

# 2017 Crop Residue Burning Ozone State Implementation Plan Revision

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Weight of Evidence to Demonstrate Program Concentration  
Threshold Protective of National Ambient Air Quality Standards



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**September 2017**

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Printed on recycled paper, DEQ, August 2017, PID SSIP, CA code 81992. Costs associated with this publication are available from the State of Idaho Department of Environmental Quality in accordance with Section 60-202, Idaho Code.

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## Abbreviations, Acronyms, and Symbols

<b>§</b>	section (usually a section of federal or state rules or codes)	<b>NAAQS</b>	National Ambient Air Quality Standards
<b>µg</b>	microgram	<b>NEI</b>	National Emissions Inventory
<b>AQI</b>	Air Quality Index	<b>NO<sub>2</sub></b>	nitrogen dioxide
<b>AQS</b>	EPA Air Quality System	<b>NO<sub>x</sub></b>	nitrogen oxides
<b>CA</b>	California	<b>O</b>	oxygen
<b>CAA</b>	Clean Air Act	<b>OH</b>	hydroxyl
<b>CO</b>	carbon monoxide	<b>PM<sub>2.5, 10</sub></b>	particulate matter with an aerodynamic diameter of 2.5 or 10 micrometers or less
<b>CRB</b>	crop residue burning	<b>ppb</b>	parts per billion
<b>CREP</b>	Conservation Reserve Enhancement Program	<b>ppbv</b>	parts per billion by volume
<b>CRP</b>	Conservation Reserve Program	<b>ppm</b>	parts per million
<b>DEQ</b>	Idaho Department of Environmental Quality	<b>RACT</b>	reasonably available control technology
<b>EPA</b>	United States Environmental Protection Agency	<b>SI</b>	stratospheric intrusion
<b>FARR</b>	Federal Air Rules for Indian Reservations	<b>SIL</b>	significant impact level
<b>FCCS</b>	Fuel Characteristic Classification System	<b>SIP</b>	state implementation plan
<b>ID</b>	Idaho	<b>SMA</b>	smoke management area
<b>IDAPA</b>	Refers to citations of Idaho administrative rules	<b>SO<sub>2</sub></b>	sulfur dioxide
<b>ISDA</b>	Idaho State Department of Agriculture	<b>TSD</b>	air quality modeling technical support document
<b>ISP</b>	institution with sensitive populations	<b>UT</b>	Utah
<b>km</b>	kilometer	<b>VOC</b>	volatile organic compound
<b>LT</b>	lower troposphere	<b>WA</b>	Washington
<b>m<sup>2</sup></b>	square meter	<b>WY</b>	Wyoming
<b>MDA8</b>	maximum daily 8-hour average		
<b>mph</b>	miles per hour		

## Executive Summary

The Idaho Department of Environmental Quality (DEQ), created by the Idaho Environmental Protection and Health Act, ensures clean air, water, and land in the state and protects Idaho citizens from the adverse health impacts of pollution. DEQ is required to protect National Ambient Air Quality Standards (NAAQS) through administration of various air quality programs. The responsibility for ensuring compliance with federal health-based air quality standards governs DEQ's decisions whether implementing programs on a daily basis or modifying rules to enhance overall program effectiveness.

In 2008, Idaho created a new Crop Residue Burning (CRB) program as a result of a court settlement and negotiations between regulators, environmental health advocates and growers. DEQ submitted the new program as a State Implementation Plan (SIP) revision, and the revision was approved by the United States Environmental Protection Agency (EPA) and became effective September 2008 (73 FR 44915). The 2008 Idaho statute (Idaho Code §39-114) and rule (IDAPA 58.01.01.621.01) implemented the program and limited burning at 75% of the NAAQS. This rule prohibited approving agricultural burning when ozone concentrations were greater than 56 parts per billion (ppb). DEQ has managed the CRB program for several years under this threshold limitation, and days with atmospheric conditions conducive to good smoke management were often excluded because of this threshold. When EPA modified the 8-hour ozone NAAQS in 2015 to 0.070 parts per million, the original Idaho rule, if left unchanged, would have restricted any agricultural burning at 52.5 ppb. An ozone concentration of 52.5 ppb is approaching background ozone levels in Idaho and would limit the effectiveness of Idaho's smoke management program. In the 2016–2017 negotiated rulemaking process, DEQ modified the Idaho rule allowing CRB to 90% of the 8-hour ozone NAAQS.

Changing the Idaho rule to 90% of the NAAQS for ozone only, which represents a 63 ppb ozone concentration, was pursued to ensure the program continues to protect public health and air quality while allowing CRB as an agricultural practice when it will not jeopardize public health. This change applies to lands outside the five Idaho tribal reservation boundaries only. A cessation threshold of 63 ppb provides (at a minimum) a 7 ppb cushion for protecting the 2015 8-hour ozone NAAQS. In reality most burning occurs on days with lower ozone concentrations and thus the actual buffer to protect the NAAQS is greater than 7 ppb. In this analysis, we conservatively assumed the smallest possible buffer of 7 ppb.

This SIP revision provides ample evidence that CRB, as it occurs in Idaho, has and will continue to meet all requirements of the Clean Air Act (CAA) and will not cause or significantly contribute to a NAAQS violation. Most notably, DEQ's technical analyses described in this document indicate the following:

- EPA's modeling results for interstate transport for the 2015 standard show that Idaho's ozone precursor emissions (volatile organic compounds [VOC] and nitrogen oxides [NO<sub>x</sub>]) from all sources, including CRB do not contribute more than 0.6 ppb to any monitor outside of Idaho.
- The 2014 National Emissions Inventory (NEI) shows that CRB activity contributed only 0.03% of Idaho's VOC emissions and 0.16% of Idaho's NO<sub>x</sub> emissions.

- Multiple DEQ searches of data from 9 ozone monitors in and around Idaho during every burn day in 2011–2015 revealed no CRB contributions to the ozone maximum daily 8-hour average (MDA8) over 2 ppb.
- Statistical analysis of 20 ozone monitors in and around California’s San Joaquin Valley, where the largest burn day involves 12,600 acres, ten times the largest burn day in Idaho’s largest county, indicates no influence from agricultural emissions on 150 burn days compared to 214 days when burning did not occur.

In summary, DEQ operates the most comprehensive agricultural burning program in the west. Daily meteorological and air quality forecasts, daily in-field surveillance, on-site approval requirements, and a rigorous permitting program that restricts burning well below all NAAQS thresholds while protecting institutions with sensitive populations are core elements of Idaho’s CRB program. These fundamental components designed to protect human health and the quality of Idaho’s air will continue to be foundational to Idaho’s CRB smoke management program. This rule change does not alter or jeopardize these purposes. In addition this change does not increase emissions, or acres burned on a daily or annual basis, and should be considered a minor SIP revision because it only changes a decision-making threshold that will improve overall smoke management (the primary goal of any successful smoke management program).

Lastly, the federal government, through implementation of the Federal Air Rules for Indian Reservations (FARR) is not required to review ozone concentrations when making burn decisions. More specifically the Nez Perce Program, which the parties to the aforementioned settlement agreed to model the state program after, does not include ozone review in its CRB regulations. Further, DEQ found no state law prohibiting CRB based on ozone concentrations.

# 1 Introduction

The goal of any smoke management program is to protect public health by reducing smoke impacts from allowable forms of open burning while protecting the NAAQS and maintaining fire as a tool. Idaho's Crop Residue Burning (CRB) program is one of the more comprehensive agricultural smoke management burning programs in the western United States. Daily meteorological and air quality forecasts coupled with daily in-field surveillance, on-site approval requirements, and a rigorous permitting program designed to protect institutions with sensitive populations (ISPs) are core elements of the CRB program. Before approving a crop residue burn, the Idaho Department of Environmental Quality (DEQ) must determine that air quality is not exceeding 75% of any National Ambient Air Quality Standard (NAAQS) and is not projected to exceed such level during the next 24 hours (section 7.2). This requirement has worked well in protecting the particulate matter with an aerodynamic diameter of 2.5 micrometers or less (PM<sub>2.5</sub>) and ozone NAAQS. However, for ozone, this requirement has been problematic to implement because it limits burning on what would otherwise be a desirable day to burn from a smoke management perspective. DEQ is updating the rules related to this requirement for ozone to improve the smoke management program, and this demonstration addresses those updates and supports DEQ's conclusion that the smoke management program will continue to be protective of the ozone NAAQS as it has successfully done for the past 9 years.

The original 75% limitation was established as a result of negotiated rulemaking in 2008. This burn cessation requirement was not included as an emission limit that was necessary to ensure maintenance or attainment of the ozone NAAQS. Instead it was a reasonable agreement point for Idaho's CRB smoke management program to be protective of all NAAQS. No ozone modeling was completed to establish this program threshold in the original SIP revision. This revision establishes the first look at the effects of the cessation criteria for ozone and demonstrates that it was not only protective of the NAAQS but should be altered to further enhance smoke management in Idaho. This current implementation plan revision is intended only to modify a program decision process that is procedural in nature. EPA's rule revision analysis guidelines suggest that no technical demonstration would be required for rule revisions that are procedural in nature when the effect of the rule was never explicitly relied upon in an attainment demonstration (EPA 2013). The 75% ozone cessation threshold was never relied upon for establishing NAAQS compliance for the rule which governs agricultural residue burning in Idaho. Furthermore, EPA in its FARR, has already determined that it is unnecessary to review ozone levels when making CRB decisions.

The 2008 SIP did not establish an acreage limitation. This implementation plan revision addressed in this document is solely intended to improve Idaho's CRB smoke management program effectiveness by providing the opportunity to utilize atmospheric conditions that support good smoke management decisions. This revision has no effect on the amount of acreage that will be registered to burn in the state of Idaho. The 2008 CRB SIP (DEQ 2008) estimated that 17% of the harvested cereal grain acreage in Idaho would be burned. This 2008 EPA-approved SIP projected the program would burn over 200,000 acres of cereal grain stubble annually in Idaho by 2015. Since 2009, Idaho has averaged just over 41,000 acres of cereal grain stubble burning per year each year, or 2% of the harvested acreage in Idaho. Emissions from CRB are actually less than 25% of that originally predicted. The harvested acres in Idaho have remained consistent at 1.8 million acres per year since the program began. There is no evidence available

that would support the presumption that this ratio, which has been consistent over time, will change as a result of additional burn days dispersed through the summer ozone season being realized. On the contrary, available evidence analyzed in this document provides data that demonstrates the amount of stubble being burned per year is not related to the number of burn days occurring each year.

Based on implementing Idaho’s CRB program since 2008, DEQ has developed a greater understanding of CRB and ozone. An indication that difficulties would arise from using a 75% of the NAAQS threshold for ozone came from the Air Quality Index (AQI). The United States Environmental Protection Agency’s (EPA’s) AQI provides a consistent messaging tool to communicate the health impacts of air pollutants to the public. All pollutants are placed on the same scale using a color-coded “yardstick.” An AQI value between 0 and 50 is considered “good” with no health impacts, while a value between 51 and 100 is considered “moderate” but still satisfactory air quality. Higher AQI values indicate less healthy air quality. The 75% of the ozone NAAQS point corresponds to an AQI value of 48, which is still considered “good” air quality. It is challenging to tell growers that they are unable to burn based on poor air quality, when the air quality is classified as good according to EPA.

To highlight the uniqueness of ozone on the AQI scale, if 75% of all of the NAAQS concentration values are calculated and converted to AQI values and plotted (Figure 1), ozone is the only pollutant whose 75% value falls into the good air quality range. For all other criteria NAAQS pollutants, 75% of the NAAQS concentration value equates to an AQI ranging from 73 to 81. A higher concentration percentage for ozone (90%) must be taken before the corresponding AQI value (77) falls in the 73–81 range as shown on the right side of Figure 1.

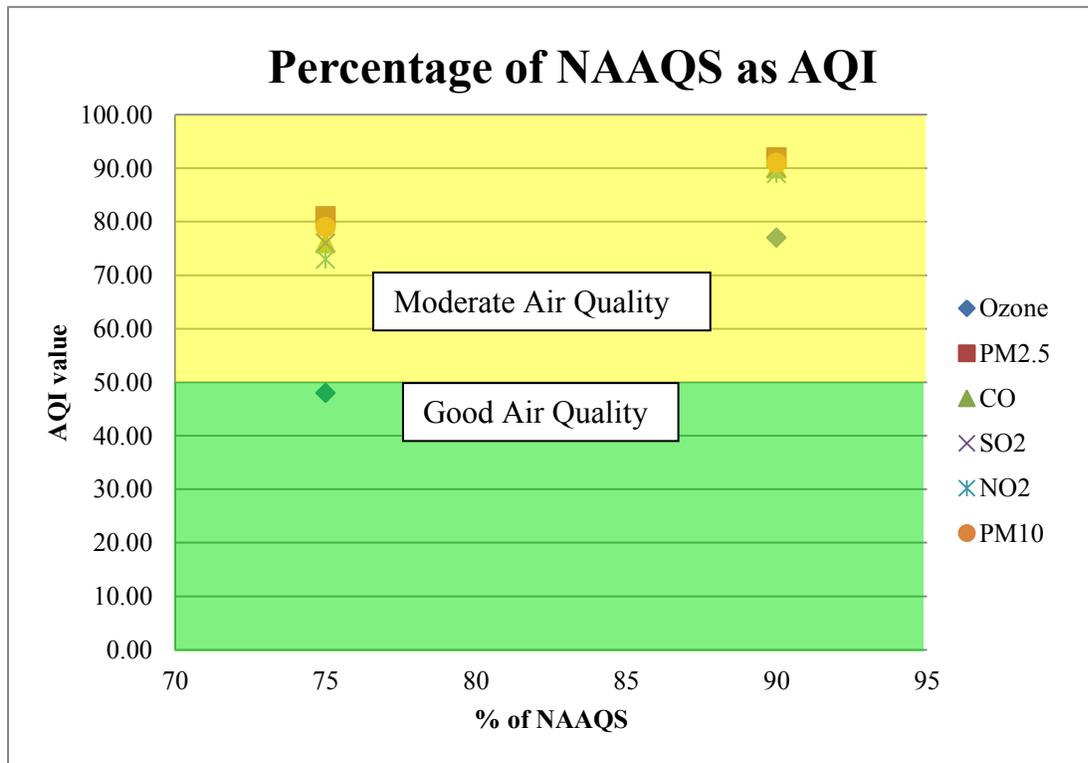


Figure 1. Plot illustrating the AQI values of 75% and 90% of the NAAQS concentration values for all criteria pollutants.

## 2 Proposed Rule Change

Based on the difficulties in running the CRB program with the 75% threshold requirement for ozone, DEQ engaged in negotiated rulemaking to develop a more appropriate program threshold that protected the ozone NAAQS but allowed DEQ greater flexibility to run an effective CRB smoke management program. As discussed above, the program requires that before approving a crop residue burn, DEQ must determine that (1) air quality is not exceeding 75% of any NAAQS, and (2) air quality is not projected to exceed such level during the next 24 hours. As a result of the ozone NAAQS threshold, there are days when DEQ cannot approve crop residue burns although (1) the weather conditions exhibit good smoke dispersion characteristics, and (2) DEQ technical staff expect the burns to have minimal impact on ambient ozone concentrations. Burning may not be allowed on good smoke management burn days even when the burn is not predicted to cause or significantly contribute to a violation of any NAAQS.

Through the negotiated rulemaking process, DEQ developed a rule that gives DEQ the authority to allow CRB when ozone levels are not exceeding, or expected to exceed, 90% rather than 75% of the ozone NAAQS. This change applies to ozone only. It applies to lands outside the five tribal reservation boundaries only.

DEQ's proposed rule change revises the program concentration threshold limit for ozone underlined below:

### 621. BURN DETERMINATION.

[Effective February 28, 2018] This version would become effective on a date certain by which EPA will have approved the SIP. DEQ anticipates approval of the SIP by February 28, 2018.

**01. Burn Approval Criteria.** The Department shall develop a Crop Residue Operating Guide to use in assisting in the determination of burn approvals. The permittee shall obtain initial approval from the Department for the proposed burn at least twelve (12) hours in advance of the burn. The permittee shall confirm, with the Department, the approval the morning of the proposed burn. The Department may shorten this time frame if meteorological or other applicable conditions change that will impact the air quality during the proposed burn period. To approve a permittee's request to burn, the Department must determine that ambient air quality levels do not exceed ninety percent (90%) of the ozone national ambient air quality standard (NAAQS) and seventy-five percent (75%) of the level of any other national ambient air quality standards NAAQS on any day and are not projected to exceed such level over the next twenty-four (24) hours, and ambient air quality levels have not reached, and are not forecasted to reach and persist at, eighty percent (80%) of the one (1) hour action criteria for particulate matter under Section 556 of these rules. . .

