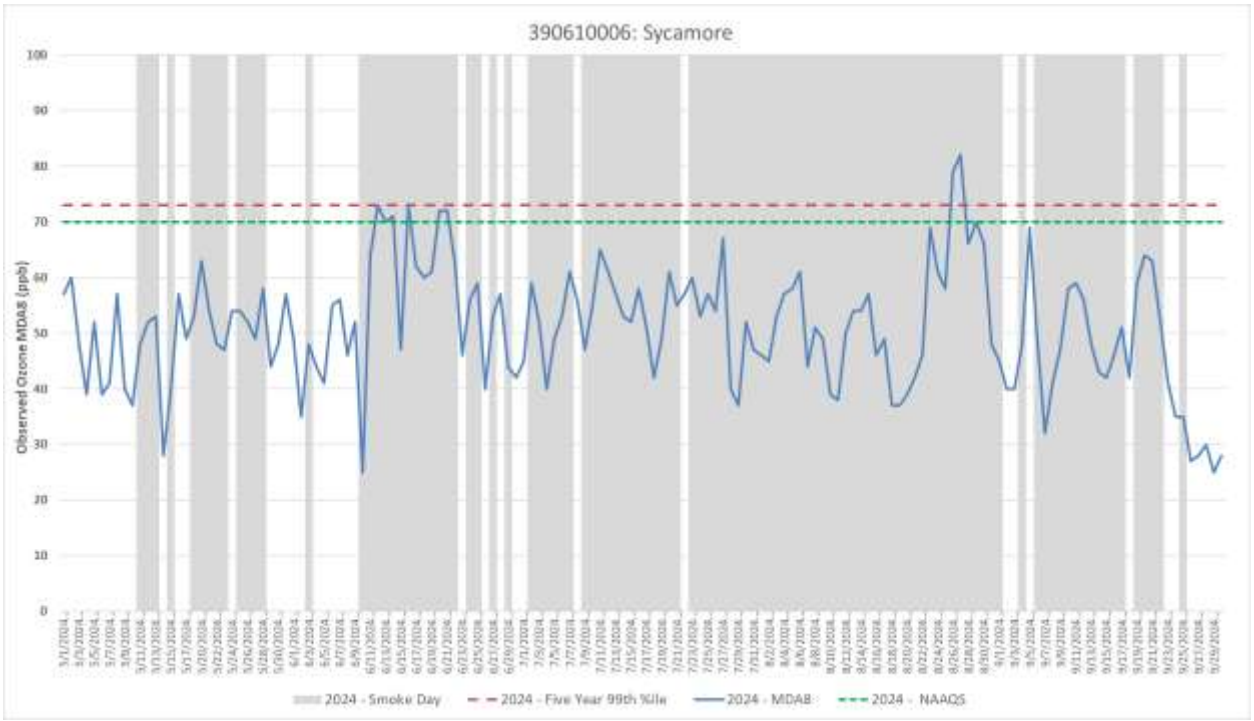
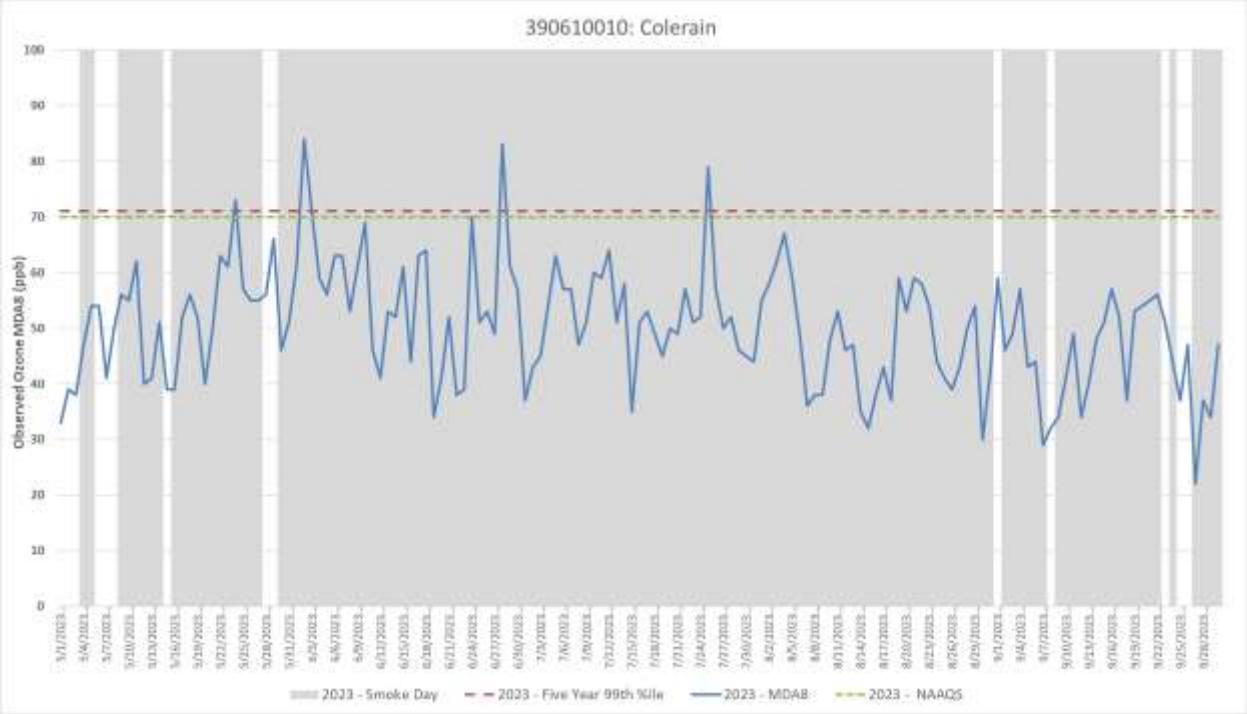




**Figure 54. May-September 2023 (top) and 2024 (bottom) time series of MDA8 ozone concentrations, 5-year 99$^{th}$ percentile values, and dates with NOAA HMS smoke indications at monitor 390610006.**



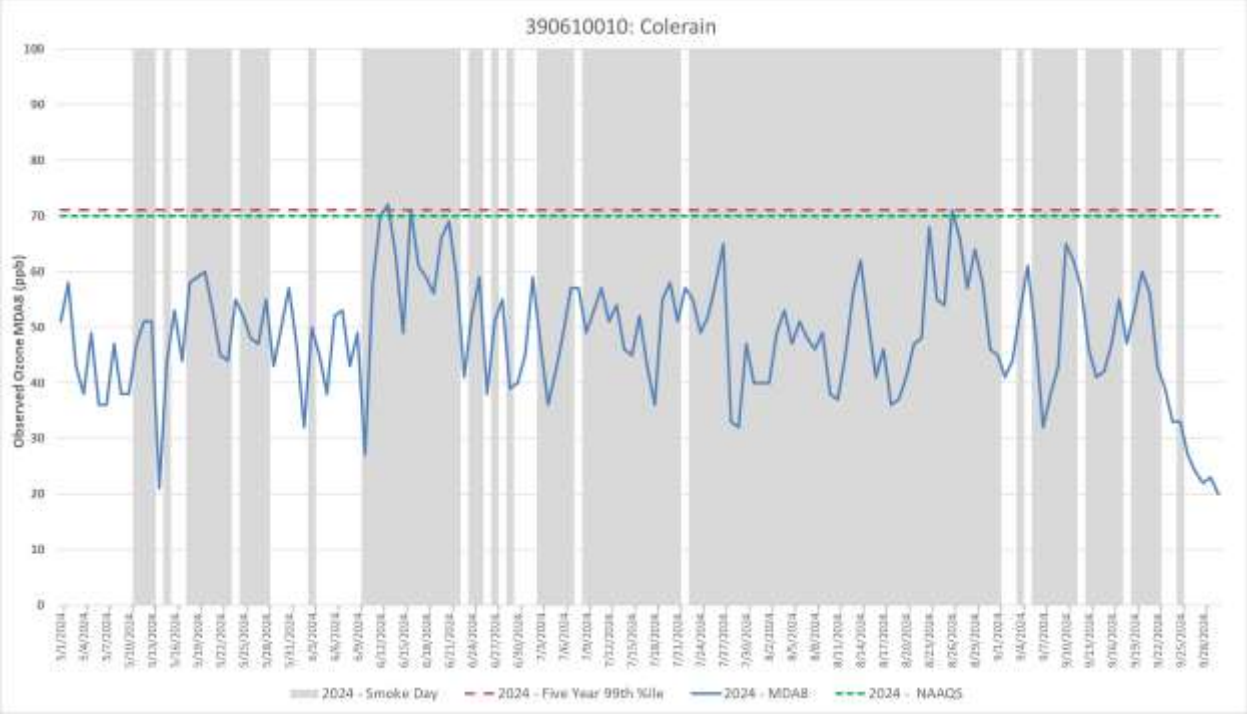
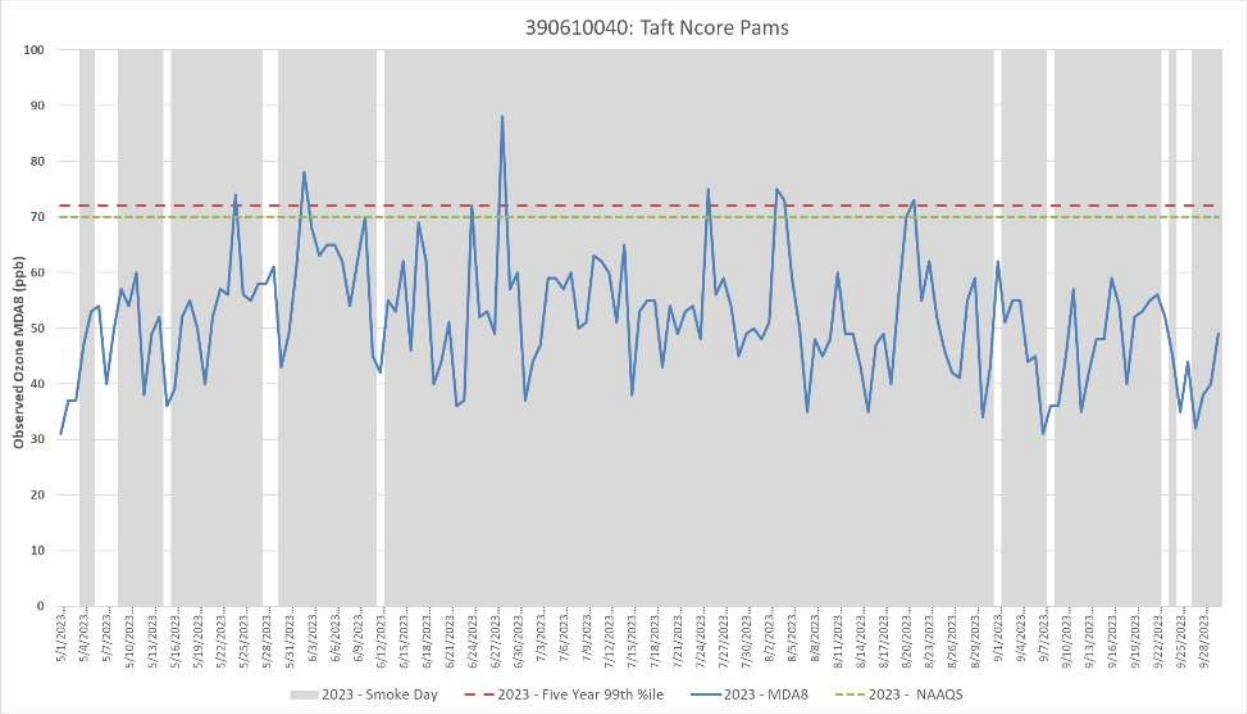




**Figure 55. May-September 2023 (top) and 2024 (bottom) time series of MDA8 ozone concentrations, 5-year 99$^{th}$ percentile values, and dates with NOAA HMS smoke indications at monitor 390610010.**



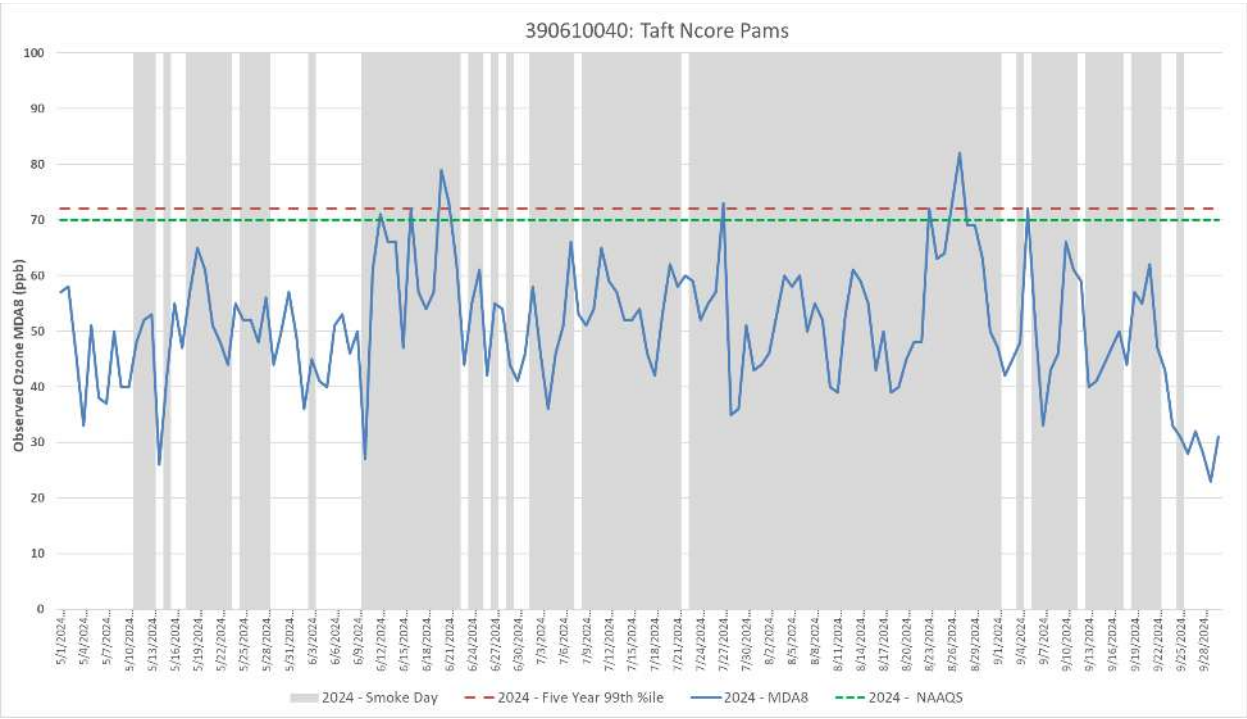
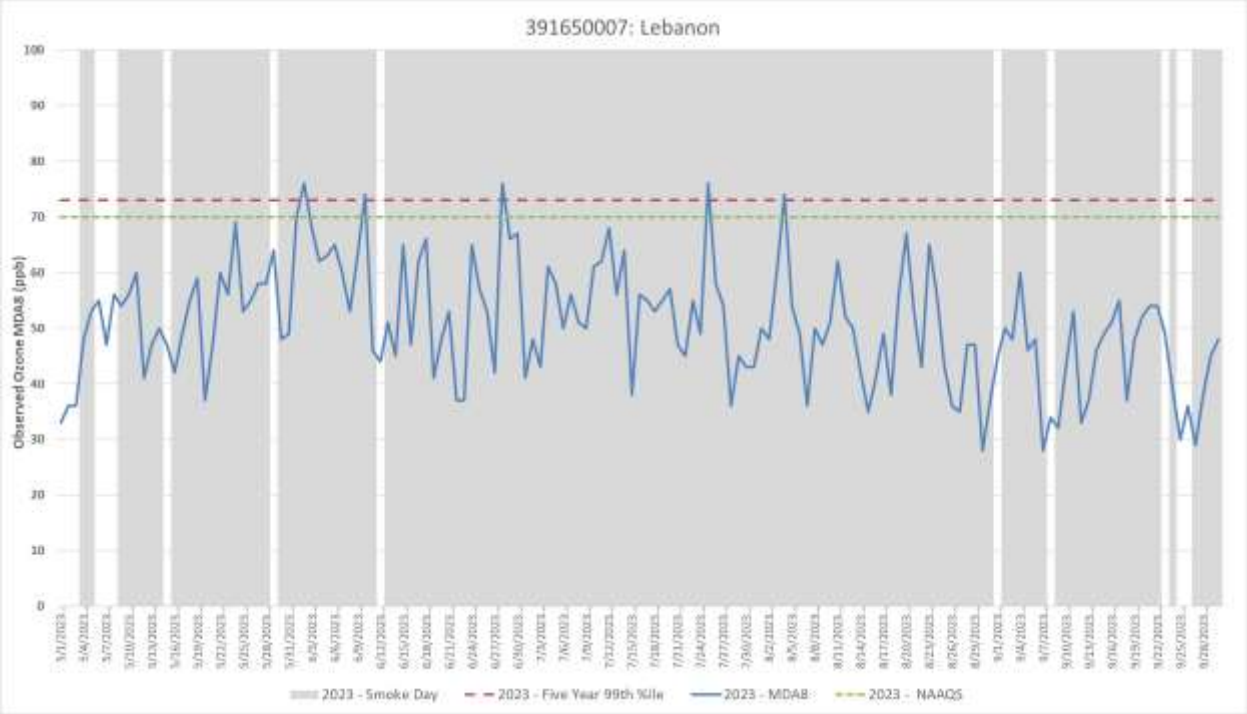




**Figure 56. May-September 2023 (top) and 2024 (bottom) time series of MDA8 ozone concentrations, 5-year 99th percentile values, and dates with NOAA HMS smoke indications at monitor 390610040.**



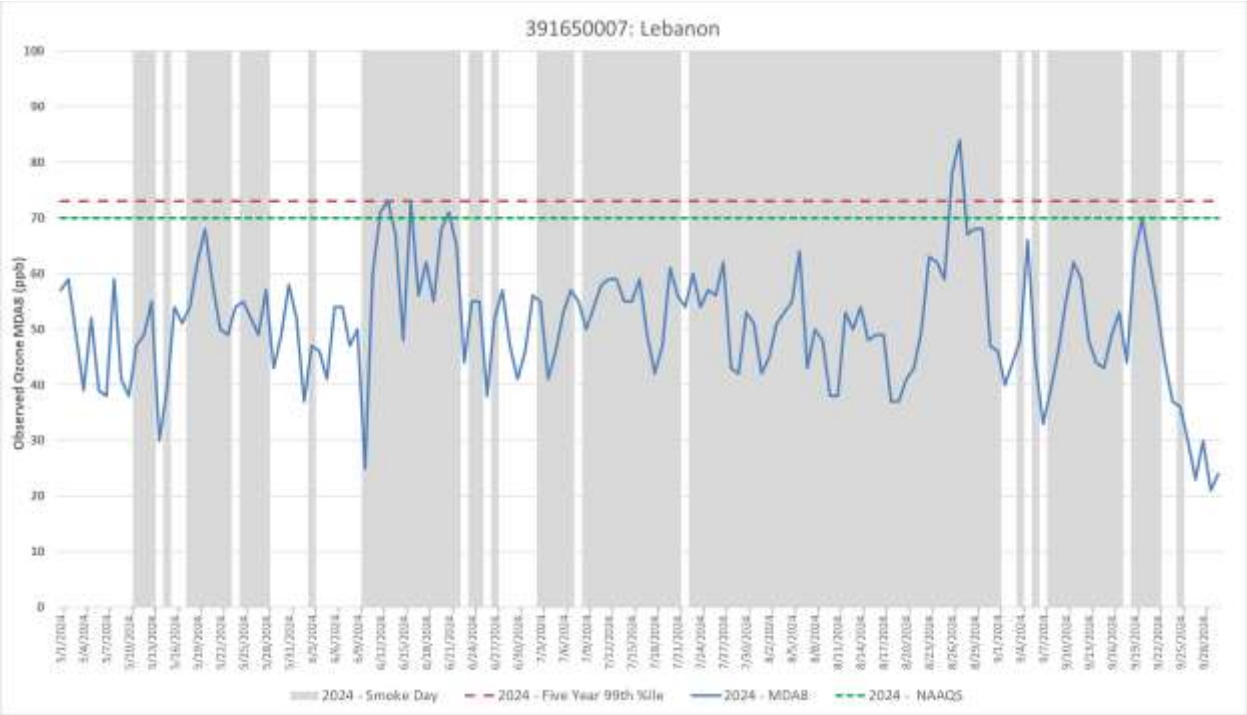
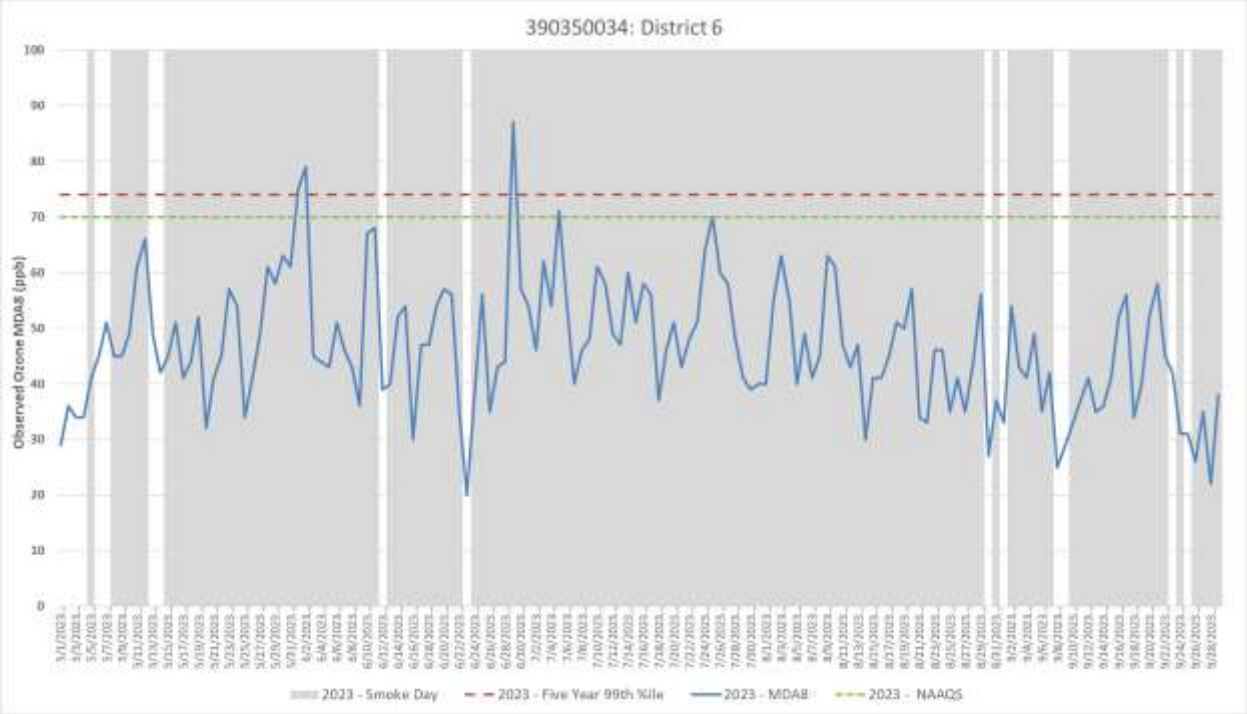




**Figure 57. May-September 2023 (top) and 2024 (bottom) time series of MDA8 ozone concentrations, 5-year 99$^{th}$ percentile values, and dates with NOAA HMS smoke indications at monitor 391650007.**



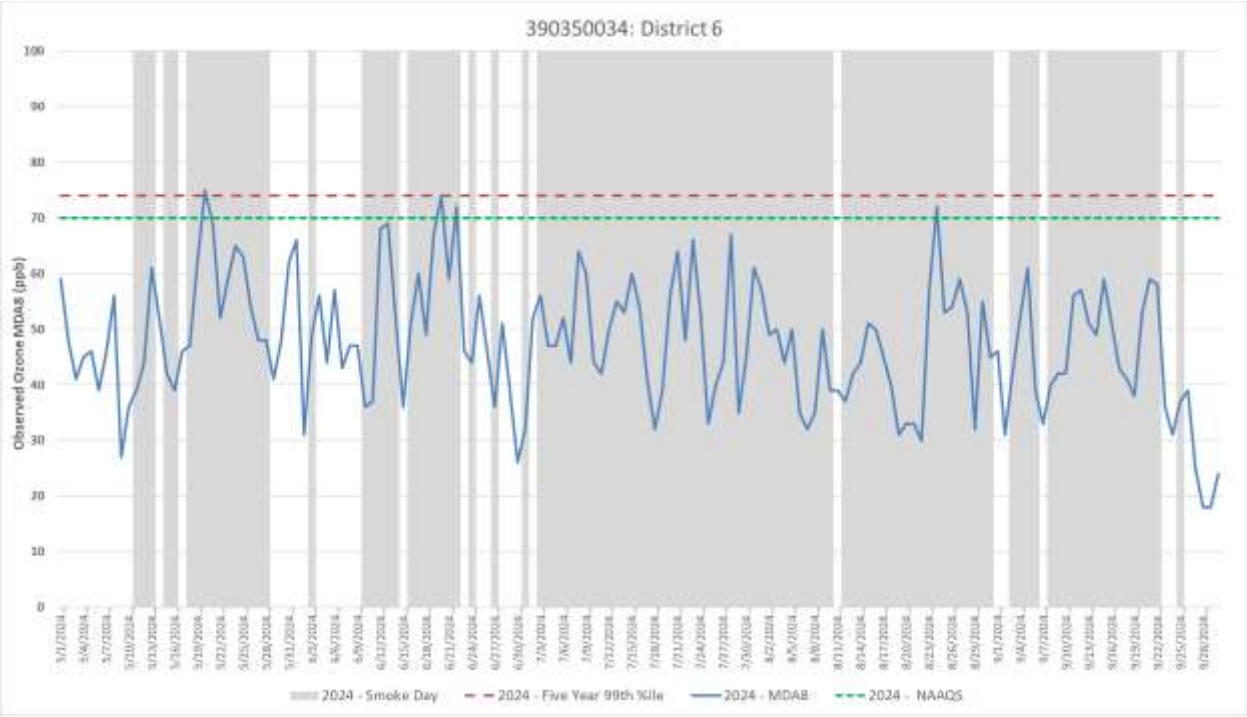
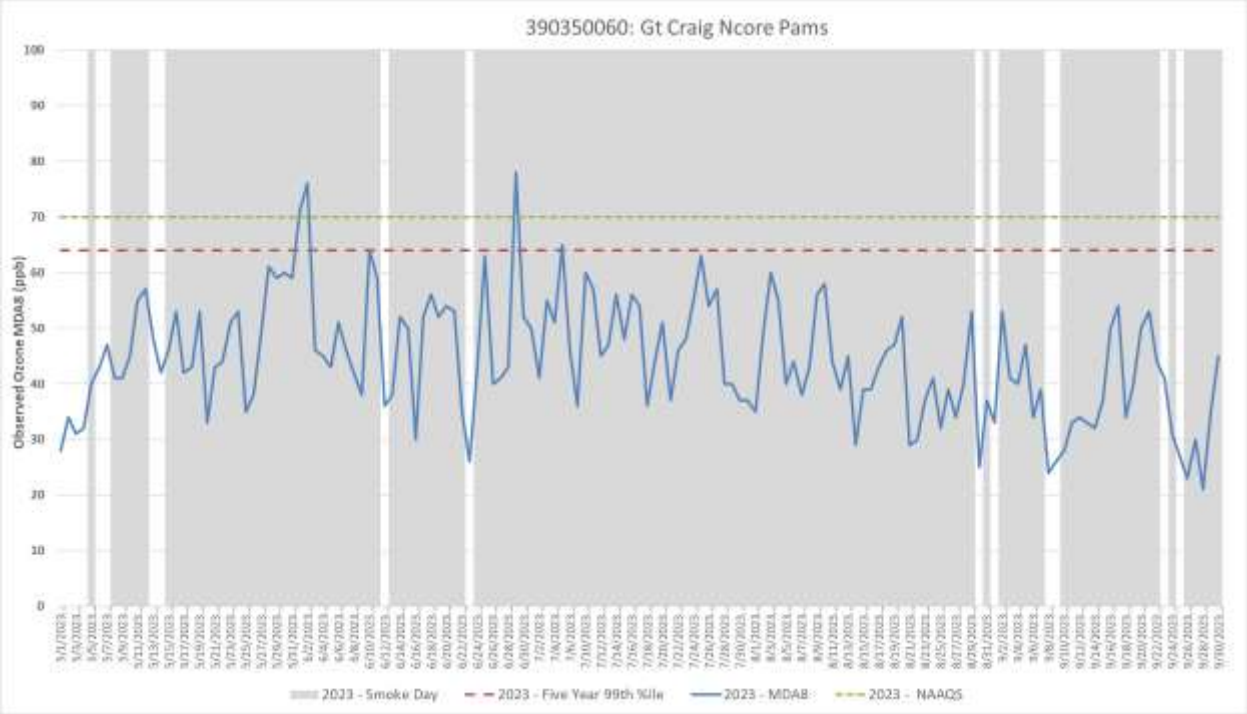




**Figure 58. May-September 2023 (top) and 2024 (bottom) time series of MDA8 ozone concentrations, 5-year 99th percentile values, and dates with NOAA HMS smoke indications at monitor 390350034.**



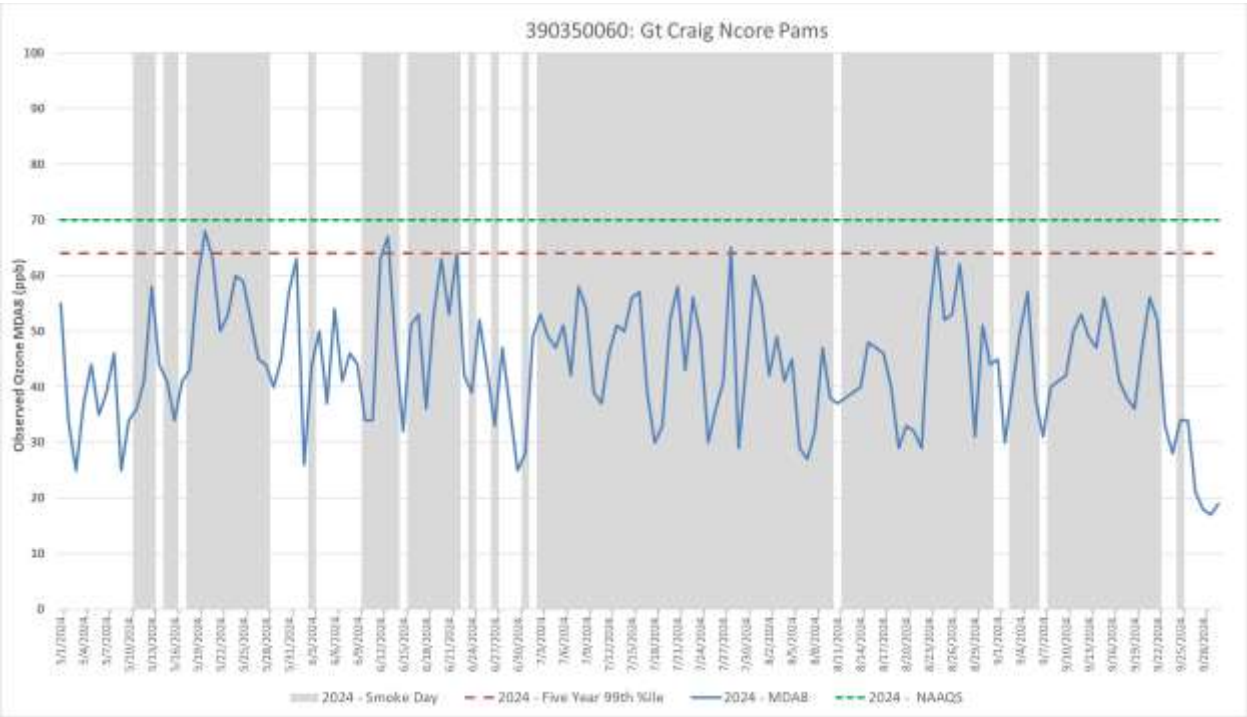
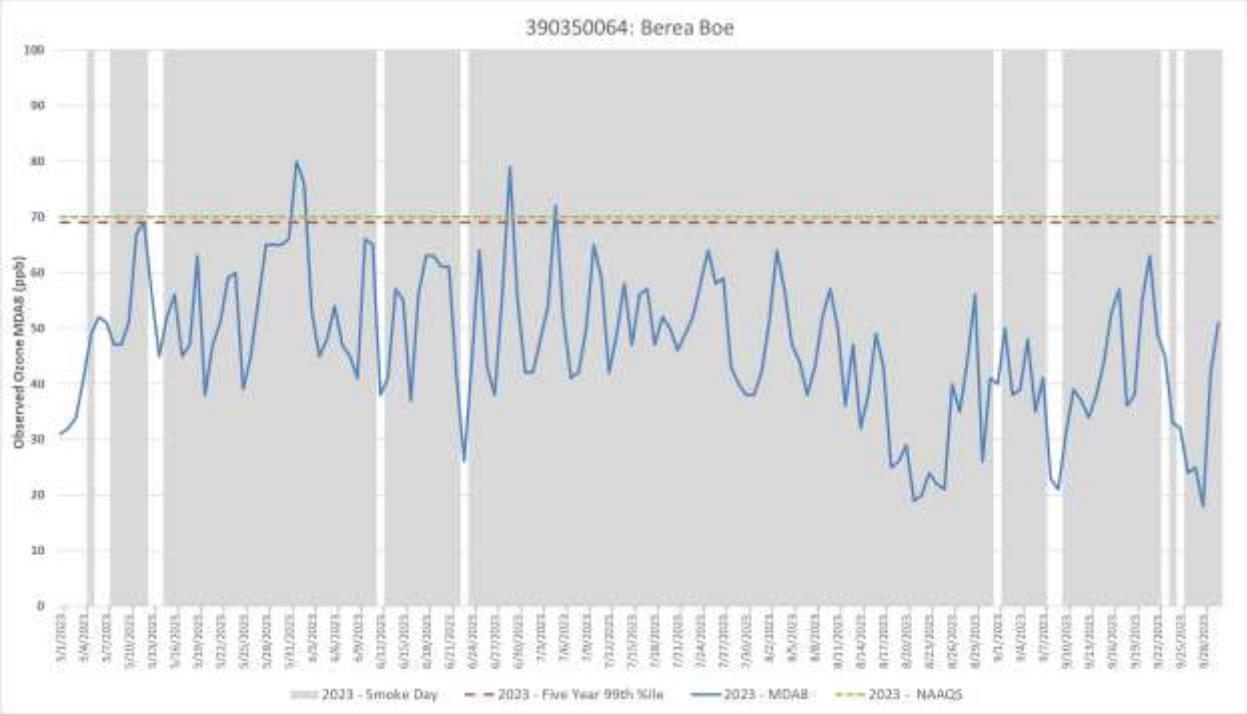




**Figure 59. May-September 2023 (top) and 2024 (bottom) time series of MDA8 ozone concentrations, 5-year 99$^{th}$ percentile values, and dates with NOAA HMS smoke indications at monitor 390350060.**



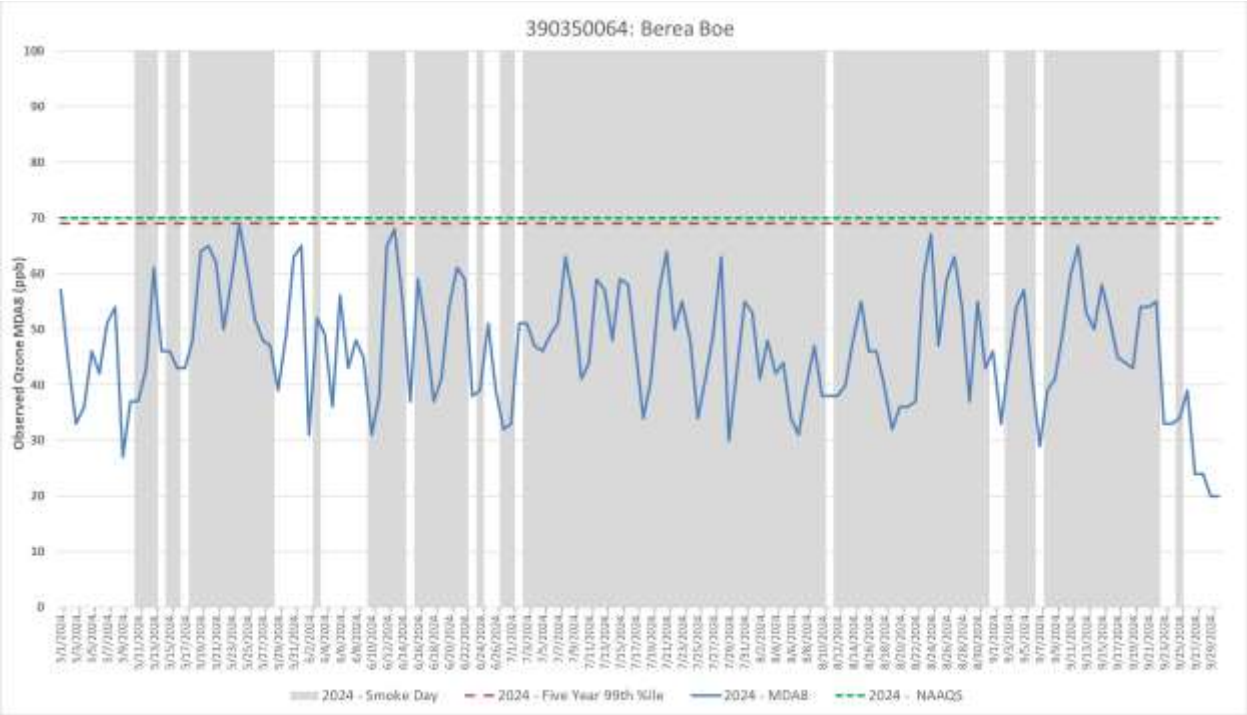
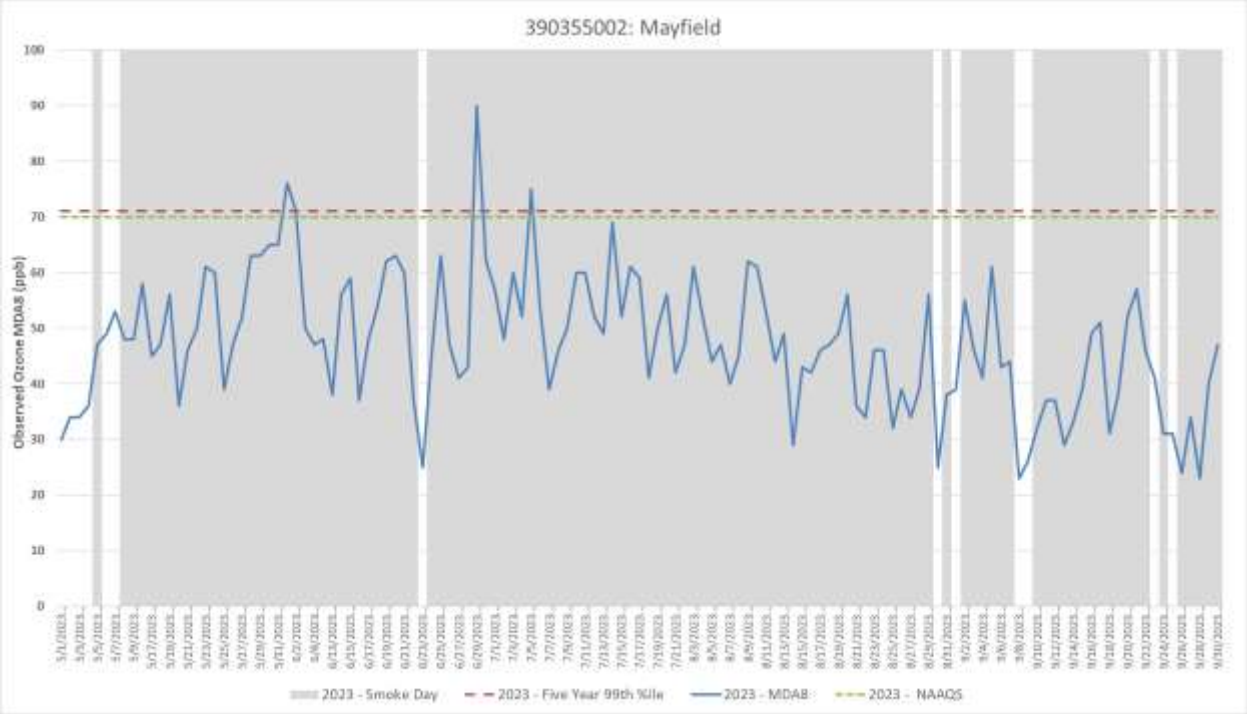




