2006 Air Quality Monitoring Data Summary
Table of Contents

TABLE OF CONTENTS .......................................................................................................................III
APPENDIX—DATA TABLES .............................................................................................................. IV
LIST OF TABLES ........................................................................................................................... V
LIST OF GRAPHS AND MAPS ......................................................................................................... VI
INTRODUCTION .................................................................................................................................. 1
AIR QUALITY STANDARDS ................................................................................................................ 3
MONITORING NETWORK .................................................................................................................. 5
  PARTICULATE MONITORING .......................................................................................................... 5
MONITORING RESULTS .................................................................................................................... 9
  OZONE ........................................................................................................................................... 9
  PARTICULATE MATTER (10 MICROMETERS) ............................................................................... 15
  PARTICULATE MATTER (2.5 MICROMETERS) ............................................................................. 17
  CARBON MONOXIDE .................................................................................................................. 28
  SULFUR DIoxide ............................................................................................................................ 30
  LEAD ............................................................................................................................................. 34
  NITROGEN DIOXIDE .................................................................................................................... 36
AIR QUALITY INDEX .......................................................................................................................... 38
IMPAIRED AIR QUALITY .................................................................................................................. 50
  WINTER BURN BANS ................................................................................................................... 50
  SUMMER OZONE ALERTS ............................................................................................................. 50
DEFINITIONS ....................................................................................................................................... 51
  GENERAL DEFINITIONS ............................................................................................................... 51
  POLLUTION SOURCES ................................................................................................................. 52
  CRITERIA AIR POLLUTANTS ....................................................................................................... 53
APPENDIX ........................................................................................................................................... A
Appendix—Data Tables

Air Quality Index

Calculation and Breakpoints for the Air Quality Index........................................................... A-2
EPA AirData Air Quality Index Report .................................................................................... A-3

2006 Data Tables

EPA AirData Monitor Values Report PM2.5............................................................................ A-4
EPA AirData Monitor Values Report PM10.......................................................................... A-5
EPA AirData Monitor Values Report Ozone ............................................................... A-6
EPA AirData Monitor Values Report CO .......................................................................... A-7
EPA AirData Monitor Values Report NO2 ................................................................. A-8
EPA AirData Monitor Values Report SO2 ........................................................................ A-9
EPA AirData Monitor Values Report Lead .................................................................... A-10
List of Tables

Air Quality Standards for Criteria Pollutants ................................................................. 3
Monitoring Network ....................................................................................................... 6
Monitoring Methods Used in Idaho ................................................................................ 7
Air Quality Index .......................................................................................................... 38
Air Quality Index Ratings For Idaho Counties ............................................................... 49
List of Graphs and Maps

Air Monitoring Network ..............................................................................................................................................8
Lancaster 8-Hour Ozone ..................................................................................................................................................10
Middleton 8-Hour Ozone ................................................................................................................................................11
ITD 8-Hour Ozone ........................................................................................................................................................12
Whitney 8-Hour Ozone ..................................................................................................................................................13
Idaho 8-Hour Ozone Averages ....................................................................................................................................14
Daily Maximum PM\textsubscript{10} 3-Year Average ........................................................................................................16
Daily Maximum PM\textsubscript{2.5} 3-Year Average ........................................................................................................19
PM\textsubscript{2.5} Average Annual Mean ......................................................................................................................20
Treasure Valley PM\textsubscript{2.5} Daily Averages from Continuous Analyzers ......................................................21
Coeur d’Alene PM\textsubscript{2.5} Daily Averages from Continuous Analyzers ...............................................................22
North Idaho PM\textsubscript{2.5} Daily Averages from Continuous Analyzers .................................................................23
North Central Idaho PM\textsubscript{2.5} Daily Averages from Continuous Analyzers .....................................................24
Twin Falls PM\textsubscript{2.5} Daily Averages from Continuous Analyzers .................................................................25
Southeast Idaho PM\textsubscript{2.5} Daily Averages from Continuous Analyzers ...........................................................26
Eastern Idaho PM\textsubscript{2.5} Daily Averages from Continuous Analyzers ...............................................................27
Carbon Monoxide (CO) 2\textsuperscript{nd} Highest 8-Hour Concentration ........................................................................29
Sulfur Dioxide (SO\textsubscript{2}) Annual Average ............................................................................................................31
Sulfur Dioxide (SO\textsubscript{2}) Maximum 24-Hour Average ..........................................................................................32
Sulfur Dioxide (SO\textsubscript{2}) Maximum 3-Hour Average ..........................................................................................33
Lead Maximum Quarterly Average ..........................................................................................................................35
Nitrogen Dioxide Annual 1-Hour Average ....................................................................................................................37
Percentage of Days Air Quality Was Rated As “Good” per AQI .................................................................................39
Air Quality for Ada County ...........................................................................................................................................40
Air Quality for Bannock County ..................................................................................................................................41
Air Quality for Bonneville County ..............................................................................................................................42
Air Quality for Canyon County ...................................................................................................................................43
Air Quality for Franklin County ....................................................................................................................................44
Air Quality for Kootenai County ..................................................................................................................................45
Air Quality for Nez Perce County ..................................................................................................................................46
Air Quality for Shoshone County ..................................................................................................................................47
Air Quality for Twin Falls County ..................................................................................................................................48
The 2006 Air Quality Monitoring Data Summary is available for viewing or downloading on the internet at:

http://www.deq.state.id.us/air/

Links to additional documents for download are also available at the Web site.
Introduction

This annual report is issued by the Idaho Department of Environmental Quality (DEQ) to inform the public of air quality throughout Idaho. The purpose of this report is to summarize regional ambient air quality while presenting air monitoring results for six criteria air pollutants. The U.S. Environmental Protection Agency (EPA) sets national ambient air quality standards (NAAQS) for these pollutants. These criteria air pollutants are:

- Particulate Matter (PM\(_{10}\) ≤ 10 micrometers, PM\(_{2.5}\) ≤ 2.5 micrometers in diameter)
- Carbon Monoxide
- Sulfur Dioxide
- Nitrogen Dioxide
- Ozone
- Lead

In Idaho, monitoring for the criteria pollutants occurs primarily in areas of high population where the potential for human exposure is greatest. Particulate matter is currently the most common criteria pollutant of concern in Idaho because particulate sources are widespread throughout the state. Common sources include windblown dust, re-entrained road dust, smoke (residential, agricultural, and forest fires), industrial emissions, and motor vehicle emissions. The PM\(_{10}\) standard has been in effect since 1987 and it was historically the particulate size of concern. However, PM\(_{2.5}\), or PM Fine, has been monitored in Idaho since 1998 and is now the pollutant of concern. Numerous studies have associated fine particulate matter with a variety of respiratory and cardiovascular problems, ranging from aggravated asthma, to irregular heartbeats, heart attacks, and early death in people with heart or lung disease. The PM NAAQS was changed by EPA effective December 17, 2006. Due to a lack of evidence linking health problems to long-term exposure to coarse particle pollution, EPA revoked the annual PM\(_{10}\) standard. The 24 hour standard for PM\(_{2.5}\) was lowered from 65 µg/m\(^3\) to 35 µg/m\(^3\) to provide increased protection against health effects associated with short-term exposure (including premature mortality and increased hospital admissions and emergency room visits).,

Another historical pollutant of concern in Idaho is carbon monoxide (CO). The primary source of CO is incomplete fossil fuel combustion. CO concentrations have the potential to be high in the urbanized areas where automobile traffic is heavy and cars frequently idle at stoplights. The Boise area (Northern Ada County) was the only CO nonattainment area in the state. When the SIP and Maintenance Plan were accepted by EPA, it was reclassified as a maintenance area on December 27, 2002. No violations of the 1 or 8-hour CO NAAQS have occurred since 1991.

Sulfur dioxide (SO\(_2\)) and nitrogen dioxide (NO\(_2\)) sources are few and very localized because these pollutants come primarily from large industrial sources (transportation sources also contribute to NO\(_2\)). There is little heavy industry in Idaho and elevated SO\(_2\) and NO\(_2\) concentrations in ambient air are typically not found. However, due to concerns of some localized sources, DEQ has monitored for one or both of these pollutants in Boise, Pocatello, Moyie Springs, Mountain Home, and Soda Springs. In the past 10 years of targeted monitoring, DEQ has not measured significant concentrations of these
pollutants at these monitoring sites. DEQ initiated NO₂ monitoring near Coeur d’Alene on January 1, 2005 to characterize emissions in the area.

The fifth criteria pollutant monitored by DEQ is ozone. Ozone (O₃) has been monitored in the Treasure Valley since 2002, and in Coeur d’Alene beginning in 2005. Ozone is created when combustion by-products near the ground react with nitrogen oxides and other compounds to create photochemical smog. These reactions are stimulated on days of intense sunlight and warm temperatures. Ozone has become a pollutant of concern since many summertime days are classified as moderate for ozone on the Air Quality Index (AQI). EPA is currently proposing to lower the ozone standard (final decision in March 2008). This will put the Treasure Valley at a much higher risk of non-attainment.

Lead (Pb) is the sixth criteria pollutant and is not currently being monitored by DEQ. Lead (Pb) was monitored in the Shoshone County town of Kellogg, near the Bunker Hill superfund site, because lead was a by-product of the smelting process that occurred in the area for decades. Although a significant problem in the 1970's and early 1980's, airborne Pb concentrations at this monitoring site were very low through the 1990’s. DEQ discontinued monitoring for lead in 2002.

DEQ monitored for toxic air pollutants in the Treasure Valley from 2003 to the beginning of 2005 to determine if concentrations are at levels that could have adverse health affects. These health effects include, but are not limited to, increased cancer risk and respiratory, cardiovascular, and neurological effects. EPA, through their National Air Toxics Assessment (NATA) program, predicts cancer and non-cancer risk values across Idaho’s airsheds using emissions estimates of certain air toxic compounds.

While Idaho generally enjoys good air quality, in many ways our airsheds are faced with new challenges. Some of these challenges are related to economic and population growth, particularly in terms of vehicles on roadways and growth in new construction.

Each day, DEQ measures the concentration of certain air pollutants throughout the state. Based on local ordinances, DEQ may issue a burn ban when concentrations of these air pollutants reach or exceed the health-based standards or limits established by state law or regulation. Concerned citizens may tune in to the news on their local radio or television station to find out if a burn ban has been issued, or login to DEQ’s Internet web site at http://www.deq.state.id.us/air/aqindex.cfm. DEQ issues a news bulletin to local news media, law enforcement, and fire officials each time a burn ban is imposed. There were a number of voluntary and mandatory bans issued in 2006.

Real-time air monitoring data are available on the Internet at http://www.tcsn.net/family/Idaho/index.html. We encourage you to visit our Web site at http://www.deq.state.id.us/ to find more extensive air quality data, educational materials, and discussions of current topics.

We are expanding and refining our Internet site to better serve the residents of Idaho. We want your feedback on our air quality data and program. Please submit your comments via email to Bruce Louks; Monitoring, Modeling, & Emissions Inventory Manager, at Bruce.Louks@deq.idaho.gov or call at 208-373-0294.
Air Quality Standards

The federal Clean Air Act (CAA) requires EPA to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The standards are designed to primarily protect the general public, including sensitive populations such as asthmatics, children, and the elderly. They are also intended to safeguard public welfare by reducing effects such as decreased visibility and damage to animals, crops, vegetation, and buildings. EPA has established standards for six criteria pollutants. The list below contains seven pollutants, which include two size ranges of particulate matter.

The state of Idaho adheres to these standards. For more information, EPA air quality standards and supporting rationale are available at http://epa.gov/air/criteria.html.

EPA adopted a lower fine particulate NAAQS and revoked the annual PM10 standard, both became effective December 17, 2006.