As already assumed by EPA in the FARR, this analysis demonstrates that Idaho's CRB program will not cause or significantly contribute to a violation of the ozone NAAQS. DEQ demonstrates through historical burn data, technical analysis, existing program restrictions (that are not changing), and evidence that no increase in annual program acreage will result from this change. It is reasonable to assume a rule revision that does not increase emissions will not interfere with attainment of the NAAQS or other Clean Air Act (CAA) requirements (EPA 2013); however, DEQ will provide additional evidence demonstrating this revision does not interfere with attainment of the ozone 8-hour NAAQS.

The 2008 SIP assumed that approximately 200,000 acres of residue would be burned in Idaho annually by 2015. This original submittal demonstrated to EPA's satisfaction that attainment of both the annual and the 24 hour PM<sub>2.5</sub> standards were achieved. The 2008 SIP did not include a demonstration for ozone nor was one required for approval. Therefore, DEQ's current SIP revision to change the ozone cessation threshold does not affect any assumption that was relied upon in the original 2008 SIP. It only seeks to improve on a point of agreement among those who were interested in establishing an effective smoke management program that would be protective of the NAAQS for Idaho at the time.

The 2008 SIP noted an air quality review analysis would be completed if the agricultural community desired to burn more than 20,000 acres of Kentucky Bluegrass. Currently Idaho's CRB Program approves and burns about 4,500 acres of bluegrass residue annually. No limitations on acreage for any other crop type were required to demonstrate attainment. The original 2008 SIP assumed an annual growth rate of the acreage burned by the program of 10% by the year 2015. The reality of Idaho's use of burning for residue reduction is far from the level assumed, demonstrated, and approved in the 2008 submittal. The program is consistently burning an average of 41,000 acres per year since its inception. This represents roughly 20% of the acreage and 10% of the emissions of the original SIP assumptions. The assumption that an additional 160,000 acres could be burned in Idaho as a result of this revision would suggest roughly 4 times the existing burn acreage would be approved and burned during those additional days. Data will be presented that shows that is an unreasonable assumption. In conclusion, since there will be no increase in annual acreage as a result of this change, attainment of the PM<sub>2.5</sub> standards are not jeopardized nor altered from the original 2008 SIP. As a result the annual PM<sub>2.5</sub> standard is not addressed in this submittal.

This change is an update to the 2008 SIP, and this analysis satisfies the requirements under CAA §110(l) (EPA 2005) and outlined in Table 1.

Information supporting this rule change is provided in the following appendices:

- Appendix A—Emissions Inventory
- Appendix B—Monitoring Design Values
- Appendix C—Impact Analysis
- Appendix D—Supporting Material
- Appendix E—Public Participation and Public Comments

**Table 1. Clean Air Act requirements.**

Clean Air Act Requirements	How Idaho will address the Requirements
Reasonably available control technology (RACT) requirements Inspection and maintenance programs Major source applicability cut-offs for purposes of RACT Rate of progress (1-hour ozone) Reasonable further progress (8-hour ozone) Stage II vapor recovery Clean fuels fleet program under CAA §183(c)(4) Clean fuels for boilers under CAA §183(e)(3) Transportation control measures during heavy traffic hours as provided under CAA §182(e)(4) Enhanced (ambient) monitoring under CAA §182(c)(1) Transportation controls under CAA §182(c)(5) Vehicle miles traveled provisions of CAA §182(c)(5) Vehicle miles traveled provisions of CAA §182(d)(1) Nitrogen oxides (NO <sub>x</sub> ) requirements under CAA §182(f) 1-hour attainment demonstrations Reasonably available control measures Contingency measures New source review Prevention of Significant Deterioration Air Toxics New Source Performance Standards	Not applicable to this SIP revision
NAAQS: Carbon monoxide (CO)	The 2017 CRB ozone minor rule change does not affect this pollutant. Section 8 "CRB Program Stability" demonstrates that no increased emissions are expected so CO is not addressed in this demonstration.
NAAQS: Lead	The 2017 CRB ozone minor rule change does not affect this pollutant. Section 8 "CRB Program Stability" demonstrates that no increased emissions are expected so lead is not addressed in this demonstration.
NAAQS: Nitrogen dioxide (NO <sub>2</sub> )	The 2017 CRB ozone minor rule change does not affect this pollutant. Section 8 "CRB Program Stability" demonstrates that no increased emissions are expected so NO <sub>2</sub> is not addressed in this demonstration.
NAAQS: PM <sub>10</sub>	The 2017 CRB ozone minor rule change does not affect this pollutant. Section 8 "CRB Program Stability" demonstrates that no increased emissions are expected so PM <sub>10</sub> is not addressed in this demonstration.
NAAQS: PM <sub>2.5</sub>	The 2017 CRB ozone minor rule change does not affect this pollutant. Section 8 "CRB Program Stability" demonstrates that this rule will not result in an increase in the number of acres burned so the 24 hour PM <sub>2.5</sub> standard is not addressed in this demonstration.
NAAQS: Ozone	The 2017 CRB ozone minor rule change does not affect Idaho's protection of this NAAQS. This analysis demonstrates that the CRB program will not cause an exceedance of an 8-hour averaged ozone concentration of 70 ppb. Because the new program threshold of 90% of the NAAQS (63 ppb) is lower than the actual NAAQS (70 ppb), this analysis needs only demonstrate that any changes are below 7 ppb.

Clean Air Act Requirements	How Idaho will address the Requirements
NAAQS: Sulfur dioxide (SO <sub>2</sub> )	The 2017 CRB ozone minor rule change does not affect this pollutant. Section 8 “CRB Program Stability” demonstrates that no increased emissions are expected so SO <sub>2</sub> is not addressed in this demonstration.
Regional haze under CAA §§169A and 169B	DEQ addresses regional haze under the “Rules for the Control of Open Burning” (IDAPA 58.01.01.600-624). Those rules have not changed and still meet the regional haze requirements. In its long-term plan to address regional haze, DEQ was required to address agricultural smoke management (IDAPA 58.01.01.667.03.c.v). As noted in the regional haze SIP, Idaho’s CRB program meets all the requirements of an enhanced smoke management program, under 40 CFR 309 (d)(6)(i). Idaho is only subject to the 40 CFR 308 requirement of a basic smoke management plan, so an enhanced plan continues to exceed that requirement. Idaho’s regional haze SIP approval is found at 77 CFR 30248.
Inter- and intrastate transport	Section 5 illustrates the impact from Idaho emissions on other states will not increase as a result of the 2017 CRB ozone minor rule change.

### 3 Science of Ozone and Fire

The interaction between CRB and ozone is complex and requires a better understanding of ozone production from biomass burning (primarily wildfires). Variables affecting ozone production include emissions, photochemistry, nonlinearity in ozone production, and time and distance. The following sections discuss Idaho’s environment and the CRB program in context with the framework of research-based ozone production variables.

#### 3.1 Emissions

Ozone enhancement from biomass burning has been observed in many instances (Brey and Fischer 2016; Galanter et al. 2000; Hobbs et al. 2003; Jaffe et al. 2008; Jaffe and Wigder 2012; McKeen et al. 2002; Pfister et al. 2008; Verma et al. 2009; Wigder et al. 2013). Direct emissions from wildfires, prescribed fires, and CRB include carbon monoxide (CO), PM, nitrogen oxides (NO<sub>x</sub>), and volatile organic compounds (VOC). The gaseous precursors, NO<sub>x</sub> and VOC, photochemically combine in the atmosphere to produce ozone. The quantities of precursors emitted depend on the amount and type of biomass burned. The subsequent production of ozone depends on the photochemical environment, meteorology, and nonfire sources of available NO<sub>x</sub>. Appendix A provides the CRB emissions inventory for Idaho.

##### 3.1.1 Direct Emissions from Source Fire

One variable that affects ozone production from biomass burning is direct emissions from the source fire. Nitrogen content of vegetation varies widely (0.2%–4%) and informs the overall fuel NO<sub>x</sub> emissions (Jaffe and Wigder 2012; Urbanski 2014). Direct source emissions are also affected by fire combustion efficiency. Thermal NO<sub>x</sub> emissions increase with temperature and are greater during flaming combustion than smoldering combustion (Jaffe et al. 2008). CRB fires are efficiently ignited, burn quickly through a homogeneous fuel bed, and maintain high rates of flaming combustion throughout the burning period. Forests, with their more complex fuel beds

of trees, litter, duff, and rotted understory, have more variable combustion stages—flaming and smoldering—during the burning period.

Fire emissions are usually estimated as a product of area burned, fuel load, combustion completeness (or fuel consumption), and emission factors. Appendix A discusses emission factors that DEQ used from the 2014 National Emissions Inventory (NEI) (EPA 2014). These parameters take into account the type of fuel burned, how much fuel is burned, and combustion efficiency. Crop residue burns tend to burn small amounts of fine fuels rather quickly relative to forest fires, which can burn enormous amounts of woody fuels over long periods of time. CRB fields in Idaho are typically less than 1,000 acres (section 8). Wildfires greater than 100,000 acres are recorded during most years in Idaho (NIFC 2016). Crop residue burns may have higher combustion efficiency, but this parameter can be outweighed by the fuel type, area burned, and mass burned during a wildfire.

Both NO<sub>x</sub> and VOC emissions are greater for forested fuel types than for the finer fuel types found in grasses and shrubland. Figure 2 and Figure 3 give emissions in tons per acre for NO<sub>x</sub> and VOC by Fuel Characteristic Classification System (FCCS) fuel type (FERA 2015). Forest vegetation types emit between 0.02–0.09 tons/acre NO<sub>x</sub> and 0.2–2.9 tons/acre VOC. In comparison, grass vegetation types, which are similar to crop residue, emit between 0.0002–0.02 tons/acre NO<sub>x</sub> and 0.002–0.04 tons/acre VOC. Therefore CRB fuel types like bluegrass or wheat stubble, which are similar to grasslands such as wheatgrass, produce much lower emissions than forested fuel types. This difference is likely due to the lower fuel density in grasses and crop residue versus forests.

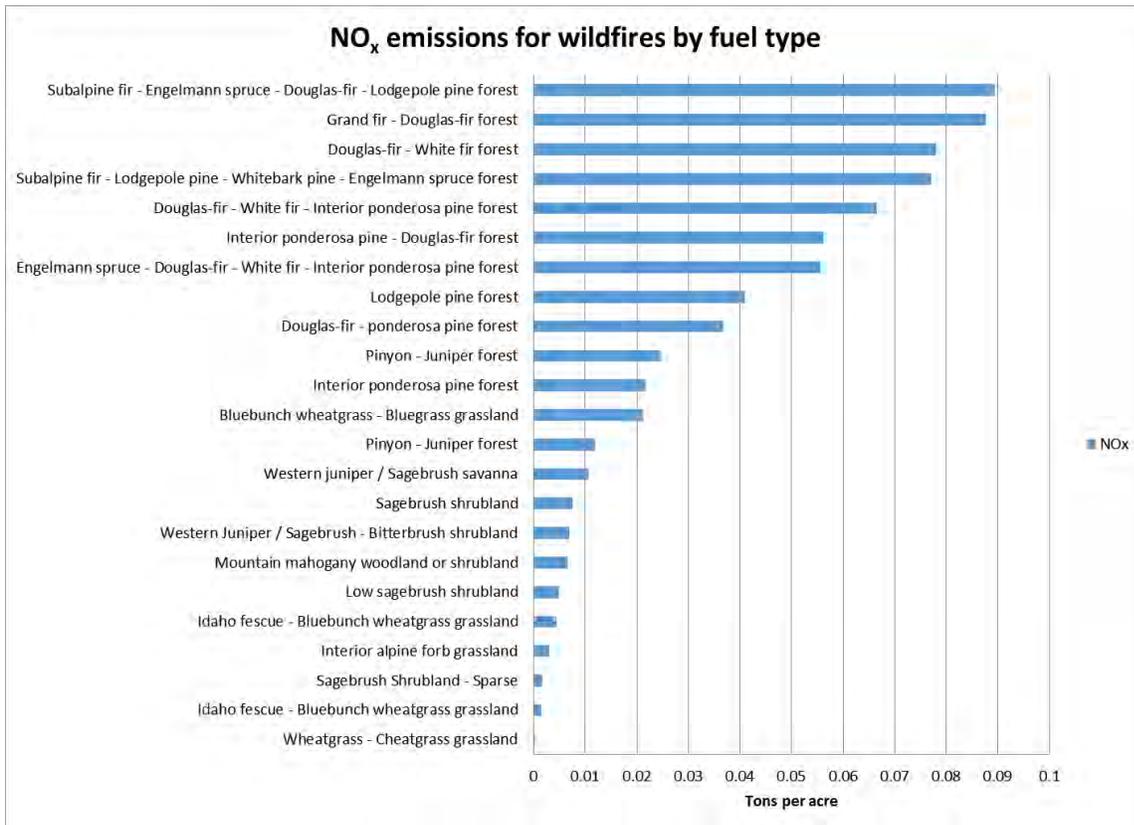


Figure 2. NO<sub>x</sub> emissions from wildfires by FCCS fuel type.

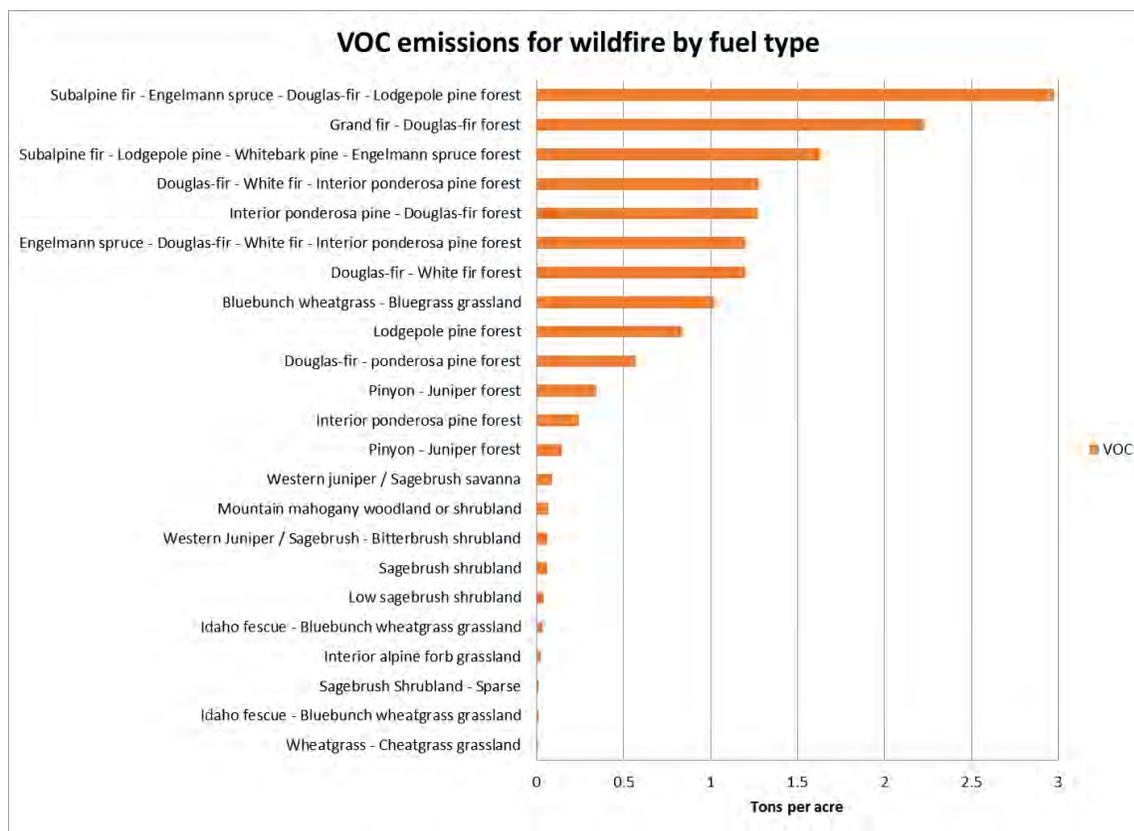


Figure 3. VOC emissions from wildfires by FCCS fuel type.