**Figure 60. May-September 2023 (top) and 2024 (bottom) time series of MDA8 ozone concentrations, 5-year 99$^{th}$ percentile values, and dates with NOAA HMS smoke indications at monitor 390350064.**



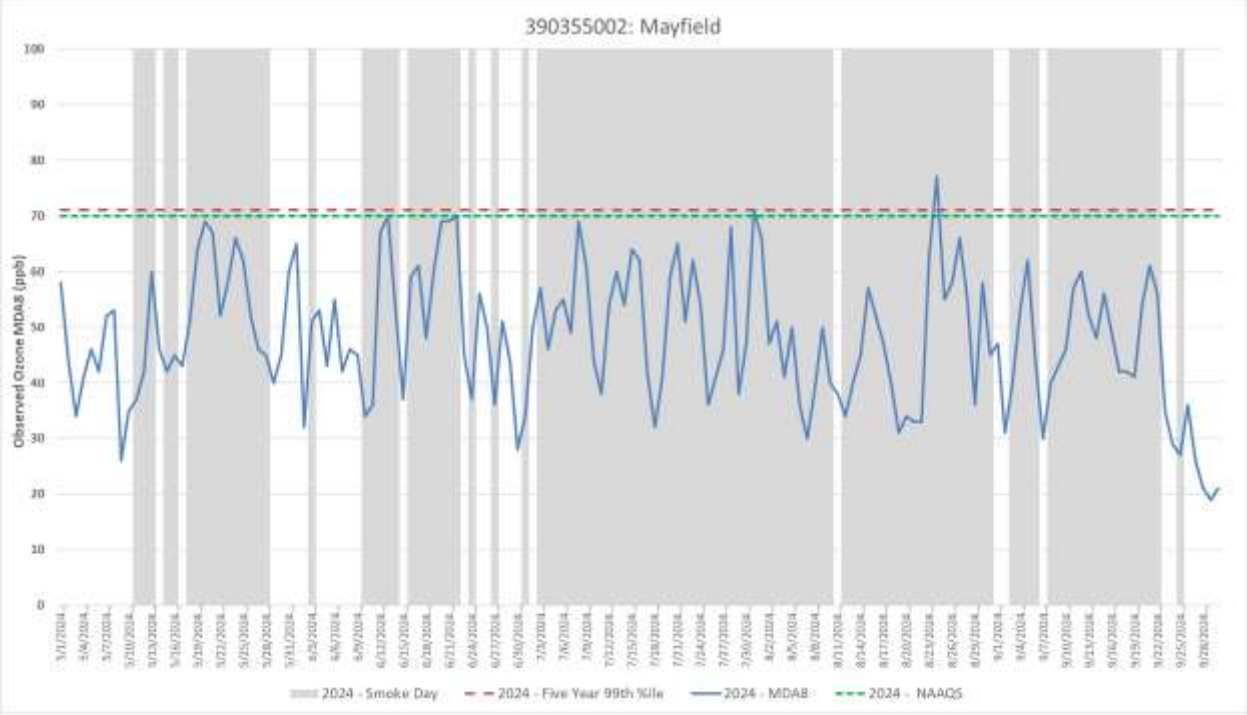
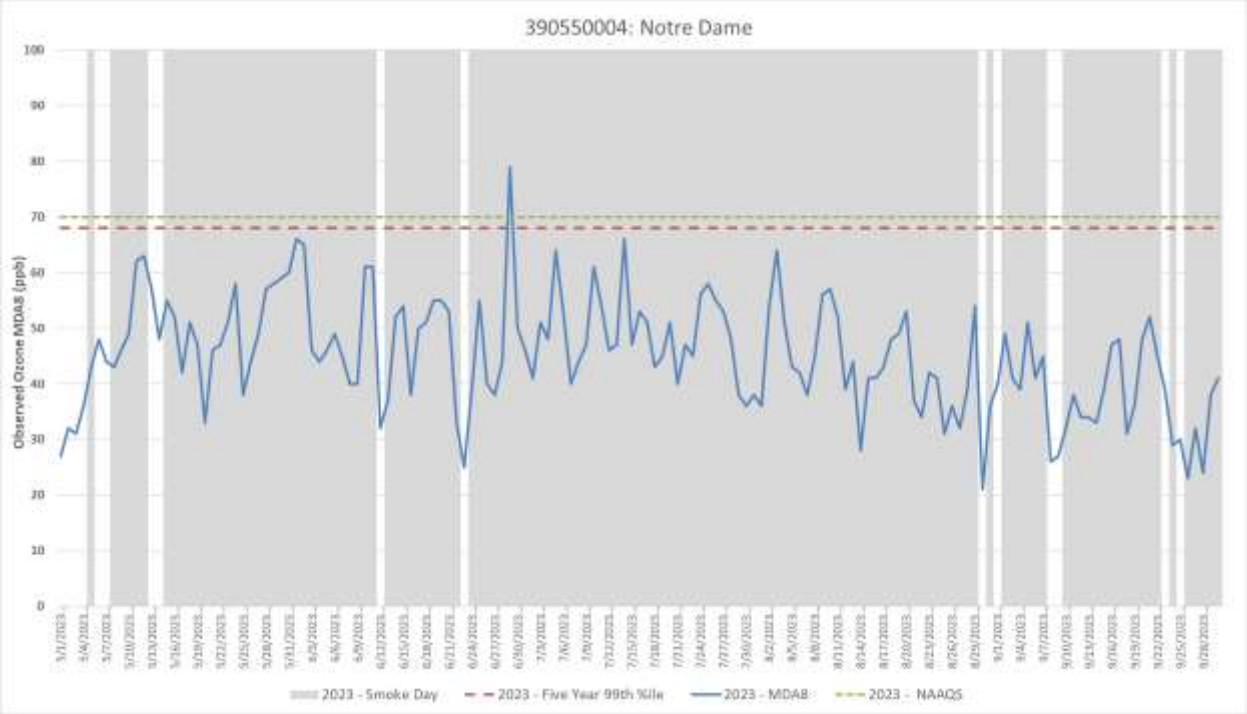




**Figure 61. May-September 2023 (top) and 2024 (bottom) time series of MDA8 ozone concentrations, 5-year 99$^{th}$ percentile values, and dates with NOAA HMS smoke indications at monitor 390355002.**



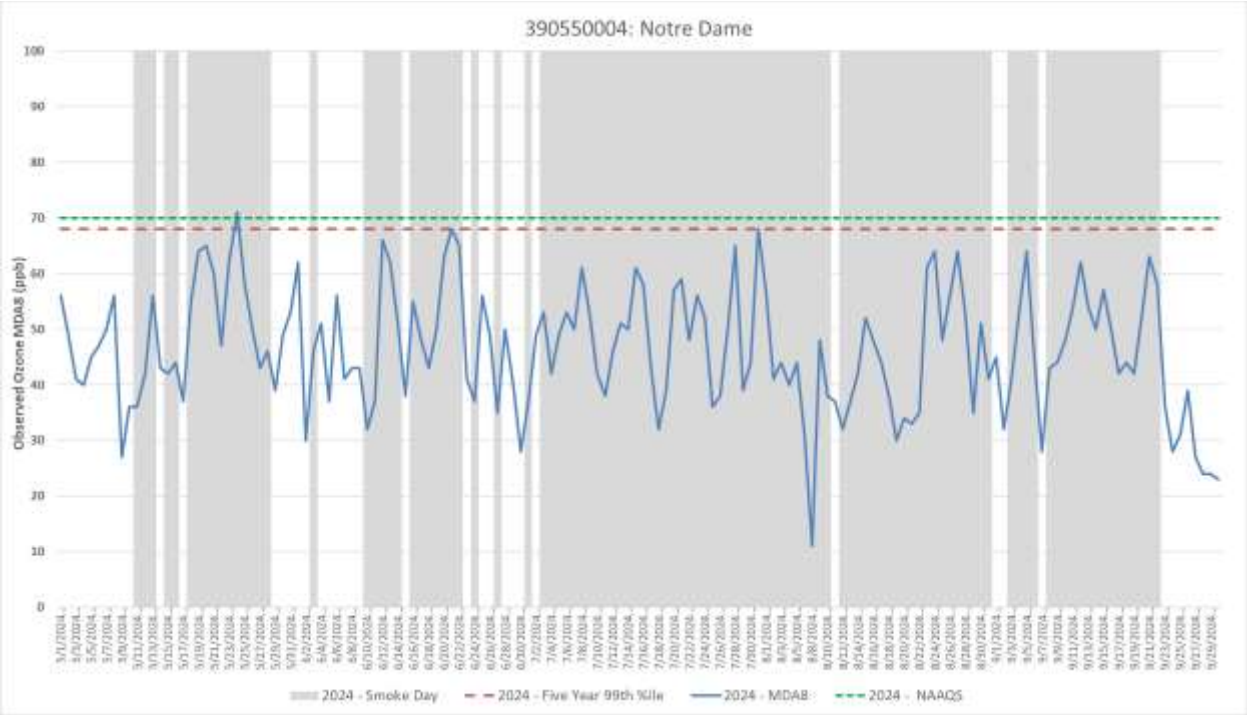
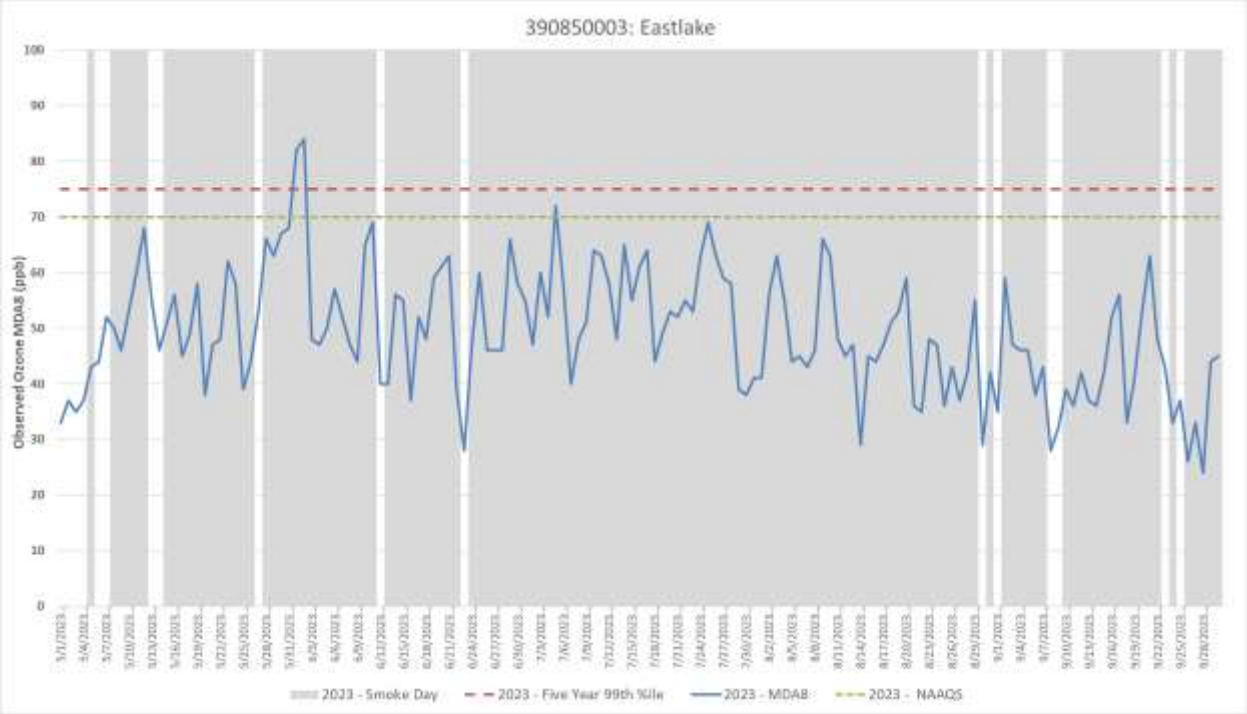




**Figure 62. May-September 2023 (top) and 2024 (bottom) time series of MDA8 ozone concentrations, 5-year 99$^{th}$ percentile values, and dates with NOAA HMS smoke indications at monitor 390550004.**



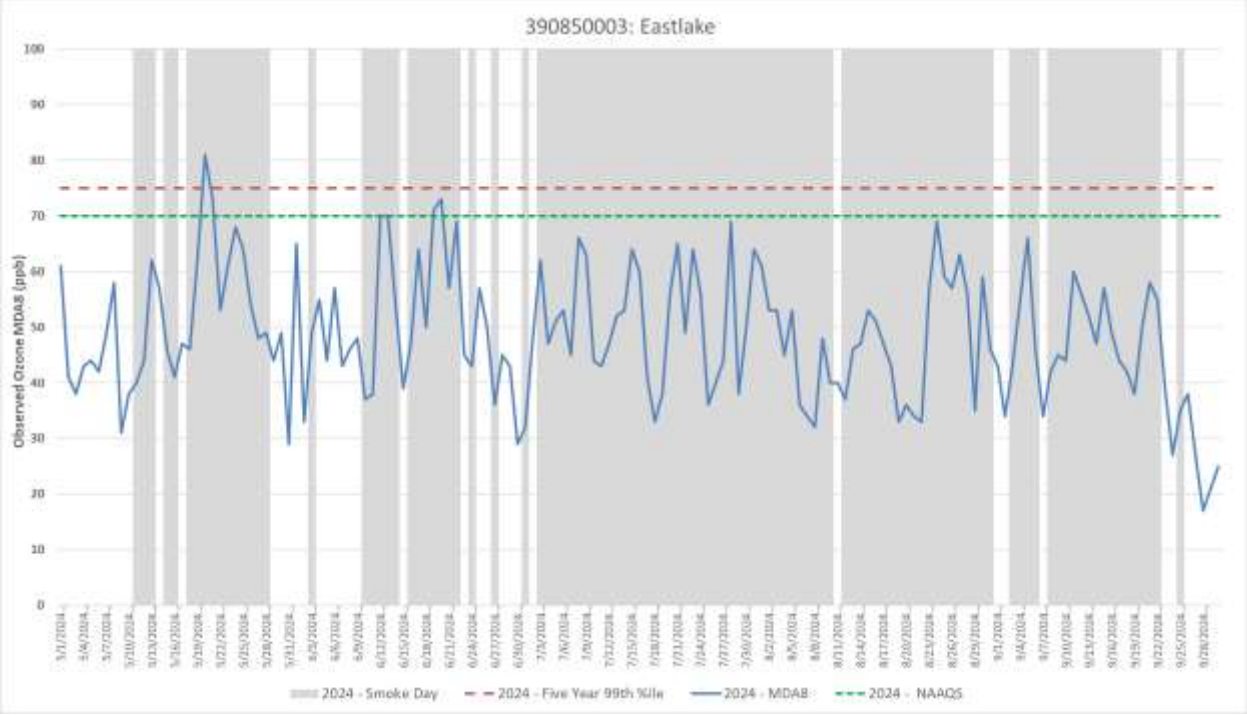
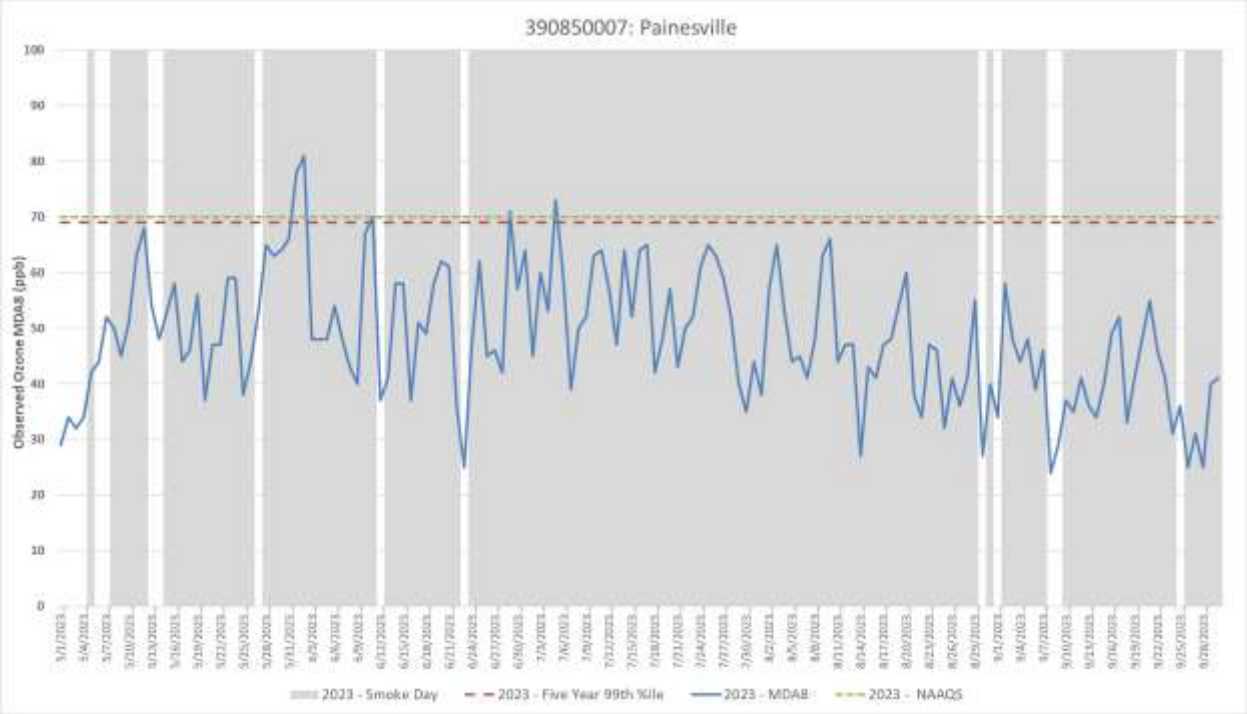




**Figure 63. May-September 2023 (top) and 2024 (bottom) time series of MDA8 ozone concentrations, 5-year 99th percentile values, and dates with NOAA HMS smoke indications at monitor 390850003.**



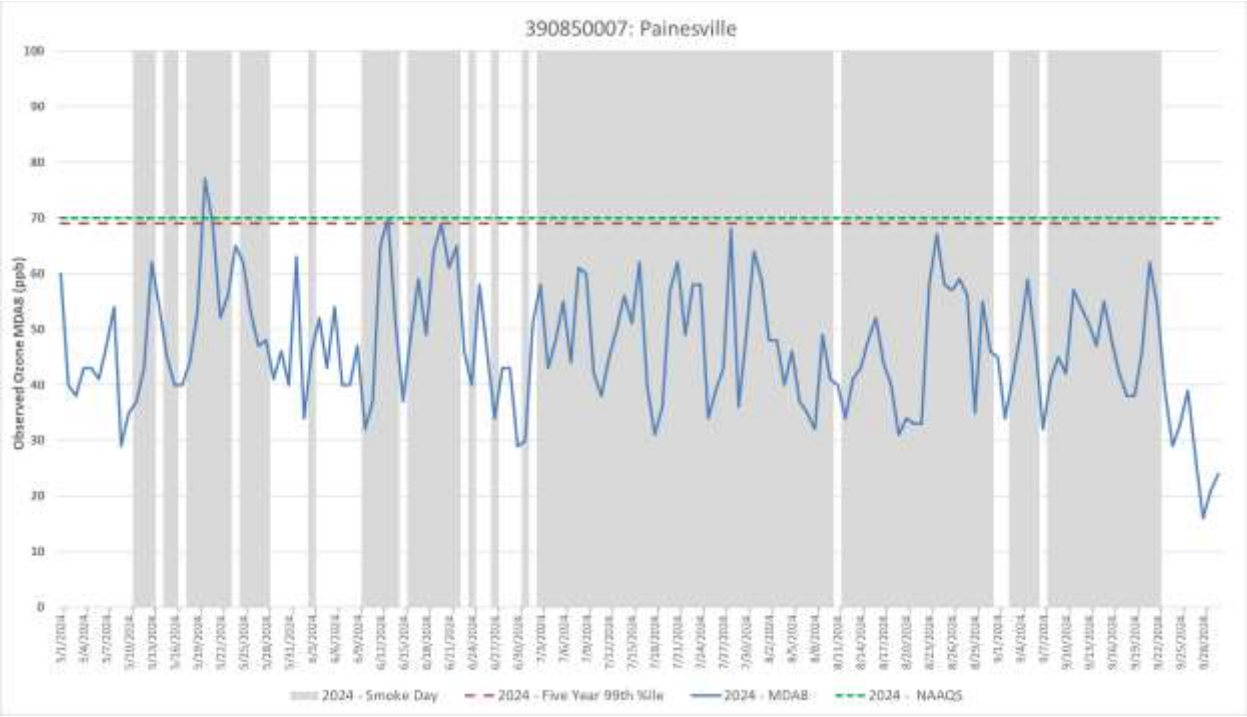
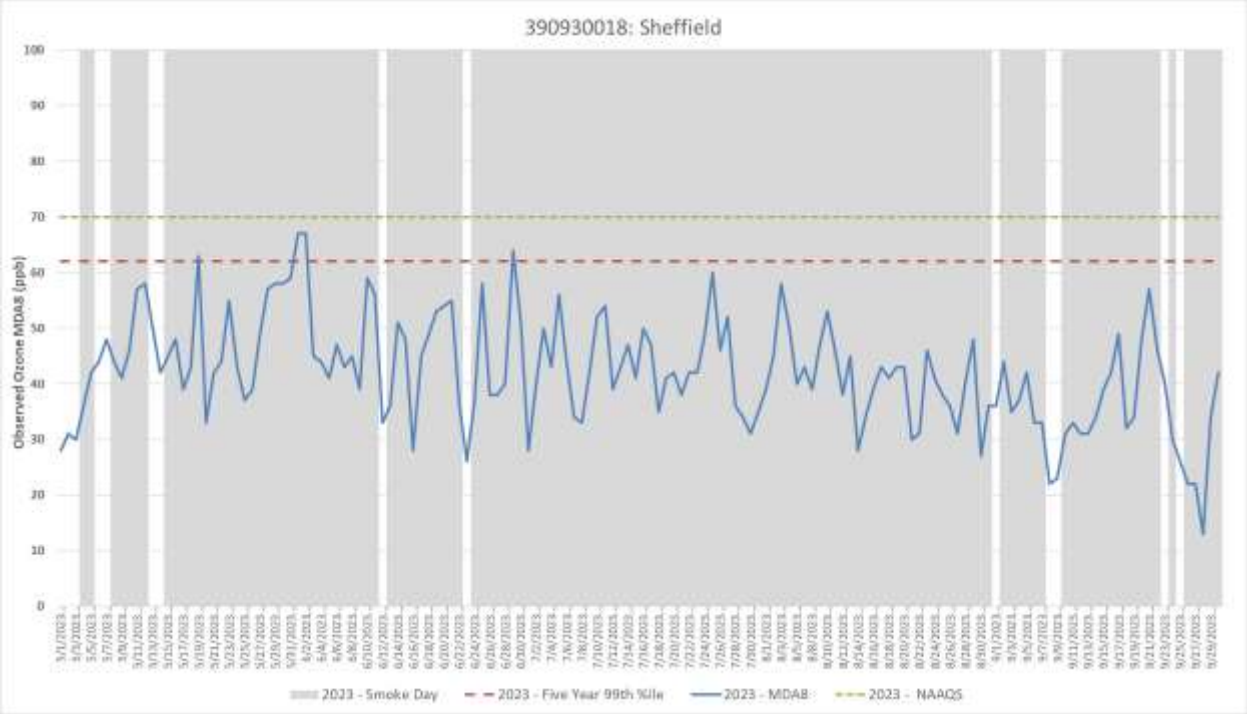




**Figure 64. May-September 2023 (top) and 2024 (bottom) time series of MDA8 ozone concentrations, 5-year 99$^{th}$ percentile values, and dates with NOAA HMS smoke indications at monitor 390850007.**



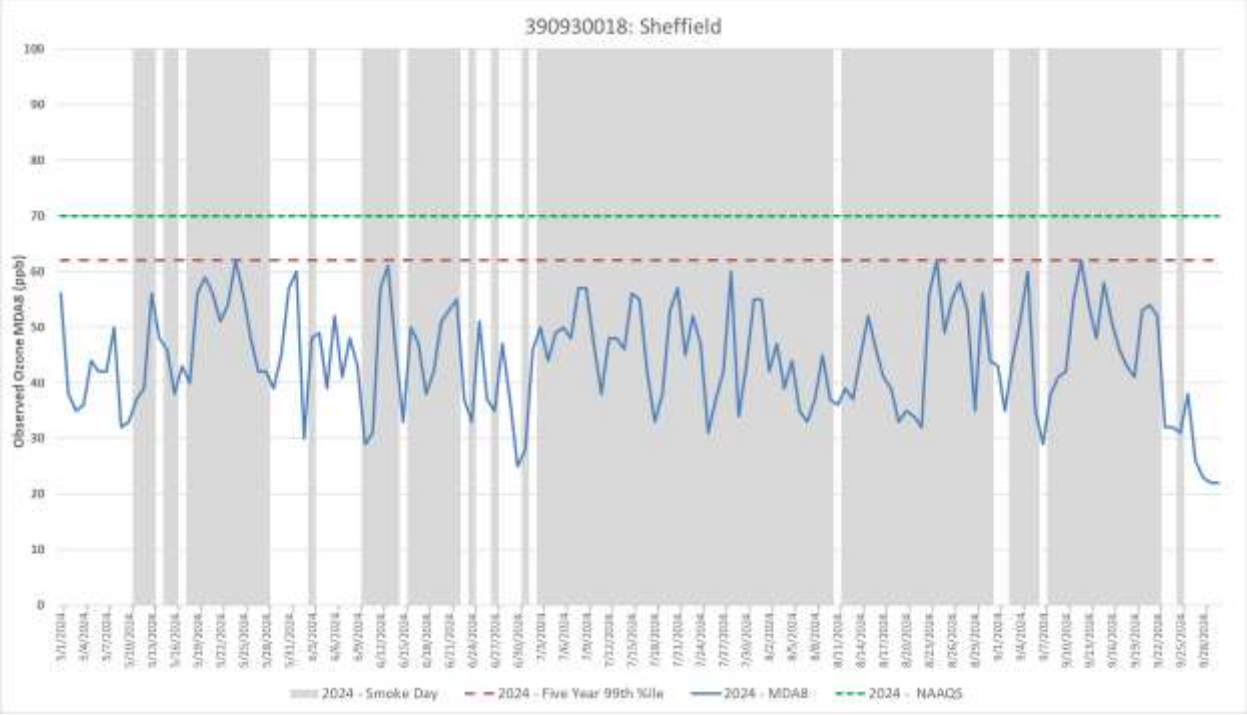
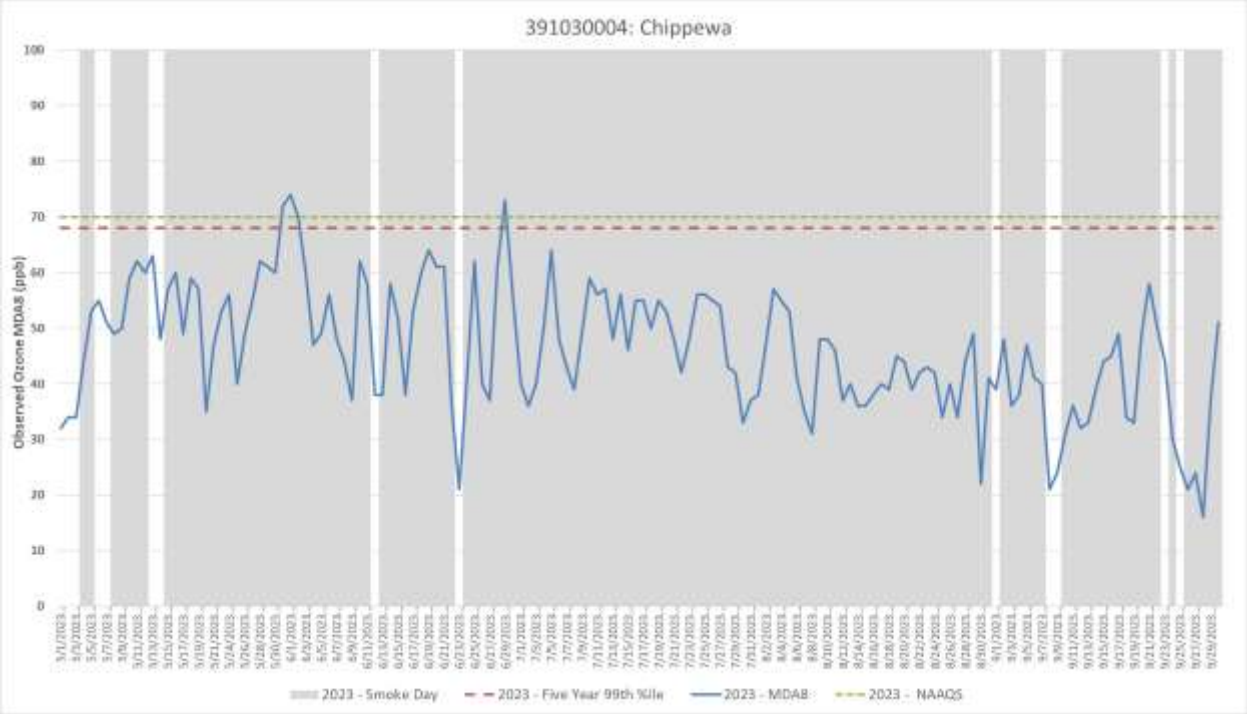




**Figure 65. May-September 2023 (top) and 2024 (bottom) time series of MDA8 ozone concentrations, 5-year 99$^{th}$ percentile values, and dates with NOAA HMS smoke indications at monitor 390930018.**



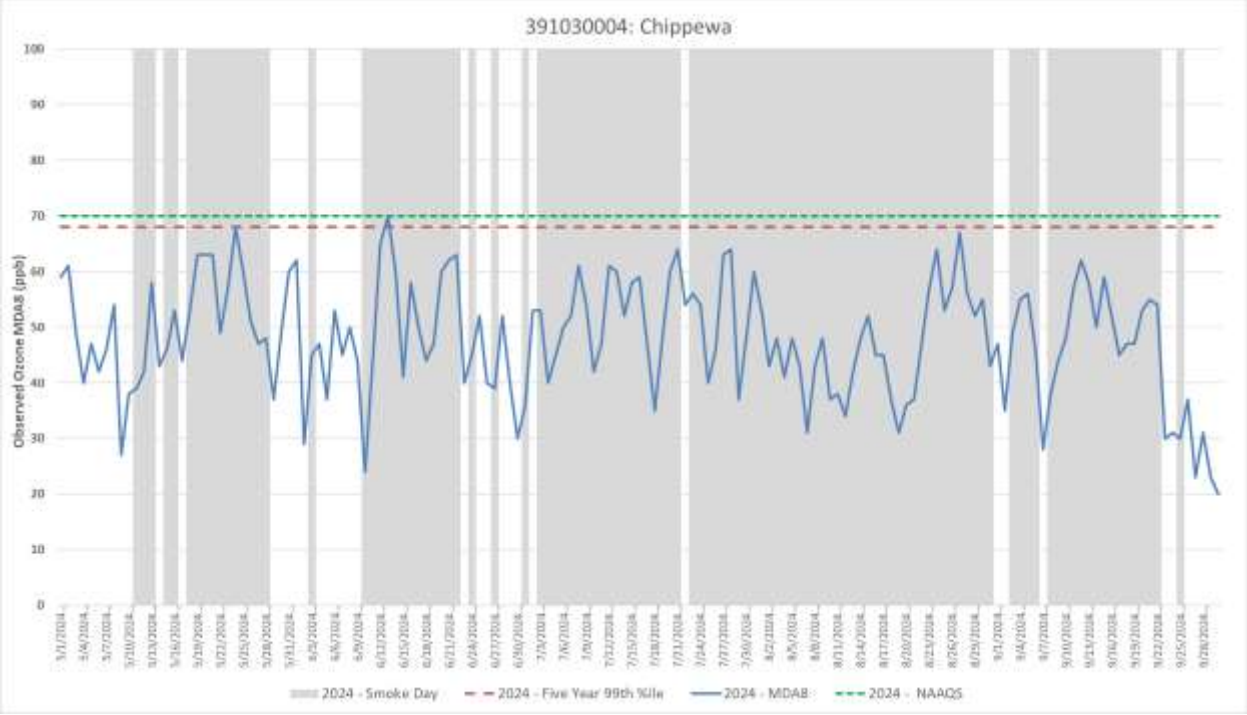




**Figure 66. May-September 2023 (top) and 2024 (bottom) time series of MDA8 ozone concentrations, 5-year 99$^{th}$ percentile values, and dates with NOAA HMS smoke indications at monitor 391030004.**

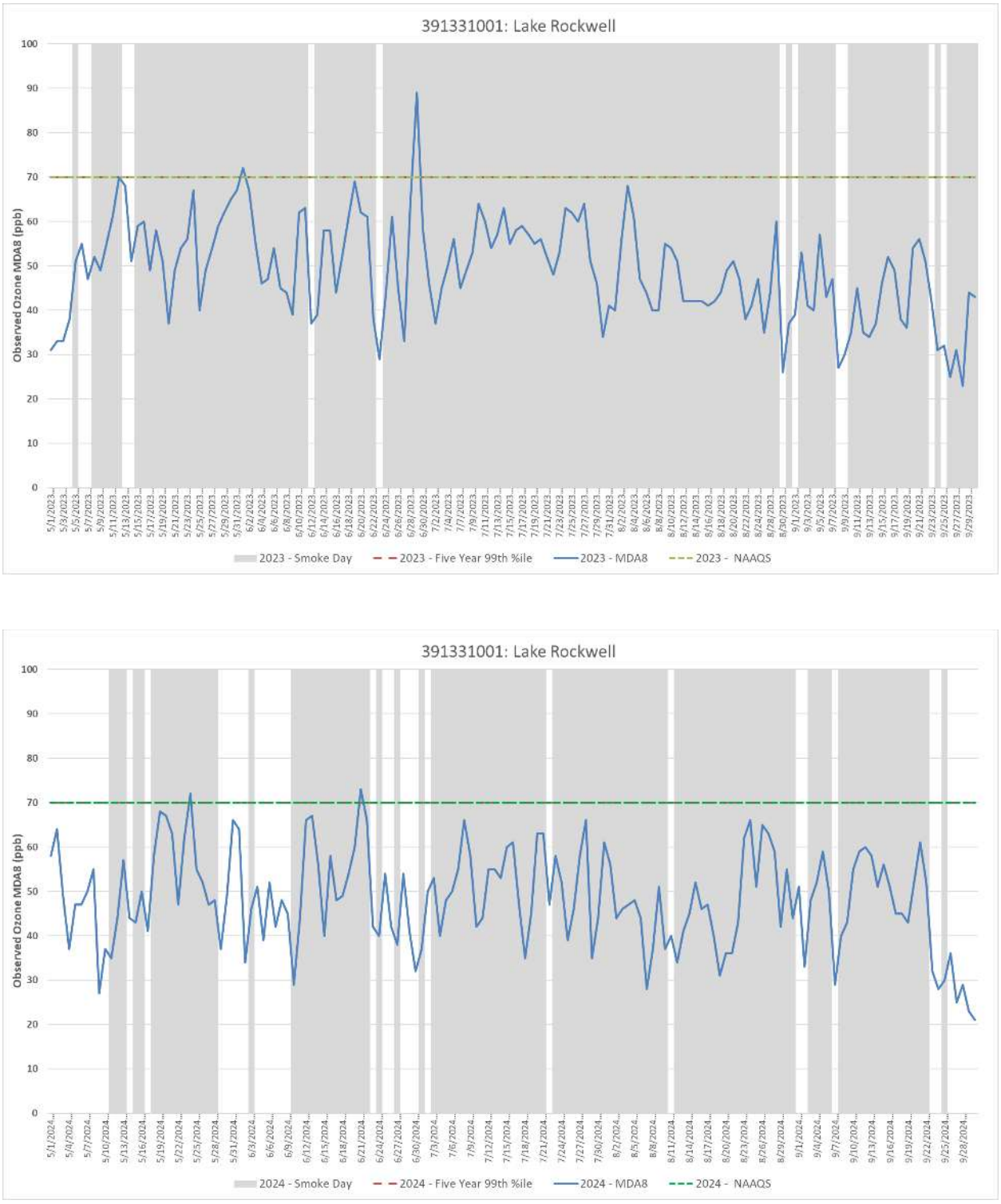
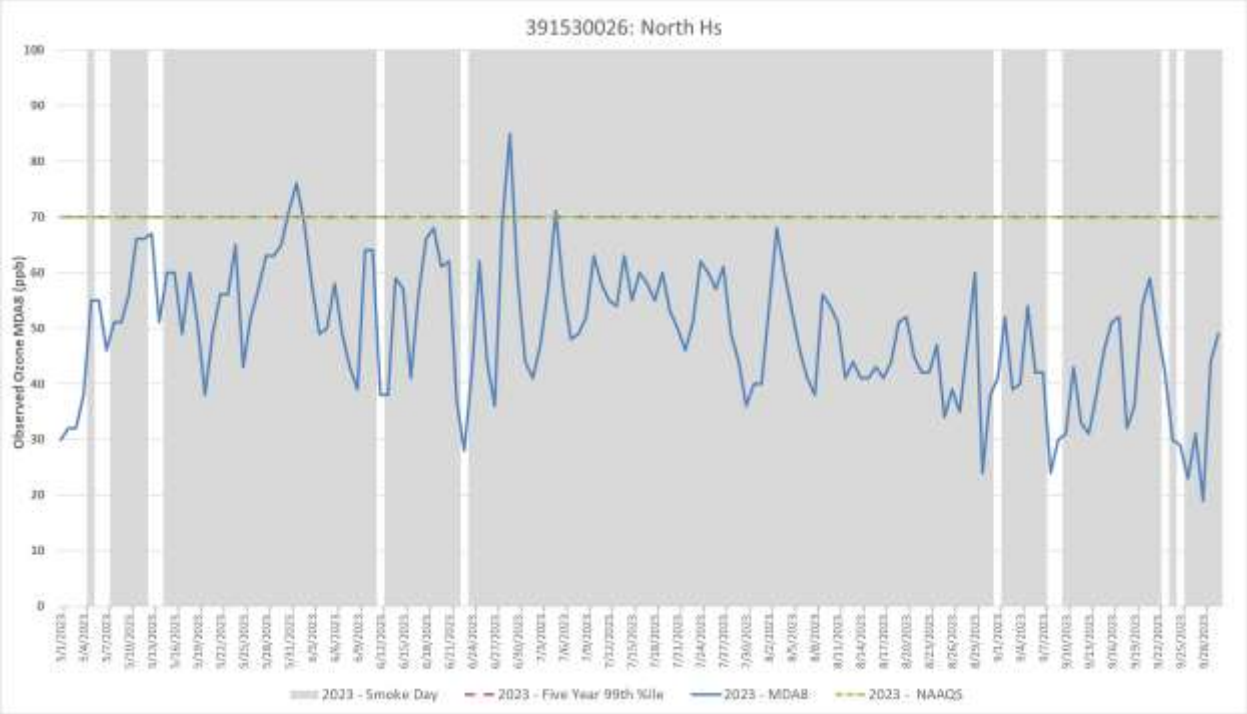



**Figure 67. May-September 2023 (top) and 2024 (bottom) time series of MDA8 ozone concentrations, 5-year 99$^{th}$ percentile values, and dates with NOAA HMS smoke indications at monitor 391331001.**



