



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 10

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OFFICE OF  
AIR AND WASTE

**JUL 08 2017**

Mr. Richard Whitman  
Director  
Oregon Department of Environmental Quality  
700 NE Multnomah Street, Suite #600  
Portland, Oregon 97232

Dear Mr. Whitman:

This letter is in response to the May 18, 2017, Oregon Department of Environmental Quality request to have elevated 24-hour PM<sub>2.5</sub> concentrations measured at the Klamath Falls monitoring station flagged as being impacted by exceptional events. Enclosed is our "Review of Exceptional Event Request Klamath Falls Monitoring Station (AQS ID 41-035-0004), 24-hour PM<sub>2.5</sub> NAAQS." The ODEQ has requested that the U.S. Environmental Protection Agency concur that the 24-hour PM<sub>2.5</sub> concentrations at the Klamath Falls monitoring station for the dates listed below were due to exceptional events caused by the emissions from wildfires:

2014 Dates

- August 3, 2014

2015 Dates

- **August 1, 2015**
- **August 4, 2015**
- August 19, 2015
- August 25, 2015
- August 28, 2015

**Bold** denotes dates reviewed and being concurred upon

The EPA's response to the ODEQ's request is governed by the "Treatment of Data Influenced by Exceptional Events" rule (81 FR 68216, October 3, 2016). After careful consideration of the information provided, the EPA concurs with the ODEQ's request to flag the August 1, 2015 and August 4, 2015, PM<sub>2.5</sub> concentration data at the Klamath Falls monitoring station AQS Site ID 41-035-0004). The basis for the EPA's decision on this concurrence is set forth in the enclosed document. The EPA has also determined that the other dates for this monitoring station requested by the ODEQ do not currently have regulatory significance and were not reviewed at this time. This does not preclude the EPA from examining this data again at a future time if these monitored values develop regulatory significance in the future.

Please note that although the EPA concurs on the August 1, 2015 and August 4, 2015, dates and reflects this through concurrence flags in the EPA's Air Quality System, the EPA's decisions on exceptional event exclusions are not considered final agency action until they are acted upon as part of a final regulatory action subject to public notice and comment. For example, such actions would include

decisions to exclude the affected data from use in an action to designate or re-designate an area, a determination of attainment, or another regulatory decision identified in 40 CFR 50.14(a)(1)(i).

Thank you for the ODEQ's submittal of this exceptional event documentation. If you have any questions or wish to discuss this matter further, please contact me or have your staff contact Doug Jager, Air Planning Unit, Office of Air and Waste, at (206) 553-2961.

Sincerely,

A handwritten signature in black ink that reads "Tim Hamlin". The signature is written in a cursive style with a large, sweeping initial "T".

Timothy B. Hamlin  
Director

Enclosure

cc: Ms. Rachel Sakata  
ODEQ

Mr. Anthony Barnack  
ODEQ

## EPA, Region 10

### Review of Exceptional Event Request

**Klamath Falls Monitoring Station (AQS ID 41-035-0004)**

**24-hour PM<sub>2.5</sub> NAAQS**

**Dates Requested:** August 3, 2014  
August 1, 4, 19, 25, 28, 2015

**Dates Analyzed:** August 1, 4, 2015

### Background

On October 3, 2016, the EPA published a final rule, *Treatment of Data Influenced by Exceptional Events* with an effective date of September 30, 2016 (Exceptional Events Rule or EER at 81 FR 68216). The 2016 Exceptional Events Rule governs the review and handling of certain air quality monitoring data for which the normal planning and regulatory processes are not appropriate and revises the rule initially adopted by the EPA on March 22, 2007 (72 FR 13560). Under the Exceptional Events Rule, the EPA may exclude data from use in determinations of National Ambient Air Quality Standard (NAAQS) exceedances and violations if a state demonstrates that an “exceptional event” caused the exceedances. Before the EPA can exclude data from these regulatory determinations, the state must notify the EPA of its intent to exclude data by flagging the data in the EPA’s Air Quality System (AQS) database and engaging in the initial notification process. Then, after notice and opportunity for public comment at the state level, the state must submit a demonstration to justify the exclusion. After considering the weight of evidence provided in the demonstration, the EPA decides whether or not to concur with each flag. Although the EPA will add concurrence flags in AQS if a state’s exceptional event demonstration meets the requirements of the Exceptional Events Rule, final action on the data exclusion does not occur until it is acted upon as part of a final regulatory action subject to public notice and comment.

