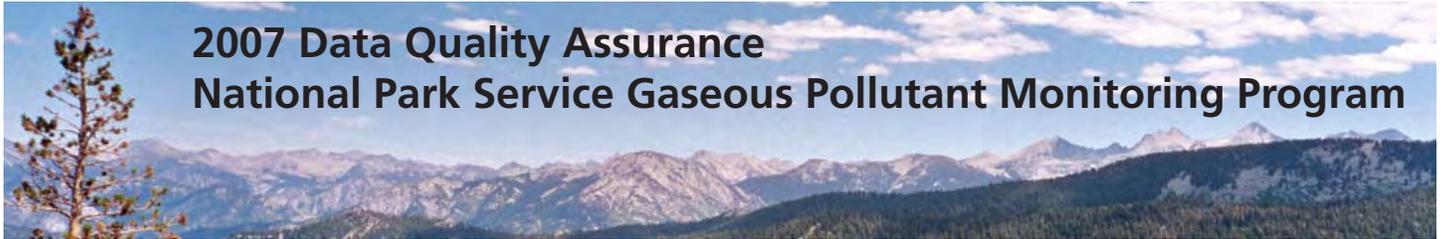


2007 Data Quality Assurance National Park Service Gaseous Pollutant Monitoring Program



This report is provided as a supplement to the National Park Service Gaseous Pollutant Monitoring Program (NPS GPMP) 2007 Annual Data Summary report. All data were validated according to U.S. Environmental Protection Agency (EPA) and NPS protocols. Presented in this report are data collection statistics for all parameters, and precision and accuracy summaries are for ozone data only.

Kings Canyon National Park,
California - Ranger Lake
Photo by Eli Weber



Data Collection

Table 1 presents data collection statistics for each parameter by site and presents the overall network average by parameter. The network average valid data collection for ozone at sites operated by the National Park Service was 94.2%, and for sulfur dioxide was 99.1%.

Table 2 presents a network summary of data collection statistics by parameter. Annual and quarterly network average statistics are presented, along with the number and percentage of sites which met the minimum EPA data collection criteria of 75%. For 2007, 28 of 30 ozone sites and 4 of 5 sulfur dioxide sites met or exceeded the annual EPA criteria at sites operated by the National Park Service.

Table 1. 2007 Data collection statistics.

National Park Unit	Site Name	Parameter Code										
		O ₃ % valid ^a	SO ₂ % valid ^a	VWDb % valid ^a	SWSC % valid ^a	TMP % valid ^a	RH % valid ^a	RNF % valid ^a	WET % valid ^a	DTP % valid ^a	SOL % valid ^a	FLOW % valid ^a
Sites operated by the National Park Service												
Badlands	Visitor Center	99.8	99.7	97.0	97.0	99.9	99.9	32.2	---	---	99.9	---
Big Bend	K-Bar Ranch Road	98.8	---	98.7	98.7	99.2	99.3	98.9	99.0	90.1	98.5	98.8
Canyonlands	Island in the Sky	97.2	---	99.7	99.7	88.7	99.8	98.7	99.1	82.4	97.6	99.8
Chiricahua	Entrance Station	97.1	---	98.8	98.8	98.8	98.9	95.5	98.1	98.7	98.8	98.9
Craters of the Moon	Visitor Center	60.4	---	99.5	99.5	99.8	99.8	---	---	---	99.8	---
Death Valley	Park Village	97.3	---	91.5	91.5	97.5	97.6	97.0	97.0	82.9	97.6	97.8
Denali	Headquarters	97.3	---	99.9	99.9	99.9	100.0	99.7	99.9	99.9	100.0	100.0
Everglades	Beard Center	---	---	99.8	99.8	99.8	98.0	99.2	99.4	99.8	99.8	79.1
Glacier	West Glacier Horse Stables	96.2	---	99.1	99.1	99.7	99.7	99.0	95.4	99.7	99.4	99.8
Grand Canyon	The Abyss	97.6	---	99.8	99.8	99.8	99.9	99.2	89.8	99.8	99.9	99.9
Great Basin	Maintenance Yard	96.6	---	97.2	97.2	98.0	98.0	97.7	97.7	98.0	97.0	98.5
Great Smoky Mountains	Clingmans Dome	95.6	---	95.9	95.9	95.5	95.8	95.3	---	---	95.8	---
Great Smoky Mountains	Cove Mountain	99.6	99.6	98.6	98.6	99.5	99.5	97.9	---	---	---	---
Great Smoky Mountains	Look Rock	99.7	---	99.7	99.7	99.7	99.6	98.9	99.0	99.7	99.7	99.8
Hawaii Volcanoes	Observatory	---	98.0	99.9	99.9	99.9	99.9	99.7	---	---	---	---
Hawaii Volcanoes	Visitor Center	---	99.8	99.9	99.9	82.2	82.1	99.5	---	---	99.9	---
Joshua Tree	Black Rock	95.5	---	99.9	99.9	99.9	99.9	97.3	99.2	99.9	99.9	99.9
Joshua Tree	Cottonwood Canyon	77.0	---	98.3	98.3	98.3	98.4	64.7	---	---	98.4	---
Lassen Volcanic	Manzanita Lake Fire Station	99.7	---	99.0	99.0	99.7	99.5	99.1	92.0	99.7	96.0	99.8
Mammoth Cave	Houchin Meadow	99.3	---	99.7	99.7	99.8	99.9	98.7	99.3	99.8	99.9	99.9
Mesa Verde	Resource Management Area	98.5	---	97.6	97.6	99.5	98.4	93.4	97.8	95.0	99.6	99.7
Mount Rainier	Tahoma Woods	97.0	---	93.1	95.3	92.9	98.3	76.9	92.9	92.9	95.7	99.9
North Cascades	Marblemount Ranger Stn	98.7	---	98.4	98.4	98.8	98.1	98.3	98.5	64.1	98.8	99.1
Petrified Forest	South Entrance	86.6	---	93.8	97.4	97.7	97.7	97.2	88.6	97.7	97.8	97.8
Pinnacles	SW of East Entrance Station	99.7	---	89.3	89.3	99.6	99.7	97.2	98.9	99.6	99.8	99.7
Rocky Mountain	Long's Peak	96.7	---	99.5	99.5	99.9	99.9	99.3	92.6	99.9	99.9	99.6
Sequoia and Kings Canyon	Ash Mountain	69.0	---	99.1	99.1	99.2	99.0	98.6	98.7	99.2	99.3	98.5
Sequoia and Kings Canyon	Lower Kaweah	99.6	---	96.1	99.7	99.6	99.8	75.4	---	---	92.1	---
Shenandoah	Big Meadows	96.2	---	87.5	87.5	52.9	97.1	95.7	96.7	50.1	96.9	97.4
Voyageurs	Sullivan Bay	94.9	---	53.2	99.6	99.6	99.6	99.3	91.4	97.8	95.9	99.7
Yellowstone	Old Faithful	---	---	91.1	96.2	99.9	99.9	---	---	---	---	---
Yellowstone	Water Tank	96.7	---	95.7	95.7	97.8	97.8	97.4	94.0	97.8	97.8	98.5
Yosemite	Turtleback Dome	96.6	---	99.7	99.7	99.7	99.8	99.2	91.2	99.7	99.9	99.9
Zion	Dalton's Wash	92.0	---	96.9	96.9	97.2	96.8	96.3	---	---	96.9	---
Average Network Data Collection		94.2	99.3	96	97.8	96.8	98.5	93.5	96.1	93.5	98.4	98.4
Sites operated by cooperating state agencies												
<i>Acadia</i>	Cadillac Mountain	99.3	---	92.3	92.3	98.7	98.7	---	---	---	---	---
<i>Acadia</i>	McFarland Hill	99.5	---	99.6	99.9	99.7	99.7	99.8	100.0	99.6	99.7	99.9
<i>Cape Cod</i>	Cape Cod	94.1	---	94.4	94.4	98.0	98.0	---	---	---	98.0	---
<i>Chamizal</i>	Chamizal	99.0	---	99.7	99.7	99.7	99.8	---	---	---	99.8	---
<i>Congaree</i>	Congaree Bluff	93.0	98.4	---	---	---	---	---	---	---	---	---
<i>Cowpens</i>	State Monitor	98.9	---	---	---	---	---	---	---	---	---	---
<i>Great Smoky Mountains</i>	Cades Cove	99.2	---	99.1	99.1	99.9	99.9	99.2	---	---	99.9	---

