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Prescribed Fire on Wildland: Addendum to the Guidance on the Preparation of Exceptional Events Demonstrations for Wildfire Events that May Influence Ozone Concentrations

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Acronyms

AQS	Air Quality System
BSMP	Basic smoke management practices
CAA	Clean Air Act
CFR	Code of Federal Regulations
EPA	Environmental Protection Agency
FLM	Federal Land Manager
FR	Federal Register
NAAQS	National Ambient Air Quality Standard or Standards
O_3	Ozone
PM	Particulate matter
Q/D	Quantity of emissions from the fire(s) divided by the Distance of the fire(s) from the affected monitor
SMP	Smoke management program

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Prescribed Fire on Wildland: Addendum to the Guidance on the Preparation of Exceptional Events Demonstrations for Wildfire Events that May Influence Ozone Concentrations

A.1 Highlights

A.1.1 Purpose

This document is an addendum to the "Guidance on the Preparation of Exceptional Events Demonstrations for Wildfire Events that May Influence Ozone Concentrations" (*Wildfire Ozone Guidance*). This addendum provides information to support development of demonstrations under the Exceptional Events Rule pertaining to prescribed fires. The 2016 Exceptional Events Rule revisions included fire-related regulatory language and preamble text, including regulatory provisions addressing prescribed fire on wildland. The regulatory language states that prescribed fire on wildland can be a human-caused event eligible for treatment as an exceptional event. The Environmental Protection Agency (EPA) recognizes the importance of prescribed fire on wildland and welcomes continued dialogue among state, tribal and local air agencies,[1] the EPA, and other federal agencies to ensure that land managers have adequate available tools to manage ecosystem development, restoration, and management of wildland vegetation, including the use of planned prescribed fires and allowing some wildfires proceed naturally, and to ensure that use of these tools is protective of public health. Additionally, the EPA recognizes that a properly managed prescribed fire is unlikely to result in an exceedance or violation of the National Ambient Air Quality Standards (NAAQS), and therefore it is important that fire managers and air agencies communicate regarding practices and expectations related to prescribed fire.

The revised Exceptional Events Rule at 40 CFR 50.14(c)(3) states that an exceptional events demonstration must include the following elements:

1) A narrative conceptual model that describes the event(s) causing the exceedance or violation and a discussion of how emissions from the event(s) led to the exceedance or violation at the affected monitor(s);
2) A demonstration that the event affected air quality in such a way that there exists a clear causal relationship between the specific event and the monitored exceedance or violation;
3) Analyses comparing the claimed event-influenced concentration(s) to concentrations at the same monitoring site at other times. The Administrator shall not require a state to prove a specific percentile point in the distribution of data;
4) A demonstration that the event was both not reasonably controllable and not reasonably preventable;

[1] References to "air agencies" include state, local and tribal air agencies responsible for implementing the Exceptional Events Rule. The regulatory text in the 2007 Exceptional Events Rule often uses "state" to apply to "air agencies." In the context of flagging data and preparing and submitting demonstrations, the role of and options available to air agencies may also apply to federal land managers (FLMs) of Class I areas and other federal agencies managing federal land where (1) the FLM or federal agency either operates a regulatory monitor that has been affected by an exceptional event or manages land on which an exceptional event occurred that influenced a monitored concentration at a regulatory monitor; and (2) the air agency concurs with the FLM or other federal agency's submittal. 40 CFR 50.14(a)(1)(ii).

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5) A demonstration that the event was caused by human activity that is unlikely to recur at a particular location or was a natural event; and
6) Documentation that the submitting air agency followed the public comment process.

The EPA evaluates exceptional events demonstrations using a "weight of evidence" approach, meaning that the EPA believes it is appropriate to consider all relevant evidence and qualitatively "weigh" this evidence based on its relevance to the Exceptional Events Rule criterion being addressed, the degree of certainty, its persuasiveness, and other considerations appropriate to the individual pollutant and the nature and type of event. As appropriate under a weight-of-evidence approach, one purpose of this document is to help air agencies determine the appropriate kind of information and analyses to include in a demonstration, which will vary on a case-by-case basis depending on the nature and severity of the event. Ultimately, the goal of the EPA in collaboration with air agencies is to ensure that exceptional events demonstrations satisfy the rule criteria and support the regulatory determination(s) for which they are significant. This addendum provides information to support compliance with these required demonstration elements for prescribed fires on wildland. The EPA does not intend for this guidance to be used in connection with preparing demonstrations related to agricultural burns. Any state considering preparing such a demonstration should consult with its reviewing EPA Regional office.

Although this guidance addendum focuses on prescribed fire events that may influence ozone (O_3) concentrations, the sections addressing the "not reasonably controllable and preventable" and the "human activity that is unlikely to recur at a particular location" criteria can provide useful examples for prescribed fire events influencing other pollutants, particularly particulate matter (PM).

A.1.2 Prescribed Fire Definitions and Terminology

This addendum uses the following fire-related terminology:

- *Prescribed fire* is "any fire intentionally ignited by management actions in accordance with applicable laws, policies, and regulations to meet specific land or resource management objectives."[2]
- *Wildland* is "an area in which development is essentially non-existent, except for roads, railroads, powerlines, and similar transportation facilities. Structures, if any, are widely scattered."[3] Land within national parks, national forests, wilderness areas, state forests, state parks, and state wilderness areas are generally considered wildland. Land outside cantonment areas on military bases may also be considered wildland. The EPA expects to evaluate the eligibility of prescribed fires on other lands as possible exceptional events on a case-by-case basis. We suggest such circumstances be discussed with the appropriate EPA Regional office before a demonstration is prepared.
- *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*"[4] (emphasis added). As we clarified in

[2] 40 CFR 50.1(m)
[3] 40 CFR 50.1(o).
[4] 40 CFR 50.1(n).

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the preamble to the final rule, when considering prevention and control for purposes of exceptional event categorization, a prescribed fire effectively becomes like a wildfire when, for example, the prescribed fire escapes secure containment due to unforeseen circumstances (*e.g.,* a sudden shift in prevailing winds).[5] In these instances, the burn manager would no longer control the path of the fire. Thus, the fact that the initial fire was deliberately ignited should not result in the entire burn (*e.g.,* the duration and extent of the burn) being classified as a prescribed fire on wildland.

- *Fire*: While this document refers to "a fire" or "the fire," we recognize that there could be multiple individual fires that, when aggregated, affect O_3 concentrations at a given monitoring site.
- *Event* includes the fire (or fires), the fire's O_3 precursor emissions, and the resulting O_3 from the fire.
- *Exceptional event* means an event(s) and its resulting emissions that affect air quality in such a way that there exists a clear causal relationship between the specific event(s) and the monitored exceedance(s) or violation(s), is not reasonably controllable or preventable, is an event(s) caused by human activity that is unlikely to recur at a particular location or a natural event(s), and is determined by the Administrator in accordance with 40 CFR 50.14 to be an exceptional event. It does not include air pollution relating to source noncompliance. Stagnation of air masses and meteorological inversions do not directly cause pollutant emissions and are not exceptional events. Meteorological events involving high temperatures or lack of precipitation (*i.e.*, severe, extreme or exceptional drought) also do not directly cause pollutant emissions and are not considered exceptional events. However, conditions involving high temperatures or lack of precipitation may promote occurrences of particular types of exceptional events, such as wildfires or high wind events, which do directly cause emissions. See promulgated definition at 40 CFR 50.1(j).
- *Evidence* includes, but is not limited to, measurements and analyses based on measurements.

Figure 1 below illustrates when it may be appropriate for an air agency to develop an exceptional events demonstration based on the information provided in this addendum, as well as expected timeframes for the EPA's response.

[5] Treatment of Data Influenced by Exceptional Events, 81 FR 68216, 68250 (October 3, 2016).