### Oregon Department of Environmental Quality Request

The ODEQ requested concurrence on state flagged 24-hour PM<sub>2.5</sub> data at the Klamath Falls air monitoring station (AQS Site ID 41-035-0004; herein referred to as the Klamath Falls monitor)<sup>1</sup> for the following dates:

#### 2014 Dates

- August 3, 2014

#### 2015 Dates

- August 1, 2015
- August 4, 2015
- August 19, 2015
- August 25, 2015
- August 28, 2015

The recorded 24-hour PM<sub>2.5</sub> ambient concentrations for which the ODEQ requests the EPA’s concurrence are shown in Table 1.

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<sup>1</sup> This monitor has also been referred to as the Peterson School monitor in prior demonstrations.

**Table 1.** 24-hr PM<sub>2.5</sub> ambient concentrations at the Klamath Falls Monitor flagged by the ODEQ

<b>Klamath Falls Monitor (41-035-0004)</b>		
<b>Date</b>	<b>PM<sub>2.5</sub> Daily Concentration (µg/m<sup>3</sup>)</b>	<b>Event Description</b>
August 3, 2014	31.4	Oregon Gulch Fire & Beaver Complex – OR
August 1, 2015	84.8	Stouts Creek Fire – OR
August 4, 2015	44.4	Stouts Creek Fire – OR
August 19, 2015	44.2	Stouts Creek Fire – OR
August 25, 2015	25.2	National Creek Complex– OR
August 28, 2015	29.5	National Creek Complex – OR & River Complex – CA

The ODEQ flagged the monitored values as due to wildfire exceptional events. The agency made the documentation available for public comment for 30 days starting on April 12, 2017. The ODEQ submitted the exceptional event demonstration package, including public comment and state response, to the EPA, Region 10 on May 18, 2017. See “*Klamath Falls 2014 and 2015 Exceptional Event EPA Concurrence Request*,” dated May 2017 (ODEQ’s May 2017 submittal). The ODEQ requests concurrence from the EPA for all of the flagged days, although the ODEQ acknowledges that only August 1 and 4, 2015 currently have regulatory significance in terms of demonstrating attainment of the 24-hour PM<sub>2.5</sub> NAAQS.

The EPA’s Exceptional Event Evaluation

The EPA agrees that the PM<sub>2.5</sub> concentrations on August 1, 2015 and August 4, 2015 do have regulatory significance. Therefore, the EPA has evaluated whether the documentation provided by the ODEQ for the PM<sub>2.5</sub> concentrations on August 1, 2015 and August 4, 2015 meets the requirements of an exceptional event under the Exceptional Event Rule. The EPA is not evaluating the PM<sub>2.5</sub> concentrations on August 3, 2014, August 19, 2015, August 25, 2015, and August 28, 2015 because they do not currently have regulatory significance.

The matrix below summarizes the requirements of the Exceptional Events Rule and describes how the ODEQ met each requirement with respect to the PM<sub>2.5</sub> concentrations on August 1 and 4, 2015. All references to page numbers, tables, and figures relate to the ODEQ’s May 2017 submittal.

<b>Procedural Requirements:</b>	<b>The EPA’s Evaluation of Flagged Exceedances:</b>
<ul style="list-style-type: none"> <li>The state must notify the EPA of its intent to request exclusion of data as due to an exceptional event by creating</li> </ul>	The ODEQ flagged the suspect 24-hour PM <sub>2.5</sub> values in AQS with the “RT” (Wildfire-U.S.) Request Exclusion qualifier code to identify the data as due to wildfire exceptional events.

<p>an initial event description and flagging the associated data in the EPA's AQS database, and engaging in the Initial Notification of Potential Exceptional Event Process. 40 CFR 50.14(c)(2)(i).</p>	<p>The ODEQ has also participated in the EPA, R10 Annual Exceptional Events teleconference on March 10, 2016 and April 6, 2017, and in subsequent meetings to discuss this data potentially influenced by an exceptional event, to determine if the identified data may affect a regulatory determination, and to discuss development of an exceptional event demonstration.</p>
<ul style="list-style-type: none"> <li>The public had an opportunity to review and comment on the demonstration justifying data exclusion; any public comments received by The ODEQ were included in the demonstration; and the demonstration addresses those comments disputing or contradicting factual evidence provided in the demonstration. 40 CFR 50.14(c)(3)(v).</li> </ul>	<p>The ODEQ provided a 30-day public comment period on the documentation for the claimed exceptional events. The public comment period ran from April 12, 2017 to May 15, 2017. The ODEQ received one comment which it provided along with its response in the ODEQ's May 2017 submittal.</p>

