

# Fifty-Second Quarterly Report of Ambient Air Quality Monitoring at Sunshine Canyon Landfill and Van Gogh Elementary School

September 1, 2020 – November 30, 2020

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Quarterly Report

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# Executive Summary

## Background

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Continuous monitoring of meteorological and air quality parameters began at the Sunshine Canyon Landfill (Landfill site) and at Van Gogh Elementary School (Community site) in the nearby community of Granada Hills in fall 2007. At these sites, the following are measured: particulate matter less than 10 microns in aerodynamic diameter (PM<sub>10</sub>), wind speed (WS) and wind direction (WD), and black carbon (BC), as a surrogate for diesel particulate matter (DPM). The collected data are validated and evaluated for completeness quarterly. Monitoring is conducted to fulfill stipulations in the City of Los Angeles' Conditions of Approval for the expansion of the landfill.<sup>1</sup> Similar conditions cover the County of Los Angeles' portion of the landfill.<sup>2</sup>

PM<sub>10</sub> concentrations are compared with federal and state PM<sub>10</sub> standards. When PM<sub>10</sub> concentrations are above the standard (i.e., an exceedance), additional comparisons are made with the historical, regional, and annual ambient PM<sub>10</sub> concentrations. The PM<sub>10</sub> and BC data are analyzed annually to characterize the impact of landfill operations on ambient air quality as observed at the Community site by quantifying PM<sub>10</sub> and BC concentrations and exceedances and comparing concentrations between the Landfill and Community sites. A more in-depth analysis is performed for the annual report.

The validated hourly data and a summary of the analytical results and field operations are reported to the Planning Department of the City of Los Angeles and to the Los Angeles County Department of Regional Planning. This Fifty-Second Quarterly Report summarizes the September 2020–November 2020 (2020 fall quarter) monitoring results from the fourteenth year of continuous data collection.

## Statistics

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For this quarter, the percent data capture for hourly PM<sub>10</sub> was 100.0% at both the Landfill site and the Community site. Of the captured PM<sub>10</sub> data, approximately 0.3% were invalidated at the Landfill site, and approximately 0.7% were invalidated at the Community site. None of the PM<sub>10</sub> data were deemed suspect at either the Landfill site or the Community site.

Hourly BC data capture was 99.9% at the Landfill site and 93.3% at the Community site. Of the captured hourly BC data, no data were deemed invalid at either the Landfill site or the Community

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<sup>1</sup> Section C.10.a of Ordinance No. 172,933.

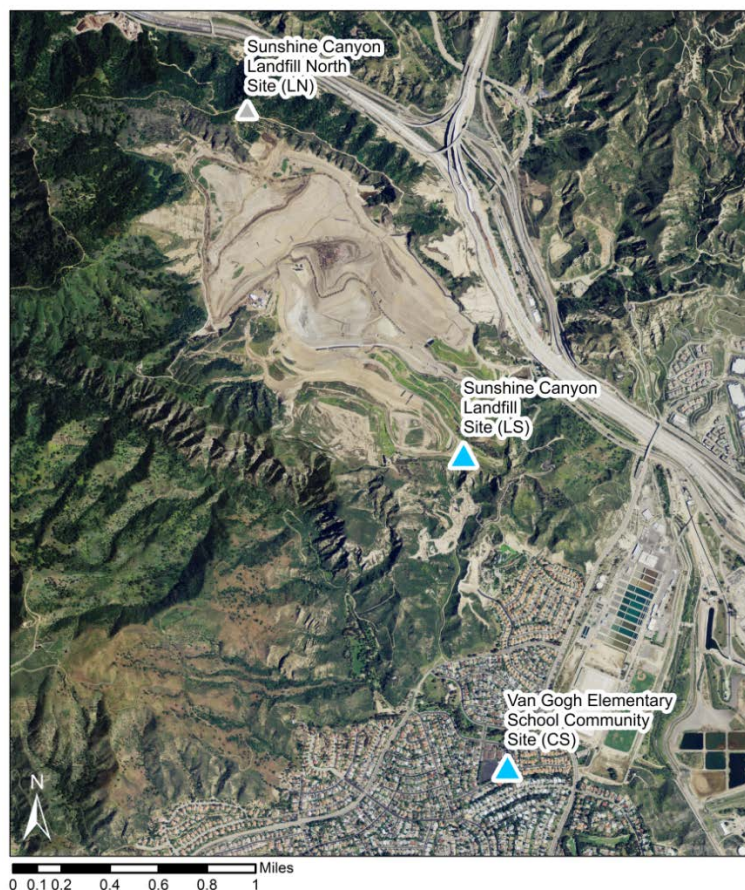
<sup>2</sup> County Condition 81.

site. Of the captured hourly BC data, 1.7% were deemed suspect at the Landfill site, and 3.6% were deemed suspect at the Community site.

During this quarter, the state 24-hr PM<sub>10</sub> standard (50 µg/m<sup>3</sup>) was exceeded on 74% of days (67 days out of the valid 91 days of the quarter) at the Landfill site and 13% of days at the Community site (11 days out of the valid 90 days of the quarter). The federal 24-hr PM<sub>10</sub> standard (150 µg/m<sup>3</sup>) was exceeded on 5% of days (4 days out of the valid 91 days of the quarter) at the Landfill site, but no federal exceedance was observed at the Community site for this quarter. In the fall 2020 quarter, the 24-hr average BC concentration was 0.8 µg/m<sup>3</sup> at the Landfill site and 0.7 µg/m<sup>3</sup> at the Community site. Both sites exhibited ranges of 24-hr average BC concentrations on the low end among the 13 monitored fall quarters (2008–2020).

# 1. Introduction

This report summarizes data completeness, ambient particulate matter less than 10 microns in aerodynamic diameter ( $PM_{10}$ ) concentrations, average and maximum ambient black carbon (BC, a surrogate for diesel particulate matter [DPM] concentrations), instrument flow rate verification (quality control) data, and field operations for the quarterly period of September 1, 2020, through November 30, 2020. The collected data are validated and evaluated quarterly for completeness. This is the fourteenth year that continuous data were collected in the fall from continuous monitors at the Sunshine Canyon Landfill site (LS; previously called the Berm site) and the Van Gogh Elementary School Community site (CS). The monitoring site locations are shown in [Figure 1](#).  $PM_{10}$  is measured with a beta attenuation monitor (BAM), and BC is measured with an Aethalometer. The Sunshine Canyon Landfill North (LN) monitoring site shown in Figure 1 was installed in December 2015 and decommissioned on May 31, 2017.



**Figure 1.** View of Sunshine Canyon Landfill and the surrounding monitoring stations (blue triangles): Sunshine Canyon Landfill site (LS) and Community site (CS). The Sunshine Canyon Landfill North site (LN, gray triangle) collected data from December 1, 2015, through May 31, 2017, and has since been decommissioned.

Monitoring is conducted to fulfill stipulations in the City of Los Angeles' Conditions of Approval for the expansion of the landfill.<sup>3</sup> Similar conditions cover the County of Los Angeles' portion of the landfill.<sup>4</sup>

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<sup>3</sup> Section C.10.a of Ordinance No. 172,933.

<sup>4</sup> County Condition 81.