Table 1. 2007 Data collection statistics (continued).

National Park Unit	Site Name	Parameter Code										
		O ₃ % valid ^a	SO ₂ % valid ^a	VWD ^b % valid ^a	SWS ^c % valid ^a	TMP % valid ^a	RH % valid ^a	RNF % valid ^a	WET % valid ^a	DTP % valid ^a	SOL % valid ^a	FLOW % valid ^a
Sites operated by cooperating state agencies												
<i>Great Smoky Mountains</i>	Purchase Knob	94.4	---	---	---	---	---	---	---	---	---	---
<i>Mount Rainier</i>	Jackson Visitor's Center	86.9	---	---	---	---	---	---	---	---	---	---
<i>Saguaro</i>	Pima County	98.4	---	---	---	99.0	99.0	---	---	---	98.7	---
<i>Theodore Roosevelt</i>	Painted Canyon Visitor Cntr	96.8	98.7	87.0	87.0	91.8	96.6	97.1	96.3	84.1	55.7	95.8
<i>Wind Cave</i>	Visitor Center	99.8	99.7	99.4	99.4	99.8	99.8	99.3	99.2	99.8	99.8	98.6
<i>Yosemite</i>	Village	---	---	---	---	---	---	---	---	---	---	---
Average Network Data Collection		96.6	98.9	96.2	96.3	98.3	99.0	98.8	98.5	94.5	93.1	98.1
Nearby sites operated by other agencies												
<i>Alabama-Coushatta</i>	CASTNet Site	65.9	---	98.1	98.1	96.6	99.7	98.7	99.2	96.6	93.8	99.5
<i>Appalachian Trail</i>	Mount Greylock Summit	96.6	---	---	---	---	---	---	---	---	---	---
<i>Blue Ridge Parkway</i>	7510 Blue Ridge Parkway	89.8	---	---	---	94.3	95.5	---	---	---	---	---
<i>Blue Ridge Parkway</i>	Barnet Knob Firetower Road	92.2	---	---	---	---	---	---	---	---	---	---
<i>Blue Ridge Parkway</i>	Frying Pan Mountain	92.3	---	---	---	---	---	---	---	---	---	---
<i>Blue Ridge Parkway</i>	Route 191	99.7	---	---	---	---	---	---	---	---	---	---
<i>Blue Ridge Parkway</i>	Ranger Station	97.5	---	---	---	99.6	99.6	---	---	---	---	---
<i>Blue Ridge Parkway</i>	Vinton Elementary	99.7	90.2	---	---	---	---	---	---	---	---	---
<i>Boston Harbor Islands</i>	Former Nike Missile Site	29.2	---	---	99.7	99.9	99.9	---	---	---	99.9	---
<i>Cuyahoga Valley</i>	800 Patterson	99.8	---	---	---	---	---	---	---	---	---	---
<i>Everglades</i>	Cutler Road	98.8	---	---	---	---	---	---	---	---	---	---
<i>George Washington Pkwy</i>	Alexandria Health	100.0	93.7	---	---	---	---	---	---	---	---	---
<i>Guilford Courthouse</i>	Mendenhall Middle School	92.8	---	---	87.7	88.0	88.0	88.0	---	88.0	88.0	---
<i>Indiana Dunes</i>	Ammunition Bunker	91.2	99.4	99.8	99.9	99.6	99.9	---	---	---	73.9	---
<i>Indiana Dunes</i>	Gas Station	90.5	99.5	---	99.2	98.7	---	---	---	96.9	---	---
<i>Indiana Dunes</i>	Water Treatment Plant	97.1	---	---	---	---	---	---	---	---	---	---
<i>Mississippi</i>	Anoka County Airport	99.2	95.8	---	---	---	---	---	---	---	---	---
<i>Mississippi</i>	Somerset Town Hall	99.1	---	---	97.0	---	---	---	---	---	---	---
<i>Mississippi</i>	Washington County	98.0	---	---	---	---	---	---	---	---	---	---
<i>Petroglyph</i>	Westside Taylor Ranch	99.7	---	---	---	---	---	---	---	---	---	---
<i>Rock Creek</i>	Achbold Parkway	97.8	---	---	---	---	---	---	---	---	---	---
<i>Saratoga</i>	Stillwater	98.6	---	---	---	---	---	---	---	---	---	---
<i>Saugus Iron Works</i>	Lynn Water Treatment	97.5	---	---	95.9	100.0	100.0	100.0	---	---	100.0	---
Average Network Data Collection		92.9	95.7	99	96.8	96.1	97.5	95.5	99.2	93.8	91.1	99.5
Portable ozone monitoring systems												
<u>Abraham Lincoln Birthplace</u>	Visitor Center	98.4	---	---	100.0	100.0	100.0	100.0	---	---	100.0	---
<u>Agate Fossil Beds</u>	Residence Area	99.6	---	---	99.6	99.6	99.6	99.6	---	---	99.6	---
<u>Assateague Island</u>	Maintenance Area	90.5	---	---	99.5	99.5	99.5	99.5	---	---	99.5	---
<u>Carlsbad Caverns</u>	Maintenance Area	82.7	---	---	100.0	100.0	100.0	100.0	---	---	100.0	98.4
<u>Colorado</u>	Maintenance Yard	91.8	---	---	100.0	100.0	100.0	99.9	---	---	100.0	---
<u>Cumberland Gap</u>	Hensley Settlement	99.3	---	---	100.0	100.0	100.0	100.0	---	---	100.0	---
<u>Dinosaur</u>	West Entrance Housing	99.9	---	---	100.0	100.0	100.0	100.0	---	---	100.0	100.0
<u>Joshua Tree</u>	Pinto Wells	94.6	---	---	96.7	99.9	99.9	99.9	---	---	99.9	99.9
<u>Mojave</u>	Kelso Mountains	82.2	---	---	100.0	100.0	100.0	99.9	---	---	100.0	---
<u>Natchez Trace Parkway</u>	Dancy Ranger Station	100.0	---	---	100.0	100.0	100.0	100.0	---	---	99.5	---

