

Table 1. 2024 Site Specifications.

National Park Unit	Site Name	State	NPS Abbr.	CASTNET Abbr.	AQS ID Number	Latitude (degrees north)	Longitude (degrees west)	Elev. (m)	O ₃ Years ^a	SO ₂	CO	NO _x /NO _y	PM	WS/WD	TMP	RH	RNF	SOL	Filter Pack ^b
Sites operated by the National Park Service (Gaseous Pollutant Monitoring Program)																			
Big Bend	K-Bar Ranch Road	TX	BIBE-KB	BBE401	48-043-0101	29.3028	103.1778	1057	35	---	---	---	---	X	X	X	---	---	X
Canyonlands	Island in the Sky	UT	CANY-IS	CAN407	49-037-0101	38.4583	109.8214	1794	33	---	---	---	---	X	X	X	---	---	X
Carlsbad Caverns	Biology Building	NM	CAVE-BB	CAV436	35-015-0010	32.1783	104.4406	1357	6	---	---	---	---	X	X	X	---	---	---
Chaco Culture	Radio Repeater	NM	CHCU-RR	CHC432	35-045-0020	36.0350	107.9042	1965	8	---	---	X	---	X	X	X	---	---	---
Chiricahua	Entrance Station	AZ	CHIR-ES	CHA467	04-003-8001	32.0094	109.3892	1569	34	---	---	---	---	X	X	X	X	X	X
Craters of the Moon	Visitor Center	ID	CRMO-VC	CRM435	16-023-0101	43.4606	113.5622	1815	33	---	---	---	---	X	X	---	---	---	---
Death Valley	Park Village	CA	DEVA-PV	DEV412	06-027-0101	36.5092	116.8481	125	32	---	---	---	---	X	X	---	---	---	---
Denali	Headquarters	AK	DENA-HQ	DEN417	02-068-0003	63.7233	148.9675	663	38	---	---	---	---	X	X	X	X	X	X
Dinosaur	West Entrance Housing	UT	DINO-WE	DIN431	49-047-1002	40.4372	109.3047	1463	24	---	---	---	---	X	X	---	X	X	X
Everglades	Beard Center	FL	EVER-BC	EVE419	12-086-0030	25.3911	80.6808	1	---	---	---	---	---	---	---	---	---	---	X
Glacier	West Glacier Horse Stables	MT	GLAC-WG	GLR468	30-029-8001	48.5103	113.9969	964	33	---	---	---	---	X	X	---	---	---	X
Grand Canyon	The Abyss	AZ	GRCA-AS	GRC474	04-005-8001	36.0586	112.1836	2073	32	---	---	---	---	X	X	X	---	---	X
Grand Teton	Science School	WY	GRTE-SS	GRT434	56-039-0008	43.6708	110.5994	2105	14	---	---	---	---	X	X	X	---	---	---
Great Basin	Maintenance Yard	NV	GRBA-MY	GRB411	32-033-0101	39.0050	114.2158	2058	32	---	---	---	---	X	X	X	---	---	X
Great Smoky Mountains	Cades Cove	TN	GRSM-CC	---	47-009-0102	35.6042	83.7831	564	32	---	---	---	---	X	X	X	X	X	---
Great Smoky Mountains	Kuwohi (Clingmans Dome)	TN	GRSM-CD	---	47-155-0102	35.5619	83.4981	2021	32	---	---	---	---	X	X	X	X	X	---
Great Smoky Mountains	Cove Mountain	TN	GRSM-CM	---	47-155-0101	35.6967	83.6086	1243	37	---	---	---	---	X	X	X	X	---	---
Great Smoky Mountains	Look Rock NCore	TN	GRSM-LN	GRS420	47-009-0101	35.6336	83.9417	801	---	X	X	X	---	---	---	---	---	---	---
Great Smoky Mountains	Look Rock	TN	GRSM-LR	GRS420	47-009-0101	35.6336	83.9417	801	37	---	---	---	X	X	X	X	X	X	X
Hawaii Volcanoes	Visitor Center	HI	HAVO-VC	---	15-001-0005	19.4308	155.2578	1215	---	X	---	---	X	X	X	X	---	---	---
Joshua Tree	Black Rock	CA	JOTR-BR	JOT403	06-071-9002	34.0694	116.3889	1243	32	---	---	---	---	X	X	X	---	---	X
Joshua Tree	Cottonwood Visitor Center	CA	JOTR-CV	---	06-065-0010	33.7472	115.8201	943	7	---	---	---	---	X	X	X	X	X	---
Lassen Volcanic	Manzanita Lake Fire Station	CA	LAVO-ML	LAV410	06-089-3003	40.5400	121.5764	1755	38	---	---	---	---	X	X	X	---	---	X
Mammoth Cave	Houchin Meadow	KY	MACA-HM	MAC426	21-061-0501	37.1317	86.1431	230	28	---	---	---	---	X	X	X	---	---	X
Mesa Verde	Resource Management Area	CO	MEVE-RM	MEV405	08-083-0101	37.1983	108.4906	2170	32	---	---	---	---	X	X	X	---	---	X
Pinnacles	SW of East Entrance Station	CA	PINN-ES	PIN414	06-069-0003	36.4833	121.1569	317	38	---	---	---	---	X	X	X	---	---	X
Rocky Mountain	Longs Peak	CO	ROMO-LP	ROM406	08-069-0007	40.2710	105.5456	2742	41	---	---	---	---	X	X	X	---	---	X

Table 1. 2024 Site Specifications (continued).