<p><b>Technical Criteria:</b></p>	
<ul style="list-style-type: none"> <li>The demonstration includes a narrative conceptual model that describes the event as provided in 40 CFR 50.14(c)(3)(iv)(A).</li> </ul>	<p><i>Conceptual Model</i></p> <p>The ODEQ developed a conceptual model in Section 1 of the submittal. Section 1.1 described above normal wildfire burn acreage in 2015 as compared to the 10-year average in the Northwest. Weather conditions, as depicted in Figure 2, were warmer when compared to the 30-year average and the area was experiencing below average precipitation and severe to exceptional drought conditions according to the National Interagency Coordination Center Wildland Fire Summary and Statistics Annual Report 2015. Weather conditions in Oregon were conducive to wildfires, and this is supported by the number of fires and acreage burned in the Pacific Northwest as described in Section 1.</p> <p>In Section 1.3 of its submittal, the ODEQ explains that the Stouts Creek Fire (impacting the August 1 and August 4, 2015, concentrations at the Klamath Falls Monitor) was caused by a resident operating a lawnmower during hours when it was prohibited by fire restrictions, and thus was a fire started by an unplanned ignition caused by an unauthorized activity. The ODEQ's May 2017 submittal states that the resultant wildfire burned 26,452 acres and was not fully suppressed until August 30, 2015. Figures 7</p>

	<p>and 8 illustrate the smoke plume migration from the Stouts Creek Fire source southeastward towards the Klamath Falls Monitor.</p> <p>The information in the ODEQ’s May 2017 submittal provides a detailed description of the event, which satisfies the conceptual model criteria. The submittal also includes a table of the data requested for exclusion which has been replicated in this analysis document.</p>
<ul style="list-style-type: none"> <li>• The event meets the definition of a “wildfire event” in 40 CFR 50.1(n).</li> </ul>	<p><i>Wildfire Event</i></p> <p>A wildfire is described in 40 CFR 50.1(n) as “any fire started by an unplanned ignition caused by lightning; volcanoes; other acts of nature; <u>unauthorized activity; or accidental, human-caused actions</u>, or a prescribed fire that has developed into a wildfire. A wildfire that predominantly occurs on wildland is a natural event.” (emphasis added).</p> <p>As described in the ODEQ’s discussion of the conceptual model of the event, the Stouts Creek Fire, a wildfire event impacting the August 1 and August 4, 2015 concentrations from the Klamath Falls Monitor, was caused by a resident operating a lawnmower during hours when it was prohibited by fire restrictions. This fire started in a sparsely populated rural area near the community of Milo, bordering the Umpqua National Forest, and burned primarily on wildland in the national forest (Figure 6). Review of Figure 6 and online maps confirmed that the area had minimal development at the point of ignition and that the burn area occurred predominantly on national forest land.</p> <p>The resultant fire burned in predominantly on wildland. A wildland area is defined in 40 CFR 50.1(o) as “an area in which human activity and development are essentially non-existent.” As such, the weight of evidence supports the conclusion that the event meets the definition of a wildfire event under the Exceptional Events Rule.</p>
<ul style="list-style-type: none"> <li>• The event satisfies the “clear causal relationship” criteria in 40 CFR 50.1(j); 40 CFR 50.14(c)(3)(iv)(B).</li> </ul>	<p><i>Clear Causal Relationship</i></p> <p>As evidence that the event affected air quality, the ODEQ explained that the August 1, 2015 and August 4, 2015, dates exceeded the PM<sub>2.5</sub> 24-hour standard (Table 1). To demonstrate a clear causal relationship between the wildfire event and the elevated PM<sub>2.5</sub> concentrations at the Klamath Falls Monitor, the ODEQ examined the meteorological conditions that caused the event, the geographic extent of the event through a review of satellite imagery, and Hysplit forward and backward trajectory analysis to demonstrate plume transport. They demonstrated through a review of the historical data that generally any summer season exceedances of the 24-hr PM<sub>2.5</sub> standard during the 2002-2015 timeframe have been associated with wildfires. (Table 4).</p>