## 2. Data Completeness

Completeness statistics for all measured variables during the 2020 fall quarter are shown in [Table 1](#). Data deemed as suspect are included in subsequent analyses (e.g., regional comparisons), while invalid data are not. The percent data capture for PM<sub>10</sub> was 100.0% at both the Landfill site and the Community site. Approximately 0.3% and 0.7% of the captured PM<sub>10</sub> data were invalidated at the Landfill and Community sites, respectively. No hourly PM<sub>10</sub> values were deemed suspect at either of the monitoring sites in this quarter.

**Table 1.** Data completeness statistics for hourly PM<sub>10</sub>, hourly BC, and 1-min wind speed and wind direction data for the 2020 fall quarter monitoring period.

Monitoring Location	Dates	Data Capture (%) <sup>a</sup>			Data Valid or Suspect (%) <sup>b</sup>			Data Suspect (%) <sup>c</sup>		
		PM <sub>10</sub>	BC	WS/WD	PM <sub>10</sub>	BC	WS/WD	PM <sub>10</sub>	BC	WS/WD
Sunshine Canyon Landfill (LS)	09/01/20-11/30/20	100.0	99.9	100.0	99.7	100.0	98.9	0.0	1.7	0.1
Community Site (CS)	09/01/20-11/30/20	100.0	93.3	100.0	99.3	100.0	98.9	0.0	3.6	0.0

<sup>a</sup> Data Capture is the number of collected data values divided by the total number of expected data intervals during the date range indicated in the "Dates" column (e.g., for the raw BC 1-hr data, 24 data values per day are expected), multiplied by 100.

<sup>b</sup> Data Valid or Suspect is the number of data values that are either valid or suspect divided by the number of captured data values, multiplied by 100.

<sup>c</sup> Data Suspect is the number of data values labeled as suspect divided by the number of captured data values, multiplied by 100.

Hourly BC data capture was 99.9% at the Landfill site and 93.3% at the Community site. No hourly BC data were invalidated at the Landfill site or the Community site. At the Landfill site, 1.7% of hourly BC data were deemed suspect; at the Community site, 3.6% hourly BC data were deemed suspect.

The wind data capture percentages were 100.0% at both the Landfill site and the Community site. Among those captured data, 1.1% of the data were invalidated at the Landfill site, with less than 0.1% deemed suspect; at the Community site, 1.1% of the data were invalidated, with none deemed suspect.



### 3. PM<sub>10</sub> Exceedances

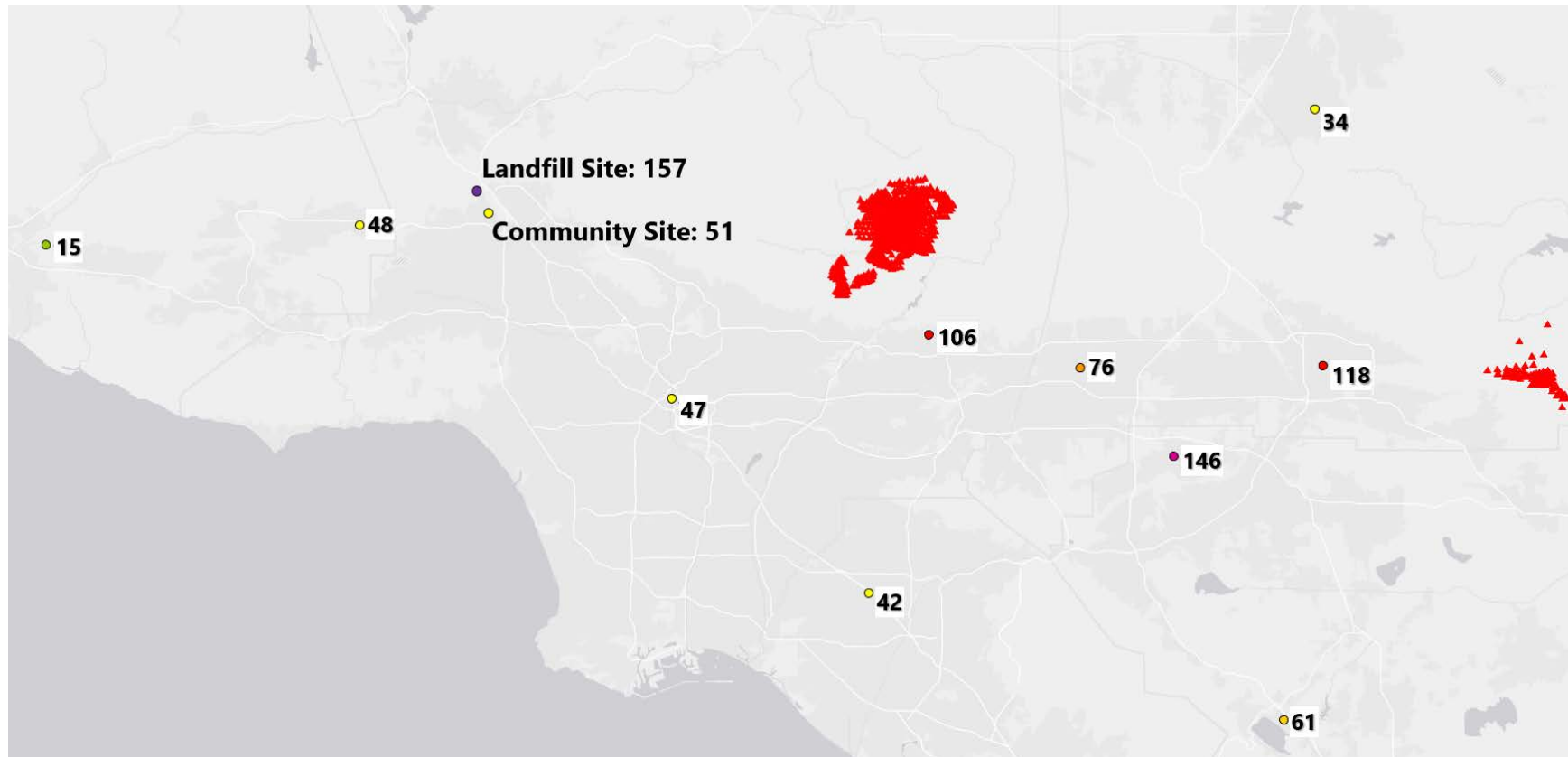
The federal and state PM<sub>10</sub> exceedances for the fall quarter of the baseline year (2002), the fall quarters of the previous 12 years (2008–2019), and the current fall quarter (2020) are summarized in [Table 2](#). In this quarter, the State PM<sub>10</sub> standard of 50 µg/m<sup>3</sup> was exceeded on 74% of days (67 days) at the Landfill site and on 13% of days (11 days) at the Community site. This is among the top three highest percentages of state PM<sub>10</sub> exceedances for the fall quarters on record at both the Landfill site and the Community site.

**Table 2.** Number of exceedances of federal and state 24-hr PM<sub>10</sub> standards during the fall quarters of the baseline year (2002) and years from 2008 to 2020. In the “Federal 24-hr” column, the values are number of exceedances and the date(s) on which those exceedances occurred. In the “State 24-hr” column, the values are number of exceedances/total days on which valid 24-hr averages were measured, and the percentage of exceedances out of the total number of days on which valid 24-hr average PM<sub>10</sub> concentrations were measured. The most recent fall quarter is shown in **bold**.