National Park Unit	Site Name	State	NPS Abbr.	CASTNET Abbr.	AQS ID Number	Latitude (degrees north)	Longitude (degrees west)	Elev. (m)	O ₃ Years ^a	SO ₂	CO	NO _x /NO _y	PM	WS/WD	TMP	RH	RNF	SOL	Filter Pack ^b
Sites operated by the National Park Service (Gaseous Pollutant Monitoring Program)																			
Sequoia and Kings Canyon	Ash Mountain	CA	SEKI-AS	SEK430	06-107-0009	36.4894	118.8292	510	26	---	---	---	X	X	X	X	---	---	X
Sequoia and Kings Canyon	Lower Kaweah	CA	SEKI-LK	---	06-107-0006	36.5658	118.7772	1890	41	---	---	---	---	X	X	X	---	---	---
Shenandoah	Big Meadows	VA	SHEN-BM	SHN418	51-113-0003	38.5231	78.4347	1068	42	---	---	---	---	X	X	X	---	---	X
Voyageurs	Sullivan Bay	MN	VOYA-SB	VOY413	27-137-0034	48.4128	92.8292	427	29	---	---	---	---	X	X	X	---	---	X
Yellowstone	Old Faithful Snow Lodge	WY	YELL-OS	---	56-039-1013	44.4582	110.8253	2230	---	---	X	X	X	X	X	X	---	---	---
Yellowstone	West Entrance	MT	YELL-WS	---	30-031-0017	44.6569	111.0894	2030	---	---	X	X	X	X	X	X	---	---	---
Yellowstone	Water Tank	WY	YELL-WT	YEL408	56-039-1011	44.5653	110.4003	2430	29	---	---	---	---	X	X	X	---	---	X
Yosemite	Turtleback Dome	CA	YOSE-TD	YOS404	06-043-0003	37.7133	119.7061	1599	32	---	---	---	---	X	X	X	---	---	X
Zion	Dalton's Wash	UT	ZION-DW	ZIO433	49-053-0130	37.1983	113.1506	1213	21	---	---	---	---	X	X	---	---	---	---
Sites operated by cooperating state agencies																			
<i>Acadia</i>	Cadillac Mountain	ME	ACAD-CM	---	23-009-0102	44.3517	68.2269	466	30	---	---	---	---	X	X	X	---	---	---
<i>Acadia</i>	McFarland Hill	ME	ACAD-MH	ACA416	23-009-0103	44.3772	68.2608	153	27	X	X	X	X	X	X	X	X	X	X
<i>Badlands</i>	Visitor Center	SD	BADL-VC	---	46-071-1001	43.7436	101.9414	739	19	---	---	---	X	---	---	---	---	---	---
<i>Cape Cod</i>	Cape Cod	MA	CACO-XX	---	25-001-0002	41.9758	70.0247	41	38	---	---	---	---	X	X	X	---	X	---
<i>Chamizal</i>	Chamizal	TX	CHAM-XX	---	48-141-0044	31.7656	106.4550	1128	33	---	---	---	---	X	X	X	---	X	---
<i>Congaree</i>	Congaree Bluff	SC	COSW-BL	---	45-079-0021	33.8147	80.7811	34	25	---	---	---	---	---	---	---	---	---	---
<i>Everglades</i>	Cutler Road	FL	EVER-CR	---	12-086-0029	25.5861	80.3269	4	40	---	---	---	---	---	---	---	---	---	---
<i>Great Smoky Mountains</i>	Purchase Knob	NC	GRSM-PK	---	37-087-0036	35.5900	83.0775	1550	30	---	---	---	---	---	---	---	---	---	---
<i>Indiana Dunes</i>	Ammunition Bunker	IN	INDU-AB	---	18-089-0022	41.6067	87.3047	183	32	X	---	---	X	X	X	X	---	X	---
<i>Mount Rainier</i>	Jackson Visitor's Center	WA	MORA-JV	---	53-053-0012	46.7853	121.7378	1615	27	---	---	---	---	---	---	---	---	---	---
<i>Saguaro</i>	East	AZ	SAGU-EA	---	04-019-0021	32.1744	110.7364	938	33	---	---	---	---	X	X	X	---	---	---

Table 1. 2024 Site Specifications (continued).

National Park Unit	Site Name	State	NPS Abbr.	CASTNET Abbr.	AQS ID Number	Latitude (degrees north)	Longitude (degrees west)	Elev. (m)	O ₃ Years ^a	SO ₂	CO	NO _x / NO _y	PM	WS/ WD	TMP	RH	RNF	SOL	Filter Pack ^b
Sites operated by cooperating state agencies																			
<i>Theodore Roosevelt</i>	Painted Canyon, VC	ND	THRO-VC	THR422	38-007-0002	46.8947	103.3778	840	27	X	---	---	X	---	---	---	---	---	X
<i>Wind Cave</i>	Visitor Center	SD	WICA-VC	WNC429	46-033-0132	43.5575	103.4839	1288	21	---	---	---	X	---	---	---	---	---	---
<i>Yosemite</i>	Village	CA	YOSE-VI	---	06-043-1001	37.7458	119.6028	1216	---	---	---	---	X	---	---	---	---	---	---

^a The values in this column represent the number of years an ozone analyzer has been operational at the site.

^b A filter pack is a part of the CASTNET network and is used to measure dry deposition using the "inferential method." This method combines air quality concentration data with meteorological measurements and land use functions to compute deposition velocities. Ambient air is drawn across the filter at either 3.0 or 1.5 liters per minute. The filter is then analyzed in a lab to yield weekly average concentrations of particulate sulfate (SO₄²⁻), particulate nitrate (NO₃⁻), particulate ammonium (NH₄⁺), sulfur dioxide (SO₂), and nitric acid (HNO₃). In some cases, the positive ions Na⁺, K⁺, Ca²⁺, and Mg²⁺ are also measured from the filter samples.