Table 1. 2007 Data collection statistics (continued).

National Park Unit	Site Name	Parameter Code										
		O ₃ % valid ^a	SO ₂ % valid ^a	VWD ^b % valid ^a	SWS ^c % valid ^a	TMP % valid ^a	RH % valid ^a	RNF % valid ^a	WET % valid ^a	DTP % valid ^a	SOL % valid ^a	FLOW % valid ^a
Portable ozone monitoring systems												
<u>Olympic</u>	Hurricane Ridge Portable	51.2	---	---	99.8	99.8	99.8	99.8	---	---	99.7	---
<u>Padre Island</u>	Malaquite Visitor Center	88.6	---	---	100.0	99.9	99.9	100.0	---	---	100.0	---
<u>Yosemite</u>	School Yard	98.2	---	---	99.9	99.9	99.9	99.9	---	---	99.9	---
Average Network Data Collection		92.0	---	---	99.7	99.9	99.9	99.9	---	---	99.9	99.4

^a The percent is calculated against the number possible. Percent valid can be less than 100% due to routine maintenance, power failures, audits, or other circumstances where the instrument was not available to collect data. Percent valid can also be less than 100% due to influencing factors such as instrument error, operator error, timing problems, flow issues, and other factors that affect instrument operation. When calculating percent valid for O₃ and SO₂, calibration events were removed from the number possible.

^b Cape Cod reports wind direction as scalar wind direction rather than vector wind direction.

^c Saguaro reports wind speed as vector wind speed rather than scalar wind speed.

Operating agency key: plain text = site operated by the National Park Service
italics = site operated by a state agency
underline = site operated by the National Park Service, but consisting of non-EPA certified portable instrumentation

Parameter key: O₃ = ozone analyzer VWD = vector wind direction TMP = ambient temperature RNF = precipitation DTP = delta temperature
 SO₂ = sulfur dioxide analyzer SWS = scalar wind speed RH = relative humidity WET = wetness SOL = solar radiation
 FLOW = filter pack flow rate

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

Portable ozone monitoring systems typically operate during the summer ozone season only.

Table 2. 2007 Network summary of data collection statistics.

Calendar Quarter	Network Data Collection Statistic ^a	Units	Parameter Code										
			O ₃	SO ₂	VWD	SWS	TMP	RH	RNF	WET	DTP	SOL	FLOW
Sites operated by the National Park Service													
Annual	Annual average	%	94.2	99.1	96.0	97.8	96.8	98.5	93.5	96.1	93.5	98.4	98.4
	# sites ≥ 75% valid	# sites (%)	28 (93)	3 (100)	33 (97)	34 (100)	33 (97)	34 (100)	30 (94)	24 (100)	22 (92)	31 (100)	24 (100)
	# sites < 75% valid	# sites (%)	2 (7)	0 (0)	1 (3)	0 (0)	1 (3)	0 (0)	2 (6)	0 (0)	2 (8)	0 (0)	0 (0)
1	Quarterly average	%	92.4	97.1	94.2	97.2	99.6	99.2	89.8	96.6	98.9	98.6	96.2
	# sites ≥ 75% valid	# sites (%)	28 (97)	3 (100)	31 (94)	32 (97)	33 (100)	33 (100)	28 (90)	22 (92)	24 (100)	30 (100)	23 (96)
	# sites < 75% valid	# sites (%)	1 (3)	0 (0)	2 (6)	1 (3)	0 (0)	0 (0)	3 (10)	2 (8)	0 (0)	0 (0)	1 (4)
2	Quarterly average	%	94.7	99.5	95.7	98.3	94.2	97.5	93.0	96.9	88.5	98.4	99.2
	# sites ≥ 75% valid	# sites (%)	29 (97)	3 (100)	33 (97)	34 (100)	31 (91)	33 (97)	29 (91)	23 (96)	20 (83)	31 (100)	24 (100)
	# sites < 75% valid	# sites (%)	1 (3)	0 (0)	1 (3)	0 (0)	3 (9)	1 (3)	3 (9)	1 (4)	4 (17)	0 (0)	0 (0)
3	Quarterly average	%	96.3	100.0	97.4	98.0	95.4	98.1	92.8	95.6	92.7	98.3	98.9
	# sites ≥ 75% valid	# sites (%)	30 (100)	3 (100)	33 (97)	34 (100)	33 (97)	34 (100)	30 (94)	24 (100)	22 (92)	31 (100)	24 (100)
	# sites < 75% valid	# sites (%)	0 (0)	0 (0)	1 (3)	0 (0)	1 (3)	0 (0)	2 (6)	0 (0)	2 (8)	0 (0)	0 (0)
4	Quarterly average	%	93.3	99.9	96.5	97.6	98.0	99.1	98.2	95.2	93.9	98.3	99.4
	# sites ≥ 75% valid	# sites (%)	28 (93)	3 (100)	34 (100)	34 (100)	33 (97)	34 (100)	32 (100)	22 (92)	22 (92)	31 (100)	24 (100)
	# sites < 75% valid	# sites (%)	2 (7)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	2 (8)	2 (8)	0 (0)	0 (0)
Sites operated by cooperating state agencies													
Annual	Annual average	%	96.6	99.1	96.2	96.3	98.3	99.0	98.8	98.5	94.5	93.1	98.1
	# sites ≥ 75% valid	# sites (%)	12 (100)	4 (100)	7 (100)	7 (100)	8 (100)	8 (100)	4 (100)	3 (100)	3 (100)	6 (86)	3 (100)
	# sites < 75% valid	# sites (%)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (14)	0 (0)
1	Quarterly average	%	96.8	99.1	99.4	99.5	99.2	99.3	99.6	99.7	99.8	87.8	99.9
	# sites ≥ 75% valid	# sites (%)	9 (100)	4 (100)	6 (100)	6 (100)	7 (100)	7 (100)	4 (100)	3 (100)	3 (100)	6 (86)	3 (100)
	# sites < 75% valid	# sites (%)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (14)	0 (0)
2	Quarterly average	%	97.5	99.4	89.1	89.2	96.5	98.7	99.1	99.2	83.1	86.8	96.1
	# sites ≥ 75% valid	# sites (%)	12 (100)	4 (100)	6 (86)	6 (86)	8 (100)	8 (100)	4 (100)	3 (100)	2 (67)	6 (86)	3 (100)
	# sites < 75% valid	# sites (%)	0 (0)	0 (0)	1 (14)	1 (14)	0 (0)	0 (0)	0 (0)	0 (0)	1 (33)	1 (14)	0 (0)
3	Quarterly average	%	96.9	98.5	97.6	97.6	97.9	98.1	97.4	95.6	95.4	97.8	96.5
	# sites ≥ 75% valid	# sites (%)	12 (100)	4 (100)	7 (100)	7 (100)	8 (100)	8 (100)	4 (100)	3 (100)	3 (100)	7 (100)	3 (100)
	# sites < 75% valid	# sites (%)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
4	Quarterly average	%	94.7	99.6	99.4	99.5	99.9	99.9	99.3	99.6	99.7	99.7	100.0
	# sites ≥ 75% valid	# sites (%)	10 (91)	4 (100)	7 (100)	7 (100)	8 (100)	8 (100)	4 (100)	3 (100)	3 (100)	7 (100)	3 (100)
	# sites < 75% valid	# sites (%)	1 (9)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

