The Air Quality Index (AQI) was in the MODERATE range for ground-level ozone on fourteen days in July (Figure 1). Fine particulate matter (PM$_{2.5}$) was also in the MODERATE range on four of those days. The remaining 17 days were in the AQI-GOOD category. The maximum AQI value for the month was 97, based on ozone levels on the 14$^{th}$ (8-hour concentration = 0.069 ppm). Particulate matter (PM$_{10}$) remained in the AQI-GOOD category.

Figure 1: Air Quality Index (AQI) values for July 2017. The data represent the maximum AQI values across all monitoring stations within Spokane County.

See Appendix 1 of this report for information about federal air quality standards or Appendix 2 for a description of the AQI. Daily mass concentrations of PM$_{2.5}$ monitored in July throughout the network are shown in Figure 2.
Daily air quality data for July at all monitoring stations in the Spokane region are provided in Appendix 3. Current and historical air quality data can be obtained electronically from Ecology’s air monitoring data website, [https://fortress.wa.gov/ecy/enviwa/Default.htm](https://fortress.wa.gov/ecy/enviwa/Default.htm).
Tables 1 and 2 contain the maximum AQI values for each pollutant for the month and for the year to date. Table 3 summarizes the year to date daily AQIs by category and compares them to last year’s AQIs.

**Table 1: Maximum AQI values and pollutant concentrations for this reporting period**

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>AQI/Concentration</th>
<th>Location</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>O₃</td>
<td>97/0.069 ppm (8 hour)</td>
<td>Spokane, Greenbluff</td>
<td>7/14</td>
</tr>
<tr>
<td>PM₁₀</td>
<td>43/46 µg/m³</td>
<td>Cheney, Turnbull National Wildlife Refuge</td>
<td>7/7 and 7/25</td>
</tr>
<tr>
<td>PM₂₅</td>
<td>55/14.0 µg/m³</td>
<td>Spokane, E. Augusta Ave (Augusta &amp; Fiske)</td>
<td>7/19</td>
</tr>
</tbody>
</table>

**Table 2: Maximum AQI values and pollutant concentrations for calendar year 2017.**

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>AQI/Concentration</th>
<th>Location</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>O₃</td>
<td>97/0.069 ppm (8 hour)</td>
<td>Spokane, Greenbluff</td>
<td>7/14</td>
</tr>
<tr>
<td>PM₁₀</td>
<td>44/47 µg/m³</td>
<td>Spokane, E. Augusta Ave (Augusta &amp; Fiske)</td>
<td>5/30</td>
</tr>
<tr>
<td>PM₂₅</td>
<td>117/42.1 µg/m³</td>
<td>Spokane Valley, E. Broadway Ave (Broadway &amp; University)</td>
<td>1/16</td>
</tr>
</tbody>
</table>

**Table 3: AQI summary as of July 31, 2017.**

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of Days This Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good (0-50)</td>
<td>154</td>
</tr>
<tr>
<td>Moderate (51-100)</td>
<td>56</td>
</tr>
<tr>
<td>Unhealthy for Sensitive Groups (101-150)</td>
<td>2</td>
</tr>
<tr>
<td>Unhealthy (151-200)</td>
<td>0</td>
</tr>
<tr>
<td>Very Unhealthy (201-300)</td>
<td>0</td>
</tr>
<tr>
<td>Hazardous (&gt;300)</td>
<td>0</td>
</tr>
</tbody>
</table>
Ground-level ozone is formed when nitrogen oxides and volatile organic compounds chemically react in the presence of sunlight. It is measured in units of parts per million (ppm) in ambient air. Ozone is a strong oxidizer and can damage lung tissue, thereby impairing respiratory function. The main sources of ozone precursors are motor vehicle emissions and refueling, gasoline storage and transport, paints, solvents and industry.

The maximum 8-hour running average ozone concentration for the month was 0.069 ppm measured at Greenbluff on the 14th (Figure 3). Eight hour average ozone concentrations in the range 0.055 to 0.070 ppm are considered “moderate” air quality by the AQI. When concentrations are below that level, air quality is “good” with respect to ground-level ozone.