Operating agency key: plain text = site operated by the National Park Service
italics = site operated by a state agency

Parameter key: O₃ = ozone (ppb)
 SO₂ = sulfur dioxide (ppb)
 CO = carbon monoxide (ppm)
 NO_x = oxides of nitrogen (ppb)
 PM = particulate matter (µg/m³)
 WS = wind speed (m/s)
 WD = wind direction (degrees)
 TMP = air temperature (degrees C)
 RH = relative humidity (%)
 RNF = precipitation (mm/hr)
 SOL = solar radiation (watts/m²)

Note : Dashed lines indicate parameter not measured at that site.

Table 2. 2024 Summary of 8-hour average ozone concentrations (ppb).

National Park Unit	Site Name	Valid Number of Days	1st Highest	2nd Highest	3rd Highest	4th Highest	# Days with 8-Hour Average O ₃ Values ≥70 ppb ^a
Sites operated by the National Park Service (Gaseous Pollutant Monitoring Program)							
Big Bend	K-Bar Ranch Road	292	74	71	69	68	2
Canyonlands	Island in the Sky	337	78	75	71	69	3
Carlsbad Caverns	Biology Building	350	94	91	90	82	28
Chaco Culture	Radio Repeater	332	71	70	69	68	1
Chiricahua	Entrance Station	364	90	76	74	74	11
Craters of the Moon	Visitor Center	348	69	67	67	65	0
Death Valley	Park Village	355	76	73	72	72	7
Denali	Headquarters	361	57	56	56	54	0
Dinosaur	West Entrance Housing	364	76	74	73	69	3
Glacier	West Glacier Horse Stables	358	60	57	56	56	0
Grand Canyon	The Abyss	326	81	74	73	71	4
Grand Teton	Science School	354	68	67	67	65	0
Great Basin	Maintenance Yard	360	72	71	67	67	2
Great Smoky Mountains	Cades Cove	245	63	59	59	59	0
Great Smoky Mountains	Cove Mountain	359	66	62	61	61	0
Great Smoky Mountains	Kuwahohi (Clingmans Dome)	164	66	66	65	63	0
Great Smoky Mountains	Look Rock	360	67	67	66	64	0
Joshua Tree	Black Rock	349	85	82	80	79	32
Joshua Tree	Cottonwood Visitor Center	362	74	72	70	70	2
Lassen Volcanic	Manzanita Lake Fire Station	277	70	65	62	61	0
Mammoth Cave	Houchin Meadow	363	63	63	62	62	0
Mesa Verde	Resource Management Area	332	71	70	70	67	1
Pinnacles	SW of East Entrance Station	350	72	70	64	63	1
Rocky Mountain	Longs Peak	365	85	81	80	78	8
Sequoia and Kings Canyon	Ash Mountain	348	99	95	95	94	94
Sequoia and Kings Canyon	Lower Kaweah	129	92	90	84	84	45
Shenandoah	Big Meadows	340	60	60	60	59	0
Voyageurs	Sullivan Bay	303	64	55	55	54	0
Yellowstone	Water Tank	364	69	65	64	62	0
Yosemite	Turtleback Dome	364	80	79	78	74	4
Zion	Dalton's Wash	359	72	68	68	67	1
Sites operated by cooperating state agencies							
<i>Acadia</i>	Cadillac Mountain	226	72	69	69	69	1
<i>Acadia</i>	McFarland Hill	364	66	62	61	61	0
<i>Badlands</i>	Visitor Center	359	79	75	75	75	7
<i>Cape Cod</i>	Cape Cod	344	71	62	62	60	1
<i>Chamizal</i>	Chamizal	359	81	80	79	74	7
<i>Congaree</i>	Congaree Bluff	267	62	57	57	57	0
<i>Everglades</i>	Cutler Road	269	68	65	60	59	0
<i>Great Smoky Mountains</i>	Purchase Knob	261	71	63	63	63	1
<i>Indiana Dunes</i>	Ammunition Bunker	359	75	72	70	69	2
<i>Mount Rainier</i>	Jackson Visitor's Center	329	63	60	60	58	0

Table 2. 2024 Summary of 8-hour average ozone concentrations (ppb) (continued).

National Park Unit	Site Name	Valid Number of Days	1st Highest	2nd Highest	3rd Highest	4th Highest	# Days with 8-Hour Average O ₃ Values ≥70 ppb ^a
Sites operated by cooperating state agencies							
<i>Saguaro</i>	East	364	77	76	76	73	6
<i>Theodore Roosevelt</i>	Painted Canyon, VC	365	71	69	68	65	1
<i>Wind Cave</i>	Visitor Center	339	78	75	74	73	7

^a The primary and secondary National Ambient Air Quality Standard for ozone is 0.070 ppm over an 8-hour period. (An exceedance of the standard occurs when an 8-hour average ozone concentration is greater than or equal to 70 ppb. A violation of the standard occurs when the 3-year average of the fourth highest daily maximum 8-hour average ozone concentration equals or exceeds 70 ppb.) Exceedances of the standard are in red.

Operating agency key: plain text = site operated by the National Park Service

italics = site operated by a state agency

Color shading key: **Red** = 4th highest 8-hour average ozone concentration >70 ppb, >3 days with 8-hour average >70 ppb

Table 3. 2024 Ozone violation summary - primary standard^a.