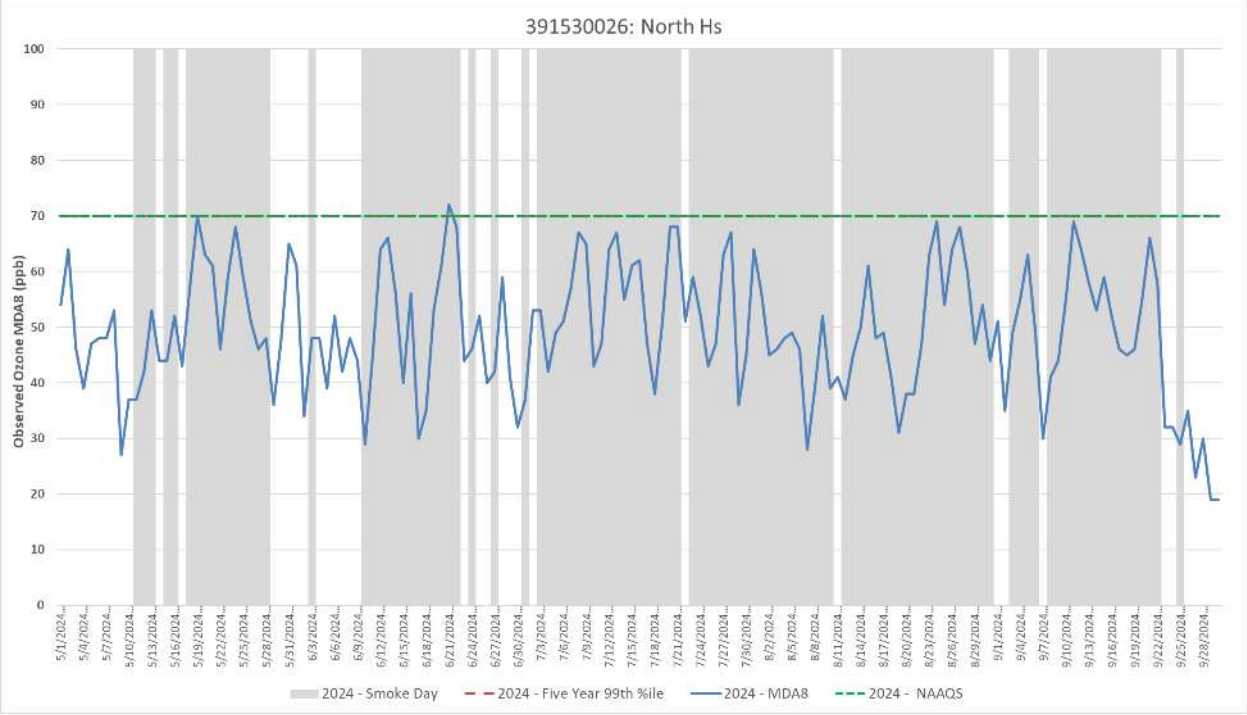
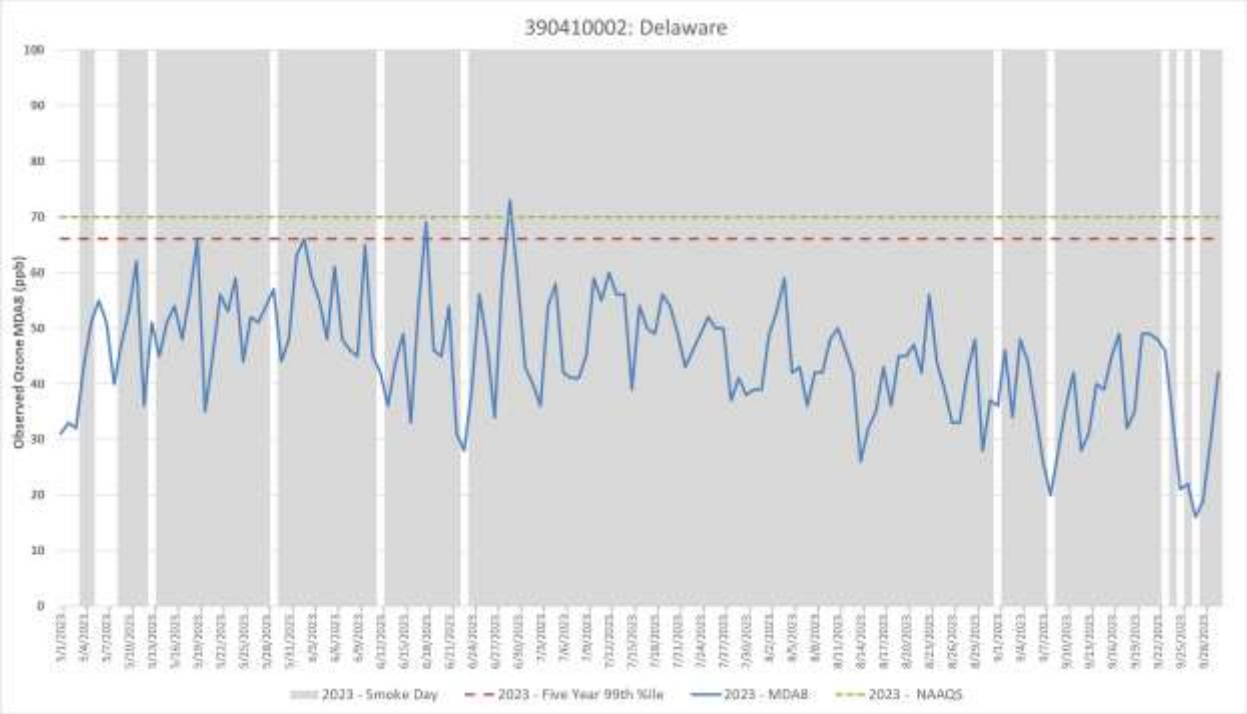




**Figure 68. May-September 2023 (top) and 2024 (bottom) time series of MDA8 ozone concentrations, 5-year 99$^{th}$ percentile values, and dates with NOAA HMS smoke indications at monitor 391530026.**



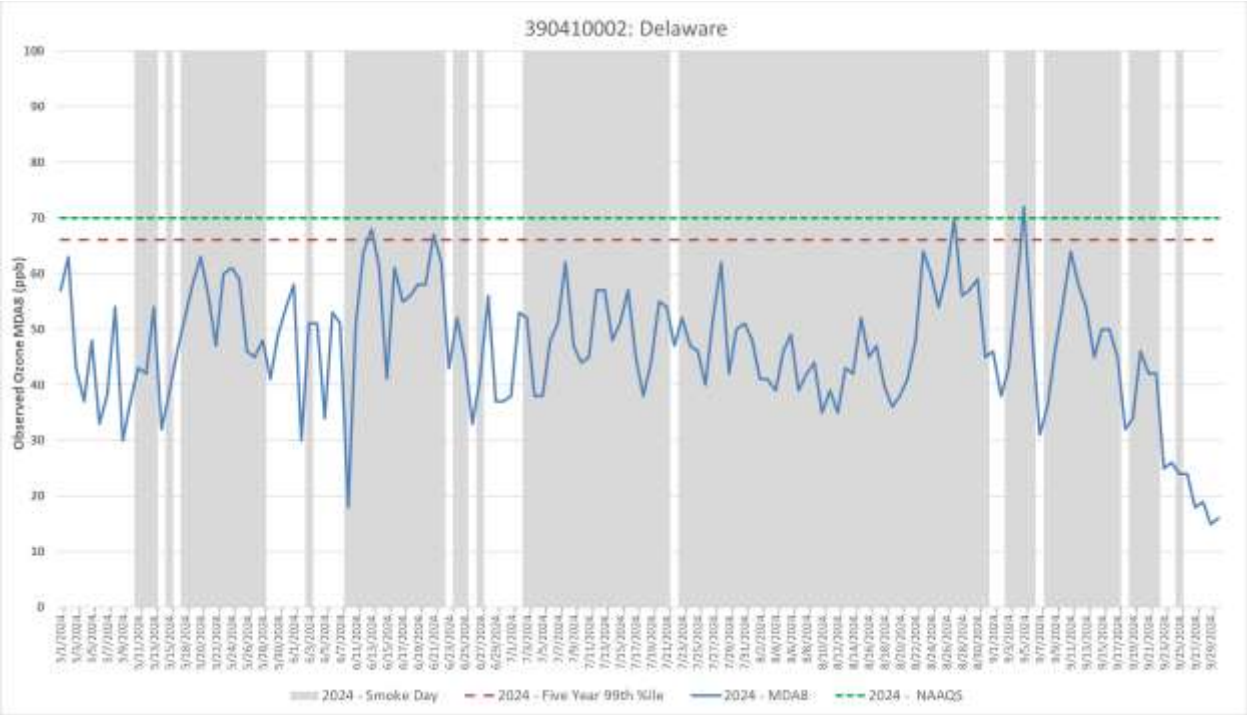
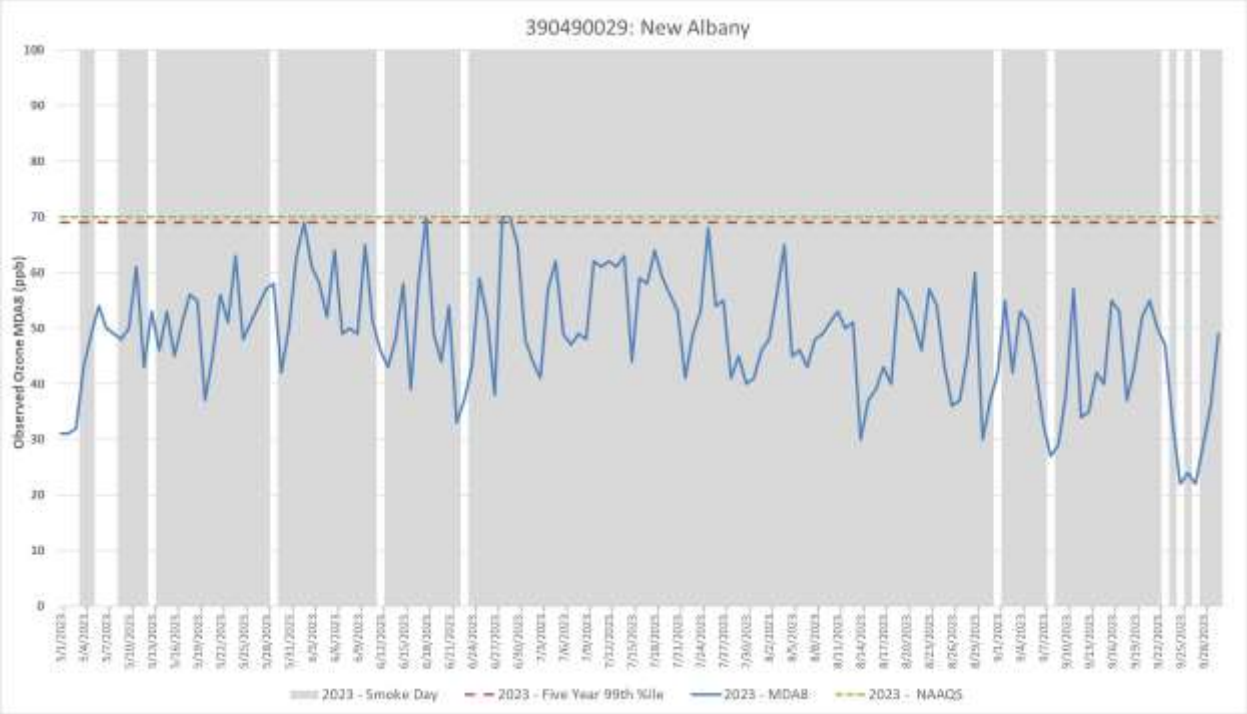




**Figure 69. May-September 2023 (top) and 2024 (bottom) time series of MDA8 ozone concentrations, 5-year 99$^{th}$ percentile values, and dates with NOAA HMS smoke indications at monitor 390410002.**



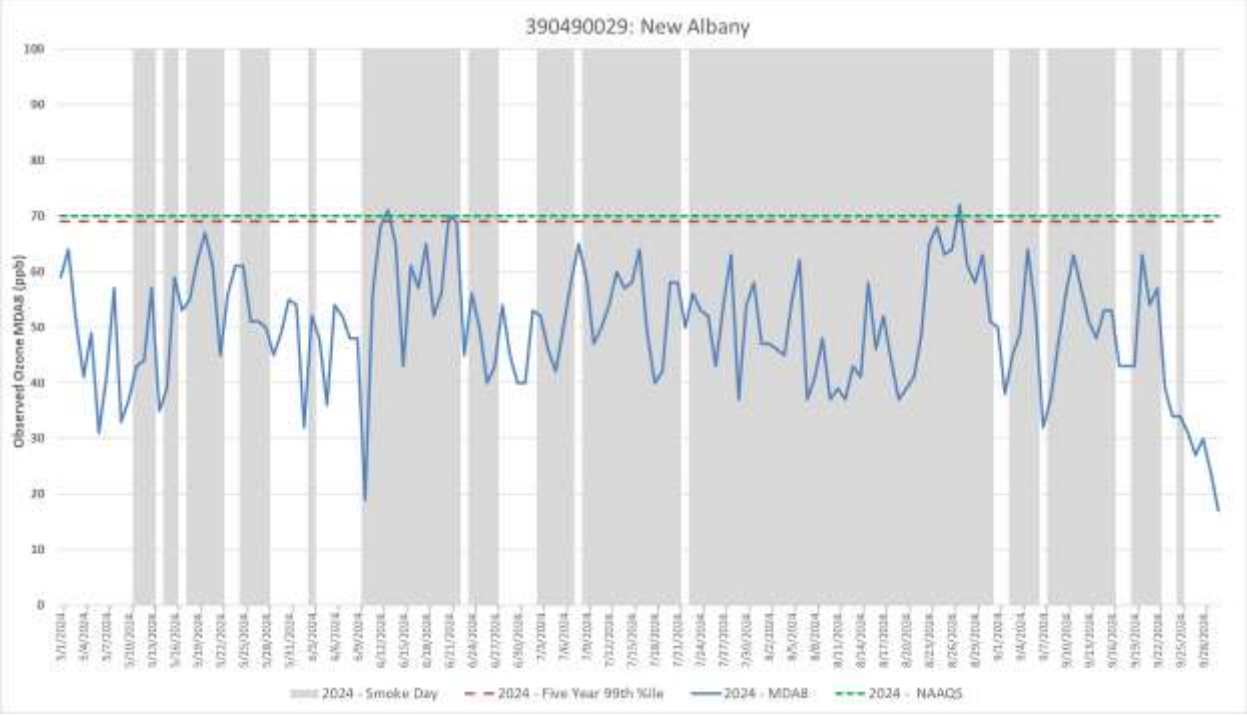
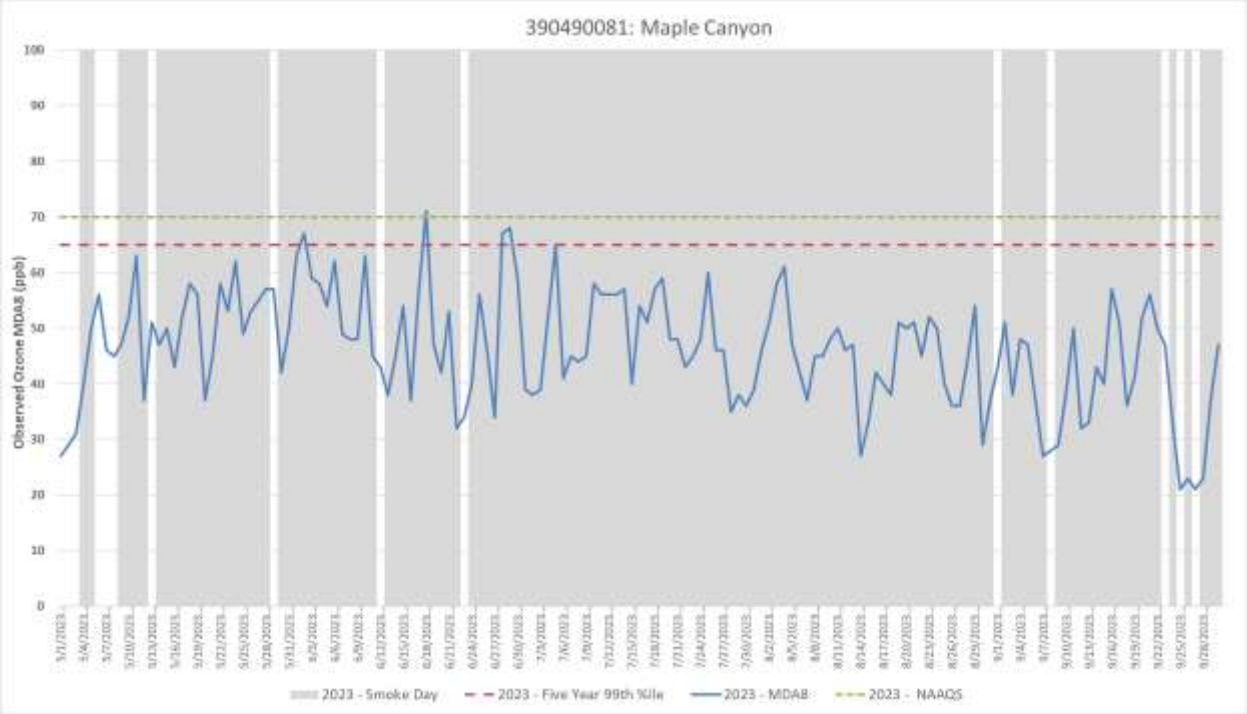




**Figure 70. May-September 2023 (top) and 2024 (bottom) time series of MDA8 ozone concentrations, 5-year 99$^{th}$ percentile values, and dates with NOAA HMS smoke indications at monitor 390490029.**



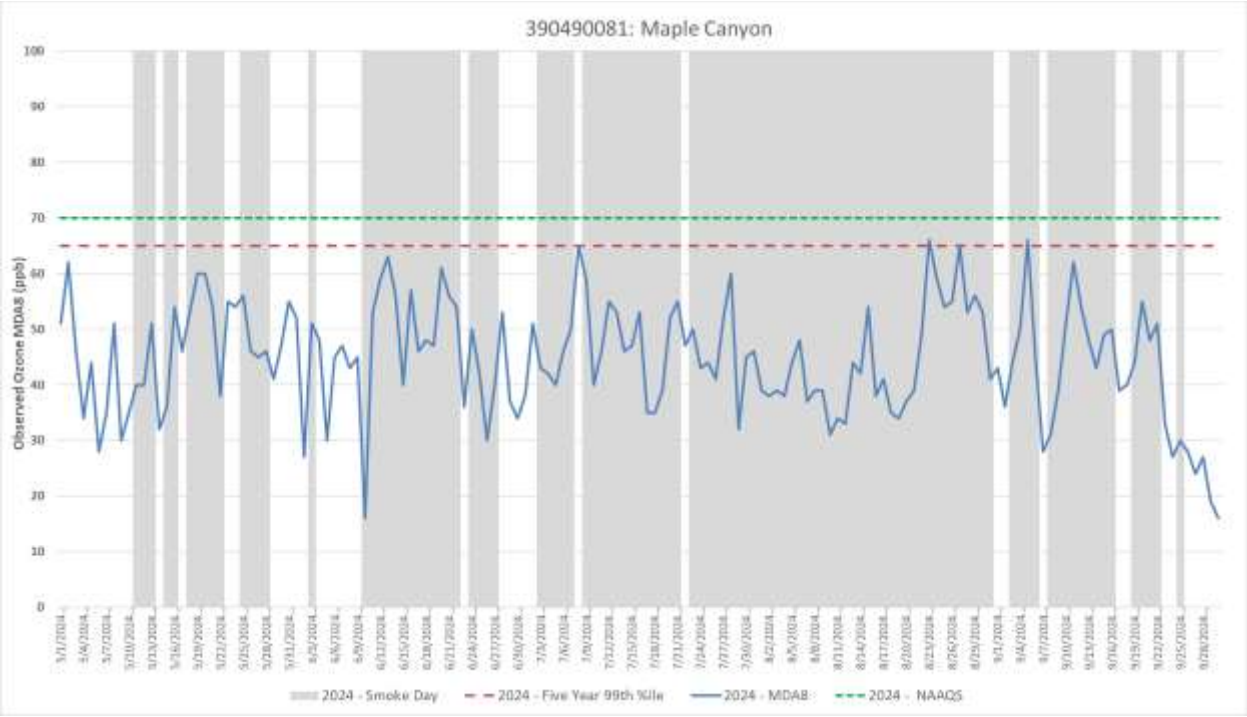
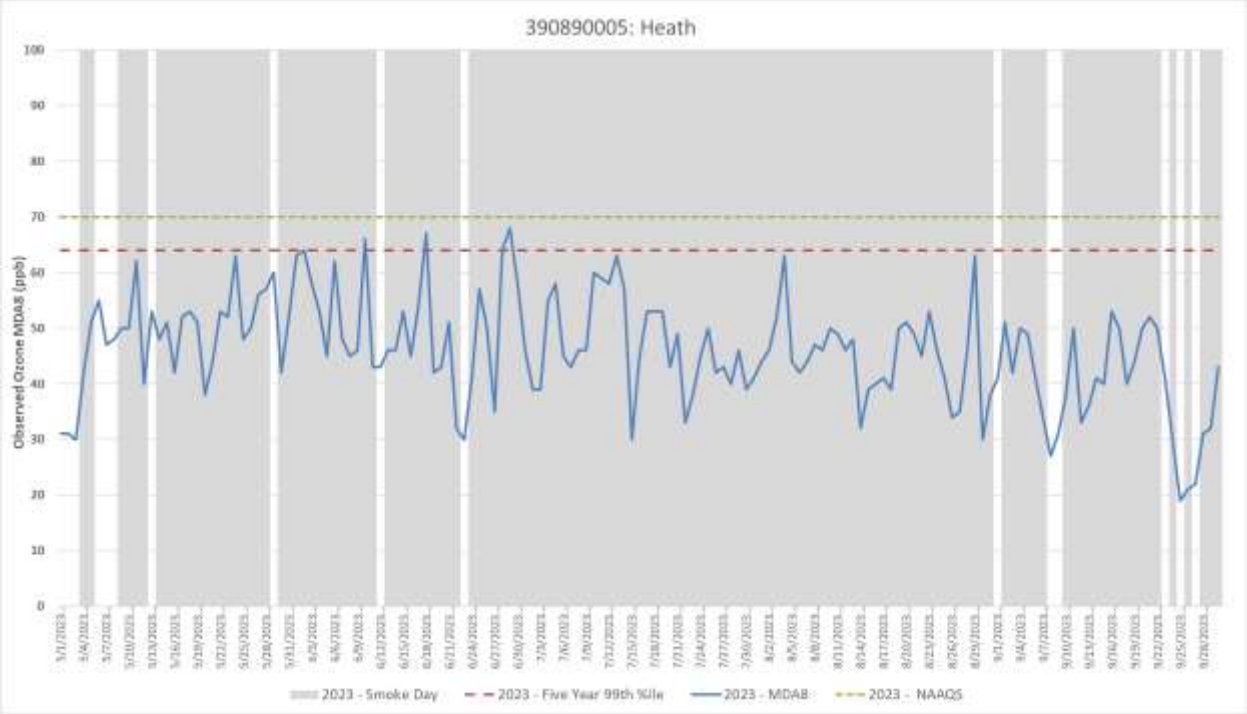




**Figure 71. May-September 2023 (top) and 2024 (bottom) time series of MDA8 ozone concentrations, 5-year 99th percentile values, and dates with NOAA HMS smoke indications at monitor 390490081.**



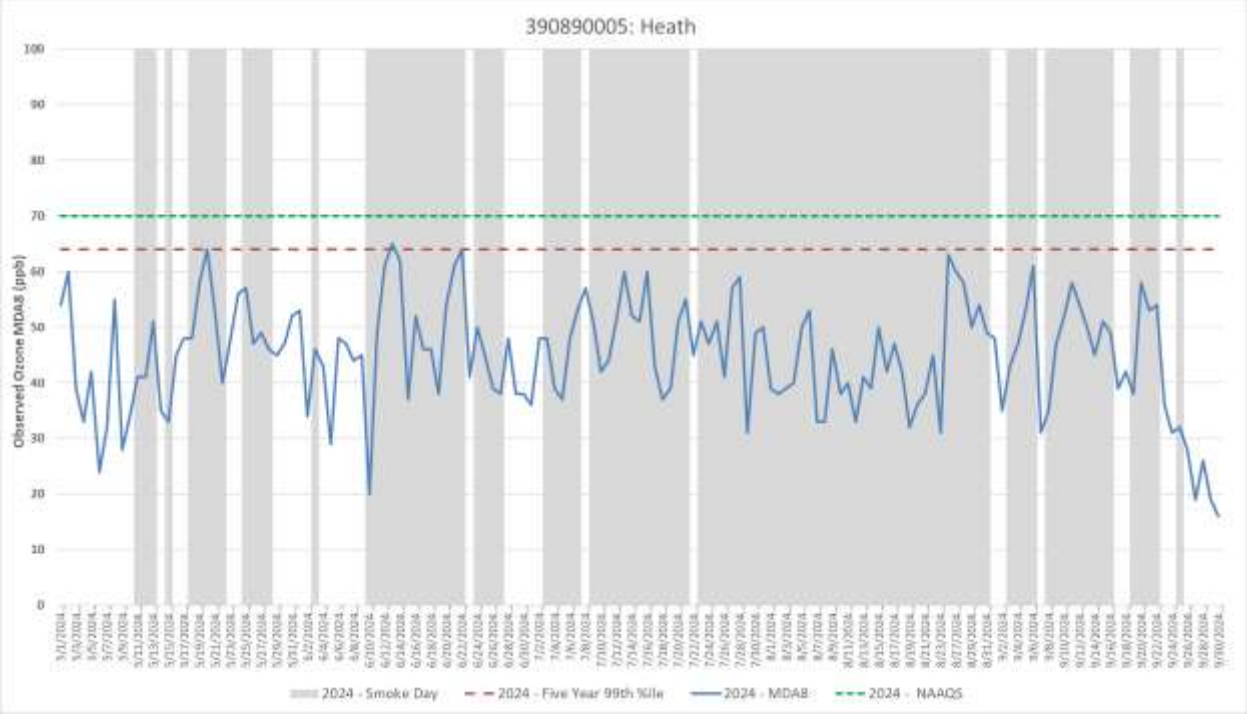
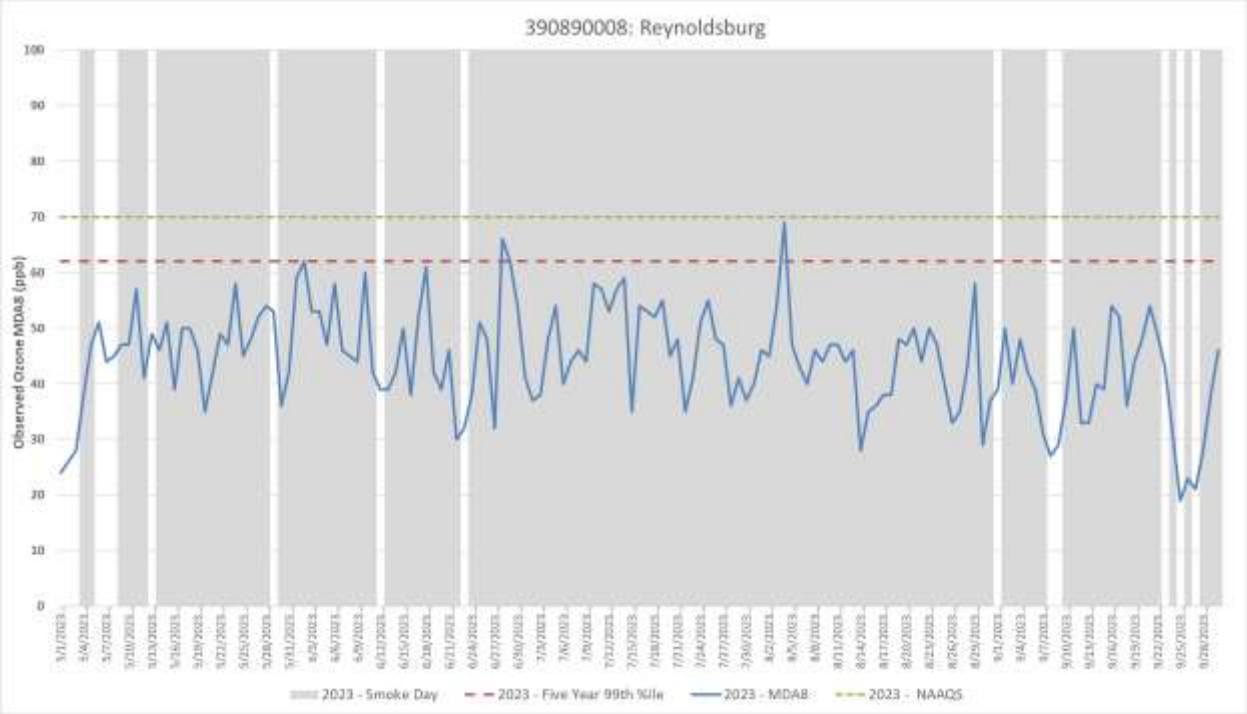




**Figure 72. May-September 2023 (top) and 2024 (bottom) time series of MDA8 ozone concentrations, 5-year 99$^{th}$ percentile values, and dates with NOAA HMS smoke indications at monitor 390890005.**



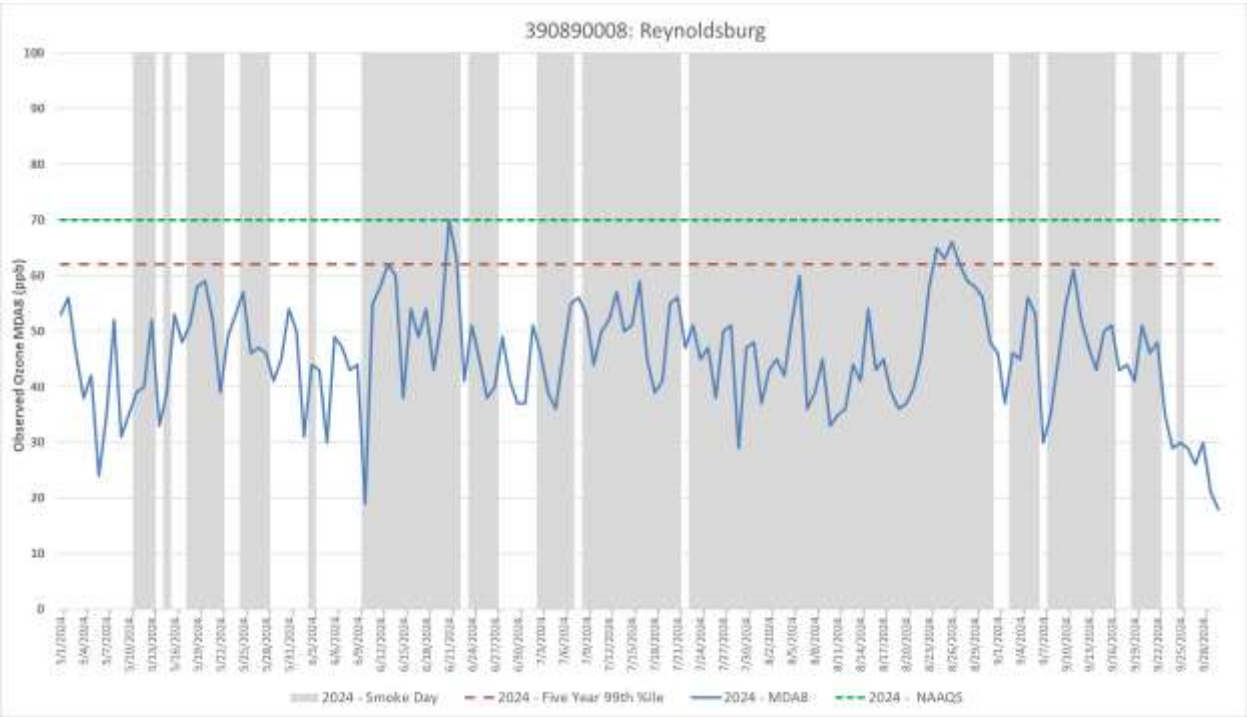




**Figure 73. May-September 2023 (top) and 2024 (bottom) time series of MDA8 ozone concentrations, 5-year 99$^{th}$ percentile values, and dates with NOAA HMS smoke indications at monitor 390890008.**

The MDA8 ozone concentrations measured in the summer of 2023 at multiple Ohio NAA monitors were not only the top five observations for the year, but also the top five observations over the past five years (2020-2024). Figure 74 provides historical context of ozone concentrations at the Sycamore monitor (390610006) and presents the MDA8 concentrations across the past five years with the summer 2023 episode standing out in the figure. This period is among the observations that exceeded the 99$^{th}$ percentile threshold for the five-year period and are among the highest observations during the five years. Figure 74 through Figure 79 clearly demonstrates that summers 2023 and 2024 included MDA8 observations that were unusually high across all the presented Ohio NAA monitors.

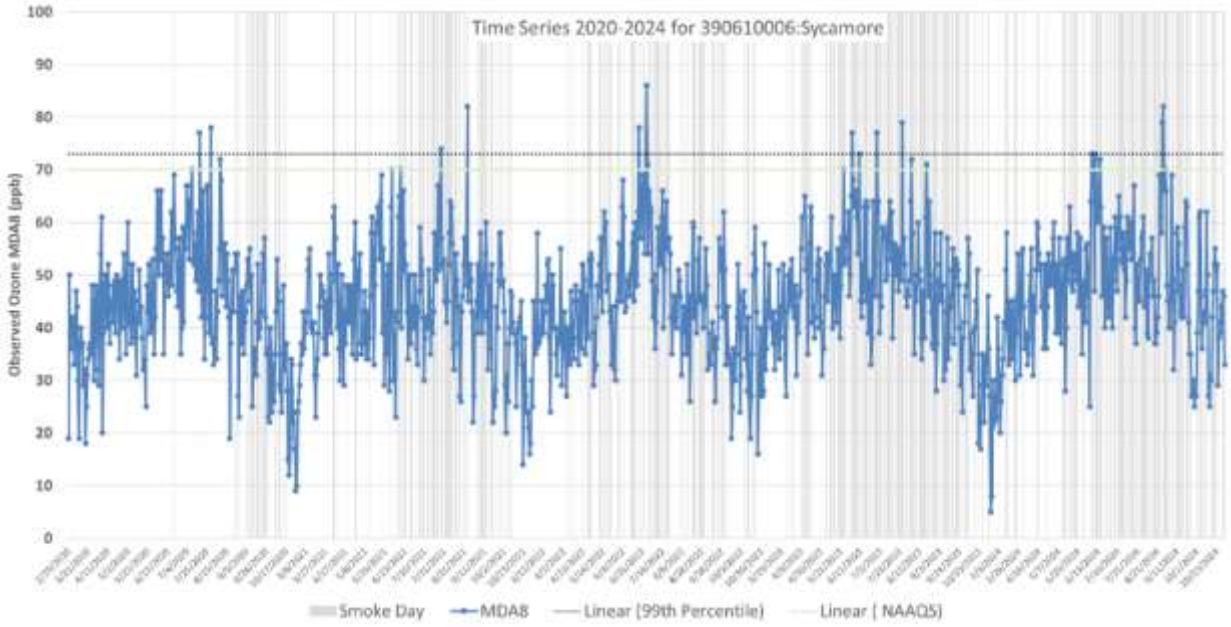



**Figure 74. 2020-2024 time series of MDA8 ozone concentrations, 5-year 99$^{th}$ percentile values, and dates with NOAA HMS smoke indications at monitor 390610006.**

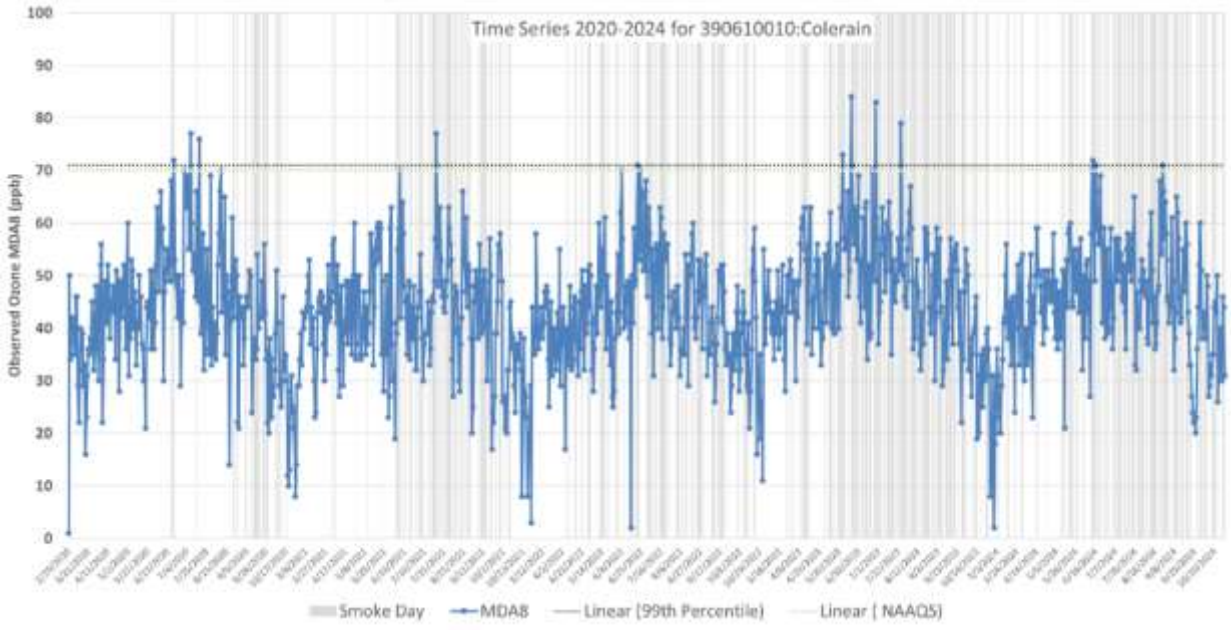



**Figure 75. 2020-2024 time series of MDA8 ozone concentrations, 5-year 99th percentile values, and dates with NOAA HMS smoke indications at monitor 390610010.**

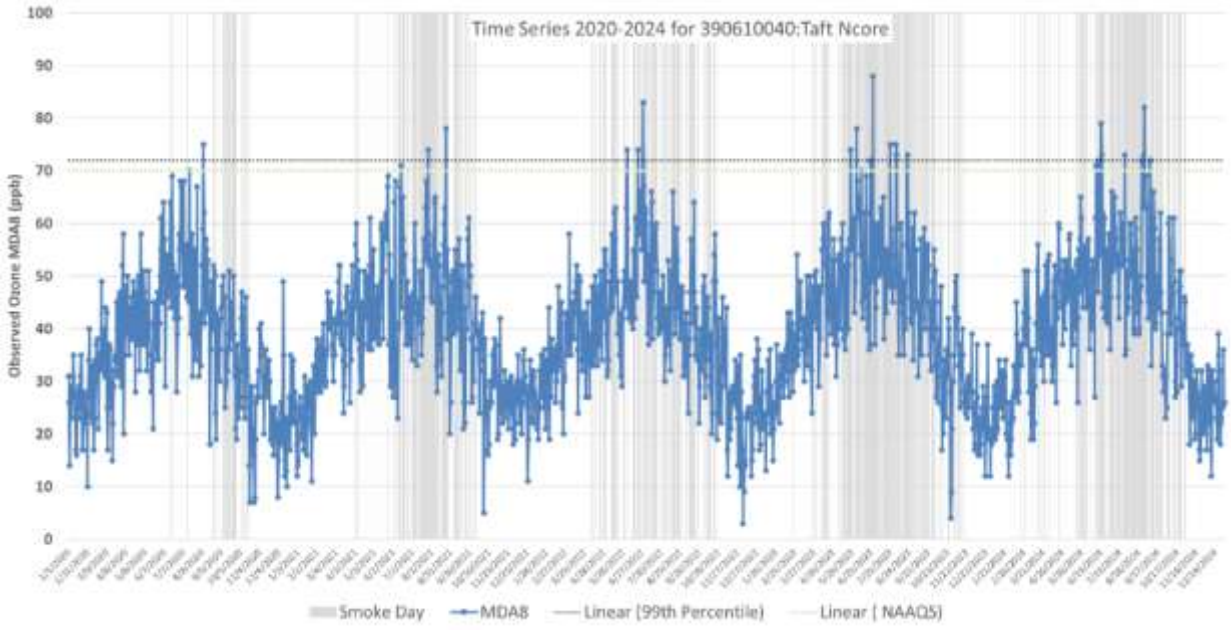



**Figure 76. 2020-2024 time series of MDA8 ozone concentrations, 5-year 99th percentile values, and dates with NOAA HMS smoke indications at monitor 390610040.**