### 3.1.2 Mixing with Urban Precursors

Another emissions-related variable that affects ozone production from biomass burning is the mixing of smoke plumes with urban precursors. It has been observed that wildfire smoke plumes mixing with anthropogenic emissions produce higher amounts of ozone. McKeen et al. (2002) report ozone concentration enhancement throughout the central and eastern United States due to wildfire smoke from Canada. They attribute the increase to in-situ oxidation of CO from wildfires with locally emitted  $\text{NO}_x$  (McKeen et al. 2002). Wigder et al. (2013) observed significantly higher ozone enhancement ratios in wildfire plumes that mixed with urban emissions than those plumes that did not. Other studies have also observed enhanced ozone production in wildfire plumes that mix with urban  $\text{NO}_x$  emissions (Brey and Fischer 2016; Junquera et al. 2005; Morris et al. 2006; Singh et al. 2010). Galanter et al. (2000) and McKeen et al. (2002) concluded that urban areas with large  $\text{NO}_x$  sources see greater ozone impacts from wildfire plumes than regions that are less populated or less polluted by  $\text{NO}_x$ . It is estimated that in moderately polluted conditions (where  $\text{NO}_y \approx 10$  ppbv), the  $\Delta\text{O}_3$  is  $\sim 75\%$  higher compared to cleaner, more rural conditions ( $\text{NO}_y \leq 2$  ppbv) (McKeen et al. 2002). Idaho is a largely rural state with few large cities capable of producing substantial amounts of urban  $\text{NO}_x$ , so Idaho is less sensitive to ozone enhancement from fire plumes. Brey and Fischer (2016) examined all of EPA's Air Quality System (AQS) ozone monitors in the lower 48 states collocated with a  $\text{PM}_{2.5}$  monitor to estimate a location-specific conservative expected ozone response to the presence of smoke. Idaho monitors (Meridian and Craters of the Moon) and nearby Idaho monitors (Spokane, WA and Washakie, UT) were included in the study. Table 2 summarizes the relevant results.

**Table 2. Brey and Fischer (2016) study results (P-value <0.05).**

Ozone Monitor Response	Spokane	Meridian	Craters of the Moon	Washakie
Sign of change in May–September MDA8 <sup>a</sup> ozone values on smoke-impacted versus smoke-free days <sup>b</sup>	No difference	No difference	Positive	Positive
Difference between mean smoke-impacted day MDA8 mixing ratio and mean smoke-free day mixing ratio <sup>c</sup>	Not significant	Not significant	10 ppbv	0–5 ppbv
High or low NO <sub>x</sub> monitors determined from 2008 NEI gridded emissions inventory <sup>d</sup>	High	Low	Low	Low

a. Maximum daily 8-hour average.

b. Monitors with fewer than 10 smoke-impacted days not shown.

c. Only locations where difference is statistically significant at 95% confidence level are shown.

d. High NO<sub>x</sub> monitors are >90th percentile for emissions. Low NO<sub>x</sub> monitors are <90th percentile.

Of the four monitors, Craters of the Moon and Washakie showed increased ozone values on smoke-impacted days, relative to smoke-free days. In the study, a smoke-impacted day for a given monitor is defined by two criteria: 1) an HMS smoke polygon overlaps the monitor, and 2) the PM<sub>2.5</sub> concentration measured at the monitor for that day is more than one standard deviation higher than the average summertime (May–August) concentration (Brey and Fischer 2016). Spokane and Meridian monitors showed no difference. The mean maximum daily 8-hour average (MDA8) values on those smoke-impacted days increased by 10 ppbv at Craters of the Moon and by 0–5 ppbv at Washakie. These results indicate that between 2005–2014, Craters of the Moon and Washakie ozone monitors were measurably impacted by smoke. Spokane and Meridian ozone monitors were not.

Brey and Fischer (2016) identified each monitor as having a high or low NO<sub>x</sub> regime, based on the 2008 NEI gridded emissions inventories. High NO<sub>x</sub> monitors occupy grid cells above the 90th percentile for emissions; conversely, low NO<sub>x</sub> monitors are below the 90th percentile. Spokane was identified as a high NO<sub>x</sub> monitor while Meridian, Craters of the Moon, and Washakie are identified as low. The analysis indicates that, on average, the high NO<sub>x</sub> monitors showed larger ozone enhancements on smoke-impacted days than the low NO<sub>x</sub> monitors. The high NO<sub>x</sub> monitors are more sensitive to smoke. This point supports previous observations by Galanter et al. (2000), Junquera et al. (2005), McKeen et al. (2002), Morris et al. (2006), Singh et al. (2010), and Wigder et al. (2013) that ozone production is enhanced when smoke plumes mix with urban precursors like NO<sub>x</sub>.

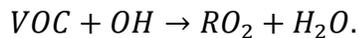
Brey and Fischer (2016) also found that the states with the largest area burned by wildfires had lower smoke-impacted ozone enhancement. Idaho is among those states with large burned areas and low ozone impacts (Brey and Fischer 2016).

### 3.2 Ozone Photochemistry

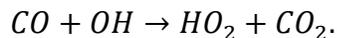
Ozone is formed from the photochemical reaction of NO<sub>x</sub> and VOC in the presence of sunlight (Jaffe and Wigder 2012). High NO<sub>x</sub> concentrations can scavenge existing ozone. Too little sunlight can slow or stop the splitting of NO<sub>x</sub> and oxygen molecules and make them unavailable for recombination into ozone. Formation and decomposition of ozone is an ongoing and complex process in the atmosphere.

### 3.2.1 Ozone Formation

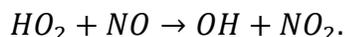
Ozone is formed through a series of reactions beginning with the reaction of VOC with the OH radical to produce organic radicals. The OH radical can initially be formed from ultraviolet interaction with existing ozone. Then it initiates the oxidation of VOCs and CO, eventually leading to the production of excess ozone as shown below:



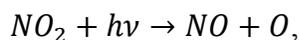
Another direct fire emission, CO, can initiate the sequence as well:



The conversion of NO to NO<sub>2</sub> follows:



NO<sub>2</sub> then undergoes photolysis to generate oxygen atoms:



where  $h\nu$  is the energy of a photon.

The oxygen atoms are then available to combine with O<sub>2</sub> to create ozone:



### 3.2.2 Meteorology

Meteorological conditions are important factors in ozone production. Solar radiation drives the formation of OH radicals and the splitting of NO<sub>2</sub> into NO and O; therefore, sunny and clear meteorological conditions will enhance ozone production. Ambient temperature is also an important factor, but it is less of a predictor for enhanced ozone production from biomass burning than burned area, biomass consumed, or even presence of fire (Jaffe et al. 2008). In examining the relationship between ozone and temperature at Yellowstone and Rocky Mountain National Parks, Jaffe et al. (2008) found high fire years significantly warmer than low fire years, but daytime seasonal mean temperature and ozone were not significantly correlated. The high temperatures may have played more of a role in initiating and sustaining the fires than in directly contributing to ozone production in smoke plumes. A final meteorological factor relevant to ozone production is wind. Wind speed and direction determine the transport rate and location of smoke plumes.

### 3.2.3 NO<sub>x</sub> Titration

At night when no sunlight is available to drive the reaction and in areas with high emissions of NO (e.g., directly downwind of a biomass fire), ozone decomposes to NO<sub>2</sub>:



$\text{NO}_x$  titration can occur directly downwind of a biomass fire, effectively suppressing ozone production in the near field. As the plume moves further downwind, ozone production increases (Gillani et al. 1998).  $\text{NO}_x$  titration has also been observed to occur in urban areas at the height of the diurnal ozone cycle, when motor vehicle tail pipe emissions provide the NO to destroy ambient ozone (Lei and Wang 2014).

### 3.2.4 Aerosol Effects

In addition to sometimes emitting large enough amounts of NO to destroy ozone through the process of  $\text{NO}_x$  titration, biomass burning can produce such large amounts of PM that incoming radiation is blocked. This effect slows the photochemical reactions that create ozone.

Significantly lowered ozone amounts were observed in Siberian wildfire plumes (<30 ppbv versus 90 ppbv in the same plume) that were optically thick (Verma et al. 2009). The same study attributes cloud suppression of photolysis to lack of enhanced ozone production in the boreal fire plume (Verma et al. 2009).

## 3.3 Nonlinearity in Ozone Production

The process of ozone production from biomass burning is cyclical. It is not a linear process that moves from emitted precursors to production to transport (Galanter et al. 2000). Ozone can be photochemically produced at the source of the fire and then destroyed quickly by excess NO. As the plume and its accompanying precursors are transported downwind, the photochemical process continues, creating more ozone along the way. If the plume encounters an urban area rich with emissions, the ozone in the plume may be enhanced or destroyed, depending on the  $\text{NO}_x/\text{VOC}$  ratio and plume sensitivity. As night falls, the ozone may be decomposed overnight but then subsequently regenerated by the sunlight the next day with additional transport.  $\text{NO}_x$  can be sequestered as peroxyacetyl nitrate, transported far downwind, and regenerated as  $\text{NO}_x$  by thermal decomposition, allowing ozone from wildfires to increase with plume age and distance from source (Jaffe and Wigder 2012).

## 3.4 Time and Distance

Ozone production from biomass burning varies in time and space. As noted in the previous section, plume age and distance from source can have a significant impact on the amount of ozone within a smoke plume. Once precursors are emitted from a biomass fire, photochemical ozone production occurs within 45 minutes (Hobbs et al. 2003).

## 3.5 Ozone and Fire Summary

Ozone production from wildfires depends on the type of biomass burned, amount of biomass burned, photochemical and meteorological environment, presence or absence of local sources of  $\text{NO}_x$ , and time and distance it takes the plume to travel from the fire to the observing monitor. Crop residue burns are smaller, burn for a shorter duration, and consume less biomass than typical wildfires, so it follows that ozone production from CRB is much lower than from wildfires. Additional variables such as production mechanisms, local effects, and maximum enhancements can also affect ozone production. The ozone chemistry of biomass burning is complex and wildfires provide a worst case scenario of the factors that need to be considered for CRB.

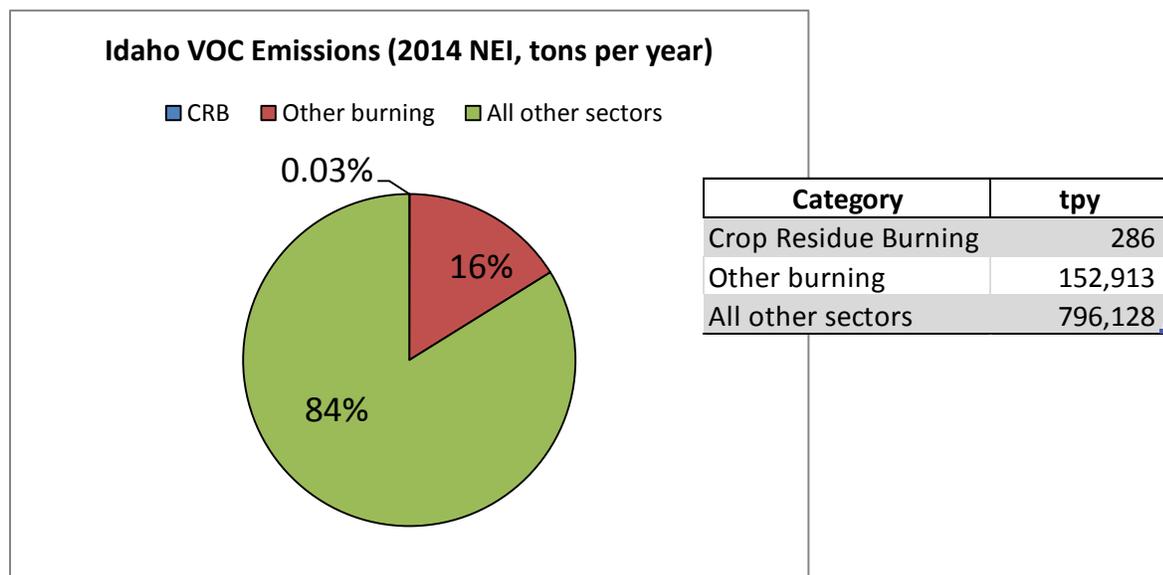
## 4 Conceptual Model

As established by the literature reviewed, ozone production from biomass burning depends on both fire and ambient emissions of ozone precursors and the atmospheric environment into which they are emitted and in which they photochemically combine to form ozone. This section summarizes the CRB emissions in Idaho and compares them to emissions from other forms of burning and from non-biomass burning sectors. Idaho's atmospheric environment is then described with meteorological data. The locations of CRB fields and ozone monitors are presented along with characterizations of annual variations in CRB, field sizes, and regional burning areas. Finally, annual means and trends of monitored ozone in Idaho are presented in time series to examine typical concentrations during CRB, wildfire, and peak ozone seasons. All this information provides an overall picture of Idaho's environment, CRB program, and ozone concentrations.

### 4.1 Idaho's Emissions of Ozone Precursors

Directly emitted ozone precursors,  $\text{NO}_x$  and VOC, combine photochemically in the atmosphere to create ozone. Figure 4 and Figure 5 present the proportions of the total annual emissions of  $\text{NO}_x$  and VOC in Idaho (outside Indian reservation boundaries), according to the 2014 NEI (EPA 2014). Appendix A provides a detailed summary of Idaho's CRB emissions inventory.

As shown in Figure 4, CRB contributes 286 tons per year of VOC or 0.03% of the total emissions. Other burning categories, including wildfires, prescribed burning, residential wood combustion, open burning, and residential open burning, produce 152,913 tons per year of VOC or 16% of the total emissions. All other sectors provide the remaining 84% of VOC emissions or 796,128 tons per year. CRB contributes a very small portion of VOC emissions in Idaho.



**Figure 4. Idaho VOC emissions from 2014 NEI.**

As shown in Figure 5, CRB contributes 166 tons per year of  $\text{NO}_x$  or 0.16% of the total emissions. Other burning categories, including wildfires, prescribed burning, residential wood combustion, open burning, residential open burning, and residential outdoor recreational burning,

produce 8,484 tons per year  $\text{NO}_x$  or 8% of the total emissions. All other sectors, mostly urban transportation, provide the remaining 92%  $\text{NO}_x$  emissions or 93,834 tons per year. CRB contributes a very small portion of  $\text{NO}_x$  emissions in Idaho.

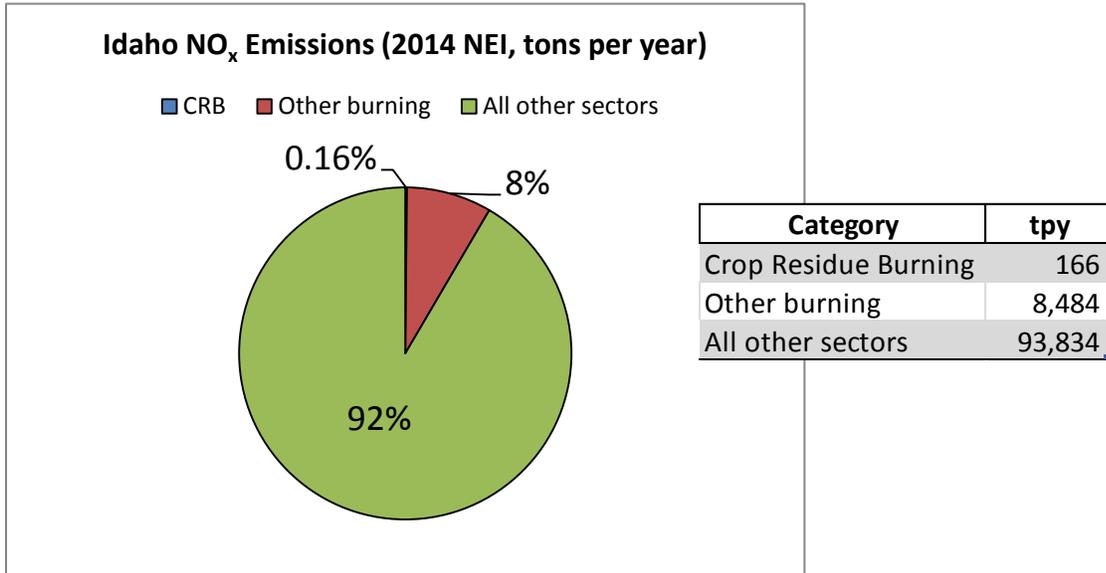
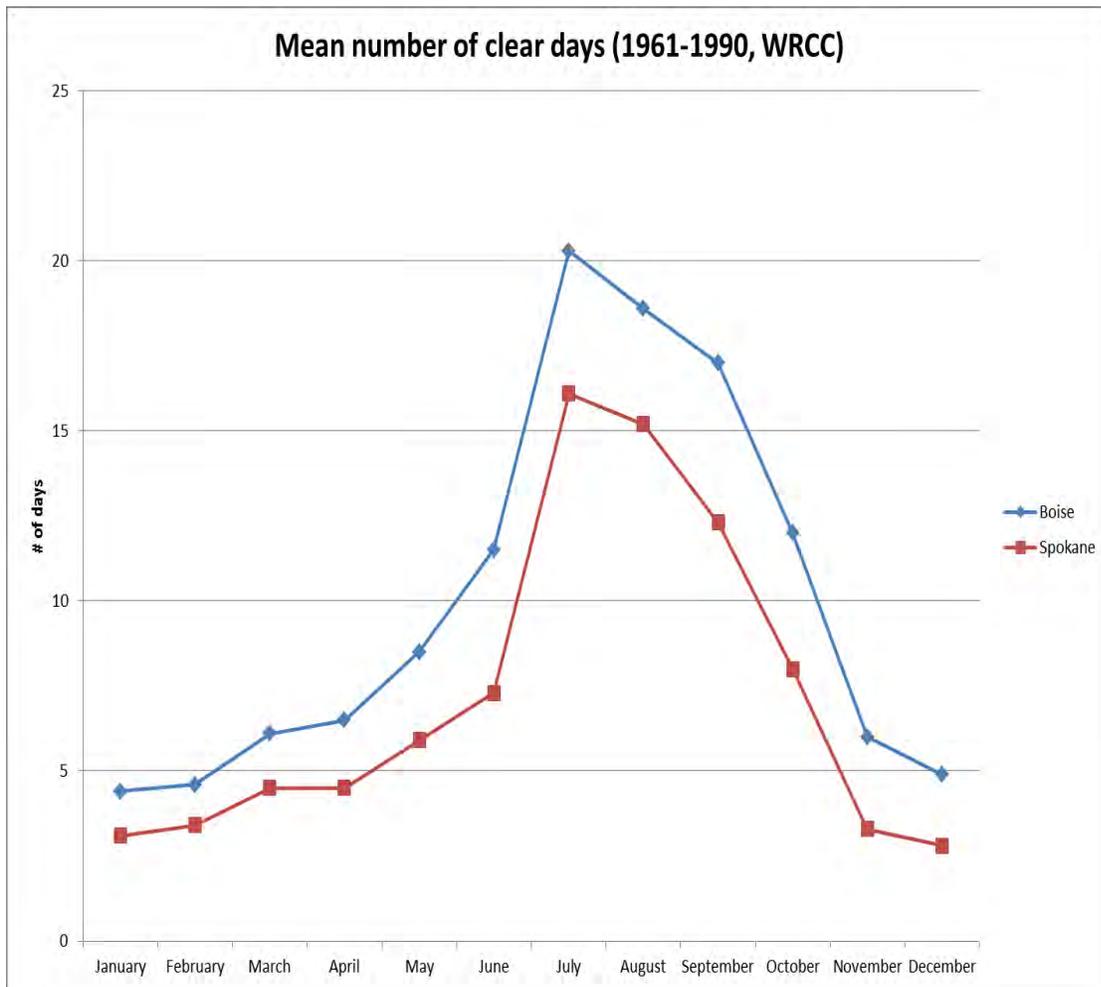


Figure 5. Idaho  $\text{NO}_x$  emissions from 2014 NEI.