National Park Unit	Site Name	2022-2024	2021-2023	2020-2022	2019-2021	2018-2020	2017-2019	2016-2018
Sites operated by the National Park Service (Gaseous Pollutant Monitoring Program)								
Big Bend	K-Bar Ranch Road	(65)	(63)	61	61	63	64	63
Canyonlands	Island in the Sky	65	65	66	66	66	65	65
Carlsbad Caverns	Biology Building	80	78	77	74	(73)	(74)	---
Chaco Culture	Radio Repeater	66	67	68	68	67	(65)	(66)
Chiricahua	Entrance Station	68	66	65	66	66	66	66
Craters of the Moon	Visitor Center	61	63	65	64	64	63	63
Death Valley	Park Village	70	71	72	72	73	72	(73)
Denali	Headquarters	52	52	53	52	52	52	50
Dinosaur	West Entrance Housing	76	76	64	67	66	70	72
Glacier	West Glacier Horse Stables	55	55	53	54	53	53	52
Grand Canyon	The Abyss	65	63	63	62	64	64	65
Grand Teton	Science School	61	61	61	61	59	59	60
Great Basin	Maintenance Yard	64	64	66	68	69	67	66
Great Smoky Mountains	Cades Cove	62	61	58	56	58	60	62
Great Smoky Mountains	Cove Mountain	(62)	(63)	61	60	62	64	67
Great Smoky Mountains	Kuwohi (Clingmans Dome)	(65)	(63)	(60)	(60)	(62)	(62)	(63)
Great Smoky Mountains	Look Rock	67	67	63	62	63	65	67
Joshua Tree	Black Rock	79	79	81	82	86	88	89
Joshua Tree	Cottonwood Visitor Center	70	69	68	(66)	(71)	(73)	(82)
Lassen Volcanic	Manzanita Lake Fire Station	(61)	65	68	67	68	66	68
Mammoth Cave	Houchin Meadow	64	64	59	59	59	61	63
Mesa Verde	Resource Management Area	64	64	66	66	68	67	68
Pinnacles	SW of East Entrance Station	64	66	67	66	65	64	68
Rocky Mountain	Longs Peak	71	70	72	71	70	68	70
Sequoia and Kings Canyon	Ash Mountain	88	88	91	90	88	86	89
Sequoia and Kings Canyon	Lower Kaweah	(80)	(80)	(83)	(82)	83	82	86
Shenandoah	Big Meadows	62	63	58	57	57	60	63
Voyageurs	Sullivan Bay	58	60	55	56	56	56	55
Yellowstone	Water Tank	58	59	62	64	63	62	62
Yosemite	Turtleback Dome	70	72	77	77	79	77	79
Zion	Dalton's Wash	65	65	66	65	66	66	66

Table 3. 2024 Ozone violation summary - primary standard^a (continued).

National Park Unit	Site Name	2022-2024	2021-2023	2020-2022	2019-2021	2018-2020	2017-2019	2016-2018
Sites operated by cooperating state agencies								
<i>Acadia</i>	Cadillac Mountain	66	66	67	67	65	69	70
<i>Acadia</i>	McFarland Hill	63	63	61	60	60	64	63
<i>Badlands</i>	Visitor Center	69	62	60	57	60	62	63
<i>Cape Cod</i>	Cape Cod	62	65	64	64	64	67	69
<i>Chamizal</i>	Chamizal	70	68	69	71	74	74	71
<i>Congaree</i>	Congaree Bluff	57	57	55	55	54	55	55
<i>Everglades</i>	Cutler Road	(62)	61	60	58	61	61	62
<i>Great Smoky Mountains</i>	Purchase Knob	65	65	62	61	62	63	64
<i>Indiana Dunes</i>	Ammunition Bunker	72	72	71	69	70	68	70
<i>Mount Rainier</i>	Jackson Visitor's Center	58	58	59	58	61	64	64
<i>Saguaro</i>	East	70	68	69	67	69	69	71
<i>Theodore Roosevelt</i>	Painted Canyon, VC	62	64	58	60	57	60	59
<i>Wind Cave</i>	Visitor Center	66	64	63	61	60	61	62

^a The 2015 primary and secondary National Ambient Air Quality Standard for ozone is 0.070 ppm over an 8-hour period. This standard was first used beginning with the period from 2014-2016. (An exceedance of the standard occurs when an 8-hour average ozone concentration is greater than or equal to 71 ppb. A violation of the standard occurs when the 3-year average of the fourth highest daily maximum 8-hour average ozone concentration equals or exceeds 71 ppb.)

Operating agency key: plain text = site operated by the National Park Service
italics = site operated by a state agency

Color shading key: **Red** = ozone violation based on the standard in place at that time

Note : A number in parenthesis () indicates that data completeness was not met. The primary standard required 90 percent data completeness, on average, during the 3-year period, with no single year within the period having less than 75 percent data completeness. This data completeness requirement would have to be satisfied in order to determine that the standard has been met at a monitoring site. However, calendar years with less than 75 percent data completeness are included in the computation if the annual fourth-highest daily maximum 8-hour concentration is greater than the level of the standard. A site could be found not to have met the standard with less than complete data.

Table 4. 2024 Summary of indices for resource injury (SUM06 and W126).