Air Quality Standards for Criteria Pollutants

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Standard</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>The 3-year average of the 4th highest daily maximum 8-hour average concentration cannot exceed the level measured at each monitor within an area over each year.</td>
<td>0.084 ppm</td>
</tr>
<tr>
<td>Particulate Matter (10 micrometers)</td>
<td>The 3-year annual average of the weighted annual mean concentration at each monitor within an area must not exceed the level</td>
<td>Revoked</td>
</tr>
<tr>
<td></td>
<td>The 24-hour average cannot exceed the level more than once per year</td>
<td>154 µg/m³</td>
</tr>
<tr>
<td>Particulate Matter (2.5 micrometers)</td>
<td>The 3-year annual average of the weighted annual mean concentrations cannot exceed the level</td>
<td>15.4 µg/m³</td>
</tr>
<tr>
<td></td>
<td>The 3-year average of the 98th percentile (based on the number of samples taken) of the daily concentrations must not exceed the level</td>
<td>35 µg/m³</td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>The 1-hour average cannot exceed the level more than once per year</td>
<td>35 ppm</td>
</tr>
<tr>
<td></td>
<td>The 8-hour average cannot exceed the level more than once per year</td>
<td>9.4 ppm</td>
</tr>
<tr>
<td>Sulfur Dioxide</td>
<td>Annual arithmetic mean of 1-hour averages cannot exceed the level</td>
<td>0.03 ppm</td>
</tr>
<tr>
<td></td>
<td>24-hour average cannot exceed the level more than once per year</td>
<td>0.14 ppm</td>
</tr>
<tr>
<td></td>
<td>The 3-hour average cannot exceed the level more than once per year</td>
<td>0.50 ppm</td>
</tr>
<tr>
<td>Lead</td>
<td>The quarterly average (by calendar) cannot exceed the level</td>
<td>1.5 µg/m³</td>
</tr>
<tr>
<td>Nitrogen Dioxide</td>
<td>The annual mean of 1-hour averages cannot exceed the level</td>
<td>0.053 ppm</td>
</tr>
</tbody>
</table>

Note: Daily concentration is the 24-hour average, measured from midnight to midnight.

In some instances, comparison of numbers in this table with sources listed above may appear to be slightly off (for example, ozone 8-hour standard 0.084 ppm listed in the table versus 0.08 ppm on the EPA Web site). These slight differences are due to a rounding convention adopted by EPA and the number of significant figures. The numbers shown on the table above are those used to determine if an area is in compliance, and are reflected in the graphs on the following pages.

The NAAQS for each pollutant may have different averaging times (for example, hourly and 8-hour averages). These different forms of the standard are created and enforced to address varied health
impacts that happen as a result of a shorter, high-level exposure versus longer, low-level exposures. These differences are addressed pollutant-by-pollutant in the following sections, and additional information is on the EPA Web site. A distinction exists between “exceeding” and “violating” a standard; the two are not equivalent. This distinction is due to the nature of the standards. In most instances it is allowable for an area to exceed the standard a few times, to allow for possible meteorological aberrances. For example, a carbon monoxide 8-hour average of 10 ppm clearly exceeds the standard; however, it does not violate the standard if it is the only exceedance that year (the standard allows for one exceedance).

The EPA standards typically apply to an ‘area’, which may be defined in different ways. Data are often presented for individual monitoring stations in the following sections because this provides more insight into regional differences in Idaho’s ambient air quality. The summaries that follow show how Idaho’s airsheds compared to the standards discussed above for the year 2006 and in many instances also incorporate the AQI and other measures of air quality where appropriate. The AQI color code shading is shown to aid interpretation of air quality, but does not imply whether or not standards were actually met for each pollutant. An airshed must satisfy the conditions in the above table to ensure compliance with the NAAQS.
Monitoring Network

The Idaho monitoring network is a composite of meteorological and pollutant-specific monitoring equipment. DEQ operates most of the monitors while several tribes operate monitors on tribal lands. Data from the network are either collected manually by field staff or sent directly to engineers and scientists through a telemetry network.

The table on the next page presents a summary of the monitoring stations used and parameters monitored during 2006. Some parameters were monitored for only part of the year. For 2006, there were meteorology sites added in Boise and Grangeville. DEQ also dropped monitoring sites in Salmon (PM$_{10}$ and PM$_{2.5}$ FRMs), and PM$_{2.5}$ FRMs in Idaho Falls, and Sandpoint.

The map on page 8 shows monitoring stations that were active in 2006. Monitoring stations are mainly located in high population areas; however, DEQ does monitor air quality in some rural areas. Some sites are selected to focus on the emissions of a single pollutant or group of sources (for example, near a high traffic volume or residential wood burning area). Monitor siting and monitoring objectives are discussed in the pollutant-specific sections of this report.

Criteria pollutants are measured using methods approved by EPA, to assess Idaho’s compliance with National Ambient Air Quality Standards (NAAQS). In addition, some pollutants of particular interest are measured using more than one method. These additional methods help engineers and scientists to better understand the presence and behavior of these pollutants. The table on the next page lists the methods used for the various pollutants. It is noteworthy that the tapered element oscillating microbalance (TEOM) method (for particulate matter) is continuous. A TEOM measures mass concentrations at pre-set time intervals (e.g. hourly). The TEOM can also be accessed through telemetry for instantaneous PM concentrations. TEOMs enable real-time data interpretation and are discussed further in the particulate matter section of this report. Additional information on measurement methods is available at EPA’s Web site: [http://www.epa.gov/ttn/amtic/](http://www.epa.gov/ttn/amtic/).

In addition to the criteria air pollutants described in this report, air toxics were monitored in for two years at a Nampa site. Monitoring was terminated at this site on March 11, 2005. DEQ intends to resume air toxics monitoring at a new location in 2007. For details on air toxics and chemical toxicity, visit the EPA web site at [www.epa.gov/ttn/atw/index.html](http://www.epa.gov/ttn/atw/index.html).

Particulate Monitoring

Particulate (PM$_{10}$) and fine particulate (PM$_{2.5}$) are measured using a variety of methods in Idaho. EPA considers the federal reference method (FRM) to be the most accurate way to determine PM$_{10}$ and PM$_{2.5}$ concentrations. This method involves pulling in air (at a given flow rate) and trapping particles of a certain size (PM$_{10}$ or PM$_{2.5}$) on a pre-weighed filter. The filter is then weighed again and the resulting mass is divided by volume (determined from flow rate and amount of time) to provide concentration. Particles on the filter can be later chemically analyzed and modeled for more information about the sources of particulate matter. Unfortunately, the FRM does not provide continuous or timely information. EPA considers the TEOM continuous method equivalent to the FRM for PM$_{10}$, but not an equivalent method for PM$_{2.5}$.
DEQ uses the FRM as well as the TEOM continuous method to provide more time-resolved data (i.e. hourly averages).

## Monitoring Network for 2006

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
<th>PM$_{10}$ FRM</th>
<th>PM$_{10}$ TEOM</th>
<th>PM$_{2.5}$ FRM</th>
<th>PM$_{2.5}$ TEOM</th>
<th>O$_3$</th>
<th>SO$_2$</th>
<th>NO$_x$</th>
<th>CO</th>
<th>Met</th>
<th>CSM</th>
<th>Tox</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boise</td>
<td>Boise, various locations</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Coeur d’Alene</td>
<td>930 N 15th, Lakes Middle School</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Emmett</td>
<td>2195 Schiller Road, Emmett</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Franklin</td>
<td>Franklin, Idaho</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Garden Valley</td>
<td>Banks Lowman Road, Garden Valley</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Grangeville</td>
<td>USFS Compound, East Grangeville</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Idaho City</td>
<td>851 Highway 21, Idaho City</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Idaho Falls</td>
<td>North Holms &amp; Pop Kroll, Idaho Falls</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Inkom</td>
<td>Inkom</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Lancaster</td>
<td>Lancaster Road near Coeur d’Alene</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Lewiston</td>
<td>Sunset Park, Lewiston</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>McCall</td>
<td>500 North Mission, McCall</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Meridian</td>
<td>St. Lukes</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Middleton</td>
<td>Middleton</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Moscow</td>
<td>1025 Plant Sciences Road</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Nampa</td>
<td>Nampa, various locations</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>P4/Monsanto</td>
<td>Soda Springs</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Parma</td>
<td>Parma</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Pinehurst</td>
<td>106 Church Street, Pinehurst</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Pocatello</td>
<td>Pocatello, various locations</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Post Falls</td>
<td>1353 1/2 Syringa, Post Falls</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Preston</td>
<td>Preston</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Rathdrum</td>
<td>Rathdrum Prairie</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Salmon</td>
<td>Salmon, various locations</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Sandpoint</td>
<td>Sandpoint</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>St. Maries</td>
<td>St. Maries</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Twin Falls</td>
<td>Smith’s Food Store, Twin Falls</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Wendell</td>
<td>Wendell, Gooding County</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>●</td>
</tr>
</tbody>
</table>

**Notes:**
- **CO** Carbon Monoxide
- **PM$_{2.5}$ FRM** Particulate Matter 2.5 micrometers (reference)
- **PM$_{2.5}$ TEOM** Particulate Matter 2.5 micrometers (TEOM continuous)
- **CSM** Chemical Speciation Monitor
- **PM$_{10}$ FRM** Particulate Matter 10 micrometers (reference)
- **PM$_{10}$ TEOM** Particulate Matter 10 micrometers (TEOM continuous)
- **O$_3$** Ozone (May through September)
- **SO$_2$** Sulfur Dioxide
- **NO$_x$** Nitrogen Oxide
- **Tox** Urban Air Toxics
- **CO** Monitor Terminated in 2006
- **CSM** CSM Nampa terminated June 28, 2006 and the St Lukes started July 1, 2006
## Monitoring Methods Used in 2006 in Idaho

<table>
<thead>
<tr>
<th>Pollutant Code</th>
<th>Measurement</th>
<th>Method</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO</td>
<td>Carbon Monoxide</td>
<td>Gas Nondispersive Infrared Radiation</td>
<td>Parts per Million</td>
</tr>
<tr>
<td>NO₂</td>
<td>Nitrogen Oxides (NO₂)</td>
<td>Chemiluminescence</td>
<td>Parts per Million</td>
</tr>
<tr>
<td>O₃</td>
<td>Ozone</td>
<td>UV Absorption</td>
<td>Parts per Million</td>
</tr>
<tr>
<td>PM&lt;sub&gt;10&lt;/sub&gt; FRM</td>
<td>PM&lt;sub&gt;10&lt;/sub&gt; Reference</td>
<td>Reference - Hi Vol Andersen/ GMW 1200</td>
<td>Micrograms per Cubic Meter</td>
</tr>
<tr>
<td>PM&lt;sub&gt;10&lt;/sub&gt; TEOM</td>
<td>PM&lt;sub&gt;10&lt;/sub&gt; TEOM</td>
<td>R&amp;P Mass Transducer</td>
<td>Micrograms per Cubic Meter</td>
</tr>
<tr>
<td>PM&lt;sub&gt;2.5&lt;/sub&gt; FRM</td>
<td>PM&lt;sub&gt;2.5&lt;/sub&gt; Reference</td>
<td>Reference—R&amp;P Partisol 2025</td>
<td>Micrograms per Cubic Meter</td>
</tr>
<tr>
<td>PM&lt;sub&gt;2.5&lt;/sub&gt; TEOM</td>
<td>PM&lt;sub&gt;2.5&lt;/sub&gt; TEOM</td>
<td>R&amp;P Mass Transducer</td>
<td>Micrograms per Cubic Meter</td>
</tr>
<tr>
<td>Tox</td>
<td>Urban Air Toxics</td>
<td>Various Methods</td>
<td>Parts per Billion and µg/m³</td>
</tr>
<tr>
<td>SO₂</td>
<td>Sulfur Dioxide</td>
<td>UV Fluorescence</td>
<td>Parts per Million</td>
</tr>
</tbody>
</table>
IDAHO DEQ
SFY 2006 Air Monitoring Network

LEGEND
- CO Carbon Monoxide
- O3 Ozone
- Met Meteorological Station
- NOx Nitrogen Oxides
- PM10 Particulate less than or equal to 10 micrometers
- PM 2.5 Particulate less than or equal to 2.5 micrometers
- SO2 Sulfur Dioxide
- Neph Nephelometer (light scattering) - Seasonal
- Spec Chemical Speciation
- Tox Urban Air Toxics
- E-barn Beta ray attenuation (PM2.5)

Region 1 Coeur d'Alene
Region 2 Lewiston
Region 3 Boise
Region 4 Twin Falls
Region 5 Pocatello
Region 6 Idaho Falls

(as of 8/28/06)
Monitoring Results

Ozone

Ozone is a summertime air pollution problem which primarily forms when photochemical pollutants from cars and industrial sources (paints, solvents, gas vapors) react with sunlight. These pollutants are called ozone precursors and include VOC and NOx. Ozone can also be directly emitted by pollutant sources. Levels of ozone are usually highest in the afternoon because of the intense sunlight, warm temperatures, and the time required for ozone to form. These levels are highly affected by weather. DEQ monitored ozone from May through September in 2006, as this is the time period of concern for high ozone levels.