Table 2. 2007 Network summary of data collection statistics (continued).

Calendar Quarter	Network Data Collection Statistic ^a	Units	Parameter Code										
			O ₃	SO ₂	VWD	SWS	TMP	RH	RNF	WET	DTP	SOL	FLOW
Nearby sites operated by other agencies													
Annual	Annual average	%	92.9	95.7	99.1	96.9	96.2	97.6	95.9	99.2	93.8	91.6	99.5
	# sites ≥ 75% valid	# sites (%)	21 (91)	5 (100)	3 (100)	8 (100)	9 (100)	8 (100)	4 (100)	1 (100)	3 (100)	5 (83)	1 (100)
	# sites < 75% valid	# sites (%)	2 (9)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (17)	0 (0)
1	Quarterly average	%	98.3	99.3	98.1	91.9	87.1	92.2	83.4	99.0	79.4	90.0	99.2
	# sites ≥ 75% valid	# sites (%)	8 (100)	5 (100)	2 (100)	6 (86)	7 (88)	6 (86)	2 (67)	1 (100)	2 (67)	4 (80)	1 (100)
	# sites < 75% valid	# sites (%)	0 (0)	0 (0)	0 (0)	1 (14)	1 (12)	1 (14)	1 (33)	0 (0)	1 (33)	1 (20)	0 (0)
2	Quarterly average	%	91.0	86.8	99.1	99.2	97.7	98.1	99.5	99.3	99.2	91.1	99.6
	# sites ≥ 75% valid	# sites (%)	21 (91)	4 (80)	3 (100)	8 (100)	9 (100)	8 (100)	4 (100)	1 (100)	3 (100)	6 (100)	1 (100)
	# sites < 75% valid	# sites (%)	2 (9)	1 (20)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
3	Quarterly average	%	90.8	98.0	99.2	97.8	99.6	99.8	99.5	99.0	99.1	88.7	99.5
	# sites ≥ 75% valid	# sites (%)	21 (91)	5 (100)	3 (100)	8 (100)	9 (100)	8 (100)	4 (100)	1 (100)	3 (100)	5 (83)	1 (100)
	# sites < 75% valid	# sites (%)	2 (9)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (17)	0 (0)
4	Quarterly average	%	97.3	98.7	99.8	98.4	99.8	99.9	99.6	99.4	97.3	97.2	99.7
	# sites ≥ 75% valid	# sites (%)	17 (100)	5 (100)	2 (100)	7 (100)	8 (100)	7 (100)	3 (100)	1 (100)	3 (100)	5 (100)	1 (100)
	# sites < 75% valid	# sites (%)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Portable ozone monitoring systems													
Annual	Annual average	%	92.1	---	99.7	99.7	99.9	99.9	99.9	---	---	99.8	99.4
	# sites ≥ 75% valid	# sites (%)	13 (93)	0 (0)	1 (100)	14 (100)	14 (100)	14 (100)	14 (100)	0 (0)	0 (0)	14 (100)	3 (100)
	# sites < 75% valid	# sites (%)	1 (7)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
1	Quarterly average	%	95.3	---	---	98.8	98.8	98.8	98.8	---	---	99.0	---
	# sites ≥ 75% valid	# sites (%)	3 (100)	0 (0)	0 (0)	3 (100)	3 (100)	3 (100)	3 (100)	0 (0)	0 (0)	3 (100)	0 (0)
	# sites < 75% valid	# sites (%)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
2	Quarterly average	%	94.5	---	99.9	99.9	99.8	99.8	99.8	---	---	99.7	99.1
	# sites ≥ 75% valid	# sites (%)	12 (100)	0 (0)	1 (100)	12 (100)	12 (100)	12 (100)	12 (100)	0 (0)	0 (0)	12 (100)	3 (100)
	# sites < 75% valid	# sites (%)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
3	Quarterly average	%	90.5	---	99.8	99.6	99.9	99.9	99.9	---	---	99.9	99.6
	# sites ≥ 75% valid	# sites (%)	11 (79)	0 (0)	1 (100)	14 (100)	14 (100)	14 (100)	14 (100)	0 (0)	0 (0)	14 (100)	3 (100)
	# sites < 75% valid	# sites (%)	3 (21)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
4	Quarterly average	%	---	---	---	---	---	---	---	---	---	---	---
	# sites ≥ 75% valid	# sites (%)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	# sites < 75% valid	# sites (%)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

^a Network data collection statistics include: 1) the percent of valid hourly averages for each parameter across the network; 2) the number and percent of sites which achieved the minimum EPA requirement of 75% valid data capture, and 3) the number and percent of sites which failed to meet 75% valid data capture.