## 4.2 Idaho's Atmospheric Environment

Section 3 established that the meteorological and photochemical environment is an important factor in ozone formation. Sunlight is required in the series of reactions that starts with OH radical formation and  $\text{NO}_x$  and VOC precursors and ends with ozone. Temperature is slightly correlated with ozone production; high ozone days with ambient emissions tend to occur on the hottest days. The north-south distance across Idaho is nearly 500 miles; therefore, meteorological regimes vary widely across the state.

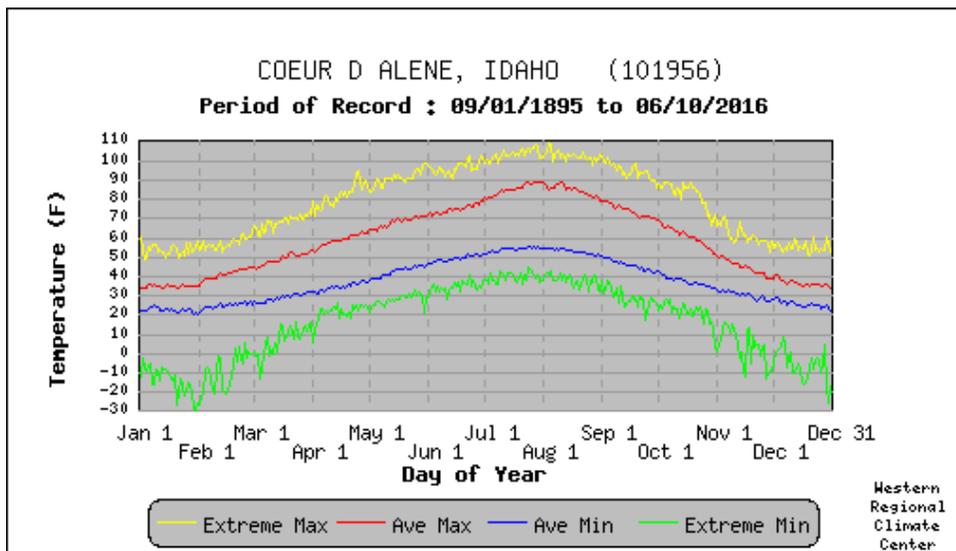
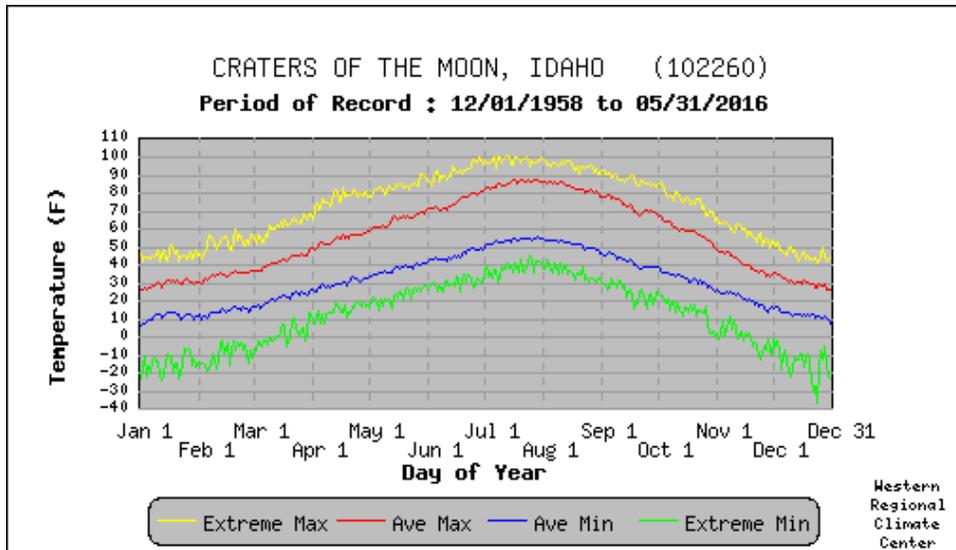
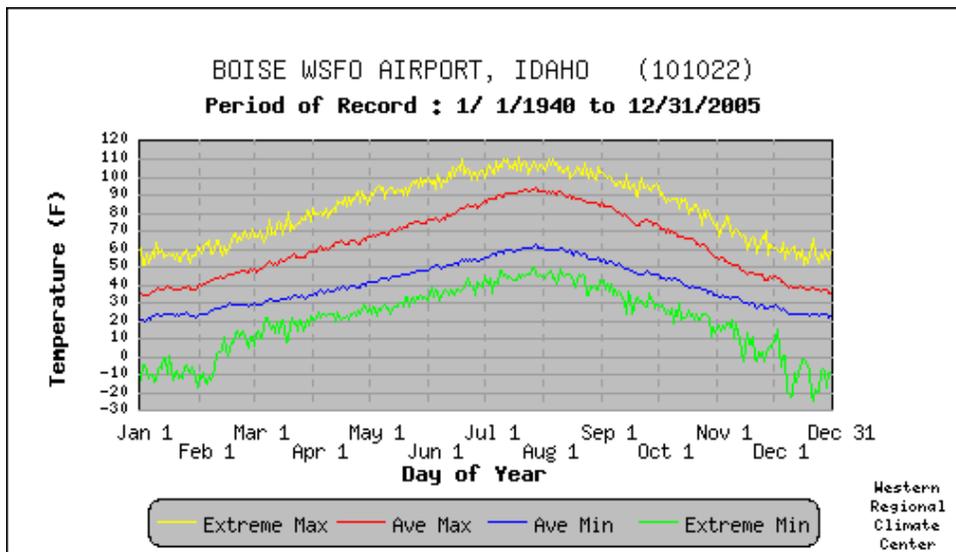
Figure 6 gives the monthly mean number of clear days at sites representing typical conditions in northern (Spokane) and southern (Boise) Idaho. Spokane, WA is the nearest location to northern Idaho with available clear day data. The climatology of clear days illustrates the annual fluctuations of periods when maximum sunlight is available to produce ozone. The shape of the annual trend in clear days is the same for both northern and southern sites, but more clear days occur in Boise during each month of the year. Clear days peak in July, where 20 days on average are expected for the month in Boise. July, August, and September have the greatest number of clear days. These months also encompass peak ozone, CRB, and wildfire seasons in Idaho.



**Figure 6. Monthly mean number of clear days for Boise, ID and Spokane, WA.**

Figure 7 gives the temperature climatologies for three sites in Idaho corresponding to current (Boise and Craters of the Moon) and historical (Coeur d'Alene) ozone monitor locations (section 4.3, Figure 8). Maximum temperatures peak in early August at all sites at around 90°F. Extreme maximums are highest in Boise and average minimums are highest at Craters of the Moon.

Average high temperatures reaching 90°F and a mean of 20 days of clear skies during July and August enhance conditions for ozone production. Higher concentrations of ozone would be expected in southern Idaho based on the meteorological data presented here.



**Figure 7. Annual temperature climatologies for Boise, Coeur d'Alene, and Craters of the Moon.**

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### 4.3 Idaho's Monitored Ozone

Presently, there are three NAAQS ozone monitors in Idaho (Figure 8). The Boise and Meridian monitors are run by DEQ, and the Craters of the Moon monitor is maintained by the National Park Service. (Note: the Nez Perce Tribe started monitoring for ozone in the fall 2016 in Kamiah but does not have enough data to observe any trends, so it is not considered in this analysis.) DEQ also had an ozone monitor in Coeur d'Alene from 2006 to 2011. Figure 9 provides the monthly mean, minimum, and maximum MDA8 ozone concentrations for all available years (i.e., years with certified data in EPA's AQS). Craters of the Moon and Meridian monitors collect data year-round, while Coeur d'Alene was and Boise is operational only during ozone season (April–September).

Each monitor has an individual annual signature, reflecting the local meteorological conditions and emissions that affect each monitor. Coeur d'Alene, in the northern part of the state, maintained the lowest mean MDA8 concentrations of all monitors, staying well below 50 ppb for all months. Maximum MDA8 exceeded 70 ppb during June, July, and August and peaked at 75 ppb during September. September also registered the lowest mean and minimum MDA8 concentrations at the Coeur d'Alene monitor. Craters of the Moon, the only rural monitor, has a relatively flat annual signature. Means range from about 35 ppb in the winter months to just over 50 ppb in July and August. Maximums barely reach 70 ppb in July and August. Minimum MDA8 values at Craters of the Moon are the highest of all monitors in Idaho, ranging from 20 ppb in November and December to 35 ppb in August. This is likely due to its higher elevation (ozone naturally increases with elevation and is highest in the stratosphere). Minimums at Craters of the Moon are higher than the means at Meridian in January, February, April, and May. The Meridian monitor has a pronounced seasonal signature between winter and summer. Low values are recorded during January, February, October, November, and December. Values are at their height during July and August. There are noticeable highs in the minimum concentrations during April and July. The Boise monitor is located in the same valley as the Meridian monitor, on the east side of the city, and the monitoring objective is to record the maximum concentrations in the state network. Minimum MDA8 values are lower at Boise than Meridian in the summer, and the means are similar between the two monitors. Maximums do capture the highest ozone concentrations in Idaho.

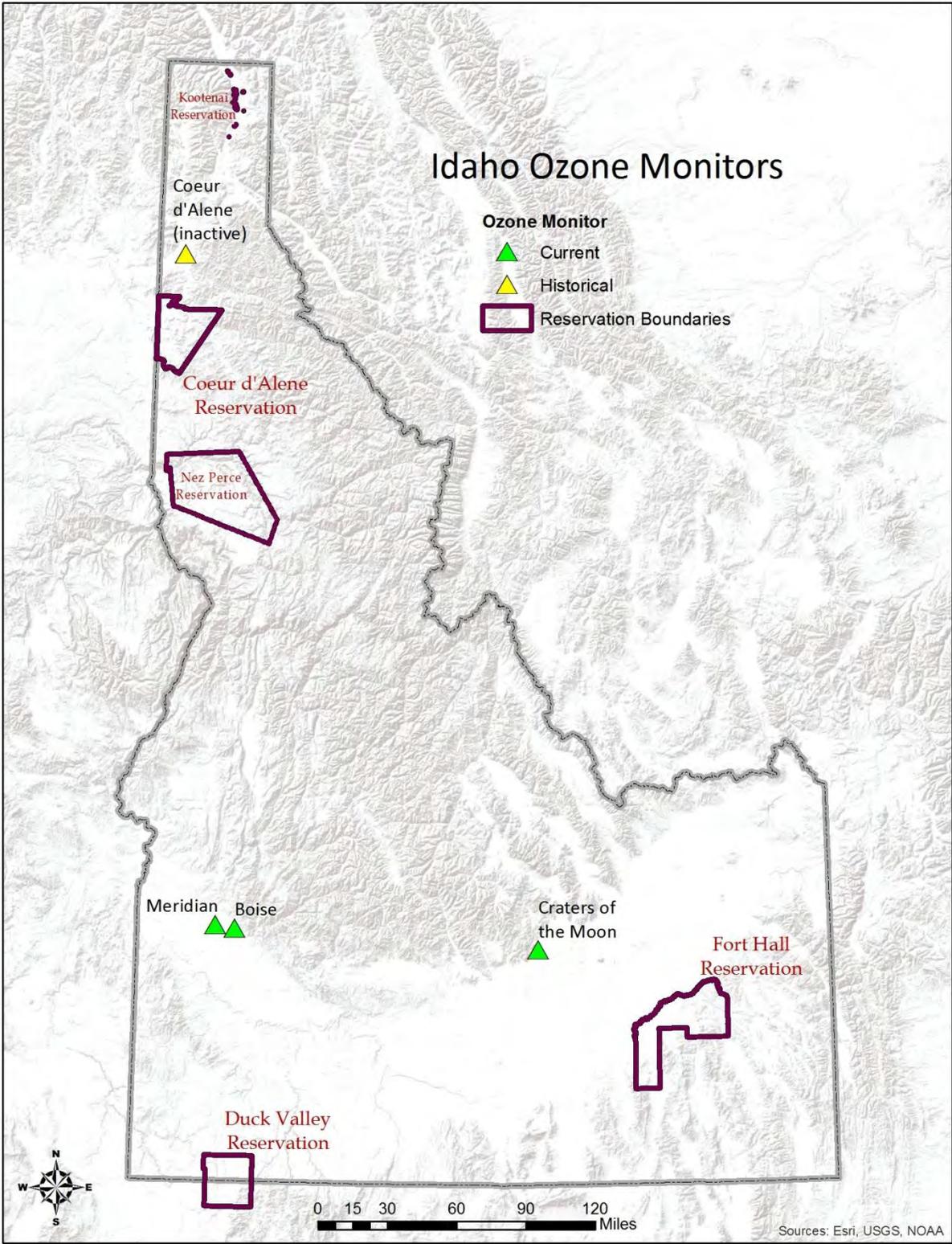


Figure 8. Ozone monitor locations in Idaho.

