

# BAY AREA AIR POLLUTION SUMMARY – 2011

| MONITORING STATIONS            | OZONE  |               |          |               |          |          | CARBON MONOXIDE |          |              | NITROGEN DIOXIDE |         |              | SULFUR DIOXIDE       |           |              | PM <sub>10</sub> |                      |          |                      | PM <sub>2.5</sub> |                      |          |         |          |  |
|--------------------------------|--|---------------|----------|---------------|----------|----------|-----------------|----------|--------------|------------------|---------|--------------|----------------------|-----------|--------------|------------------|----------------------|----------|----------------------|-------------------|----------------------|----------|---------|----------|--|
|                                | Max 1-Hr   | Cal 1-Hr Days | Max 8-Hr | Nat 8-Hr Days | Cal Days | 3-Yr Avg | Max 1-Hr        | Max 8-Hr | Nat/Cal Days | Max 1-Hr         | Ann Avg | Nat/Cal Days | Max 1-Hr             | Max 24-Hr | Nat/Cal Days | Ann Avg          | Max 24-Hr            | Nat Days | Cal Days             | Max 24-Hr         | Nat Days             | 3-yr Avg | Ann Avg | 3-yr Avg |  |
| <b>North Counties</b>          | (ppb)  |               | (ppb)    |               |          |          | (ppm)           |          |              | (ppb)            |         |              | (µg/m <sup>3</sup> ) |           |              |                  | (µg/m <sup>3</sup> ) |          | (µg/m <sup>3</sup> ) |                   | (µg/m <sup>3</sup> ) |          |         |          |  |
| Napa                           | 83   | 0             | 69       | 0             | 0        | 65       | 2.4             | 1.8      | 0            | 45               | 8       | 0            | -                    | -         | -            | 20.2             | 55                   | 0        | 1                    | -                 | -                    | -        | -       | -        |  |
| San Rafael*                    | 92   | 0             | 70       | 0             | 0        | 53       | 1.9             | 1.0      | 0            | 53               | 12      | 0            | -                    | -         | -            | 16.5             | 54                   | 0        | 1                    | 42.2              | 1                    | *        | 9.9     | *        |  |
| Santa Rosa                     | 73   | 0             | 53       | 0             | 0        | 50       | 1.8             | 1.2      | 0            | 41               | 9       | 0            | -                    | -         | -            | -                | -                    | -        | -                    | 33.2              | 0                    | 24       | 8.6     | 8.0      |  |
| Vallejo                        | 90   | 0             | 69       | 0             | 0        | 61       | 3.0             | 2.4      | 0            | 47               | 10      | 0            | 7.4                  | 2.6       | 0            | -                | -                    | -        | -                    | 54.2              | 6                    | 29       | 9.8     | 9.1      |  |
| <b>Coast &amp; Central Bay</b> |  |               |          |               |          |          |                 |          |              |                  |         |              |                      |           |              |                  |                      |          |                      |                   |                      |          |         |          |  |
| Oakland                        | 91   | 0             | 51       | 0             | 0        | 49       | 4.1             | 1.5      | 0            | 56               | 13      | 0            | -                    | -         | -            | -                | -                    | -        | -                    | 49.3              | 3                    | 25       | 10.1    | 9.0      |  |
| Oakland-West*                  | 57   | 0             | 48       | 0             | 0        | *        | 3.5             | 2.7      | 0            | 62               | 16      | 0            | 19.3                 | 3.8       | 0            | -                | -                    | -        | -                    | -                 | -                    | -        | -       | -        |  |
| Richmond                       |  |               |          |               |          |          |                 |          |              |                  |         |              | 20.7                 | 3.2       | 0            | -                | -                    | -        | -                    | -                 | -                    | -        | -       | -        |  |
| San Francisco                  | 70   | 0             | 54       | 0             | 0        | 47       | 1.8             | 1.2      | 0            | 93               | 14      | 0            | 19.5                 | 46        | 0            | 0                | 47.5                 | 2        | 27                   | 9.5               | 9.9                  |          |         |          |  |
| San Pablo*                     | 78   | 0             | 58       | 0             | 0        | *        | 1.9             | 1.0      | 0            | 51               | 10      | 0            | 14.4                 | 6.0       | 0            | 19.7             | 73                   | 0        | 1                    | -                 | -                    | -        | -       | -        |  |
| <b>Eastern District</b>        |  |               |          |               |          |          |                 |          |              |                  |         |              |                      |           |              |                  |                      |          |                      |                   |                      |          |         |          |  |
| Bethel Island                  | 91   | 0             | 78       | 2             | 4        | 74       | 1.4             | 0.9      | 0            | 36               | 7       | 0            | 8.0                  | 2.7       | 0            | 18.8             | 72                   | 0        | 1                    | -                 | -                    | -        | -       | -        |  |