Parameter key: O₃ = ozone analyzer VWD = vector wind direction TMP = ambient temperature RNF = precipitation DTP = delta temperature
 SO₂ = sulfur dioxide analyzer SWS = scalar wind speed RH = relative humidity WET = wetness SOL = solar radiation
 FLOW = filter pack flow rate

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

Portable ozone monitoring systems typically operate during the summer ozone season only.

Precision and Accuracy

Ozone analyzers are automatically challenged daily with known zero and span concentrations. Most sites also undergo an automatic daily precision check. At a few sites, precision checks are performed weekly. All EPA reference method ozone sites operate both an analyzer (with ozone generator) and calibrator on site. The daily zero, span, and precision values are measured by both instruments, providing an independent reference to the on-site measurements. The NPS goal is for precision checks to fall within $\pm 10\%$ of the calibration gas concentration.

Routine quality assurance multipoint calibrations of the GPMP ozone analyzers and calibrators are performed by the site operators monthly, and by the NPS-contracted network field specialists upon initial installation and every six months thereafter. Network field specialists perform their quality assurance checks using an ozone transfer standard (traceable to a National Institute of Standards and Technology (NIST)-certified primary

standard). The NPS goal is for these accuracy checks to fall within $\pm 10\%$ of the transfer standard gas concentrations. For more information on quality assurance within the network, please refer to the Quality Management Plan (QMP) and the Quality Assurance Project Plan (QAPP) which can be found on the Internet at: <http://www.nature.nps.gov/air/monitoring/network.cfm#procedures>.

Table 3 presents a summary of ozone analyzer precision results and semiannual accuracy results, by quarter, for 2007. Results are color-coded to indicate ideal performance (no shading), acceptable performance (yellow), and unacceptable performance (red). Accuracy results are presented only for NPS-operated sites, and typically include two entries for the year.

Table 4 presents a network summary of ozone analyzer precision and accuracy, by quarter, for 2007. Included in the table are the number of sites whose precision and accuracy checks fell within $\pm 5\%$, $\pm 10\%$, and outside of $\pm 10\%$.

Rocky Mountain National Park,
Colorado - Moraine Park
Photo by Jessica Ward/
Air Resource Specialists, Inc.



Table 3. 2007 Ozone analyzer precision and accuracy summary.

National Park Unit	Site Name	Calendar Quarter	Precision				Accuracy ^g		
			Required # of Precision Checks Met? ^a	Avg. Absolute Percent Difference ^{c, d}	Lower 95% Probability Limit ^f	Upper 95% Probability Limit ^f	Accuracy Check Performed During the Quarter? ^b	Avg. Absolute Percent Difference ^{c, d}	Maximum Percent Difference ^e
Sites operated by the National Park Service									
Badlands	Visitor Center	1	Y	1.5	-3.1	0.0	N	---	---
		2	Y	1.1	-2.4	0.2	Y	0.7	-2.8
		3	Y	2.1	-5.3	1.1	N	---	--
		4	Y	3.8	-5.3	-2.4	N	---	---
Big Bend	K-Bar Ranch Road	1	Y	1.1	-3.6	1.4	N	---	---
		2	Y	2.0	-4.1	0.0	Y	1.4	2.9
		3	Y	1.2	-6.1	3.7	N	---	---
		4	Y	1.4	-4.9	2.1	N	---	---
Canyonlands	Island in the Sky	1	Y	1.3	-1.0	3.6	Y	0.5	1.4
		2	Y	2.0	-4.2	0.1	N	---	---
		3	Y	2.1	-4.5	0.3	Y	2.8	-3.4
		4	Y	1.1	-2.1	4.3	N	---	---
Chiricahua	Entrance Station	1	Y	1.2	-2.3	0.0	N	---	---
		2	Y	1.9	0.7	3.0	Y	1.0	-3.9
		3	Y	1.5	0.5	2.5	N	---	---
		4	Y	1.7	0.6	2.9	Y	0.9	1.4
Craters of the Moon	Visitor Center	1	---	---	---	---	---	---	---
		2	Y	0.9	-6.2	8.0	Y	0.7	2.1
		3	N	5.7	1.7	9.7	Y	1.4	1.5
		4	Y	4.7	0.7	8.7	N	---	---
Death Valley	Park Village	1	Y	1.8	0.1	3.4	Y	1.1	1.8
		2	Y	2.3	0.9	3.7	N	---	---
		3	Y	2.1	-0.5	4.7	Y	0.6	1.3
		4	Y	1.1	-0.6	2.9	N	---	---
Denali	Headquarters	1	Y	0.6	-0.6	1.7	N	---	---
		2	Y	0.8	-0.9	2.4	Y	0.4	1.4
		3	Y	1.1	0.4	1.8	N	---	---
		4	Y	0.3	-2.3	1.7	Y	0.6	1.5
Glacier	West Glacier Horse Stables	1	Y	0.4	-2.9	2.0	N	---	---
		2	Y	1.2	-4.7	2.3	Y	1.0	-2.4
		3	Y	2.4	-1.6	6.5	N	---	---
		4	Y	1.1	-0.8	3.1	Y	2.0	-4.0
Grand Canyon	The Abyss	1	Y	0.6	-1.0	2.3	N	---	---
		2	Y	0.9	-0.5	2.3	Y	1.4	-2.8
		3	Y	0.8	-0.5	2.1	N	---	---
		4	Y	1.2	-0.4	2.8	Y	1.1	-2.9
Great Basin	Maintenance Yard	1	Y	2.1	-3.5	-0.7	Y	1.4	1.9
		2	Y	1.7	-3.0	-0.4	N	---	---
		3	Y	1.2	-2.7	0.3	Y	1.7	2.3
		4	Y	1.2	-2.9	0.4	N	---	---

Table 3. 2007 Ozone analyzer precision and accuracy summary (continued).

