

## Final 2024 Ozone Season Summary for the Kansas City Region

### Summary

The Air Quality Maintenance Area for the Greater Kansas City Region includes Wyandotte and Johnson Counties in Kansas; and Clay, Platte and Jackson Counties in Missouri. From March 1 – October 31, 2024, there were two Ozone Action Days issued, and regional monitors recorded six days that exceeded the National Ambient Air Quality Standard (NAAQS) for ozone. **Table 1** shows both the number of each forecast by type, and the daily air quality conditions recorded by monitors.

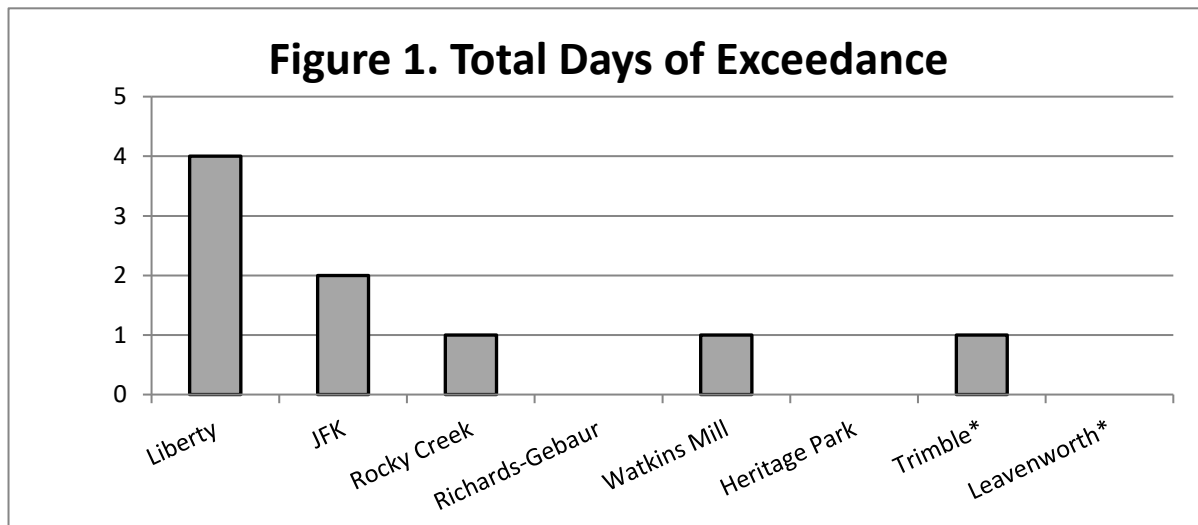
**Table 1. Forecast and Monitor Results**

	Green	Yellow	Orange	Red
Actual	172	67	6	0
Forecasted	168	75	2	0

### 2024 Monitor Map

Ozone measurements defining the air quality for the Greater Kansas City Air Quality Maintenance area are made at six monitors. Two additional nearby monitors at Trimble and Leavenworth provide useful forecasting information, and two distant monitors at Chanute and El Dorado offer some forecasting guidance on how pollution is moving into and out of our region. **Map 1** on the next page shows the location of nearby monitors.

It can be helpful to review the total number of days on which various locations exceeded the National Ambient Air Quality Standard (NAAQS) on **Figure 1**. This helps to identify any particularly affected areas and to see the general pervasiveness of poor air quality around the region. **Appendix A** provides greater detail on specific dates when area monitors recorded eight-hour peak values and the levels experienced at each site.