**Figure 3:** Eight hour maximum ozone concentrations for the Spokane region in July. The threshold for the moderate category of the AQI for ozone is 0.055 ppm averaged over eight hours. An ozone measurement above 0.070 ppm, averaged over eight hours, is the level of the federal ozone standard. It is not a violation of the standard to exceed this level on a given day because determination of attainment status is based on averaging data over a period of years. See Appendix 1 for more detailed information about attainment of federal air quality standards.
The Clean Air Act requires EPA to set National Ambient Air Quality Standards (NAAQS) for six common air pollutants, carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), particulate matter (PM₁₀ and PM₂.₅), ground-level ozone (O₃) and sulfur dioxide (SO₂; Table A-1). These are known as “criteria” pollutants because the US EPA established regulatory limits to concentrations in ambient air using human health or environmentally based criteria. Carbon monoxide, particulate matter and ozone are monitored in Spokane County by the Spokane Regional Clean Air Agency (SRCAA) and the Washington State Department of Ecology (Ecology).

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Primary/Secondary</th>
<th>Averaging Time</th>
<th>Level</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Monoxide (CO)</td>
<td>primary</td>
<td>8 hours</td>
<td>9 ppm</td>
<td>Not to be exceeded more than once per year</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 hour</td>
<td>35 ppm</td>
<td></td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>primary and secondary</td>
<td>Rolling 3 month period</td>
<td>0.15 µg/m³ (2)</td>
<td>Not to be exceeded</td>
</tr>
<tr>
<td>Nitrogen Dioxide (NO₂)</td>
<td>primary</td>
<td>1 hour</td>
<td>100 ppb</td>
<td>98th percentile of 1-hour daily maximum concentrations, averaged over 3 years</td>
</tr>
<tr>
<td></td>
<td>primary and secondary</td>
<td>1 year</td>
<td>53 ppb (2)</td>
<td>Annual Mean</td>
</tr>
<tr>
<td>Ozone (O₃)</td>
<td>primary and secondary</td>
<td>8 hours</td>
<td>0.070 ppm (3)</td>
<td>Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years</td>
</tr>
<tr>
<td>Particle Pollution (PM)</td>
<td>PM₂.₅</td>
<td>primary</td>
<td>1 year</td>
<td>12.0 µg/m³ annual mean, averaged over 3 years</td>
</tr>
<tr>
<td></td>
<td></td>
<td>secondary</td>
<td>1 year</td>
<td>15.0 µg/m³ annual mean, averaged over 3 years</td>
</tr>
<tr>
<td></td>
<td></td>
<td>primary and secondary</td>
<td>24 hours</td>
<td>35 µg/m³ 98th percentile, averaged over 3 years</td>
</tr>
<tr>
<td></td>
<td>PM₁₀</td>
<td>primary and secondary</td>
<td>24 hours</td>
<td>150 µg/m³ Not to be exceeded more than once per year on average over 3 years</td>
</tr>
<tr>
<td></td>
<td></td>
<td>primary</td>
<td>1 hour</td>
<td>75 ppb (4) 99th percentile of 1-hour daily maximum concentrations, averaged over 3 years</td>
</tr>
<tr>
<td></td>
<td></td>
<td>secondary</td>
<td>3 hours</td>
<td>0.5 ppm Not to be exceeded more than once per year</td>
</tr>
</tbody>
</table>

(1) In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 µg/m³ as a calendar quarter average) also remain in effect.

(2) The level of the annual NO₂ standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.


(4) The previous SO₂ standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which implementation plans providing for attainment of the current (2010) standard have not been submitted and approved and which is designated nonattainment under the previous SO₂ standards or is not meeting the requirements of a SIP call under the previous SO₂ standards (40 CFR 50.4(3)), A SIP call is an EPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the require NAAQS.
Appendix 2 – Air Quality Index

The Air Quality Index (AQI) is EPA’s color-coded tool for communicating daily air quality to the public and can be calculated for any of the criteria pollutants except lead, provided monitoring data are available. An index value above 100 indicates that the concentration of a criteria pollutant exceeded the limit established in the NAAQS. Categories of the AQI are “good” (green, 0-50), “moderate” (yellow, 51-100), “unhealthy for sensitive groups” (orange, 101-150), “unhealthy” (red, 151-200), “very unhealthy” (purple, 201-300) and “hazardous” (maroon, 301-500; Table A-2).