People frequently hear of ozone in the upper atmosphere. In this context, ozone is considered beneficial because it helps to protect the earth from the sun’s rays. In contrast, ozone formed at ground level is unhealthy. Elevated concentrations of ground-level ozone can cause reduced lung function, respiratory irritation, and can aggravate asthma. Ozone has also been linked to immune system effects (http://www.epa.gov/ttn/oarpg/naaqsfin/o3health.html). The damage ozone causes to the lungs typically heals within a few days, but repeated or prolonged exposure may cause permanent damage. People with respiratory conditions should limit outdoor exertion if ozone levels are high. Even healthy individuals may experience respiratory symptoms on a high-ozone day. Ground-level ozone can also damage agricultural crops and forests, interfering with their ability to photosynthesize and grow.

The monitoring stations measuring ozone are located in both urban and rural areas, although the precursor chemicals that react with sunlight to produce ozone are generated primarily in large metropolitan areas. Because summers in Idaho are normally hot and dry, some areas tend to see daily ozone levels that begin to rise in the late morning and then peak in the late afternoon and early evening. This phenomenon follows very closely with the time of day that the sun is the highest in the sky and temperatures are the hottest.

Graphs presented on pages 10-13 show trends in ozone levels in Idaho, reflecting both the AQI and the NAAQS. The graphs on the following pages present daily maximum 8-hour average data for the months of May through September. The shading on each graph corresponds to the AQI breakpoints for ozone, which is typically based on the 8-hour average.

The graph on page 14 shows monitoring data for each ozone monitoring station against the 8-hour federal standard, and shows that the region has remained below the standard since monitoring began. This means the three-year average of the 4th-highest 8-hour concentration has not violated the NAAQS standard of 0.08 ppm. The ozone standard is defined such that the three highest concentrations can exceed the level of the standard while still maintaining attainment. Values presented on the page 14 graph are 3-year averages of the 4th-highest concentrations; the year on the x-axis represents the last year averaged. For example, concentrations shown for 2006 are an average of 2004, 2005, and 2006 concentrations.

For additional information on ozone, visit www.epa.gov/air/urbanair/ozone/index.html. There is also additional information on ozone in question/answer format in the definitions section of this document.
Lancaster 8-Hour Ozone
Daily Maximum 8-Hour Concentration

- >0.104 ppm Unhealthy
- 0.085 - 0.104 ppm Unhealthy for Sensitive Groups
- 0.065 - 0.084 ppm Moderate
- 0 - 0.064 ppm Good

2006 Air Quality Data Summary
Middleton 8-Hour Ozone
Daily Maximum 8-Hour Concentration

Site Closed in August and equipment moved to ITD
ITD 8-Hour Ozone
Daily Maximum 8-Hour Concentration

Equipment failed. Replaced with equipment from the Middleton Site.
Whitney 8-Hour Ozone
Daily Maximum 8-Hour Concentration

2006 Air Quality Data Summary

Parts per Million (ppm)

>0.104 ppm Unhealthy
0.085 - 0.104 ppm Unhealthy for Sensitive Groups
0.065 - 0.084 ppm Moderate
0 - 0.064 ppm Good

Whitney
## Idaho 8-Hour Ozone Averages

3-Year Average of 4th Highest Annual Concentration vs Standard

<table>
<thead>
<tr>
<th>Year</th>
<th>8-Hour Average Concentration (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td></td>
</tr>
</tbody>
</table>

### Legend
- **8-Hour Federal Standard**
- **Middleton**
- **Tilli**
- **Whitney**
- **Lancaster (2 Yr)**
- **ITD (1 Yr)**

The graph shows the annual ozone concentration trends from 2004 to 2006 for various locations in Idaho, with the 8-hour federal standard indicated by a dashed line.
Particulate Matter (10 micrometers)

Particulate matter (PM) includes both solid matter and liquid droplets suspended in the air. Particles smaller than 2.5 micrometers in diameter are called “fine” particles, or PM$_{2.5}$. Particles between 2.5 and 10 micrometers in diameter are called “coarse” particles. PM$_{10}$ includes both fine and coarse particles. Coarse particles typically come from crushing or grinding operations and dust from roads. PM$_{10}$ can aggravate respiratory conditions such as asthma. People with respiratory conditions should avoid outdoor exertion if PM$_{10}$ levels are high.

The federal annual PM$_{10}$ standard was revoked effective December 17, 2006 due to a lack of evidence linking health problems to long-term exposure to coarse particle pollution. The 24-hour standard was not changed. EPA may choose to replace the PM$_{10}$ standard in the future with a PM$_{10-2.5}$ (PMcoarse) standard, ranging from diameters 2.5-10 micrometers. In 2006, Idaho had three areas that had previously exceeded federal PM$_{10}$ standards. These nonattainment areas are in Sandpoint, Pinehurst, and Pocatello. Northern Ada County was formerly a nonattainment area but is now considered to be a maintenance area for PM$_{10}$.

Idaho monitors PM$_{10}$ using both reference and continuous methods. The PM$_{10}$ TEOM is a federal equivalent method. TEOM data is also used to determine compliance to the PM$_{10}$ NAAQS. Reference and equivalent method results are shown in the following graphs. TEOM data is also used to determine the daily AQI and to inform the public of air quality values in near real-time via DEQ Web pages.

The graph on the page 16 demonstrates that Idaho’s airsheds were in compliance for the daily NAAQS standards for PM$_{10}$. Some concentrations were measured using the reference method while Sandpoint, Pinehurst, Coeur d’Alene, the Boise Fire Station, and Nampa were measured with TEOMs, the federal equivalent method. The graph shows PM$_{10}$ at individual monitoring stations for each monitoring location. It is clear that all concentrations are below the NAAQS. Years shown on the x-axis are actually the last year that was averaged. For example, data points for 2006 actually reflect the three-year average of 2004, 2005, and 2006.

Maximum daily values (24-hour average) confirm that Idaho has shown a slight decrease since 1996. Statistical summaries of reference and continuous method PM$_{10}$ concentrations are provided in tables in the Appendix. The maximum PM$_{10}$ measured in 2006 was 106 µg/m$^3$ at the Nampa monitor, measured by a continuous equivalent method analyzer. This value is below the 24 hour standard allowing each monitor one value above 154 µg/m$^3$ per year. The 24-hour daily PM NAAQS is violated if the expected number of exceedances over three consecutive years is greater than one. So you can have 2/0/1 exceedances in three consecutive years and not violate the NAAQS.

For additional information on PM$_{10}$, visit [www.epa.gov/air/urbanair/pm/index.html](http://www.epa.gov/air/urbanair/pm/index.html). More information on PM$_{10}$ is also presented in question/answer format in the definitions section of this document.
Daily PM$_{10}$ 1997 - 2006
3-Year Average of Daily Maximum

3-Year Average Daily Maximum Concentration
Micrograms per Cubic Meter (ug/m$^3$)

Federal Standard
Sandpoint
Coeur d'Alene
Pinehurst
Lewiston
Boise
Pocatello STP
Nampa
Pocatello G&G
Particulate Matter (2.5 micrometers)

Particles smaller than 2.5 micrometers in diameter are called “fine” particles, or PM$_{2.5}$. DEQ considers PM$_{2.5}$ to be one of the major air pollution concerns affecting a number of airsheds in Idaho. PM$_{2.5}$ generally comes from wood burning, agricultural burning and other area sources, as well as vehicle exhaust including cars, diesel trucks, and buses. Fine particulate can also be formed secondarily in the atmosphere by chemical reactions of pollutant gases.

Exposure to PM$_{2.5}$ can have serious health effects. Fine particles are most closely associated with increased respiratory disease, decreased lung function, and even premature death. Children, older adults, and people with some illnesses are more sensitive and more likely to develop heart or lung problems associated with PM$_{2.5}$. People with respiratory or heart disease, older adults, and children should avoid outdoor exertion if PM$_{2.5}$ levels are high. PM$_{2.5}$ also significantly affects visibility.

PM$_{2.5}$ is primarily measured using two different methods in Idaho, the federal reference method and the Tapered Element Oscillating Method (TEOM). The federal reference method is considered by EPA to be the most accurate way to determine PM$_{2.5}$ concentrations. This method involves pulling in air (at a given flow rate) and trapping particles of a certain size (in this case PM$_{2.5}$) on a pre-weighed filter. The filter is then used, weighed, and divided by volume (determined from flow rate and amount of time) to provide the concentration. Unfortunately, the reference method does not provide continuous or timely information. Thus, Idaho uses the TEOM method to provide more time-relevant data. The TEOM method uses measurement of mass to determine particulate matter present. A third method of PM$_{2.5}$ measurement is used during agricultural burning season; the nephelometer. These transportable instruments help DEQ estimate PM$_{2.5}$ concentrations during these activities.

The graphs in this section use data primarily from the federal reference method. The continuous data are from the TEOMs. The continuous methods are compared to the reference method values for a one year period and calculations are made to determine the degree of difference from the reference method. The differences are then applied to the current continuous values in an attempt to make them “reference method-like.” Continuous methods are not designated as equivalent methods for PM$_{2.5}$ and data cannot be used for NAAQS determinations.

The graphs on pages 19 and 20 show that PM$_{2.5}$ measurements meet the daily and annual NAAQS using the standard reference method. All of Idaho was designated attainment/unclassifiable for PM$_{2.5}$ in 2006. The graphs on pages 21 through 27 use data from the continuous samplers to display PM$_{2.5}$ with the AQI. Both types of graphs are discussed below.

The graph on page 19 shows the 2006 three-year average of the 98$^{th}$ percentile 24-hour (daily) averages at each monitoring station against the federal standard. The annual averages for 2001-2006 all fell well below the previous standard of 65 $\mu$g/m$^3$. For 2006 the graph shows the three year average for Pinehurst exceeding the new NAAQS of 35 $\mu$g/m$^3$. There is only one year of data for Franklin, but if it continues its current trend, it will also exceed the new NAAQS after the 2008 data year.
The graph on page 20 shows the three-year average of the annual averages at each monitoring station, against the federal standard. It is easily seen that the annual standard of 15.4 μg/m³ was not exceeded at any of the monitoring stations.

Graphs on pages 21 through 27 show daily PM$_{2.5}$ concentrations measured at Idaho sites during 2006 using the TEOM continuous analyzers against a backdrop of AQI breakpoints. The highest concentration of PM$_{2.5}$ measured with the TEOMS in 2006 was 99.4 μg/m³, measured at Salmon. A few of the graphs show some extended periods of zero concentrations. These are times when a TEOM was not functioning due to mechanical malfunctions.