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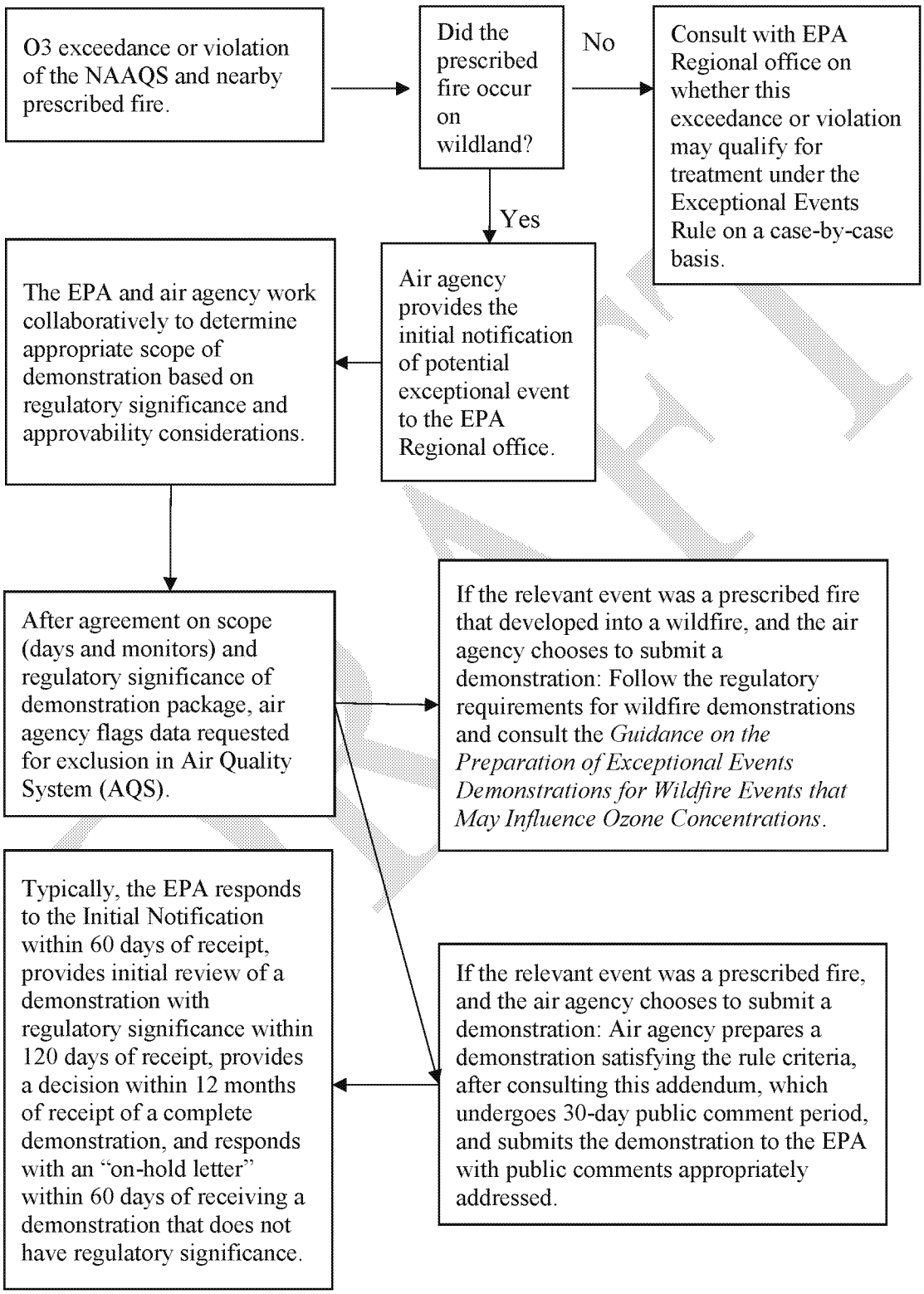
Figure 1. Flowchart illustrating when it is appropriate to develop an exceptional events demonstration based on this Addendum to the *Wildfire Ozone Guidance.*



A.2 Narrative Conceptual Model of Event

A.2.1 Overview and Exceptional Events Rule Provisions

As discussed in Section 2 of the *Wildfire Ozone Guidance*, the Exceptional Events Rule at 40 CFR 50.14(c)(3)(iv)(A) requires that demonstrations include a narrative conceptual model describing the event. This narrative conceptual model would typically discuss the interaction of emissions, meteorology, and chemistry of event and non-event NAAQS pollutant formation in the area, and, under 40 CFR 50.14(c)(3)(i), must describe the regulatory significance of the proposed data exclusion. Because this narrative typically appears at or near the beginning of a demonstration, it is expected to help readers and the reviewing EPA Regional office understand the event formation and the event's influence on monitored pollutant concentrations before the reader reaches the portion of the demonstration that contains the technical evidence to support the requested data exclusion. The EPA expects that much of the information the air agency discussed with or submitted to the EPA during the Initial Notification process would also be useful in the narrative conceptual model section of a demonstration.

A.2.2 Examples of Supporting Documentation

The *Wildfire Ozone Guidance* describes evidence and technical analyses that air agencies can include in an exceptional events demonstration. For these analyses to be meaningful and clearly interpreted, air agencies should tie them to a simple narrative describing how emissions from a prescribed fire (or group of fires) caused O_3 exceedances or violations at a particular location and how these event-related emissions and resulting exceedances or violations differ from typical high O_3 episodes in the area. The narrative conceptual model for a prescribed fire demonstration could include information similar to the example evidence and analyses described in Section 2.2 of the *Wildfire Ozone Guidance*.

Satisfying the human activity unlikely to recur at a particular location criterion, discussed in Section A.4 of this addendum, involves analyzing whether the prescribed fire was conducted with the objective to establish, restore and/or maintain a sustainable and resilient wildland ecosystem and/or to preserve endangered or threatened species through a program of prescribed fire. The narrative conceptual model should include a brief description of the intended objective for the prescribed fire. The narrative conceptual model should also identify whether the prescribed fire followed an established natural fire return interval or was conducted to conform with a fire return interval established in accordance with a multi-year land or resource management plan. In addition, the conceptual model should address whether the prescribed fire was conducted in compliance with either a state-certified smoke management program (SMP) or basic smoke management practices (BSMP).

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A.3 Clear Causal Relationship between the Specific Event and the Monitored Concentration

A.3.1 Overview and Exceptional Events Rule Provisions

The Exceptional Events requires that demonstrations address the technical criterion that "the event affected air quality in such a way that there exists a clear causal relationship between the specific event and the monitored exceedance or violation" supported, in part, by the comparison to historical concentrations and other analyses.[6] Air agencies typically support the clear causal relationship with a comparison of the O_3 data requested for exclusion with historical concentrations at the air quality monitor. In addition to providing this information on the historical context for the event-influenced data, air agencies should further support the clear causal relationship criterion by demonstrating that the prescribed fire emissions were transported to the monitor (i.e., that the emissions were transported to the area and reached ground level), demonstrating that the emissions from fire(s) influenced the monitored concentrations, and, in some cases, quantifying the contribution of the fire emissions to the monitored O_3 exceedance or violation. The *Wildfire Ozone Guidance* identifies a tiered strategy with three tiers of analyses for the clear causal relationship criterion, which acknowledges that some fire events can be extreme or otherwise clearly stand out from normally occurring O_3 concentrations and, thus, may necessitate less evidence for the clear causal relationship analysis. These tiers as related to prescribed fire are discussed further in section A.3.3 of this document. The EPA acknowledges that since prescribed fires tend to be small scale and well-defined, they are unlikely to be severe or extreme enough for Tier 1 or Tier 2 analyses. However, these same features also mean that the supporting data to satisfy the clear causal relationship criterion for a Tier 3 analysis should be readily available and quantifiable.