National Park Unit	Site Name	O ₃ % Valid	SUM06 ^a (ppm-hr)	SUM06 Period	W126 ^b (ppm-hr)	W126 Period	NPS W126 ^c (ppm-hr)	NPS W126 Period
Sites operated by the National Park Service (Gaseous Pollutant Monitoring Program)								
Big Bend	K-Bar Ranch Road	81.5	10.7	March-May	9.4	March-May	11.9	April-June
Canyonlands	Island in the Sky	94.7	16.1	May-July	13.3	May-July	14.4	May-July
Carlsbad Caverns	Biology Building	95.6	41.5	May-July	26.5	May-July	28.0	May-July
Chaco Culture	Radio Repeater	93.1	17.8	May-July	14.1	May-July	15.3	May-July
Chiricahua	Entrance Station	99.1	32.1	May-July	20.4	May-July	21.8	May-July
Craters of the Moon	Visitor Center	95.1	10.6	June-August	9.5	June-August	10.6	June-August
Death Valley	Park Village	97.3	30.5	May-July	19.0	May-July	20.3	May-July
Denali	Headquarters	99.0	0.0	April-June	2.3	February-April	3.0	March-May
Dinosaur	West Entrance Housing	97.3	16.4	May-July	12.8	June-August	13.9	June-August
Glacier	West Glacier Horse Stables	98.3	1.3	July-September	2.5	May-July	3.2	May-July
Grand Canyon	The Abyss	93.8	25.6	May-July	16.1	May-July	17.4	May-July
Grand Teton	Science School	96.5	11.6	May-July	9.8	May-July	10.9	May-July
Great Basin	Maintenance Yard	98.9	11.9	June-August	11.5	June-August	12.6	June-August
Great Smoky Mountains	Cades Cove	85.2	1.1	March-May	3.3	March-May	4.0	March-May
Great Smoky Mountains	Cove Mountain	99.0	1.5	March-May	3.9	March-May	4.7	March-May
Great Smoky Mountains	Kuwohi (Clingmans Dome)	44.6	1.2	May-July	3.7	May-July	4.5	May-July
Great Smoky Mountains	Look Rock	98.4	4.3	June-August	4.9	June-August	5.7	June-August
Joshua Tree	Black Rock	95.7	42.8	May-July	27.1	May-July	28.7	May-July
Joshua Tree	Cottonwood Visitor Center	98.9	23.5	May-July	16.0	May-July	17.3	May-July
Lassen Volcanic	Manzanita Lake Fire Station	78.6	3.3	April-June	4.7	April-June	5.5	April-June
Mammoth Cave	Houchin Meadow	94.6	3.3	June-August	3.8	June-August	4.6	June-August
Mesa Verde	Resource Management Area	90.6	18.7	May-July	14.3	May-July	15.5	May-July
Pinnacles	SW of East Entrance Station	96.4	9.2	July-September	7.4	July-September	8.3	July-September
Rocky Mountain	Longs Peak	99.1	22.7	June-August	16.9	June-August	18.1	June-August
Sequoia and Kings Canyon	Ash Mountain	96.5	66.1	June-August	50.1	June-August	51.7	June-August
Sequoia and Kings Canyon	Lower Kaweah	59.6	45.2	May-July	31.1	May-July	32.5	May-July
Shenandoah	Big Meadows	95.2	0.9	March-May	3.7	April-June	4.5	April-June
Voyageurs	Sullivan Bay	82.8	0.5	July-September	1.7	March-May	2.3	March-May
Yellowstone	Water Tank	99.1	4.6	May-July	6.4	June-August	7.3	June-August
Yosemite	Turtleback Dome	99.3	18.4	June-August	13.7	June-August	14.9	June-August
Zion	Dalton's Wash	99.0	18.4	May-July	13.4	May-July	14.6	May-July
Sites operated by cooperating state agencies								
<i>Acadia</i>	Cadillac Mountain	91.1	3.1	May-July	3.0	May-July	3.6	May-July
<i>Acadia</i>	McFarland Hill	98.5	1.3	May-July	1.8	March-May	2.4	March-May
<i>Badlands</i>	Visitor Center	97.6	18.0	June-August	13.7	June-August	14.1	June-August
<i>Cape Cod</i>	Cape Cod	93.6	2.1	June-August	2.7	June-August	3.2	June-August
<i>Chamizal</i>	Chamizal	98.2	25.6	May-July	17.5	May-July	18.8	May-July
<i>Congaree</i>	Congaree Bluff	96.2	0.8	February-April	2.3	April-June	2.8	April-June
<i>Everglades</i>	Cutler Road	78.6	1.9	February-April	3.7	February-April	3.4	March-May
<i>Great Smoky Mountains</i>	Purchase Knob	91.0	2.3	March-May	6.0	March-May	6.5	March-May
<i>Indiana Dunes</i>	Ammunition Bunker	98.1	7.7	July-September	6.8	July-September	7.5	July-September
<i>Mount Rainier</i>	Jackson Visitor's Center	90.4	1.3	May-July	2.5	May-July	3.2	March-May

Table 4. 2024 Summary of indices for resource injury (SUM06 and W126) (continued).

National Park Unit	Site Name	O ₃ % Valid	SUM06 ^a (ppm-hr)	SUM06 Period	W126 ^b (ppm-hr)	W126 Period	NPS W126 ^c (ppm-hr)	NPS W126 Period
<i>Saguaro</i>	East	99.3	26.9	May-July	17.5	May-July	18.0	May-July
<i>Theodore Roosevelt</i>	Painted Canyon, VC	99.1	7.6	May-July	7.1	May-July	7.5	May-July
<i>Wind Cave</i>	Visitor Center	92.5	13.2	July-September	11.7	July-September	12.2	July-September

^a SUM06 exposure index represents the 0800-2000 hourly ozone concentrations equaling or exceeding 0.06 ppm. The value reported here represents a three-month maximum value during the ozone season. Units are ppm-hr.

^b W126 exposure index represents 0800-2000 hourly ozone concentrations where each concentration is weighted by a function that gives greater emphasis to the higher hourly concentrations while still including the lower ones. The value reported here represents a three-month maximum value during the ozone season. Units are ppm-hr. For more information on the W126 exposure index go to <https://www.nps.gov/subjects/air/glossary.htm>

^c NPS W126 represents a three-month maximum value during the growing season (March to September) with a monthly completeness criteria of 50%, a three-month completeness criteria of 75%, and a seasonal completeness criteria of 60%.

Operating agency key: plain text = site operated by the National Park Service
italics = site operated by a state agency

Table 5. 2024 Summary of sulfur dioxide data.