For additional information on particulate matter, visit [www.epa.gov/air/urbanair/pm/index.html](http://www.epa.gov/air/urbanair/pm/index.html). Information on PM$_{2.5}$ is also presented in a question/answer format in the definitions section of this document.
3-Yr Average Daily PM$_{2.5}$ 2001 - 2006
Federal Reference Method Monitors

Year

98th Percentile of Daily Concentrations
Micrograms per Cubic Meter (ug/m$^3$)

Previous Federal Standard
New Federal Standard

Particulate Matter 2006 Air Quality Data Summary
Treasure Valley
PM$_{2.5}$ Daily Averages from Continuous Analyzers

2006 Air Quality Data Summary

Particulate Matter 2006 Air Quality Data Summary Page 21
Coeur d’Alene
PM$_{2.5}$ Daily Averages from Continuous Analyzers

2006 Air Quality Data Summary
Northern Idaho
PM$_{2.5}$ Daily Averages from Continuous Analyzers

24-Hour Average Concentration
(Midnight-to-Midnight)

- >65.4 µg/m³ Unhealthy
- 40.5 - 65.4 µg/m³ Unhealthy for Sensitive Groups
- 15.5 - 40.4 µg/m³ Moderate
- 0 - 15.4 µg/m³ Good

Mass Transducer R&P TEOM 1400a - Sandpoint
Mass Transducer R&P TEOM 1400a - Pinehurst
North Central Idaho
PM$_{2.5}$ Daily Averages from Continuous Analyzers

2006 Air Quality Data Summary
Twin Falls

PM$_{2.5}$ Daily Averages from Continuous Analyzers
Southeast Idaho
PM$_{2.5}$ Daily Averages from Continuous Analyzers

2006 Air Quality Data Summary
Eastern Idaho

PM$_{2.5}$ Daily Averages from Continuous Analyzers

24-Hour Average Concentration (Midnight-to-Midnight) Micrograms per Cubic Meter

- >65.4 µg/m$^3$ Unhealthy
- 40.5 - 65.4 µg/m$^3$ Unhealthy for Sensitive Groups
- 15.5 - 40.4 µg/m$^3$ Moderate
- 0 - 15.4 µg/m$^3$ Good

99.4 µg/m$^3$ on 8/23

Mass Transducer R&P TEOM 1400a - Idaho Falls
Mass Transducer R&P TEOM 1400a - Salmon
Carbon Monoxide

Carbon Monoxide (CO) is an odorless, colorless gas that can enter the bloodstream through the lungs and reduce the amount of oxygen that reaches organs and tissues. Carbon monoxide forms when the carbon in fuels doesn’t burn completely. The majority of CO comes from vehicle exhaust. In cities, 85-95% of all CO emissions may come from motor vehicle exhaust.

Elevated levels of CO in the ambient air can occur in urban canyon areas with heavy traffic congestion. The highest levels of CO in the outside air typically occur during the colder months of the year when temperature inversions are more frequent. People with cardiovascular disease or respiratory problems might experience chest pain and increased cardiovascular symptoms, particularly while exercising, if CO levels are high. High levels of CO can affect alertness and vision even in healthy individuals.

CO monitoring stations are generally located in urban canyon areas with heavy traffic congestion. These include central business areas, roadsides, and shopping malls.

The graph on page 29 shows the second highest 8-hour concentrations at Idaho’s monitoring sites versus the NAAQS standard. The second-highest concentration is displayed on these graphs because, under the federal rule, the 8-hour average can not be exceeded more than once per year (thus, choosing the second highest). These graphs confirm the general downward trend that CO is taking from the early 1990s to present. There were no 8-hour concentrations measured at any sites that exceeded the NAAQS standard of 9.4 ppm. The maximum 8-hour concentration for CO in 2006 was 2.1 ppm, well below the 8-hour standard. These data are provided in the Appendix.

The NAAQS also includes a 1-hour standard for CO of 35 ppm (can not be exceeded more than once a year). Measured 1-hour concentrations in Idaho are historically much lower than the 35 ppm standard, and therefore 1-hour CO trends were not graphed. The maximum and second-highest measured 1-hour CO in 2005 are 4.8 and 3.5 ppm, respectively. Additional 1-hour average CO data are provided in the Appendix.

For additional information on CO, visit [www.epa.gov/air/urbanair/co/index.html](http://www.epa.gov/air/urbanair/co/index.html). CO information is also provided in question/answer format in the definitions section of this document.
Carbon Monoxide (CO) for Idaho
2nd Highest 8-Hour Concentration vs Standard

Year


2nd Highest 8-Hour Average Concentration
Parts per Million (ppm)

0 1 2 3 4 5 6 7 8 9 10

Federal Standard
Boise
Nampa
Lewiston

Lewiston sampling stopped in 2002
Nampa sampling stopped in 2005
Sulfur Dioxide

Sulfur dioxide (SO₂) is a colorless, reactive gas produced by burning fuels containing sulfur, such as coal and oil, and by industrial processes. Historically, the greatest sources of SO₂ were industrial facilities that derived their products from raw materials like metallic ore, coal, and crude oil, or that burned coal or oil to produce process heat (petroleum refineries, cement manufacturing, and metal processing facilities). Currently, on-road vehicles, marine craft, and diesel construction equipment also release significant SO₂ emissions to the air.

People with asthma who are active outdoors may experience bronchoconstriction, where symptoms include wheezing, shortness of breath, and tightening of the chest. People should limit outdoor exertion if SO₂ levels are high.

The graph on page 31 shows that Idaho is well below the annual standard for SO₂. The maximum measured SO₂ concentrations in 2006 were significantly below the federal standards as well. The graphs on pages 32 and 33 show the maximum 24-hour and 3-hour concentrations, respectively, at Idaho’s monitoring sites. The maximum 24-hour and 3-hour averages were 0.033 ppm and 0.107 ppm, respectively. Note that the 2005-2006 Soda Springs monitor is at a different location than it was in 1999-2002. DEQ changed from population exposure monitoring to “hot spot” monitoring at Soda Springs. ‘Hot spot’ refers to monitoring that is designed to investigate pollution sources on a local scale. This allows for the assessment of air quality emanating from a point source, but rather than emissions being monitored directly from a stack or chimney, the air is measured as it moves towards areas where it may impact on human health or quality of life.

Additional SO₂ data are located in the Appendix, and information on SO₂ is available at www.epa.gov/air/urbanair/so2/index.html. SO₂ information is also provided in question/answer format in the definitions section of this document.
Sulfur Dioxide (SO₂)
Annual Average vs Standard

Maximum 1-Hour Average Concentration
Parts per Million (ppm)

Year
1999 2000 2001 2002 2003 2004 2005 2006

Annual Federal Standard
Pocatello
Soda Springs
Soda Springs (hot spot)
Sulfur Dioxide (SO₂)
Maximum 24-Hour Average vs Standard

Year

Maximum 24-Hour Average Concentration (ppm)

- 24-Hour Federal Standard
- Pocatello
- Soda Springs
- Soda Springs (hot spot)
Sulfur Dioxide (SO₂)
Maximum 3-Hour Average vs Standard

Sulfur Dioxide
2006 Air Quality Data Summary
Lead

Lead is a highly toxic metal that was used for many years in household products, automobile fuel, and industrial chemicals. Airborne lead was associated primarily with automobile exhaust and lead smelters. The large reductions in lead emissions from motor vehicles have changed the nature of the air quality lead problem in the United States. Industrial processes, particularly primary and secondary lead smelters and battery manufacturers, are now responsible for most of the lead emissions.

People, animals, and fish are mainly exposed to lead by breathing and ingesting it in food, water, soil, or dust. Lead accumulates in the blood, bones, muscles, and fat. Infants and young children are especially sensitive to even low levels of lead. Lead can have health effects ranging from behavioral problems and learning disabilities to seizures and death.

According to EPA, the primary sources of lead exposure are lead-based paint, lead-contaminated dust, and lead-contaminated residual soils. Refer to the EPA Web site www.epa.gov/ttnatw01/hltheq/lead.html for ways to limit your exposure to these lead sources.

Lead has not been monitored in Idaho since 2002. With the phase-out of lead in fuel and the closure of the Bunker Hill lead smelter in Kellogg, airborne lead is no longer a public health concern in Idaho. The graph on page 35 is included to show the historical monitoring of airborne lead in Kellogg.

For additional information on lead, visit www.epa.gov/air/urbanair/lead/index.html. Lead information is also available in a question/answer format in the definitions section of this document.
Nitrogen Dioxide

Nitrogen dioxide (NO₂) is a reddish brown, highly reactive gas that forms from the reaction of nitrogen oxide (NO) and oxygen in the atmosphere. The term “NOₓ”, which is frequently used, refers to both NO and NO₂. NO₂ will react with VOCs and can result in the formation of ozone. On-road vehicles like trucks and automobiles are the major sources of NOₓ. Industrial boilers and processes, home heaters, and gas stoves can also produce NOₓ. NO₂ pollution is greatest in cold weather.

NO₂ can cause respiratory symptoms such as coughing, wheezing, and shortness of breath in people with respiratory diseases such as asthma. Long-term exposure can lead to respiratory infections.

Motor vehicle manufacturers have been required to reduce NOₓ emissions from cars and trucks since the 1970s. NOₓ is not considered a significant pollution problem in Idaho. In 2006, DEQ only maintained one monitoring site for nitrogen dioxide at the Lancaster site near Coeur d’Alene. The monitoring objective is primarily to assess ambient NOₓ concentrations for evaluating ozone formation processes. The annual average for each year has consistently been less than half of the NAAQS standard, as shown in the graph on page 37 and in data in the Appendix. The maximum 1-hour average of NO₂ measured in 2006 was 0.038 ppm. NOₓ monitoring at this site was stopped on December 31, 2006. NOₓ data is now collected only during the ozone monitoring season.

For additional information on NO₂, visit www.epa.gov/air/urbanair/nox/index.html.
Idaho Nitrogen Dioxide (NO₂)
Annual 1-Hour Average vs Standard

Year
- 1997
- 1998
- 1999
- 2000
- 2001
- 2002
- 2003
- 2004
- 2005
- 2006

Annual 1-Hour Average Concentration
Parts per Million (ppm)
- Federal Standard
- Pocatello
- Boise
- Moyie Springs
- Mtn. Home
- Lancaster

Nitrogen Dioxide
Air Quality Index

The AQI is reported according to a 500-point scale for each of the major criteria air pollutants: ozone, particulate matter (PM$_{2.5}$ & PM$_{10}$), carbon monoxide, nitrogen dioxide, and sulfur dioxide. The “worst denominator” determines the ranking. For example, if an area has a carbon monoxide value of 132 on a given day and all other pollutants are below 50, the AQI for that day would be 132. The AQI scale breaks down into six categories. Each category has a corresponding color, shown below, with pollution concentration breakpoints for each category.

<table>
<thead>
<tr>
<th>Levels of Health Concern</th>
<th>Numeric Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>0-50</td>
<td>Air quality is considered satisfactory, and air pollution poses little or no risk.</td>
</tr>
<tr>
<td>Moderate</td>
<td>51-100</td>
<td>Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.</td>
</tr>
<tr>
<td>Unhealthy for Sensitive Groups</td>
<td>101-150</td>
<td>Members of sensitive groups may experience health effects. The general public is not likely to be affected.</td>
</tr>
<tr>
<td>Unhealthy</td>
<td>151-200</td>
<td>Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.</td>
</tr>
<tr>
<td>Very Unhealthy</td>
<td>201-300</td>
<td>Health alert: everyone may experience more serious health effects.</td>
</tr>
<tr>
<td>Hazardous</td>
<td>300-500</td>
<td>Health warnings of emergency conditions. The entire population is more likely to be affected.</td>
</tr>
</tbody>
</table>

The AQI is a national index, so the values and colors used to show local air quality and the associated level of health concern will be the same everywhere in the U.S.A. The number of “good” air quality days continues to dominate regionally in Idaho. However, there were brief periods when the air quality degraded into “moderate,” “unhealthy for sensitive groups,” and “unhealthy.” The table presented on page 49 shows the AQI breakdown by percentage in each category for the year.

The graph on page 39 presents the annual number of “good” days for several Idaho counties. The number of “good” days has remained relatively high over the last few years for each county. Current reduction in the number of “good” days cannot be directly compared with the numbers before 1999. In that year, PM$_{2.5}$ was added to the index and the “unhealthy” category was divided into “unhealthy” and “unhealthy for sensitive groups.” In 2002 ozone monitoring was added to the AQI calculation in the Treasure Valley with ozone contributing to the number of moderate days in the following years. Ozone monitoring began at the Lancaster site near Coeur d’Alene in 2005.