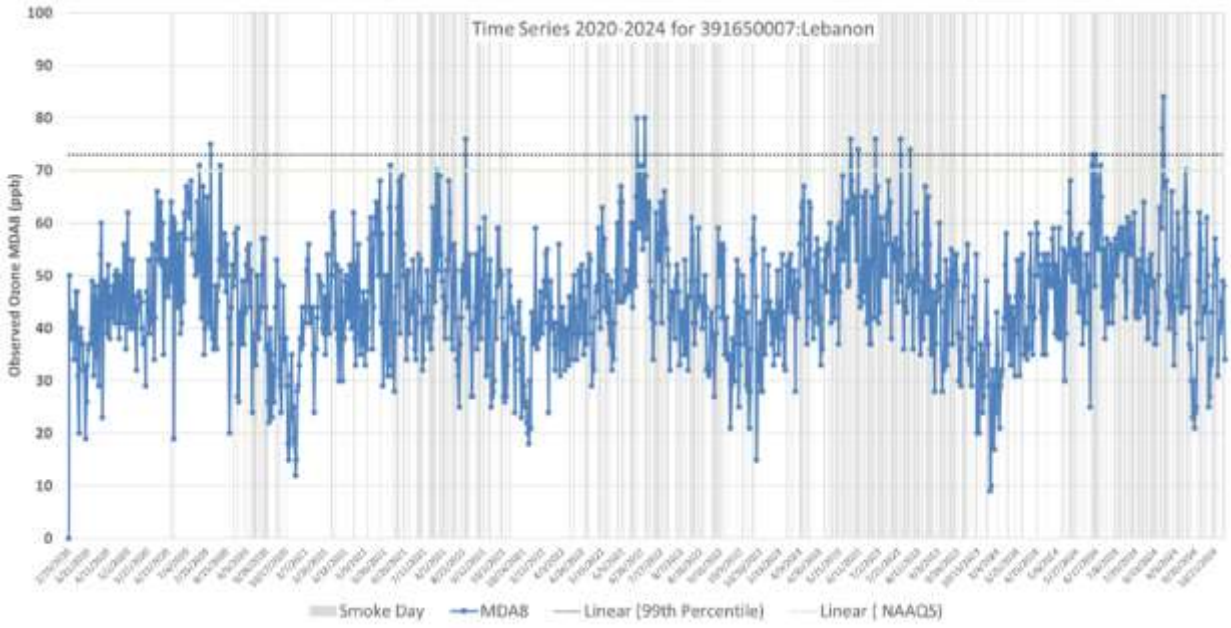



**Figure 77. 2020-2024 time series of MDA8 ozone concentrations, 5-year 99th percentile values, and dates with NOAA HMS smoke indications at monitor 391650007.**

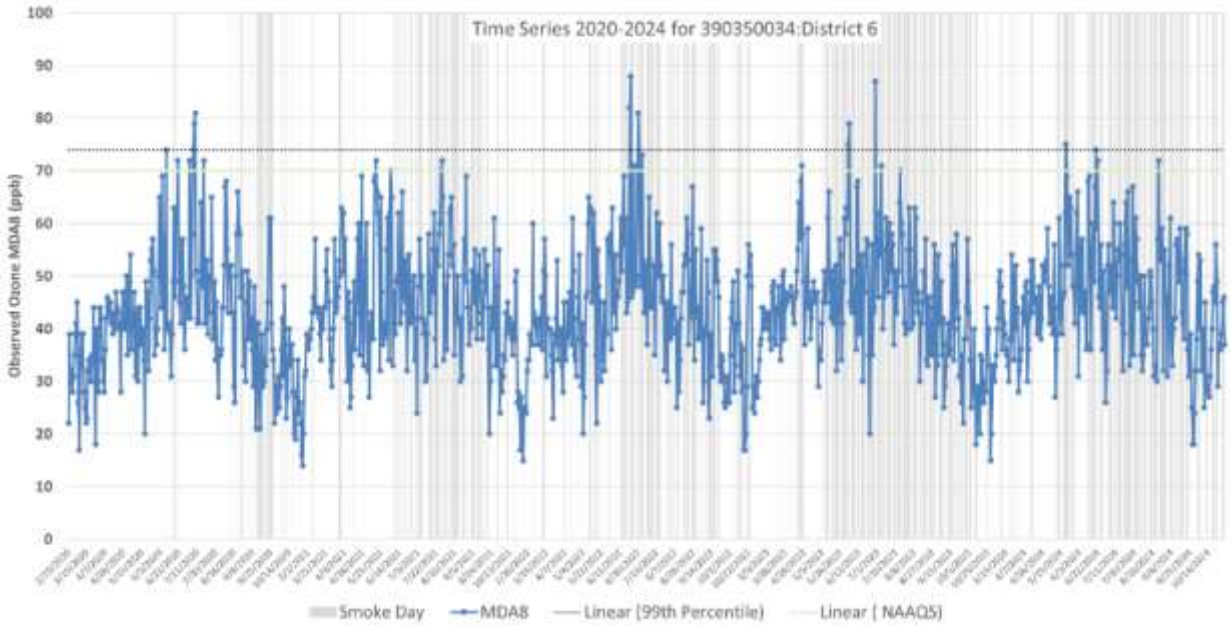



**Figure 78. 2020-2024 time series of MDA8 ozone concentrations, 5-year 99th percentile values, and dates with NOAA HMS smoke indications at monitor 390350034.**

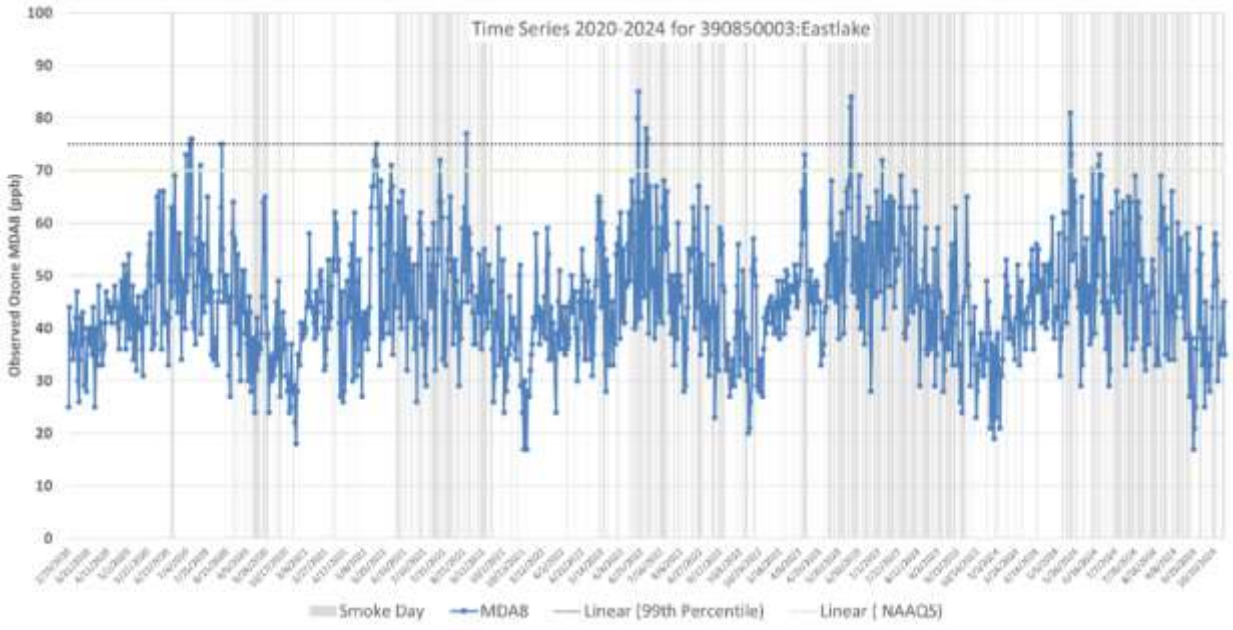



**Figure 79. 2020-2024 time series of MDA8 ozone concentrations, 5-year 99$^{th}$ percentile values, and dates with NOAA HMS smoke indications at monitor 390850003.**

Figure 80 through Figure 91 further demonstrate that many May – August 2023 and 2024 MDA8 observations (blue line) were remarkably higher than the five-year 2020-2024 average monthly MDA8 concentrations (solid orange line) and were oftentimes more than two times the standard deviation (orange dotted lines) over this period. At some monitors on certain dates, the MDA8 observation is as much as 36 ppb higher than the five-year average at that monitor for those months (delta represented with grey bars).