National Park Unit	Site Name	Calendar Quarter	Precision				Accuracy ^g		
			Required # of Precision Checks Met? ^a	Avg. Absolute Percent Difference ^{c, d}	Lower 95% Probability Limit ^f	Upper 95% Probability Limit ^f	Accuracy Check Performed During the Quarter? ^b	Avg. Absolute Percent Difference ^{c, d}	Maximum Percent Difference ^e
Sites operated by the National Park Service									
Great Smoky Mountains	Clingmans Dome	1	---	---	---	---	---	---	---
		2	Y	0.0	-3.7	3.8	N	---	---
		3	N	0.4	-3.9	3.1	N	---	---
		4	Y	1.1	-2.0	4.2	Y	5.8	10.0
Great Smoky Mountains	Cove Mountain	1	Y	0.0	-1.1	1.2	N	---	---
		2	Y	0.5	-1.0	1.9	N	---	---
		3	Y	0.2	-1.4	1.0	N	---	---
		4	Y	0.2	-1.6	1.2	Y	1.1	-2.5
Great Smoky Mountains	Look Rock	1	Y	0.9	-8.0	6.1	N	---	---
		2	Y	0.6	-0.7	1.9	Y	1.7	2.0
		3	Y	0.4	-1.7	2.5	N	---	---
		4	Y	0.0	-1.8	1.9	Y	0.7	1.5
Joshua Tree	Black Rock	1	Y	5.1	-8.1	-2.1	N	---	---
		2	Y	5.4	-7.8	-2.9	Y	4.0	4.7
		3	Y	7.5	-10.5	-4.4	N	---	---
		4	Y	3.5	-8.6	1.6	Y	1.4	-2.7
Joshua Tree	Cottonwood Canyon	1	Y	4.3	-6.7	-1.9	N	---	---
		2	Y	0.5	-8.0	7.1	Y	0.6	-2.2
		3	N	0.4	-9.2	8.3	N	---	---
		4	Y	1.3	-1.1	3.7	Y	1.3	2.0
Lassen Volcanic	Manzanita Lake Fire Station	1	Y	5.4	2.6	8.2	Y	1.5	-4.3
		2	Y	3.9	2.7	5.1	N	---	---
		3	Y	3.2	2.1	4.4	Y	1.2	-1.8
		4	Y	2.3	0.9	3.7	N	---	---
Mammoth Cave	Houchin Meadow	1	Y	0.2	-5.5	5.1	Y	0.7	1.2
		2	Y	0.2	-2.0	1.5	N	---	---
		3	Y	0.3	-3.0	2.3	Y	1.9	3.0
		4	Y	1.8	-5.0	1.4	N	---	---
Mesa Verde	Resource Management Area	1	Y	1.9	-0.5	4.2	Y	1.7	2.2
		2	Y	1.4	0.2	2.7	N	---	---
		3	Y	0.4	-1.0	1.9	N	---	---
		4	Y	0.3	-1.9	2.6	N	---	---
Mount Rainier	Tahoma Woods	1	Y	2.1	-5.2	1.1	N	---	---
		2	Y	2.9	-4.4	-1.4	N	---	---
		3	Y	1.9	-5.8	2.0	Y	0.5	1.4
		4	Y	0.2	-4.0	4.4	N	---	---
North Cascades	Marblemount Ranger Stn	1	Y	1.4	-4.5	1.7	N	---	---
		2	Y	2.9	-8.4	2.7	N	---	---
		3	Y	0.7	-5.3	3.8	Y	0.2	-0.4
		4	Y	0.0	-4.9	5.0	N	---	---

Table 3. 2007 Ozone analyzer precision and accuracy summary (continued).

National Park Unit	Site Name	Calendar Quarter	Precision				Accuracy ⁹		
			Required # of Precision Checks Met? ^a	Avg. Absolute Percent Difference ^{c, d}	Lower 95% Probability Limit ^f	Upper 95% Probability Limit ^f	Accuracy Check Performed During the Quarter? ^b	Avg. Absolute Percent Difference ^{c, d}	Maximum Percent Difference ^e
Sites operated by the National Park Service									
Petrified Forest	South Entrance	1	Y	0.7	-2.1	0.6	N	---	---
		2	Y	0.5	-1.6	0.7	Y	2.5	-4.8
		3	Y	0.9	-2.0	0.1	N	---	---
		4	Y	1.0	-2.1	0.2	Y	1.3	-4.3
Pinnacles	SW of East Entrance Stn	1	Y	3.0	-4.9	-1.0	Y	2.4	-4.2
		2	Y	0.1	-2.7	2.4	N	---	---
		3	Y	0.2	-2.7	2.3	Y	0.9	-1.4
		4	Y	2.6	-5.2	-0.1	N	---	---
Rocky Mountain	Long's Peak	1	Y	0.1	-1.6	1.4	N	---	---
		2	Y	2.2	-0.6	4.9	Y	0.1	0.5
		3	Y	3.1	0.6	5.5	Y	1.7	1.9
		4	Y	1.2	-1.0	3.4	N	---	---
Sequoia and Kings Canyon	Ash Mountain	1	Y	2.4	-3.5	-1.3	Y	3.3	-4.9
		2	Y	5.4	-7.7	-3.0	N	---	---
		3	Y	3.6	-6.8	-0.4	Y	3.6	-4.3
		4	Y	1.8	-9.0	5.4	N	---	---
Sequoia and Kings Canyon	Lower Kaweah	1	Y	0.3	-0.8	1.4	Y	1.1	-2.0
		2	Y	3.1	-8.6	2.3	N	---	---
		3	Y	0.0	-0.9	1.0	Y	0.0	0.0
		4	Y	0.1	-0.9	0.8	N	---	---
Shenandoah	Big Meadows	1	Y	2.9	0.7	5.1	N	---	---
		2	Y	3.7	0.6	6.8	Y	0.4	0.6
		3	Y	2.7	-0.8	6.2	N	---	---
		4	Y	2.0	-3.7	7.7	Y	1.0	-1.8
Voyageurs	Sullivan Bay	1	Y	0.8	-2.2	0.5	N	---	---
		2	Y	0.7	-3.3	2.0	Y	1.1	1.8
		3	Y	0.5	-1.7	0.8	N	---	---
		4	Y	0.1	-1.0	1.3	Y	0.4	1.5
Yellowstone	Water tank	1	Y	0.1	-1.2	1.0	N	---	---
		2	Y	0.8	-2.3	0.6	Y	3.2	4.1
		3	Y	0.8	-2.3	0.7	Y	2.0	-2.9
		4	Y	1.9	-3.7	0.0	N	---	---
Yosemite	Turtleback Dome	1	Y	1.9	-9.0	5.2	Y	2.0	3.9
		2	Y	2.0	-5.0	8.9	N	---	---
		3	Y	0.6	-1.0	2.1	N	---	---
		4	Y	0.3	-2.6	1.9	Y	0.2	0.5
Zion	Dalton's Wash	1	Y	1.2	-2.8	0.3	Y	1.8	-4.3
		2	Y	1.6	-2.7	-0.4	N	---	---
		3	Y	2.5	-4.4	-0.6	Y	1.0	-2.0
		4	Y	1.9	-3.4	-0.3	N	---	---

Table 3. 2007 Ozone analyzer precision and accuracy summary (continued).