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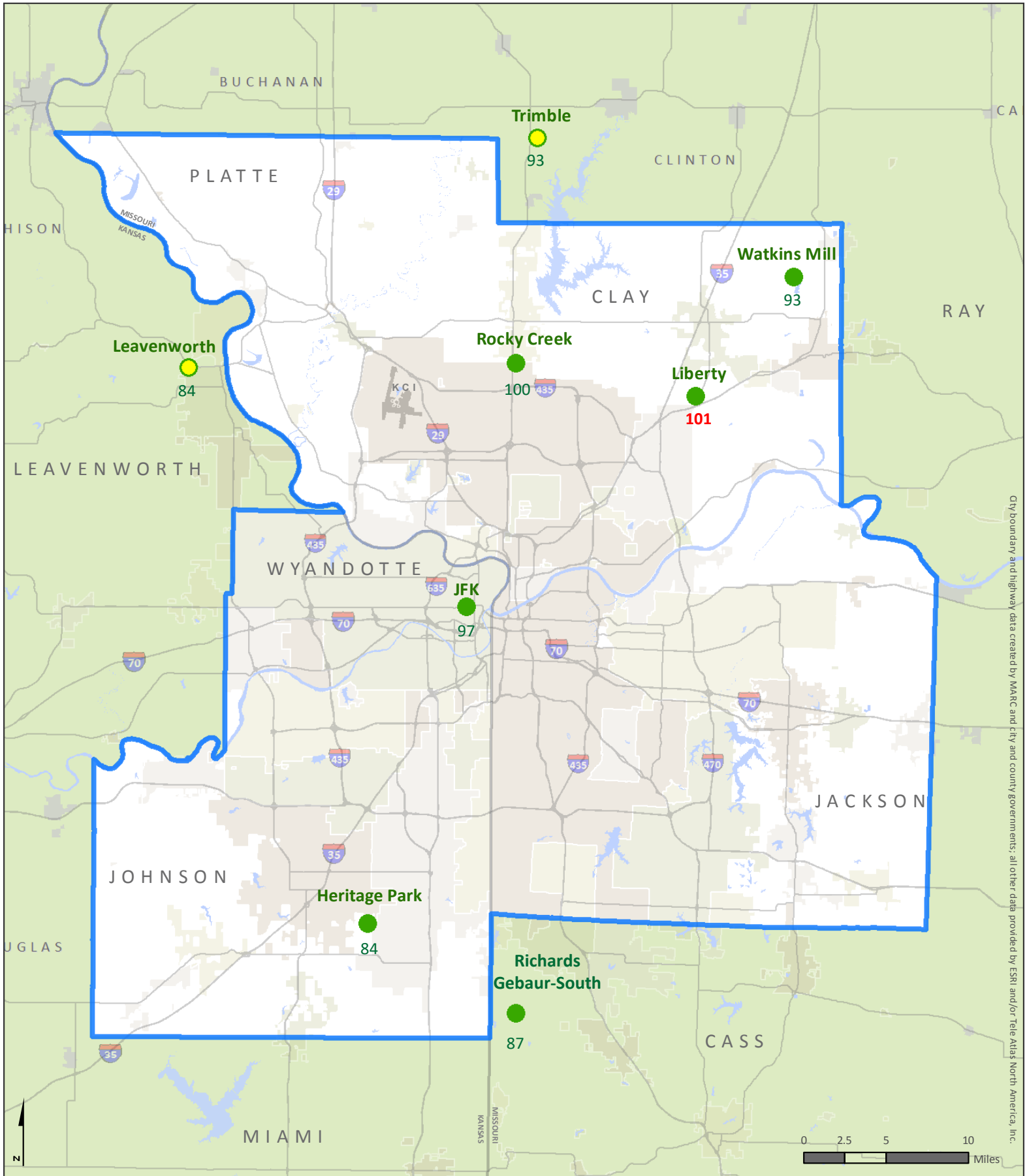
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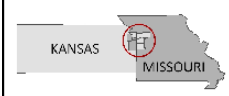
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# Air Quality Monitoring Stations



City boundary and highway data created by MARC and city and county governments; all other data provided by ESRI and/or Tele Atlas North America, Inc.