<table>
<thead>
<tr>
<th>Air Quality Index Levels of Health Concern</th>
<th>Color Code</th>
<th>Index Numerical Value</th>
<th>Breakpoints</th>
<th>Health Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>Green</td>
<td>0-50</td>
<td>0.000-0.054</td>
<td>0.0-12.0</td>
</tr>
<tr>
<td>Moderate</td>
<td>Yellow</td>
<td>51-100</td>
<td>0.035-0.070</td>
<td>12.1-35.4</td>
</tr>
<tr>
<td>Unhealthy for Sensitive Groups</td>
<td>Orange</td>
<td>101-150</td>
<td>0.071-0.085</td>
<td>35.5-55.4</td>
</tr>
<tr>
<td>Unhealthy</td>
<td>Red</td>
<td>151-200</td>
<td>0.086-0.105</td>
<td>55.5-150.4</td>
</tr>
<tr>
<td>Very Unhealthy</td>
<td>Purple</td>
<td>201-300</td>
<td>0.106-0.200</td>
<td>150.5-250.4</td>
</tr>
<tr>
<td>Hazardous</td>
<td>Maroon</td>
<td>&gt;300</td>
<td>0.201 to the Significant Harm Level* (0.600 ppm, 2 hour average)</td>
<td>230.5+</td>
</tr>
</tbody>
</table>

*The significant harm level (SHL) is set at a level that represents imminent and substantial endangerment to public health.
Appendix 3

Table A-3: Summary air quality data for July for air monitoring stations in Spokane County. The ground-level ozone data are maximum 8-hour running averages in parts per million (ppm) and the PM data are 24-hour averages in micrograms per cubic meter of air \( (\mu g/m^3) \). There are no data for Airway Heights because of vandalism and theft of equipment from the monitoring station.