A.3.2 Comparison of Event-Related Concentrations to Historical Concentrations

Part of demonstrating a clear causal relationship between the event and the monitored O_3 exceedance involves comparing the event-related exceedance with historical concentrations measured at the affected monitor or at other monitors in the area during the same season. Air agencies should compare the data requested for exclusion with the historical concentrations at the monitor, including all other "high" values in the relevant historical record. If other values in the historical record are alleged to have been affected by exceptional events, the EPA recommends identifying those values and including event information to support that the fire caused the monitored exceedance or violation, such as a list of previous fire dates and locations, evidence of stratospheric intrusion, or evidence supporting other event types. In addition to showing how the level of the event exceedance compares with historical data, air agencies can also show how the diurnal or seasonal pattern differs, if such a deviation occurred, due to the event. Effective statistical summaries that characterize non-event, high-concentration day historical data and the differences seen on event days would carry more weight than anecdotal or general assertions of when non-event behavior occurs, without evidence or quantification. The data used in the comparison of historical concentrations analysis should focus on concentrations

[6] *See* 40 CFR 50.14(c)(3)(iv)(B)-(C).

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of O_3 at the influenced monitor and nearby monitors if appropriate. Evidence of additional impacts on air quality can also be provided if this evidence provides additional insight.

As described in 40 CFR 50.14(c)(3)(iv)(C), there is no pass or fail threshold for the historical concentrations data presentation. However, these comparisons to historical concentrations may inform whether the air agency needs to provide additional evidence to successfully establish the clear causal relationship element. For example, historical comparisons conclusively showing that the event-influenced O_3 concentration was outside the range of historical concentrations could indicate less additional evidence may be needed to demonstrate the clear causal relationship. Additionally, a history of concentrations above the standard could indicate that more additional evidence may be needed to demonstrate the clear causal relationship between the exceedance or violation and the prescribed fire event.

Section 3.2.1 of the *Wildfire Ozone Guidance* provides examples of documentation that can be used to support a comparison to historical concentrations.

A.3.3 Analyses Supporting a Clear Causal Relationship

Demonstrating a clear causal relationship between a prescribed fire (or fires) on wildland and a monitored exceedance or violation involves evidence and technical analyses similar to those that could be used for a wildfire on wildland demonstration, as discussed in Section 3 of the *Wildfire Ozone Guidance*. Air agencies should discuss these analyses with their EPA Regional office to ensure the demonstration includes sufficient and appropriate analyses.

The *Wildfire Ozone Guidance* identifies a tiered strategy with three tiers of analyses for the clear causal relationship criterion for wildfires on wildland, which acknowledges that some wildfire events can be extreme or otherwise clearly stand out from normally occurring O_3 concentrations and, thus, may necessitate less evidence for the clear causal relationship analysis. Events with the clearest clear causal relationship between the event and monitored O_3 concentrations may find that Tier 1 analyses are appropriate. Tier 1 analyses for the clear causal relationship are likely appropriate for fires located in close proximity to a monitor in an area or during a time of year with typically low O_3 concentrations. Tier 1 analyses would likely need the least amount of evidence. Tier 2 analyses should include more evidence than Tier 1 analyses to show a clear causal relationship and should be used in situations with less clear wildfire impacts. Tier 3 analyses are appropriate when the relationship between the fire and the monitored O_3 exceedances or violations is more complex.

Based on the controlled nature of prescribed fires, these events likely will not be extreme or otherwise have clear impacts on a monitored exceedance or violation, unless the prescribed fire is very close to the monitor. Thus, Tier 3 analyses are likely appropriate to demonstrate a clear causal relationship in a prescribe fire event. Section A.3.4 briefly summarizes the expected components of the clear causal relationship portion of the demonstration supported with Tier 3 analyses.

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A.3.4 Relationship of the Event, Monitor(s), and Exceedance to the Key Factors for Tier 2 Analyses

As part of the weight of evidence showing for the clear causal relationship rule element, air agencies should explain how the event, monitor(s) and exceedance compare with the key factors outlined in Section 3.5.1. The relationship of the event to the Tier 2 key factors may help inform the amount of additional information that will be needed to support Tier 3 analyses.

Section 3.5.1 of the *Wildfire Ozone Guidance* discusses analyzing a fire using emissions from the fire(s) divided by the distance of the fire from the affected monitor (Q/D). Although discussing Q/D is not required, this analysis may also be relevant for prescribed fire events influencing O_3 concentrations. Since prescribed fire events are controlled, typically small, and contained so they are not expected to reach the same magnitudes as a wildfire, a prescribed fire event is unlikely to have a Q/D greater than or equal to 100 tons per day/kilometer. However, air agencies may still benefit from conducting a Q/D analysis to support the clear causal relationship rule criterion. The *Wildfire Ozone Guidance* aggregating the emissions from multiple fires to calculate the Q/D of an event.[7] Several individual prescribed burns may occur at the same time, and together may cause an exceedance or violation. Analyzing the aggregate Q/D of these burns may be useful in demonstrating that the combined influence of the prescribed burns had a clear causal relationship to the monitored exceedance or violation.

A.3.5 Evidence that the Fire Emissions Affected the Monitor(s)

Air agencies will need evidence showing that the fire emissions affected the monitor to support the clear causal relationship criterion. The Tier 3 clear causal relationship analyses could include multiple analyses from those examples listed in Section 3.5.2 of the *Wildfire Ozone Guidance*. These analyses typically include evidence of changes in spatial or temporal patterns of O_3 concentrations or supporting ground level measurements (*e.g.* carbon monoxide, particulate matter (PM), nitrogen oxide, or other fire-related compounds). Each additional piece of information that supports the event's influence on the exceedance at the monitor will strengthen the air agency's position.

A.3.6 Evidence that the Fire Emissions were Transported to the Monitor(s)

To demonstrate a clear causal relationship between the event's emissions and the monitored O_3 exceedance, air agencies should show that the emissions from the fire were clearly transported to the monitor. This will likely require a trajectory analysis or the satellite plume analysis, as described in Section 3.5.3. Additional information, such as analyses of surface meteorology (wind speed and direction), could further support the clear causal relationship rule element.

A.3.7 Additional Evidence that the Fire Emissions Caused the O_3 Exceedance

Depending on the quantity and strength of evidence supplied in other sections of the demonstration, an air agency may further support the clear causal relationship between the fire

[7] Pages 17 through 19 in Section 3.5.1 of *Wildfire Ozone Guidance* provide a formula for aggregating multiple burns as part of a Q/D analysis.

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and the O_3 exceedance with additional analysis showing that the fire emissions caused the O_3 exceedance. Some potentially useful supporting analyses include matching day analyses, statistical regression models, or photochemical models, all of which are described in more detail in Section 3.6.4 of this document. Entities developing demonstrations should engage with their EPA Regional office to determine what additional evidence is necessary based on the specific circumstances of the prescribed fire(s) in question.

A.3.8 Example Conclusion Statement

Air agencies can provide the supporting evidence and analyses identified in the *Wildfire Ozone Guidance* to document the clear causal relationship between the prescribed fire event and the monitored O_3 exceedance or violation.

In summarizing the clear causal relationship section of its demonstration, it is helpful when the air agency concludes with the following type of statement, which explains how the demonstration meets the relevant statutory and regulatory criteria:

"On [day/time] an [event type] occurred that generated pollutant X or its precursors resulting in elevated concentrations at [monitoring location(s)]. The monitored [pollutant] concentrations of [ZZ] were [describe the comparison to historical concentrations including the percentile rank over an annual (seasonal) basis]. Meteorological conditions were not consistent with historically high concentrations at the relevant monitoring sites, [plus describe additional evidence of a comparison of the event-related exceedance to historical concentrations, if this evidence provides additional insight]. In addition, the comparisons and analyses, provided in [Section X] of this demonstration support our position that the prescribed fire event affected air quality in such a way that there exists a clear causal relationship between the specific event and the monitored exceedance or violation on [dates/time of data requested for exclusion, or reference to summary table in demonstration] and thus satisfies the clear causal relationship criterion."