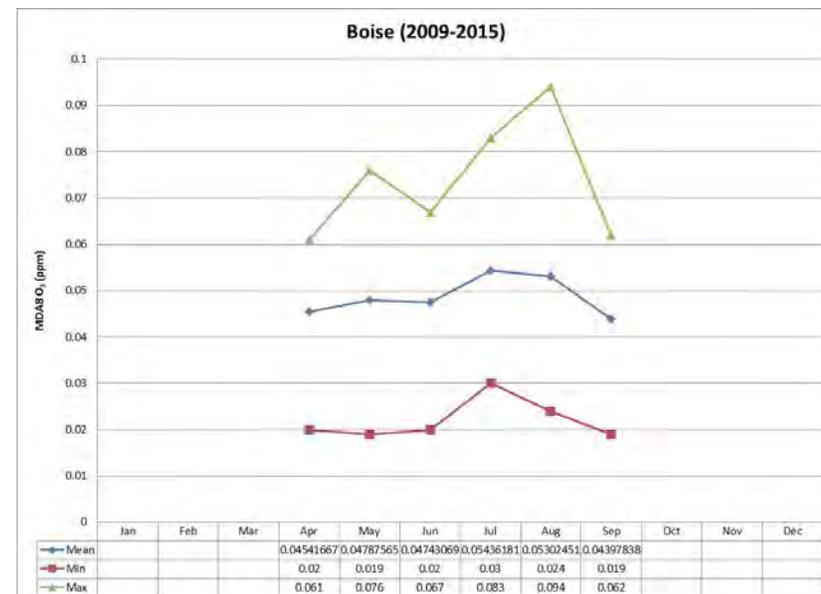
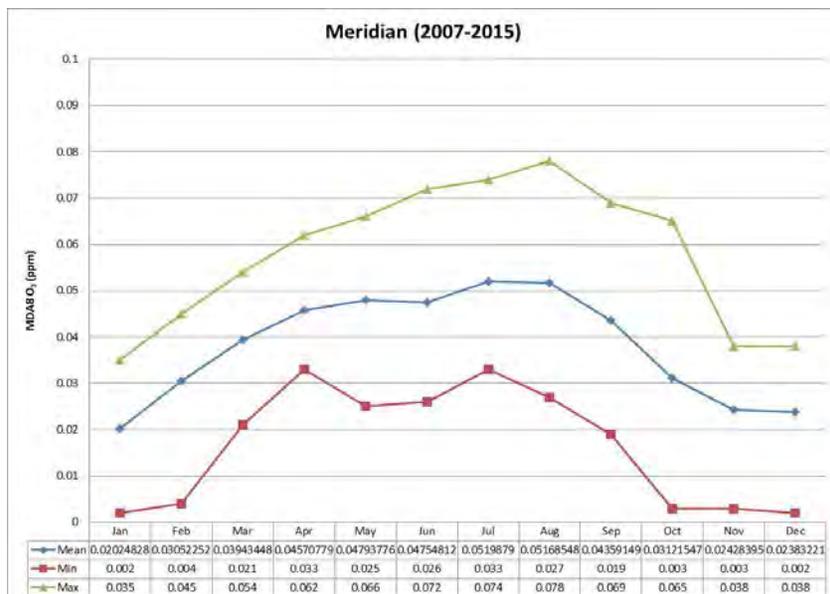
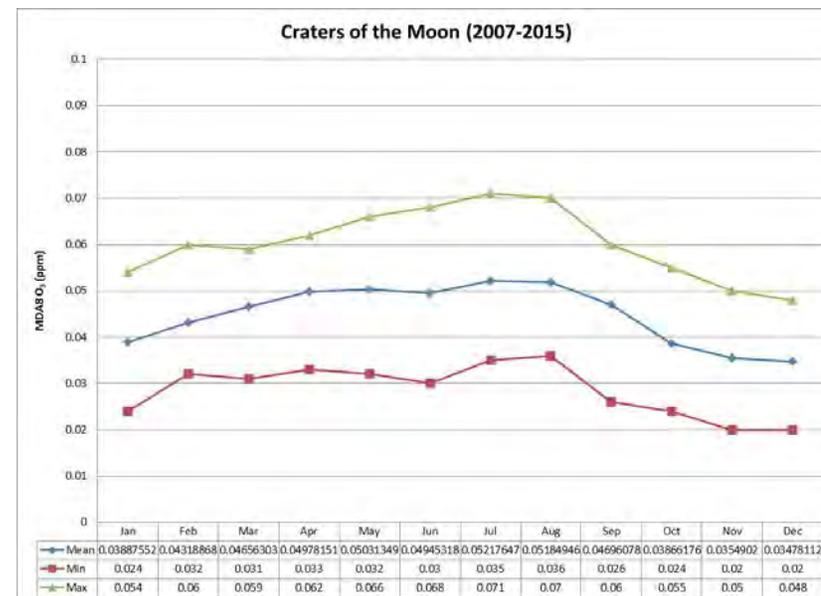
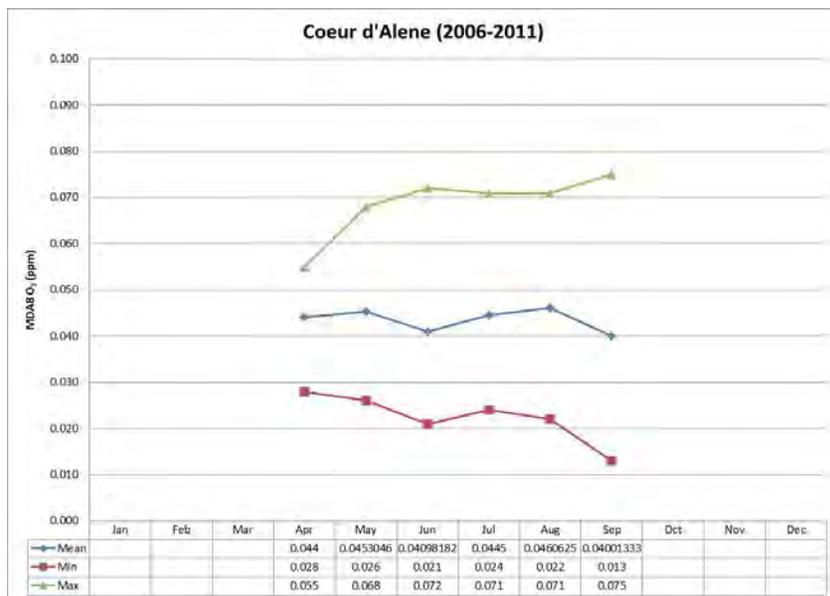


Figure 9. Monthly mean, minimum, and maximum MDA8 ozone concentrations at monitors in Idaho.

## 4.4 Design Values for Idaho and Surrounding Monitors

A summary of design values for 2015 8-hour ozone NAAQS are included in Appendix B, Table B-1. The ozone design value is used to assess violations of the NAAQS. The design value is based on the 4th highest MDA8 each year at a single location, averaged over 3 years. In Idaho, design values are provided for monitors at Craters of the Moon, St. Luke's (Boise) and White Pine (Meridian). Design values are included for ozone monitors in bordering areas in surrounding states (i.e., Logan, UT, Spokane, WA, and Jackson, WY) that are used to make burn decisions. Site-level historical design value data for these areas are included in Appendix B, Table B-2. There are no current or historical NAAQS nonattainment designations in Idaho or in the areas bordering Idaho.

## 5 Interstate Transport

The total pollution in any area forms from combining local and upwind sources. Air transport refers to pollution from upwind emissions sources that impact air quality in a given location downwind. Sulfur dioxide (SO<sub>2</sub>) and NO<sub>x</sub> emissions can each undergo chemical reactions in the atmosphere to form fine particle inorganic aerosol pollution. Similarly, NO<sub>x</sub> emissions can react in the atmosphere with VOCs to create ground-level ozone pollution. These pollutants can travel across state boundaries affecting air quality and public health regionally. The transport of these pollutants across state borders, or interstate air pollution transport, can make it difficult for downwind states to meet health-based air quality standards for PM<sub>2.5</sub> and ozone.

The CAA's "good neighbor" provision requires EPA and states to address interstate transport of air pollution that affects downwind states' ability to attain and maintain NAAQS. The CAA §110(a)(2)(D)(i)(I) requires each state in its SIP to prohibit emissions that will significantly contribute to nonattainment of a NAAQS, or interfere with maintenance of a NAAQS, in a downwind state. To help states quantify their interstate transport impacts on downwind states from ozone precursors, EPA conducted an air quality modeling analysis

In December 2016, EPA released the *Air Quality Modeling Technical Support Document for the 2015 Ozone NAAQS Preliminary Interstate Transport Assessment* (EPA 2016a). It is a draft document and out for public comment until April 2017. In this air quality modeling technical support document (TSD), air quality modeling is used to estimate impacts from upwind states on monitoring sites predicted to have nonattainment or maintenance problems for the ozone NAAQS. The projected future year of this analysis is 2023. Based on EPA's analysis, Idaho is predicted to have less than a 1% contribution (0.7 ppb) to monitors in other states in 2023. Concluding, Idaho's emissions will not contribute to the maintenance or nonattainment problems in other states. The CRB percentage of ozone precursor emissions is minimal, and no increase is expected in acres burned, so this SIP revision will not contribute to ozone interstate transport concerns in other states.

## Interstate Transport Analysis

A detailed description of the modeling platform used in EPA’s analysis is found in the TSD (EPA 2016a). A brief overview is provided for reference. The emissions inventory base year of 2011 is used to project future emissions in 2023. A detailed description of the 2011 and 2023 emissions inventories and their development are documented by EPA (2016b and 2016c). The TSD uses 2011 NEI v2 emissions for Idaho. For the 2011 NEI, Idaho provided an update to the default CRB emissions inventory based on our knowledge of Idaho acres burned. Appendix A provides the 2011 emissions inventory discussion. The breakdown of Idaho CRB contributions for NO<sub>x</sub> and VOCs used in this analysis are shown in Table 3.

**Table 3. Idaho CRB contributions to NO<sub>x</sub> and VOCs from 2011 NEI.**

Category	Pollutant	2011 (tons per year)	State Total	CRB %
CRB	NO <sub>x</sub>	377	114,527	0.33
CRB	VOC	768	1,006,684	0.08

The photochemical model that EPA used in the TSD was CAMx v6.30, which is designed to simulate the chemistry of secondary pollutants like ozone and secondary PM<sub>2.5</sub> at a regional level. The CAMx model was operated with the ozone source apportionment option in which ozone precursors are “tagged” for each state to provide the contributions of precursor emissions from each state to the ozone levels in every other state. Meteorological data for 2011 was derived from the Weather Research Forecasting Model. Model boundary conditions and performance evaluation analyses are described in detail in the TSD. The overall model performance was determined to “provide a reasonable projection of expected future year ozone concentrations and contributions” (EPA 2016a).

The most recent ozone design values along with projected 2023 design values were used to identify potential nonattainment or maintenance sites in 2023. The methodology employed is identical to the approach used in the final cross state air pollution rule update (EPA 2016d). The model was also used to generate source apportionment contributions (by state) for the identified nonattainment or maintenance receptors (monitors) of concern in 2023. Idaho’s estimated 2023 downwind contributions are listed in Table 4.

**Table 4. Idaho’s 2023 maximum downwind contributions to nonattainment or maintenance areas.**

Upwind State	Largest Contribution to a Downwind Nonattainment Receptor	Largest Contribution to a Downwind Maintenance Receptor
Idaho	0.07 ppb (Santa Clara, CA)	0.16 ppb (Jefferson, CO)

Both of the contributions listed above (0.07 ppb and 0.16 ppb) are less than 1% of the NAAQS, the threshold that EPA used previously in determining interstate transport linkages (EPA 2016d). The highest contribution from Idaho to any monitor in this analysis was only 0.6 ppb to a monitor in Campbell Wyoming (EPA 2016f). The top 5 contributions from Idaho to any ozone monitors are shown in Table 5.

**Table 5. Idaho’s 2023 maximum downwind contributions to any monitor.**

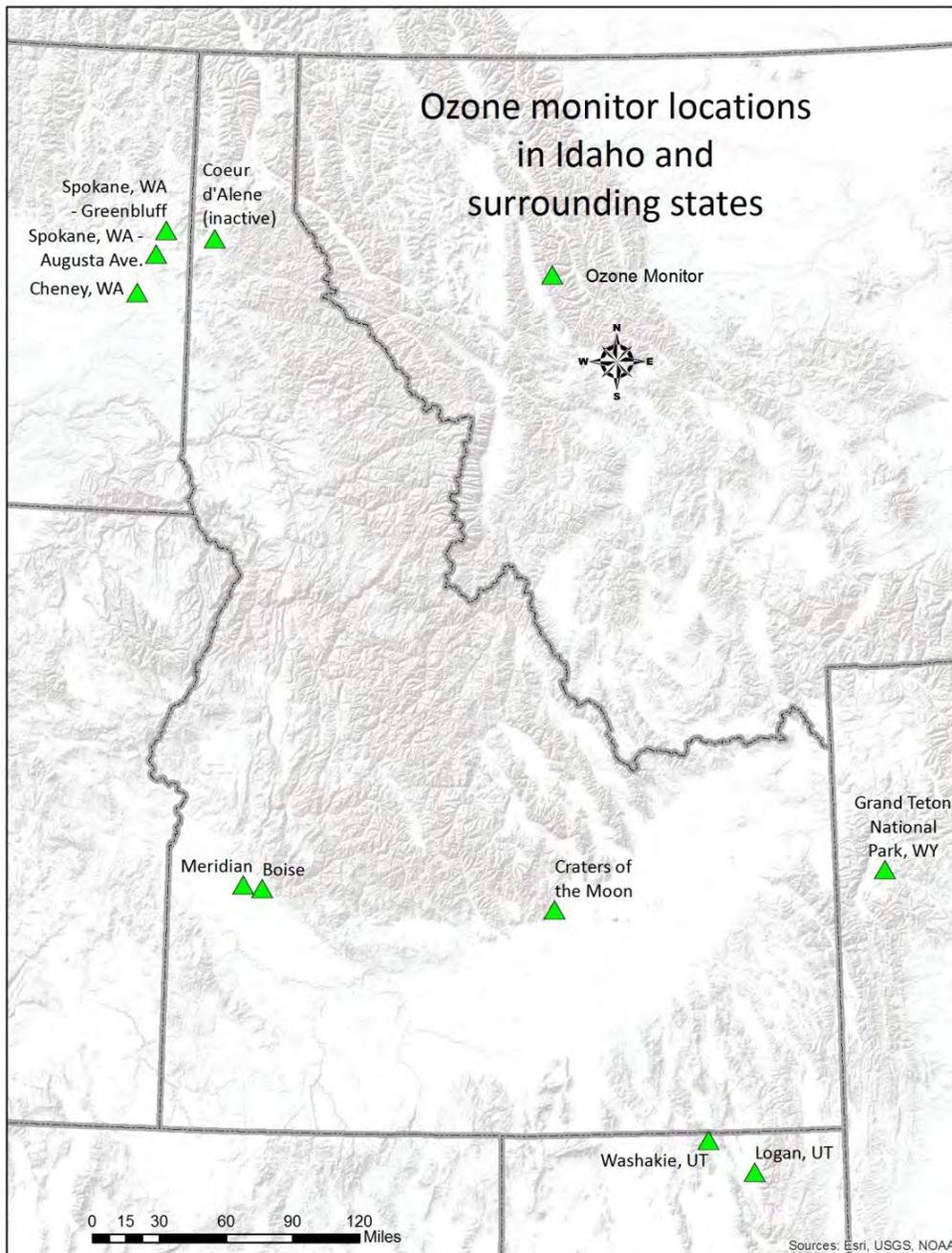
Upwind State	Largest Contribution to a Downwind Receptor
Idaho	0.6 ppb (Campbell, WY)
Idaho	0.18 ppb (Arapahoe, CO)
Idaho	0.16 ppb (Jefferson, CO)
Idaho	0.16 ppb (Larimer, CO)
Idaho	0.16 ppb (Salt Lake, Utah)

EPA modeling results demonstrate that all Idaho emissions of ozone precursors, including CRB emissions, do not contribute significantly to any locations beyond Idaho’s borders and will not contribute to ozone interstate transport concerns in other states. In addition, this EPA analysis shows that Idaho precursor emissions do not produce significant ozone at any great distances. This is especially true for CRB emissions that are less than 0.2% of the total Idaho emissions of NO<sub>x</sub> and VOC.

## 6 Monitor Impact Analysis

For ozone, under the 2008 standard, CRB was not allowed at ozone concentrations above 56 ppb. For the 2015 standard, that program cutoff value would drop to 52 ppb. Under DEQ’s new rule, the new program cutoff value will be 63 ppb. This change only increases the available burn days (assuming all other program criteria are met) when the ozone concentrations are predicted to be between 52 and 63 ppb. Even when an ozone monitor concentration reaches 63 ppb, there is still a 7 ppb buffer before the NAAQS would be exceeded. In reality, most burning occurs on days when monitored concentration values are much lower than 63 ppb, so there is an even greater buffer value than 7 ppb. To be very conservative in this historical monitor impact analysis, the focus is on a 7 ppb buffer value. Without specific hourly emissions data from other sources contributing to ozone production, DEQ must also use an extremely conservative approach in the quantification analysis and assume 100% of identified impacts are attributed to CRB emissions alone. This approach is unrealistic as the largest and the most likely emissions sources are transportation, industry, and other burning (including wildfires).

Monitor impact analyses were performed to evaluate potential impacts from CRB on ozone monitors in and around Idaho. DEQ examined ozone data from nine monitoring stations (Figure 10) for the most recent 5-year certified dataset (2011–2015) to determine if smoke from CRB conducted in Idaho impacted ozone concentrations at these monitors. The year 2011 was chosen as the start date for this analysis since DEQ started to incorporate ozone into all burn decisions in southern Idaho outside of the Treasure Valley on May 10, 2011. During spring 2011, DEQ obtained access to real-time ambient ozone monitoring data from the National Park Service monitors at Craters of the Moon National Monument, City of Rocks National Reserve, and Yellowstone National Park. Combined with ozone monitoring data from Logan, UT (Utah DEQ) and ozone forecast models from the National Weather Service and the University of Washington, these data provided sufficient coverage of southern Idaho so that DEQ could forecast ozone concentrations and use those forecasts in the daily burn-decision process.