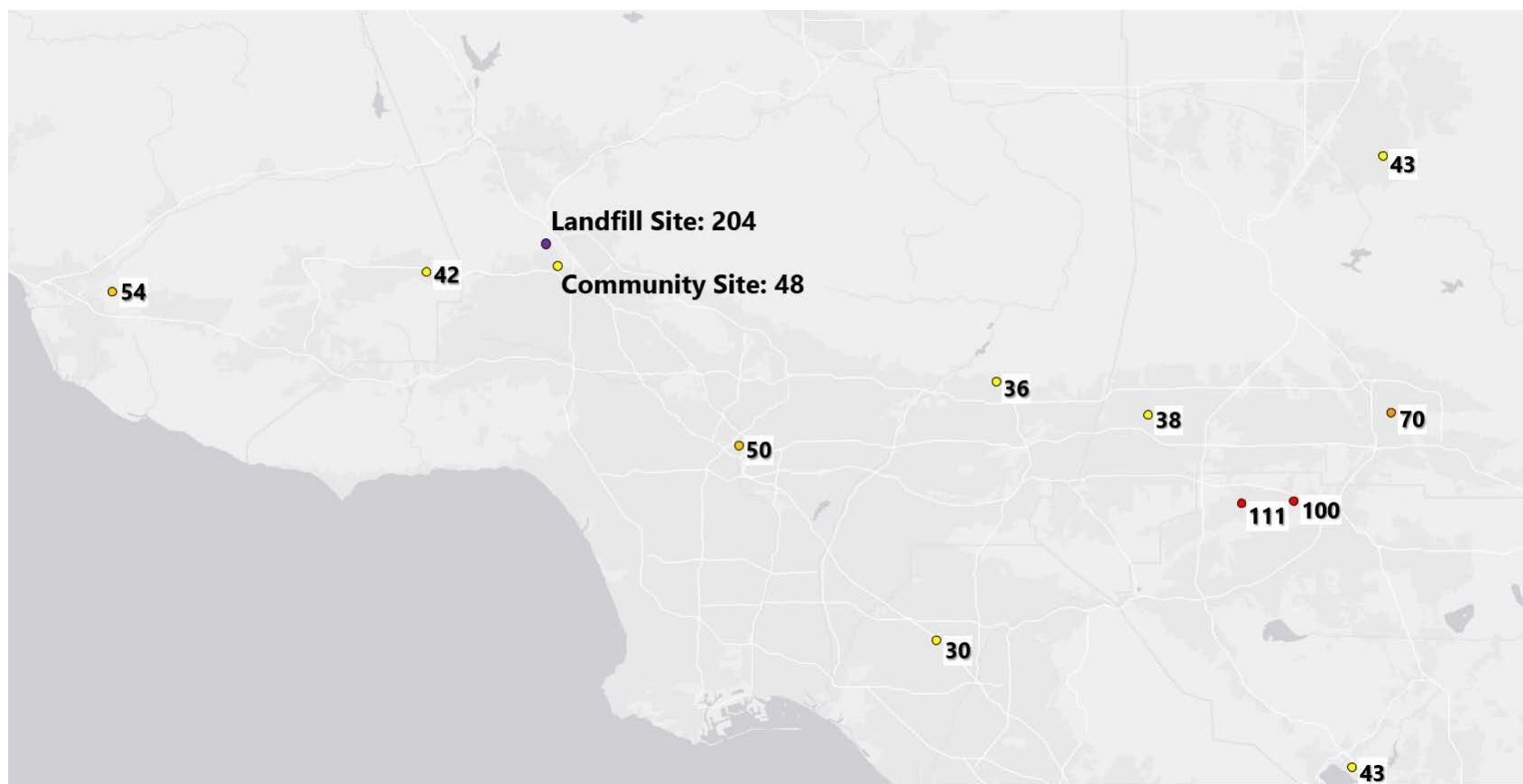
Site	Quarter Period	Quarter Name	Exceedances of PM <sub>10</sub> Standard	
			Federal 24-hr 150 µg/m <sup>3</sup>	State 24-hr 50 µg/m <sup>3</sup>
Sunshine Canyon Landfill (LS)	09/01/02–11/30/02	Baseline Year	0	51/77 (66%)
	09/01/08–11/30/08	2008 Fall	1 (10/09/08)	12/73 (16%)
	09/01/09–11/30/09	2009 Fall	1 (10/27/09)	78/89 (19%)
	09/01/10–11/30/10	2010 Fall	0	8/86 (9%)
	09/01/11–11/30/11	2011 Fall	1 (11/02/11)	20/89 (22%)
	09/01/12–11/30/12	2012 Fall	1 (10/26/12)	9/85 (11%)
	09/01/13–11/30/13	2013 Fall	1 (10/04/13)	14/89 (16%)
	09/01/14–11/30/14	2014 Fall	0	5/91 (5%)
	09/01/15–11/30/15	2015 Fall	0	10/86 (12%)
	09/01/16–11/30/16	2016 Fall	1 (11/27/16)	12/48 (25%)
	09/01/17–11/30/17	2017 Fall	3 (10/09/17, 10/24/17, 11/21/17)	27/87 (32%)
	09/01/18–11/30/18	2018 Fall	1 (11/8/2018)	14/89 (16%)
	09/01/19–11/30/19	2019 Fall	5 (10/25/19, 10/31/19, 11/16/19, 11/25/19, 11/26/19)	39/74 (53%)
	<b>09/01/20–11/30/20</b>	<b>2020 Fall</b>	<b>4 (09/09/20, 10/16/20, 10/26/20, 11/26/20)</b>	<b>67/91 (74%)</b>

Site	Quarter Period	Quarter Name	Exceedances of PM <sub>10</sub> Standard	
			Federal 24-hr 150 µg/m <sup>3</sup>	State 24-hr 50 µg/m <sup>3</sup>
Sunshine Canyon Landfill North (LN)	09/01/16–11/30/16	2016 Fall	0	13/35 (37%)
Community Site (CS)	09/01/02–11/30/02	Baseline Year	0	8/33 (24%)
	09/01/08–11/30/08	2008 Fall	0	12/90 (13%)
	09/01/09–11/30/09	2009 Fall	1 (10/27/2009)	11/78 (14%)
	09/01/10–11/30/10	2010 Fall	0	7/91 (8%)
	09/01/11–11/30/11	2011 Fall	0	11/88 (13%)
	09/01/12–11/30/12	2012 Fall	0	5/90 (6%)
	09/01/13–11/30/13	2013 Fall	0	7/85 (8%)
	09/01/14–11/30/14	2014 Fall	0	0/91 (0%)
	09/01/15–11/30/15	2015 Fall	0	0/90 (0%)
	09/01/16–11/30/16	2016 Fall	0	1/50 (2%)
	09/01/17–11/30/17	2017 Fall	0	4/92 (5%)
	09/01/18–11/30/18	2018 Fall	0	2/88 (3%)
	09/01/19–11/30/19	2019 Fall	3 (10/10/19, 10/11/19, 10/30/19)	17/90 (19%)
	<b>09/01/20–11/30/20</b>	<b>2020 Fall</b>	<b>0</b>	<b>11/90 (13%)</b>