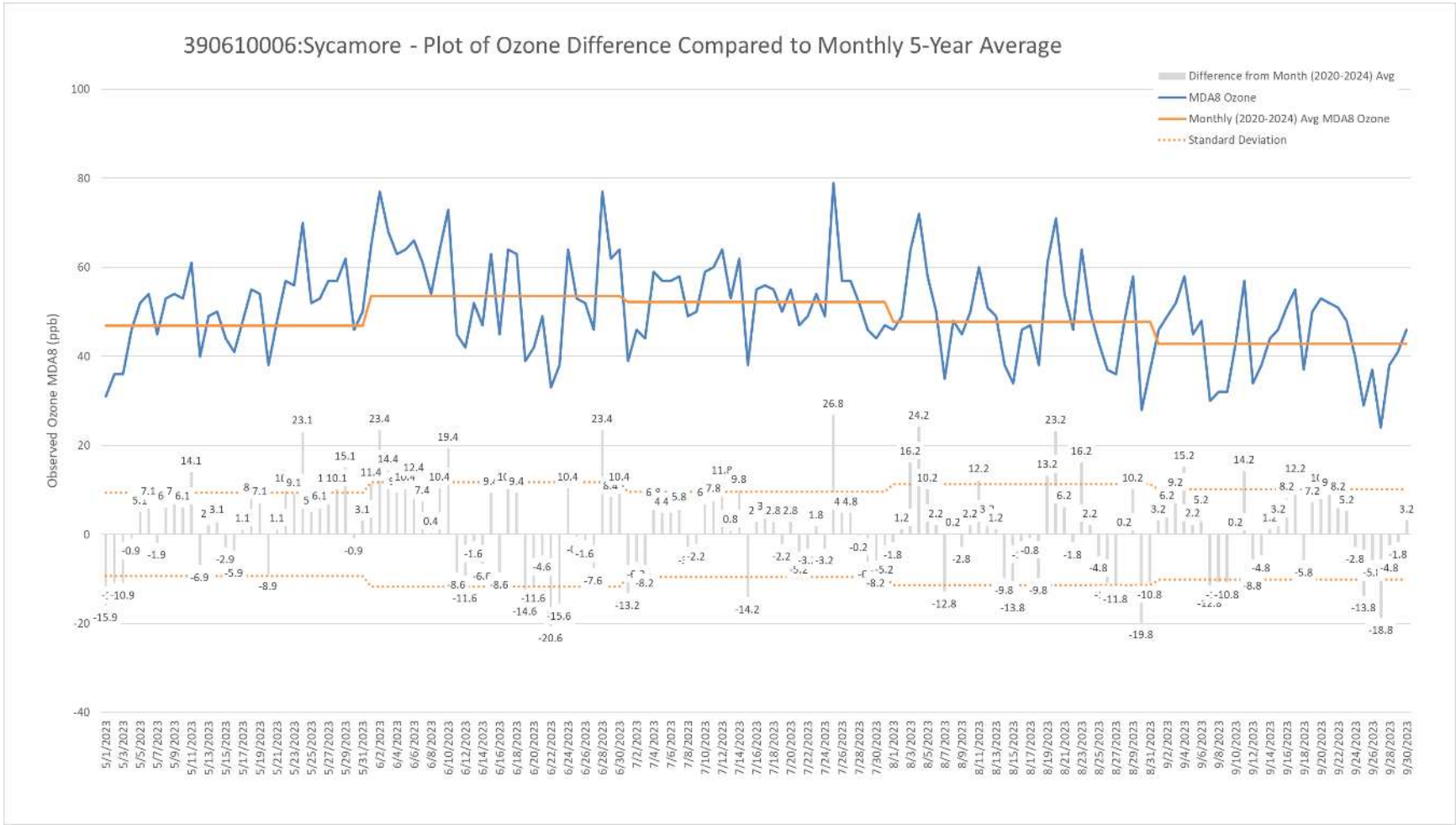



**Figure 80. Monitor 390610006 May-September 2023 8-hr Ozone Comparison to May-September 2020-2024 Average 8-hr.**

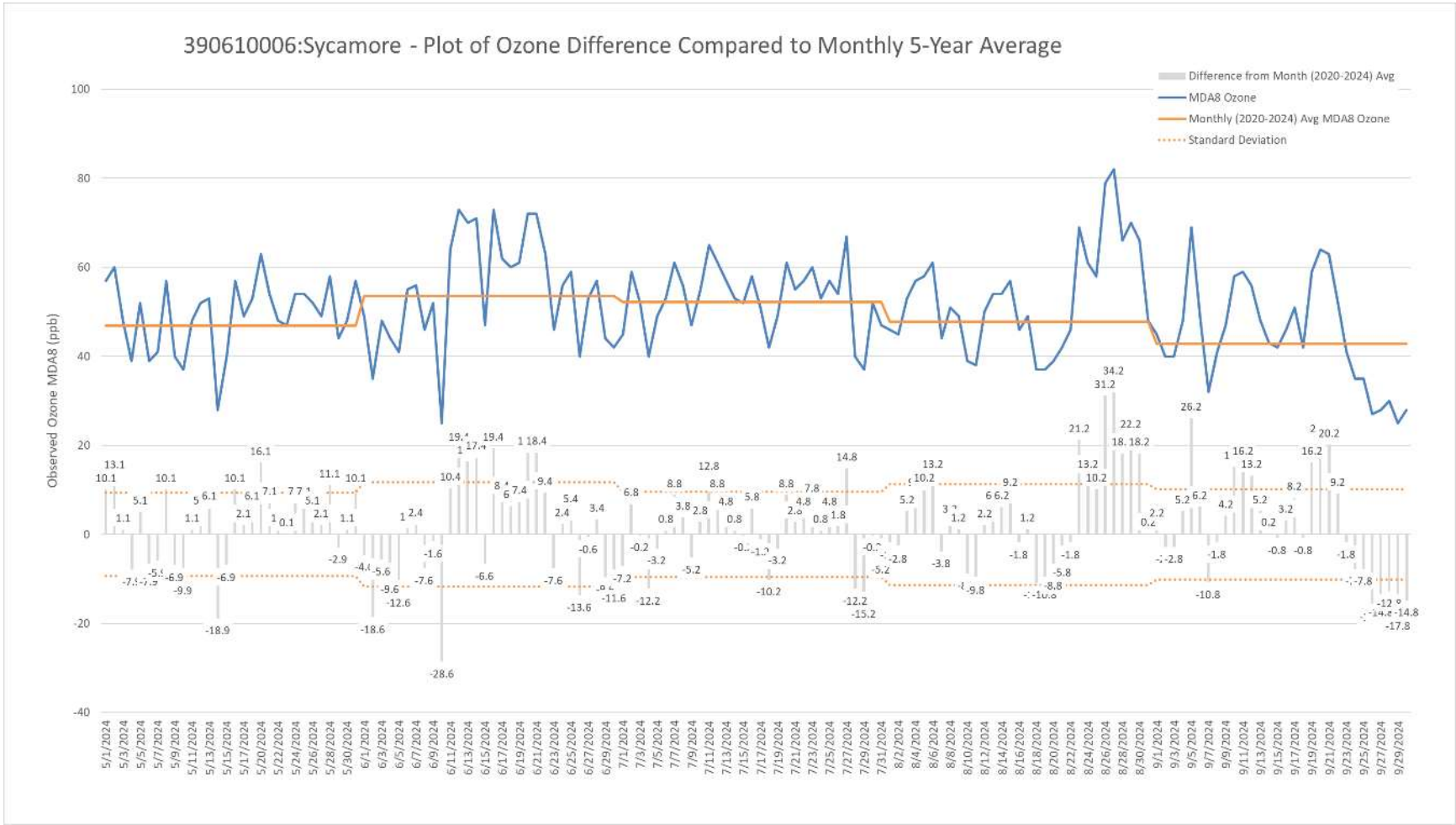



**Figure 81. Monitor 390610006 May-September 2024 8-hr Ozone Comparison to May-September 2020-2024 Average 8-hr.**

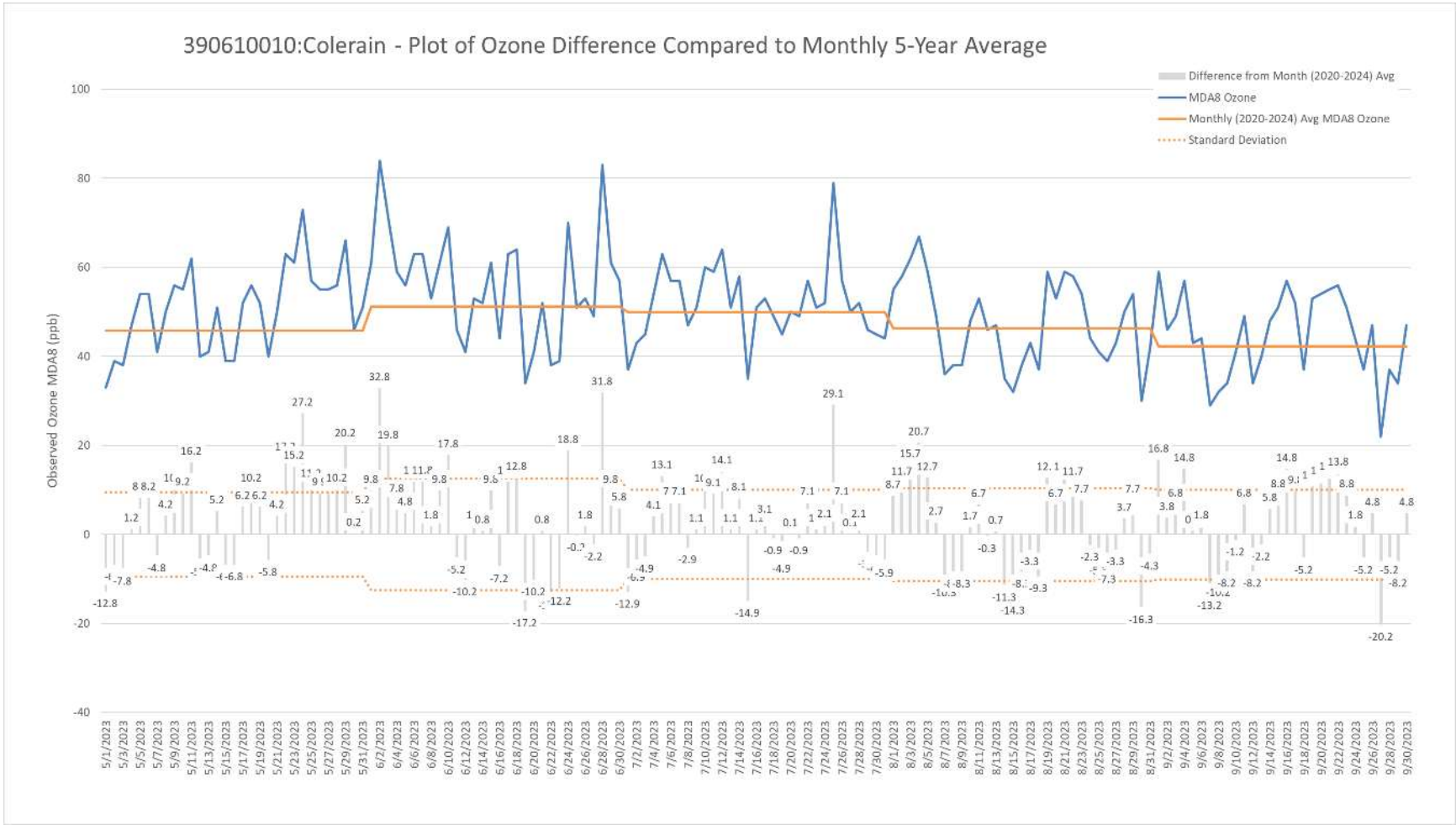



**Figure 82. Monitor 390610010 May-September 2023 8-hr Ozone Comparison to May-September 2020-2024 Average 8-hr.**

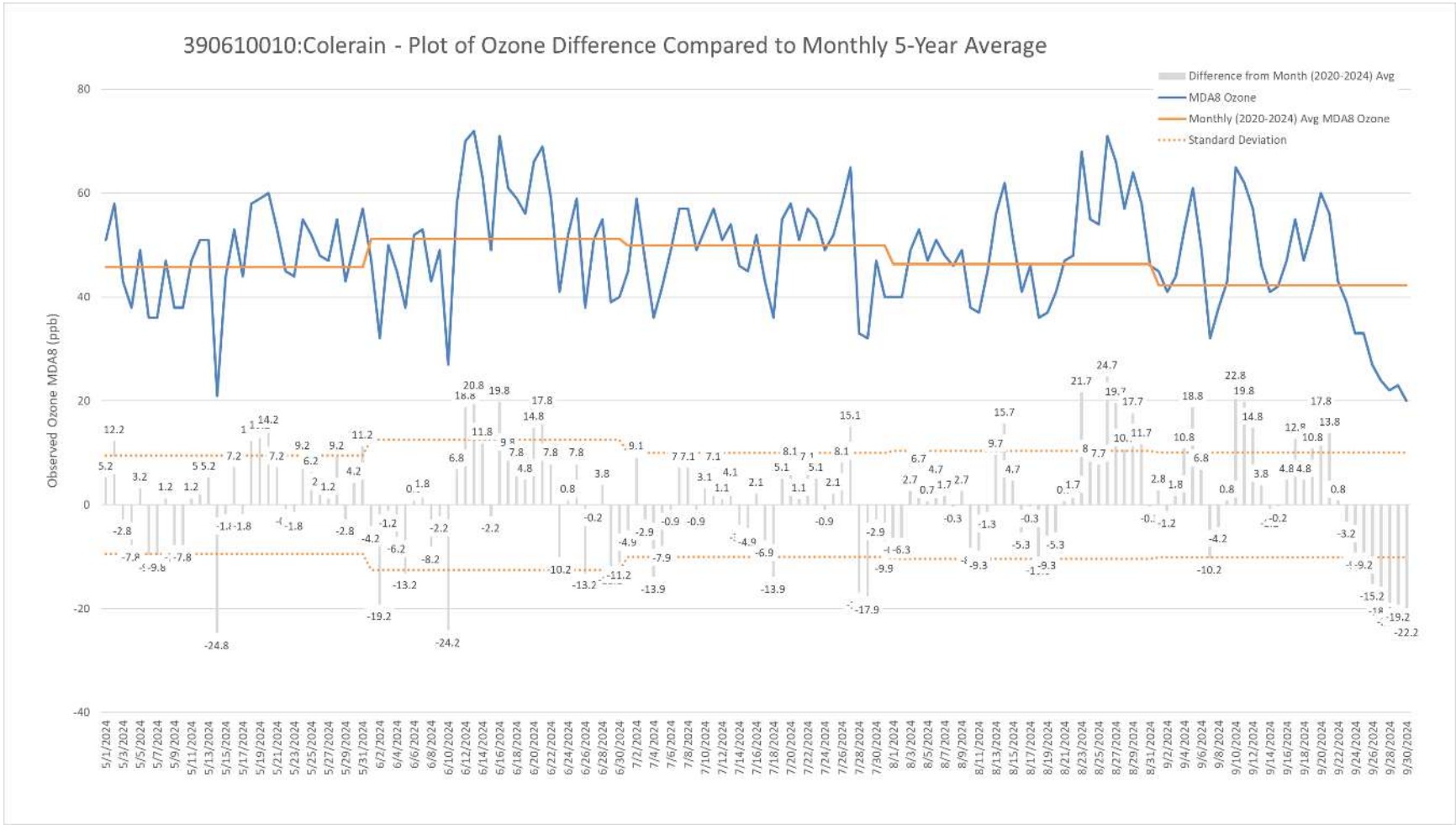



**Figure 83. Monitor 390610010 May-September 2024 8-hr Ozone Comparison to May-September 2020-2024 Average 8-hr.**

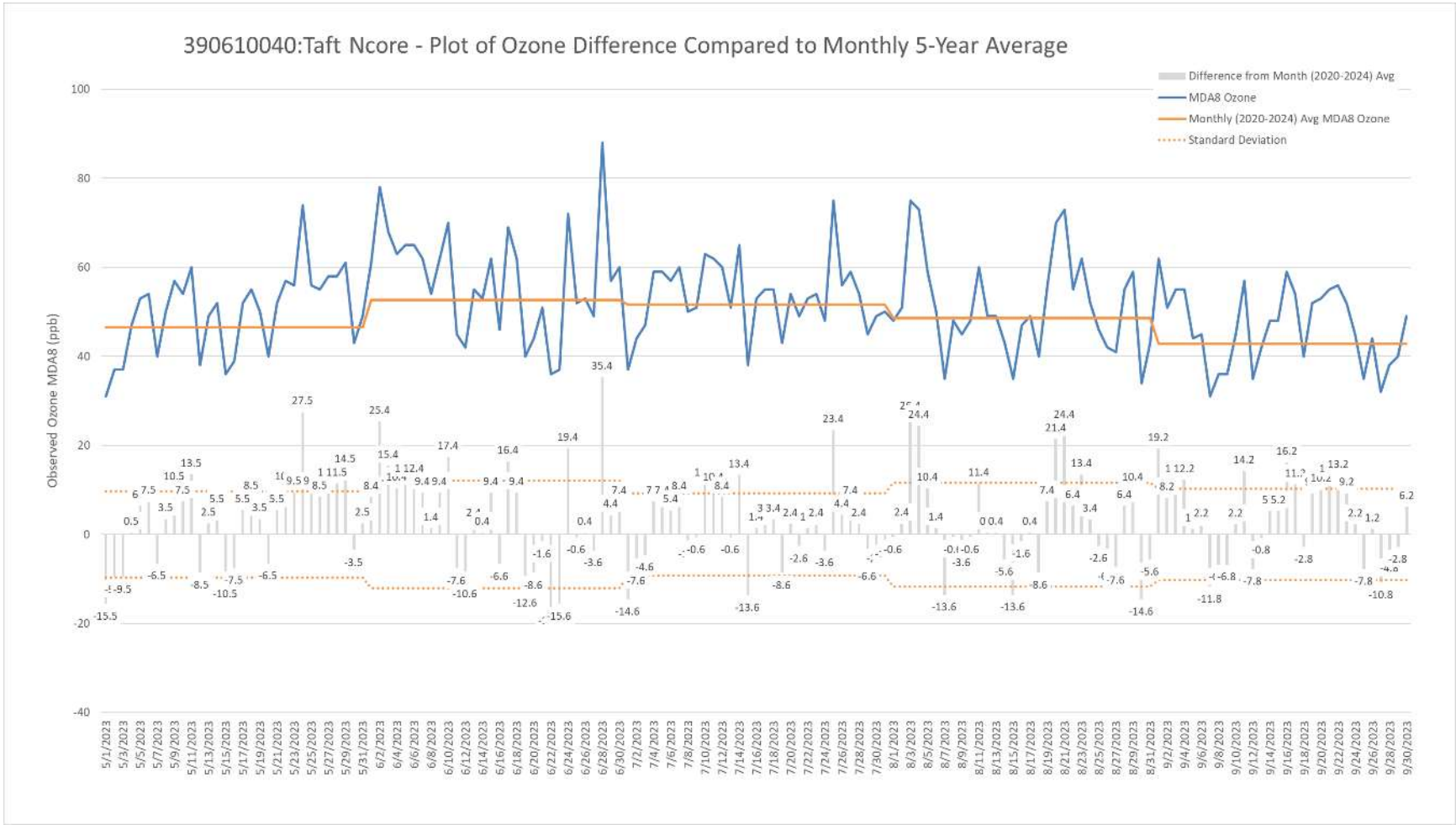



**Figure 84. Monitor 390610040 May-September 2023 8-hr Ozone Comparison to May-September 2020-2024 Average 8-hr.**

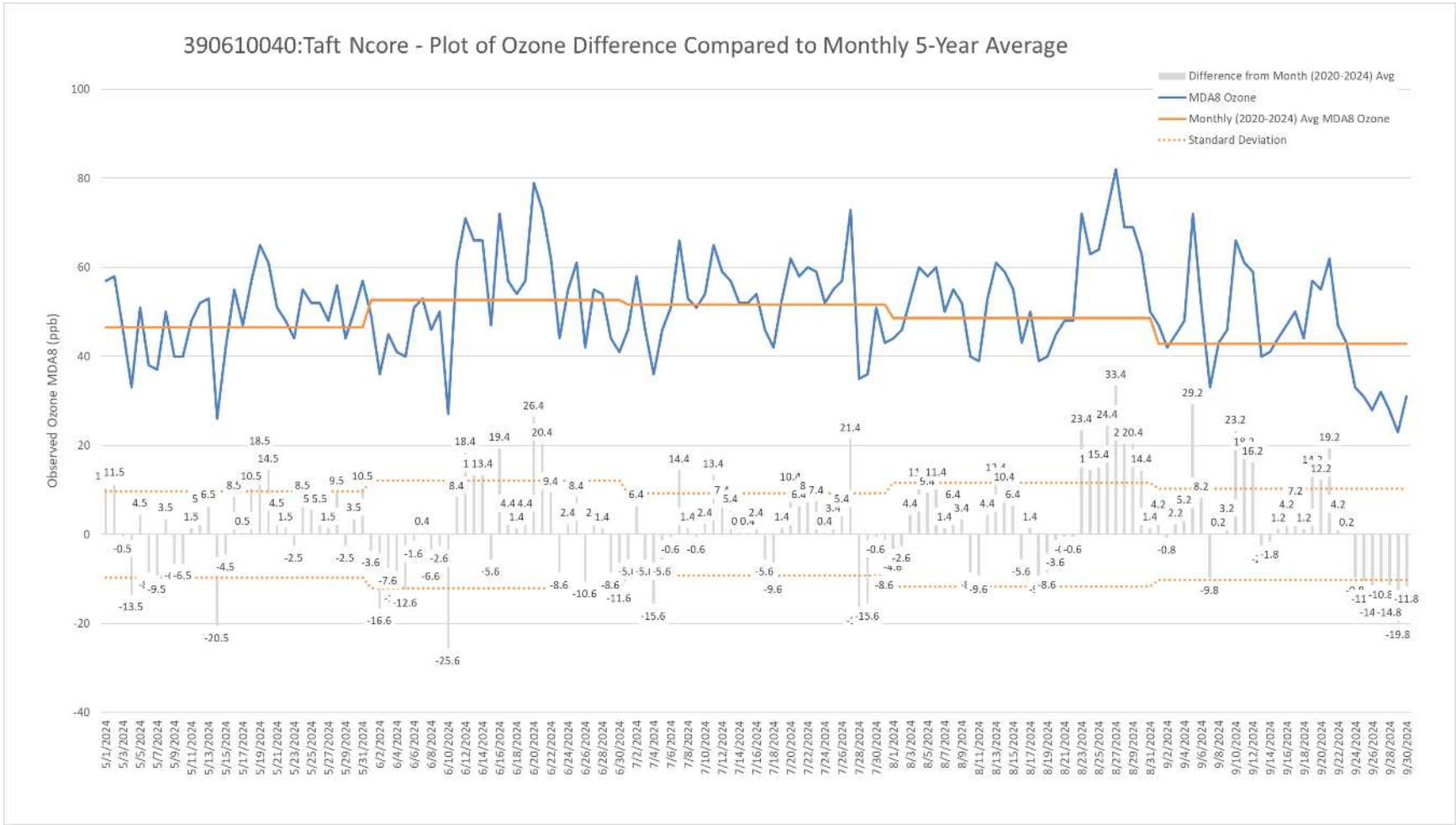



**Figure 85. Monitor 390610040 May-September 2024 8-hr Ozone Comparison to May-September 2020-2024 Average 8-hr.**

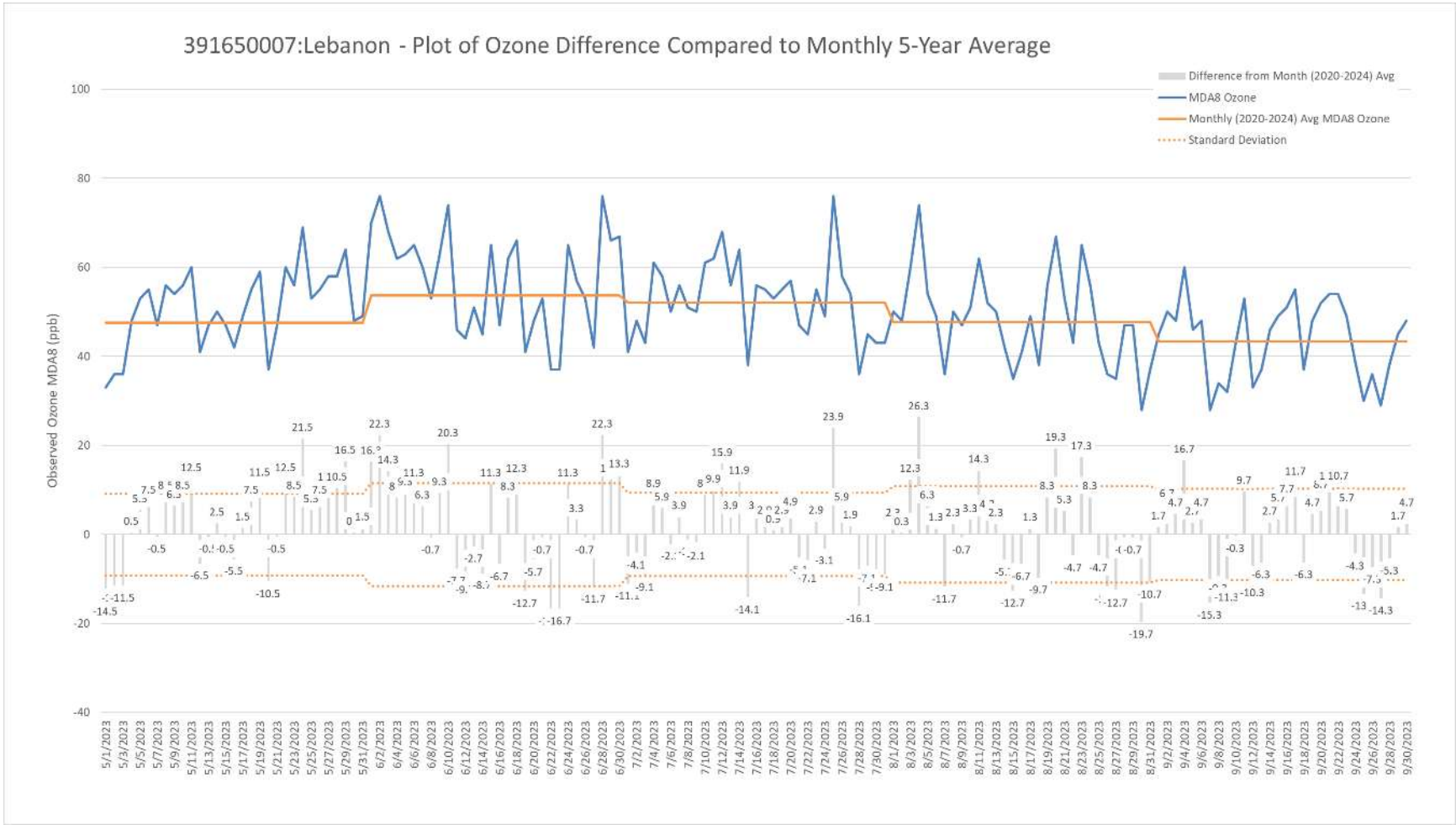



**Figure 86. Monitor 391650007 May-September 2023 8-hr Ozone Comparison to May-September 2020-2024 Average 8-hr.**

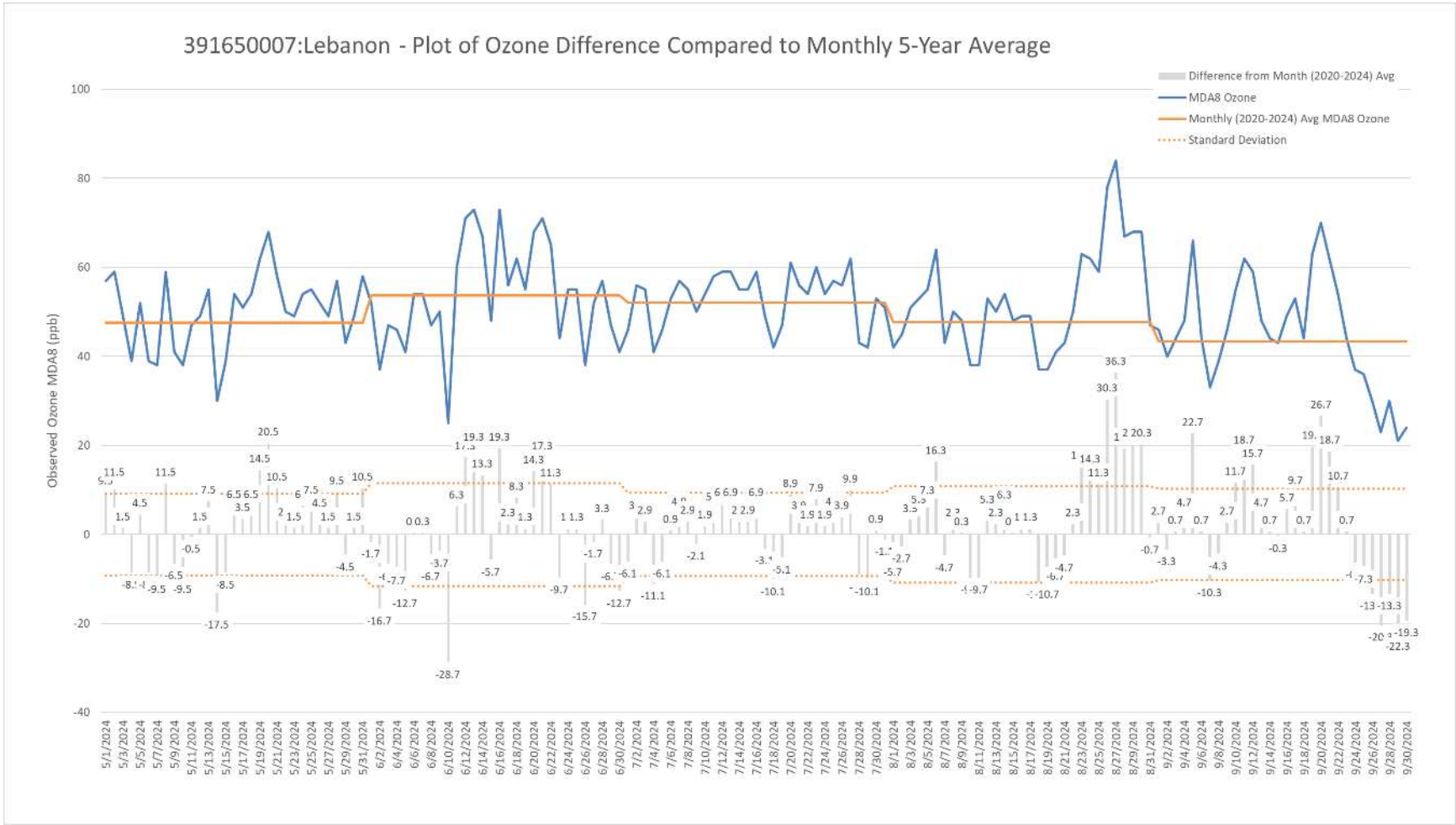



**Figure 87. Monitor 391650007 May-September 2024 8-hr Ozone Comparison to May-September 2020-2024 Average 8-hr.**

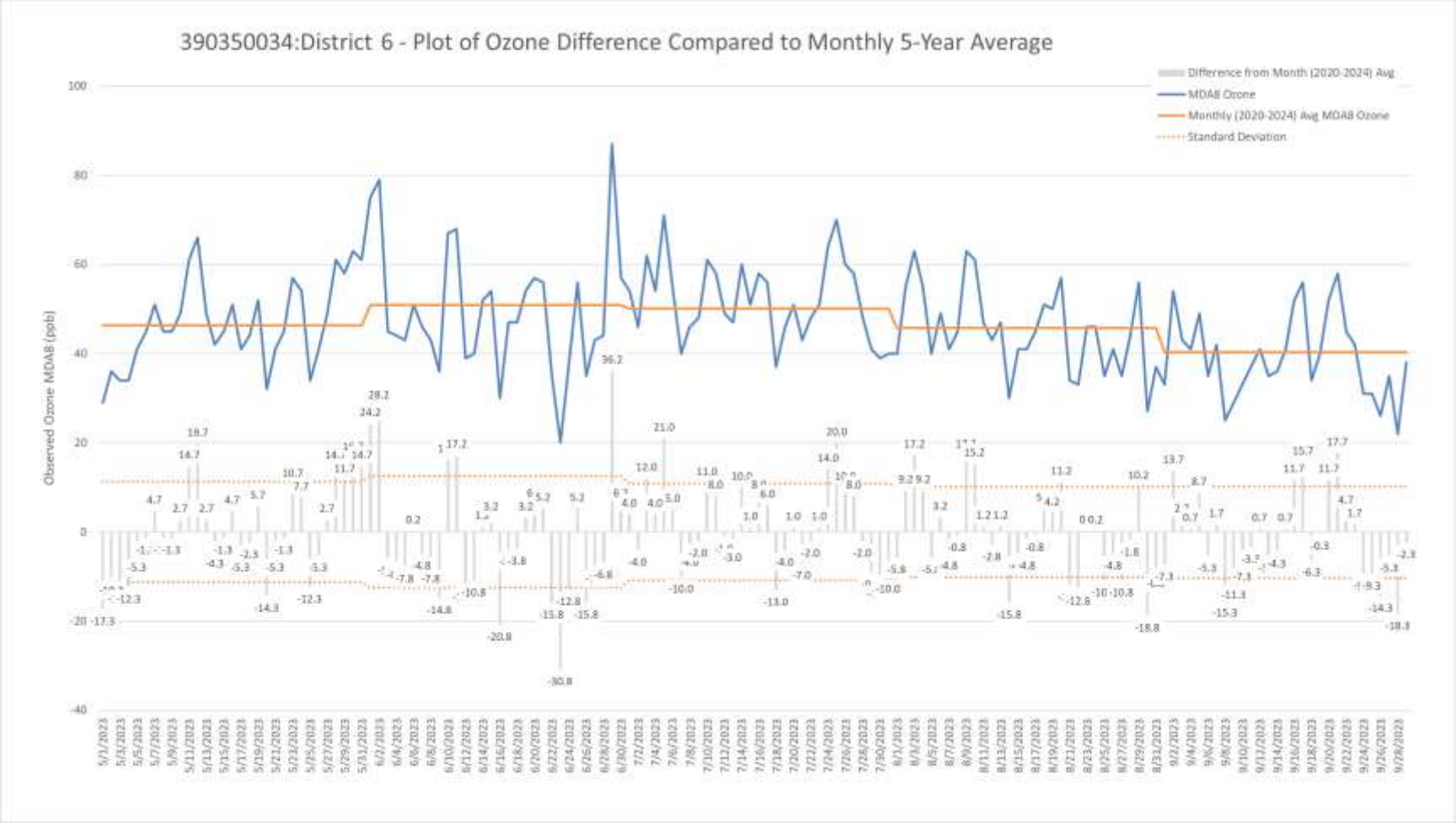



**Figure 88. Monitor 390350034 May-September 2023 8-hr Ozone Comparison to May-September 2020-2024 Average 8-hr.**

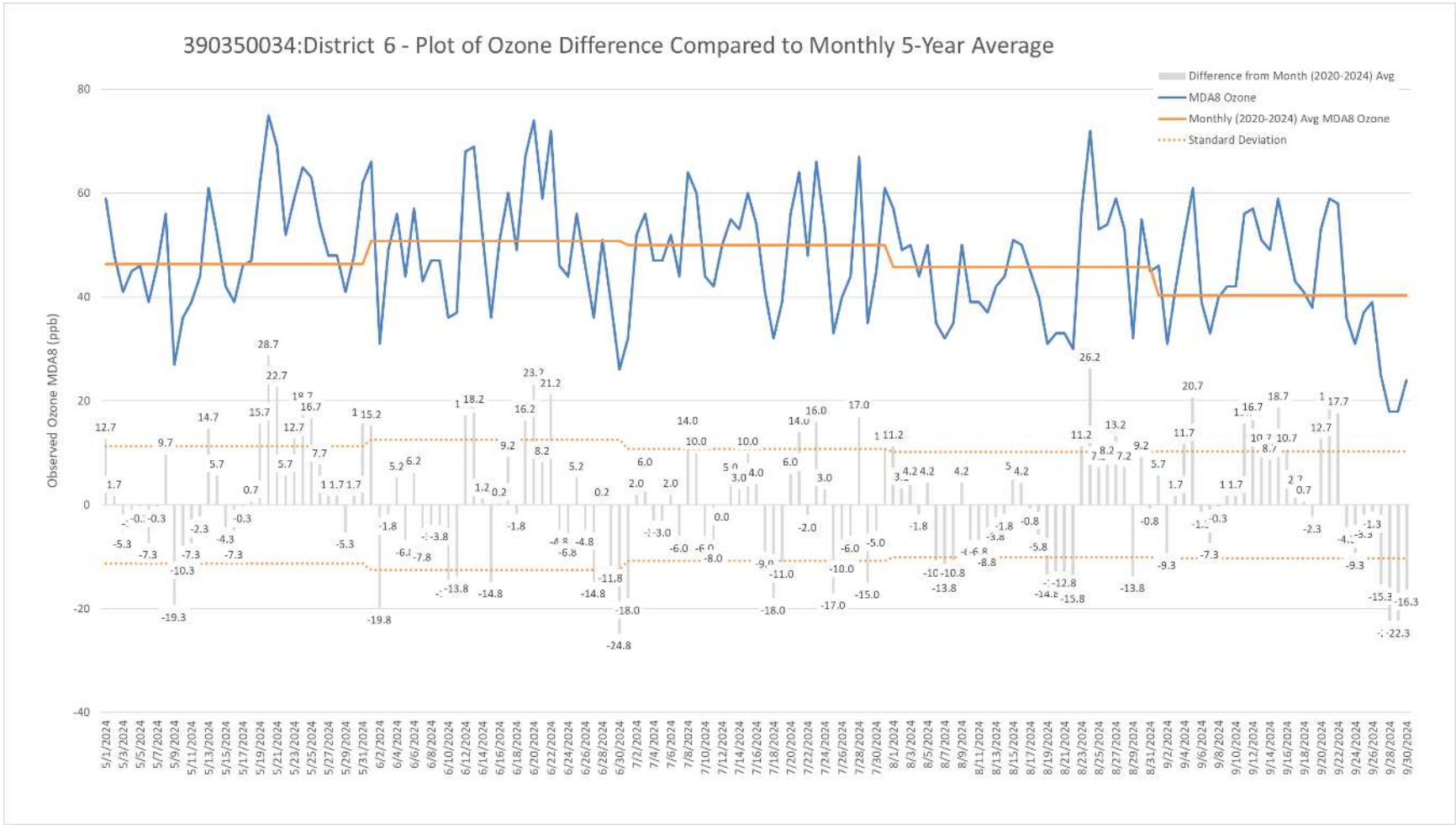



**Figure 89. Monitor 390350034 May-September 2024 8-hr Ozone Comparison to May-September 2020-2024 Average 8-hr.**

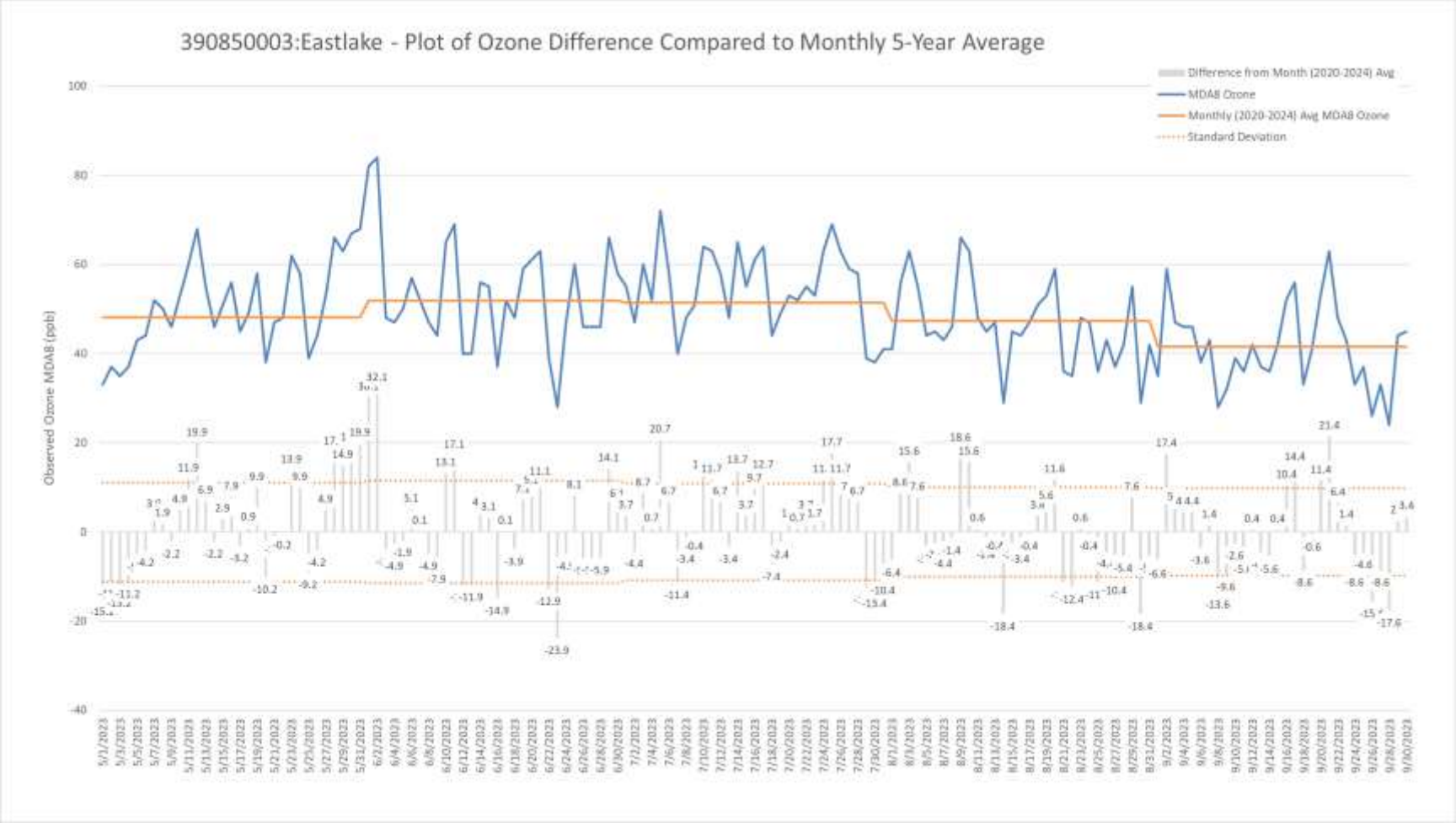



**Figure 90. Monitor 390850003 May-September 2023 8-hr Ozone Comparison to May-September 2020-2024 Average 8-hr.**

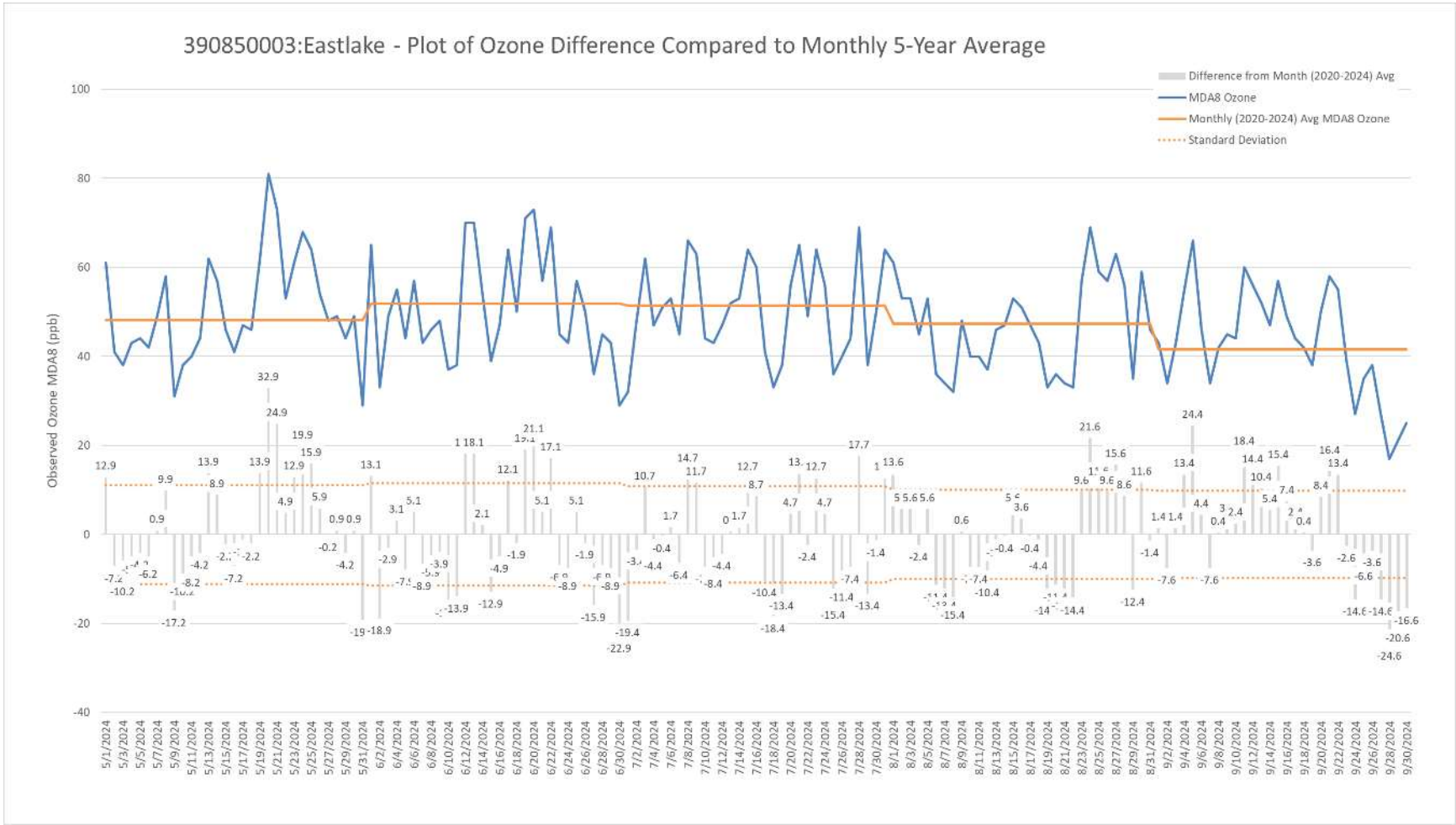



**Figure 91. Monitor 390850003 May-September 2024 8-hr Ozone Comparison to May-September 2020-2024 Average 8-hr.**

**PM2.5, Multi-pollutant, and alternate species corroboration**

Ohio's monitoring network observes both total PM2.5 mass and speciated compounds such as ionic potassium (K+) and organic carbon (OC), as well as other pollutants such as carbon monoxide (CO) and elemental or black carbon (EC) which can act as tracers of wildfire emissions.

The daily PM2.5 concentrations at multiple monitors and OC and K+ at a subset of these monitors in Ohio were examined.

Figure 92 through Figure 107 provides daily PM2.5 concentrations during 2023 and 2024 (May through September) and show that enhanced PM2.5 concentrations correlate to dates when high ozone concentrations are also observed. It can also be seen in 2023 that there is a buildup of PM2.5 as the Canadian wildfire smoke is present over the region. In these instances, we see the gradual increase of PM2.5 concentrations, the longer the plumes reside over the region. It has also been observed in urban areas[16], that the ozone response to smoke levels can be non-linear, with the highest ozone levels not always associated with the highest PM2.5 concentrations.