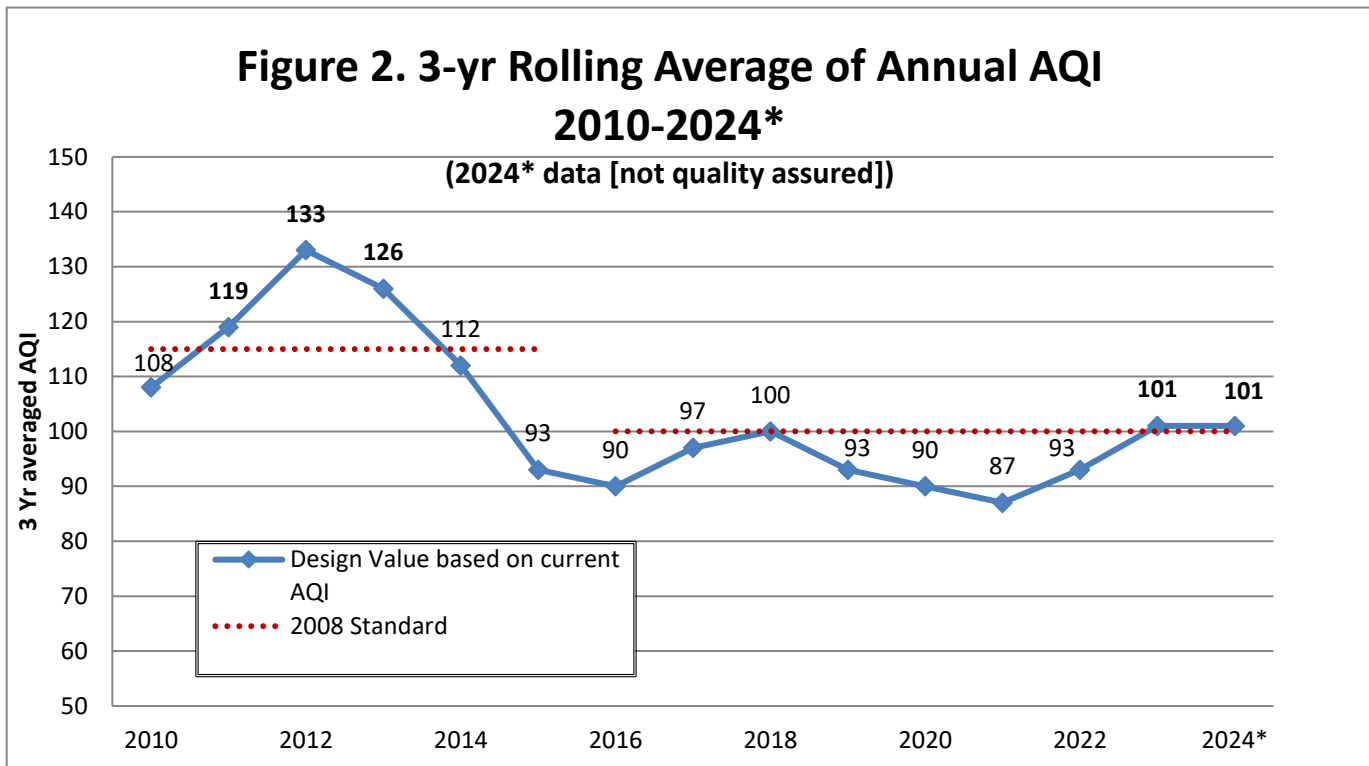
- in area monitor
- out of area monitor

  Air Quality Maintenance Area

Number = 3-yr Average of Annual AQI

Note: Monitor stations not shown above - El Dorado Springs & Chanute





**AQI and the Air Quality Ozone Trend: 2010 - 2024**

The EPA uses an index ranging from 0-500 to illustrate air quality conditions to the public. Anytime an index exceeds 100, the air quality is considered to have exceeded the NAAQS and could potentially harm unusually sensitive groups like children, older adults or those with medical conditions such as asthma, emphysema or heart problems. At an AQI of 150, the air quality is unhealthy for everyone with sensitive groups facing even greater risk.

**Figure 2** shows the trendline of the rolling three-year average of the AQI indicating whether the region meets the air quality standard for an ozone level sufficient to protect public health. The EPA uses this process because unusual weather patterns or uncontrolled events such as wildfires can create individual years that produce higher or lower than average ground level ozone pollution. As an Ambient Air Quality Standard, the desire is to determine if a region is meeting the standard for health under typical conditions and to monitor the trend to see if air quality is improving or declining over time. As shown in the figure, such things as significant policy changes, infrastructure investment in emission controls by power plant operators and technological advancement in vehicle engines brought our ozone trend down after 2014. Since then, the region has hovered close to or just below the acceptable level of ozone.