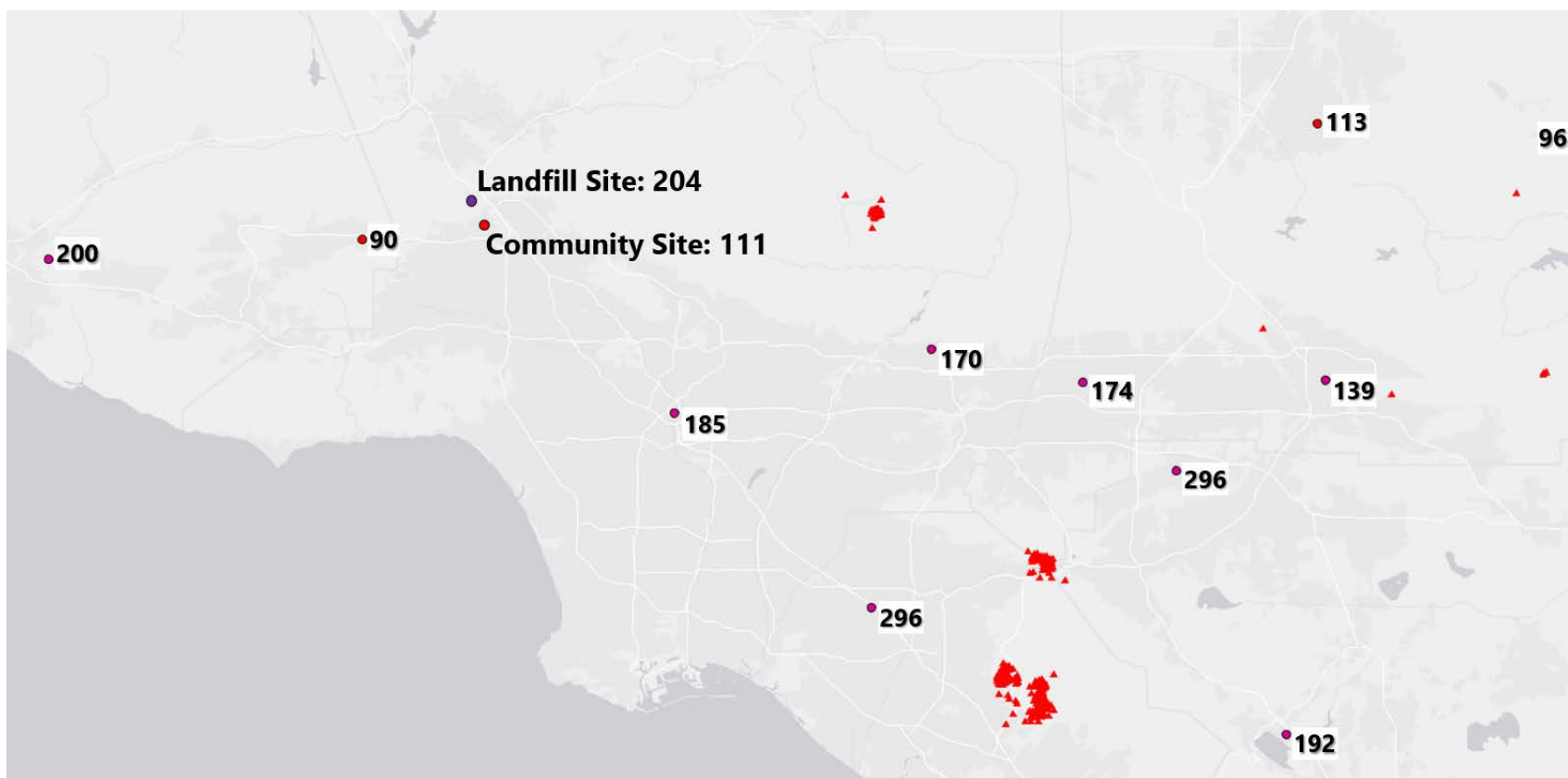
The federal 24-hr PM<sub>10</sub> standard (150 µg/m<sup>3</sup>) was exceeded on 4 days at the Landfill site, and none at the Community site. The Landfill site saw the second highest number of 24-hr PM<sub>10</sub> federal exceedance days this quarter among the 14 fall quarters of PM<sub>10</sub> measurements, including the baseline year (2001-2002). [Figures 2 through 5](#) show 24-hr PM<sub>10</sub> concentrations at sites across the Los Angeles region on the days when the federal 24-hr PM<sub>10</sub> standard was exceeded at the Landfill site.



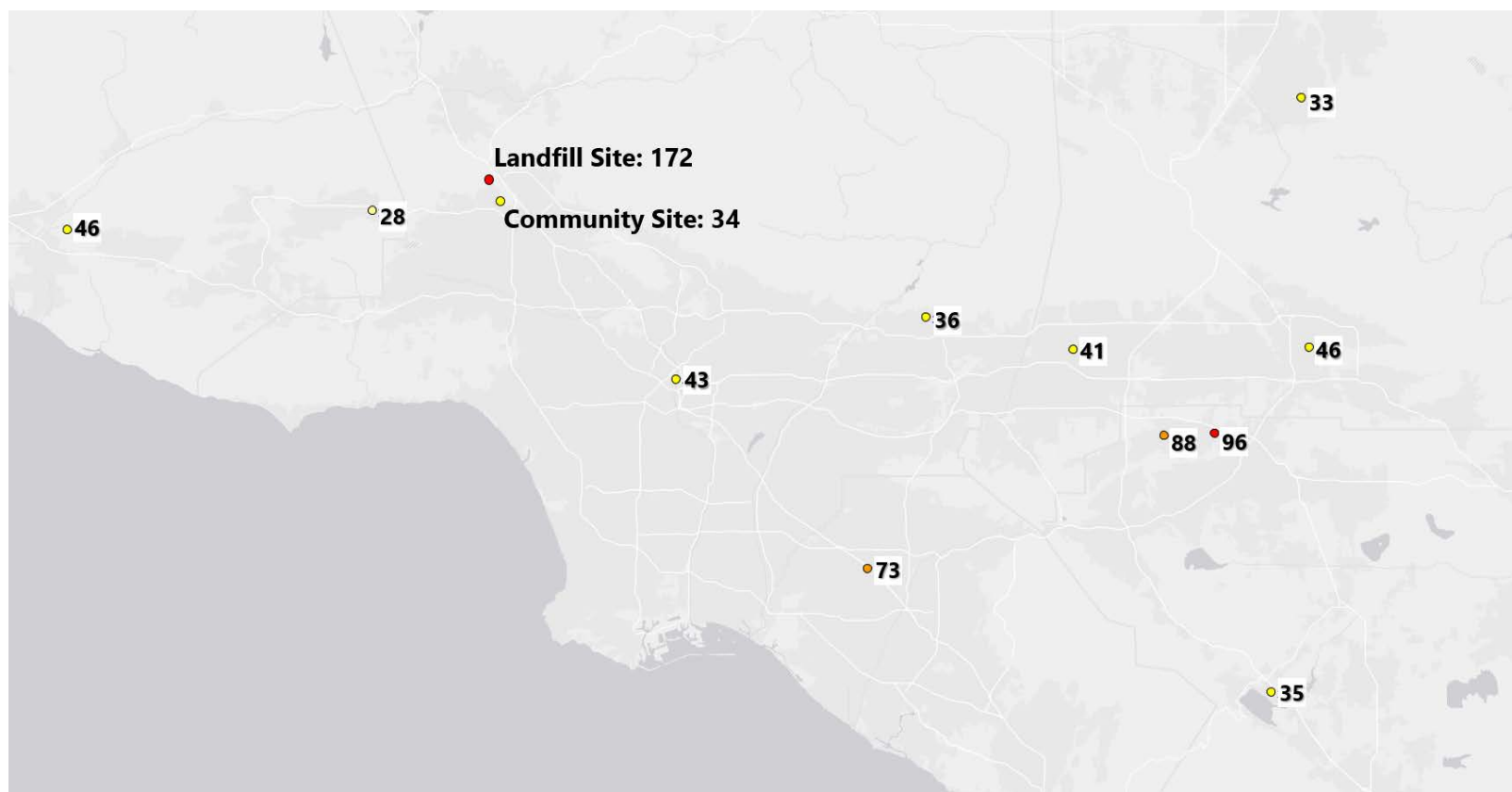
**Figure 2.**  $PM_{10}$  concentrations at sites across the Los Angeles area on September 9, 2020. Values next to each site show the 24-hr  $PM_{10}$  concentration in  $\mu g/m^3$ . Note: no other sites (within the map domain) recorded 24-hr  $PM_{10}$  concentrations above the federal standard. Red triangles depict locations of the active wildfire hotspot events on this day.