	<p>In section 3.1 of its submittal, the ODEQ compared the event-influenced concentrations to concentrations from the same monitoring site over the course of multiple years and seasons to support the conclusion that the background concentrations differed based on acreage burned.</p> <p>In section 3.2, the ODEQ demonstrates the clear causal relationship between the wildfires and the monitored values. On August 1, 2015, satellite images in Figure 27 and 28 show smoke traveling from the Stouts Creek Fire southeast towards Klamath Falls. Figure 29 shows and quantifies that the PM levels peaked late in the day on August 1, 2015, and these high values occurred when wind direction data show winds coming from the northwest, from the direction of the Stouts Creek Fire. Reviewing the data from subsequent days in Figure 29, PM<sub>2.5</sub> values decrease on August 2 and August 3, and begin rise on August 4, peaking late in the day which is supported by satellite imagery in Figure 33. The ODEQ also ran the Hysplit model for August 1 (Figures 31 and 32) and for August 4 (Figures 36 and 37). The model data on both August 1 and August 4, showed that smoke from the Stouts Creek Fire was transported to the southeast towards Klamath Falls, and air impacting Klamath Falls came from the direction of the Stouts Creek Fire.</p> <p>Based on the suite of evidence provided, the EPA concludes that there is a clear causal connection between the elevated PM<sub>2.5</sub> concentrations recorded at the Klamath Falls Monitor on August 1 and 4, 2015, and that the elevated PM<sub>2.5</sub> was generated by the Stouts Creek Fire wildfire event, which burned from July 30 through August 30, 2015.</p>
<ul style="list-style-type: none"> <li>• The demonstration includes an analysis comparing the claimed event-influenced concentrations to concentrations at the same monitoring site at other times to support the “clear causal connection” requirement. 40 CFR 50.14(c)(3)(iv)(C).</li> </ul>	<p><i>Event-Related Concentrations Compared to Historical Concentrations</i></p> <p>In section 3.1 of its submittal, the ODEQ compared the event-influenced concentrations to concentrations from the same monitoring site over the course of multiple years and seasons to support the conclusion that the event affected air quality and that there was a clear causal relationship between the event and the monitored exceedance.</p> <p>The ODEQ produced a table (Table 4) summarizing the number of summer season PM<sub>2.5</sub> exceedance days from 2002 through 2015 at the Klamath Falls monitor. The ODEQ demonstrated that generally any summer season exceedances of the 24-hr PM<sub>2.5</sub> standard during the 2002-2015 timeframe have been associated with wildfires.</p> <p>These results demonstrate that the PM<sub>2.5</sub> concentrations at the Klamath Falls Monitor were above normal historical fluctuations,</p>

	<p>including background, and support the conclusion that there is a clear causal connection between the wildfire event and the elevated PM<sub>2.5</sub> concentrations measured at Klamath Falls.</p>
<ul style="list-style-type: none"> <li>The event satisfies the “not reasonably controllable and not reasonably preventable” criteria in 40 CFR 50.1(j); 40 CFR 50.14(c)(3)(iv)(D).</li> </ul>	<p><i>Not Reasonably Controllable/Not Reasonably Preventable</i></p> <p>40 CFR Part 50.14(b)(4) states that:  <i>Provided the Administrator determines that there is no compelling evidence to the contrary in the record, the Administrator will determine every wildfire occurring predominantly on wildland to have met the requirements identified in paragraph (c)(3)(iv)(D) of this section regarding the not reasonably controllable or preventable criterion.</i></p> <p>As described previously, this event was a wildfire started by an unplanned ignition caused by an unauthorized activity and that burned predominantly on wildland. The EPA is not aware of evidence to the contrary. Therefore, according to 40 CFR 50.14(b)(4), the event has met the requirements of not reasonably controllable and not reasonably preventable.</p> <p>Nonetheless, the ODEQ produced a table (Table 3) summarizing the various fire complexes in the area, including the Stouts Creek Fire, and identified the managing agency, level of suppression, and the associated costs of managing the fires. Additionally, during the time of the wildfires, the ODEQ stated that there were no unusual sources of anthropogenic emissions that may have affected the values at the monitor, such as industrial sources or prescribed fire. A burn ban was in effect during this time.</p>
<ul style="list-style-type: none"> <li>The event satisfies the “unlikely to recur at a particular location or a natural event” criteria in 40 CFR 50.1(k); 40 CFR 50.14(c)(3)(iv)(E).</li> </ul>	<p><i>Natural Event</i></p> <p>As described previously, this event was a wildfire started by an unplanned ignition caused by an unauthorized activity and that burned predominantly on wildlands. Maps of wildfires which impacted the Klamath Falls monitor in 2014 and 2015, shown in Section 1.3 and Figure 6 of the submittal, demonstrate that these fires occurred predominately on wildlands.</p> <p>The event meets the Natural Event requirement of the Exceptional Events Rule based on the definition of “wildfire” in 40 CFR 50.1(n):  <i>Wildfire is any fire started by an unplanned ignition caused by lightning; volcanoes; other acts of nature; unauthorized activity; or accidental, human-caused actions, or a prescribed fire that has developed into a wildfire. A wildfire that predominantly occurs on wildland is a natural event.</i></p>
<ul style="list-style-type: none"> <li>The event satisfies the “mitigation” criteria in</li> </ul>	<p><i>Mitigation</i></p>