**Additional Information: Explanation of the AQI, Attainment and Data**

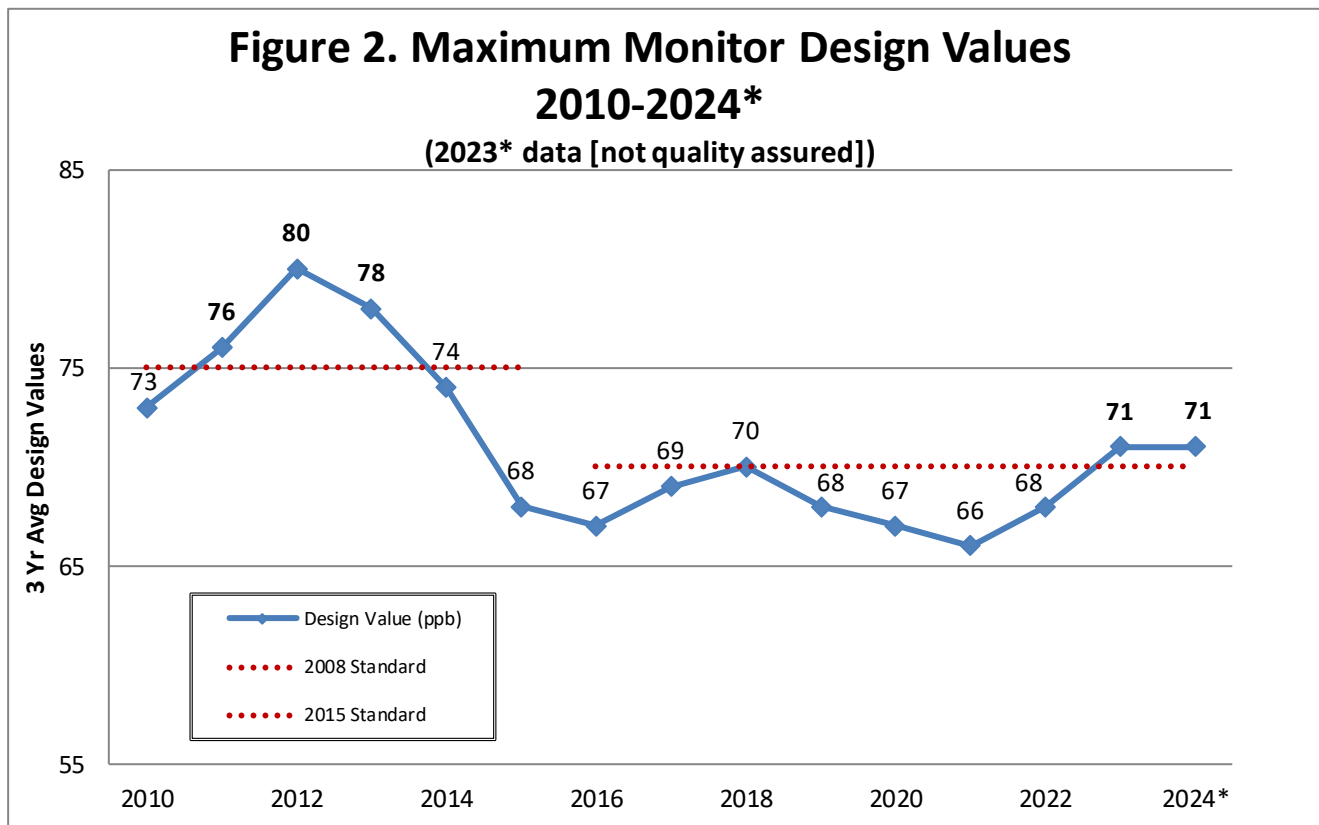
**More About the Ozone National Ambient Air Quality Standard**

To promote public awareness when air quality begins to reach unacceptable pollution levels, EPA has a tool that associates colors and health messages with ranges of the Air Quality Index (AQI) specific to various types of air pollutants. The type of pollutant that determines the AQI may change, but the AQI will always use the 0-150 index.