National Park Unit	Site Name	Calendar Quarter	Precision			
			Required # of Precision Checks Met? ^a	Avg. Absolute Percent Difference ^{c, d}	Lower 95% Probability Limit ^f	Upper 95% Probability Limit ^f
Sites operated by cooperating state agencies						
<i>Acadia</i>	Cadillac Mountain	1	---	---	---	---
		2	N	0.1	-0.8	0.6
		3	Y	0.3	-1.1	1.6
		4	Y	0.0	0.0	0.0
<i>Acadia</i>	McFarland Hill	1	Y	1.5	-0.3	3.2
		2	N	0.9	-2.5	4.3
		3	Y	1.6	0.5	2.7
		4	N	1.3	-2.5	0.0
<i>Cape Cod</i>	Cape Cod	1	---	---	---	---
		2	Y	4.7	3.7	5.7
		3	Y	3.4	0.3	6.6
		4	---	---	---	---
<i>Chamizal</i>	Chamizal	1	Y	0.2	-1.5	1.9
		2	N	0.1	-1.3	1.5
		3	Y	1.1	1.1	1.1
		4	Y	0.9	-0.7	2.5
<i>Congaree</i>	Congaree Bluff	1	N	1.7	-6.2	9.6
		2	N	3.4	-3.2	9.9
		3	N	1.8	-0.3	3.9
		4	N	0.9	-8.6	6.9
<i>Cowpens</i>	State Monitor	1	N	1.5	-5.3	2.2
		2	Y	0.5	-10.5	9.5
		3	N	1.9	-7.3	11.1
		4	Y	3.0	-11.8	5.9
<i>Great Smoky Mountains</i>	Cades Cove	1	Y	1.0	-1.5	3.5
		2	Y	1.6	-1.1	4.3
		3	Y	2.7	-0.2	5.5
		4	Y	4.3	0.7	7.9
<i>Great Smoky Mountains</i>	Purchase Knob	1	---	---	---	---
		2	Y	0.1	-1.2	1.3
		3	Y	0.6	-0.5	1.6
		4	Y	1.0	0.5	1.5
<i>Mount Rainier</i>	Jackson Visitor's Center	1	N	0.2	-2.0	1.6
		2	Y	0.2	-2.8	3.1
		3	N	1.4	-3.5	0.6
		4	N	3.6	-9.9	2.6
<i>Saguaro</i>	Pima County	1	Y	0.4	-2.1	1.2
		2	Y	0.0	-1.6	1.6
		3	Y	0.4	-1.6	2.3
		4	Y	0.3	-1.4	2.0

Table 3. 2007 Ozone analyzer precision and accuracy summary (continued).

National Park Unit	Site Name	Calendar Quarter	Precision			
			Required # of Precision Checks Met? ^a	Avg. Absolute Percent Difference ^{c, d}	Lower 95% Probability Limit ^f	Upper 95% Probability Limit ^f
Sites operated by cooperating state agencies						
<i>Theodore Roosevelt</i>	Painted Canyon Visitor Ctr	1	N	0.6	-1.7	2.8
		2	Y	0.8	-0.9	2.4
		3	N	1.6	-0.4	3.5
		4	Y	0.6	-4.2	2.9
<i>Wind Cave</i>	Visitor Center	1	Y	0.3	-3.1	3.8
		2	N	0.6	-1.7	0.6
		3	Y	0.5	-2.4	1.5
		4	Y	0.2	-2.3	1.9
Nearby sites operated by other agencies						
<i>Appalachian Trail</i>	Mount Greylock Summit	1	---	---	---	---
		2	Y	3.2	2.3	4.2
		3	N	2.1	-1.5	5.8
		4	---	---	---	---
<i>Blue Ridge Parkway</i>	7510 Blue Ridge Parkway	1	---	---	---	---
		2	Y	0.7	-0.6	2.1
		3	Y	1.6	-0.3	3.6
		4	Y	1.9	0.7	3.1
<i>Blue Ridge Parkway</i>	Frying Pan Mountain	1	---	---	---	---
		2	Y	1.2	-1.7	4.2
		3	Y	1.0	-0.8	2.7
		4	N	0.7	-0.5	2.0
<i>Blue Ridge Parkway</i>	Route 191	1	---	---	---	---
		2	Y	0.8	-1.3	2.9
		3	Y	0.5	-2.2	1.2
		4	Y	1.1	-1.1	-1.1
<i>Blue Ridge Parkway</i>	Ranger Station	1	---	---	---	---
		2	N	1.6	-4.9	8.1
		3	Y	3.1	-3.5	9.7
		4	Y	0.2	-0.8	1.2
<i>Blue Ridge Parkway</i>	Vinton Elementary	1	---	---	---	---
		2	N	1.5	-1.7	4.8
		3	Y	1.1	-6.6	4.4
		4	Y	1.4	0.2	2.7
<i>Boston Harbor Islands</i>	Former Nike Missile Site	1	---	---	---	---
		2	Y	2.7	-5.3	0.0
		3	Y	1.4	-2.5	-0.3
		4	---	---	---	---
<i>Cuyahoga Valley</i>	800 Patterson	1	---	---	---	---
		2	N	1.7	-2.9	6.4
		3	N	0.4	-2.0	2.8
		4	N	0.8	-2.8	1.2

Table 3. 2007 Ozone analyzer precision and accuracy summary (continued).