A.4 Addressing the Human Activity Unlikely to Recur at a Particular Location or a Natural Event Criterion

A.4.1 Overview and Exceptional Events Rule Provisions

According to the CAA and the Exceptional Events Rule, an exceptional event must be "an event caused by human activity that is unlikely to recur at a particular location or a natural event." The final rule acknowledges that prescribed fires are events caused by human activity and, therefore, to be considered an exceptional event, every prescribed fire demonstration must address the "human activity unlikely to recur at a particular location" criterion.[8] A prescribed fire is never to be treated as a natural event, unless the prescribed fire develops into a wildfire.

[8] *See* 40 CFR 50.14(b)(3) and 81 FR 68216, 68251 (October 3, 2016).

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The general benchmark for recurrence (*i.e.*, three events in 3 years) for most "human activities that are unlikely to recur" does not apply to prescribed fires, and in some situations prescribed fires happening more frequently than three times in 3 years can be considered unlikely to recur.[9] To satisfy the human activity unlikely to recur at a particular location criterion for demonstrations involving prescribed fires on wildland, the demonstration must "describe the actual frequency with which a burn was conducted, but may rely upon and reference an assessment of the natural fire return interval or the prescribed fire frequency needed to establish, restore and/or maintain a sustainable and resilient wildland ecosystem contained in a multi-year land or resource management plan with a stated objective to establish, restore and/or maintain a sustainable and resilient wildland ecosystem and/or to preserve endangered or threatened species through a program of prescribed fire."[10] This provision of the revised rule is intended to recognize natural fire's vital role in benefiting ecosystems and in preventing catastrophic wildfire, and to recognize that land managers often pursue these benefits through a program of prescribed fire. Notably, there are uses of prescribed fire for purposes other than maintaining a sustainable and resilient wildland ecosystem or to preserve endangered or threatened species. These other purposes include, but are not limited to, burning of land clearing debris, agricultural burning, and burning of logging slash on land where the primary purpose of the logging is for commercial timber sale. Fires for these other purposes typically would not be described in a multi-year land or resource management plan with a stated objective to establish, restore and/or maintain a sustainable and resilient wildland ecosystem and/or to preserve endangered or threatened species through a program of prescribed fire, but the interval with which they are conduced could nevertheless be consistent with the prescribed fire frequency needed to establish, restore and/or maintain a sustainable and resilient wildland ecosystem contained in such a plan.

Providing a demonstration that assesses the natural fire return interval does not preclude the air agency from also assessing the prescribed fire frequency needed to establish, restore, and/or maintain a sustainable and resilient wildland ecosystem. These two methods of defining recurrence are not necessarily mutually exclusive; they may provide support for each other.[11] Air agencies should consult with their EPA Regional office when analyzing this rule criterion to ensure that they are providing appropriate and sufficient evidence.

The EPA recognizes that a single event, natural or caused by human activity (to include prescribed fire events), can span multiple days and result in an air agency flagging multiple monitor-day values in AQS (*i.e.,* multiple exceedances of a given NAAQS at a single monitor on one or more days or multiple NAAQS exceedances at multiple monitors on multiple days).[12] The

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[9] *See* 81 FR 68216, 68255.

[10] 40 CFR 50.14(b)(3)(iii). ''Historically documented'' or ''known seasonal'' events include events of the same type and pollutant (*e.g.,* high wind dust/ PM or wildfire/O_3) that recur every year, either seasonally or throughout the year.

[11] For example, an area's natural fire return interval may be a strong indicator of the fire frequency necessary to maintain a sustainable and resilient wildland ecosystem. However, the prescribed burn frequency necessary to allow certain native plants and animal species to establish themselves, as analyzed in a multi-year land or resource management plan, may be more frequent than the natural fire return interval. In this context, an air agency could describe the natural fire return interval and how it relates to the necessary burn frequency, and then describe the specific reasons why more frequent burning is necessary.

[12] 81 FR 68216, 68233 (October 3, 2016).

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demonstration may assess recurrence based on the whole event, rather than analyzing each exceedance day separately in the context of event recurrence.

The EPA evaluates exceptional events demonstrations using a "weight of evidence" approach.[13] In accordance with this approach, the EPA will also evaluate whether a prescribed fire satisfies the human activity unlikely to recur criterion based on the weight of evidence.

Air agencies should consult with their EPA Regional Office regarding how to characterize a "particular location." Ultimately, the EPA will determine the bounds for ''a particular location."[14] In the context of prescribed fire, a "particular location" will likely be defined by landscape, ecosystem, and fuel loading characteristics.

The Relationship between the Fire Return Interval and Mitigation Plans

Recurrence in the context of human activity unlikely to recur for a prescribed fire is different than the event recurrence applicability criterion for mitigation plan development under 40 CFR 51.930. The Exceptional Events Rule requires the development of mitigation plans in areas with "historically documented" or "known seasonal" exceptional events.[15] Air agencies must develop mitigation plans if there have been three prescribed fire events or event seasons[16] in a particular location within a 3-year period. Notably, a "particular location" for mitigation plans is defined by the monitors exceeding or violating the NAAQS. Thus, if the prescribed fire that is the subject of the demonstration is the third event for the same pollutant in the same area for which the air agency has either submitted a demonstration or has submitted an initial notification within a 3-year period, the air agency must develop a mitigation plan to satisfy the Exceptional Events Rule. The EPA does not intend to count demonstrations that result in nonconcurrence (*i.e.,* the EPA Regional office does not concur with a demonstration to exclude flagged data) toward three events or event seasons in a 3-year period. See Section A.5 of this document for information about how existing SMP documentation may meet some or all exceptional events mitigation plan requirements.

The EPA will inform the air agencies if they become subject to the mitigation plan development requirements. Air agencies should work with their EPA Regional offices to ensure the mitigation plans are complete.

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[13] *See id.* at 68230.
[14] *Id.* at 68272.
[15] 40 CFR 51.930.
[16] A season with multiple events is one event such that a mitigation plan will be required only when an event type persists across several years. For example, an area may not have previously experienced prescribed fires in the past 10 years, but then experiences multiple fires and multiple exceedances in a single wildfire season. If these multiple prescribed fires affect the same general geographic area and monitors in a relatively short period of time (*e.g.,* 2– 3 months), then they could be considered a single event for purposes of developing a mitigation plan and would not trigger the requirement for a mitigation plan. Also, for purposes of counting a season towards the limit of three seasons in 3 years, we mean a season containing one or more events for which an air agency has previously submitted exceptional events demonstrations or a season of events that is the subject of an Initial Notification of Potential Exceptional Event (regardless of whether the air agency submitted a demonstration).

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A.4.2 Describing the Actual Frequency with Which a Burn Was Conducted

Every demonstration must describe the actual frequency with which the burn was conducted. This description typically includes the following: (1) geographical parameters of the fire, including latitude/longitude and physical description of the area(s) burned; (2) date of the burn(s) that is the subject of the demonstration; (3) the dates of past burns in the same area; (4) time of initial ignition; (5) approximate time of end of burn; (6) total acres burned; and (7) a description of dominant fuel type burned. Some examples of this documentation include:

- A copy of the burn plan and/or burn permit under which the prescribed fire program was conducted, including a certification that the plan was implemented for prescribed fire(s) in question.
- A copy of the post-burn report or a letter from the burn manager.
- Additional forms of evidence in consultation with EPA Regional Offices.