Since our region has had current and historical problems with it in the past, we routinely track, forecast and record ozone levels. The current national standard equating to an AQI of 100 for ground-level ozone is 70 ppb averaged over eight hours. **Table 2** is shown below with the ozone concentration corresponding with each AQI color, and **Figure 3** illustrates the same information in ppb as that shown earlier as an AQI value in **Figure 2**.

**Table 2. Air Quality Index under the 2015 Ozone Standard**

Category	AQI Value	2015 8-hour ozone (ppb)
<b>Good (Green)</b>	0 – 50	0 – 54
<b>Moderate (Yellow)</b>	51 – 100	55 – 70
<b>Unhealthy for Sensitive Groups (Orange)</b>	101 – 150	71 – 85
<b>Unhealthy (Red)</b>	151 – 200	86 – 105
<b>Very Unhealthy (Purple)</b>	201 – 300	106 – 200
<b>Hazardous (Maroon)</b>	301 – 500	> 200



**Attainment of the Standard: Determining Kansas City Ozone Design Values, 2016 – 2024**

An individual daily 8-hr exceedance of the eight-hour ozone standard of 71ppb at a monitored location does not necessarily result in a violating monitor. Compliance with the eight-hour ozone standard is based on the three-year average of the *fourth-highest* annual ozone reading from each monitor.

For the same reasons we use a rolling three-year average, we use the fourth highest annual reading to avoid any unusual events or conditions that could have affected monitors beyond what would be considered a “typical” day during any specific annual summer. The fourth highest daily reading represents the 95<sup>th</sup> percentile reading across all days during the ozone season for each monitor. Given the nature of its importance, this critical value –

the rolling three-year average of the fourth highest annual reading – called the “Design Value,” is used to evaluate whether we are in attainment at the end of each given season.

**Table 3. 2024 Fourth-High Values That Would Trigger a Violation  
(70-ppb is the current standard)**

<b>Missouri</b>	<b>8-Hr Value (ppb)</b>	<b>Kansas</b>	<b>8-Hr Value (ppb)</b>
<i>Design Value Level</i>	70	<i>NAAQS Level</i>	70
<b>Liberty</b>	<b>70</b>	JFK (KCK)	72
Watkins Mill	76	Heritage Park	77
Rocky Creek	70	Leavenworth	78
Richards Gebauer	77		
Trimble	72		

\*Bold text indicates the tentative monitor that exceeded the 2024 critical value.

Under the current eight-hour ozone standard, **violations** only occur when the three-year average-based design value for any individual regional monitor is 71 ppb or higher. **Table 3** displays the critical fourth-highest eight-hour readings of the 2024 season. If a monitor reaches its critical value for the year, it causes a violation of the overall design value once that reading is averaged with the previous two years.

In 2024, the Liberty location had four daily readings above the air quality standard and reached its critical value. It is the one monitor in currently in tentative violation. In 2023, the Rocky Creek location reached its critical value, but the annual value from the 2024 season has now brought its design value back within the standard. The specific dates and readings illustrating the tentative violation are apparent in **Appendix A**.

**Appendix B** contains both the historical fourth-high eight-hour readings (ppb) as well as the design values (ppb) for years from 2018 – 2024.

**Appendix C**, at the end of this report, summarizes the SkyCasts and highest daily eight-hour monitor ozone readings (ppb) for the entire 2024 ozone season. It includes all days that were forecasted to be Yellow or as an Ozone Action Day, and/or had a maximum eight-hour ozone reading greater than or equal to 55 ppb. *Green SkyCast days with maximum eight-hour ozone values less than 55ppb which were accurately forecasted to be green will not be listed.*