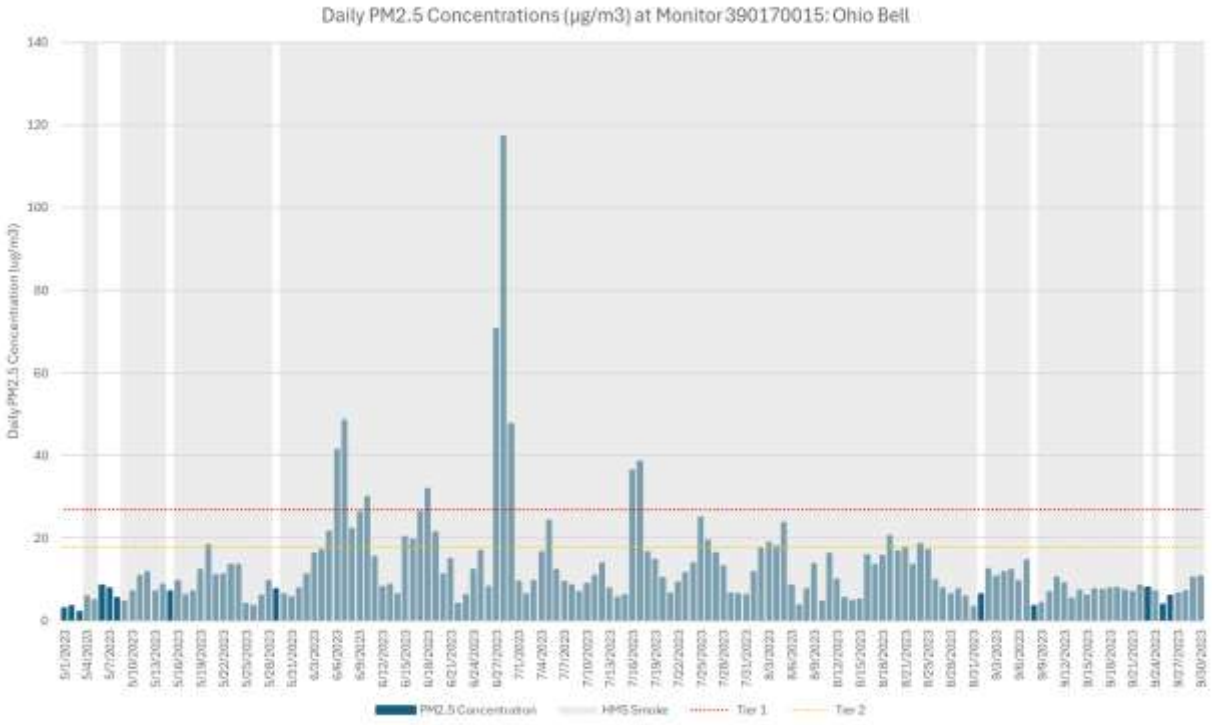



**Figure 92. Daily PM2.5 concentrations at monitor 390170015; May through September 2023.**

[16] https://doi.org/10.1021/acs.est.9b05241

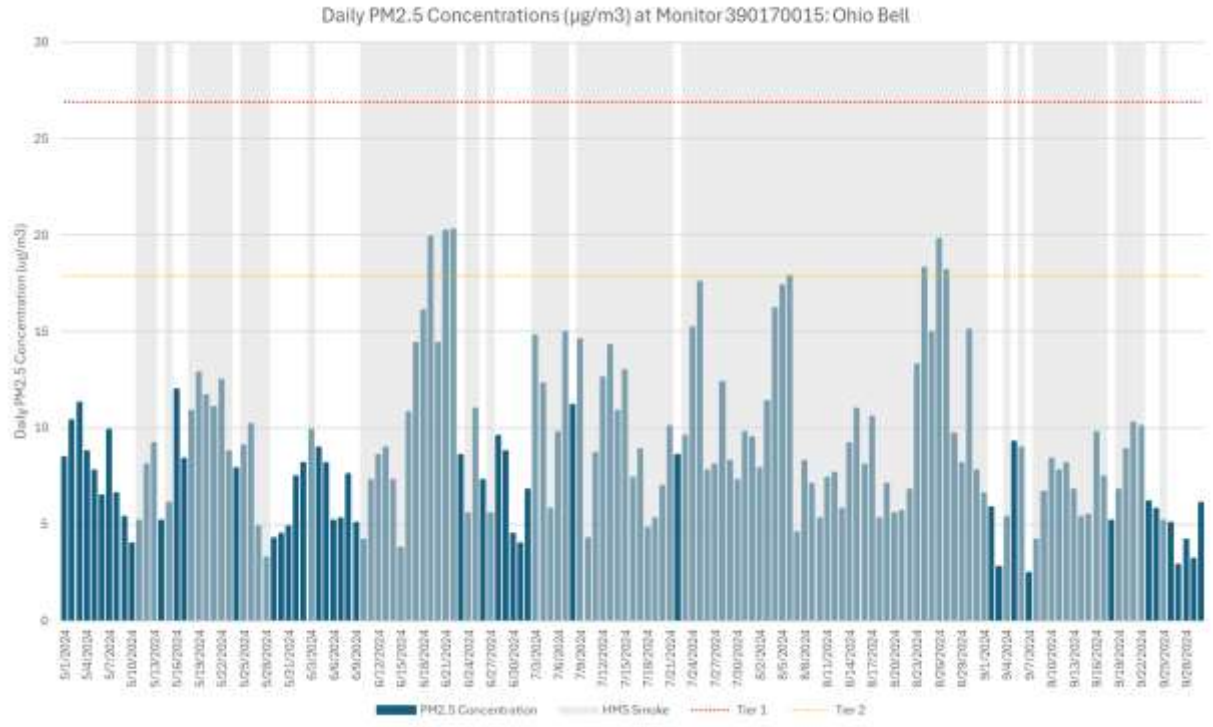



**Figure 93. Daily PM2.5 concentrations at monitor 390170015; May through September 2024.**

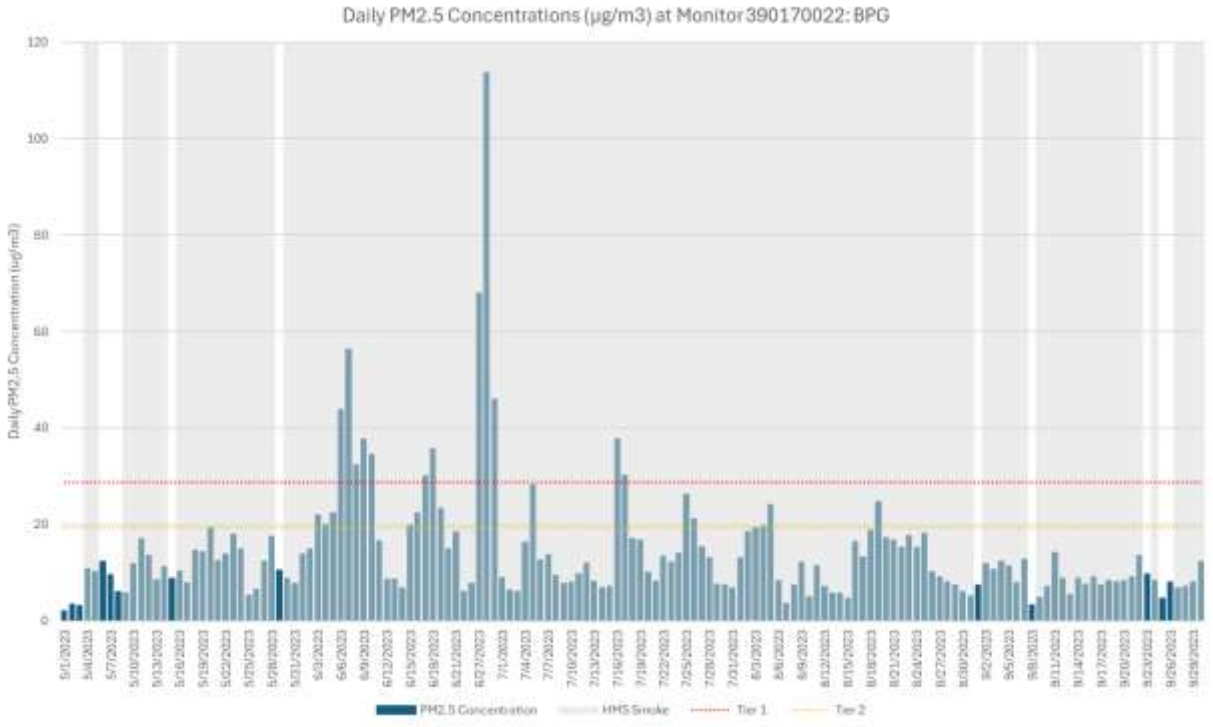



**Figure 94. Daily PM2.5 concentrations at monitor 390170022; May through September 2023.**

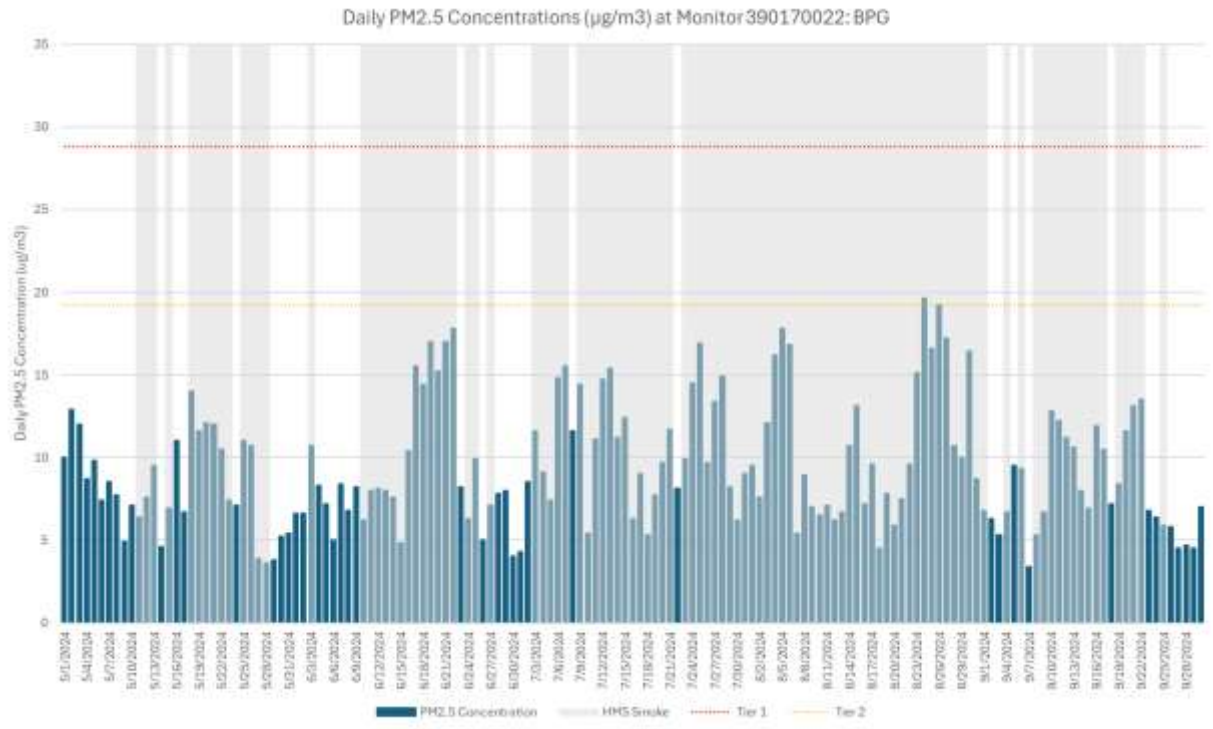



**Figure 95. Daily PM2.5 concentrations at monitor 390170022; May through September 2024.**

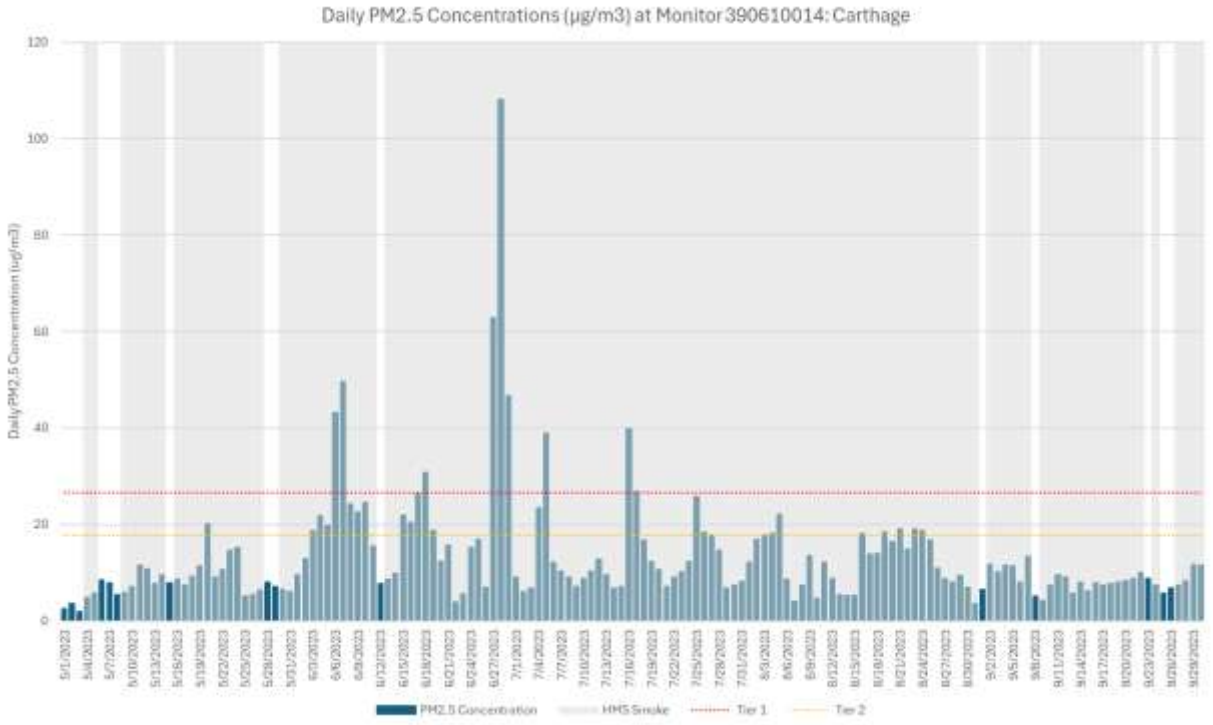



**Figure 96. Daily PM2.5 concentrations at monitor 390610014; May through September 2023.**

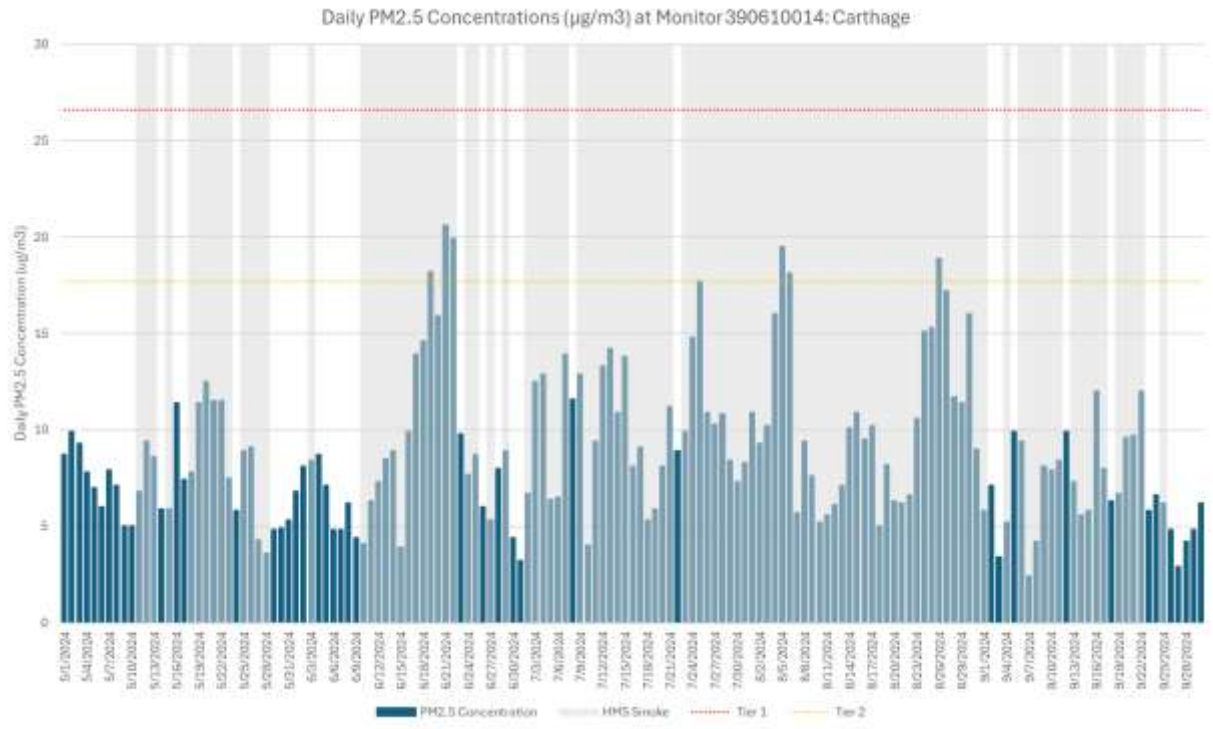



**Figure 97. Daily PM2.5 concentrations at monitor 390610014; May through September 2024.**

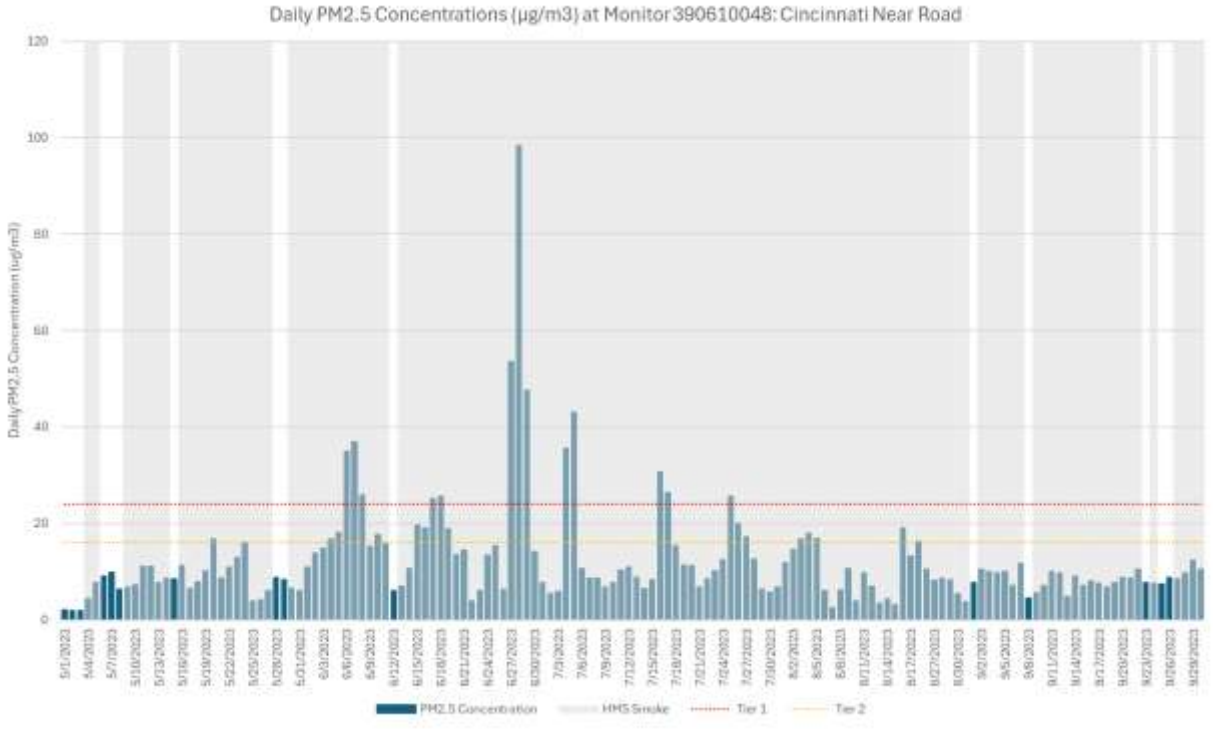



**Figure 98. Daily PM2.5 concentrations at monitor 390610048; May through September 2023.**

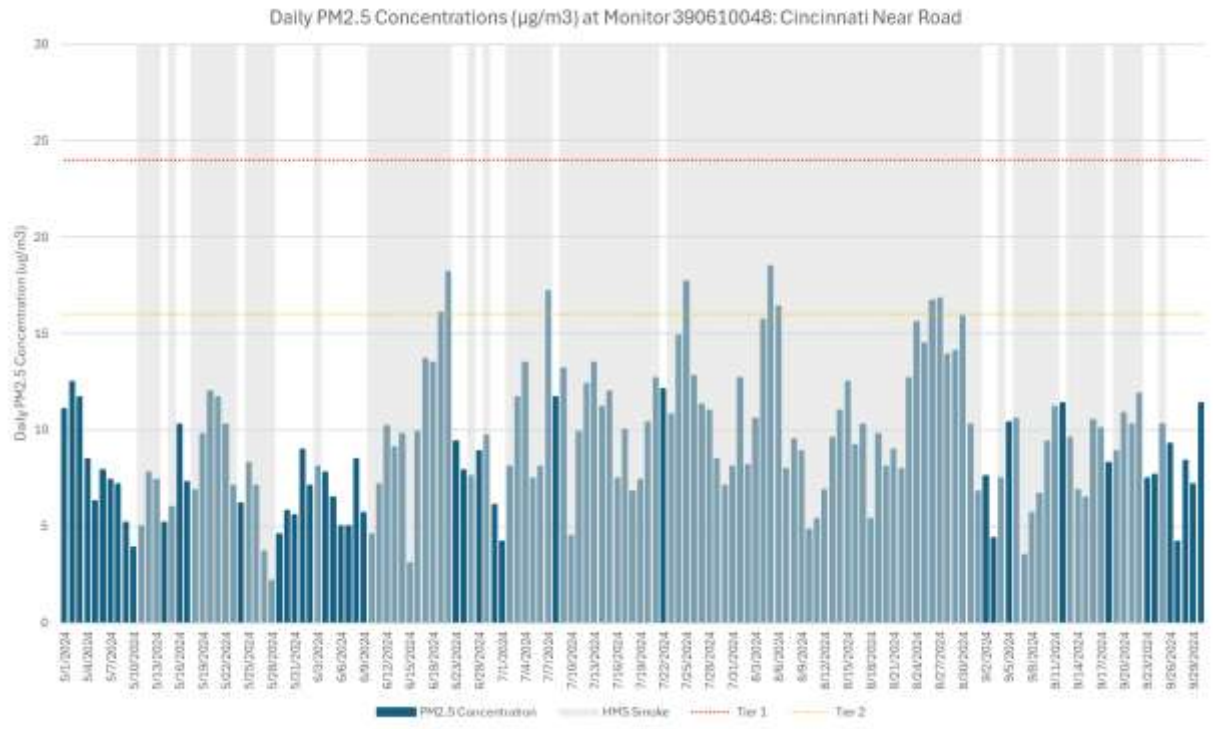



**Figure 99. Daily PM2.5 concentrations at monitor 390610048; May through September 2024.**

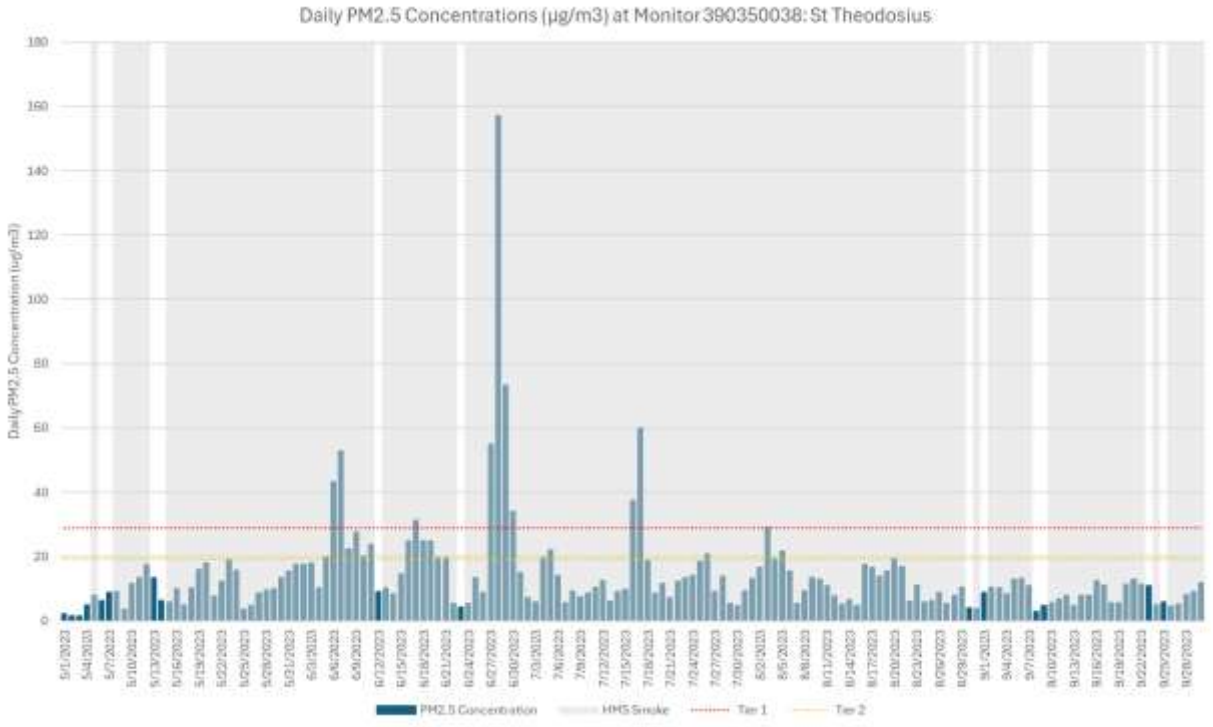



**Figure 100. Daily PM2.5 concentrations at monitor 390350038; May through September 2023.**

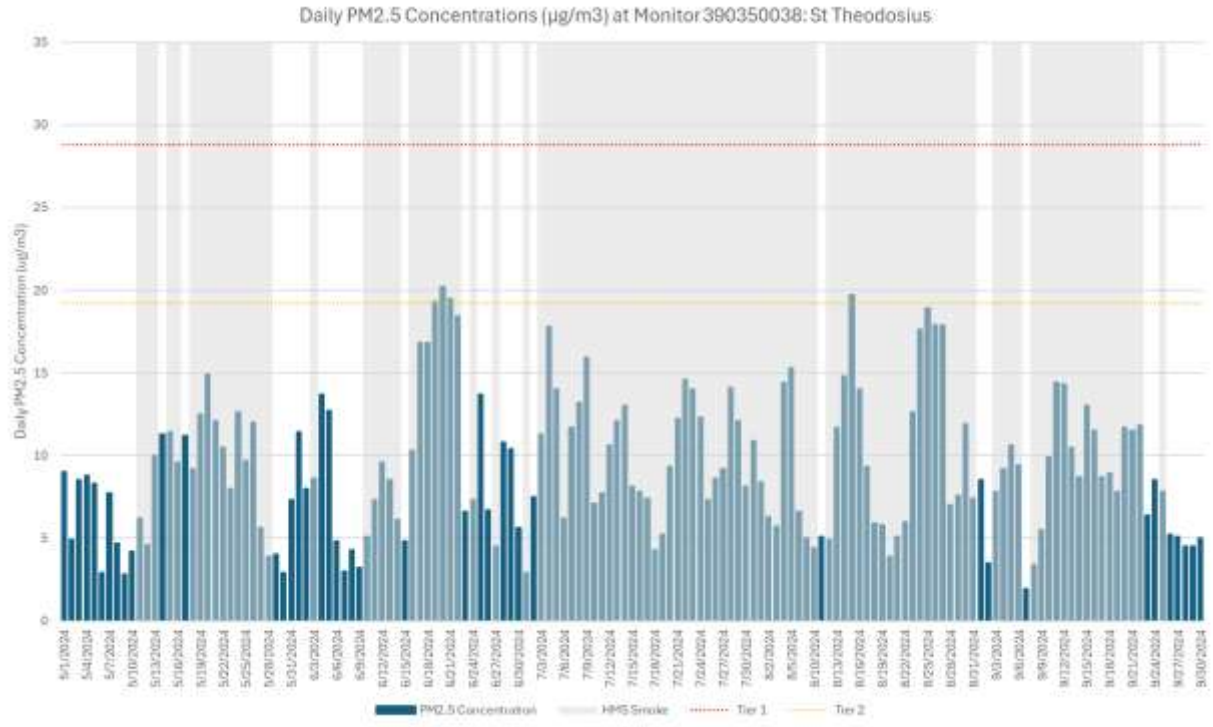



**Figure 101. Daily PM2.5 concentrations at monitor 390350038; May through September 2024.**

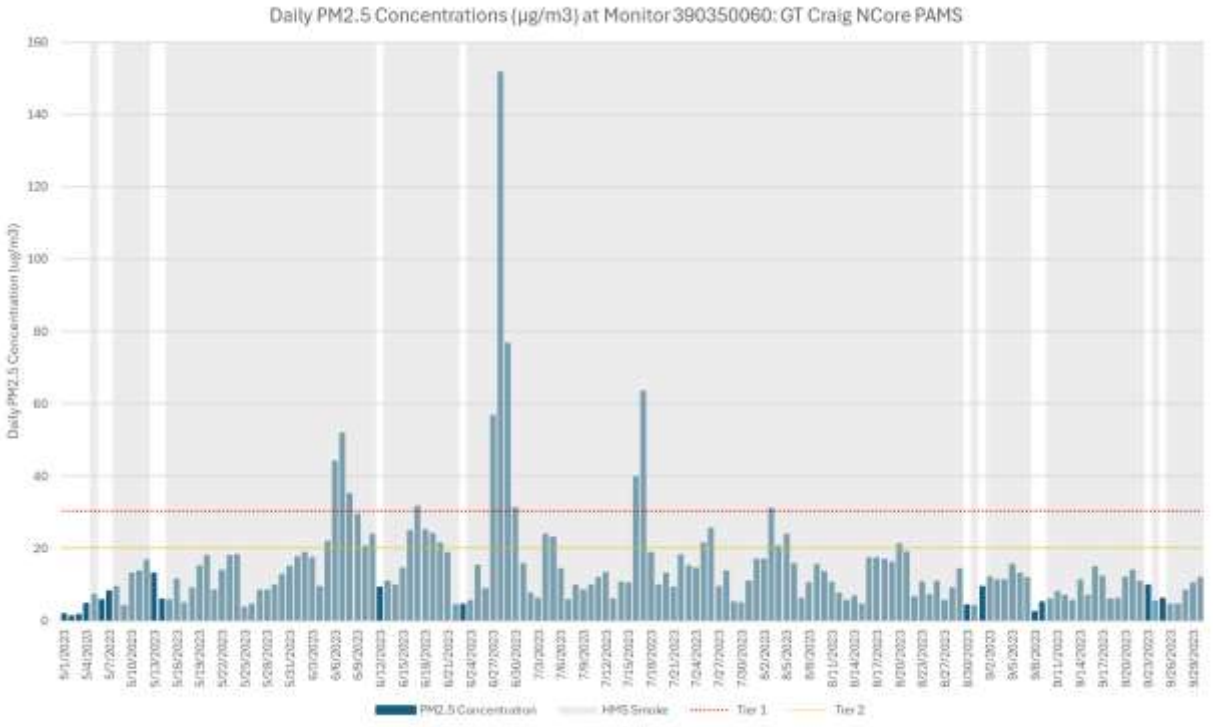



**Figure 102. Daily PM2.5 concentrations at monitor 390350060; May through September 2023.**

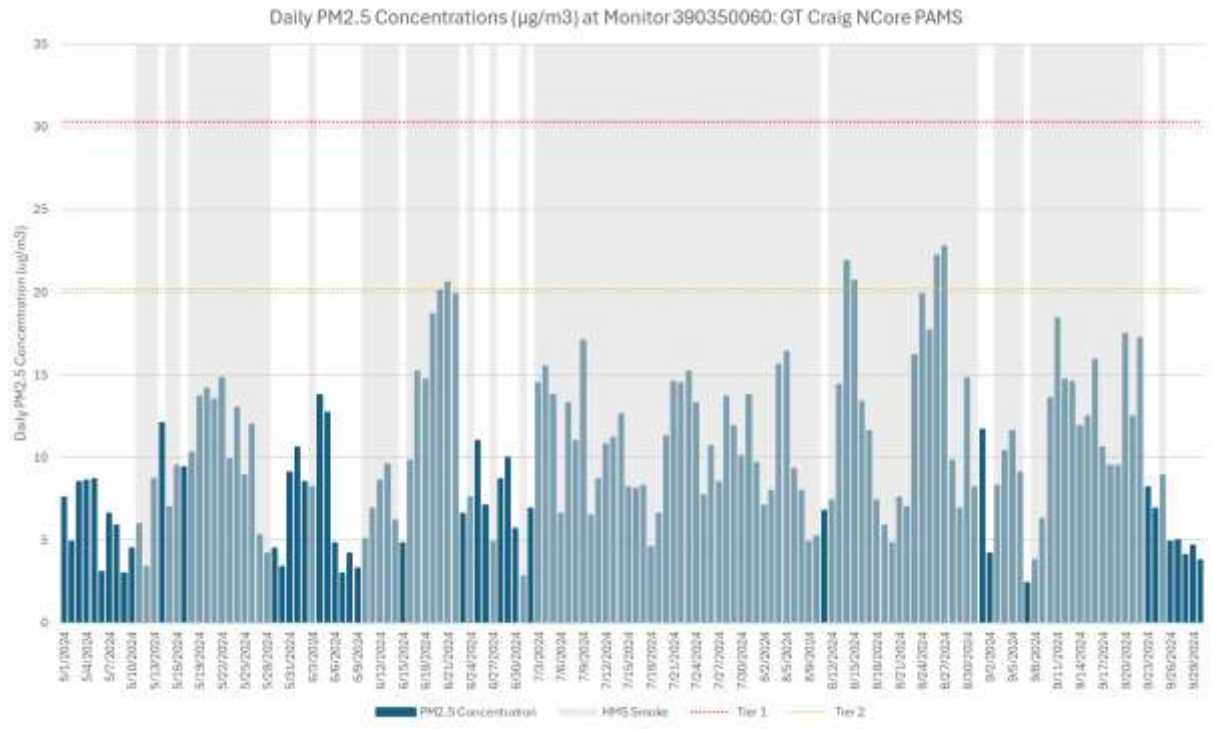



**Figure 103. Daily PM2.5 concentrations at monitor 390350060; May through September 2024.**

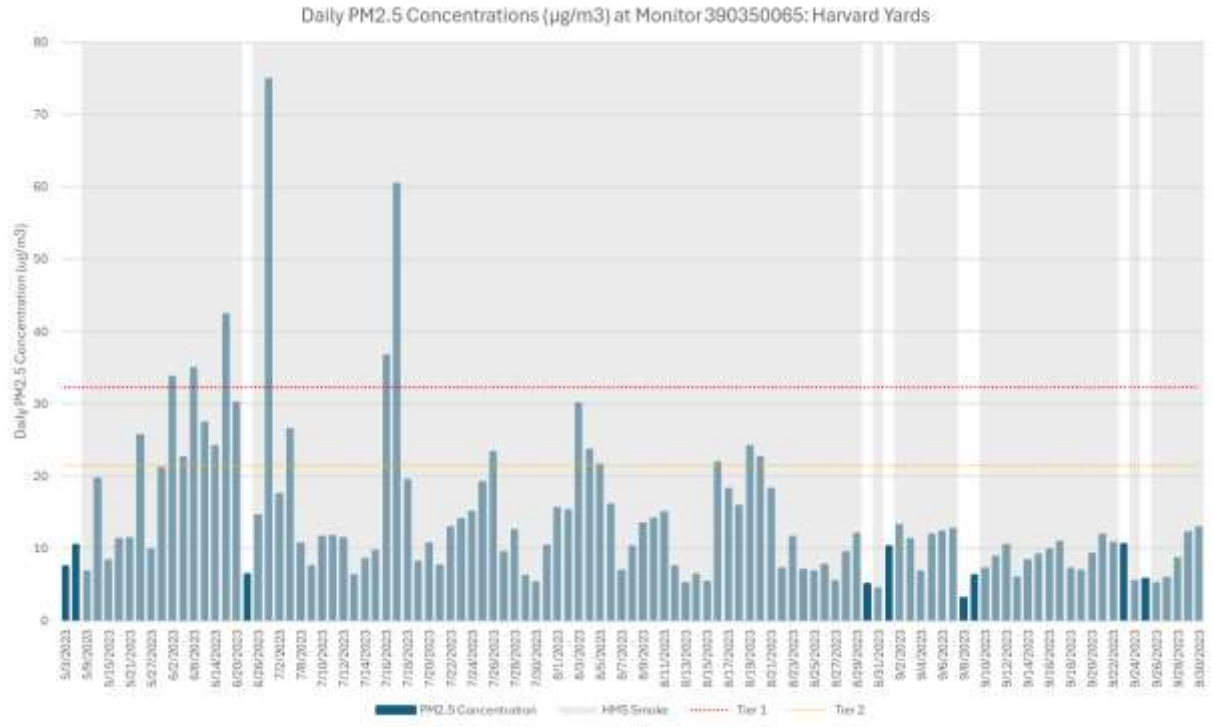



**Figure 104. Daily PM2.5 concentrations at monitor 390350065; May through September 2023.**

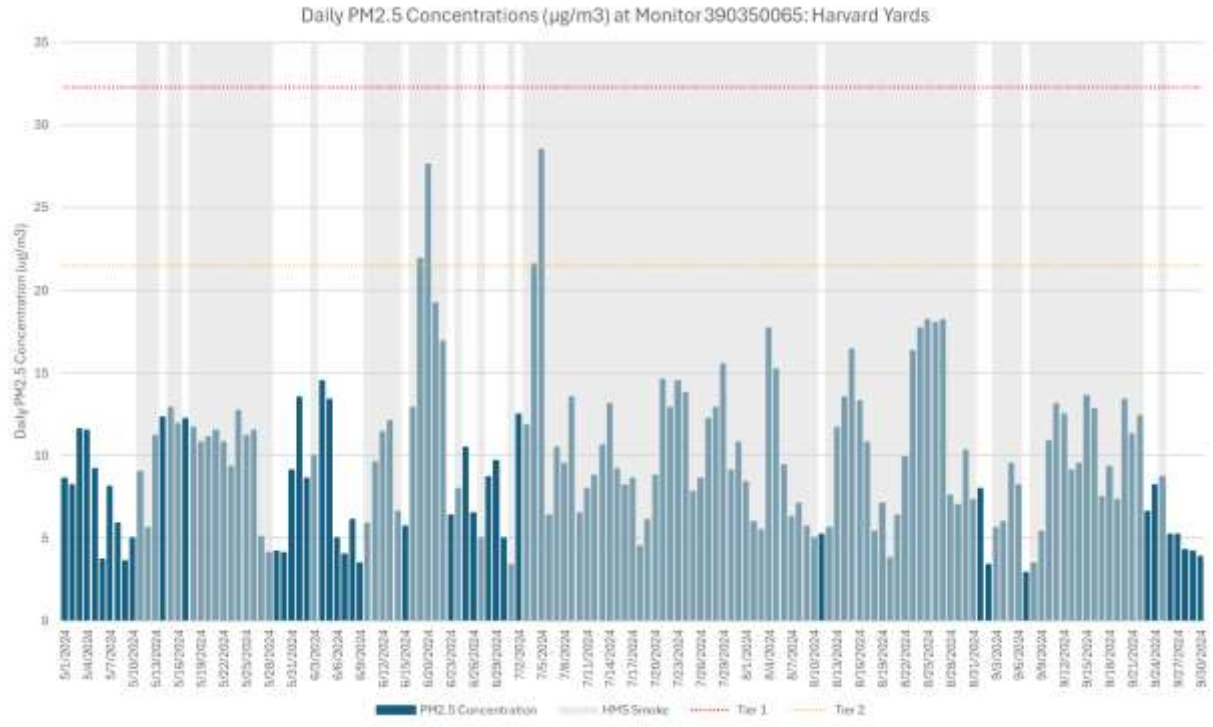



**Figure 105. Daily PM2.5 concentrations at monitor 390350065; May through September 2024.**

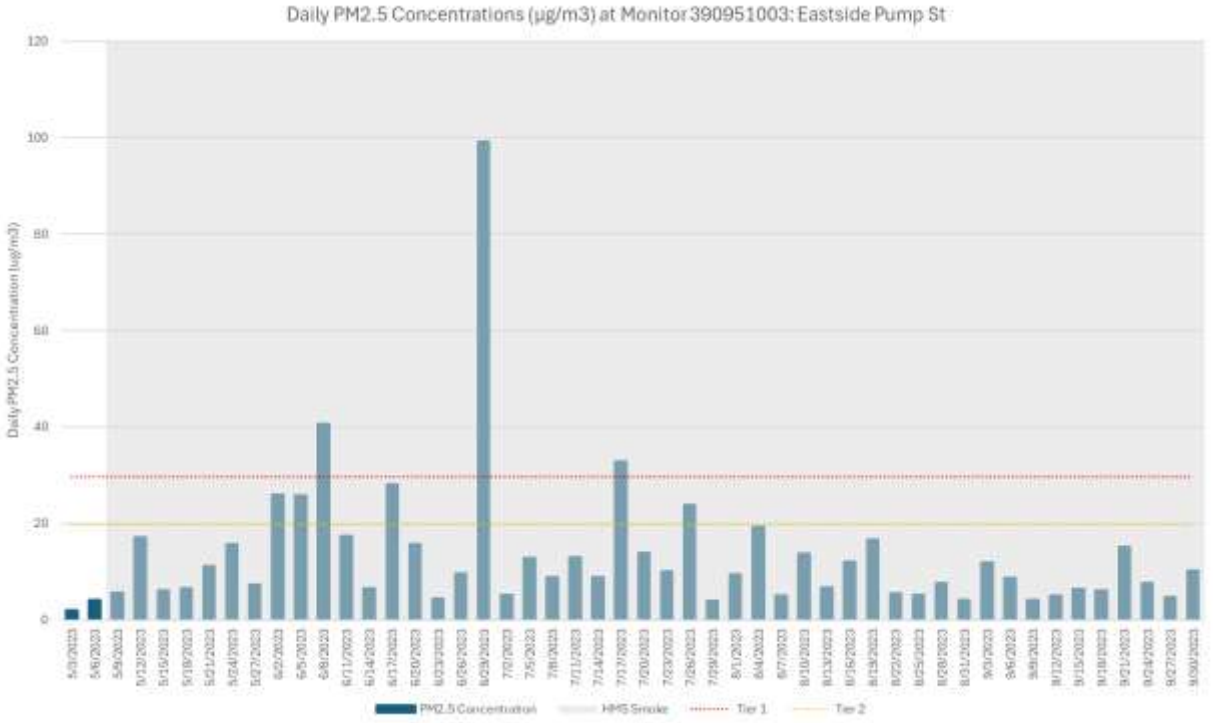



**Figure 106. Daily PM2.5 concentrations at monitor 390951003; May through September 2023.**

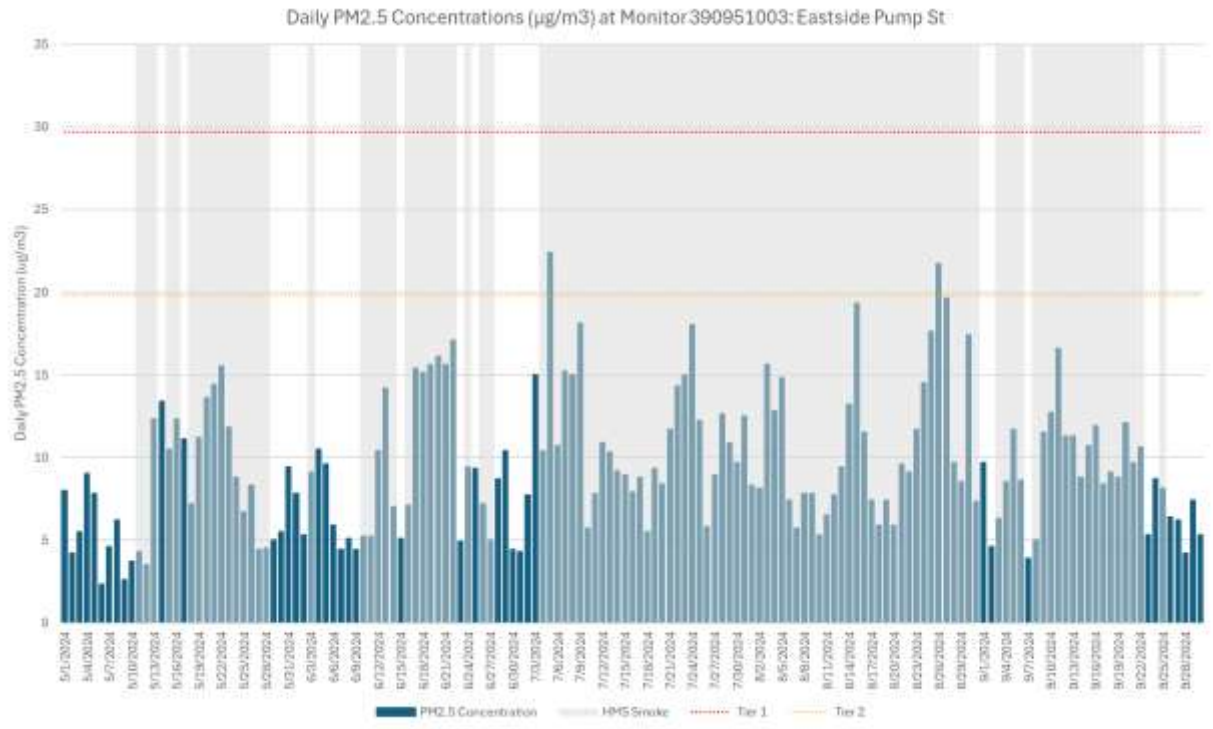



**Figure 107. Daily PM2.5 concentrations at monitor 390951003; May through September 2024.**

OC and K+ are the compounds most associated with wildfire emissions, so comparing these chemical compounds against the monitored 8-hour maximums for these months can provide evidence regarding the impact of such emissions. Speciated data (run every 3 or 6 days) retrieved from Ohio monitors showed increased concentrations of both species in May and June 2023, consistent with the track of the Canadian wildfire smoke plume analyzed by HMS and observed increases in the ozone concentrations. K+ acts as a useful tracer of wildfire smoke because there are few anthropogenic sources, and concentrations above background levels are a signature of wildfire emissions.

Particularly in late May leading into early June 2023, the magnitudes of OC and K+ were largest at these monitor (except for July 5 observation associated with Independence Day fireworks), demonstrating influence by the wildfire smoke still present in the area. Since the K+ and OC are specific wood combustion markers, these speciated PM2.5 data provide conclusive evidence that the ozone affecting the airmass in Ohio developed in areas under the heavy influence of smoke related emissions.

Figure 108 through Figure 119 show that OC, along with K+, increased around the time of the elevated ozone readings measures during the 2023 and 2024 episodes at these monitors, days in which smoke was visibly present over the location, providing further support that this was an event with a clear indicator of wildfire or prescribed fire influence. What is also observed in these figures is the buildup of concentrations of these tracers as the fire smoke is persistent over the region for multiple days. In these instances, we see a gradual increase in these tracer species concentrations, the longer the plumes reside over the region.