The AQI Graphs on pages 40-48 present the distribution of AQI categories recorded for nine Idaho counties. The AQI data summaries for each county that support the graphs are located in the Appendix.
Air Quality for Bannock County

- **1999 PM2.5 monitoring begins**
- **2002 Ozone monitoring begins**

Days of the Year Percentage

<table>
<thead>
<tr>
<th>Year</th>
<th>Good</th>
<th>Moderate</th>
<th>Unhealthy for Sensitive Groups</th>
<th>Unhealthy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1998</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1999</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Air Quality for Canyon County

- PM2.5 monitoring begins in 1999
- Ozone monitoring begins in 2002

Days of the Year Percentage

Year:
- 1997
- 1998
- 1999
- 2000
- 2001
- 2002
- 2003
- 2004
- 2005
- 2006

Legend:
- Good
- Moderate
- Unhealthy for Sensitive Groups
- Unhealthy
Air Quality for Franklin County

There were only 16 AQI days calculated in 2004.
Air Quality for Kootenai County

Days of the Year Percentage

Year


Good

Moderate

Unhealthy for Sensitive Groups

Unhealthy

1999

PM2.5 monitoring begins

2002

Ozone monitoring begins
Air Quality for Nez Perce County

1999 PM2.5 monitoring begins
2002 Ozone monitoring begins

Year

Days of the Year Percentage


1999 2002
PM2.5 Ozone monitoring begins
monitoring begins

Good Moderate Unhealthy for Sensitive Groups Unhealthy
Air Quality for Shoshone County

Days of the Year Percentage

Year


1999 PM2.5 monitoring begins
2002 Ozone monitoring begins

Air Quality Index
Air Quality for Twin Falls County

- Good
- Moderate
- Unhealthy for Sensitive Groups
- Unhealthy

Key:
- Blue squares: Good
- Yellow circles: Moderate
- Orange triangles: Unhealthy for Sensitive Groups
- Red diamonds: Unhealthy

Years:
- 1999: PM2.5 monitoring begins
- 2002: Ozone monitoring begins
The number of “good” AQI days continues to dominate regionally in Idaho; however, there were brief periods when the air quality degraded into “moderate,” “unhealthy for sensitive groups,” or “unhealthy.” The table below shows the AQI breakdown by percentage in each category where air quality is monitored. In 2006, the highest AQI value of 171 was recorded in Lemhi County on August 23 for PM2.5. This value was in the unhealthy range.

<table>
<thead>
<tr>
<th>County</th>
<th># AQI Days</th>
<th>Good</th>
<th>Moderate</th>
<th>Unhealthy for Sensitive Groups</th>
<th>Unhealthy</th>
<th>Highest AQI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ada</td>
<td>365</td>
<td>79.5%</td>
<td>19.5%</td>
<td>1.1%</td>
<td></td>
<td>138</td>
</tr>
<tr>
<td>Bannock</td>
<td>365</td>
<td>98.1%</td>
<td>1.9%</td>
<td></td>
<td></td>
<td>66</td>
</tr>
<tr>
<td>Benewah</td>
<td>124</td>
<td>87.1%</td>
<td>12.1%</td>
<td>0.8%</td>
<td></td>
<td>115</td>
</tr>
<tr>
<td>Boise</td>
<td>46</td>
<td>56.5%</td>
<td>37.0%</td>
<td>4.3%</td>
<td>2.2%</td>
<td>160</td>
</tr>
<tr>
<td>Bonner</td>
<td>359</td>
<td>96.1%</td>
<td>3.9%</td>
<td></td>
<td></td>
<td>78</td>
</tr>
<tr>
<td>Bonneville</td>
<td>224</td>
<td>99.1%</td>
<td>0.9%</td>
<td></td>
<td></td>
<td>57</td>
</tr>
<tr>
<td>Butte</td>
<td>365</td>
<td>100.0%</td>
<td></td>
<td></td>
<td></td>
<td>40</td>
</tr>
<tr>
<td>Canyon</td>
<td>359</td>
<td>85.5%</td>
<td>13.9%</td>
<td>0.6%</td>
<td></td>
<td>108</td>
</tr>
<tr>
<td>Caribou</td>
<td>272</td>
<td>100.0%</td>
<td></td>
<td></td>
<td></td>
<td>49</td>
</tr>
<tr>
<td>Franklin</td>
<td>291</td>
<td>93.1%</td>
<td>6.9%</td>
<td></td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>Idaho</td>
<td>233</td>
<td>91.8%</td>
<td>7.3%</td>
<td>0.9%</td>
<td></td>
<td>132</td>
</tr>
<tr>
<td>Kootenai</td>
<td>272</td>
<td>91.2%</td>
<td>8.8%</td>
<td></td>
<td></td>
<td>91</td>
</tr>
<tr>
<td>Latah</td>
<td>250</td>
<td>94.0%</td>
<td>5.2%</td>
<td>0.8%</td>
<td></td>
<td>123</td>
</tr>
<tr>
<td>Lemhi</td>
<td>208</td>
<td>86.5%</td>
<td>12.0%</td>
<td>0.5%</td>
<td>1.0%</td>
<td>171</td>
</tr>
<tr>
<td>Nez Perce</td>
<td>244</td>
<td>90.6%</td>
<td>8.6%</td>
<td>0.8%</td>
<td></td>
<td>107</td>
</tr>
<tr>
<td>Power</td>
<td>230</td>
<td>94.8%</td>
<td>4.8%</td>
<td>0.4%</td>
<td></td>
<td>146</td>
</tr>
<tr>
<td>Shoshone</td>
<td>350</td>
<td>85.7%</td>
<td>14.0%</td>
<td>0.3%</td>
<td></td>
<td>113</td>
</tr>
<tr>
<td>Twin Falls</td>
<td>227</td>
<td>97.8%</td>
<td>2.2%</td>
<td></td>
<td></td>
<td>70</td>
</tr>
<tr>
<td>Valley</td>
<td>65</td>
<td>61.5%</td>
<td>33.8%</td>
<td>4.6%</td>
<td></td>
<td>147</td>
</tr>
</tbody>
</table>

There were no NAAQS violations in 2006 for any pollutants. In most cases, pollutant concentrations fell well below standards.
Impaired Air Quality

Winter Burn Bans

Idaho has a winter-impaired air quality program primarily targeting sources of particulate matter from wood stoves and fireplaces. Idaho’s program is generally implemented through local ordinances in those areas that have historically had winter inversion problems. Generally, these ordinances specify that a wood burning ban will be declared whenever DEQ reports an AQI value of 74 or greater for any pollutant measured by an approved monitor and air stagnation conditions are forecasted to continue for at least 24-hours. In some areas, open burning (even if a valid permit has been issued) is prohibited when DEQ reports an AQI value of 60 or higher for any pollutant measured in the city/region/airshed.

The DEQ online Current Air Quality Report lists the daily air quality in many cities and regions in Idaho. Each report will list the pollutant being monitored, the AQI, and burn restrictions, if any, for the day. Anyone wanting to know if they can burn can go to this site to see what the forecast is for their area.

From November 1 through March 31, alert between 2:00 and 4:00 p.m. each day, when the air quality is forecasted to be poor, DEQ will issue an air quality to notify the local community of the next day’s air quality condition forecasted for their airshed. If conditions are expected to be poor for the weekend, alerts will continue to be issued at the regular time on Saturday and Sunday. These alerts will be reported to local media outlets and to others through an email notification list.

Summer Ozone Alerts

DEQ forecasts pollution conditions for ozone in the Treasure Valley Monday through Friday (and weekends when needed) using pollutant monitoring data and meteorological information. Because ozone needs heat and sunlight to form, it is considered a summertime problem and is only monitored from May 1 through September 30. Ozone pollution can rise to very high levels when the valley experiences hot days with few clouds in the sky. The Treasure Valley tends to see daily ozone levels that begin to rise in the late morning and peak in the late afternoon and early evening. This phenomenon follows very closely with the time of day that the sun is the highest in the sky through the time temperatures are the hottest. Since we have no control over our weather characteristics, we have to focus on controlling what we put into our air. Under yellow or moderate alerts, the public is requested to keep vehicles maintained, limit driving, combine trips, comply with open burning restrictions, refuel after 7:00 p.m. and to not top off the tank, mow lawns in the evening, and don’t use lighter fluid on the barbecue. These alerts will be reported to local media outlets and to others through an email notification list. The plan can be viewed at: http://www.deq.state.id.us/air/data_reports/reports/ada_co/pollution_response_plan_summer.pdf.
DEFINITIONS

General Definitions

Air Toxics

Air toxics are broadly defined as almost 700 pollutants that DEQ considers to be potentially harmful to human health and the environment. These pollutants are listed in the Idaho air rules in IDAPA 58.01.01.585 and 586 (http://adm.idaho.gov/adminrules/rules/idapa58/0101.pdf). Hazardous air pollutants (see below) are included in this list to identify them as a subset of air toxics.

Criteria Air Pollutant (CAP)

The Clean Air Act of 1970 defined six criteria pollutants and established ambient concentrations to protect public health. EPA periodically has revised the original concentration limits and methods of measurement, most recently in 1997. See page 3 for the list and the allowed ambient concentrations.

Hazardous Air Pollutant (HAP)

A hazardous air pollutant is an air contaminant identified as toxic in the Federal Clean Air Act, Section 112(b). 188 pollutants are currently listed as HAPs. They are listed by EPA at http://www.epa.gov/ttn/atw/188polls.html.

Temperature Inversions

The earth gains and loses most of its energy at its surface. It is warmed by solar heating during the day and cooled by radiation emissions at night. During the late morning and afternoon hours, the air near the surface is warmer than the air aloft and allows for good pollutant dispersion (vertical mixing may be 1,500 meters or more). At night with clear skies, the surface radiates heat into outer space, creating cooler air at the surface and warmer air aloft. Warmer air above cooler air (temperature inversion) is a stable condition and limits the upward movement of pollution because the warmer air acts as a barrier. With little or no wind, pollutants are trapped near the surface (vertical mixing may be 200 meters or less) and can reach high levels of concentration.

Volatile Organic Compound (VOC)

An organic compound that participates in atmospheric photochemical reactions. This excludes all compounds determined to have negligible photochemical reactivity by EPA and listed in 40 CFR 51.100(s) in effect July 1, 1998.

Visibility/Regional Haze

Visibility is often explained in terms of visual range and light extinction. Visual range is the maximum distance—usually miles or kilometers—that you can see a black object against the horizon. Light extinction is the sum of light scattering and light absorption by fine particles and gases in the atmosphere. The more light extinction you have, the shorter your visual range will be. Reduced visibility (or visual range) is caused by weather (clouds, fog, and rain) and air pollution (fine particles and gases). The major pollution contributor to reduced visibility is fine particulate matter (PM_{2.5}) emissions, which are transported aloft and may remain suspended for a week or longer. Fine particles have a greater
impact than coarse particles at locations far from the emitting source because they remain suspended in the atmosphere longer and travel farther. PM$_{2.5}$ also presents some of the most serious health hazards to the public, so you can roughly assume that the worse the visibility, the unhealthier the air is to breathe.

**Pollution Sources**

**Area Sources**

Countywide categories of pollution sources, in which each individual source emits pollutants below the thresholds for a point source facility designation.

**Biogenics**

Natural sources such as trees, plants, grass, crops, and soils. The worldwide emissions rate of these natural hydrocarbons has been estimated to exceed that of non-methane hydrocarbons originating from human sources. Isoprene, one of the major constituents of biogenic emissions, is very photoreactive and makes biogenic VOCs a contributor in the formation of ozone.

**Emission Factor**

A value derived from source tests, material balance calculations, or engineering comparisons with similar processes. Used to estimate emissions from process quantities.

**Non-road Mobile Sources**

Farm vehicles, on-site construction/industrial vehicles, logging equipment, small marine craft, aircraft, trains, lawn and garden equipment, and off-road trail machines.

**On-road Mobile Sources**

Cars, trucks, sport utility vehicles, motorcycles and buses.

**Point Sources**

For the every-third-year statewide emissions inventory, point sources are defined as facilities that have actual annual air pollutant emissions equal to or exceeding 1000 tons per year of CO; 100 tons per year of NO$_X$, PM$_{10}$, PM$_{2.5}$, SO$_X$, or VOCs; or 5 tons per year of lead.