**Appendix A. Eight-Hour Ozone Exceedances  
March 1 – October 31, 2024**

Daily Maximum 8-Hour Value (ppb)								
Date	Liberty	JFK	Rocky Creek	Richards-Gebauer	Watkins Mill	Heritage Park	Trimble*	Leavenworth*
4/14/2024	<b>73</b>	63	63	56	66	54	62	44
6/23/2024	46	<b>78</b>	67	57	49	58	48	59
7/25/2024	<b>76</b>	70	<b>74</b>	55	70	54	63	56
8/5/2024	<b>76</b>	67	66	59	<b>77</b>	52	57	56
8/27/2024	61	<b>73</b>	70	59	53	59	50	69
10/3/2024	70	67	70	66	68	64	<b>71</b>	62
10/12/2024	<b>71</b>	64	68	63	70	59	62	64

\*The Trimble and Leavenworth monitors are outside the maintenance area boundary but are used to verify SkyCast ozone forecasts due to their proximity to the boundary. Readings in **bold red** show exceedances of the ozone NAAQS.

**Appendix B. Fourth-High Readings and Design Values, 2016-2024**

	<u>Fourth-High 8-Hour Values (ppb)</u>								<u>Design Values (ppb)</u>				
	18	19	20	21	22	23	24		18-20	19-21	20-22	21-23	22-24
<b>Missouri</b>													
Liberty	<b>74</b>	63	65	64	69	<b>74</b>	<b>71</b>		67	64	66	69	<b>71</b>
Watkins Mill	<b>72</b>	63	65	65	66	<b>71</b>	68		66	64	65	67	68
Rocky Creek	<b>72</b>	62	65	<b>71</b>	69	<b>74</b>	68		66	66	68	<b>71</b>	70
Richards Gebauer	66	64	58	63	63	<b>73</b>	62		62	61	61	66	66
Trimble	69	62	63	63	65	<b>76</b>	63		64	62	63	68	68
<b>Kansas</b>													
JFK (KCK)	69	58	63	70	64	<b>77</b>	67		63	63	65	70	69
Heritage Park	66	54	55	64	63	<b>73</b>	61		58	57	60	66	65
Leavenworth	64	61	59	63	61	<b>74</b>	62		61	61	61	66	65

\*The 2024 eight-hour monitored ozone readings have not been quality assured and may contain errors. Readings in **bold red** represent design values above the 70-ppb standard.

**Appendix C. Summary of SkyCasts and Daily Maximum Eight-hour Ozone Values  
March 1 – October 31, 2024**

Date	Daily Max 8-Hr Value (ppb)*	Monitor(s) Recording Max Value	SkyCast	Date	Daily Max 8-Hr Value (ppb)*	Monitor(s) Recording Max Value	SkyCast
<b>March</b>				6/3	56	Rocky Creek	Green
3/9	55	Rocky Creek, JFK, Liberty	Green	6/4	59	Rocky Creek	Yellow
<b>April</b>				6/5	52	Richards Gebauer	Yellow
4/8	44	Richards Gebauer	Yellow	6/7	62	Rocky Creek, Watkins Mill	Yellow
4/13	61	Liberty	Green	6/8	51	Richards Gebauer	Yellow
4/14	<b>73</b>	Liberty	Yellow	6/10	55	Richards Gebauer	Yellow
4/16	65	JFK	Green	6/11	60	JFK	Yellow
4/17	53	JFK	Yellow	6/12	62	Rocky Creek	Yellow
4/23	56	JFK	Green	6/13	57	Liberty	Yellow
4/24	61	JFK	Green	6/14	61	JFK	Yellow
4/30	51	Rocky Creek, Liberty	Yellow	6/15	47	JFK	Yellow
<b>May</b>				6/16	60	Rocky Creek	Yellow
5/8	55	JFK	Green	6/19	39	Richards Gebauer	Yellow
5/9	55	Rocky Creek, JFK	Green	6/20	51	Watkins Mill	Yellow
5/11	57	JFK	Green	6/21	43	Rocky Creek	Yellow
5/12	57	Rocky Creek	Green	6/23	<b>78</b>	JFK	Yellow
5/15	36	Richards Gebauer, Liberty	Yellow	6/24	58	Rocky Creek	Yellow
5/16	55	Richards Gebauer	Green	6/25	50	Liberty	Yellow
5/17	65	Rocky Creek	Yellow	6/26	57	Richards Gebauer	Green
5/18	63	Rocky Creek	Yellow	6/27	63	JFK	Green
5/19	58	Rocky Creek	Yellow	6/29	39	Rocky Creek, Liberty	Yellow
5/20	65	Rocky Creek, Richards Gebauer, Watkins Mill	Green	<b>July</b>			
5/21	48	Rocky Creek	Yellow	7/6	55	Rocky Creek, Liberty	Yellow
5/22	55	Rocky Creek, Richards Gebauer	Yellow	7/8	58	Richards Gebauer	Yellow
5/23	54	Rocky Creek	Yellow	7/9	48	Liberty	Yellow
5/26	58	JFK	Green	7/10	61	JFK	Yellow
5/28	52	Liberty, JFK	Yellow	7/11	63	JFK	Yellow
5/29	57	JFK	Yellow	7/12	66	Rocky Creek	Yellow
<b>June</b>				7/13	56	Rocky Creek	Yellow