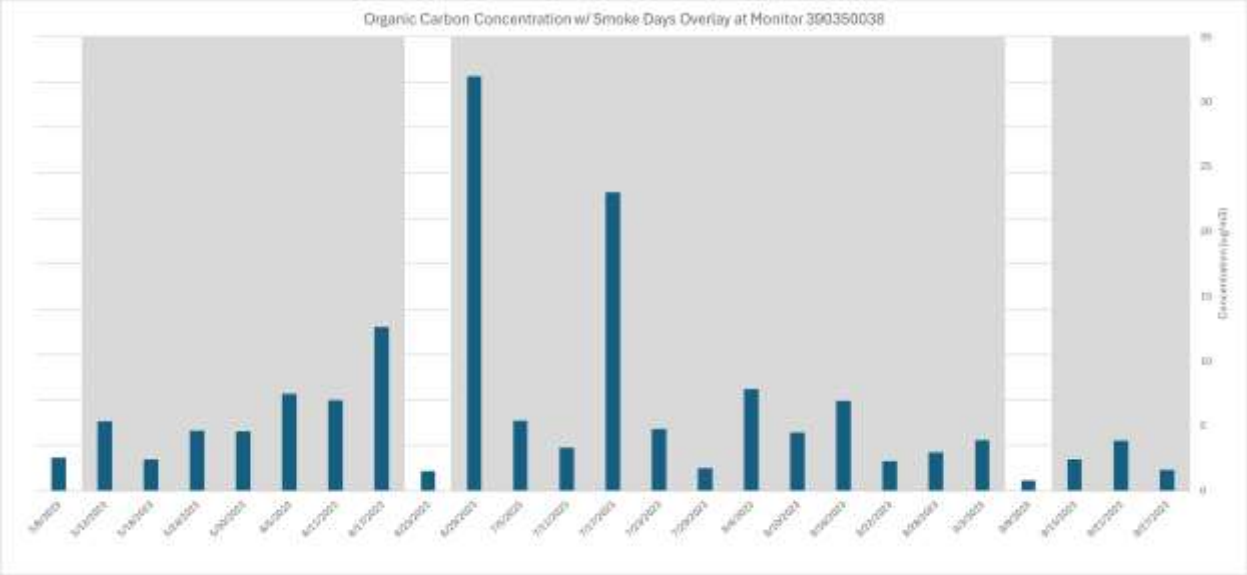



**Figure 108. Organic carbon concentrations at monitor 390350038; May through September 2023.**

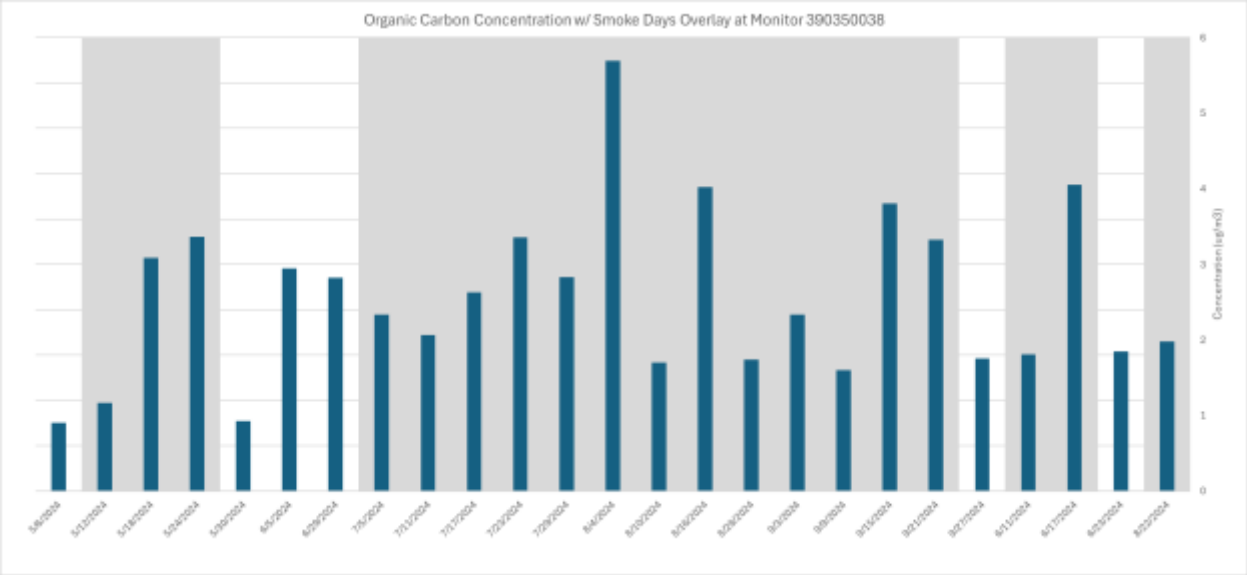



**Figure 109. Organic carbon concentrations at monitor 390350038; May through September 2024.**

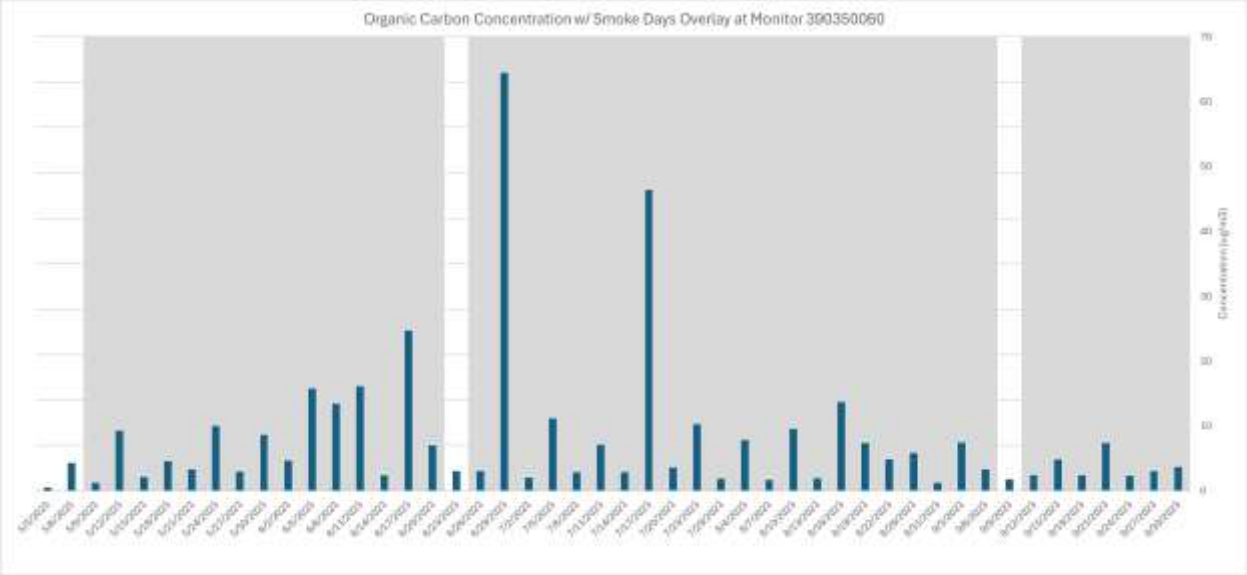



**Figure 110. Organic carbon concentrations at monitor 390350060; May through September 2023.**

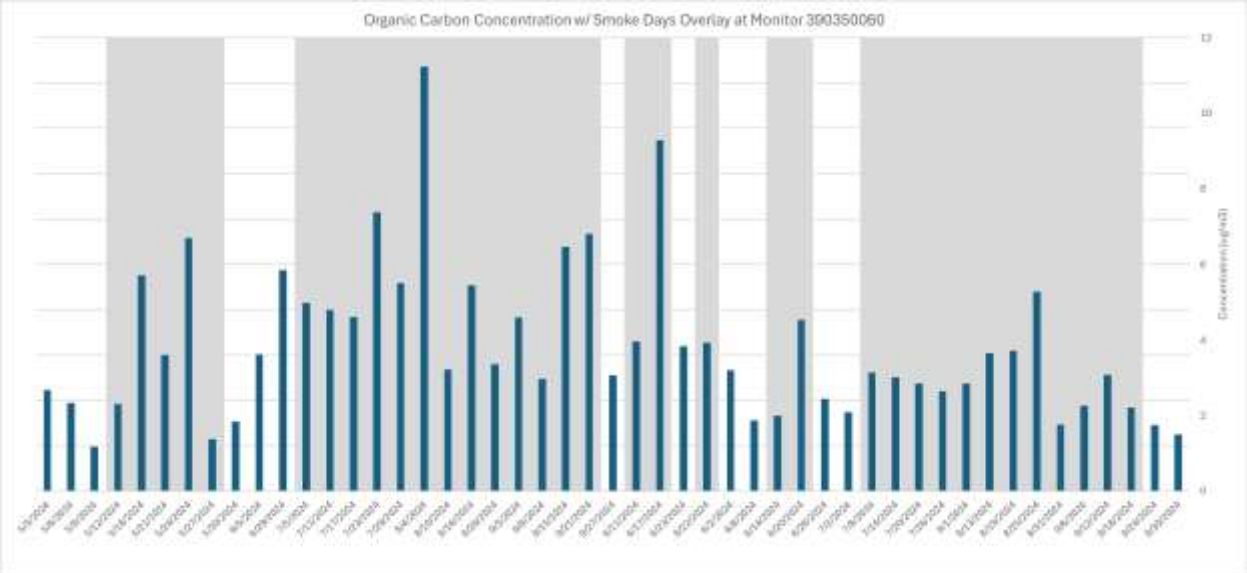



**Figure 111. Organic carbon concentrations at monitor 390350060; May through September 2024.**

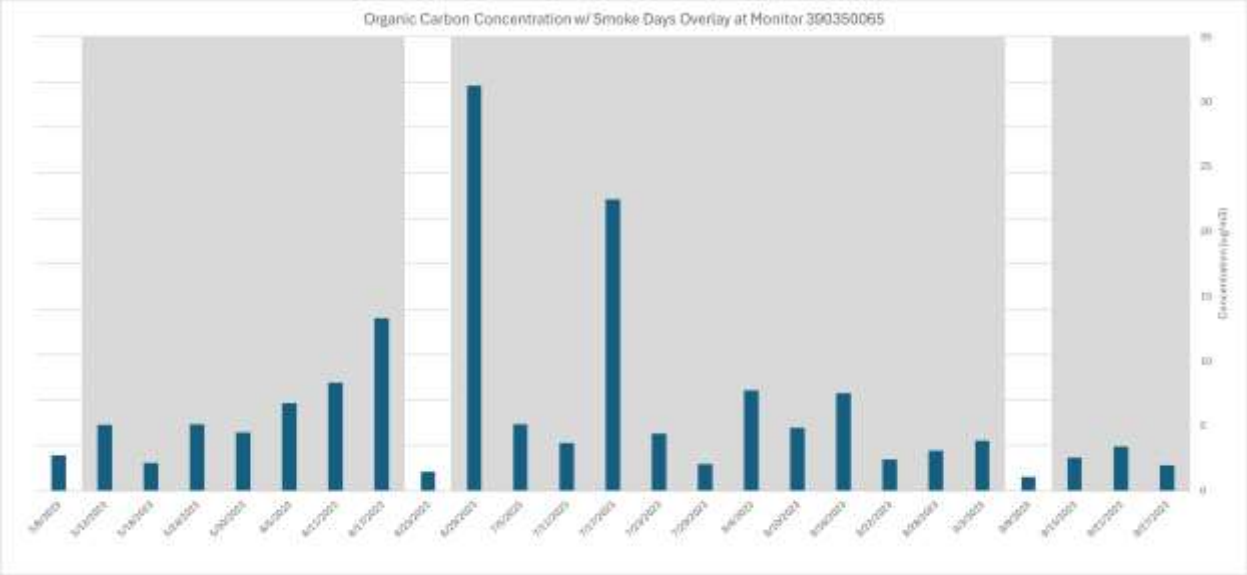



**Figure 112. Organic carbon concentrations at monitor 390350065; May through September 2023.**

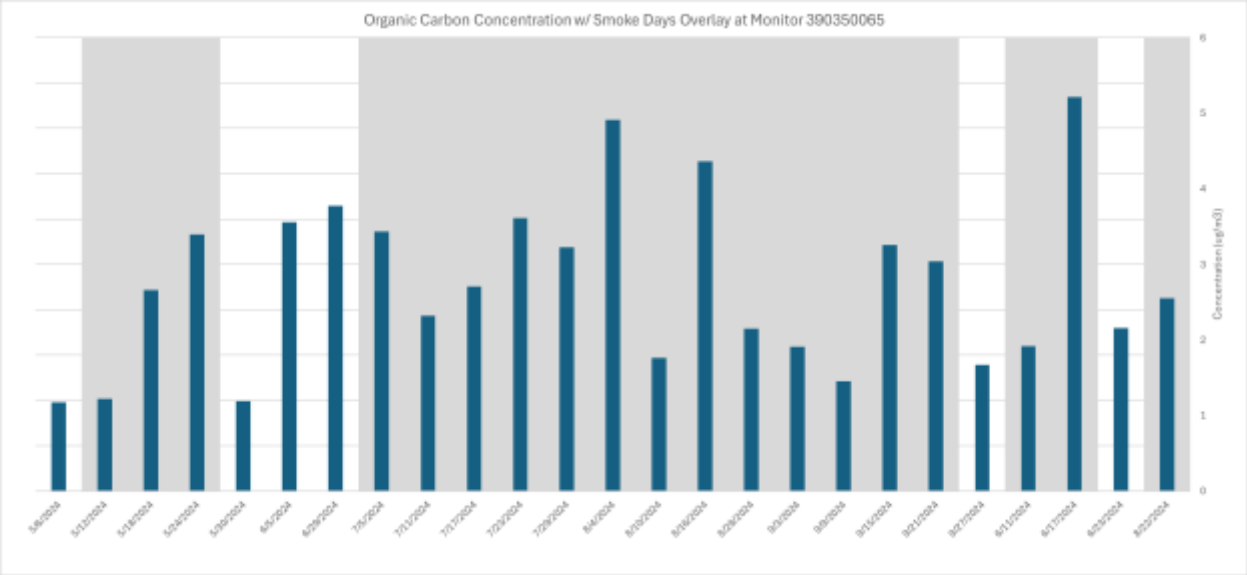



**Figure 113. Organic carbon concentrations at monitor 390350065; May through September 2024.**

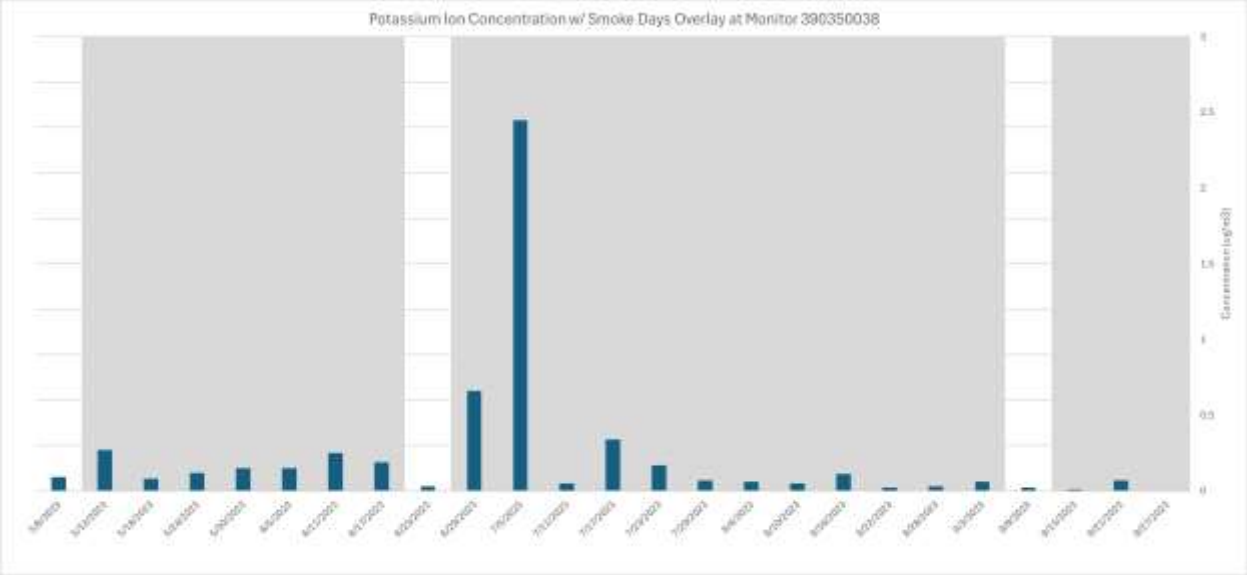



**Figure 114. Potassium ion concentrations at monitor 390350038; May through September 2023.**

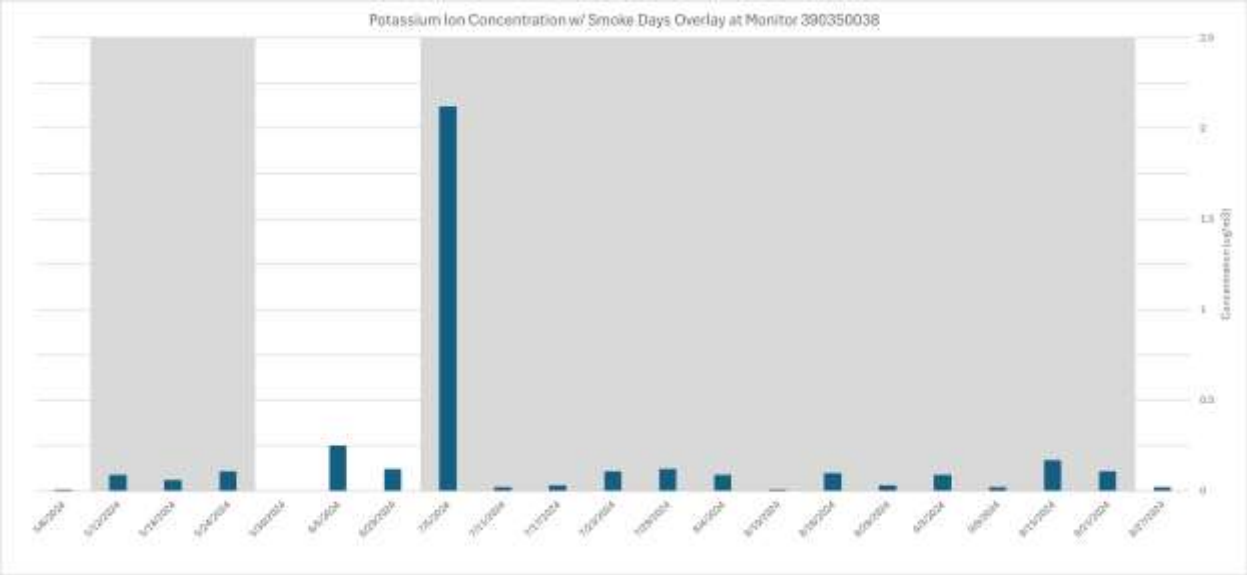



**Figure 115. Potassium ion concentrations at monitor 390350038; May through September 2024.**

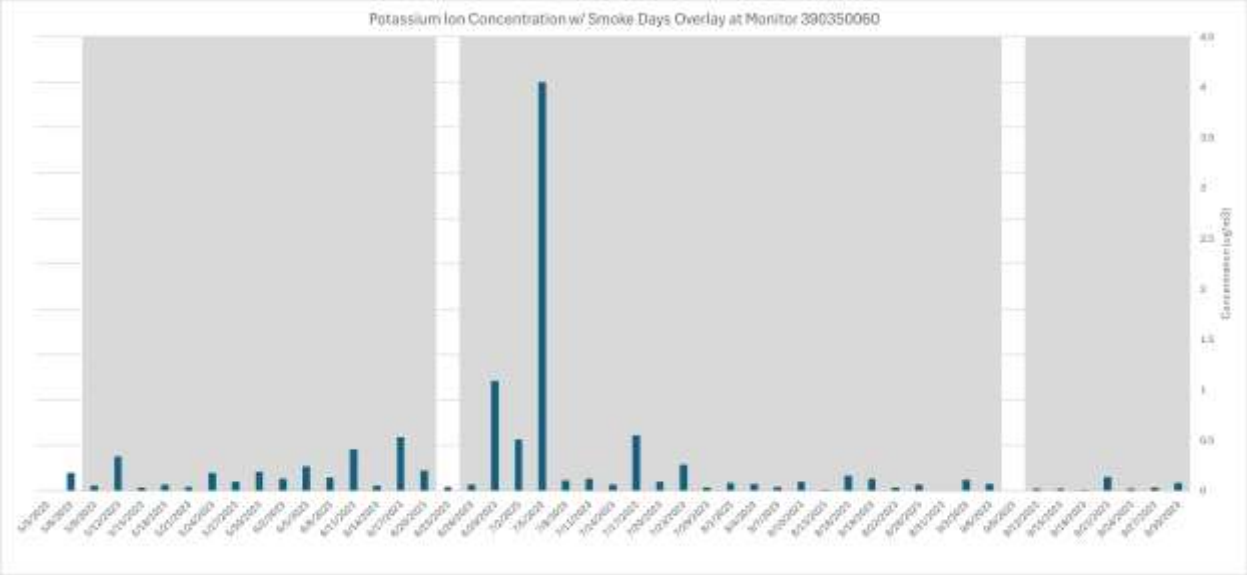



**Figure 116. Potassium ion concentrations at monitor 390350060; May through September 2023.**

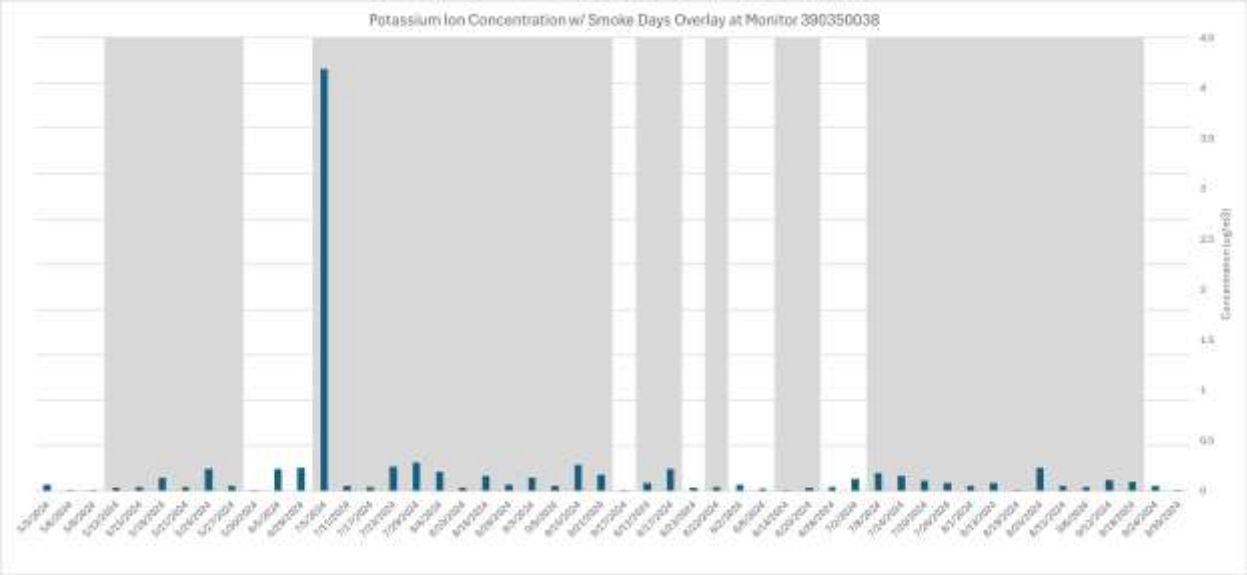



**Figure 117. Potassium ion concentrations at monitor 390350060; May through September 2024.**

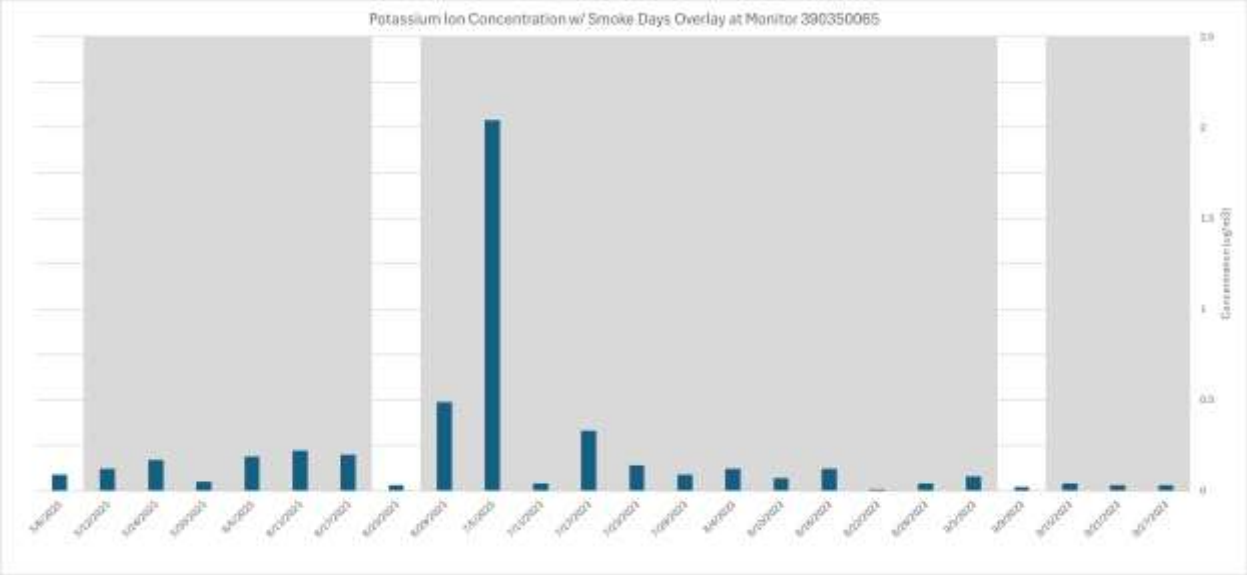



**Figure 118. Potassium ion concentrations at monitor 390350065; May through September 2023.**

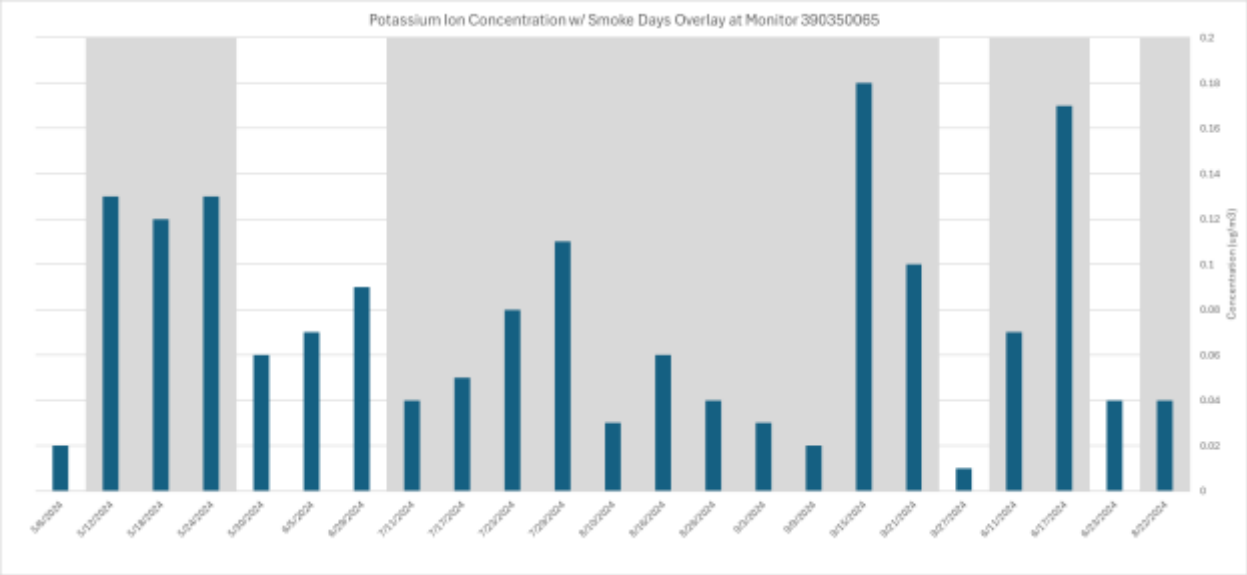



**Figure 119. Potassium ion concentrations at monitor 390350065; May through September 2024.**

**Evidence of Transport of Fire Emissions from the Fire to the Monitor**

**Visible Satellite Imagery**

Visible satellite imagery from the Moderate Resolution Imaging Spectroradiometer (MODIS) Aqua and Terra satellites plainly shows transport of smoke from fires burning in Canada to the midwestern United States, including Ohio, between May and September 2023 and May and September 2024, when ozone and PM2.5 concentrations were at their highest. In the example episodes below, June 28-29, 2023, and August 27-28, 2024, the movement of a dense smoke plume south and southeast from Canada is particularly noteworthy as these plumes eventually make their way across the international border and into the Ohio valley, enhancing ozone and PM2.5 concentrations along its path.

The associated smoke text products[17] produced by NOAA for June 28, 2023 and August 27, 2024, and represented in Figure 120 and Figure 121, note the following:

*June 28, 2023*

*DESCRIPTIVE TEXT NARRATIVE FOR SMOKE/DUST OBSERVED IN SATELLITE IMAGERY THROUGH 1550Z June 28, 2023*

*SMOKE:*

*Canada, Eastern and Central United States, Atlantic Ocean… The major wildfires across portions of Canada continue with a large area of smoke over much of Canada and extending to the south over the Central and Southeastern United States. The smoke also extended well off the east coasts of Canada and the United States over the northern and central Atlantic to western portions of Europe. To the west, some of the thinner density smoke had spread to the west and south to just off the southwestern coast of Canada and the Pacific Northwest United States and into the far northeastern Pacific Ocean. Within this area, the thickest smoke was located from western Quebec through southern Ontario and into portions of the Midwestern and Upper Midwest of the United States and also over northern Alberta, the southern Northwest Territories and northern British Columbia."*

*August 27, 2024*

*DESCRIPTIVE TEXT NARRATIVE FOR SMOKE/DUST OBSERVED IN SATELLITE IMAGERY THROUGH 1725Z August 27, 2024*

*SMOKE:*

*Canada/United States/Atlantic Ocean... A large area of smoke attributed to a combination of the large amount of wildfire activity across western Canada and the Northwest region of the United States, and seasonal burning throughout the Southeastern United States, continues to impact areas of Canada, the United States and parts of the northern Atlantic Ocean. Several relatively small areas of moderate-to-thick density smoke were seen emanating from wildfires located in north-central Saskatchewan, Idaho,*

[17] https://www.ospo.noaa.gov/products/land/smoke/

*Montana and north-central Ontario. A small area of moderate density smoke was also observed in the Southeastern United States, concentrated mostly in Kansas, Missouri, Arkansas and Illinois while light density smoke was seen blanketing northern Canada, extending south through the Mississippi Valley and continuing to the Coastal Atlantic region of the United States, before extending northeast through Newfoundland and Labrador and into the northern Atlantic Ocean. Cloud cover throughout the majority of Canada prevented a more detailed analysis of smoke density today, however, based on past observations it is likely that medium-to-heavy density smoke is present near active wildfires but is concealed by cloud cover.*

The movement of this smoke corresponds to the expansion of elevated ozone values along the pathway of transport to the Ohio arished, as demonstrated in following sections using ozone observations, NOAA HMS smoke products, and AQI maps.

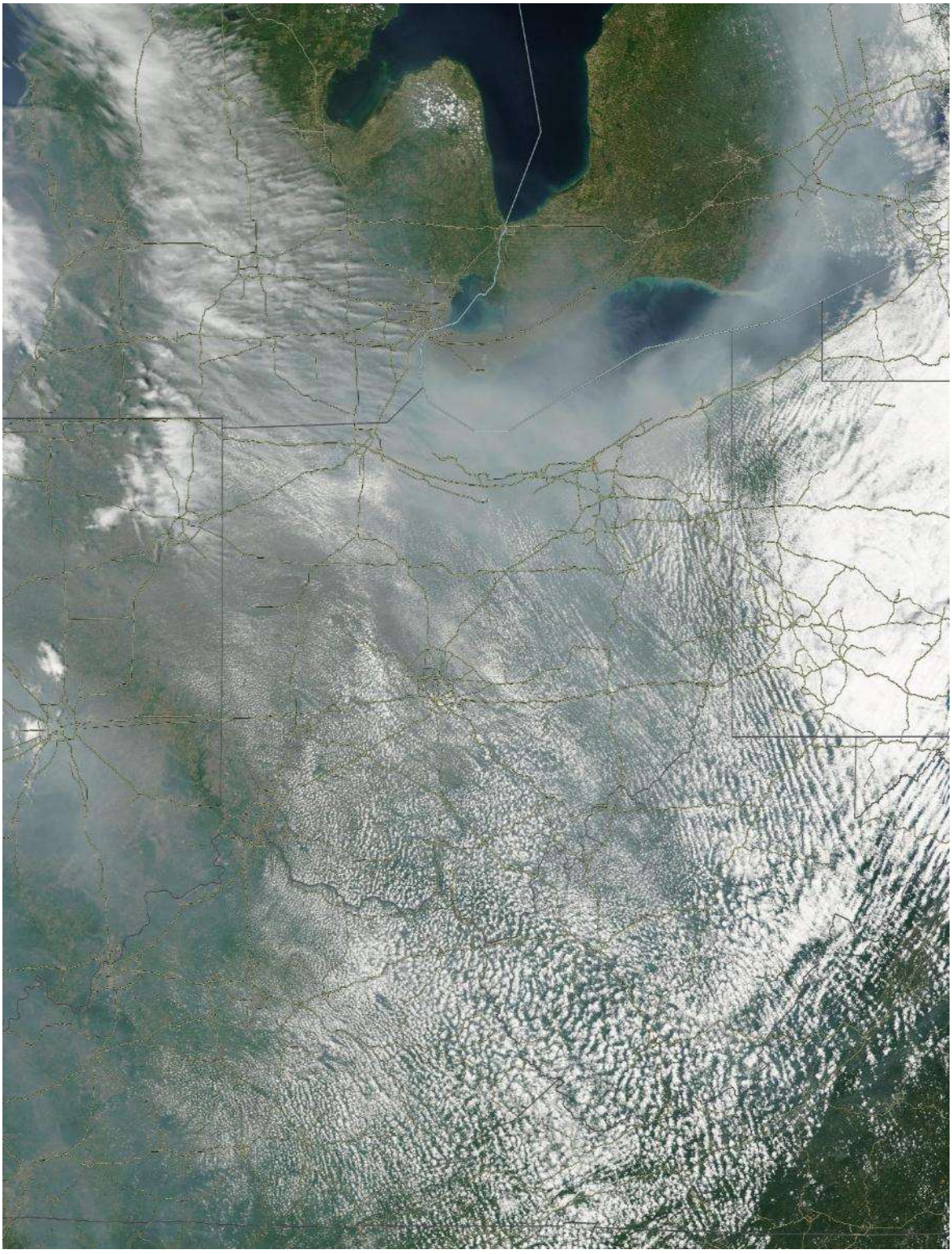


**Figure 120. MODIS Terra true color satellite imagery from June 28, 2023, with smoke present over the Ohio region. Image source: NASA Worldview.**

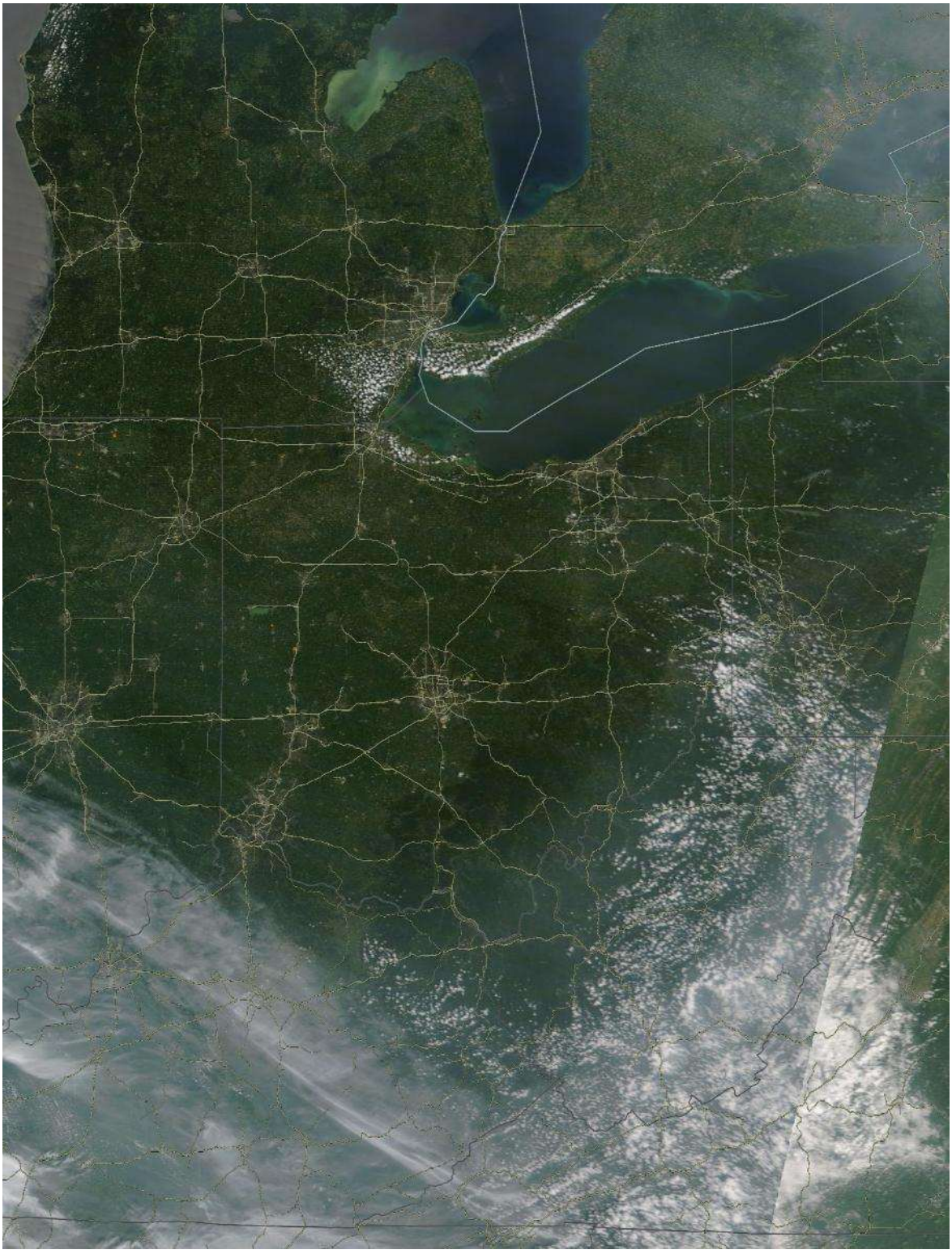


**Figure 121. MODIS Terra true color satellite imagery from August 27, 2024, with smoke present over the southern Ohio region. Image source: NASA Worldview.**

**HMS Smoke Plume Data and Ozone AQI Maps**

Based on the considerable collective size of the Canadian wildfire complexes and large number of prescribed fire acres burned, significant amounts of ozone and PM2.5 precursors were emitted in addition to other smoke components. As early as May 10, 2023, plumes from the Canadian wildfires began dispersing into the Ohio valley region. Through all of June and into early July, with additional episodes in late July and early August, wildfire smoke was prevalent in the Midwestern U.S. and enhanced ozone concentrations in the region.

Figure 122 and Figure 123 shows the progression of the smoke plumes over the Midwest during the example episode of June 27 and 28, 2023, as analyzed by the HMS staff at NOAA, using satellite images and Ozone and PM2.5 AQI. This series of maps shows the movement of the Canadian smoke plumes as a first plume tracks west and then south toward the Mississippi Valley eventually finding its way over Ohio during the episode.

Similar patterns are seen in Figure 124 and Figure 125, which represent August 26-27, 2024. As shown in these figures, fire smoke had an AQI impact on monitors in Ohio and the surrounding area during these episodes.

Figure 122 through Figure 125 corroborate the evidence of smoke over Ohio demonstrated by the visual satellite images (Figure 120 and Figure 121) that enhanced the ozone and PM2.5 concentrations during these episodes.

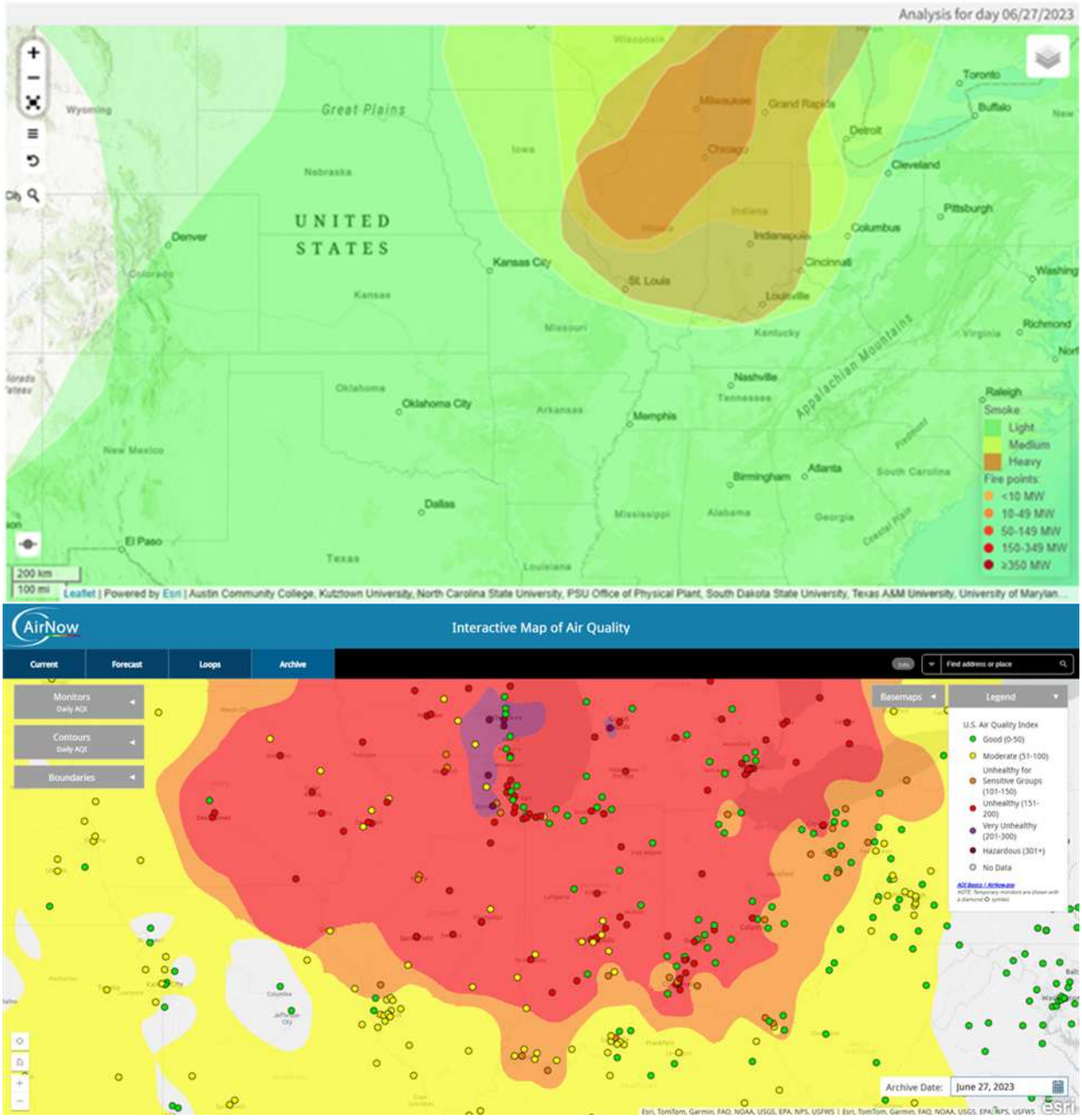



**Figure 122. HMS Smoke Analysis (top) and AQI Maps (bottom) from June 27, 2023.**

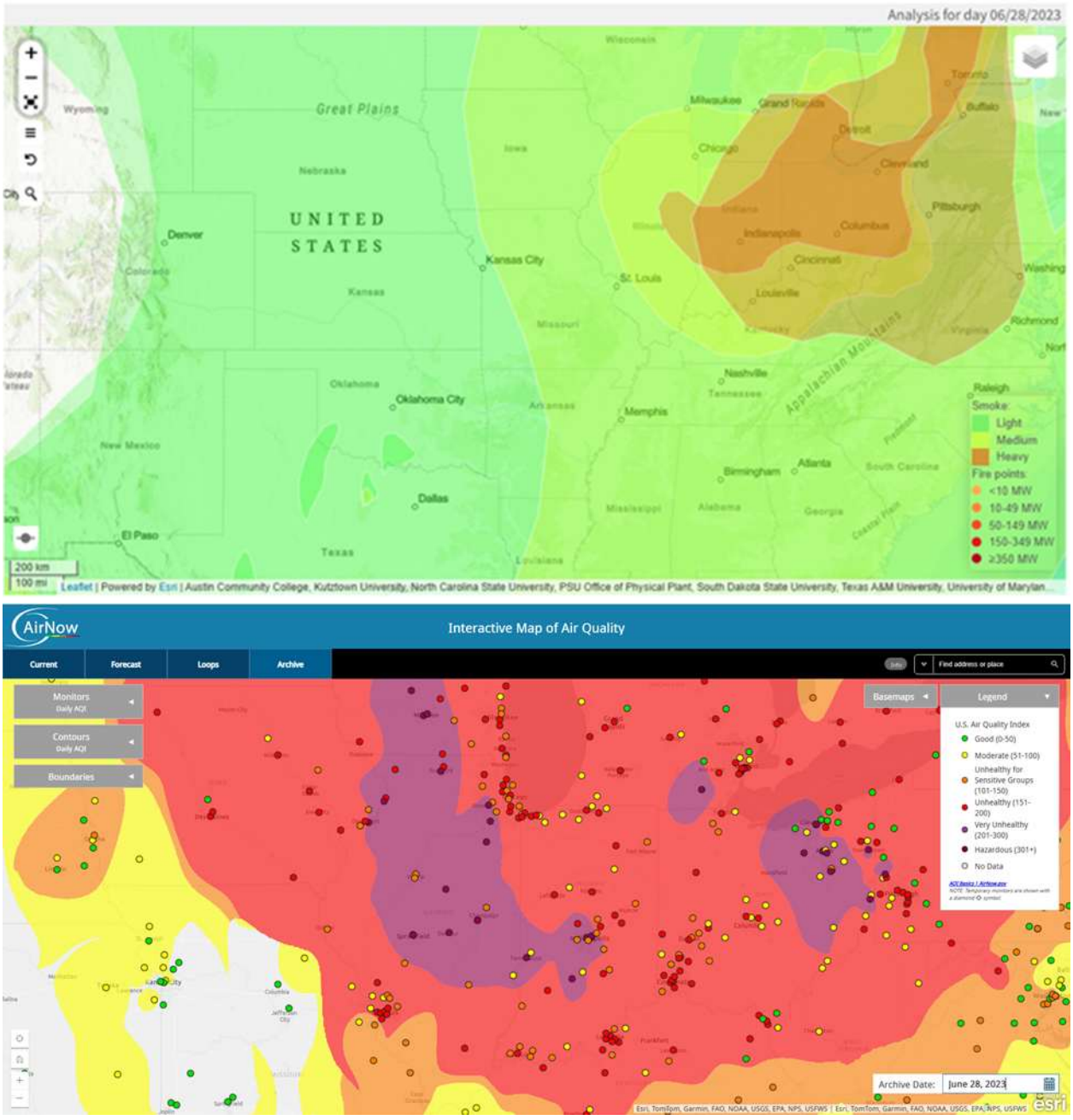



**Figure 123. HMS Smoke Analysis (top) and AQI Maps (bottom) from June 28, 2023.**

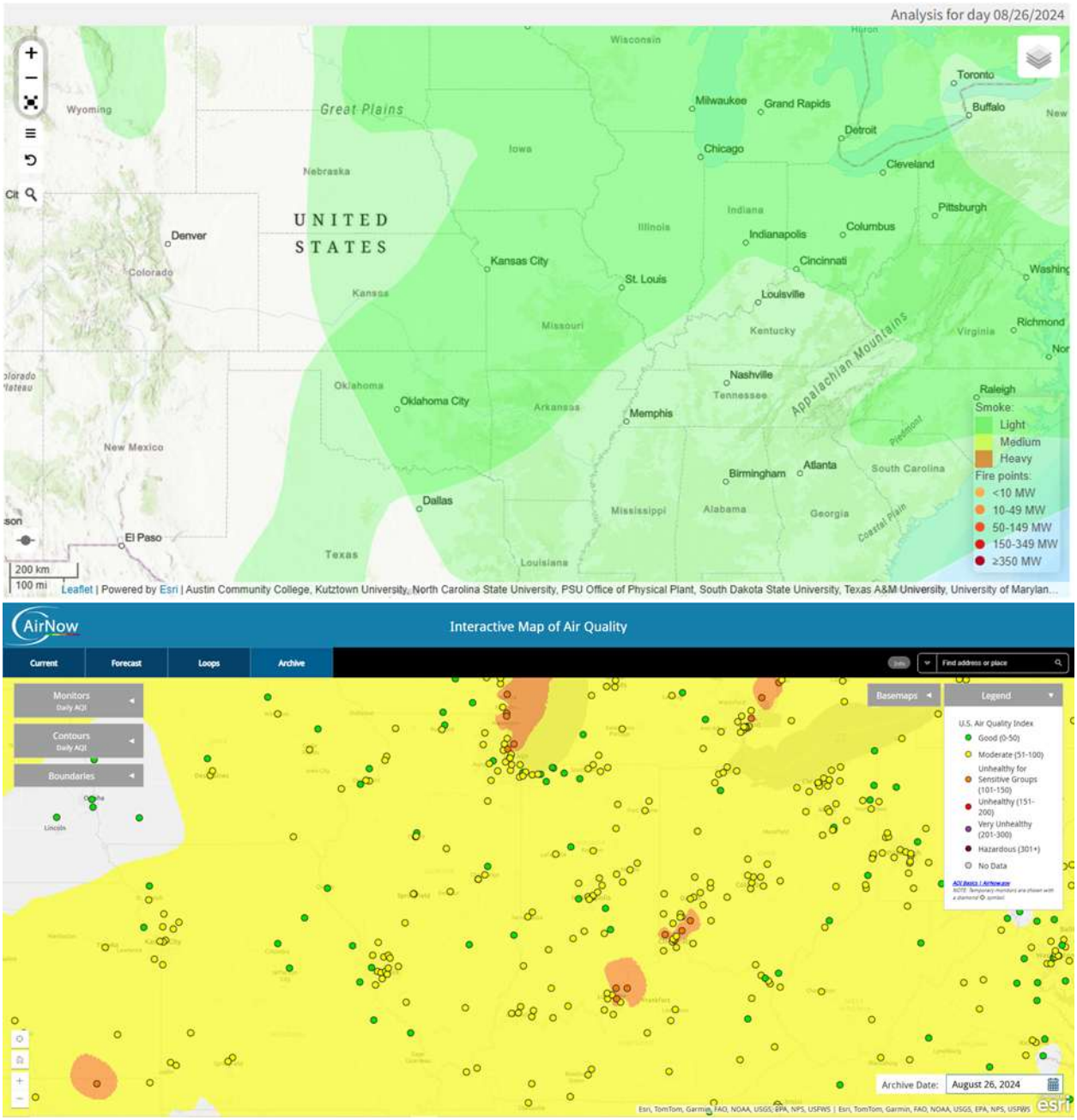



**Figure 124. HMS Smoke Analysis (top) and AQI Maps (bottom) from August 26, 2024.**

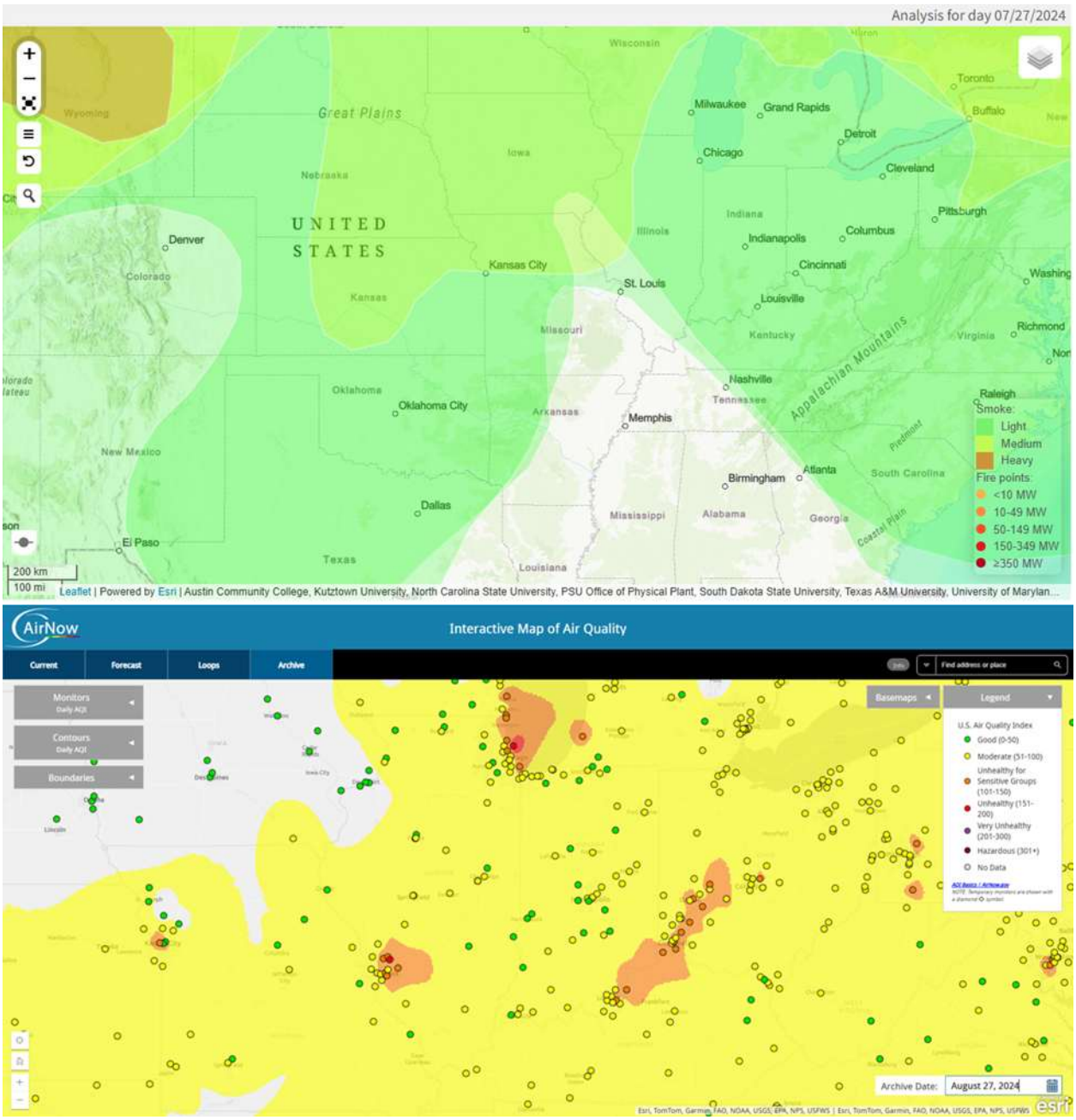



**Figure 125. HMS Smoke Analysis (top) and AQI Maps (bottom) from August 27, 2024.**

**Regional Supporting Measurements**

Additionally, the comparison of the HMS smoke plumes with MDA8 ozone and 24-hour PM2.5 concentrations shows that these concentrations increased at monitors along the paths of the smoke plumes between the fires and across all of Ohio. This impact is even clearer based on examination of the highest concentrations at other Ohio sites outside of NAAs or CBSAs.

Ozone concentrations on most of the 2023- and 2024-episode dates and as found in monitors in Ohio are presented in Table 7 and Table 8, were associated with the ten highest annual concentrations at other regional monitors. This is also seen for PM2.5 concentrations in Table 9 and in Table 10 at non-CBSA monitors. While some of these sites may not have exceeded the level of the NAAQS during these periods, it is clearly seen that during the episode of the smoke transport, these sites had unusually high ozone and PM2.5 concentrations for their locations.