**Figure 3.** PM<sub>10</sub> concentrations at sites across the Los Angeles area on October 16, 2020. Values next to each site show the 24-hr PM<sub>10</sub> concentration in µg/m<sup>3</sup>. Note: no other sites (within the map domain) recorded 24-hr PM<sub>10</sub> concentrations above the federal standard. No active wildfire hotspot events were within the map domain on this day.



**Figure 4.** PM<sub>10</sub> concentrations at sites across the Los Angeles area on October 26, 2020. Values next to each site show the 24-hr PM<sub>10</sub> concentration in µg/m<sup>3</sup>. Note: several sites recorded 24-hr PM<sub>10</sub> concentrations above the federal standard. Red triangles depict locations of the active wildfire hotspot events on this day.



**Figure 5.**  $PM_{10}$  concentrations at sites across the Los Angeles area on November 26, 2020. Values next to each site show the 24-hr  $PM_{10}$  concentration in  $\mu g/m^3$ . Note: no other sites (within the map domain) recorded 24-hr  $PM_{10}$  concentrations above the federal standard. No active wildfire hotspot events were within the map domain on this day.



As shown in Figure 4, 24-hr PM<sub>10</sub> concentrations measured at several sites across the Los Angeles area on October 26, 2020, exceeded the federal 24-hr PM<sub>10</sub> standard. Wildfire activity within the area, as well as from beyond the Los Angeles Basin, was the main cause of this PM<sub>10</sub> event; therefore, it is difficult to quantify the impact landfill activities had on the Landfill site. Conversely, federal exceedances occurring at the Landfill site on September 9, October 16, and November 26 were distinctive within the Los Angeles area. The Landfill site concentrations were 102%–134% higher than concentrations measured at the Community site on these days (with concentrations at the Community site exceeding the State PM<sub>10</sub> standard only on September 9). We assume that landfill activity played a key role in the September 9, October 16, and November 26 federal exceedances; however, the level of uncertainty in quantifying landfill contributions to neighborhood-scale pollutant concentrations remains high without the presence of an upwind landfill monitoring site.



## 4. Average and Maximum Black Carbon Concentrations and PM<sub>10</sub> Concentrations

Although no federal or state standards exist for BC concentrations in ambient air, BC is a measurable component of ambient air that correlates well with DPM. Because of growing evidence that DPM is associated with several negative health effects, BC is often measured in an attempt to quantify the relative amounts of DPM in ambient air. Findings from the Multiple Air Toxics Exposure Study IV (MATES IV), conducted by the South Coast Air Quality Management District (SCAQMD), found DPM to be the most important toxic air pollutant contributing to risk in the Los Angeles basin (South Coast Air Quality Management District, 2015).

BC is measured by an Aethalometer, which passes air through a filter tape trapping the suspended particles. Light-absorbing particles attenuate a light beam projected through the deposit. The buildup of BC on the air sampling tape causes an artifact that affects the accuracy of the measured concentration (Drinovec et al., 2015; Allen, 2014), subjecting aethalometers to a saturation effect. Instrument response is dampened with heavier loading (i.e., higher concentrations) of BC aerosol. This artifact can cause BC concentration readings to be lower than the true concentration. However, mathematical methods to correct the BC concentration values are available and widely used. All the reported BC values to date from the Landfill, Landfill North, and Community sites have been adjusted in this report to compensate for this tape saturation effect; this compensation had not been performed in quarterly reports prior to the 29<sup>th</sup> Quarterly Report (winter 2015). Because the compensation process changes the reported concentration, and because uncompensated values were used in previous reports, prior-year BC concentrations shown in this report do not match concentrations reported prior to the 29<sup>th</sup> Quarterly Report. All BC data shown in this Quarterly Report have been compensated, with the exception of data from the baseline year, which are unavailable.

The 24-hr average and maximum compensated BC concentrations collected during the 2020 fall quarter, the compensated BC data from the fall quarters of the 12 previous years, and the uncompensated data from the baseline year are provided in [Table 3](#). The 2020 fall quarter 24-hr BC concentration average at the Landfill site is higher than all of the previous fall quarters since the 2014 fall quarter. At the Community site, the 2020 fall quarter 24-hr BC concentration average is higher than that of the previous five quarters.

Distributions of 24-hour average PM<sub>10</sub> and BC data from fall quarters of 2008 through 2020 (presented as notched box-whisker plots<sup>5</sup>), and percentile trends for these metrics, are shown in Figures 6 through 9.

**Table 3.** 24-hr BC concentrations for the fall quarter of the baseline year (2002) and each year from 2008 to 2020. Uncompensated BC values are reported for the 2002 fall quarter. The most recent fall quarter is shown in **bold**.