| Concord                        | 99   | 2             | 78       | 2             | 5        | 73       | 1.6             | 1.2      | 0            | 42               | 9       | 0            | 9.3                  | 2.6       | 0            | 15.7             | 59                   | 0        | 1                    | 47.5              | 2                    | 27       | 7.8     | 7.8      |  |
| Crockett                       | -  | -             | -        | -             | -        | -        | -               | -        | -            | -                | -       | -            | 53.3                 | 5.9       | 0            | -                | -                    | -        | -                    | -                 | -                    | -        | -       | -        |  |
| Fairfield                      | 94   | 0             | 76       | 1             | 3        | 69       | -               | -        | -            | -                | -       | -            | -                    | -         | -            | -                | -                    | -        | -                    | -                 | -                    | -        | -       | -        |  |
| Livermore                      | 115  | 3             | 84       | 2             | 9        | 76       | -               | -        | -            | 57               | 11      | 0            | -                    | -         | -            | -                | 45.4                 | 2        | 28                   | 7.8               | 8.2                  |          |         |          |  |
| Martinez                       | -  | -             | -        | -             | -        | -        | -               | -        | -            | -                | -       | -            | 28.9                 | 4.7       | 0            | -                | -                    | -        | -                    | -                 | -                    | -        | -       | -        |  |
| <b>South Central Bay</b>       |  |               |          |               |          |          |                 |          |              |                  |         |              |                      |           |              |                  |                      |          |                      |                   |                      |          |         |          |  |
| Hayward*                       | 88   | 0             | 70       | 0             | 0        | *        | -               | -        | -            | -                | -       | -            | -                    | -         | -            | -                | -                    | -        | -                    | -                 | -                    | -        | -       | -        |  |
| Redwood City                   | 76   | 0             | 61       | 0             | 0        | 56       | 3.8             | 1.7      | 0            | 56               | 12      | 0            | -                    | -         | -            | -                | 39.7                 | 1        | 25                   | 8.7               | 8.6                  |          |         |          |  |
| <b>Santa Clara Valley</b>      |  |               |          |               |          |          |                 |          |              |                  |         |              |                      |           |              |                  |                      |          |                      |                   |                      |          |         |          |  |
| Cupertino*                     | 86   | 0             | 67       | 0             | 0        | *        | 1.2             | 1.0      | 0            | 42               | 9       | 0            | 35.1                 | 6.6       | 0            | 14.2             | 29                   | 0        | 0                    | -                 | -                    | -        | -       | -        |  |
| Gilroy                         | 81   | 0             | 73       | 0             | 1        | 71       | -               | -        | -            | -                | -       | -            | -                    | -         | -            | -                | 35.5                 | 1        | 22                   | 8.1               | 8.4                  |          |         |          |  |
| Los Gatos                      | 91   | 0             | 75       | 0             | 1        | 70       | -               | -        | -            | -                | -       | -            | -                    | -         | -            | -                | -                    | -        | -                    | -                 | -                    | -        | -       | -        |  |
| San Jose                       | 98   | 1             | 67       | 0             | 0        | 63       | 2.5             | 2.3      | 0            | 61               | 15      | 0            | 7.2                  | 2.4       | 0            | 19.2             | 44                   | 0        | 0                    | 50.5              | 3                    | 30       | 9.9     | 9.6      |  |
| San Martin                     | 91   | 0             | 72       | 0             | 2        | 74       | -               | -        | -            | -                | -       | -            | -                    | -         | -            | -                | -                    | -        | -                    | -                 | -                    | -        | -       | -        |  |
| <b>Total Bay Area</b>          |  | 5             |          | 4             | 10       |          |                 |          | 0            |                  |         | 0            |                      |           | 0            |                  |                      |          | 4                    | 0                 | 8                    | 0        |         |          |  |
| Days over Standard             | *See NOTES on second page.<br>Dash (-) indicates pollutant is not monitored at the site. |               |          |               |          |          |                 |          |              |                  |         |              |                      |           |              |                  |                      |          |                      |                   |                      |          |         |          |  |

## 2011 NOTES

The annual Bay Area Air Pollution Summary summarizes pollutant concentrations for comparison to the national and California air pollution standards.