National Park Unit	Site Name	Highest Daily Maximum 1-Hour Average Concentration ^a (ppb)						Highest Daily Maximum 3-Hour Average Concentration ^b (ppb)				
		1 st Highest	2 nd Highest	3 rd Highest	4 th Highest	99th Percentile Value	No. of Days with 1-Hr Average >75 ppb	1 st Highest	2 nd Highest	3 rd Highest	4 th Highest	No. of Days with 3-Hr Maximum >549 ppb
Sites operated by the National Park Service (Gaseous Pollutant Monitoring Program)												
Great Smoky Mountains	Look Rock NCore	4.2	4.1	2.4	2.1	2	0	2.3	2.1	1.8	1.7	0
Hawaii Volcanoes	Visitor Center	142.9	95.5	56.0	53.1	53	2	61.9	61.9	55.5	50.4	0
Sites operated by cooperating state agencies												
<i>Acadia</i>	McFarland Hill	1.3	0.6	0.6	0.5	1	0	0.5	0.4	0.4	0.3	0
<i>Indiana Dunes</i>	Ammunition Bunker	43.2	39.0	38.4	34.2	34	0	33.0	29.5	22.6	19.9	0
<i>Theodore Roosevelt</i>	Painted Canyon, VC	5.8	5.6	5.4	5.2	5	0	4.4	4.2	4.1	4.1	0

^a The primary hourly National Ambient Air Quality Standard for sulfur dioxide is a daily maximum 1-hour average of 75 ppb. (An exceedance of the standard occurs when a daily maximum 1-hour average exceeds 75 ppb. A violation of the standard occurs when the 3-year average of the 99th percentile of the daily maximum 1-hour average exceeds 75 ppb.)

^b The secondary National Ambient Air Quality Standard for sulfur dioxide is 0.5 ppm over a 3-hour period not to be exceeded more than once per year. (A value greater than 0.5 ppm, 549 ppb, or 1,300 µg/m³ exceeds the standard.) (40 CFR 50.5.)

Operating agency key: plain text = site operated by the National Park Service
italics = site operated by a state agency

Color shading key: **Red** >75 ppb 99th percentile value, or >549 ppb 3-hour average

Table 6. 2024 Summary of carbon monoxide data.

National Park Unit	Site Name	Highest Daily Maximum 1-Hour Average Concentration ^a (ppm)					Highest Daily Maximum 8-Hour Average Concentration ^b (ppm)				
		1 st Highest	2 nd Highest	3 rd Highest	4 th Highest	No. of Days with 1-Hr Average >35 ppm	1 st Highest	2 nd Highest	3 rd Highest	4 th Highest	No. of Days with 8-Hr Average >9 ppm
Sites operated by the National Park Service (Gaseous Pollutant Monitoring Program)											
Great Smoky Mountains	Look Rock NCore	0.680	0.459	0.387	0.350	0	0.387	0.316	0.268	0.263	0
Yellowstone	Old Faithful Snow Lodge	0.487	0.422	0.409	0.397	0	0.462	0.375	0.357	0.326	0
Yellowstone	West Entrance	1.711	0.765	0.689	0.574	0	0.479	0.477	0.460	0.447	0
Sites operated by cooperating state agencies											
<i>Acadia</i>	McFarland Hill	0.308	0.293	0.287	0.277	0	0.286	0.261	0.260	0.259	0

^a The primary hourly National Ambient Air Quality Standard for carbon monoxide is a daily maximum 1-hour average of 35 ppm. (An exceedance of the standard occurs when a daily maximum 1-hour average exceeds 35 ppm. A violation of the standard occurs when a daily maximum 1-hour average exceeds 35 ppm more than once in a calendar year.)

^b The primary National Ambient Air Quality Standard for carbon monoxide is 9 ppm over an 8-hour period. (An exceedance of the standard occurs when an 8-hour average exceeds 9 ppm. A violation of the standard occurs when a daily maximum 8-hour average exceeds 9 ppm more than once in a calendar year.) (40CFR 50.8.)

Operating agency key: plain text = site operated by the National Park Service
italics = site operated by a state agency

Color shading key: **Red** >35 ppm 1-hour average or >9 ppm 8-hour average

Table 7. 2024 Summary of nitrogen dioxide data.

National Park Unit	Site Name	Highest Daily Maximum 1-Hour Average Concentrations ^{ab} (ppb)						
		1st Highest	2nd Highest	3rd Highest	4th Highest	98 th Percentile Value	No. of Days with 1-Hour Average >100 ppb	Annual Arithmetic Mean
Sites operated by the National Park Service (Gaseous Pollutant Monitoring Program)								
Chaco Culture	Radio Repeater	5.1	4.7	4.5	4.5	4	0	1
Great Smoky Mountains	Look Rock NCore	11.6	6.9	6.5	5.9	5	0	1
Yellowstone	Old Faithful Snow Lodge	37.3	31.1	28.4	24.1	22	0	1
Yellowstone	West Entrance	25.0	24.9	22.1	20.7	16	0	1

^a The primary hourly National Ambient Air Quality Standard for nitrogen dioxide is a daily maximum 1-hour average of 100 ppb. (An exceedance of the standard occurs when a daily maximum 1-hour average exceeds 100 ppb. A violation of the standard occurs when the 3-year average of the 98th percentile of the daily maximum 1-hour average exceeds 100 ppb.) (40 CFR 50.11)

^b The primary and secondary annual National Ambient Air Quality Standard for nitrogen dioxide is an annual arithmetic mean of 53 ppb. (An exceedance and violation of the standard occurs when an annual arithmetic mean of NO₂ concentrations is greater than 53 ppb.) (40 CFR 50.11.)

Operating agency key: plain text = site operated by the National Park Service
italics = site operated by a state agency

Color shading key: **Red** >53 ppb annual arithmetic mean or >100 ppb 98th percentile value

Table 8. 2024 Summary of oxides of nitrogen data.