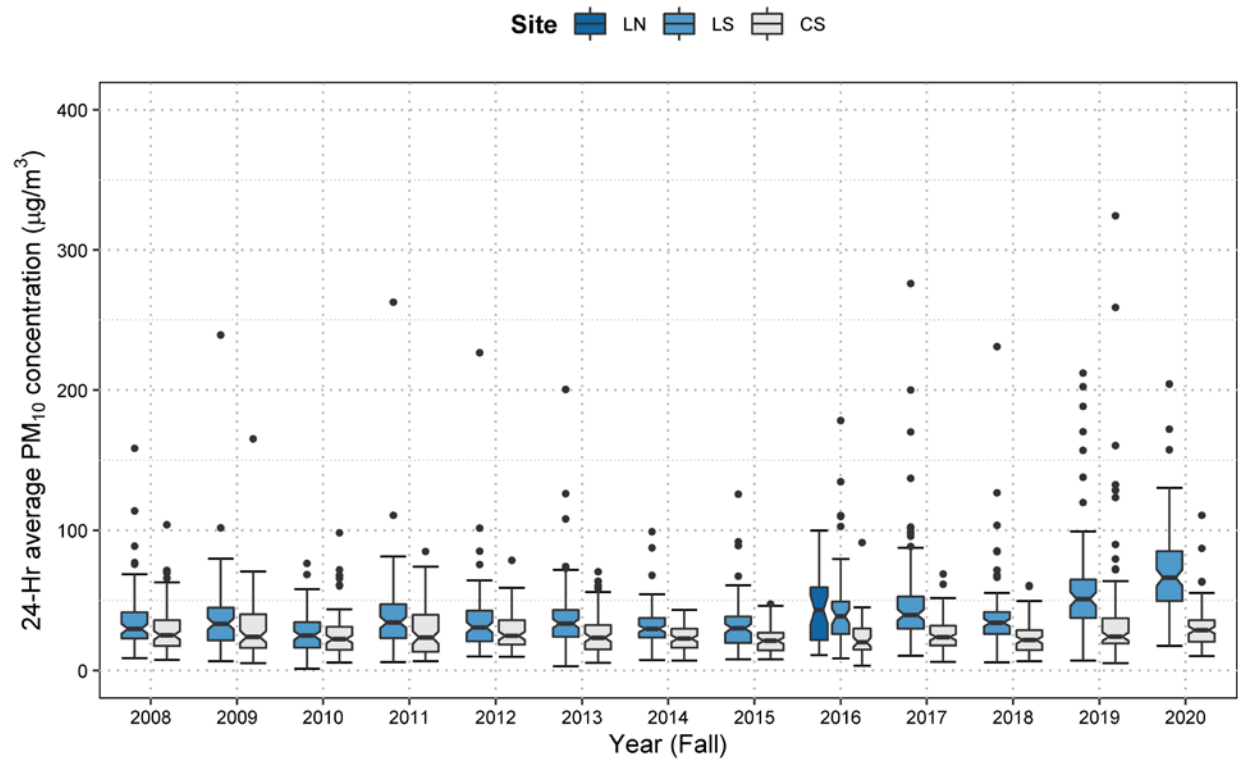
Site	Quarterly Period	Quarter Name	BC Concentrations (µg/m <sup>3</sup> )	
			Average 24-Hr	Maximum 24-Hr
Sunshine Canyon Landfill (LS)	09/01/02–11/30/02	Baseline Year	1.26*	2.83*
	09/01/08–11/30/08	2008 Fall	1.47	2.88
	09/01/09–11/30/09	2009 Fall	1.21	3.45
	09/01/10–11/30/10	2010 Fall	0.87	2.74
	09/01/11–11/30/11	2011 Fall	1.07	2.71
	09/01/12–11/30/12	2012 Fall	0.95	2.63
	09/01/13–11/30/13	2013 Fall	0.92	2.32
	09/01/14–11/30/14	2014 Fall	0.81	2.42
	09/01/15–11/30/15	2015 Fall	0.48	1.17
	09/01/16–11/30/16	2016 Fall	0.59	1.64
	09/01/17–11/30/17	2017 Fall	0.54	1.30
	09/01/18–11/30/18	2018 Fall	0.55	1.43
	09/01/19–11/30/19	2019 Fall	0.51	1.62
	<b>09/01/20–11/30/20</b>	<b>2020 Fall</b>	<b>0.75</b>	<b>1.90</b>
Sunshine Canyon Landfill North (LN)	06/01/16–08/31/16	2016 Fall	0.64	1.95

<sup>5</sup> A notched box-whisker plot shows the entire distribution of concentrations for each year. Each box illustrates the 25<sup>th</sup> (lower box extent), 50<sup>th</sup> (median, midline), and 75<sup>th</sup> (upper box extent) percentiles. The extent of the box indicates the interquartile range (IQR), where 50% of the data lie. The whiskers indicate values that are up to 1.5 times the IQR from the 25<sup>th</sup> or 75<sup>th</sup> percentile. Data outside of the IQR are referred to as “outliers” and are plotted individually. The boxes are notched (narrowed) at the median and return to full width at the 95% lower- and upper-confidence interval values (i.e., the extents of the notches indicate the range in which the median falls with 95% confidence). If the notches of any two boxes do not overlap, there is strong evidence that the medians are statistically different at the 95% confidence level.

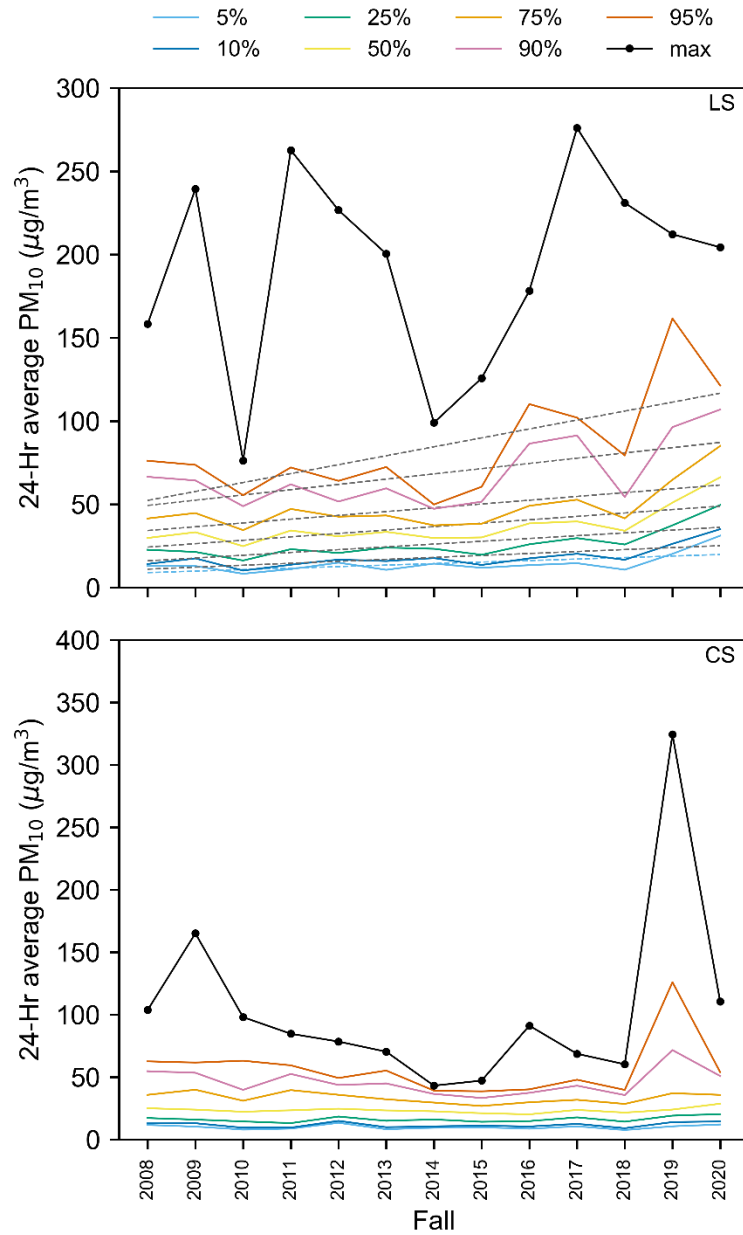
Site	Quarterly Period	Quarter Name	BC Concentrations (µg/m <sup>3</sup> )	
			Average 24-Hr	Maximum 24-Hr
Community Site (CS)	09/01/02–11/30/02	Baseline Year	1.31*	2.92*
	09/01/08–11/30/08	2008 Fall	0.86	6.15
	09/01/09–11/30/09	2009 Fall	1.00	3.23
	09/01/10–11/30/10	2010 Fall	0.80	2.47
	09/01/11–11/30/11	2011 Fall	0.95	2.55
	09/01/12–11/30/12	2012 Fall	0.77	2.07
	09/01/13–11/30/13	2013 Fall	0.57	1.63
	09/01/14–11/30/14	2014 Fall	0.83	1.98
	09/01/15–11/30/15	2015 Fall	0.64	1.68
	09/01/16–11/30/16	2016 Fall	0.64	1.54
	09/01/17–11/30/17	2017 Fall	0.46	1.22
	09/01/18–11/30/18	2018 Fall	0.57	1.55
	09/01/19–11/30/19	2019 Fall	0.48	1.88
	<b>09/01/20–11/30/20</b>	<b>2020 Fall</b>	<b>0.68</b>	<b>2.05</b>

<sup>a</sup> Uncompensated BC values.