### \*Station Information (see asterisks on front page)

PM<sub>2.5</sub> monitoring began at San Rafael in October 2009. Therefore, 3-year average PM<sub>2.5</sub> statistics are not available.

Ozone monitoring at Oakland-West began in December 2010. Therefore, 3-year average ozone statistics are not available.

The San Pablo site was temporarily closed from March 2009 to May 2010 due to damage from a building fire. Therefore, 3-year average ozone statistics are not available.

The Hayward site was temporarily closed during 2010 due to a major construction project adjacent to the site. Therefore, 3-year average ozone statistics are not available.

A new site was opened in Cupertino on September 1, 2010 for an air monitoring study. Therefore, 3-year average statistics for ozone are not available.

## Explanation of Terms

State and national excesses occur when pollutant concentrations surpass the indicated standards. For comparison, values in ppb must be converted to ppm and rounded to the same number of decimal places as the original standard.

### MAX HR / MAX 8-HR / MAX 24-HR

The highest average contaminant concentration over a one-hour period, an eight-hour period (on any given day), or a 24-hour period (from midnight to midnight).

### ANN AVG

The yearly average (arithmetic mean) of the readings taken at a given monitoring station.

### NAT DAYS

The number of days during the year for which the monitoring station recorded contaminant concentrations in excess of the national standard.

### CAL DAYS

The number of days during the year for which the station recorded contaminant concentrations in excess of the California standard.

### TOTAL BAY AREA DAYS OVER STANDARD

is not a sum of excesses at individual stations, but rather a sum of the number of days for which excesses occurred at any one or more stations.

### 3-YR AVG (Nat. 8-hr ozone standard)

The 3-year average of the fourth highest 8-hour average ozone concentration for each monitoring station. A 3-year average greater than 75 ppb at any monitoring station means that the region does not meet the standard and may be designated non-attainment by the EPA.

### PM<sub>10</sub>

Particulate matter ten microns or smaller in size. PM<sub>10</sub> is sampled every third at San Jose or sixth day at all other sites.

### PM<sub>2.5</sub>

Particulate matter 2.5 microns or smaller in size. PM<sub>2.5</sub> is a sub-category of PM<sub>10</sub>.

### PM<sub>10</sub> ANN AVG and MAX 24-HR

This table shows PM<sub>10</sub> data reported at local temperature and pressure conditions, according to the California standards. National PM<sub>10</sub> data are converted to standard temperature and pressure conditions, which generally results in slightly lower readings.

### 3-YR AVG (PM<sub>2.5</sub> 24-hour standard)

The 3-year average of the annual 98<sup>th</sup> percentiles of the individual 24-hour concentrations of PM<sub>2.5</sub>. A 3-year average greater than 35 µg/m<sup>3</sup> at any monitoring station means that the region does not meet the standard and may be designated non-attainment by the EPA.

### 3-YR AVG (PM<sub>2.5</sub> annual standard)

The 3-year average of the quarterly averages of PM<sub>2.5</sub>. A 3-year average greater than 15.0 µg/m<sup>3</sup> at any monitoring station means that the region does not meet the standard and may be designated non-attainment by the EPA.