**Figure 10. Ozone monitor locations in Idaho and surrounding states.**

DEQ operates two out of the three monitors located in Idaho (Meridian and Boise). Data from the Craters of the Moon National Monument monitor are reported by the National Park Service. The ozone monitors in eastern Washington are operated by the Washington Department of Ecology (Cheney, Spokane-Greenbluff, and Spokane-Augusta Ave.). Two monitors, Logan and Washakie, are located in northern Utah and are operated by Utah DEQ and the Northwest Band of the Shoshone Nation, respectively. The Grand Teton National Park, WY ozone monitor is also operated by the National Park Service. DEQ operated an ozone monitor in Coeur d'Alene for 7 years (2005–2011) in an effort to reconcile whether the Spokane ozone data represented the ambient levels in Coeur d'Alene and surrounding areas. The Spokane data were representative of

the area, so DEQ discontinued ozone monitoring in Coeur d'Alene in 2011. DEQ uses Spokane monitor data for burn decision support. Data from the Coeur d'Alene monitor were not included in this analysis because it operated for only 1 year in the time period under consideration.

DEQ believes that the ozone monitoring sites shown in the following analyses are adequate for detecting potential CRB impacts because of the large number of burn days and the variability of the winds, which cause CRB plumes to shift often.

## 6.1 Short-Term Monitor Deviations from the Normal Diurnal Ozone

The first method of assessing any possible CRB program burn ozone monitor impacts focuses on short-term deviations from the normal diurnal ozone pattern. This analysis starts with hourly monitoring data for 2011–2015 and searches for any short emissions increase or spike that occurs during and after the burn window on days when there were any burns located in the same region as the monitor (up to a distance of 130–290 miles). The duration of a field burn generally ranges from one-half to 2 hours, depending on field size, from ignition to extinguishment. As a result, the axial length of any CRB plume (along the direction of the wind) reflects the maximum time duration of the burn. Thus any observed impacts caused by the smoke plumes generated by CRB are expected to mirror this half-hour to 2-hour window. In the rare case in which multiple burns are aligned together and burned successively, the impact period observed at the monitor may be somewhat longer; however, wind direction variability will most likely prevent this from happening. Monitoring data during the Soda Fire in August 2015, which burned 283,686 acres of forest, shrub, and short grass 50 miles southwest of Boise, typically produced 2-hour ozone peaks above baseline concentration at the Boise and Meridian monitors. The 2-hour impacts were due to wind variability although the wildfire burned 24 hours per day.

To *identify* an ozone “peak” or short-term increase, a peak was defined as a 2-hour period during which the average ozone level was greater than the average ozone level of the 2 hours on either side of the two hour peak. Both hourly peak values must also be greater than or equal to all four neighboring values. This condition is necessary to prevent exceptionally low values from decreasing the 4-hour average to a level where an intermediate point may be falsely identified as a peak. Such low values often take place during rapid drops in ozone levels at the end of a day. The 2-hour averaging time period was chosen instead of 1 hour to reduce the impact of background noise.

To *quantify* the contribution of detected ozone peaks to the MDA8, the background ozone level was calculated by linear interpolation of the two ozone measurements directly before and directly after the ozone peak. The two hourly baseline (background) values were then subtracted from the measured peak values to determine the average peak potential contribution above the background value. The entire 24-hour record was used so baseline hours outside the search window could be used for quantifying peaks. Two-hour peak impacts were then summed and divided by eight to obtain an 8-hour averaged impact equivalent. Table 6 summarizes the highest identified peaks and their equivalent possible MDA8 contributions.

The three highest MDA8 values were 4.75 ppb at the Cheney monitor (6/28/2013), 4 ppb at the Logan monitor (9/14/2015), and 4.5 ppb at the Meridian monitor (8/14/2015). If those days are examined in greater detail, Idaho CRB program burns can be ruled out as possible contributors. First, considering the “peak” observed at Cheney monitor on 6/28/2013, the approved CRB program burn conducted that day was only 4 acres and over 100 miles away. It is too small and

far away to have such a significant impact. Next, considering the “peak” observed at the Logan monitor on 9/14/2015, the observed impact occurred from 11 a.m. to noon and the only CRB program burn was conducted between 11 a.m. and 2 p.m. at a distance of over 50 miles away from the monitor. The timing precludes any CRB contributions to precursors from the burn from transporting to the monitor in time to cause the increase. The “peak” observed on 8/14/2015 at Meridian was due to the Soda Fire that was burning southwest of the Meridian monitor, based on satellite images of the Soda Fire smoke.

**Table 6. Highest identified 2-hour peaks and their equivalent possible MDA8 contributions.**

Ozone Monitor	Date of Greatest Potential Impact	Total Acres Burned	2-Hour Rise over 4-Hour Window (ppb)	Impact on the 8-Hour NAAQS (ppb)	Conclusions from Detailed Analysis
Greenbluff	7/13/2012	15	16.5	2.9	Timing at 4 p.m. precludes CRB due to transport distance from Idaho burns.
	9/22/2014	95	10.3	1.6	Not investigated in detail
	5/15/2012	121	10	1.5	Not investigated in detail
Cheney	6/28/2013	4	19	4.8	Very small burn >100 miles away. Significant contribution not possible.
	8/10/2012	175	11.8	2	Not investigated in detail
	9/19/2013	17	11.5	1.9	Not investigated in detail
Washakie	8/30/2013	1390	13.5	2.5	Timing at 11 a.m. precludes CRB due to transport distance from Idaho burns.
	9/6/2012	1226	9.3	1.4	Not investigated in detail
	9/6/2013	646	8.3	1.7	Not investigated in detail
Logan	9/14/2015	278	22.5	4	Timing at 11 a.m. precludes CRB due to transport distance from Idaho burns.
	8/30/2012	723	16.7	3.5	Timing at 4 p.m. precludes CRB due to transport distance and direction from Idaho burns.
	10/17/2014	44	15.7	3.8	Steep ozone drop—false peak detection
Meridian	8/14/2015	295	21	4.5	Soda Range fire southwest of Meridian.
	8/7/2013	612	17.5	3.1	Timing at 12 p.m. precludes CRB due to transport distance and direction from Idaho burns.
	8/12/2015	41	16.5	2.8	Soda Range fire southwest of Meridian.
Craters of the Moon	8/18/2015	175	10.2	2.3	Precludes CRB due to transport direction noted in CRB field notes.
	5/2/2014	332	8	1.3	Not investigated in detail
	5/1/2013	3	7.3	1.4	Not investigated in detail

DEQ also investigated the days when the quantified impacts were greater than 2 ppb and ruled out contributions from CRB (Table 6). DEQ did not continue detailed analyses for any “peak” quantified below 2 ppb because this level appears to be within the natural variability. DEQ concludes from analysis of these short-term “peaks” that the CRB program burns from 2011 to 2015 did not cause or contribute to a violation of the ozone NAAQS at any monitor in or adjacent to Idaho. All identified possible impacts are well below the conservative 7 ppb buffer and the days identified with the highest possible impacts cannot be attributed to CRB activity. Appendix C provides additional details and analysis.

## **6.2 Independent Search of Monitors Downwind of Largest CRB Burn Days per Smoke Management Area**

In a separate independent analysis, DEQ also focused on days when the most acreage was burned in each smoke management area (SMA). This analysis uses similar “peak detection” techniques described in section 6.1, but this analysis focuses on the largest burn days and areas in Idaho and looks specifically at downwind monitors on those large burn days using wind observations made between the burn area and monitor.

### **6.2.1 CRB Activity**

DEQ focused on the largest burn days, by total acres per SMA, based on the assumption that if any ozone impacts are occurring, monitors are most likely to detect them when the largest acreages are burned in a concentrated area on the same day. Of the 13 SMAs in Idaho, CRB activity from 10 SMAs was included in this analysis. The other three SMAs, Boise and Valley Counties, Custer and Lemhi Counties, and Shoshone County, were not included because collectively there were only 2 days when more than 100 acres were burned in one of the SMAs, and ozone data were not available for these days. Even in ideal circumstances, smaller burns will not significantly impact ozone monitoring levels.

The total acreage for all CRB program burns on the same date in each of the 10 SMAs were summed and sorted in decreasing order of acres burned for all burn days from 2009 to 2016. In each SMA, at least 5 days with the largest number of acres burned were analyzed for wind direction and ozone peaks at nearby monitors. In the SMAs with many large burn days, all days were analyzed when at least 1,000 acres were burned. In some SMAs with fewer large burns, all burn days with at least 100 acres were analyzed .

### **6.2.2 Ozone Monitoring Data**

The ozone monitors within Idaho used in this analysis were Craters of the Moon National Monument and Meridian. The ozone monitors outside of Idaho used in this analysis were Spokane-Greenbluff and Cheney, WA, Washakie and Logan, UT, and Teton and Yellowstone National Park, WY.

Wind direction and wind speed data were downloaded from MesoWest operated at the University of Utah (Horel et al. 2002). One meteorological station was used for each SMA, selected at a location where wind speed and direction would best represent the entire SMA and its transport path or direction toward the monitor. A sector bounded by 30 degrees to either side of this station was the required wind direction range for a CRB program burn to impact an ozone monitor. For the SMAs with multiple concentrated burn areas separated by a large distance, such

as eastern Idaho, wind sectors were created for each concentrated burn area and then combined. For this reason, some wind sectors are greater than 60 degrees. Table 7 indicates the wind direction sector for each SMA-ozone monitor pair.

**Table 7. Ozone monitors, wind direction sector, and meteorological station for each smoke management area.**

Smoke Management Area	Ozone Monitor	Wind Direction Sector (degrees)	Meteorological Station
Blaine and Camas Counties	Craters of the Moon	213–273	Potter Butte (PBUI1)
Boundary	Spokane-Greenbluff	6–66	Bonner's Ferry (BFYI1)
Central	Spokane-Greenbluff	129–189	Potlatch (POTI1)
	Cheney, WA	105–165	
Eastern Idaho	Craters of the Moon	28–109	Idaho Falls (IDA)
	Yellowstone	201–277	
	Teton	246–313	
Kootenai	Spokane-Greenbluff	60–120	Coeur d'Alene Airport (KCOE)
	Cheney, WA	19–79	
Northern Magic Valley	Craters of the Moon	159–251	Rock Lake (ROCI1)
	Logan, UT	274–343	
	Meridian, ID	85–151	
Southeastern Idaho	Craters of the Moon	71–181	Pocatello Regional Airport (KPIH)
	Logan, UT	303–56	
	Teton	192–285	
Southern Magic Valley	Craters of the Moon	169–252	Burley Municipal Airport (KBYI)
	Logan, UT	265–343	
	Meridian, ID	92–163	
Southwestern Idaho	Meridian, ID	240–300	Caldwell Industrial Airport (KEUL)
Weiser and Lower Payette	Meridian, ID	292–358	Ontario Municipal Airport (KONO)

### 6.2.3 Peak Detection

The peaks were identified and quantified using the same methods described in section 6.1.

### 6.2.4 Large Burn Day Analysis

This analysis followed the path of emissions from large burns or large clusters of burns from individual SMAs to ozone monitors within and surrounding Idaho using surface wind direction data. Data from the ozone monitors were then analyzed for the presence of ozone peaks possibly attributable to the CRB activity on the same day. DEQ filtered the set of all large burn days for each SMA to a subset of days where that day's CRB-related ozone precursor emissions may have been transported toward a monitor and caused an observed increase in ozone levels. On these select days, DEQ performed a more detailed wind analysis to determine with greater certainty if the burns could impact ozone levels.

A monitor was determined to be potentially affected by the CRB program burn if 30% or more of wind measurements from 11 a.m. to 8 p.m. on the day of the burn fell within the wind

direction sector, as CRB program burns are not allowed before 11 a.m. or after 4 p.m., and most burns occur between 12 p.m. and 2 p.m. Further investigation using back trajectory analysis to determine whether ozone peaks at monitors were caused by CRB program burns were performed for all 2-hour ozone peaks greater than or equal to 8 ppb in magnitude. A 2-hour peak of 8 ppb is equivalent to an ozone contribution of 2 ppb above the maximum daily 8-hour average.

### 6.2.5 Summary of Detected Impacts on Ozone Monitors

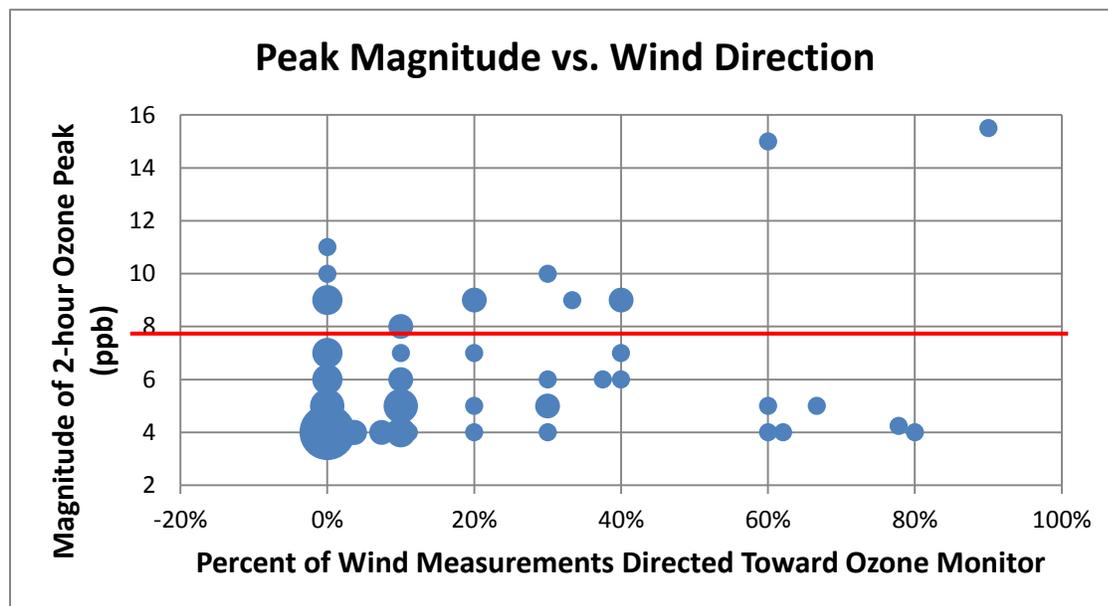
Of the 169 CRB days evaluated, 102 days had detectable ozone “peaks,” but only 20% of days with peaks had winds directed toward an ozone monitor greater than 30% of the time.

Table 8 summarizes the total number of days in which ozone peaks were identified that may have been affected by CRB activity based on wind transport patterns. As more of the wind measurements must be directed toward a monitor, fewer days with peaks qualify for consideration. The “10%” of winds column relates to a minimum 1 hour of wind blowing toward the monitor in the 10-hour window from 10 a.m. to 8 p.m. local time.

**Table 8. Total number of days with peaks that may have been affected by CRB activity.**

Minimum % Wind Direction within Sector	10%	20%	30%	40%	50%
Number of qualifying peaks	39	24	19	12	8

Figure 11 shows the variation of peak magnitude with percent of winds blowing toward the monitor. Of the peaks shown in Figure 11, days with 2-hour peaks of 8 ppb or larger (above the red line) were further evaluated using back trajectory analysis to see if the wind trajectories from the ozone monitor on that day intersected CRB locations. The back trajectory methodology is described in Appendix C.



**Figure 11. Ozone peak magnitude as determined by the percent of wind measurements directed toward the affected ozone monitor. Larger markers indicate a higher frequency of the wind percent-peak magnitude pair. Cases above the 2-hour ozone “peak” of 8 ppb (red line) were selected for more detailed analysis; values below that line are equivalent to 2 ppb or less, when averaged over 8 hours.**

Only two burn clusters qualified as potential contributors to elevated ozone levels after this analysis: the burns in the central SMA on 9/16/2009 detected by the Cheney, WA monitor and the burns in the southeastern Idaho SMA on 10/5/2012 detected by the Logan, UT monitor. Table 9 shows the details of these two burn clusters, including the approximate quantified ozone impact.