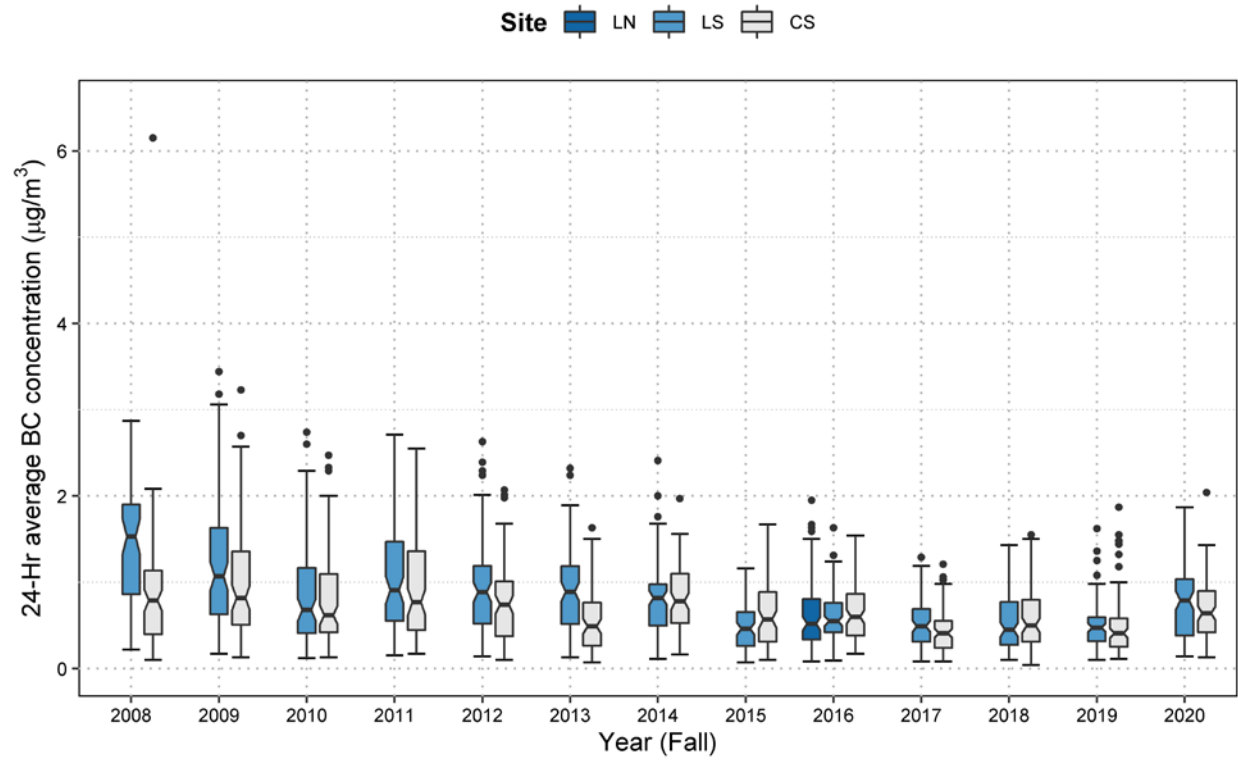
<sup>b</sup> Data taken from the secondary Aethalometer between April 20 and May 24, 2019, were used without corrections.



**Figure 6.** Distribution of 24-hr average PM<sub>10</sub> concentrations at the Sunshine Canyon Landfill North site (LN), Landfill site (LS), and Community site (CS) during fall (September-November) quarters from 2008 to 2020.

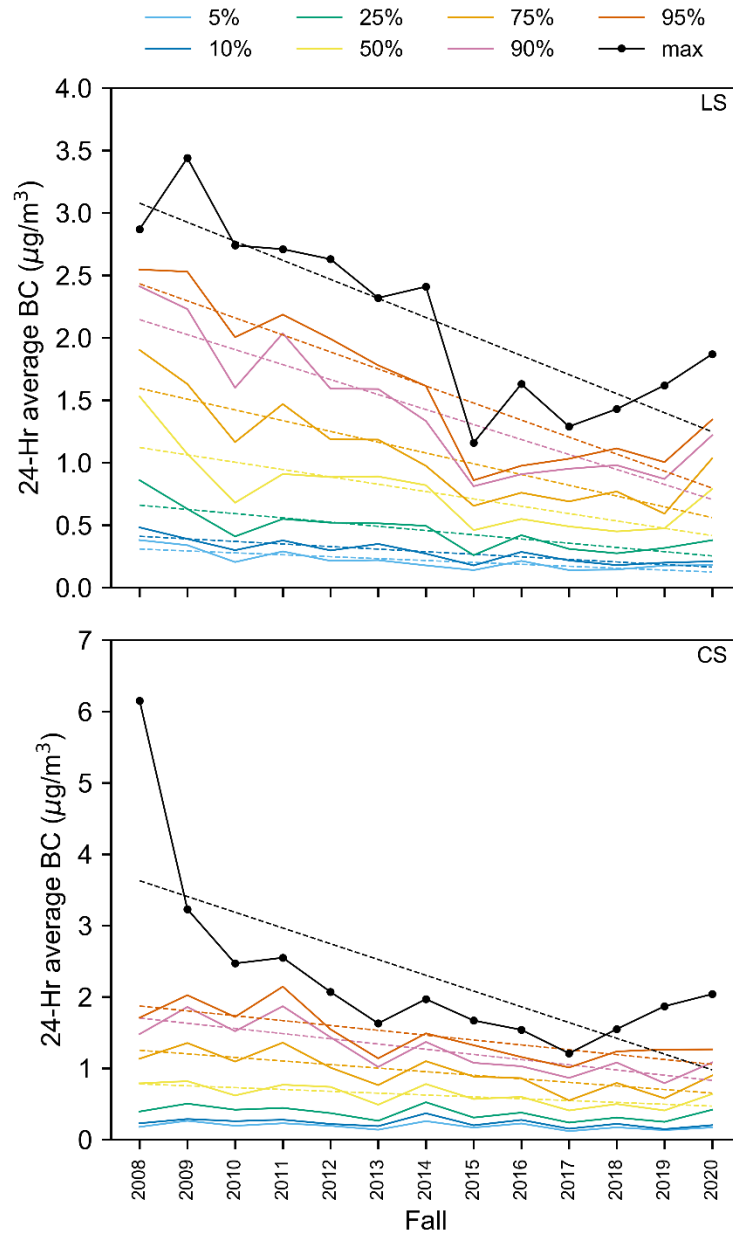


**Figure 7.** Trends of 24-hr average PM<sub>10</sub> maxima and percentiles at the Sunshine Canyon Landfill site (LS, top) and Community site (CS, bottom) during fall (September-November) quarters from 2008 to 2020. The colored dashed lines denote statistically significant decreasing linear trends. Statistical significance was defined at the 95% confidence level ( $p$ -value  $\leq 0.05$ ).