**Registered Facility**

The total of all pollutant-emitting activities located on adjacent or contiguous properties owned or operated by one person or corporate entity. It includes all of the pollutant-emitting buildings, processes, structures, equipment, control apparatuses, and storage areas at a facility.

**Area Sources**

Also called non-point sources. Pollution sources where each individual facility or source emits pollutants below the thresholds for point source classification. Sources include wood stoves/fireplaces, outdoor burning, architectural surface coating, automobile painting, commercial/consumer solvents, dry
cleaning, printing, stationary diesel engines, small utility engines, small industrial facilities, gas stations, and construction activities.

**Criteria Air Pollutants**

**Ozone (O₃)**

- **What is it?**
  Ozone, a bluish-colored gas molecule with a strong odor, is composed of three atoms of oxygen. In the upper atmosphere ozone occurs naturally and partially absorbs the sun’s harmful ultraviolet rays. Ozone at ground level is a summertime air pollution problem.

- **How is it caused?**
  Ozone forms when photochemical pollutants from cars, trucks, and industrial sources react with sunlight. Ozone-forming pollutants include NOₓ and VOCs; even gasoline-powered yard equipment, paints, solvents, and off-road vehicle motors contribute.

- **When does it happen?**
  Ozone pollution is most common in the summer months, when sunlight and stable atmospheric conditions occur. Ozone levels are usually highest in the afternoon, as sunlight photochemically transforms NOₓ and VOCs into ozone.

- **Who is affected?**
  Adults and children who are active outdoors, people with respiratory disease such as asthma, and people with unusual sensitivity to ozone. During physical activity, ozone penetrates deeper into the lungs and can do more damage.

  Ozone is a very reactive gas. For this reason, high concentrations of ozone can cause respiratory distress and disease in humans, decreased yields of agricultural crops and forests, and damage to some rubber products, plastics, and paints used outdoors. National crop losses from ozone exposure are estimated at $3 billion to $5 billion annually. Forest losses are harder to estimate.

- **What are the health effects?**
  Ozone can cause coughing and throat irritation, make deep vigorous breathing more difficult, and increase the chance of respiratory infections. It increases sensitivity to allergens and can trigger asthma attacks. The damage it causes to the lungs heals within a few days, but repeated or prolonged exposure may cause permanent damage.

- **What can I do about it?**
  If ozone levels are high and you have a respiratory condition or are normally active outdoors, try to limit your outdoor exertion.

In the United States, management of ozone and other photochemical oxidants has been a major goal of federal and state clean air legislation (Clean Air Act). Although many of the pollution control efforts required by the CAA have been implemented, efforts to decrease ozone pollution have been only partially successful.
In the Treasure Valley airshed the ozone trend is flat and is marginally within the Federal standards.

- **Where is it measured?**
  Unlike other pollutants monitored here in Idaho, ozone is formed when precursor compounds react in the atmosphere. Winds transport ozone and precursor emissions from one area to another. For the Treasure Valley, ozone precursors are emitted into the air in urban areas of the airshed and subsequently travel southeasterly to more rural areas as they react to form ozone. As a result, for the Treasure Valley airshed, DEQ has monitors in various locations. Another ozone monitor has been running in the Coeur d’Alene area since 2005.

**Particulate Matter (PM$_{2.5}$ and PM$_{10}$)**

- **What is it?**
  Particulate matter (PM) includes both solid matter and liquid droplets suspended in the air. Particles smaller than 2.5 micrometers in diameter are called “fine” particles, or PM$_{2.5}$. Particles between 2.5 and 10 micrometers in diameter are called “coarse” particles. PM$_{10}$ includes both fine and coarse particles. DEQ considers PM$_{2.5}$ to be one of the major air pollution concerns affecting our state.

- **How is it caused?**
  - PM$_{2.5}$ comes from all types of combustion, including cars, diesel trucks, power plants, wood burning, and from some industrial processes. It can also be formed in the atmosphere by chemical reactions of pollutant gases.
  - The “coarse” particles in PM$_{10}$ typically come from crushing or grinding operations and dust from roads.

- **When does it happen?**
  Daily peaks in PM$_{2.5}$ in urbanized areas suggest that PM$_{2.5}$ levels peak in association with traffic flow and rush hour periods.

- **Who is affected?**
  People with asthma and heart or lung disease, the elderly, and children. PM$_{2.5}$ also significantly affects visibility.

- **What are the health effects?**
  Fine particulates (PM$_{2.5}$) pose a greater risk to human health than coarse particulates, because they penetrate deeper into the respiratory system.
  - PM$_{2.5}$ exposure can have serious health effects. People with heart or lung diseases are at increased risk of attacks or premature death. Children and the elderly are more likely to develop heart or lung problems.
  - PM$_{10}$ can aggravate respiratory conditions such as asthma.

- **What can I do about it?**
  - If PM$_{2.5}$ levels are high, people with respiratory or heart disease, the elderly, and children should avoid outdoor exertion.
  - If PM$_{10}$ levels are high, people with respiratory conditions should avoid outdoor exertion.
Where is it measured?
Due to the health risks associated with PM, both PM$_{2.5}$ and PM$_{10}$ are monitored in various population-oriented locations throughout Idaho.

Carbon Monoxide (CO)

**What is it?**
CO is an odorless, colorless gas that can enter the bloodstream through the lungs and reduce the amount of oxygen that reaches organs and tissues.

**How is it caused?**
Carbon monoxide forms when the carbon in fuels doesn’t burn completely. Vehicle exhaust contributes 60% of all CO. In cities, that can be a 95% contribution.

**When does it happen?**
CO pollution is at its worst in cold weather because fuels burn less efficiently in low temperatures. CO levels usually peak during morning and evening rush hours.

**Who is affected?**
People with cardiovascular disease, such as angina, or cardiovascular or respiratory problems; also fetuses and young infants.

**What are the health effects?**
Chest pain and increased cardiovascular symptoms, particularly while exercising. High levels of CO can affect alertness and vision even in healthy individuals.

**What can I do about it?**
If CO levels are high, limit exertion and avoid sources of CO such as heavy traffic.

**Where is it measured?**
CO monitoring stations are located in urban canyon areas with heavy traffic congestion. These include central business areas, roadsides, and shopping malls.

Sulfur Dioxide (SO$_2$)

**What is it?**
Sulfur dioxide is a colorless, reactive gas.

**How is it caused?**
SO$_2$ is produced by burning sulfur-containing fuels such as coal and oil and by some industrial processes.

**Where does it happen?**
The highest concentrations of SO$_2$ are usually near large industrial sources.

**Who is affected?**
People with asthma who are active outdoors.

**What are the health effects?**
Bronchoconstriction, which can cause wheezing, shortness of breath, and tightening of the chest. When exposure to SO$_2$ ends, the symptoms should clear up within an hour.
• **What can I do about it?**
  If SO₂ levels are high, limit your outdoor exertion.

• **Where is it measured?**
  Because the large primary sources of SO₂ in Idaho are industrial, DEQ monitors for SO₂ near large facilities with high SO₂ emissions. The only monitors running in 2006 were in Pocatello and Soda Springs.

---

**Lead (Pb)**

• **What is it?**
  Lead is a highly toxic metal that was used for many years in household products, automobile fuel, and industrial chemicals.

• **How is it caused?**
  Locally, airborne lead is associated primarily with automobile exhaust and lead smelters. Since the phase-out of lead in fuels, cars and trucks are no longer a significant source of lead. Also, the Kellogg Bunker Hill Mine ceased operations in 1981.

• **When does it happen?**
  Lead concentrations are likely to be highest near sources where current or former lead smelting/processing operations caused particle fallout, especially in nearby soils such as unpaved parking lots.

• **Who is affected?**
  Everyone. Children 6 years and younger are most at risk.

• **What are the health effects?**
  Lead can have health effects ranging from behavioral problems and learning disabilities to seizures and death.

• **What can I do about it?**
  According to EPA, the primary sources of lead exposure are lead-based paint, lead-contaminated dust, and lead-contaminated residual soils. Refer to EPA’s Web site at [http://www.epa.gov/ttn/atw/hlthef/lead.html](http://www.epa.gov/ttn/atw/hlthef/lead.html) for ways to limit your exposure to these lead sources.

• **Where is it measured?**
  Due to the phase-out of leaded fuels and the closure of Idaho’s only lead smelter in 1981, DEQ no longer monitors for airborne lead. Historical monitoring was continued until 2002 but was discontinued due to the low levels being measured.

---

**Nitrogen Dioxide (NO₂)**

• **What is it?**
  Nitrogen dioxide (NO₂) is a reddish brown, highly reactive gas that forms from the reaction of nitrogen oxide (NO) and oxygen in the atmosphere. NO₂ will react with VOCs and can result in the formation of ozone.
• **How is it caused?**  
  High temperature combustion sources such as power plants and automobiles are major producers of NO. Home heaters and gas stoves can also produce NO.

• **When does it happen?**  
  NO₂ pollution is greatest in cold weather. It follows a similar trend to CO.

• **Who is affected?**  
  People with respiratory diseases such as asthma; also children.

• **What are the health effects?**  
  NO₂ can cause respiratory symptoms such as coughing, wheezing, and shortness of breath. Long-term exposure can lead to respiratory infections.

• **What can I do about it?**  
  Since the 1970s, motor vehicle manufacturers have been required to reduce NO emissions from cars and trucks. It is not a significant pollution problem in Idaho.

• **Where is it measured?**  
  NO₂ is not a major concern in Idaho. It was measured during 2006 at the Lancaster site near Coeur d’Alene, but was curtailed December 31, 2006 and will now only be monitored during ozone season.
Appendix
### Calculation and Breakpoints for the Air Quality Index (AQI)

#### Breakpoints for Criteria Pollutants

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Concentration Range</th>
<th>AQI Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM2.5</td>
<td>0.000–0.064</td>
<td>0–50 Good</td>
</tr>
<tr>
<td>PM10</td>
<td>0.065–0.084</td>
<td>51–100 Moderate</td>
</tr>
<tr>
<td>PM10</td>
<td>0.085–0.104</td>
<td>101–150 Unhealthy for sensitive groups</td>
</tr>
<tr>
<td>PM10</td>
<td>0.105–0.124</td>
<td>151–200 Unhealthy</td>
</tr>
<tr>
<td>NO2</td>
<td>0.405–0.504</td>
<td>301–400 Very unhealthy</td>
</tr>
<tr>
<td>NO2</td>
<td>0.505–0.604</td>
<td>401–500 Hazardous</td>
</tr>
</tbody>
</table>

#### Breakpoints for Criteria Pollutants (μg/m³) and CO (ppm)

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Concentration Range</th>
<th>AQI Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM2.5</td>
<td>0.000–0.064</td>
<td>0–50 Good</td>
</tr>
<tr>
<td>PM2.5</td>
<td>0.065–0.084</td>
<td>51–100 Moderate</td>
</tr>
<tr>
<td>PM2.5</td>
<td>0.085–0.104</td>
<td>101–150 Unhealthy for sensitive groups</td>
</tr>
<tr>
<td>PM2.5</td>
<td>0.105–0.124</td>
<td>151–200 Unhealthy</td>
</tr>
<tr>
<td>PM2.5</td>
<td>0.125–0.164</td>
<td>201–300 Very unhealthy</td>
</tr>
<tr>
<td>PM2.5</td>
<td>0.165–0.204</td>
<td>301–400 Very unhealthy</td>
</tr>
<tr>
<td>PM2.5</td>
<td>0.205–0.404</td>
<td>401–500 Hazardous</td>
</tr>
<tr>
<td>PM2.5</td>
<td>0.405–0.504</td>
<td>301–400 Very unhealthy</td>
</tr>
<tr>
<td>PM2.5</td>
<td>0.505–0.604</td>
<td>401–500 Hazardous</td>
</tr>
</tbody>
</table>

* **a** Areas are generally required to report the AQI based on 8-hour ozone values. However, there are a small number of areas where an AQI based on 1-hour ozone values would be safer. In these cases, in addition to calculating the 8-hour ozone value, the 1-hour ozone value may be calculated, and the greater of the two values reported.