<table>
<thead>
<tr>
<th>Date</th>
<th>Ozone Greenbluff (8 hour max, ppm)</th>
<th>Ozone Turnbull NWR (8 hour max, ppm)</th>
<th>PM1.0 Augusta &amp; Fiske BAM (24 hour avg, ( \mu g/m^3 ))</th>
<th>PM1.0 Broadway &amp; University BAM (24 hour avg, ( \mu g/m^3 ))</th>
<th>PM2.5 Colby TEOM (24 hour avg, ( \mu g/m^3 ))</th>
<th>PM2.5 Airway Heights TEOM (24 hour avg, ( \mu g/m^3 ))</th>
<th>PM2.5 Monroe &amp; Wellsley nephelometer (24 hour avg, ( \mu g/m^3 ))</th>
<th>PM1.0 Augusta &amp; Fiske TEOM (24 hour avg, ( \mu g/m^3 ))</th>
<th>PM1.0 Turnbull NWR BAM (24 hour avg, ( \mu g/m^3 ))</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/1</td>
<td>0.058</td>
<td>0.052</td>
<td>7.0</td>
<td>4.4</td>
<td>8.2</td>
<td>6.6</td>
<td>19.0</td>
<td>16.0</td>
<td>16.0</td>
</tr>
<tr>
<td>7/2</td>
<td>0.051</td>
<td>0.051</td>
<td>5.1</td>
<td>6.2</td>
<td>7.7</td>
<td>5.7</td>
<td>18.0</td>
<td>14.0</td>
<td>14.0</td>
</tr>
<tr>
<td>7/3</td>
<td>0.050</td>
<td>0.051</td>
<td>3.8</td>
<td>3.8</td>
<td>5.3</td>
<td>4.0</td>
<td>22.0</td>
<td>14.0</td>
<td>14.0</td>
</tr>
<tr>
<td>7/4</td>
<td>0.063</td>
<td>0.056</td>
<td>8.0</td>
<td>9.8</td>
<td>7.6</td>
<td>7.6</td>
<td>21.0</td>
<td>14.0</td>
<td>14.0</td>
</tr>
<tr>
<td>7/5</td>
<td>0.068</td>
<td>0.056</td>
<td>13.5</td>
<td>12.8</td>
<td>10.3</td>
<td>9.4</td>
<td>31.0</td>
<td>34.0</td>
<td>34.0</td>
</tr>
<tr>
<td>7/6</td>
<td>0.056</td>
<td>0.055</td>
<td>8.7</td>
<td>7.2</td>
<td>9.4</td>
<td>8.5</td>
<td>27.0</td>
<td>31.0</td>
<td>31.0</td>
</tr>
<tr>
<td>7/7</td>
<td>0.057</td>
<td>0.060</td>
<td>9.0</td>
<td>8.1</td>
<td>8.7</td>
<td>7.9</td>
<td>30.0</td>
<td>46.0</td>
<td>46.0</td>
</tr>
<tr>
<td>7/8</td>
<td>0.055</td>
<td>0.049</td>
<td>3.2</td>
<td>3.2</td>
<td>5.8</td>
<td>4.3</td>
<td>21.0</td>
<td>33.0</td>
<td>33.0</td>
</tr>
<tr>
<td>7/9</td>
<td>0.056</td>
<td>0.053</td>
<td>6.1</td>
<td>6.2</td>
<td>7.4</td>
<td>5.7</td>
<td>23.0</td>
<td>21.0</td>
<td>21.0</td>
</tr>
<tr>
<td>7/10</td>
<td>0.048</td>
<td>0.044</td>
<td>4.1</td>
<td>4.5</td>
<td>7.1</td>
<td>4.1</td>
<td>29.0</td>
<td>25.0</td>
<td>25.0</td>
</tr>
<tr>
<td>7/11</td>
<td>0.050</td>
<td>0.045</td>
<td>6.9</td>
<td>6.1</td>
<td>9.0</td>
<td>7.0</td>
<td>30.0</td>
<td>25.0</td>
<td>25.0</td>
</tr>
<tr>
<td>7/12</td>
<td>0.055</td>
<td>0.050</td>
<td>6.3</td>
<td>5.6</td>
<td>8.1</td>
<td>6.0</td>
<td>24.0</td>
<td>21.0</td>
<td>21.0</td>
</tr>
<tr>
<td>7/13</td>
<td>0.057</td>
<td>0.053</td>
<td>6.9</td>
<td>5.2</td>
<td>8.0</td>
<td>5.8</td>
<td>34.0</td>
<td>27.0</td>
<td>27.0</td>
</tr>
<tr>
<td>7/14</td>
<td>0.069</td>
<td>0.057</td>
<td>12.2</td>
<td>7.4</td>
<td>10.0</td>
<td>8.6</td>
<td>31.0</td>
<td>23.0</td>
<td>23.0</td>
</tr>
<tr>
<td>7/15</td>
<td>0.063</td>
<td>0.055</td>
<td>8.4</td>
<td>7.2</td>