**Figure 8.** Distribution of 24-hr average BC concentrations at the Sunshine Canyon Landfill North site (LN), Landfill site (LS), and Community site (CS) during fall (September-November) quarters from 2008 to 2020.





**Figure 9.** Trends of 24-hr average BC maxima and percentiles at the Sunshine Canyon Landfill site (LS, top) and Community site (CS, bottom) during fall (September-November) quarters from 2008 to 2020. The colored dashed lines denote statistically significant decreasing linear trends. Statistical significance was defined at the 95% confidence level ( $p\text{-value} \leq 0.05$ ).

At this time of year, the median 24-average PM<sub>10</sub> concentrations measured at the Community site are usually lower than those measured at the Landfill site (Figure 6). This remained true in the 2020 fall quarter. As indicated by the non-overlapping notches (and the entire interquartile range) in the box-whisker plot, the difference between the median 24-hour PM<sub>10</sub> concentrations at the Community and the Landfill sites is statistically significant. At the Landfill site, there is a statistically

significant increasing trend in all of the 24-hr averages (Figure 7). All percentiles except the 95<sup>th</sup> percentile and the maximum value of the 24-hr average PM<sub>10</sub> concentration at the Landfill site have increased since the 2019 fall quarter. At the Community site, there is not a statistically significant trend for all the 24-hr average PM<sub>10</sub> percentiles or maximum value; the 75<sup>th</sup>, 90<sup>th</sup>, and 95<sup>th</sup> percentiles in the 2020 fall quarter are lower than their counterparts in the 2019 fall quarter.

During the fall quarters, the median 24-hr average BC concentrations are not usually significantly different between the Landfill and the Community sites, as indicated by overlapping notches in the box-whisker plot (Figure 8). In the fall 2020 quarter, the median 24-hr average BC concentration at the Landfill site was not statistically higher than that at the Community site, as indicated by the overlapping notches in the box-whisker plot. There is some year-to-year variability in median 24-hr average BC concentrations over the 13 recorded consecutive years, but the range of 24-hr average BC values has generally decreased over time at both monitoring sites. In the fall 2020 quarter, both the Landfill site and the Community site saw higher median 24-hr average BC concentrations than in the previous fall quarter.

There is a statistically significant decreasing trend in 24-hr average BC concentrations, the 5<sup>th</sup> through 95<sup>th</sup> percentiles, and the maximum 24-hour BC concentrations at the Landfill site during fall quarters over the observational record (Figure 9). All percentiles of the 24-hr BC recorded in the 2020 fall quarter are higher than the previous fall quarter. At the Community site, there is also a statistically significant declining trend in fall quarter 24-hr average BC concentrations, at the 50<sup>th</sup> to 95<sup>th</sup> percentiles, and the 24-hr maximum BC over the 13 recorded consecutive years, although the 5<sup>th</sup> to 95<sup>th</sup> percentiles of 24-hr BC and 24-hr maximum BC were higher in the 2020 fall quarter than in the previous fall quarter. There were no statistically significant increasing trends in the maxima or percentiles.

## 5. Field Operations

Tables 4 and 5 list dates and major tasks associated with visits to the Landfill site and the Community site during the 2020 fall quarter.

**Table 4.** Landfill monitoring site (LS) visits, field maintenance, and operations.

Date of Site Visit	Description of Work
09/22/2020	Collected PM <sub>10</sub> and BC data Restarted Aethalometer Check Aethalometer and BAM tape supplies Performed flow check on Aethalometer and BAM Cleaned BAM roller, vane, and nozzle Performed leak test on BAM and passed
10/23/2020	Collected PM <sub>10</sub> and BC data Performed flow check on Aethalometer and BAM Cleaned BAM roller, vane, and nozzle Performed leak test on BAM and passed
11/27/2020	Changed BAM tape
01/04/2021 <sup>a</sup>	Collected PM <sub>10</sub> and BC data Restarted Aethalometer Checked Aethalometer and BAM tape supplies Performed flow check on Aethalometer and BAM Cleaned BAM roller, vane, and nozzle Performed leak test on BAM and passed

<sup>a</sup> The next site visit that occurred after the current quarter is included in this report. The information from this site visit is used to assess the quality of the last portion of data from the current quarter.

**Table 5.** Community site (CS) visits, field maintenance, and operations.

Date of Site Visit	Description of Work
09/21/2020	Annual met. calibration Collected PM <sub>10</sub> and BC data Restarted Aethalometer Checked Aethalometer and BAM tape supplies Performed flow test on Aethalometer and BAM Cleaned BAM roller, vane, and nozzle Performed leak test on BAM Leak test passed
10/23/2020	Changed BAM tape Investigated blue screen PC issue Restarted PC and advised IT
12/09/2020	Investigated communication issue Rebooted proxy Found PC infected with Trojan virus Advised IT to fix Restarted Envidas
01/04/2021 <sup>a</sup>	Verified remote access to PC for data collection

<sup>a</sup> The next site visit that occurred after the current quarter is included in this report. The information from this site visit is used to assess the quality of the last portion of data from the current quarter.

Aethalometer and BAM flow rates measured with a National Institute of Standards and Technology (NIST)-traceable flow standard are shown in [Table 6](#). BAM flow rates are volumetric (i.e., they depend on local temperature and pressure), and Aethalometer flow rates are at standard temperature and pressure. The target flow rate of the BAM is 16.7 liters per minute (lpm) volumetric to meet the 10-micron particle cut point of the inlet, with an acceptable range of 16.0 lpm to 17.3 lpm. The Aethalometer has no particle size cut point.

**Table 6.** Flow rates for the BAM PM<sub>10</sub> and Aethalometer BC monitors at the Landfill and Community sites. “Ref.” is the Reference and “Aeth.” is the Aethalometer.

Location	Date	Flow Rate (lpm)					
		As Found		As Left		As Found	
		BAM	Ref.	BAM	Ref.	Aeth.	Ref.
Sunshine Canyon Landfill (LS)	09/22/2020	16.7	16.7	17.1	16.7	4	4
	11/27/2020	NA	NA	NA	NA	NA	NA
	01/04/2021 <sup>a</sup>	16.7	16.7	16.99	16.7	4	3.93
Community Site (CS)	9/21/2020	16.7	16.7	16.66	16.7	4.1	4.18
	10/23/2020	NA	NA	NA	NA	NA	NA
	12/9/2020	NA	NA	NA	NA	NA	NA
	01/04/2021 <sup>a</sup>	NA	NA	NA	NA	NA	NA

<sup>a</sup> The next site visit that occurred after the current quarter is included in this report. The information from this site visit is used to assess the quality of the last portion of data from the current quarter.



## 6. References

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