Notably, on days that have conducive meteorology to conduct prescribed burns, often numerous fires are started over a wide area and obtaining documentation in the form of a copy of a burn permit or specific burn plan is not reasonable. In that instance, the demonstration may also include daily satellite overpasses to estimate the number acres burned on a daily, multiple day, or weekly timeframe. This type of analysis is dependent on meteorological conditions during the satellite overpass time (*i.e.*, cloud cover). Such evidence may be appropriate based on consultation with EPA Regional offices.

A.4.3 Addressing Recurrence by Relying on the Natural Fire Return Interval

An assessment of whether the prescribed fire meets the "unlikely to recur" criterion based on an area's natural fire return interval should include (1) a review of the number of years between successive naturally occurring fires for a given vegetation type and (2) a review showing that the actual frequency by which the prescribed fires were conducted matches the natural fire return interval.

Multi-year land or resource management plans prepared by the land management agency or any private property owner generally include documentation of these established fire intervals, and can be used to identify the natural fire return interval in an exceptional events demonstration. While the EPA will generally defer to the interval described in these plans, the actual burn frequency is not required to match the described interval exactly to satisfy human activity unlikely to recur criterion. Based on the complexity of prescribed fire for sustainable land management, the EPA acknowledges that portions of natural ecosystems may have different natural fire return intervals, which may influence how a burn manager applies the prescribed fire. The EPA is not defining a specific form for multi-year land or resource management plans, and the relevant information may be contained in a number of different documents. For example, SMP documentation may also contain this information.

The details of a natural fire return interval likely vary based on specific conditions and circumstances in each state and area. Notably, the natural fire return interval may be different from the recent frequency of natural fire. If appropriate, agencies could use scientific studies

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based on modeling or longer term historical analyses outside of human records (*e.g.* geological indicators), to give a more general time frame of fire recurrence for a certain type of landscape.

If the air agency intends to satisfy this criterion by referencing the natural fire return interval, a successful demonstration would typically include language from the multi-year land or resource management plan explaining the natural frequency of fire. As discussed in Section A.4.3 of this document, the EPA will compare these intervals in a general way to determine whether the actual burn frequency mimics the natural fire return interval. On a case-by-case basis, in the absence of a multi-year land or resource management plan, the natural fire return interval may be established according to scientific literature.

An example of a multi-year land or resource management plan is the "Range-wide Conservation Plan for Longleaf Pine"[17] (Longleaf Conservation Plan). Longleaf pine ecosystems have historically covered over 90 million acres in the Southeastern United States Coastal Plains, but have been reduced to less than three percent of their original area. The Longleaf Conservation Plan indicates that frequent prescribed fire is essential to achieving the goal of restoring 5 million acres of longleaf pine ecosystems by 2025. According to the Longleaf Conservation Plan, a study of fire regimes in southern forests conducted by the U.S. Forest Service found that the historical natural fire return interval for longleaf pine ecosystems is one to four years[18]. References to this type of information may be helpful for addressing the natural fire return interval criterion.

A.4.4 Addressing Recurrence Using the Prescribed Fire Frequency Needed to Establish, Restore and/or Maintain a Sustainable and Resilient Wildland Ecosystem

Fire recurrence may also be addressed by identifying the prescribed fire frequency needed to establish, restore and/or maintain a sustainable and resilient wildland ecosystem and/or to preserve endangered or threatened species. The EPA acknowledges that a multi-year plan with such a stated objective may include general targets for the frequency of prescribed fire use and that management may deviate from the general plan due to unexpected differences between planned and actual fire behavior, landscape or ecosystem characteristics, fuel loading patterns and weather patterns.[19]

As a result, when the EPA reviews an exceptional events demonstration for a prescribed fire conducted under a land or resource management plan, we intend to compare the actual time pattern of prescribed fires on the land with the pattern described in the applicable multi-year plan in a general way, rather than treating the multi-year plan as containing a specific schedule to which management must adhere.

On a case-by-case basis, in the absence of a multi-year land or resource management plan, the necessary prescribed fire frequency may be established according to scientific literature. When

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[17] America's Longleaf, A Restoration Initiative for the Southern Longleaf Pine Forest, "Range-wide Conservation Plan for Longleaf Pine," March 19, 2009, available at *http://www.americaslongleaf.org/media/86/conservation_plan.pdf*.

[18] *See* Table 25.1 on page 611 of: Stanturf, J.A.; Wade, D.D.; Waldrop, T.A.; Kennard, D.K.; Achtemeier, G.L. 2002. Background paper: fire in southern forest landscapes. In: Wear, D.N.; Greis, J.G. Southern forest resource assessment. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station: 607-622.

[19] 81 FR 68216, 68252 (October 3, 2016).

preparing its demonstration, the air agency should discuss this literature review with the EPA Regional office, and include this information and analysis in the demonstration, as appropriate.

If the air agency intends to satisfy this criterion by referencing the fire frequency needed to establish, restore and/or maintain a sustainable and resilient wildland ecosystem and/or to preserve endangered or threatened species, the demonstration typically should include language from the area's multi-year land or resource management plan addressing this frequency, with a focus on the following details:

- A description of the area to be burned and planned approximate start time and end of burn, or appropriate description based on the multi-year land or resource management plan.
- A description of the plant and animal life that the fire will impact
- An analysis of the intended impacts of prescribed fire in the area, emphasizing biological diversity and wildlife habitat

An air agency can also satisfy this rule criterion by demonstrating through a review of scientific literature that the fire was conducted according to the frequency necessary to achieve this goal. This analysis typically should review similar factors as those described above.

The Longleaf Conservation Plan discussed above also serves as an example for addressing the rule criterion. The plan indicates that periodic fire is critical for creating and maintaining an environment where longleaf pine ecosystems can thrive and provide valuable habitat for threatened and endangered species, including the red-cockaded woodpecker and gopher tortoise. Additional scientific literature supports the need for frequent prescribed fire for restoring and maintaining longleaf pine ecosystems.[20] A fire return frequency of one to four years is needed for a healthy longleaf ecosystem.[19]

A.4.5 Example Conclusion Statement

Including a conclusion statement similar to the language below is helpful to demonstrate that the prescribed fire on wildland satisfied the human activity unlikely to recur at a particular location criterion.

"Based on the documentation provided in [Section X] of this submittal, the prescribed fire event satisfied the human activity unlikely to recur at a particular location criterion by describing the actual frequency with which a burn was conducted and showed how this burn frequency [Pick one: mimics the natural fire return interval OR follows the prescribed fire frequency needed to establish, restore and/or maintain a sustainable and resilient wildland ecosystem contained in a multi-year land or resource management plan with a stated objective to establish, restore and/or maintain a sustainable and resilient wildland ecosystem and/or to preserve endangered or threatened species through a program of prescribed fire]. Specifically, the demonstration

[20] Forest Encyclopedia Network, "Managing Longleaf Pine with Prescribed Fire" *http://www.forestencyclopedia.net/p/p227.*

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described the burn frequency as being [every 3 years…]. The land management plan [identify the specific plan name] indicates that the [natural OR necessary] fire return interval is 3-5 years."

Where appropriate, the conclusion statement should clarify whether appropriate burn frequencies vary within the ecosystem. For example, for a "natural ecosystem" where the encroachment of vegetation that harms the ecosystem is greater along the perimeter, submitter might say that to maintain the "natural, historic" ecosystem you need annual burning along the perimeter (defined as X miles/acres) and burning every 2-3 years in the interior.