National Park Unit	Site Name	Calendar Quarter	Precision			
			Required # of Precision Checks Met? ^a	Avg. Absolute Percent Difference ^{c, d}	Lower 95% Probability Limit ^f	Upper 95% Probability Limit ^f
Nearby sites operated by other agencies						
<i>Everglades</i>	Cutler Road	1	Y	2.0	-7.6	3.7
		2	Y	1.5	-4.1	1.2
		3	Y	4.0	-7.7	-0.2
		4	Y	1.5	-3.1	0.1
<i>George Washington Pkwy</i>	Alexandria Health	1	---	---	---	---
		2	Y	2.5	-8.6	3.7
		3	Y	0.8	-5.2	3.6
		4	Y	0.7	-5.8	7.3
<i>Guilford Courthouse</i>	Mendenhall Middle School	1	---	---	---	---
		2	Y	0.5	-2.8	1.8
		3	Y	0.6	-2.3	1.1
		4	Y	1.3	-1.6	-0.9
<i>Indiana Dunes</i>	Ammunition Bunker	1	---	---	---	---
		2	Y	0.2	-5.6	6.0
		3	Y	0.6	-2.4	3.7
		4	---	---	---	---
<i>Indiana Dunes</i>	Gas Station	1	---	---	---	---
		2	N	2.2	-5.0	0.6
		3	N	2.1	-8.0	3.9
		4	---	---	---	---
<i>Indiana Dunes</i>	Water Treatment Plant	1	---	---	---	---
		2	Y	0.9	-5.4	7.1
		3	Y	0.2	-4.1	4.5
		4	---	---	---	---
<i>Mississippi</i>	Anoka County Airport	1	N	1.8	-6.2	9.7
		2	Y	0.1	-8.0	8.1
		3	Y	2.8	-7.5	2.0
		4	N	7.1	-9.9	-4.3
<i>Mississippi</i>	Somerset Town Hall	1	Y	1.7	-3.5	0.2
		2	Y	1.9	-3.0	-0.9
		3	Y	2.4	-3.8	-1.0
		4	N	1.9	-3.0	-0.8
<i>Petroglyph</i>	Westside Taylor Ranch	1	N	0.2	-1.4	1.8
		2	N	0.6	-1.1	2.4
		3	N	2.0	1.1	3.0
		4	N	0.6	-5.3	6.4
<i>Rock Creek</i>	Achbold Parkway	1	Y	1.0	-8.0	6.0
		2	Y	2.5	-8.0	2.9
		3	Y	1.1	-6.3	4.2
		4	Y	0.8	-8.1	6.5

Table 3. 2007 Ozone analyzer precision and accuracy summary (continued).

National Park Unit	Site Name	Calendar Quarter	Precision			
			Required # of Precision Checks Met? ^a	Avg. Absolute Percent Difference ^{c, d}	Lower 95% Probability Limit ^f	Upper 95% Probability Limit ^f
Nearby sites operated by other agencies						
<i>Saratoga</i>	Stillwater	1	Y	1.4	-0.3	3.1
		2	Y	0.8	-3.4	1.8
		3	Y	0.7	-3.1	1.8
		4	Y	0.3	-1.6	2.1
<i>Saugus Iron Works</i>	Lynn Water Treatment	1	Y	3.5	-4.6	-2.4
		2	Y	4.8	-5.7	-3.8
		3	Y	4.3	-5.3	-3.3
		4	Y	4.3	-5.2	-3.3

^a Precision checks are required by the Environmental Protection Agency (EPA) of all pollutant analyzers collecting data which are to be submitted to the EPA Air Quality System (AQS). A precision check is performed by challenging the pollutant analyzer with a known concentration of gas from the pollutant transfer standard. This precision check must be performed at least every 14 days of monitoring operation. The percent difference between the analyzer and the transfer standard is then calculated. According to the NPS standard operating procedures, the pollutant analyzer must respond within 10% of the transfer standard.

^b Accuracy checks are required by the EPA of all pollutant analyzers collecting data which are to be submitted to the EPA AQS. An accuracy check is performed by challenging the pollutant analyzer with a known concentration of gas from the pollutant transfer standard at several different points. The percent difference between the analyzer and the transfer standard is then calculated. According to NPS standard operating procedures, the pollutant analyzer must respond within 10% of the transfer standard. All accuracy checks reported here were performed by the reporting organization and onto by an outside auditor.

^c Percent Difference = [(analyzer - transfer standard) / transfer standard] x 100

^d Average Absolute Percent Difference is the mean of the absolute value of all individual precision check percent differences during the quarter, or the mean of the absolute value of all the percent differences from each point challenged during an accuracy check.

^e Maximum Percent Difference is the highest percent difference from the points of a multipoint (or accuracy) calibration. A positive value indicates the analyzer read high, a negative value indicates the analyzer read low.

^f Upper/Lower 95% Probability Limits = (Average Percent Difference) ± (1.96) (Standard Deviation of precision check percent differences in the quarter). The probability limits represent the interval having a 95% chance of containing the true average percent difference. Probability limits must be within ± 15%.

^g Accuracy results are presented for NPS-operated sites only.

Operating agency key: plain text = site operated by the National Park Service
Italics = site operated by a state agency
underline = site operated by the National Park Service, but consisting of non-EPA certified portable instrumentation

Color shading key:  or  Ideal: indicates percent difference within ± 5% or a probability limit within ± 10%.
 Acceptable: indicates a percent difference between ± 5.1-10% or a probability limit between ± 10.1-15%.
 Unacceptable: indicates a percent difference greater than ± 10% or a probability limit greater than ± 15%.

Table 4. 2007 Ozone analyzer precision and accuracy overall network summary.

Calendar Quarter	# Operational Sites	Precision ^a Average Absolute Percent Difference			Accuracy ^{b,c} Average Absolute Percent Difference		
		# Sites within ± 5%	# Sites within ± 5.1-10%	# Sites > ± 10%	# Sites within ± 5%	# Sites within ± 5.1-10%	# Sites > ± 10%
Sites operated by the National Park Service							
1	28	26	2	0	11	0	0
2	30	28	2	0	15	0	0
3	30	28	2	0	14	0	0
4	30	30	0	0	12	1	0
Sites operated by cooperating state agencies							
1	9	9	0	0			
2	12	12	0	0			
3	12	12	0	0			
4	11	11	0	0			
Nearby sites operated by other agencies							
1	7	7	0	0			
2	20	20	0	0			
3	20	20	0	0			
4	15	14	1	0			

^a Precision checks are required by the Environmental Protection Agency (EPA) of all pollutant analyzers collecting data which are to be submitted to the EPA Air Quality System (AQS). A precision check is performed by challenging the pollutant analyzer with a known concentration of gas from the pollutant transfer standard. This precision check must be performed at least every 14 days of monitoring operation. The percent difference between the analyzer and the transfer standard is then calculated. According to NPS standard operating procedures, the pollutant analyzer must respond within 10% of the transfer standard.

^b Accuracy checks are required by the EPA of all pollutant analyzers collecting data which are to be submitted to the EPA AQS. An accuracy check is performed by challenging the pollutant analyzer with a known concentration of gas from the pollutant transfer standard of several different points. The percent difference between the analyzer and the transfer standard is then calculated. According to NPS standard operating procedures, the pollutant analyzer must respond within 10% of the transfer standard.

^c Accuracy results are presented for NPS-operated sites only.