<td>9.0</td>
<td>8.0</td>
<td>26.0</td>
<td>29.0</td>
<td>29.0</td>
</tr>
<tr>
<td>7/16</td>
<td>0.040</td>
<td>0.039</td>
<td>2.5</td>
<td>2.6</td>
<td>4.3</td>
<td>2.9</td>
<td>18.0</td>
<td>17.0</td>
<td>17.0</td>
</tr>
<tr>
<td>7/17</td>
<td>0.046</td>
<td>0.041</td>
<td>3.7</td>
<td>3.2</td>
<td>5.7</td>
<td>3.4</td>
<td>20.0</td>
<td>17.0</td>
<td>17.0</td>
</tr>
<tr>
<td>7/18</td>
<td>0.046</td>
<td>0.051</td>
<td>12.7</td>
<td>11.1</td>
<td>11.5</td>
<td>12.2</td>
<td>32.0</td>
<td>27.0</td>
<td>27.0</td>
</tr>
<tr>
<td>7/19</td>
<td>0.059</td>
<td>0.053</td>
<td>14.0</td>
<td>7.3</td>
<td>12.5</td>
<td>10.2</td>
<td>36.0</td>
<td>28.0</td>
<td>28.0</td>
</tr>
<tr>
<td>7/20</td>
<td>0.043</td>
<td>0.039</td>
<td>4.1</td>
<td>4.1</td>
<td>6.6</td>
<td>4.4</td>
<td>35.0</td>
<td>29.0</td>
<td>29.0</td>
</tr>
<tr>
<td>7/21</td>
<td>0.045</td>
<td>0.046</td>
<td>5.0</td>
<td>3.8</td>
<td>5.7</td>
<td>4.0</td>
<td>20.0</td>
<td>16.0</td>
<td>16.0</td>
</tr>
<tr>
<td>7/22</td>
<td>0.048</td>
<td>0.048</td>
<td>9.0</td>
<td>6.9</td>
<td>8.0</td>
<td>8.2</td>
<td>27.0</td>
<td>21.0</td>
<td>21.0</td>
</tr>
<tr>
<td>7/23</td>
<td>0.042</td>
<td>0.039</td>
<td>6.4</td>
<td>3.6</td>
<td>6.3</td>
<td>5.7</td>
<td>19.0</td>
<td>25.0</td>
<td>25.0</td>
</tr>
<tr>
<td>7/24</td>
<td>0.040</td>
<td>0.038</td>
<td>2.5</td>
<td>2.1</td>
<td>4.3</td>
<td>2.9</td>
<td>15.0</td>
<td>26.0</td>
<td>26.0</td>
</tr>
<tr>
<td>7/25</td>
<td>0.042</td>
<td>0.042</td>
<td>9.2</td>
<td>3.7</td>
<td>6.7</td>
<td>4.9</td>
<td>23.0</td>
<td>46.0</td>
<td>46.0</td>
</tr>
<tr>
<td>7/26</td>
<td>0.053</td>
<td>0.046</td>
<td>9.5</td>
<td>4.9</td>
<td>11.2</td>
<td>7.6</td>
<td>31.0</td>
<td>33.0</td>
<td>33.0</td>
</tr>
<tr>
<td>7/27</td>
<td>0.046</td>
<td>0.043</td>
<td>8.5</td>
<td>4.9</td>
<td>7.9</td>
<td>4.6</td>
<td>32.0</td>
<td>24.0</td>
<td>24.0</td>
</tr>
<tr>
<td>7/28</td>
<td>0.050</td>
<td>0.043</td>
<td>7.5</td>
<td>4.1</td>
<td>7.8</td>
<td>3.6</td>
<td>22.0</td>
<td>19.0</td>
<td>19.0</td>
</tr>
<tr>
<td>7/29</td>
<td>0.057</td>
<td>0.051</td>
<td>8.2</td>
<td>4.7</td>
<td>8.2</td>
<td>4.3</td>
<td>22.0</td>
<td>31.0</td>
<td>31.0</td>
</tr>
<tr>
<td>7/30</td>
<td>0.048</td>
<td>0.043</td>
<td>7.5</td>
<td>3.6</td>
<td>6.6</td>
<td>3.6</td>
<td>17.0</td>
<td>15.0</td>
<td>15.0</td>
</tr>
<tr>
<td>7/31</td>
<td>0.051</td>
<td>0.045</td>
<td>4.9</td>
<td>4.9</td>
<td>7.4</td>
<td>3.8</td>
<td>27.0</td>
<td>23.0</td>
<td>23.0</td>
</tr>
<tr>
<td>AVG</td>
<td>0.052</td>
<td>0.048</td>
<td>7.2</td>
<td>5.5</td>
<td>7.8</td>
<td>NA</td>
<td>6.0</td>
<td>25.0</td>
<td>25.0</td>
</tr>
<tr>
<td>MAX</td>
<td>0.069</td>
<td>0.060</td>
<td>14.0</td>
<td>12.8</td>
<td>12.5</td>
<td>NA</td>
<td>12.2</td>
<td>36.0</td>
<td>46.0</td>
</tr>
</tbody>
</table>