A.5 Addressing the Not Reasonably Controllable or Preventable Criterion

A.5.1 Overview and Exceptional Events Rule Provisions

According to the CAA and the Exceptional Events Rule, an exceptional event must be "not reasonably controllable or preventable." The final rule clarifies that the EPA interprets this requirement to contain two factors: the event must be both not reasonably controllable and not reasonably preventable at the time the event occurred.[21]

A.5.2 Addressing the "Not Reasonably Controllable" Criterion

A demonstration satisfies the controllability prong based on the manner by which the fire was conducted. The controllability prong of the not reasonably controllable or preventable criterion can be satisfied if (1) the prescribed fire was conducted under an adopted and implemented certified SMP, or (2) the prescribed fire was conducted with appropriate BSMP.[22] The state must either certify to the Administrator that it has adopted and is implementing an SMP *or* the state must demonstrate that the burn manager employed appropriate BSMPs. *See* table 1 to 40 CFR 50.14.[23]

<u>Demonstrating the Controllability Prong by Implementing a Smoke Management Program</u>

The EPA has previously explained that SMPs establish a basic framework of procedures for managing smoke from prescribed fires, and are typically developed by air agencies in collaboration with wildland owners/managers. SMPs are intended to foster stakeholder cooperation and responsible fire management with the goal of minimizing negative impacts on public health and welfare.

If an air agency demonstration relies on an SMP to address the "not reasonably controllable" prong of the "not reasonably controllable or preventable" criterion, the air agency must certify the SMP before the date of the event. Because the EPA does not approve or disapprove SMPs, the air agency, rather than the EPA, certifies the SMP. "Certification" requires that a responsible state or delegated local agency certify in a letter to the Administrator of the EPA, or a EPA

[21] *See* 40 CFR 50.14(c)(3)(D) and 81 FR 68216, 68235.
[22] *See* 40 CFR 50.14(a)(3)(ii)(A).
[23] *Id.*

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Regional Administrator, that it has adopted and is implementing an SMP.[24] Past certifications provided to the EPA through this process are sufficient to meet the "certified" SMP language in the Exceptional Events Rule. Note that SMPs that have been incorporated into an SIP are one example of "certified" SMPs.[25] An air agency with a current SMP that has not been certified according to this process could pursue certification of its existing SMP. The EPA anticipates that any person within an air agency responsible for submitting exceptional events demonstrations or SIP revisions could also be responsible for certifying an SMP.[26] The EPA will accept a letter from the air agency submitting the exceptional events demonstration certifying that the SMP is being implemented, provided that prior to the EPA's acting on a demonstration, the record contains no clear evidence to the contrary.[27]

States with SMPs typically have robust communications between officials concerned with air quality impacts and land managers who use prescribed fire. These groups communicate during the development of the SMP, during the day-to-day burn authorization process, and in the periodic review and potential revision of the SMP. The EPA encourages these groups to also communicate with their EPA Regional Offices to ensure that the SMP addresses prescribed fire in a manner that meets Exceptional Events Rule criteria.

A certified SMP that addresses prescribed fire on wildland for the purposes of meeting Exceptional Events rule criteria will generally have at least the following six components:

1. *Authorization to burn*:[28] Includes a process for authorizing or granting approval to manage prescribed fires on wildland within a region, state or on tribal lands and identifies a central authority responsible for implementing the program. The authorization process could, but is not required to, include burn permits or other forms of instruction for conducting burns that consider air quality and the ability of the airshed to disperse emissions.
2. *Minimizing air pollutant emissions*: Encourages wildland owners/managers to consider and evaluate alternative treatments to fire, but if fire is the selected approach to follow appropriate emission reduction techniques.
3. *Smoke management components of burn plans*: If the smoke management program requires burn plans, then the burn plan should include the following components: Actions to minimize fire emissions, approaches to evaluate smoke dispersion, public notification and exposure reduction procedures, and air quality monitoring.

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[24] *See* 50 CFR 50.14(b)(3)(ii)(A) and 81 FR 68216, 68252 (October 3, 2016).
[25] *See* 81 FR at 68252.
[26] *See* 81 FR at 68252 n.74.
[27] *Id.* at 68251.
[28] The authorization to burn element does not mean that a SMP must require permits for prescribed fire to satisfy the not reasonably controllable or preventable criterion. We have clarified that while this component must include a process for authorizing or granting approval for fires with resource benefits, this authorization process may or may not include burn-specific permits. For example, the authorization could be day-by-day and apply to all burners, or to burners in defined areas, with no transaction between the implementing agency and particular burner other than to convey this general information. *See* Responses to Significant Comments on the 2015 Proposed Rule Revisions to the Treatment of Data Influenced by Exceptional Events, page 73 (September 2016), Docket Number EPA-HQ-OAR-2013-0572. Available at *https://www.epa.gov/sites/production/files/2016-09/documents/exceptional_events_rtc_09132016_final.pdf.*

4. *Public education and awareness*: Establishes the criteria for issuing health advisories when necessary and procedures for notifying potentially affected populations.
5. *Surveillance and enforcement*: Includes procedures to ensure compliance with the terms of the SMP.
6. *Program evaluation*: Provides for periodic review by interested stakeholders of the SMP effectiveness and program revision as necessary. A review of effectiveness should consider the role of prescribed fire in meeting the goals in a multi-year land or resource management plan with a stated objective to establish, restore and/or maintain a sustainable and resilient wildland ecosystem and/or to preserve endangered or threatened species. Effectiveness reviews should also consider air quality impacts as well as any received post-burn reports, which may describe implemented contingency plans due to smoke impacts or use of BSMP and recommendations for future improvements. SMP procedures for reevaluation should address a frequency of review (*e.g.*, every 3 to 5 years, or as needed); participants in the review process (*e.g.*, original program developers to include land owners/ managers, air quality managers, the public, etc.); and program objectives over the review period (*e.g.*, acres burned, anticipated/desired future acres burned, needed modifications). [29]

These six SMP components are provided as guidance in the preamble to the Final Rule. Additionally, SMPs may meet some or all requirements for an exceptional events mitigation plan. For areas that may be required to develop a mitigation plan, they can leverage existing requirements from an SMP towards meeting the obligations of a mitigation plan. If an exceptional event triggers a mitigation plan requirement, air agencies should engage with their EPA Regional office to determine whether existing programs meet mitigation requirements.

If private landowners want to rely on a land/resource management plan and burns on private land contribute to an exceedance in an exceptional events demonstration, and the state submitting a demonstration is relying on a certified SMP, then the SMP should address fires on privately-owned lands.

The demonstration can be supported by the SMP, or a reference to a website containing the SMP with adequate information to ensure that the EPA and the public can access the SMP, and a letter from the responsible state, tribe, or delegated local agency certifying that it has adopted and is implementing the SMP.[30] Additionally, the EPA recommends that the demonstration include a copy of the burn plan and post-burn report, if available. If the responsible state, tribe, or delegated local agency has previously submitted a certification letter, the parties should discuss with the EPA Regional office whether an additional more recent letter is necessary.

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[29] 81 FR 68216, 68252 (October 3, 2016).

[30] Examples of certified SMPs include programs for the state of Georgia is available at *http://www.garxfire.com/pdf%20files/SMP_MOU.pdf/*, and for the state of Florida at *http://www.freshfromflorida.com/content/download/35388/831285/Florida's_Certified_Smoke_Management_Plan_2014.pdf.*

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Demonstrating the Controllability Prong by Relying on Basic Smoke Management Practices

If the state or tribe has not implemented an SMP that would satisfy the not reasonably controllable criterion, or it does not wish to rely on the SMP in the demonstration, it may instead satisfy this criterion by providing evidence as described below that the burn manager[31] employed appropriate BSMP.[32]