* **b** NO₂ has no short-term National Ambient Air Quality Standard (NAAQS) and can generate an AQI only above a value of 200.

* **c** 8-hour O₃ values do not define higher AQI values (above 300). AQI values above 300 are calculated with 1-hour O₃ concentrations.

For more detailed information about the AQI and the pollutants it measures, go to [www.epa.gov/airnow/aqibroch](http://www.epa.gov/airnow/aqibroch)
### 2006 Air Quality Data Summary Appendix

#### US EPA - AirData Air Quality Index Report
Monday: 21-May-2007 at 11:4:58 AM (USA Eastern time zone)
Geographic Area: Idaho
Year: 2006

<table>
<thead>
<tr>
<th>Data Year</th>
<th>County</th>
<th># AQI data days</th>
<th>Number of Days AQI was:</th>
<th>Max AQI</th>
<th>90th % AQI</th>
<th>Median AQI</th>
<th>Number of Days Main AQI Pollutant was:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>Ada</td>
<td>365</td>
<td>Good 290, Mod 71, Unhealthy 4</td>
<td>138</td>
<td>62</td>
<td>28</td>
<td>CO 25, NO2 113, O3 87, SO2 101, PM2.5 130, PM10 97</td>
</tr>
<tr>
<td>2006</td>
<td>Bannock</td>
<td>365</td>
<td>Good 358, Mod 7</td>
<td>66</td>
<td>31</td>
<td>17</td>
<td>CO 87, NO2 101, O3 177, SO2 124</td>
</tr>
<tr>
<td>2006</td>
<td>Benewah</td>
<td>124</td>
<td>Good 108, Mod 15, Unhealthy 1</td>
<td>115</td>
<td>55</td>
<td>24</td>
<td>O3 46</td>
</tr>
<tr>
<td>2006</td>
<td>Boise</td>
<td>46</td>
<td>Good 26, Mod 17, Unhealthy 2 1</td>
<td>160</td>
<td>93</td>
<td>44</td>
<td>CO 232, NO2 127</td>
</tr>
<tr>
<td>2006</td>
<td>Bonner</td>
<td>359</td>
<td>Good 345, Mod 14</td>
<td>78</td>
<td>36</td>
<td>19</td>
<td>O3 224</td>
</tr>
<tr>
<td>2006</td>
<td>Bonneville</td>
<td>224, Mod 2</td>
<td>Good 222</td>
<td>57</td>
<td>27</td>
<td>17</td>
<td>CO 224, NO2 177, O3 106</td>
</tr>
<tr>
<td>2006</td>
<td>Butte</td>
<td>365</td>
<td>Good 365</td>
<td>40</td>
<td>29</td>
<td>22</td>
<td>CO 365</td>
</tr>
<tr>
<td>2006</td>
<td>Canyon</td>
<td>359</td>
<td>Good 307, Mod 50, Unhealthy 2</td>
<td>108</td>
<td>56</td>
<td>30</td>
<td>CO 291, NO2 233</td>
</tr>
<tr>
<td>2006</td>
<td>Caribou</td>
<td>272</td>
<td>Good 272</td>
<td>49</td>
<td>4</td>
<td>1</td>
<td>CO 49, NO2 272</td>
</tr>
<tr>
<td>2006</td>
<td>Franklin</td>
<td>291</td>
<td>Good 271, Mod 20</td>
<td>100</td>
<td>42</td>
<td>16</td>
<td>CO 291</td>
</tr>
<tr>
<td>2006</td>
<td>Gem</td>
<td>9</td>
<td>Good 9</td>
<td>50</td>
<td>50</td>
<td>24</td>
<td>CO 9</td>
</tr>
<tr>
<td>2006</td>
<td>Idaho</td>
<td>233</td>
<td>Good 214, Mod 17, Unhealthy 2</td>
<td>132</td>
<td>46</td>
<td>17</td>
<td>CO 233</td>
</tr>
<tr>
<td>2006</td>
<td>Kootenai</td>
<td>272</td>
<td>Good 248, Mod 24</td>
<td>91</td>
<td>49</td>
<td>32</td>
<td>CO 112, NO2 156, O3 4</td>
</tr>
<tr>
<td>2006</td>
<td>Latah</td>
<td>250</td>
<td>Good 235, Mod 13, Unhealthy 2</td>
<td>123</td>
<td>35</td>
<td>13</td>
<td>CO 250</td>
</tr>
<tr>
<td>2006</td>
<td>Lemhi</td>
<td>208</td>
<td>Good 180, Mod 25, Unhealthy 1 2</td>
<td>171</td>
<td>57</td>
<td>25</td>
<td>CO 208</td>
</tr>
<tr>
<td>2006</td>
<td>Nez Perce</td>
<td>244</td>
<td>Good 221, Mod 21, Unhealthy 2</td>
<td>107</td>
<td>46</td>
<td>18</td>
<td>CO 244</td>
</tr>
<tr>
<td>2006</td>
<td>Power</td>
<td>230</td>
<td>Good 218, Mod 11, Unhealthy 1</td>
<td>146</td>
<td>35</td>
<td>15</td>
<td>CO 230</td>
</tr>
<tr>
<td>2006</td>
<td>Shoshone</td>
<td>350</td>
<td>Good 300, Mod 49, Unhealthy 1</td>
<td>113</td>
<td>57</td>
<td>24</td>
<td>CO 270, NO2 80</td>
</tr>
<tr>
<td>2006</td>
<td>Twin Falls</td>
<td>227</td>
<td>Good 222</td>
<td>70</td>
<td>39</td>
<td>22</td>
<td>CO 227</td>
</tr>
<tr>
<td>2006</td>
<td>Valley</td>
<td>65</td>
<td>Good 40, Mod 22, Unhealthy 3</td>
<td>147</td>
<td>78</td>
<td>34</td>
<td>CO 65</td>
</tr>
</tbody>
</table>
2006 Air Quality Data Summary Appendix

* US EPA - AirData Monitor Values Report - Criteria Air Pollutants
* Tuesday, 22-May-2007 at 4:40:16 PM (USA Eastern time zone)
* Geographic Area: Idaho
* Pollutant: Particulate (size < 2.5 micrometers)
* Year: 2006

<table>
<thead>
<tr>
<th>Data Year</th>
<th>County</th>
<th># Obs</th>
<th>1st Max</th>
<th>2nd Max</th>
<th>3rd Max</th>
<th>4th Max</th>
<th>98th Pct</th>
<th># Exceed</th>
<th>Annual Mean</th>
<th>Annual # Exceed</th>
<th>Monitor Number</th>
<th>Site ID</th>
<th>Site Address</th>
<th>City</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>Ada</td>
<td>15</td>
<td>35</td>
<td>17</td>
<td>15</td>
<td>14</td>
<td>35</td>
<td>0</td>
<td>9.1</td>
<td>0</td>
<td>1</td>
<td>160010010</td>
<td>520 S. Eagle Road, Meridian</td>
<td>Meridian</td>
</tr>
<tr>
<td>2006</td>
<td>Ada</td>
<td>49</td>
<td>29</td>
<td>24</td>
<td>22</td>
<td>22</td>
<td>29</td>
<td>0</td>
<td>8</td>
<td>0</td>
<td>1</td>
<td>160010011</td>
<td>Mtn View School/3500 Carbarton LaBoise</td>
<td>Boise</td>
</tr>
<tr>
<td>2006</td>
<td>Bannock</td>
<td>10</td>
<td>9</td>
<td>9</td>
<td>7</td>
<td>3</td>
<td>9</td>
<td>0</td>
<td>4.1</td>
<td>0</td>
<td>2</td>
<td>160050015</td>
<td>G&amp;G/Corner Of Garret &amp; Gould</td>
<td>Pocatello</td>
</tr>
<tr>
<td>2006</td>
<td>Bannock</td>
<td>59</td>
<td>23</td>
<td>21</td>
<td>20</td>
<td>17</td>
<td>21</td>
<td>0</td>
<td>6.4</td>
<td>0</td>
<td>1</td>
<td>160050015</td>
<td>G&amp;G/Corner Of Garret &amp; Gould</td>
<td>Pocatello</td>
</tr>
<tr>
<td>2006</td>
<td>Bannock</td>
<td>24</td>
<td>14</td>
<td>8</td>
<td>6</td>
<td>6</td>
<td>14</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>160050018</td>
<td>Highway 30 - Inkom, Idaho</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>Benewah</td>
<td>52</td>
<td>48</td>
<td>33</td>
<td>24</td>
<td>23</td>
<td>33</td>
<td>0</td>
<td>9.7</td>
<td>0</td>
<td>1</td>
<td>160090010</td>
<td>9th And Center</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>Benewah</td>
<td>52</td>
<td>26</td>
<td>17</td>
<td>15</td>
<td>15</td>
<td>17</td>
<td>0</td>
<td>7</td>
<td>0</td>
<td>1</td>
<td>160090011</td>
<td>850 A Street, Plummer</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>Canyon</td>
<td>29</td>
<td>28</td>
<td>21</td>
<td>16</td>
<td>14</td>
<td>28</td>
<td>0</td>
<td>9.1</td>
<td>0</td>
<td>2</td>
<td>160270004</td>
<td>Northwest Nazarine College (Nnc)</td>
<td>Nampa</td>
</tr>
<tr>
<td>2006</td>
<td>Canyon</td>
<td>105</td>
<td>27</td>
<td>24</td>
<td>22</td>
<td>21</td>
<td>22</td>
<td>0</td>
<td>7.6</td>
<td>0</td>
<td>1</td>
<td>160270004</td>
<td>Northwest Nazarine College (Nnc)</td>
<td>Nampa</td>
</tr>
<tr>
<td>2006</td>
<td>Franklin</td>
<td>284</td>
<td>40</td>
<td>35</td>
<td>31</td>
<td>29</td>
<td>27</td>
<td>0</td>
<td>6.2</td>
<td>0</td>
<td>1</td>
<td>160410001</td>
<td>Franklin - Water Treatment Facility</td>
<td>Franklin</td>
</tr>
<tr>
<td>2006</td>
<td>Franklin</td>
<td>48</td>
<td>15</td>
<td>14</td>
<td>11</td>
<td>9</td>
<td>15</td>
<td>0</td>
<td>5.1</td>
<td>0</td>
<td>1</td>
<td>160410002</td>
<td>Preston Jr. High - 450 E. Valley Vie</td>
<td>Preston</td>
</tr>
<tr>
<td>2006</td>
<td>Idaho</td>
<td>55</td>
<td>26</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>0</td>
<td>9.5</td>
<td>0</td>
<td>2</td>
<td>160490003</td>
<td>Intersection Of Apple And Pine, Kamiah</td>
<td>Idaho</td>
</tr>
<tr>
<td>2006</td>
<td>Idaho</td>
<td>57</td>
<td>37</td>
<td>26</td>
<td>25</td>
<td>25</td>
<td>26</td>
<td>0</td>
<td>10</td>
<td>0</td>
<td>1</td>
<td>160490003</td>
<td>Intersection Of Apple And Pine, Kamiah</td>
<td>Idaho</td>
</tr>
<tr>
<td>2006</td>
<td>Shoshone</td>
<td>115</td>
<td>47</td>
<td>34</td>
<td>34</td>
<td>30</td>
<td>34</td>
<td>0</td>
<td>11.5</td>
<td>0</td>
<td>1</td>
<td>160790017</td>
<td>Pinehurst/Pinehurst School, Pinehu</td>
<td>Pinehurst</td>
</tr>
</tbody>
</table>
### 2006 Air Quality Data Summary Appendix

* US EPA - AirData Monitor Values Report - Criteria Air Pollutants  
* Tuesday, 22-May-2007 at 4:14:0 PM (USA Eastern time zone)  
* Geographic Area: Idaho  
* Pollutant: Particulate (size < 10 micrometers)  
* Year: 2006