National Park Unit	Site Name	Highest Daily Maximum 1-Hour Average Concentrations (ppb)				No. of Days with 1-Hour Average >100 ppb
		1st Highest	2nd Highest	3rd Highest	4th Highest	
Sites operated by the National Park Service (Gaseous Pollutant Monitoring Program)						
Chaco Culture	Radio Repeater	5.0	4.8	4.7	4.7	0
Great Smoky Mountains	Look Rock NCore (NO _v)	11.6	6.9	6.5	5.9	0
Yellowstone	Old Faithful Snow Lodge	74.8	57.5	48.4	46.9	0
Yellowstone	West Entrance	94.9	86.1	84.0	57.4	0
Sites operated by cooperating state agencies						
<i>Acadia</i>	McFarland Hill (NO _v)	17.9	12.2	9.4	8.2	0
Operating agency key:	plain text = site operated by the National Park Service <i>italics</i> = site operated by a state agency					

Table 9. 2024 Summary of PM_{2.5} data from reference and equivalency methods.

National Park Unit	Site Name	Sampler Type*	% Valid	Annual Arithmetic Mean ^a (µg/m ³)	Highest Daily Maximum 24-Hour Average Concentrations ^b (µg/m ³)					98 th Percentile Value	No. of Days with 24-Hour Average >35 µg/m ³
					1st Highest	2nd Highest	3rd Highest	4th Highest			
Sites operated by the National Park Service (Gaseous Pollutant Monitoring Program)											
Great Smoky Mountains	Look Rock NCore	TEOM	91.5	7.5	29.7	18.3	18.0	18.0	16.1	0	
Hawaii Volcanoes	Visitor Center	BAM	85.9	0.7	10.2	8.6	6.7	6.5	4.4	0	
Sequoia and Kings Canyon	Ash Mountain	BAM	94.9	5.5	51.0	44.4	36.0	36.0	29.5	5	
Yellowstone	Old Faithful Snow Lodge	BAM	96.0	2.2	32.8	27.6	21.0	18.3	12.4	0	
Yellowstone	West Entrance	BAM	95.0	2.5	26.7	25.0	21.0	19.0	14.1	0	
Sites operated by cooperating state agencies											
<i>Acadia</i>	McFarland Hill	BAM	99.6	3.0	18.8	17.6	15.1	13.5	11.5	0	
<i>Badlands</i>	Visitor Center	BAM	98.8	6.7	31.5	31.2	31.1	27.2	24.0	0	
<i>Indiana Dunes</i>	Ammunition Bunker	BAM	96.4	8.0	31.0	20.7	19.5	18.6	17.0	0	
<i>Theodore Roosevelt</i>	Painted Canyon Visitor Ctr	BAM	99.8	5.7	85.1	54.9	51.1	49.1	37.6	10	
<i>Wind Cave</i>	Visitor Center	BAM	98.2	6.0	38.1	35.0	30.6	30.0	22.4	1	
<i>Yosemite</i>	Village	BAM	93.3	5.2	40.5	20.7	16.4	14.7	13.4	1	

^a The primary annual National Ambient Air Quality Standard for PM_{2.5} is an annual arithmetic mean of 9.0 µg/m³. (An exceedance of the standard occurs when an annual arithmetic mean of PM_{2.5} concentrations is greater than 9.0 µg/m³. A violation of the standard occurs when the 3-year average of the weighted annual mean PM_{2.5} concentrations is greater than 9.0 µg/m³.) (40 CFR 50.7.)

^b The primary daily National Ambient Air Quality Standard for PM_{2.5} is a 24-hour average concentration of 35 µg/m³. (An exceedance of the standard occurs when a 24-hour average PM_{2.5} concentration is greater than 35 µg/m³. A violation of the standard occurs when the 3-year average of the annual 98th percentile of 24-hour PM_{2.5} concentrations is greater than 35 µg/m³.) (40 CFR 50.7.)

* TEOM = tapered element oscillating microbalance
 BAM = beta attenuation monitor

Operating agency key: plain text = site operated by the National Park Service
 italics = site operated by a state agency

Color shading key: Annual arithmetic mean **Red** >9 µg/m³
 98th percentile value **Red** >35 µg/m³

Table 10. 2024 Summary of PM₁₀ data from reference and equivalency methods.

National Park Unit	Site Name	Sampler Type*	% Valid	Annual Arithmetic Mean ^a (µg/m ³)	Highest Daily Maximum 24-Hour Average Concentrations ^b (µg/m ³)				No. of Days with 24-Hour Average >150 µg/m ³
					1st Highest	2nd Highest	3rd Highest	4th Highest	
Sites operated by cooperating state agencies									
<i>Badlands</i>	Visitor Center	BAM	94.8	12	90	60	50	40	0
<i>Wind Cave</i>	Visitor Center	BAM	98.4	10	140	100	80	70	0
<i>Yosemite</i>	Village	BAM	88.0	14	60	40	30	30	0

^a The primary and annual National Ambient Air Quality Standard for PM₁₀ is an annual arithmetic mean of 50 µg/m³. (An exceedance of the standard occurs when an annual arithmetic mean of PM₁₀ concentrations is greater than 50 µg/m³. A violation of the standard occurs when the 3-year average of the weighted annual mean PM₁₀ concentrations is greater than 50 µg/m³.) (40 CFR 50.6.)

^b The primary daily National Ambient Air Quality Standard for PM₁₀ is a 24-hour average concentration of 150 µg/m³. (An exceedance of the standard occurs when a 24-hour average PM₁₀ concentration is greater than 150 µg/m³. A violation of the standard occurs when a 24-hour average concentration greater than 150 µg/m³ occurs more than once in a calendar year.) (40 CFR 50.6.)

* TEOM = tapered element oscillating microbalance
 BAM = beta attenuation monitor

Operating agency key: *italics* = site operated by a state agency

Color shading key: **Red** >50 µg/m³ annual arithmetic mean, > 150 µg/m³ 24-hour average

Table 11. 2024 PM₁₀ summary - maximum daily 24-hour average concentration in 2022-2024 (µg/m³)^a.