<p>40 CFR 51.930 and 40 CFR 50.14(b)(9).</p>	<p>40 CFR 51.930 requires that a state requesting to exclude air quality data due to exceptional events must take appropriate and reasonable actions to protect public health from exceedances or violations of the NAAQS. At a minimum, the State must:</p> <ol style="list-style-type: none"> <li>1. Provide for prompt public notification whenever air quality concentrations exceed or are expected to exceed an applicable ambient air quality standard;</li> <li>2. Provide for public education concerning actions that individuals may take to reduce exposures to unhealthy levels of air quality during and following an exceptional event; and</li> <li>3. Provide for the implementation of appropriate measures to protect public health from exceedances or violations of ambient air quality standards caused by exceptional events.</li> </ol> <p>To provide information to the community during wildfires, the ODEQ has collaborated with various agencies in the state to develop a wildfire response protocol. The protocol identifies agencies roles and responsibilities during wildfire events  <a href="https://www.oregon.gov/deq/FilterDocs/WFresponse.pdf">https://www.oregon.gov/deq/FilterDocs/WFresponse.pdf</a> .</p> <p>The ODEQ inputs data into AirNow and Air Quality Indexes for the Oregon ambient air monitoring network, which is available to the public. This information allows for prompt notification to the public during poor air quality episodes, such as the impacts from the Stouts Creek Fire wildfire event.</p> <p>The ODEQ also manages a blog as part of the protocol, <a href="http://oregonSmoke.blogspot.com">http://oregonSmoke.blogspot.com</a>, that contains air quality data, fire locations, health alerts, and other related information.</p> <p>The information provided in the ODEQ's May 2017 submittal is sufficiently detailed to document that the mitigation requirements of the Exceptional Event Rule have been met. The area is not subject to the mitigation plan requirement given that in the area has only identified two exceptional event wildfire seasons in the past three years. To trigger the requirement there is the need for three events or event seasons. See 40 CFR 51.930(b).</p>
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Conclusion

Based on the documentation in the ODEQ's May 2017 submittal, the EPA concurs with the ODEQ that the PM<sub>2.5</sub> concentrations results listed in Table 2 have regulatory significance and were impacted by a wildfire exceptional event.

**Table 2.** 24-hr PM<sub>2.5</sub> Ambient Concentrations Flagged by the ODEQ at the Klamath Falls Monitor and Concluded by the EPA as Meeting the Exceptional Event Criteria

<b>Klamath Falls Monitor (41-035-0004)</b>		
<b>Date</b>	<b>PM<sub>2.5</sub> Daily Concentration (µg/m<sup>3</sup>)</b>	<b>Event Description</b>
August 1, 2015	84.8	Stouts Creek Fire – OR
August 4, 2015	44.4	Stouts Creek Fire – OR

The information and analyses presented in the ODEQ’s May 2017 submittal provide weight of evidence sufficient for the EPA’s concurrence on the data flagged by the ODEQ for the Klamath Falls Monitor on the dates listed above in Table 2 and as described in this document. Accordingly, the EPA is placing concurrence indicators in the EPA’s AQS database for these dates at this monitor.

Note that the EPA’s decisions on exceptional event exclusions are not considered final agency action until they are acted upon as part of a final regulatory action subject to public notice and comment. Such actions would include, for example, decisions to exclude the affected data from use in an action to designate or re-designate an area, a determination of attainment, or another regulatory decision identified in 40 CFR 50.14(a)(1)(i).