The Exceptional Events Rule requires interagency collaboration for air agencies employing BSMP to satisfy the not reasonably controllable criterion.[33] If the air agency anticipates satisfying this rule criterion by employing BSMP, then the air agency, federal land managers, and other entities as appropriate, must periodically collaborate with burn managers operating within the jurisdiction of the state or tribe to discuss and document the process by which air agencies and land managers will work together to protect public health and manage air quality impacts during the conduct of prescribed fires on wildland.[34] While the EPA is not defining the mechanism by which these discussions are conducted or documented, or the full scope of these discussions, such discussions must include outreach and education regarding general expectations for the selection and application of appropriate BSMP and goals for advancing strategies and increasing adoption and communication of the benefits of appropriate BSMP. This mechanism could be formal, such as a Memorandum of Understanding or an Interagency Agreement, or it could be a letter agreement.[35] The Exceptional Events Rule also creates an initial implementation period (*e.g.*, 2 years from the effective date of the 2016 Exceptional Events Rule) for this collaboration to allow air agencies and land managers to develop and incorporate the collaboration process into operational management. Event demonstrations submitted on or before September 30, 2018, are not subject to the collaboration requirement. Event demonstrations submitted after September 30, 2018, are subject to the collaboration requirements, and thus FLMs and burn managers must have discussed and documented a process that includes outreach and education regarding general expectations for the selection and application of appropriate BSMP and goals for advancing strategies and increasing adoption and communication of the benefits of appropriate BSMP.[36] Under the rule, the EPA cannot concur with a demonstration for prescribed fire that submitted after September 30, 2018 that relies on BSMP until this collaboration has been conducted and documented. The EPA does not require that collaboration results prescriptive list of every BSMP that must be applied to comply with the Exceptional Events rule. Rather, these collaborations serve as a vital mechanism to ensure air agencies and federals are working together to implement the Exceptional Events Rule.

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[31] The terms "burn manager" or "fire manager" mean the party responsible for supervising a prescribed fire from ignition through fire extinguishing and cleanup, or another party in the same organization who represents, supervises or is supervised by said party and can be a communications pathway to and from such person. Many agencies have their own definition of or terminology for a burn manager, some of which include certification requirements. We are deferring and relying on states to use the appropriate terminology. *See* Responses to Significant Comments on the 2015 Proposed Rule Revisions to the Treatment of Data Influenced by Exceptional Events, page 72 (September 2016), Docket Number EPA-HQ-OAR-2013-0572. Available at *https://www.epa.gov/sites/production/files/2016-09/documents/exceptional_events_rtc_09132016_final.pdf.*

[32] 40 CFR 50.14(b)(3)(ii)(A).

[33] 40 CFR 50.14(b)(3)(ii)(B)(1).

[34] 40 CFR 50.14(b)(3)(ii)(B).

[35] 81 FR 68216, 68254 (October 3, 2016).

[36] 40 CFR 50.14(b)(3) and 81 FR 68216, 68254.

As discussed in the preamble to the final rule, the EPA does not expect the above described collaborative discussions on BSMP prior to each prescribed fire on wildland. Furthermore, goals for applicability should remain flexible to allow for onsite variation and site-specific conditions that can be variable on the day of the burn.[37] The EPA also does not expect air agencies to create new processes for engaging with burn managers where such processes already exist. Where air agencies have an existing, documented process or program under which air agencies, federal land managers, state fire agencies and other entities engage with burn managers regarding the protection of public health and air quality and general expectations for the selection, application and benefits of appropriate BSMP, they may rely upon and reference this process or program when addressing the not reasonably controllable or preventable criterion for an exceptional events demonstration for a prescribed fire.[38]

The EPA identified generally appropriate BSMP in Table 1 to 40 CFR § 50.14 in the final Exceptional Events Rule.[39] This table, which is reproduced below, is not intended to be all-inclusive. Burn managers and air agencies have flexibility and discretion to consider other appropriate BSMP as they become available due to technological advancement or programmatic refinement.[40] As part of the Exceptional Events demonstration, the air agency must document that the BSMPs were implemented for the fire(s) that are the subjects of the demonstration. This documentation may be available in a burn plan or post-burn report.

Neither this prescribed fire addendum to the *Guidance on the Preparation of Exceptional Events Demonstrations for Wildfire Events that May Influence Ozone Concentrations* nor the Exceptional Events Rule is intended to limit the type of practices that may constitute BSMP.

After a prescribed fire occurs and exceeds or violates a NAAQS, the air agency that employed the BSMP must participate in a "lessons learned" review of the event, and examine why an exceedance or violation occurred in spite of the use of BSMP.[41] The air agency and the burn manager must conduct a retrospective review of the prescribed fire event and the employed BSMP to ensure the protection of air quality and public health and progress towards restoring and/or maintaining a sustainable and resilient wildland ecosystem. Either the air agency or the burn manager could initiate such a retrospective review. If the prescribed fire becomes the subject of an exceptional events demonstration, the demonstration must include documentation of the post-burn review before the EPA will concur with a demonstration.[42]

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[37] 81 FR 68216, 68254.
[38] *Id.*
[39] *Id.* at 68252.
[40] *Id.*
[41] *See* 40 CFR 50.14(b)(3)(ii).
[42] 81 FR 68216, 68254 (October 3, 2016).

Table 1 to 40 § 50.14: Summary of Basic Smoke Management Practices, Benefit Achieved with the BSMP, and When It Is Applied[a]

Basic Smoke Management Practice [b]	Benefit achieved with the BSMP	When the BSMP is applied—before/during/after the burn
Evaluate Smoke Dispersion Conditions	Minimize smoke impacts	Before, During, After.
Monitor Effects on Air Quality	Be aware of where the smoke is going and degree it impacts air quality.	Before, During, After.
Record-Keeping/Maintain a Burn/Smoke Journal.	Retain information about the weather, burn and smoke. If air quality problems occur, documentation helps analyze and address air regulatory issues	Before, During, After.
Communication—Public Notification	Notify neighbors and those potentially impacted by smoke, especially sensitive receptors.	Before, During.
Consider Emission Reduction Techniques	Reducing emissions through mechanisms such as reducing fuel loading can reduce downwind impacts.	Before, During, After.
Share the Airshed—Coordination of Area Burning.	Coordinate multiple burns in the area to manage exposure of the public to smoke.	Before, During, After.

[a] The EPA believes that elements of these BSMP could also be practical and beneficial to apply to wildfires for areas likely to experience recurring wildfires.
[b] The listing of BSMP in this table is not intended to be all-inclusive. Not all BSMP are appropriate for all burns. Goals for applicability should retain flexibility to allow for onsite variation and site-specific conditions that can be variable on the day of the burn. Burn managers can consider other appropriate BSMP as they become available due to technological advancement or programmatic refinement.

Table 2 includes additional procedures and practices for air agencies before, during and after the event in question.

If an air agency is supporting its demonstration that the prescribed fire was not reasonably controllable through a showing that the burn manager employed appropriate BSMP, the demonstration should provide evidence of interagency collaboration. Additionally, the demonstration must include documentation of a post-burn review.[43] The demonstration must also identify that appropriate BSMP were employed. The air agency may rely on a statement or other documentation provided by the burn manager that he or she employed BSMP. Burn plans and post-burn reports are two examples of documentation that air agencies can use in their exceptional events demonstrations for prescribed fires to show the implementation of BSMP. Table 2 provides examples of elements that may be included in burn plans and post-burn reports.

[43] *Id.* at 68254 and 40 CFR 50.14(b)(3)(ii)(A).

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Table 2: Elements That May Be Included In Burn Plans and Post-Burn Reports For Prescribed Fires Submitted As Exceptional Events[44]

Element	Burn plan	Post-Burn report
Fire Name [a]	Include	Include
Permit number (if appropriate)	Include	Include.
Latitude/longitude and physical description	Include	Include.
Date of burn, ignition time and completion time (duration of burn)	Include	Include
AQI status on burn day, if available (both in the vicinity of the fire and in the affected upwind area)	Predicted	Actual
Acres burned	Planned	Actual (blackened)
Description of fuel loading	Estimated	Actual (tons consumed)
Meteorological data (weather conditions, wind speed and direction, dispersion)	Predicted conditions (including predicted dispersion).	Actual conditions (including actual dispersion)
Smoke Impacts	Anticipated smoke impacts	Observed or reported smoke impacts (include nature, duration, spatial extent and copies of received complaints)
BSMP actions to reduce impacts	Expected BSMP actions	Actual BSMP actions
Recommendations for future burns in similar areas		Include
Analytics (modeled/actual fire spread, satellite imagery and analysis, webcam/video, PM/O_3 concentrations over the course of the fire)		Include

[a] The ''Fire Name'' should be unique and referenced, to the greatest extent possible, in all exceptional events-related documentation, including the event name in AQS. The fire name could simply consist of the county, state and date in which the burn occurred (*e.g.*, County X, State Y Prescribed Fire on Date Z) if no other name has been assigned.