National Park Unit	Site Name	Sampler Type*	2024	2023	2022
Sites operated by cooperating state agencies					
<i>Badlands</i>	Visitor Center	BAM	90	160	60
<i>Wind Cave</i>	Visitor Center	BAM	140	110	60
<i>Yosemite</i>	Village	BAM	60	230	160

^a The primary daily National Ambient Air Quality Standard for PM₁₀ is a 24-hour average concentration of 150 µg/m³. (An exceedance of the standard occurs when a 24-hour average PM₁₀ concentration is greater than 150 µg/m³. A violation of the standard occurs when a 24-hour average concentration greater than 150 µg/m³ occurs more than once per year on average over 3 years.) (40 CFR 50.6.)

* TEOM = tapered element oscillating microbalance
 BAM = beta attenuation monitor

Operating agency key: *italics* = site operated by a state agency

Color shading key: **Red** = more than one 24-hour average concentration > 150 µg/m³ in calendar year

Table 12. 2024 Annual summary of selected meteorological data.

National Park Unit	Site Name	Wind Speed	Ambient Temperature		Relative Humidity			Precipitation	
		(m/s)	(degrees C)		(%)			(mm)	
		Average	Average	Maximum	Minimum	Average	Maximum	Minimum	Annual Accumulation
Sites operated by the National Park Service (Gaseous Pollutant Monitoring Program)									
Big Bend	K-Bar Ranch Road	3.8	21.2	40.6	-9.1	35	97	1	---
Canyonlands	Island in the Sky	3.0	13.3	35.5	-9.2	39	100	4	---
Carlsbad Caverns	Biology Building	5.3	19.1	37.6	-13.5	37	100	2	---
Chaco Culture	Radio Repeater	4.0	12.0	35.0	-12.6	44	100	5	---
Chiricahua	Entrance Station	2.9	16.6	36.6	-7.6	38	100	4	431.3
Craters of the Moon	Visitor Center	3.2	7.8	33.8	-21.6	---	---	---	---
Death Valley	Park Village	3.6	26.7	50.5	3.9	---	---	---	---
Denali	Headquarters	1.4	-1.0	27.7	-38.6	69	100	14	270.2
Dinosaur	West Entrance Housing	1.6	11.6	37.6	-18.9	---	---	---	129.4
Glacier	West Glacier Horse Stables	0.9	6.4	34.1	-38.9	---	---	---	---
Grand Canyon	The Abyss	3.1	12.2	34.1	-11.8	34	100	3	---
Grand Teton	Science School	2.6	3.7	30.9	-27.1	65	100	8	---
Great Basin	Maintenance Yard	2.8	10.7	33.5	-12.9	39	100	3	---
Great Smoky Mountains	Cades Cove	1.3	14.5	33.7	-14.0	78	100	9	1,398.0
Great Smoky Mountains	Cove Mountain	4.1	12.1	26.7	-16.7	72	100	1	1,169.5
Great Smoky Mountains	Kuwahohi (Clingmans Dome)	1.9	12.3	22.5	-6.1	88	100	3	1,167.2
Great Smoky Mountains	Look Rock	2.1	14.7	31.8	-16.0	71	100	12	1,363.3
Hawaii Volcanoes	Visitor Center	3.8	15.2	24.5	8.9	93	100	39	---
Joshua Tree	Black Rock	4.0	17.3	39.1	-3.2	34	99	2	---
Joshua Tree	Cottonwood Visitor Center	2.6	19.4	41.9	-0.1	32	99	4	111.5
Lassen Volcanic	Manzanita Lake Fire Station	1.1	10.0	30.6	-8.8	57	100	9	---
Mammoth Cave	Houchin Meadow	1.7	15.1	35.9	-18.0	72	100	21	---
Mesa Verde	Resource Management Area	3.0	10.9	32.7	-14.6	43	100	7	---
Pinnacles	SW of East Entrance Station	2.1	15.2	46.0	-4.9	64	100	7	---
Rocky Mountain	Longs Peak	2.5	5.5	27.0	-26.4	47	100	5	---
Sequoia and Kings Canyon	Ash Mountain	2.2	18.3	41.8	-0.4	51	100	9	---
Sequoia and Kings Canyon	Lower Kaweah	2.1	14.8	30.9	-7.4	57	100	7	---
Shenandoah	Big Meadows	1.7	9.7	30.5	-17.7	75	100	11	---
Voyageurs	Sullivan Bay	2.3	6.0	30.9	-30.2	76	100	22	---
Yellowstone	Old Faithful Snow Lodge	1.6	2.6	29.7	-36.4	67	100	10	---
Yellowstone	Water Tank	1.6	2.4	27.1	-31.5	66	100	10	---
Yellowstone	West Entrance	1.1	3.5	31.3	-37.5	68	100	10	---
Yosemite	Turtleback Dome	4.2	12.4	34.2	-5.9	50	100	9	---
Zion	Dalton's Wash	4.2	17.5	41.1	-6.9	---	---	---	---
Sites operated by cooperating state agencies									
<i>Acadia</i>	Cadillac Mountain	5.8	8.2	34.5	-17.0	82	100	19	---
<i>Acadia</i>	McFarland Hill	2.2	8.4	32.1	-15.5	76	100	17	1,098.9
<i>Cape Cod</i>	Cape Cod	2.3	11.4	34.9	-8.2	76	99	21	---
<i>Chamizal</i>	Chamizal	2.8	21.0	41.2	-4.6	35	91	5	---
<i>Indiana Dunes</i>	Ammunition Bunker	2.7	12.2	35.5	-23.5	72	100	19	---
<i>Saguaro</i>	East	---	22.0	42.1	-1.1	31	99	3	---

Note : Dashed lines represent no data available for that particular parameter at that site.

Operating agency key: plain text = site operated by the National Park Service
italics = site operated by a state agency