**Table 9. Details of the two ozone peaks greater than 8 ppb potentially impacted by CRB based upon wind trajectories.**

Date	Smoke Management Area	Burn Size (acres)	Monitor	8-Hour Ozone Impact Equivalent (ppb)	% of Wind Directed Toward Monitor
9/16/2009	Central	2227	Cheney, WA	0.19	10
10/5/2012	Southeastern Idaho	929	Logan, UT	0.88	33

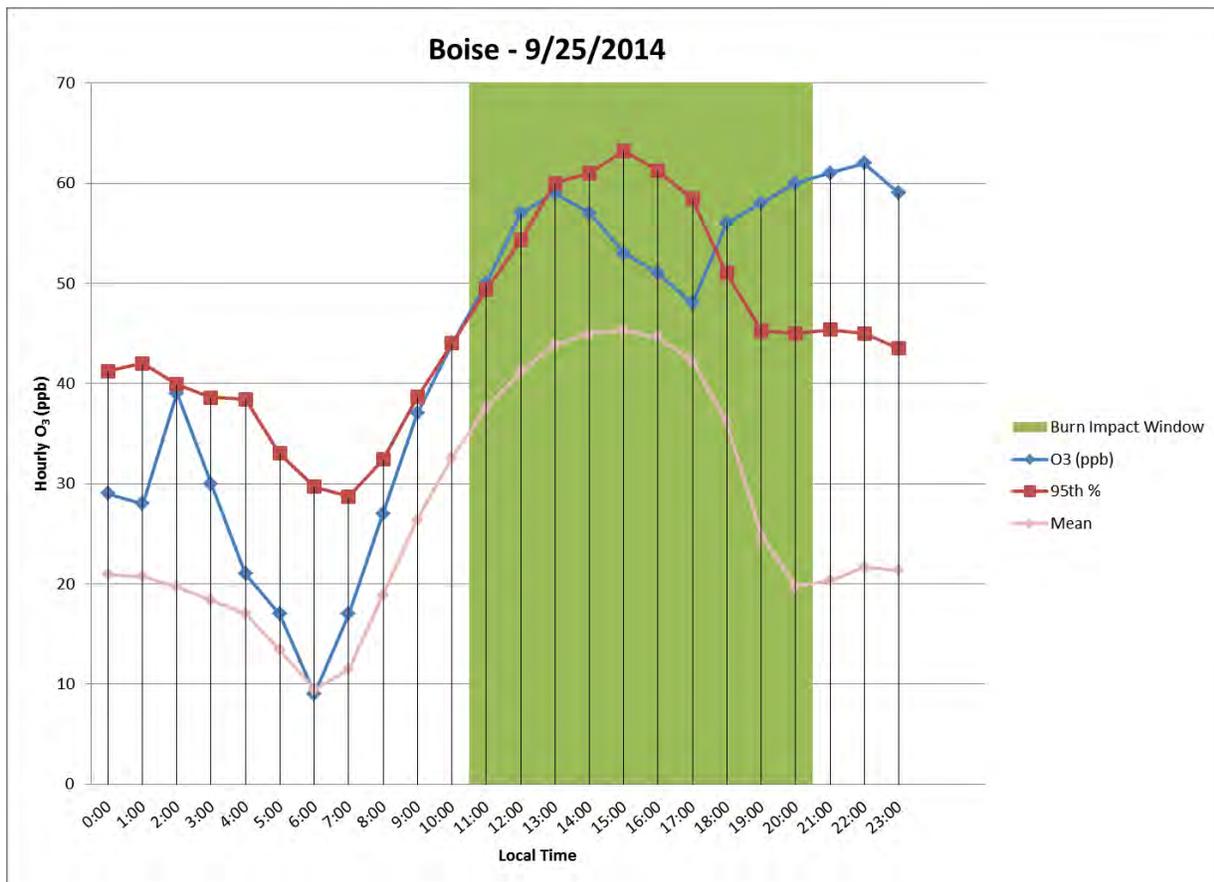
The results from this analysis suggest an insignificant impact on atmospheric ozone levels on large burn days. Of the 169 CRB monitor days evaluated, only two, or 1.2%, were determined to have been potentially impacted by CRB. These 2 days had 8-hour ozone impact equivalents of 0.19 ppb and 0.88 ppb, less than the SIL for ozone, although each of the 169 CRB monitor days had a large number of acres burned in a relatively small area on these days.

Finally, when the large burn days without “peaks” are compared statistically with the population of days with “peaks”, DEQ found that the two groups are most likely from the same population. We infer from this that the large SMA burn days do not increase the number of peaks observed.

### 6.3 95th-Percentile Analysis Method

The third analysis method follows EPA guidance for determining impacts from exceptional events, based on comparison to historical variation in ozone as represented by the 95th-percentile values.

Hourly ozone data were obtained from EPA Air Data (<https://www.epa.gov/outdoor-air-quality-data>) for the most recent 5-year certified dataset (2011–2015). The data were used to calculate historical 95th-percentile values for 2011–2015. The hourly percentiles were plotted with daily time series for each day that CRB program burns occurred (Figure 12).



**Figure 12. Example time series with hourly ozone concentration and historic 95th percentiles plotted for 9/25/2014 at the Boise monitor.**

Any hourly ozone values within the burn window greater than the 95th percentile were flagged for further investigation. Using a 95th-percentile threshold employs a general test of statistical significance and ensures that such concentrations would clearly fall beyond the range of normal expectations for air quality during a particular time of year (81 FR 68216).

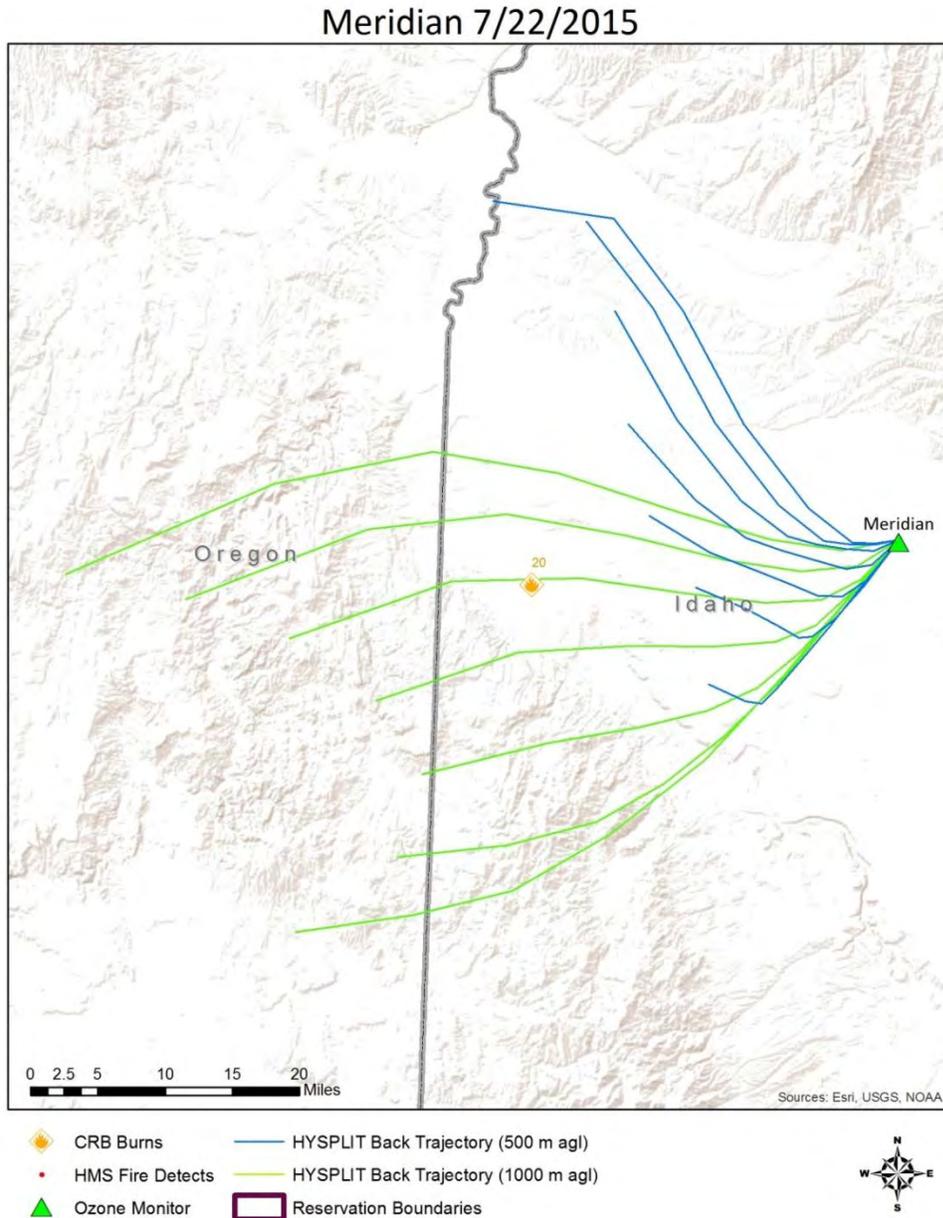
As outlined in the CRB operating guide (section 7.2) (DEQ 2016), DEQ specifies a burn window (start and end time) for each authorized crop residue burn. Burns may not be ignited before the start time and must be completed (fire out) by the end time. While the majority of burns are authorized within a burn window of 12 p.m. to 4 p.m., some burns are approved for earlier start times to address fire safety and smoke management concerns. DEQ used a conservative estimate of the possible burn impact window from 11 a.m. to 8 p.m. for this analysis. This estimate captures any early ignitions if they did occur and captures a long emission transport time after the burns. A review of field notes from the 2013 and 2016 burn seasons confirmed 99% of authorized agriculture burning occurred within a burn window of 11 a.m. to 4 p.m.

To capture any potential impacts from CRB on ozone monitors, DEQ first identified all hourly ozone concentrations above the 5-year 95th percentile and determined if CRB program burns were authorized on days when hourly ozone excursions above the 95th percentile were observed between 11 a.m. and 8 p.m. All CRB program burn locations occurring within 50 miles of the ozone monitors were then identified. DEQ believes that any smoke generated from further than 50 miles would most likely not impact the monitor during the established impact window

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allowed based on typical surface wind conditions under which CRB is permitted. In general, a “no burn” decision is made on days when surface winds are forecasted to be greater than 12 mph because smoke will not disperse vertically under these conditions and most growers refrain from burning under high wind speeds because of fire safety concerns. These wind speed restrictions are always in place for fields located within 3 miles of an ISP.

Next, a trajectory analysis was performed on identified days. HYSPLIT back trajectories were run from each affected monitor during the burn impact window to determine if smoke from the CRB program burns could have impacted the monitor on those days. Appendix C provides a description of the trajectory analysis methods. The modeled back trajectories were overlaid in ArcMap on a map of monitor, CRB, and wildfire locations for the affected days (Figure 13). If the back trajectories clearly intersected the CRB locations, then that date was classified as “possible impact.” If the back trajectories came close to the CRB locations, the back trajectories were then buffered by 12 km (the grid cell resolution of the North American Model (NAM) meteorological data used in the HYSPLIT model). The 12 km buffer represents an envelope of model uncertainty. If the CRB locations intersected the back trajectory buffer zone, the date was also classified as “possible impact.” If the CRB locations were further than 12 km away from the back trajectories, then that date was classified as “no impact.” The resulting dates for “possible impact” are shown in Table 10. A table of “no impact” days is included in Appendix C.



**Figure 13. Example back trajectory analysis for Meridian monitor on 7/22/2015. The 1,000 meter back trajectory intersects a 20-acre CRB program burn to the west of the monitor. Smoke from this burn could potentially have caused the hourly ozone concentration at the monitor to rise above the historic 95th-percentile value.**

Of the 49 days identified that had hourly ozone concentrations above the 95th percentile, 23 had potential CRB contributions based on the back-trajectories. To estimate the relative increase above normal historical fluctuations, the difference between the observed MDA8 and the calculated 95th-percentile monthly averaged MDA8 was calculated ( $n \sim 6 - 10$  depending on the monitor) as shown in Table 10. Of the 23 days identified, only 5 days led to MDA8 values greater than the 95th-percentile MDA8. These days were investigated further.

The value at the Boise monitor on 8/13/2013 was influenced by the Elk Complex wildfire actively burning to the east of Boise, which consumed over 100,000 acres until contained, rather

than by the 122 acres of CRB. The value on 05/01/2105 at the Washakie monitor was most likely caused by lower troposphere/stratospheric intrusion of ozone. On this day, ozone concentrations were elevated regionally. The value at Grand Teton National Park on 09/05/2012 occurred when numerous Idaho wildfires caused satellite-detected smoke in the area, a likely cause of the elevated ozone. Finally, the fluctuations above the 95th-percentile values on 10/01/2012 in Logan, UT and on 10/05/2012 in Grand Teton National Park did not result from Idaho CRB burns due to the time required for transport from the burns to the monitors. All remaining days were not above the MDA8 95th percentile and well below the ozone NAAQS. They were not investigated further.

**Table 10. Maximum potential contribution above the 95th percentile for CRB possible impact days assuming all monitor contributions are due to CRB.**

Monitor	Date	Possible Impact		Potential Contribution above 95th %	Conclusions from Detailed Analysis
		MDA8 (ppm)	95th % MDA8 (for month of interest)		
Boise	8/13/2013	0.074	0.070	0.004	Due to Elk Complex fire
Washakie, UT	5/1/2015	0.067	0.064	0.003	Regional high, likely LT/SI
Grand Teton National Park, WY	9/5/2012	0.055	0.052	0.003	Multiple wildfire plumes in area Sept 4 & 5, 2012
Logan, UT	10/1/2012	0.046	0.044	0.002	Timing at 11 am precludes CRB due to transport
Grand Teton National Park, WY	10/5/2012	0.048	0.047	0.001	Timing at 1 pm precludes CRB due to transport
Washakie, UT	8/8/2011	0.067	0.067	0.000	Not above 95 <sup>th</sup> %
Craters of the Moon	5/5/2011	0.059	0.059	0.000	Not above 95 <sup>th</sup> %
Washakie, UT	10/1/2012	0.049	0.050	-0.001	Not above 95 <sup>th</sup> %
Washakie, UT	10/25/2013	0.049	0.050	-0.001	Not above 95 <sup>th</sup> %
Meridian	10/1/2012	0.042	0.043	-0.001	Not above 95 <sup>th</sup> %
Craters of the Moon	9/6/2011	0.054	0.056	-0.002	Not above 95 <sup>th</sup> %
Craters of the Moon	9/20/2013	0.054	0.056	-0.002	Not above 95 <sup>th</sup> %
Grand Teton National Park, WY	10/4/2012	0.045	0.047	-0.002	Not above 95 <sup>th</sup> %
Spokane-Augusta Ave.	9/24/2014	0.047	0.050	-0.003	Not above 95 <sup>th</sup> %
Washakie, UT	9/2/2011	0.058	0.062	-0.004	Not above 95 <sup>th</sup> %
Cheney, WA	9/24/2014	0.051	0.055	-0.004	Not above 95 <sup>th</sup> %
Washakie, UT	5/13/2015	0.059	0.064	-0.005	Not above 95 <sup>th</sup> %
Washakie, UT	9/7/2011	0.055	0.062	-0.007	Not above 95 <sup>th</sup> %
Boise	5/2/2011	0.055	0.062	-0.007	Not above 95 <sup>th</sup> %
Boise	8/23/2013	0.061	0.070	-0.009	Not above 95 <sup>th</sup> %
Boise	8/23/2013	0.061	0.070	-0.009	Not above 95 <sup>th</sup> %
Meridian	8/23/2013	0.059	0.068	-0.009	Not above 95 <sup>th</sup> %
Meridian	9/25/2014	0.046	0.057	-0.011	Not above 95 <sup>th</sup> %

Notes: parts per million (ppm); lower troposphere (LT); stratospheric intrusion (SI)

DEQ concludes that from 2011 to 2015 CRB did not cause or contribute to values above the 95th-percentile historical fluctuations and that no direct relationship exists between CRB

program burns and the hours and days when ozone concentrations exceeded the historical 95th-percentile value. Additional details are included in Appendix C.

## 6.4 Nationwide Search CRB Contributions to Ozone

Based on the 2014 NEI (EPA 2016), CRB occurs in many other states, and some states have more ozone monitors than Idaho, so to be conclusive, DEQ looked at other states. In the 2014 NEI, all individual crop burns are identified by date and location and include county and state. We looked nationwide for large burn areas where the ozone monitoring network may be denser than in the Pacific Northwest. Presumably, CRB-related impacts in other regions may inform the potential for CRB contributions to ozone in Idaho. Due to the volume of data, a detailed search of hourly data from other areas similar to those in sections 6.1, 6.2, and 6.3 was not possible, but a higher level analysis allowed DEQ to add to the evidence about the potential for agricultural burns to contribute significantly to tropospheric ozone formation.

### 6.4.1 Agricultural Burning Database in 2014 NEI

The 2014 NEI (EPA 2016) agricultural burning dataset was searched for the largest county-level burn days nationwide. The top county-level burn days in 2014, sorted by total VOC emissions are shown in Table 11. In addition, it seems that with this level of burning, a reasonably dense monitoring network should provide definitive data regarding the potential for such large amounts of burning to produce additional ozone.

The largest county-level burn days occur in the Central Valley, CA (i.e., San Joaquin Valley, Figure 14), where much more burning occurs than the largest burn days in any county in Idaho. The largest county-level burn day (ranked by VOC emissions) in DEQ's burn program ranks 36th and occurred in Idaho County on 9/25/2014, when 10 fields totaling 1,200 acres were burned (Lewis County burned slightly more but not under Idaho's CRB program). In contrast, on the largest burn day in Fresno County, CA, 43 fields totaling 5,160 acres were burned on 1/31/2014. On that day, 5 of the counties in the San Joaquin Valley totaled 105 burns and 12,600 acres (10 times the number of acres burned in Idaho County on 9/25/2014). The magnitude of the burning in these counties, which are designated nonattainment for both PM<sub>2.5</sub> and ozone, is surprising and suggests that burning does not contribute to any significant increases in observed ozone concentrations. In addition, it seems that with this level of burning, a reasonably dense monitoring network should provide definitive data regarding the potential for such large amounts of burning to produce additional ozone.