<table>
<thead>
<tr>
<th>Data Year</th>
<th>County</th>
<th># Obs</th>
<th>1st Max</th>
<th>2nd Max</th>
<th>3rd Max (24-Hr PM10)</th>
<th>4th Max (24-Hr PM10)</th>
<th># Exceed-Actual (24 Hr PM10)</th>
<th>Annual Mean (PM10)</th>
<th>Annual # Exceed (PM10)</th>
<th>Mon #</th>
<th>Site ID</th>
<th>Site Address</th>
<th>Site Address Details</th>
<th>City</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>Ada</td>
<td>308</td>
<td>97</td>
<td>89</td>
<td>69</td>
<td>69</td>
<td>0</td>
<td>23</td>
<td>0</td>
<td>3</td>
<td>160010009</td>
<td>Fire Station #5/16th &amp; Front</td>
<td>Boise</td>
<td>Boise</td>
</tr>
<tr>
<td>2006</td>
<td>Ada</td>
<td>49</td>
<td>56</td>
<td>56</td>
<td>45</td>
<td>43</td>
<td>0</td>
<td>21</td>
<td>0</td>
<td>1</td>
<td>160010011</td>
<td>Mtn View School/3500 Carbarton Lane</td>
<td>Boise</td>
<td>Boise</td>
</tr>
<tr>
<td>2006</td>
<td>Bannock</td>
<td>116</td>
<td>62</td>
<td>53</td>
<td>52</td>
<td>48</td>
<td>0</td>
<td>21</td>
<td>0</td>
<td>1</td>
<td>160050015</td>
<td>G&amp;G/Corner Of Garret &amp; Gould</td>
<td>Pocatello</td>
<td>Pocatello</td>
</tr>
<tr>
<td>2006</td>
<td>Bannock</td>
<td>16</td>
<td>45</td>
<td>35</td>
<td>35</td>
<td>29</td>
<td>0</td>
<td>20</td>
<td>0</td>
<td>2</td>
<td>160050015</td>
<td>G&amp;G/Corner Of Garret &amp; Gould</td>
<td>Pocatello</td>
<td>Pocatello</td>
</tr>
<tr>
<td>2006</td>
<td>Bannock</td>
<td>315</td>
<td>47</td>
<td>45</td>
<td>44</td>
<td>43</td>
<td>0</td>
<td>14</td>
<td>0</td>
<td>3</td>
<td>160050015</td>
<td>G&amp;G/Corner Of Garret &amp; Gould</td>
<td>Pocatello</td>
<td>Pocatello</td>
</tr>
<tr>
<td>2006</td>
<td>Bonner</td>
<td>351</td>
<td>68</td>
<td>62</td>
<td>52</td>
<td>52</td>
<td>0</td>
<td>18</td>
<td>0</td>
<td>1</td>
<td>160170004</td>
<td>310 South Division Street</td>
<td>Sandpoint</td>
<td>Sandpoint</td>
</tr>
<tr>
<td>2006</td>
<td>Canyon</td>
<td>311</td>
<td>106</td>
<td>96</td>
<td>87</td>
<td>83</td>
<td>0</td>
<td>26</td>
<td>0</td>
<td>2</td>
<td>160270002</td>
<td>Nampa Fire Stn/923 1st St</td>
<td>Nampa</td>
<td>Nampa</td>
</tr>
<tr>
<td>2006</td>
<td>Kootenai</td>
<td>155</td>
<td>55</td>
<td>47</td>
<td>40</td>
<td>39</td>
<td>0</td>
<td>15</td>
<td>0</td>
<td>3</td>
<td>160550006</td>
<td>Lakes Middle School/930 N 15th St</td>
<td>Coeur D'Alene</td>
<td>Coeur D'Alene</td>
</tr>
<tr>
<td>2006</td>
<td>Power</td>
<td>116</td>
<td>161</td>
<td>150</td>
<td>107</td>
<td>89</td>
<td>1</td>
<td>26</td>
<td>0</td>
<td>1</td>
<td>160770011</td>
<td>S Of Hwy 30 And E Of Weaver Rd</td>
<td>Coeur D'Alene</td>
<td>Coeur D'Alene</td>
</tr>
<tr>
<td>2006</td>
<td>Power</td>
<td>57</td>
<td>130</td>
<td>110</td>
<td>94</td>
<td>78</td>
<td>0</td>
<td>25</td>
<td>0</td>
<td>2</td>
<td>160770011</td>
<td>S Of Hwy 30 And E Of Weaver Rd</td>
<td>Coeur D'Alene</td>
<td>Coeur D'Alene</td>
</tr>
<tr>
<td>2006</td>
<td>Power</td>
<td>167</td>
<td>245</td>
<td>99</td>
<td>78</td>
<td>76</td>
<td>1</td>
<td>18</td>
<td>0</td>
<td>3</td>
<td>160770011</td>
<td>S Of Hwy 30 And E Of Weaver Rd</td>
<td>Coeur D'Alene</td>
<td>Coeur D'Alene</td>
</tr>
<tr>
<td>2006</td>
<td>Shoshone</td>
<td>343</td>
<td>52</td>
<td>52</td>
<td>47</td>
<td>44</td>
<td>0</td>
<td>19</td>
<td>0</td>
<td>3</td>
<td>160790017</td>
<td>Pinehurst/Pinehurst School, Pinehurst</td>
<td>Pinehurst</td>
<td>Pinehurst</td>
</tr>
</tbody>
</table>
### 8-Hour Ozone

<table>
<thead>
<tr>
<th>Data Year</th>
<th>County</th>
<th>1st Max</th>
<th>2nd Max</th>
<th>3rd Max</th>
<th>4th Max</th>
<th>Days &gt; Std</th>
<th>Required Days</th>
<th># Days</th>
<th>% Days</th>
<th>Monitor Number</th>
<th>Site ID</th>
<th>Site Address</th>
<th>City</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>Ada</td>
<td>0.078</td>
<td>0.076</td>
<td>0.074</td>
<td>0.074</td>
<td>0</td>
<td>143</td>
<td>120</td>
<td>84</td>
<td>160010019</td>
<td>3311 W. State Street, Boise</td>
<td>Boise</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>Ada</td>
<td>0.090</td>
<td>0.088</td>
<td>0.083</td>
<td>0.082</td>
<td>2</td>
<td>153</td>
<td>134</td>
<td>88</td>
<td>160010030</td>
<td>Whitney Elementary School</td>
<td>Boise</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>Butte</td>
<td>0.051</td>
<td>0.047</td>
<td>0.046</td>
<td>0.046</td>
<td>0</td>
<td>153</td>
<td>149</td>
<td>97</td>
<td>160230101</td>
<td>Craters Of The Moon National Mon, Idaho</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>Canyon</td>
<td>0.075</td>
<td>0.074</td>
<td>0.072</td>
<td>0.071</td>
<td>0</td>
<td>117</td>
<td>93</td>
<td>79</td>
<td>160270007</td>
<td>5 South 3rd Avenue West</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>Kootenai</td>
<td>0.075</td>
<td>0.07</td>
<td>0.068</td>
<td>0.068</td>
<td>0</td>
<td>153</td>
<td>120</td>
<td>78</td>
<td>160550003</td>
<td>North Of Lancaster Road - Near Hayden, I</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**US EPA - AirData Monitor Values Report - Criteria Air Pollutants**
**Tuesday, 22-May-2007 at 5:48:23 PM (USA Eastern time zone)**
**Geographic Area: Idaho**
**Pollutant: Carbon Monoxide**
**Year: 2006**

<table>
<thead>
<tr>
<th>Data Year</th>
<th>County</th>
<th># Obs</th>
<th>1st Max</th>
<th>2nd Max</th>
<th># Exceed</th>
<th>1st Max</th>
<th>2nd Max</th>
<th># Exceed</th>
<th>Monitor</th>
<th>Site ID</th>
<th>Site Address</th>
<th>City</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>Ada</td>
<td>8068</td>
<td>4.8</td>
<td>3.5</td>
<td>0</td>
<td>2.1</td>
<td>2.1</td>
<td>0</td>
<td>1</td>
<td>160010014</td>
<td>Eastman Bldg/166 N. 9th St</td>
<td>Boise</td>
</tr>
</tbody>
</table>

A.7
### 2006 Air Quality Data Summary Appendix

* US EPA - AirData Monitor Values Report - Criteria Air Pollutants  
* Thursday, 24-May-2007 at 2:59:48 PM (USA Eastern time zone)  
* Geographic Area: Idaho  
* Pollutant: Nitrogen Dioxide  
* Year: 2006

<table>
<thead>
<tr>
<th>Data Year</th>
<th>County</th>
<th>1-Hour NO2</th>
<th>Annual NO2</th>
<th>Monitor</th>
<th>Site ID</th>
<th>Site Address</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td># Obs</td>
<td>1st Max</td>
<td>2nd Max</td>
<td>Mean</td>
<td># Exceed</td>
</tr>
<tr>
<td>2006</td>
<td>Kootenai</td>
<td>8417</td>
<td>0.038</td>
<td>0.037</td>
<td>0.006</td>
<td>0</td>
</tr>
</tbody>
</table>

A-8
### 2006 Air Quality Data Summary Appendix

* US EPA - AirData Monitor Values Report - Criteria Air Pollutants
* Thursday, 24-May-2007 at 1:30:56 PM (USA Eastern time zone)
* Geographic Area: Idaho
* Pollutant: Sulfur Dioxide
* Year: 2006

<table>
<thead>
<tr>
<th>Data Year</th>
<th>County</th>
<th>1-Hr SO2</th>
<th>3-Hr SO2</th>
<th>24-Hr SO2</th>
<th>Annual SO2</th>
<th>Mon</th>
<th>Site ID</th>
<th>Site Address</th>
<th>City</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td># Obs Max</td>
<td>1st Max</td>
<td>2nd Max</td>
<td>1st Max</td>
<td>2nd Max</td>
<td># Exceed</td>
<td>Mean</td>
<td># Exceed</td>
</tr>
<tr>
<td>2006</td>
<td>Bannock</td>
<td>8606 0.09</td>
<td>0.079</td>
<td>0.064</td>
<td>0.061</td>
<td>0.027</td>
<td>0.024</td>
<td>0</td>
<td>0.005</td>
</tr>
<tr>
<td>2006</td>
<td>Caribou</td>
<td>6567 0.115</td>
<td>0.114</td>
<td>0.107</td>
<td>0.09</td>
<td>0.033</td>
<td>0.024</td>
<td>0</td>
<td>0.002</td>
</tr>
</tbody>
</table>
US EPA - AirData Monitor Values Report - Criteria Air Pollutants  
Friday, 21-Oct-2005 at 11:25:31 AM (USA Eastern time zone)  
Geographic Area: Idaho  
Pollutant: Lead  
Year: 1999 - 2002

<table>
<thead>
<tr>
<th>Data Year</th>
<th>County</th>
<th># Obs</th>
<th>1st Max</th>
<th>2nd Max</th>
<th>Qtr 1</th>
<th>Qtr 2</th>
<th>Qtr 3</th>
<th>Qtr 4</th>
<th># Exceed</th>
<th>Monitor Number</th>
<th>Site ID</th>
<th>Site Address</th>
<th>City</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>Shoshone</td>
<td>59</td>
<td>0.14</td>
<td>0.13</td>
<td>0.04</td>
<td>0.03</td>
<td>0.05</td>
<td>0.04</td>
<td>0</td>
<td>1</td>
<td>160790006</td>
<td>Medical Clinic/204 Oregon Kellogg</td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>Shoshone</td>
<td>61</td>
<td>0.49</td>
<td>0.10</td>
<td>0.04</td>
<td>0.04</td>
<td>0.08</td>
<td>0.04</td>
<td>0</td>
<td>1</td>
<td>160790006</td>
<td>Medical Clinic/204 Oregon Kellogg</td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>Shoshone</td>
<td>58</td>
<td>0.06</td>
<td>0.04</td>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
<td>0</td>
<td>1</td>
<td>160790006</td>
<td>Medical Clinic/204 Oregon Kellogg</td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td>Shoshone</td>
<td>30</td>
<td>0.05</td>
<td>0.04</td>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
<td>0</td>
<td>1</td>
<td>160790006</td>
<td>Medical Clinic/204 Oregon Kellogg</td>
<td></td>
</tr>
</tbody>
</table>