## HEALTH-BASED AMBIENT AIR QUALITY STANDARDS

| Pollutant                         | Averaging Time | California Std       | National Std           |
|-----------------------------------|----------------|----------------------|------------------------|
| <b>Ozone</b>                      | 1 Hour         | 0.09 ppm             | –                      |
|                                   | 8 Hour         | 0.070 ppm            | 0.075 ppm              |
|                                   |                |                      |                        |
| <b>Carbon Monoxide</b>            | 1 Hour         | 20 ppm               | 35 ppm                 |
|                                   | 8 Hour         | 9.0 ppm              | 9 ppm                  |
| <b>Nitrogen Dioxide*</b>          | 1 Hour         | 0.18 ppm             | 0.100 ppm              |
|                                   | Annual         | 0.030 ppm            | 0.053 ppm              |
| <b>Sulfur Dioxide*</b>            | 1 Hour         | –                    | 0.075 ppm              |
|                                   | 24 Hour        | 0.04 ppm             | –                      |
| <b>Particulates ≤ 10 microns</b>  | 24 Hour        | 50 µg/m <sup>3</sup> | 150 µg/m <sup>3</sup>  |
|                                   | Annual         | 20 µg/m <sup>3</sup> | –                      |
| <b>Particulates ≤ 2.5 microns</b> | 24 Hour        | –                    | 35 µg/m <sup>3</sup>   |
|                                   | Annual         | 12 µg/m <sup>3</sup> | 15.0 µg/m <sup>3</sup> |

\* In 2010 the U.S. EPA implemented a new 1-hour nitrogen dioxide standard of 100 ppb, and a new 1-hour sulfur dioxide standard of 75 ppb. The previous 24-hour and annual sulfur dioxide standards were revoked.

| Concentrations | ppm<br>parts per million | ppb<br>parts per billion | µg/m <sup>3</sup><br>micrograms per cubic meter |
|----------------|--------------------------|--------------------------|---|
|----------------|--------------------------|--------------------------|---|

## TEN-YEAR BAY AREA AIR QUALITY SUMMARY

### DAYS OVER STANDARDS

| YEAR | OZONE |      |      | CARBON MONOXIDE |      | NITROGEN DIOXIDE |      | SULFUR DIOXIDE |       | PM <sub>10</sub> |          | PM <sub>2.5</sub> |
|------|-------|------|------|-----------------|------|------------------|------|----------------|-------|------------------|----------|-------------------|
|      | 8-Hr* | 1-Hr | 8-Hr | 1-Hr            | 8-Hr | 1-Hr             | 1-Hr | 24-Hr          | 24-Hr | 24-Hr            | 24-Hr*** |                   |
|      | Nat   | Cal  |      | Nat             | Cal  | Nat**            | Cal  | Nat**          | Cal   | Nat              | Cal      | Nat               |
| 2002 | 7     | 16   | -    | 0               | 0    | 0                | 0    | -              | 0     | 0                | 6        | 7                 |
| 2003 | 7     | 19   | -    | 0               | 0    | 0                | 0    | -              | 0     | 0                | 6        | 0                 |
| 2004 | 0     | 7    | -    | 0               | 0    | 0                | 0    | -              | 0     | 0                | 7        | 1                 |
| 2005 | 1     | 9    | 9    | 0               | 0    | 0                | 0    | -              | 0     | 0                | 6        | 0                 |
| 2006 | 12    | 18   | 22   | 0               | 0    | 0                | 0    | -              | 0     | 0                | 15       | 10                |
| 2007 | 1     | 4    | 9    | 0               | 0    | 0                | 0    | -              | 0     | 0                | 4        | 14                |
| 2008 | 12    | 9    | 20   | 0               | 0    | 0                | 0    | -              | 0     | 0                | 5        | 12                |
| 2009 | 8     | 11   | 13   | 0               | 0    | 0                | 0    | -              | 0     | 0                | 1        | 11                |
| 2010 | 9     | 8    | 11   | 0               | 0    | 0                | 0    | 0              | 0     | 0                | 2        | 6                 |
| 2011 | 4     | 5    | 10   | 0               | 0    | 0                | 0    | 0              | 0     | 0                | 4        | 8                 |

\*In 2008, the U.S. EPA revised the 8-hour ozone standard from 0.08 ppm to 0.075 ppm. Stating in 2008, ozone exceedance days reflect the new standard.

\*\*In 2010, the U.S. EPA implemented a new national 1-hour nitrogen dioxide standard of 100 ppb and a new national 1-hour sulfur dioxide standard of 75 ppb.

\*\*\*In 2006, the U.S. EPA revised the national 24-hour PM<sub>2.5</sub> standard from 65 µg/m<sup>3</sup> to 35 µg/m<sup>3</sup>. Starting in 2006, PM<sub>2.5</sub> exceedance days reflect the new standard.