A.5.3 Addressing the "Not Reasonably Preventable" Criterion

A demonstration satisfies the not reasonably preventable prong based on the benefits that would be foregone if the fire were not conducted.[45] Thus, satisfying the "not reasonably preventable" prong of the "not reasonably controllable or preventable" rule criterion involves describing those foregone benefits. The air agency can rely on a multi-year land or resource management plan for a wildland area with a stated objective to establish, restore and/or maintain a sustainable and resilient wildland ecosystem and/or to preserve endangered or threatened species through a program of prescribed fire. [46] The "foregone benefits" are those objectives in a multi-year plan that establish, restore and/or maintain a sustainable and resilient wildland ecosystem.

[44] *See* 81 FR at 68253, Table 4.
[45] *Id.* at 68256.
[46] 40 CFR 50.14(b)(ii)(C).

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As stated in the preamble to the final rule, the existence of identified objectives in a state or private management plan may not be sufficient under the exceptional events process. Rather, the stated objectives must include objectives to establish, restore and/or maintain a sustainable and resilient wildland ecosystem and/or to preserve endangered or threatened species, as identified by the Exceptional Events Rule.[47]

If a prescribed fire on private land contributes to the exceedance, the multi-year land or resource management plan must either address the specific privately-owned lands or private landowners must have a land management plan that addresses the above objectives.

An air agency can support that the prescribed fire was not reasonably preventable by pointing to a multi-year land or resource management plan for a wildland area with a stated objective to establish, restore, and/or maintain a sustainable and resilient wildland ecosystem and/or to preserve endangered or threatened species. Air agencies can either include a copy of the plan or an internet link to the plan in the demonstration with adequate information to ensure the EPA and the public can access the plan.[48] This documentation may be similar to evidence supporting that the prescribed fire was human activity unlikely to recur. Thus, a demonstration can cite to where this information was already identified.

For example, the Longleaf Conservation Plan discussed in Sections A.4.4 above also serves as an example for addressing the "not reasonably preventable" rule criterion. The plan indicates that periodic fire is critical for creating and maintaining an environment where longleaf pine ecosystems can thrive and provide valuable habitat for threatened and endangered species, including the red-cockaded woodpecker and gopher tortoise. According to the plan, additional scientific literature supports the need for frequent prescribed fire for restoring and maintaining longleaf pine ecosystems.[49] In this instance, prescribed burns performed for restoring or maintaining longleaf pine ecosystems may reference the appropriate portions of the Longleaf Conservation Plan to address this rule criterion.

A.5.4 Example Conclusion Statement

A conclusion statement similar to the language below is helpful to demonstrate that the prescribed fire on wildland satisfied the not reasonably controllable or preventable criterion.

"Based on the documentation provided in [Section X] of this submittal, the prescribed fire event satisfied the not reasonably controllable or preventable criterion. The event was not reasonably controllable because it was [conducted under a certified and implemented Smoke Management Program/the burn manager employed appropriate basic smoke management practices]. The event was not reasonably preventable because the prescribed fire was necessary to establish, restore and/or maintain a sustainable and resilient wildland ecosystem and/or to preserve endangered or threatened species through a program of prescribed fire, as evidenced by [multi-year land or

[47] *Id.* and 81 FR 68216, 68255 (October 3, 2016).
[48] 81 FR at 68250.
[49] Forest Encyclopedia Network, "Managing Longleaf Pine with Prescribed Fire" *http://www.forestencyclopedia.net/p/p227*.

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resource management plan contained in Section (X)/scientific literature contained in Section (X)]."

A.6 Air Agency's Public Comment Process

A.6.1 Overview and Exceptional Events Rule Provisions

According to 40 CFR 50.14(c)(3)(v), air agencies must "[d]ocument [in their exceptional events demonstration] that the [air agency] followed the public comment process and that the comment period was open for a minimum of 30 days…." Further, air agencies must submit any received public comments to the EPA and address in their submission those comments disputing or contradicting the factual evidence in the demonstration. Air agencies with recurring events may also be subject to the mitigation requirements at 40 CFR 51.930. Air agencies subject to these requirements have additional obligations including preparation of a mitigation plan which must provide for public notification and education.[50]

A.6.2 Examples of Supporting Documentation

Air agencies typically include in their exceptional events demonstration the details of the public comment process including newspaper listings, website postings, and/or places (library, agency office) where the hardcopy was available.

A.6.3 Example Conclusion Statement

In addition to the supporting information suggested in Section 6.2, a conclusion statement similar to the language below is helpful to demonstrate that the air agency followed the public comment process.

"The [air agency] posted notice of this exceptional events demonstration on [date posted] in the following counties/locations: [list counties affected and locations posted]. [Number] public comments were received and have been included in [Section X] of the demonstration, along with [air agency's] responses to these comments."

A.7 Key Messages

The EPA recognizes the limited resources of the air agencies that prepare and submit exceptional events demonstrations and of the EPA Regional offices that review these demonstrations. Prior to submitting a demonstration, the initial notification process is intended to promote early and frequent communication between air agencies and EPA Regional offices when air agencies first begin to consider developing an exceptional events demonstration. During the initial notification process, the EPA expects to discuss potential event-influenced monitored concentrations with an affected air agency prior to the air agency preparing and submitting a demonstration. For prescribed fire events, this "initial notification" is expected to focus, in part, on whether the event is human activity unlikely to recur and is not reasonably controllable or preventable, based on the

[50] *See* 40 CFR 51.930(b).

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specific manner these provisions are applied to prescribed fire. The EPA and the air agency will also begin discussions regarding the appropriate tier (Tier 1,2 or 3) for evidence in support of the clear causal relationship between the event and the exceedance.

For prescribed fire events on wildland, the human activity unlikely to recur at a particular location criterion is demonstrated by comparing the actual frequency with which a burn was conducted with an assessment of the natural fire return interval or the prescribed fire frequency needed to establish, restore and/or maintain a sustainable and resilient wildland ecosystem contained in a multi-year land or resource management plan with a stated objective to establish, restore and/or maintain a sustainable and resilient wildland ecosystem and/or to preserve endangered or threatened species through a program of prescribed fire. The not reasonably controllable or preventable criterion for demonstrations involving prescribed fires on wildland is demonstrated based on evidence indicating (1) the prescribed fire was conducted under an adopted and implemented certified SMP, or (2) the prescribed fire was conducted with appropriate BSMP, as well as an analysis of the benefits that would be foregone if the fire were not conducted.

One of the EPA's goals in developing this document is to establish clear expectations to enable agencies to better manage resources as they prepare the documentation required under the 2016 Exceptional Events Rule and to avoid the preparation and submission of extraneous information. Submitters should prepare and submit the appropriate level of supporting documentation, which will vary on a case-by-case basis depending on the nature and severity of the event, as appropriate under a weight-of-evidence approach. Ultimately, the EPA ensured that the 2016 Exceptional Events Rule included mechanisms to facilitate collaboration with air agencies to ensure that exceptional events demonstrations satisfy the rule criteria and support the regulatory determination(s) for which they are significant, and this document is intended to help air agencies determine the appropriate kind of information and analyses to include in a demonstration, considering the weight-of-evidence approach, and which will vary on a case-by-case basis.

DRAFT