In fact, across all the monitors in the region and across all the top ten days at each of those monitors in the state, only a handful of monitor-days observed did not occur within the wildfire and prescribed fire smoke episodes in 2023 and 2024.

**Table 7. Observed Top Ten MDA8 Ozone Concentrations (ppb) at Ohio Monitors enhanced by fire smoke during the 2023 episodes (HMS smoke days highlighted in orange).**

| | | | Top 10 2023 MDA8 Ozone Observations (ppb) | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| State | County | Monitor ID | 1st Max Value | 1st Max Date | 2nd Max Value | 2nd Max Date | 3rd Max Value | 3rd Max Date | 4th Max Value | 4th Max Date | 5th Max Value | 5th Max Date | 6th Max Value | 6th Max Date | 7th Max Value | 7th Max Date | 8th Max Value | 8th Max Date | 9th Max Value | 9th Max Date | 10th Max Value | 10th Max Date |
| Ohio | Allen | 390030009 | 75 | 6/29/2023 | 73 | 6/18/2023 | 73 | 6/28/2023 | 72 | 6/2/2023 | 68 | 6/1/2023 | 68 | 6/30/2023 | 67 | 4/14/2023 | 67 | 6/3/2023 | 67 | 6/10/2023 | 67 | 8/3/2023 |
| Ohio | Ashtabula | 390071001 | 84 | 6/2/2023 | 78 | 6/1/2023 | 69 | 4/15/2023 | 69 | 6/29/2023 | 68 | 4/13/2023 | 67 | 4/14/2023 | 66 | 5/31/2023 | 66 | 6/11/2023 | 66 | 7/5/2023 | 65 | 4/11/2023 |
| Ohio | Clark | 390230001 | 74 | 6/2/2023 | 70 | 6/10/2023 | 70 | 6/18/2023 | 69 | 6/3/2023 | 69 | 6/28/2023 | 68 | 5/19/2023 | 68 | 6/1/2023 | 68 | 6/29/2023 | 67 | 7/12/2023 | 66 | 5/24/2023 |
| Ohio | Clark | 390230003 | 74 | 6/2/2023 | 72 | 6/28/2023 | 69 | 6/1/2023 | 68 | 6/3/2023 | 67 | 6/10/2023 | 66 | 5/19/2023 | 66 | 5/24/2023 | 66 | 6/18/2023 | 66 | 6/29/2023 | 65 | 4/13/2023 |
| Ohio | Clinton | 390271002 | 79 | 6/2/2023 | 75 | 6/10/2023 | 75 | 6/28/2023 | 74 | 8/4/2023 | 70 | 6/1/2023 | 69 | 6/3/2023 | 68 | 6/4/2023 | 68 | 7/11/2023 | 67 | 6/29/2023 | 66 | 4/12/2023 |
| Ohio | Greene | 390570006 | 78 | 8/4/2023 | 77 | 6/2/2023 | 75 | 6/28/2023 | 73 | 6/1/2023 | 69 | 5/24/2023 | 68 | 6/3/2023 | 68 | 6/10/2023 | 67 | 7/25/2023 | 66 | 5/29/2023 | 66 | 6/5/2023 |
| Ohio | Jefferson | 390810017 | 78 | 6/29/2023 | 73 | 6/1/2023 | 69 | 5/31/2023 | 69 | 6/18/2023 | 67 | 6/2/2023 | 66 | 4/20/2023 | 66 | 6/28/2023 | 65 | 5/12/2023 | 64 | 4/11/2023 | 64 | 5/24/2023 |
| Ohio | Knox | 390830003 | 72 | 6/18/2023 | 70 | 4/13/2023 | 70 | 6/2/2023 | 69 | 6/29/2023 | 68 | 6/28/2023 | 66 | 6/10/2023 | 65 | 4/20/2023 | 65 | 6/6/2023 | 64 | 5/24/2023 | 64 | 6/1/2023 |
| Ohio | Lawrence | 390870011 | 61 | 4/13/2023 | 61 | 6/2/2023 | 60 | 4/20/2023 | 60 | 6/29/2023 | 59 | 4/12/2023 | 58 | 4/19/2023 | 58 | 6/10/2023 | 57 | 4/21/2023 | 57 | 6/3/2023 | 56 | 6/6/2023 |
| Ohio | Lawrence | 390870012 | 65 | 6/10/2023 | 64 | 4/20/2023 | 63 | 6/9/2023 | 63 | 8/4/2023 | 61 | 4/13/2023 | 61 | 6/2/2023 | 60 | 5/11/2023 | 60 | 8/19/2023 | 59 | 4/19/2023 | 59 | 4/21/2023 |
| Ohio | Lucas | 390950024 | 78 | 6/29/2023 | 75 | 6/2/2023 | 72 | 4/14/2023 | 72 | 6/1/2023 | 71 | 6/28/2023 | 70 | 5/29/2023 | 68 | 7/25/2023 | 65 | 6/10/2023 | 65 | 6/20/2023 | 64 | 5/11/2023 |
| Ohio | Lucas | 390950027 | 81 | 6/29/2023 | 75 | 6/2/2023 | 74 | 6/1/2023 | 74 | 6/28/2023 | 72 | 5/29/2023 | 71 | 4/14/2023 | 69 | 6/20/2023 | 68 | 6/18/2023 | 67 | 6/10/2023 | 66 | 6/19/2023 |
| Ohio | Lucas | 390950035 | 83 | 6/29/2023 | 81 | 6/2/2023 | 79 | 6/1/2023 | 73 | 4/14/2023 | 73 | 5/29/2023 | 73 | 6/30/2023 | 73 | 8/4/2023 | 72 | 7/5/2023 | 71 | 5/12/2023 | 71 | 7/24/2023 |
| Ohio | Madison | 390970007 | 72 | 6/1/2023 | 72 | 6/2/2023 | 70 | 6/28/2023 | 67 | 6/10/2023 | 66 | 6/3/2023 | 66 | 6/18/2023 | 66 | 8/4/2023 | 65 | 6/29/2023 | 64 | 4/20/2023 | 63 | 5/24/2023 |
| Ohio | Mahoning | 390990015 | 84 | 6/29/2023 | 69 | 4/14/2023 | 68 | 5/12/2023 | 68 | 6/1/2023 | 66 | 6/19/2023 | 65 | 6/11/2023 | 65 | 7/5/2023 | 65 | 7/24/2023 | 64 | 4/13/2023 | 64 | 5/24/2023 |
| Ohio | Miami | 391090005 | 74 | 6/2/2023 | 72 | 6/10/2023 | 71 | 6/28/2023 | 69 | 6/3/2023 | 69 | 6/18/2023 | 67 | 4/13/2023 | 67 | 5/24/2023 | 66 | 6/1/2023 | 65 | 5/19/2023 | 65 | 6/29/2023 |
| Ohio | Montgomery | 391130037 | 78 | 6/28/2023 | 77 | 6/2/2023 | 72 | 6/1/2023 | 71 | 6/3/2023 | 71 | 8/4/2023 | 70 | 5/24/2023 | 69 | 7/25/2023 | 67 | 4/13/2023 | 67 | 6/10/2023 | 67 | 6/18/2023 |
| Ohio | Noble | 391219991 | 74 | 6/1/2023 | 70 | 5/31/2023 | 70 | 6/2/2023 | 66 | 4/20/2023 | 66 | 6/28/2023 | 65 | 5/11/2023 | 65 | 6/29/2023 | 64 | 5/24/2023 | 64 | 6/10/2023 | 64 | 6/18/2023 |
| Ohio | Preble | 391351001 | 76 | 6/2/2023 | 73 | 6/28/2023 | 70 | 5/24/2023 | 68 | 6/10/2023 | 67 | 6/1/2023 | 67 | 6/5/2023 | 67 | 6/18/2023 | 66 | 6/29/2023 | 65 | 8/4/2023 | 64 | 5/22/2023 |
| Ohio | Stark | 391510016 | 83 | 6/29/2023 | 76 | 5/31/2023 | 73 | 6/28/2023 | 70 | 6/1/2023 | 68 | 5/24/2023 | 65 | 4/13/2023 | 65 | 6/2/2023 | 65 | 7/5/2023 | 64 | 4/20/2023 | 64 | 6/19/2023 |
| Ohio | Stark | 391510022 | 72 | 6/29/2023 | 70 | 6/28/2023 | 68 | 5/31/2023 | 66 | 4/20/2023 | 66 | 5/24/2023 | 66 | 6/1/2023 | 65 | 4/13/2023 | 65 | 7/5/2023 | 64 | 6/2/2023 | 64 | 6/18/2023 |
| Ohio | Stark | 391514005 | 82 | 6/29/2023 | 73 | 6/1/2023 | 71 | 5/31/2023 | 68 | 5/12/2023 | 68 | 5/24/2023 | 67 | 4/14/2023 | 67 | 6/2/2023 | 67 | 6/28/2023 | 65 | 4/13/2023 | 65 | 4/20/2023 |
| Ohio | Trumbull | 391550011 | 86 | 6/29/2023 | 75 | 4/14/2023 | 70 | 5/12/2023 | 68 | 6/1/2023 | 67 | 4/13/2023 | 66 | 4/20/2023 | 65 | 6/2/2023 | 65 | 6/11/2023 | 64 | 5/24/2023 | 64 | 7/5/2023 |
| Ohio | Trumbull | 391550013 | 78 | 6/29/2023 | 72 | 4/14/2023 | 66 | 6/11/2023 | 65 | 4/13/2023 | 65 | 4/15/2023 | 65 | 4/20/2023 | 65 | 6/1/2023 | 64 | 5/12/2023 | 63 | 6/2/2023 | 63 | 7/26/2023 |
| Ohio | Washington | 391670004 | 70 | 4/13/2023 | 65 | 5/11/2023 | 64 | 6/2/2023 | 64 | 6/10/2023 | 63 | 6/29/2023 | 62 | 6/18/2023 | 62 | 10/19/2023 | 61 | 8/4/2023 | 60 | 4/12/2023 | 60 | 6/1/2023 |
| Ohio | Wood | 391730003 | 78 | 6/28/2023 | 77 | 6/29/2023 | 71 | 6/1/2023 | 71 | 6/2/2023 | 68 | 4/14/2023 | 68 | 5/29/2023 | 66 | 6/19/2023 | 65 | 6/10/2023 | 65 | 6/18/2023 | 64 | 6/20/2023 |

**Table 8. Observed Top Ten MDA8 Ozone Concentrations (ppb) at Ohio Monitors enhanced by fire smoke during the 2024 episodes (HMS smoke days highlighted in orange).**

| | | | Top 10 2024 MDA8 Ozone Observations (ppb) | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| State | County | Monitor ID | 1st Max Value | 1st Max Date | 2nd Max Value | 2nd Max Date | 3rd Max Value | 3rd Max Date | 4th Max Value | 4th Max Date | 5th Max Value | 5th Max Date | 6th Max Value | 6th Max Date | 7th Max Value | 7th Max Date | 8th Max Value | 8th Max Date | 9th Max Value | 9th Max Date | 10th Max Value | 10th Max Date |
| Ohio | Allen | 390030009 | 69 | 6/13/2024 | 66 | 6/16/2024 | 66 | 6/21/2024 | 65 | 6/20/2024 | 63 | 6/12/2024 | 63 | 7/8/2024 | 61 | 9/12/2024 | 61 | 9/20/2024 | 60 | 4/16/2024 | 60 | 6/14/2024 |
| Ohio | Ashtabula | 390071001 | 73 | 6/22/2024 | 72 | 5/21/2024 | 68 | 6/13/2024 | 67 | 8/24/2024 | 66 | 7/9/2024 | 65 | 6/12/2024 | 63 | 7/15/2024 | 63 | 8/25/2024 | 62 | 5/20/2024 | 62 | 5/24/2024 |
| Ohio | Clark | 390230001 | 80 | 6/13/2024 | 74 | 8/27/2024 | 71 | 6/12/2024 | 68 | 9/20/2024 | 67 | 9/11/2024 | 66 | 6/16/2024 | 66 | 6/21/2024 | 65 | 8/26/2024 | 64 | 5/20/2024 | 62 | 6/18/2024 |
| Ohio | Clark | 390230003 | 78 | 6/13/2024 | 70 | 6/12/2024 | 69 | 8/27/2024 | 67 | 6/21/2024 | 67 | 8/26/2024 | 66 | 6/16/2024 | 66 | 9/20/2024 | 61 | 5/20/2024 | 61 | 6/14/2024 | 60 | 6/20/2024 |
| Ohio | Clinton | 390271002 | 74 | 6/21/2024 | 74 | 6/22/2024 | 73 | 9/20/2024 | 71 | 8/6/2024 | 69 | 6/16/2024 | 68 | 6/14/2024 | 67 | 8/27/2024 | 66 | 6/13/2024 | 66 | 6/20/2024 | 64 | 5/20/2024 |
| Ohio | Greene | 390570006 | 76 | 8/27/2024 | 68 | 6/13/2024 | 67 | 6/21/2024 | 67 | 9/20/2024 | 66 | 4/15/2024 | 65 | 4/14/2024 | 65 | 6/14/2024 | 64 | 6/16/2024 | 62 | 6/18/2024 | 62 | 8/29/2024 |
| Ohio | Jefferson | 390810017 | 68 | 5/20/2024 | 68 | 7/28/2024 | 66 | 6/13/2024 | 66 | 6/22/2024 | 65 | 7/9/2024 | 65 | 8/24/2024 | 64 | 4/16/2024 | 64 | 7/13/2024 | 64 | 9/11/2024 | 63 | 6/21/2024 |
| Ohio | Knox | 390830003 | 71 | 6/13/2024 | 68 | 6/12/2024 | 66 | 8/27/2024 | 65 | 5/20/2024 | 64 | 6/21/2024 | 63 | 6/22/2024 | 61 | 5/2/2024 | 61 | 5/24/2024 | 61 | 6/14/2024 | 61 | 9/20/2024 |
| Ohio | Lawrence | 390870011 | 65 | 8/28/2024 | 60 | 8/30/2024 | 59 | 8/24/2024 | 59 | 8/27/2024 | 58 | 6/14/2024 | 57 | 5/20/2024 | 57 | 8/25/2024 | 56 | 4/26/2024 | 56 | 8/6/2024 | 55 | 4/14/2024 |
| Ohio | Lawrence | 390870012 | 65 | 7/12/2024 | 64 | 8/23/2024 | 63 | 8/29/2024 | 62 | 8/28/2024 | 61 | 7/7/2024 | 61 | 7/8/2024 | 61 | 7/27/2024 | 61 | 8/24/2024 | 61 | 8/25/2024 | 60 | 6/14/2024 |
| Ohio | Lucas | 390950024 | 67 | 6/21/2024 | 65 | 6/20/2024 | 64 | 6/13/2024 | 63 | 6/19/2024 | 62 | 9/12/2024 | 61 | 5/31/2024 | 60 | 5/24/2024 | 60 | 7/8/2024 | 60 | 7/23/2024 | 60 | 7/28/2024 |
| Ohio | Lucas | 390950027 | 72 | 6/21/2024 | 70 | 9/12/2024 | 65 | 6/13/2024 | 63 | 5/24/2024 | 61 | 7/8/2024 | 60 | 5/31/2024 | 60 | 6/16/2024 | 60 | 6/20/2024 | 59 | 6/14/2024 | 59 | 7/13/2024 |
| Ohio | Lucas | 390950035 | 76 | 6/21/2024 | 75 | 7/28/2024 | 73 | 6/20/2024 | 71 | 8/24/2024 | 70 | 9/15/2024 | 68 | 6/19/2024 | 68 | 7/7/2024 | 67 | 6/13/2024 | 67 | 6/17/2024 | 67 | 7/8/2024 |
| Ohio | Madison | 390970007 | 70 | 6/21/2024 | 70 | 8/27/2024 | 69 | 9/20/2024 | 67 | 6/13/2024 | 65 | 6/22/2024 | 65 | 8/6/2024 | 63 | 5/20/2024 | 62 | 6/12/2024 | 62 | 6/16/2024 | 62 | 9/11/2024 |
| Ohio | Mahoning | 390990015 | 68 | 5/24/2024 | 68 | 6/22/2024 | 67 | 6/13/2024 | 67 | 8/24/2024 | 65 | 5/20/2024 | 65 | 6/12/2024 | 65 | 7/28/2024 | 65 | 8/27/2024 | 64 | 9/5/2024 | 63 | 6/1/2024 |
| Ohio | Miami | 391090005 | 71 | 6/13/2024 | 69 | 6/16/2024 | 69 | 6/21/2024 | 68 | 6/12/2024 | 65 | 6/14/2024 | 65 | 9/11/2024 | 64 | 5/2/2024 | 64 | 9/20/2024 | 62 | 5/19/2024 | 62 | 5/20/2024 |
| Ohio | Montgomery | 391130037 | 84 | 6/13/2024 | 79 | 6/12/2024 | 73 | 6/16/2024 | 72 | 8/27/2024 | 69 | 6/21/2024 | 69 | 8/26/2024 | 68 | 6/14/2024 | 68 | 8/29/2024 | 67 | 8/30/2024 | 66 | 5/20/2024 |
| Ohio | Noble | 391219991 | 67 | 7/28/2024 | 66 | 5/2/2024 | 66 | 7/27/2024 | 66 | 8/24/2024 | 66 | 8/30/2024 | 66 | 9/11/2024 | 65 | 7/21/2024 | 64 | 6/22/2024 | 64 | 7/16/2024 | 64 | 8/28/2024 |
| Ohio | Preble | 391351001 | 70 | 6/21/2024 | 66 | 6/14/2024 | 66 | 6/16/2024 | 65 | 9/11/2024 | 64 | 6/13/2024 | 63 | 5/19/2024 | 63 | 7/2/2024 | 62 | 6/12/2024 | 61 | 10/4/2024 | 60 | 6/20/2024 |
| Ohio | Stark | 391510016 | 67 | 6/21/2024 | 64 | 5/19/2024 | 64 | 6/22/2024 | 60 | 5/2/2024 | 60 | 5/20/2024 | 60 | 7/8/2024 | 60 | 8/24/2024 | 59 | 5/24/2024 | 59 | 5/31/2024 | 59 | 8/23/2024 |
| Ohio | Stark | 391510022 | 65 | 6/22/2024 | 64 | 6/21/2024 | 64 | 7/21/2024 | 62 | 8/24/2024 | 61 | 7/8/2024 | 61 | 7/27/2024 | 61 | 8/23/2024 | 61 | 8/27/2024 | 60 | 5/19/2024 | 60 | 5/20/2024 |
| Ohio | Stark | 391514005 | 68 | 6/21/2024 | 68 | 6/22/2024 | 67 | 5/24/2024 | 67 | 8/24/2024 | 66 | 6/13/2024 | 65 | 5/20/2024 | 65 | 7/28/2024 | 65 | 8/27/2024 | 64 | 8/26/2024 | 63 | 6/12/2024 |
| Ohio | Trumbull | 391550011 | 69 | 5/24/2024 | 69 | 8/27/2024 | 68 | 6/13/2024 | 68 | 6/22/2024 | 68 | 7/28/2024 | 68 | 8/24/2024 | 66 | 5/20/2024 | 66 | 7/8/2024 | 65 | 6/12/2024 | 64 | 5/19/2024 |
| Ohio | Trumbull | 391550013 | 68 | 6/13/2024 | 66 | 5/20/2024 | 64 | 5/24/2024 | 64 | 6/12/2024 | 64 | 7/28/2024 | 63 | 5/21/2024 | 63 | 6/22/2024 | 61 | 6/1/2024 | 60 | 5/19/2024 | 60 | 7/23/2024 |
| Ohio | Washington | 391670004 | 67 | 6/13/2024 | 65 | 8/6/2024 | 62 | 5/2/2024 | 62 | 5/20/2024 | 61 | 4/16/2024 | 61 | 8/27/2024 | 60 | 6/12/2024 | 60 | 8/23/2024 | 59 | 8/24/2024 | 59 | 8/30/2024 |
| Ohio | Wood | 391730003 | 71 | 6/21/2024 | 66 | 5/24/2024 | 66 | 6/13/2024 | 65 | 9/12/2024 | 63 | 6/19/2024 | 63 | 7/8/2024 | 63 | 7/23/2024 | 62 | 6/20/2024 | 61 | 5/31/2024 | 61 | 7/13/2024 |

**Table 9. Observed Top Ten 24-hour PM2.5 Concentrations (ug/m3) at Ohio monitors enhanced by fire smoke during the 2023 episodes (HMS smoke days highlighted in orange).**

| | | | Top 10 2023 Daily (24-hr) PM2.5 Observations (µg/m3) | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| State | County | Monitor ID | 1st Max Value | 1st Max Date | 2nd Max Value | 2nd Max Date | 3rd Max Value | 3rd Max Date | 4th Max Value | 4th Max Date | 5th Max Value | 5th Max Date | 6th Max Value | 6th Max Date | 7th Max Value | 7th Max Date | 8th Max Value | 8th Max Date | 9th Max Value | 9th Max Date | 10th Max Value | 10th Max Date |
| Ohio | Allen Co | 390030009 | 117.4 | 6/28/2023 | 90.2 | 6/27/2023 | 78.2 | 6/29/2023 | 47.8 | 7/17/2023 | 45.8 | 4/6/2023 | 36.9 | 6/7/2023 | 35.1 | 6/6/2023 | 35.0 | 7/16/2023 | 28.5 | 6/17/2023 | 25.4 | 6/8/2023 |
| Ohio | Athens Co | 390090003 | 64.2 | 6/29/2023 | 29.6 | 7/17/2023 | 23.4 | 6/17/2023 | 20.5 | 6/8/2023 | 18.8 | 6/11/2023 | 18.2 | 7/16/2023 | 17.4 | 7/27/2023 | 16.5 | 8/5/2023 | 15.8 | 11/6/2023 | 14.5 | 7/18/2023 |
| Ohio | Belmont Co | 390130006 | 97.9 | 6/29/2023 | 32.0 | 7/17/2023 | 24.2 | 6/17/2023 | 21.6 | 6/8/2023 | 19.5 | 7/18/2023 | 19.1 | 6/11/2023 | 19.1 | 8/5/2023 | 18.1 | 6/5/2023 | 16.4 | 5/24/2023 | 15.8 | 8/2/2023 |
| Ohio | Clark Co | 390230005 | 118.2 | 6/28/2023 | 75.6 | 6/27/2023 | 51.5 | 6/29/2023 | 41.7 | 6/7/2023 | 41.6 | 7/17/2023 | 40.5 | 6/6/2023 | 38.4 | 7/16/2023 | 32.6 | 6/5/2023 | 32.6 | 6/18/2023 | 27.2 | 6/17/2023 |
| Ohio | Franklin Co | 390490034 | 82.6 | 6/29/2023 | 47.2 | 7/17/2023 | 31.2 | 6/17/2023 | 29.1 | 6/8/2023 | 25.9 | 6/5/2023 | 24.3 | 6/9/2023 | 23.5 | 7/5/2023 | 22.7 | 11/5/2023 | 22.5 | 12/15/2023 | 21.9 | 11/6/2023 |
| Ohio | Franklin Co | 390490038 | 133.5 | 6/28/2023 | 83.2 | 6/29/2023 | 68.8 | 6/27/2023 | 49.9 | 6/7/2023 | 46.4 | 7/17/2023 | 38.5 | 6/6/2023 | 35.0 | 6/18/2023 | 33.9 | 11/6/2023 | 31.9 | 6/9/2023 | 31.5 | 6/17/2023 |
| Ohio | Franklin Co | 390490040 | 53.1 | 6/26/2023 | 29.8 | 6/17/2023 | 28.7 | 6/8/2023 | 26.7 | 11/16/2023 | 24.6 | 12/15/2023 | 23.6 | 11/15/2023 | 23.3 | 6/5/2023 | 22.6 | 11/6/2023 | 21.8 | 12/22/2023 | 21.4 | 7/5/2023 |
| Ohio | Franklin Co | 390490081 | 85.3 | 6/29/2023 | 46.1 | 7/17/2023 | 31.5 | 6/17/2023 | 31.5 | 7/16/2023 | 29.1 | 6/8/2023 | 26.8 | 7/5/2023 | 26.4 | 8/19/2023 | 23.3 | 7/25/2023 | 22.7 | 6/5/2023 | 22.5 | 11/5/2023 |
| Ohio | Jefferson Co | 390810017 | 152.5 | 6/28/2023 | 112.4 | 6/29/2023 | 39.7 | 7/17/2023 | 33.7 | 6/30/2023 | 32.9 | 6/6/2023 | 28.2 | 6/7/2023 | 27.0 | 6/9/2023 | 25.3 | 8/2/2023 | 24.2 | 6/17/2023 | 23.8 | 6/27/2023 |
| Ohio | Lawrence Co | 390870012 | 66.4 | 6/28/2023 | 50.5 | 6/29/2023 | 38.3 | 6/7/2023 | 34.5 | 6/27/2023 | 31.2 | 7/17/2023 | 28.0 | 6/16/2023 | 28.0 | 6/18/2023 | 27.9 | 6/9/2023 | 25.9 | 6/6/2023 | 25.2 | 6/8/2023 |
| Ohio | Mahoning Co | 390990015 | 149.6 | 6/28/2023 | 82.7 | 6/29/2023 | 46.9 | 7/17/2023 | 45.8 | 6/30/2023 | 37.1 | 6/7/2023 | 31.5 | 6/6/2023 | 30.2 | 6/27/2023 | 27.7 | 7/16/2023 | 26.0 | 6/9/2023 | 26.0 | 8/3/2023 |
| Ohio | Montgomery Co | 391130038 | 118.5 | 6/28/2023 | 75.6 | 6/27/2023 | 48.2 | 6/29/2023 | 47.8 | 6/7/2023 | 42.5 | 6/6/2023 | 39.3 | 7/16/2023 | 39.2 | 7/17/2023 | 33.4 | 6/5/2023 | 31.4 | 6/10/2023 | 26.6 | 6/9/2023 |
| Ohio | Preble Co | 391351001 | 127.3 | 6/28/2023 | 94.8 | 6/27/2023 | 52.9 | 6/7/2023 | 46.5 | 6/29/2023 | 44.0 | 6/6/2023 | 39.6 | 7/16/2023 | 38.3 | 7/17/2023 | 31.5 | 7/25/2023 | 29.2 | 6/10/2023 | 28.4 | 6/18/2023 |
| Ohio | Scioto Co | 391450013 | 84.6 | 6/28/2023 | 53.2 | 6/29/2023 | 40.3 | 6/27/2023 | 40.0 | 6/7/2023 | 33.9 | 7/17/2023 | 31.7 | 6/18/2023 | 29.5 | 7/16/2023 | 27.2 | 6/6/2023 | 27.0 | 6/9/2023 | 25.6 | 6/17/2023 |
| Ohio | Scioto Co | 391450015 | 76.2 | 6/28/2023 | 51.2 | 6/29/2023 | 40.3 | 6/7/2023 | 38.5 | 6/27/2023 | 33.4 | 6/8/2023 | 33.2 | 6/18/2023 | 33.1 | 7/17/2023 | 28.9 | 6/9/2023 | 28.5 | 6/6/2023 | 26.2 | 6/16/2023 |
| Ohio | Stark Co | 391510017 | 108.2 | 6/29/2023 | 47.3 | 7/17/2023 | 33.2 | 7/16/2023 | 30.1 | 6/8/2023 | 29.5 | 8/2/2023 | 28.6 | 8/3/2023 | 27.9 | 6/17/2023 | 23.8 | 11/5/2023 | 23.7 | 7/18/2023 | 23.7 | 8/5/2023 |
| Ohio | Stark Co | 391510020 | 206.4 | 6/28/2023 | 105.4 | 6/29/2023 | 46.8 | 7/17/2023 | 43.1 | 6/7/2023 | 36.5 | 6/6/2023 | 35.9 | 6/27/2023 | 31.6 | 6/30/2023 | 31.1 | 7/16/2023 | 29.6 | 6/8/2023 | 28.6 | 7/4/2023 |
| Ohio | Summit Co | 391530017 | 152.9 | 6/28/2023 | 81.1 | 6/29/2023 | 49.5 | 7/17/2023 | 34.3 | 6/27/2023 | 31.7 | 6/17/2023 | 28.4 | 6/8/2023 | 27.4 | 7/16/2023 | 26.1 | 6/30/2023 | 24.9 | 11/5/2023 | 24.3 | 6/18/2023 |
| Ohio | Summit Co | 391530023 | 80.1 | 6/29/2023 | 49.4 | 7/17/2023 | 32.2 | 7/16/2023 | 27.1 | 6/8/2023 | 26.9 | 6/17/2023 | 26.1 | 7/5/2023 | 22.0 | 7/18/2023 | 19.6 | 6/11/2023 | 19.1 | 7/26/2023 | 18.9 | 2/8/2023 |
| Ohio | Trumbull Co | 391550014 | 142.8 | 6/28/2023 | 78.7 | 6/29/2023 | 50.4 | 7/17/2023 | 45.3 | 6/30/2023 | 39.5 | 6/7/2023 | 37.2 | 6/27/2023 | 32.3 | 6/6/2023 | 30.0 | 7/16/2023 | 29.8 | 8/3/2023 | 25.7 | 6/10/2023 |

**Table 10. Observed Top Ten 24-hour PM2.5 Concentrations (ug/m3) at Ohio monitors enhanced by fire smoke during the 2024 episodes (HMS smoke days highlighted in orange).**

| | | | Top 10 2024 Daily (24-hr) PM2.5 Observations (µg/m3) | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| State | County | Monitor ID | 1st Max Value | 1st Max Date | 2nd Max Value | 2nd Max Date | 3rd Max Value | 3rd Max Date | 4th Max Value | 4th Max Date | 5th Max Value | 5th Max Date | 6th Max Value | 6th Max Date | 7th Max Value | 7th Max Date | 8th Max Value | 8th Max Date | 9th Max Value | 9th Max Date | 10th Max Value | 10th Max Date |
| Ohio | Allen Co | 390030009 | 22.8 | 6/27/2024 | 21.0 | 6/28/2024 | 16.8 | 2/22/2024 | 15.4 | 12/25/2024 | 14.1 | 1/6/2024 | 13.8 | 2/27/2024 | 13.8 | 3/13/2024 | 13.1 | 1/21/2024 | 12.8 | 2/5/2024 | 12.6 | 1/19/2024 |
| Ohio | Athens Co | 390090003 | 16.2 | 7/25/2024 | 15.0 | 6/22/2024 | 14.8 | 2/22/2024 | 14.0 | 8/6/2024 | 13.4 | 8/5/2024 | 12.8 | 6/21/2024 | 12.7 | 6/19/2024 | 12.0 | 11/6/2024 | 11.9 | 6/18/2024 | 11.6 | 2/23/2024 |
| Ohio | Belmont Co | 390130006 | 22.8 | 2/22/2024 | 18.1 | 9/9/2024 | 16.8 | 6/20/2024 | 16.0 | 2/23/2024 | 15.1 | 1/23/2024 | 14.3 | 6/17/2024 | 14.1 | 12/25/2024 | 14.1 | 12/27/2024 | 13.4 | 1/24/2024 | 13.1 | 8/28/2024 |
| Ohio | Clark Co | 390230005 | 20.7 | 2/22/2024 | 20.2 | 6/21/2024 | 18.0 | 6/22/2024 | 17.1 | 3/29/2024 | 17.1 | 6/19/2024 | 17.1 | 8/26/2024 | 17.0 | 8/25/2024 | 16.9 | 2/23/2024 | 16.4 | 8/27/2024 | 15.9 | 12/25/2024 |
| Ohio | Franklin Co | 390490034 | 42.6 | 10/19/2024 | 41.9 | 10/20/2024 | 27.5 | 10/17/2024 | 23.9 | 2/22/2024 | 23.9 | 10/29/2024 | 22.8 | 10/22/2024 | 20.6 | 11/10/2024 | 20.4 | 10/18/2024 | 20.2 | 8/27/2024 | 19.8 | 10/13/2024 |
| Ohio | Franklin Co | 390490038 | 23.1 | 2/22/2024 | 23.1 | 8/26/2024 | 22.2 | 8/27/2024 | 22.2 | 12/25/2024 | 21.4 | 8/5/2024 | 20.0 | 11/10/2024 | 19.4 | 8/24/2024 | 18.8 | 6/22/2024 | 18.8 | 8/15/2024 | 18.6 | 6/19/2024 |
| Ohio | Franklin Co | 390490040 | 27.8 | 8/26/2024 | 24.7 | 10/19/2024 | 24.6 | 2/22/2024 | 23.3 | 8/27/2024 | 22.9 | 6/22/2024 | 22.7 | 8/24/2024 | 21.2 | 10/20/2024 | 20.6 | 6/21/2024 | 19.7 | 8/25/2024 | 19.6 | 8/15/2024 |
| Ohio | Franklin Co | 390490081 | 23.1 | 10/20/2024 | 22.1 | 2/22/2024 | 21.4 | 6/22/2024 | 21.3 | 12/25/2024 | 20.8 | 6/19/2024 | 19.8 | 6/21/2024 | 19.2 | 2/23/2024 | 19.1 | 7/24/2024 | 18.8 | 8/5/2024 | 18.7 | 7/25/2024 |
| Ohio | Jefferson Co | 390810017 | 24.8 | 1/24/2024 | 22.4 | 8/15/2024 | 20.0 | 2/22/2024 | 17.0 | 1/23/2024 | 16.7 | 10/29/2024 | 16.6 | 6/20/2024 | 16.4 | 8/5/2024 | 16.4 | 11/19/2024 | 16.3 | 8/27/2024 | 16.1 | 8/26/2024 |
| Ohio | Lawrence Co | 390870012 | 34.8 | 11/10/2024 | 18.2 | 11/27/2024 | 18.0 | 2/22/2024 | 16.6 | 1/24/2024 | 16.3 | 1/23/2024 | 16.3 | 7/25/2024 | 14.7 | 7/28/2024 | 14.6 | 8/6/2024 | 14.5 | 6/22/2024 | 13.9 | 12/26/2024 |
| Ohio | Mahoning Co | 390990015 | 18.4 | 2/23/2024 | 18.1 | 8/15/2024 | 17.6 | 8/14/2024 | 16.3 | 2/22/2024 | 16.3 | 6/20/2024 | 15.9 | 8/5/2024 | 15.3 | 8/4/2024 | 15.2 | 8/26/2024 | 15.1 | 8/25/2024 | 14.6 | 12/18/2024 |
| Ohio | Montgomery Co | 391130038 | 22.5 | 2/22/2024 | 18.3 | 6/22/2024 | 18.2 | 8/26/2024 | 18.0 | 6/19/2024 | 17.9 | 6/21/2024 | 17.9 | 8/27/2024 | 17.1 | 8/5/2024 | 16.2 | 8/24/2024 | 16.0 | 10/20/2024 | 15.9 | 7/25/2024 |
| Ohio | Preble Co | 391351001 | 23.3 | 2/22/2024 | 16.0 | 6/21/2024 | 15.8 | 3/29/2024 | 15.8 | 12/25/2024 | 14.9 | 1/6/2024 | 14.9 | 6/17/2024 | 14.9 | 6/22/2024 | 14.9 | 8/4/2024 | 14.7 | 7/25/2024 | 14.7 | 10/29/2024 |
| Ohio | Scioto Co | 391450013 | 19.4 | 2/22/2024 | 18.9 | 7/25/2024 | 18.5 | 11/10/2024 | 18.1 | 1/24/2024 | 17.2 | 7/9/2024 | 17.2 | 8/6/2024 | 16.5 | 8/5/2024 | 16.1 | 3/14/2024 | 15.6 | 10/29/2024 | 15.3 | 2/26/2024 |
| Ohio | Scioto Co | 391450015 | 24.1 | 11/10/2024 | 20.6 | 8/6/2024 | 20.6 | 8/24/2024 | 20.3 | 6/22/2024 | 20.3 | 7/25/2024 | 19.4 | 6/21/2024 | 19.2 | 11/6/2024 | 18.8 | 7/9/2024 | 18.3 | 5/20/2024 | 18.2 | 1/24/2024 |
| Ohio | Stark Co | 391510017 | 22.9 | 8/24/2024 | 22.2 | 2/23/2024 | 21.8 | 10/19/2024 | 21.7 | 2/20/2024 | 21.6 | 8/26/2024 | 20.7 | 10/18/2024 | 20.7 | 10/22/2024 | 20.3 | 8/15/2024 | 20.2 | 2/22/2024 | 19.8 | 6/19/2024 |
| Ohio | Stark Co | 391510020 | 20.0 | 2/23/2024 | 18.8 | 8/15/2024 | 18.7 | 11/18/2024 | 18.5 | 12/25/2024 | 18.2 | 6/22/2024 | 17.7 | 2/22/2024 | 17.6 | 6/21/2024 | 17.6 | 10/20/2024 | 16.8 | 8/25/2024 | 16.6 | 8/26/2024 |
| Ohio | Summit Co | 391530017 | 19.8 | 2/23/2024 | 19.5 | 10/20/2024 | 19.4 | 2/22/2024 | 18.5 | 2/20/2024 | 16.7 | 10/19/2024 | 16.3 | 7/7/2024 | 15.7 | 8/15/2024 | 15.6 | 11/18/2024 | 15.2 | 8/25/2024 | 15.1 | 12/25/2024 |
| Ohio | Trumbull Co | 391550014 | 20.0 | 8/15/2024 | 18.9 | 2/22/2024 | 18.3 | 2/23/2024 | 17.9 | 6/21/2024 | 17.5 | 8/25/2024 | 17.3 | 8/27/2024 | 17.1 | 6/20/2024 | 17.0 | 12/18/2024 | 16.9 | 6/22/2024 | 16.7 | 2/20/2024 |

**Recommendations**

Based on the results of this analysis and the widespread impact of wildfire and prescribed fire smoke on Ohio monitors both within the ozone NAAs, CBSAs, and statewide, the following action is recommended.

1. Each date at each monitor within the ozone NAAs identified to have been influenced by wildfire or prescribed fire smoke during the 2023 and 2024 time frame, and found to have enhanced ozone or PM2.5 concentrations as a result, should be flagged as influenced by exceptional events, and the associated pollutant concentration values should be removed from the regulatory record used to determine design values and attainment designations.
    a. The "regulatory significant" nomenclature typically applied to concurring with exceptional events demonstrations should not be limited to the attainment / nonattainment determination and instead should include any date or concentration that was enhanced by wildfire or prescribed fire smoke, regardless of the attainment outcome of the exceptions.
2. Consideration should be given to excluding dates and concentrations at other monitors outside of the NAAs and CBSAs, but in the same regional airshed, that would have also been impacted by wildfire or prescribed fire smoke during the same summer 2023 and 2024 episodes. This may also include simply referencing other state exceptional events demonstrations when proximal monitors were impacted on the same dates and by the same smoke plumes.
3. Consideration should be given to states, including Ohio and Kentucky, to allow limited information necessary to support the clear causal relationship criterion for any fire date that fell within the 2023 or 2024 wildfire or prescribed fire episodes. Ample evidence has been provided here and elsewhere to support the fact that smoke from Canadian wildfires and domestic prescribed fires in 2023 and 2024 had significant impact on ozone and PM2.5 observations and enhanced concentrations beyond reasonable and typical conditions. As it is understood that many states are preparing exceptional events demonstrations for monitors and dates affected during these episodes, it would be appropriate to allow for information in this document to be adopted to satisfy Tier 1 obligations in those demonstrations.

ALPINE GEOPHYSICS

# Appendix A

## Air Quality Index Plots

## May 1 – September 30, 2023

# Appendix B

## Air Quality Index Plots

## May 1 – September 30, 2024

# Appendix C

## HMS Smoke Plots

## May 1 – September 30, 2023

# Appendix D

## HMS Smoke Plots

## May 1 – September 30, 2024

**Link to Appendices A-D:**

https://www.midwestozonegroup.com/_files/ugd/7ec07f_b2991af438bc42ef8fae3a8a50421bde.pdf

ALPINE GEOPHYSICS

# Appendix E

# MODIS Terra True Color Satellite Imagery

# May 1 – September 30, 2023

# Appendix F

# MODIS Terra True Color Satellite Imagery

# May 1 – September 30, 2024

**Link to Appendices E-F:**

https://www.midwestozonegroup.com/_files/ugd/7ec07f_d9f26e16460b41508857ddc4ac3d29d6.pdf