\*The 2024 eight-hour monitored ozone readings have not been quality assured and may contain errors. Readings in **bold** represent eight-hour peak concentrations above the 70 ppb standard.

**Appendix C. Summary of SkyCasts and Daily Maximum Eight-hour Ozone Values  
March 1 – October 31, 2024 (Continued)**

<b>Date</b>	<b>Daily Max 8-Hr Value (ppb)*</b>	<b>Monitor(s) Recording Max Value</b>	<b>SkyCast</b>	<b>Date</b>	<b>Daily Max 8-Hr Value (ppb)*</b>	<b>Monitor(s) Recording Max Value</b>	<b>SkyCast</b>
7/19	55	JFK	Yellow	8/29	58	Rocky Creek	Yellow
7/22	60	Heritage Park	Yellow	<b>September</b>			
7/23	56	JFK	Yellow	9/3	55	JFK	Green
7/24	64	JFK	Yellow	9/4	68	Rocky Creek	Yellow
7/25	<b>76</b>	Liberty	Yellow	9/5	62	Richards Gebauer	Yellow
7/26	65	Rocky Creek	Yellow	9/9	55	Rocky Creek	Yellow
7/27	42	Rocky Creek, JFK	Yellow	9/10	59	Rocky Creek	Yellow
7/28	43	Rocky Creek	Yellow	9/11	66	Rocky Creek	Yellow
7/29	64	Rocky Creek	Yellow	9/12	64	Rocky Creek	Yellow
7/30	49	Liberty	Yellow	9/14	37	JFK	Yellow
7/31	45	Rocky Creek, Liberty	Yellow	9/20	62	Heritage Park	Yellow
<b>August</b>				9/30	62	Liberty	Yellow
8/1	56	Liberty	Green	<b>October</b>			
8/3	63	Richards Gebauer	Yellow	10/3	70	Rocky Creek, Liberty	Green
8/4	60	Liberty	Yellow	10/4	62	Richards Gebauer	Yellow
8/5	<b>77</b>	Watkins Mill	Yellow	10/5	64	JFK	Yellow
8/16	51	Heritage Park, JFK	Yellow	10/9	55	Rocky Creek	Yellow
8/17	55	Richards Gebauer	Yellow	10/10	60	Rocky Creek	Yellow
8/23	55	JFK	Green	10/11	66	Watkins Mill	Yellow
8/24	48	Rocky Creek	Yellow	10/12	<b>71</b>	Liberty	Yellow
8/25	64	Rocky Creek	Yellow	10/20	60	Watkins Mill	Yellow
8/26	70	Liberty	<b>Orange</b>	10/21	55	Liberty	Yellow
8/27	<b>73</b>	JFK	<b>Orange</b>	10/22	53	Liberty	Yellow
8/28	66	Rocky Creek	Yellow				

\*The 2024 eight-hour monitored ozone readings have not been quality assured and may contain errors. Readings in **bold** represent eight-hour peak concentrations above the 70 ppb standard.