**Table 11. Largest county-level burn days in the 2014 NEI sorted by total VOC emissions.**

State-County-Day	Count of Burns	Sum of Acres Burned	Sum of VOC (ton/day)	Sum of NO <sub>x</sub> (ton/day)	Sum of PM <sub>2.5</sub> (ton/day)	Sum of CO (ton/day)
<b>CALIFORNIA-Fresno_01/31</b>	43	5160	44.3	18.3	91.7	734.6
CALIFORNIA-Fresno_02/01	42	5040	44.2	19.0	90.7	733.9
<b>CALIFORNIA-Madera_01/31</b>	26	3120	27.1	11.4	55.3	446.6
MONTANA-Chouteau_04/07	31	3720	26.6	14.9	29.1	352.8
MONTANA-Teton_04/19	25	3000	25.3	10.5	53.3	427.2
MONTANA-Chouteau_04/21	26	3120	22.7	12.4	27.3	309.6
MONTANA-Teton_04/21	21	2520	21.5	8.8	45.8	363.6

State-County-Day	Count of Burns	Sum of Acres Burned	Sum of VOC (ton/day)	Sum of NO <sub>x</sub> (ton/day)	Sum of PM <sub>2.5</sub> (ton/day)	Sum of CO (ton/day)
MONTANA-Teton_05/08	21	2520	21.2	8.9	44.3	356.6
NORTH DAKOTA-Cavalier_10/24	34	2040	16.6	8.4	25.0	239.7
MONTANA-Chouteau_04/19	18	2160	16.1	8.3	22.7	232.6
WASHINGTON-Whitman_03/24	17	2040	15.7	8.4	18.8	209.1
<b>CALIFORNIA-Tulare_01/31</b>	14	1680	14.6	7.3	27.4	241.2
WASHINGTON-Whitman_09/10	17	2040	14.3	8.0	18.5	208.7
MONTANA-Teton_04/30	14	1680	14.2	5.9	30.0	240.1
CALIFORNIA-Fresno_12/01	13	1560	13.5	5.4	29.3	229.4
<b>CALIFORNIA-San Joaquin_01/31</b>	13	1560	13.5	5.4	29.3	229.4
CALIFORNIA-San Joaquin_12/30	13	1560	13.5	5.4	29.3	229.4
NORTH DAKOTA-Cavalier_10/25	27	1620	12.7	6.3	20.3	191.5
CALIFORNIA-Kern_02/01	12	1440	12.4	5.3	26.1	209.9
KANSAS-Linn_03/29	14	1120	12.0	6.6	15.1	149.8
NORTH DAKOTA-Cavalier_10/31	23	1380	11.6	5.7	18.6	170.3
NORTH DAKOTA-Towner_10/24	24	1440	11.3	6.0	16.2	163.7
KANSAS-Osage_03/29	13	1040	11.1	6.1	13.1	133.1
WASHINGTON-Walla Walla_09/10	12	1440	11.1	5.7	15.1	154.6
NORTH DAKOTA-Ramsey_10/31	23	1380	10.9	6.2	13.1	147.4
WASHINGTON-Walla Walla_09/09	11	1320	10.7	5.6	11.2	128.6
MISSOURI-Stoddard_09/30	18	1080	10.6	6.3	13.6	141.8
KANSAS-Pottawatomie_04/11	13	1040	10.5	6.1	14.4	145.4
CALIFORNIA-Madera_02/01	10	1200	10.4	4.2	22.5	176.5
MINNESOTA-Norman_05/17	16	960	10.0	5.5	12.4	124.9
IDAHO-Lewis_09/25	11	1320	9.9	4.8	17.4	159.3
CALIFORNIA-Fresno_12/02	9	1080	9.3	3.8	20.3	158.8
<b>CALIFORNIA-Merced_01/31</b>	9	1080	9.3	3.8	20.3	158.8
WASHINGTON-Okanogan_07/18	9	1080	9.3	3.8	20.3	158.8
CALIFORNIA-Imperial_02/01	9	1080	9.1	4.2	14.2	129.5
<b>IDAHO-Idaho_09/25*</b>	10	1200	9.0	4.5	14.1	136.5

\*Idaho County had the largest burn day in 2014 of any counties under the DEQ burn program. Lewis Co is mostly not in DEQ program.

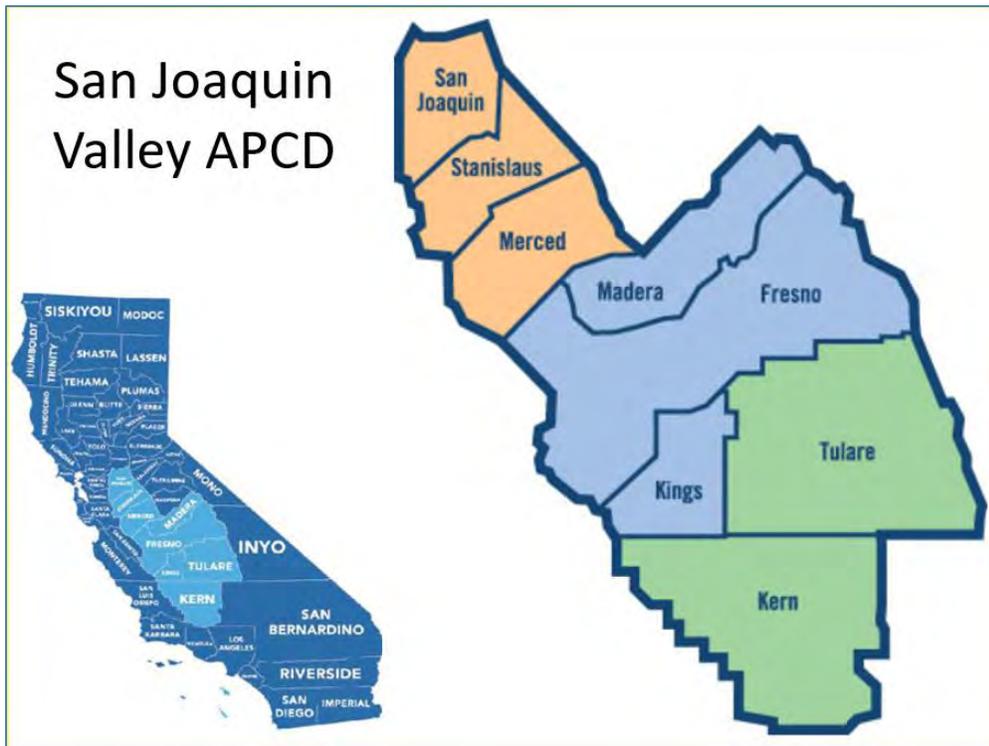


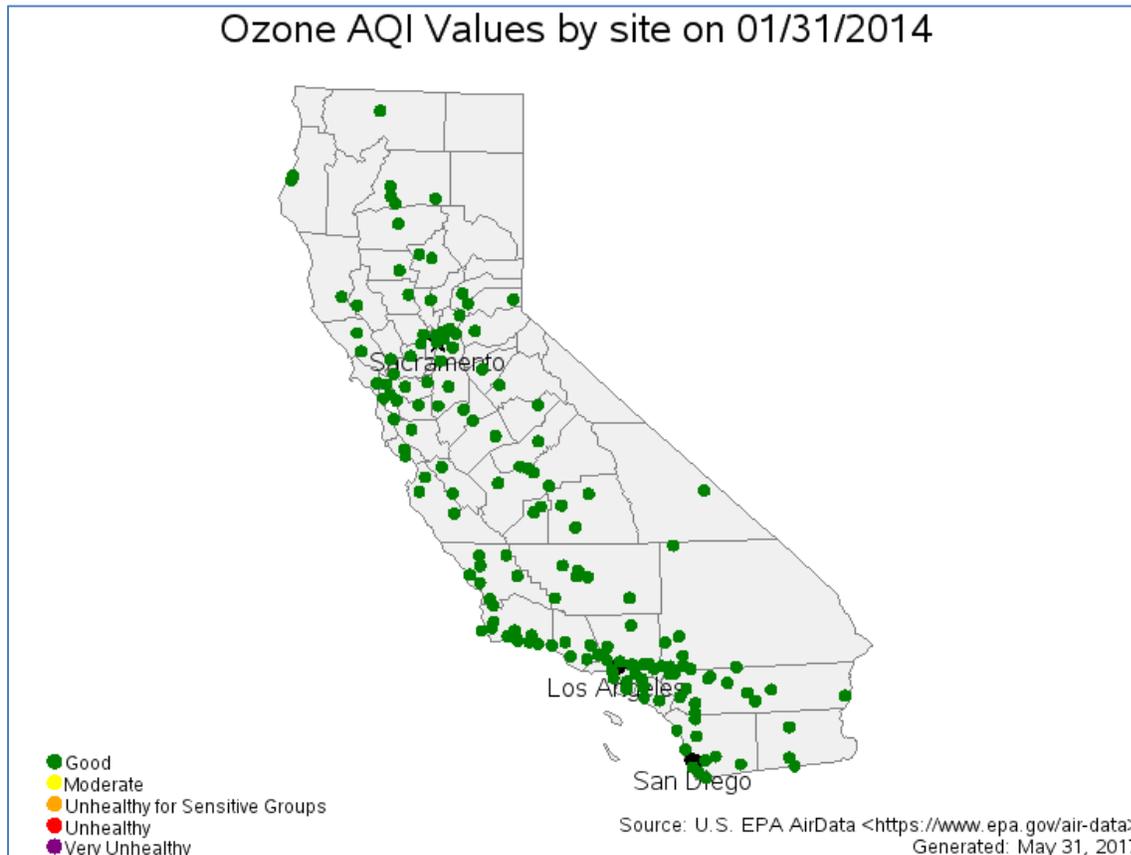
Figure 14. Location of San Joaquin Valley Air Pollution Control District and constituent counties (SJVAPCD 2010).

#### 6.4.2 Ozone Monitoring in the San Joaquin Valley

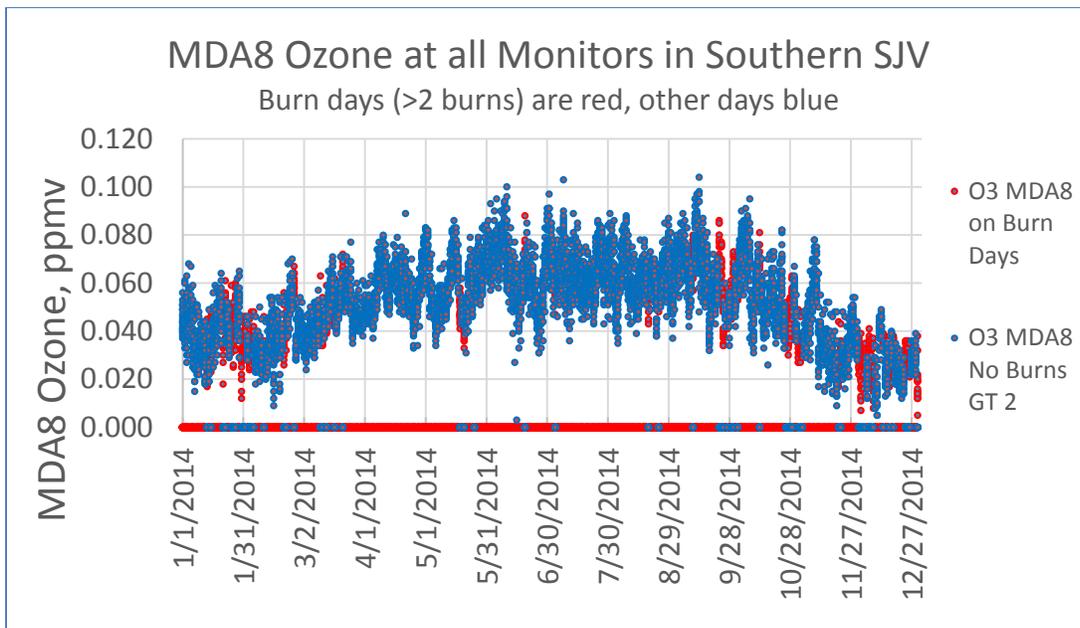
The ozone monitoring network in California and the AQI values for the largest burn day on 1/31/2014, are shown in Figure 15. All monitors are green or “good” on that day (<55 ppb) in spite of it being the largest burn day in the nation for a single county (5,160 acres in Fresno County) and for a cluster of 5 counties in the same valley (12,600 total acres in Fresno, Madera, Tulare, San Joaquin, and Merced). January 31 is a “winter” day, but the temperature reached 63°F on that day so it is not too dissimilar from warmer seasons in other locations. DEQ obtained MDA8 ozone monitoring data for approximately 20 ozone monitors in and around the San Joaquin Valley for 2014. Due to the dense monitoring network available in California, and the very large burn days, the San Joaquin Valley appears to be the best place in the United States to search for excess ozone contributions from agricultural burning, so DEQ focused on this region. The San Joaquin Valley is also unique in that it lies between several large urban areas including the Los Angeles metropolitan area to the south and the San Francisco and Sacramento areas to the north and moderately sized cities within the valley including Stockton, Fresno, and Bakersfield (all larger than Boise, ID). The NO<sub>x</sub>-rich urban plumes would be expected to mix with CRB NO<sub>x</sub> and VOC emissions to enhance ozone production from any agricultural burning in the valley compared to less populated agricultural areas in Idaho. It is clear that if significant excess ozone cannot be found using the dense monitoring network in the San Joaquin Valley, it likely does not occur in any significant amounts in other locations with less burning and a sparser monitoring network.

The 2014 ozone MDA8 values for the 20 San Joaquin Valley area monitors is shown in Figure 16 where all days with more than two fields burned are indicated by a red symbol, and the “no burn” days or days with two or fewer fields burned are indicated by blue symbols. Most burning

occurs in the cooler months when background ozone is below about 60 ppb; however, a small number of higher ozone occurs on burn days in the warmer seasons when ozone levels are generally higher. Nevertheless, no clear increasing trend in ozone above the surrounding days can be identified because the day-to-day variability is too great, and it appears that many more clusters of high ozone occur on nonburn (in this section nonburn days refers to days when CRB burning did not occur) days than on burn days. Thus, DEQ used a statistical approach to rigorously investigate whether agricultural burning influences the ozone levels.



**Figure 15. California ozone monitors, showing ozone AQI values on the largest burn day in 2014 (EPA 2017). Ozone remained less than 55 ppb for all monitors in spite of 12,600 acres burned in San Joaquin Valley, CA on this day.**



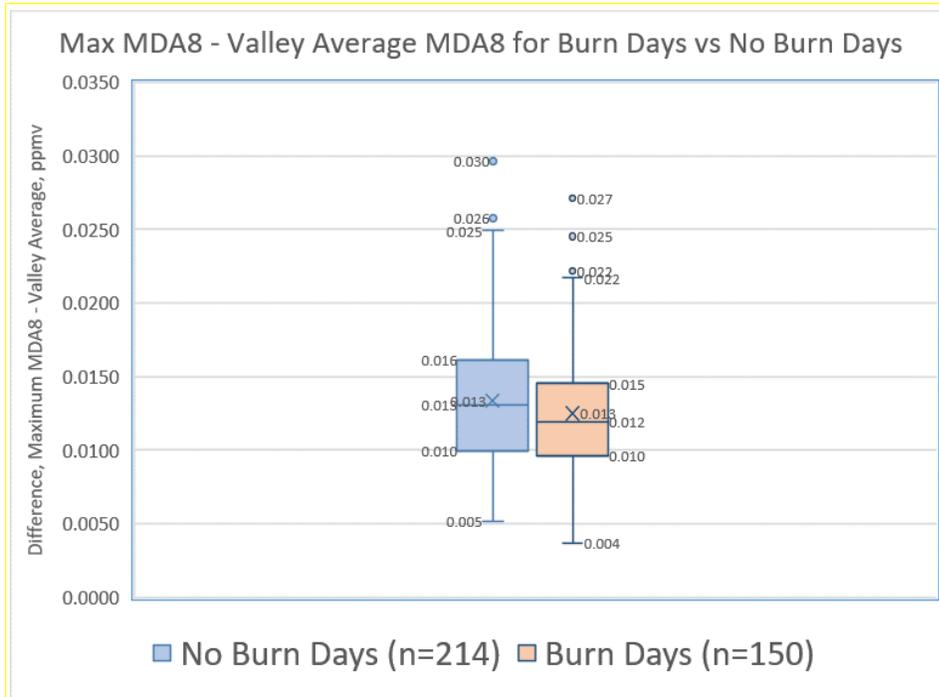
**Figure 16. MDA8 ozone in the southern San Joaquin Valley, CA for 2014. Days in which more than two fields were burned in any county are shown in red. Blue symbols indicate no burning or only minor burning. Large ozone increases are not seen on most large burn days.**

### 6.4.3 Statistical Analysis of Ozone MDA8 Values in the San Joaquin Valley

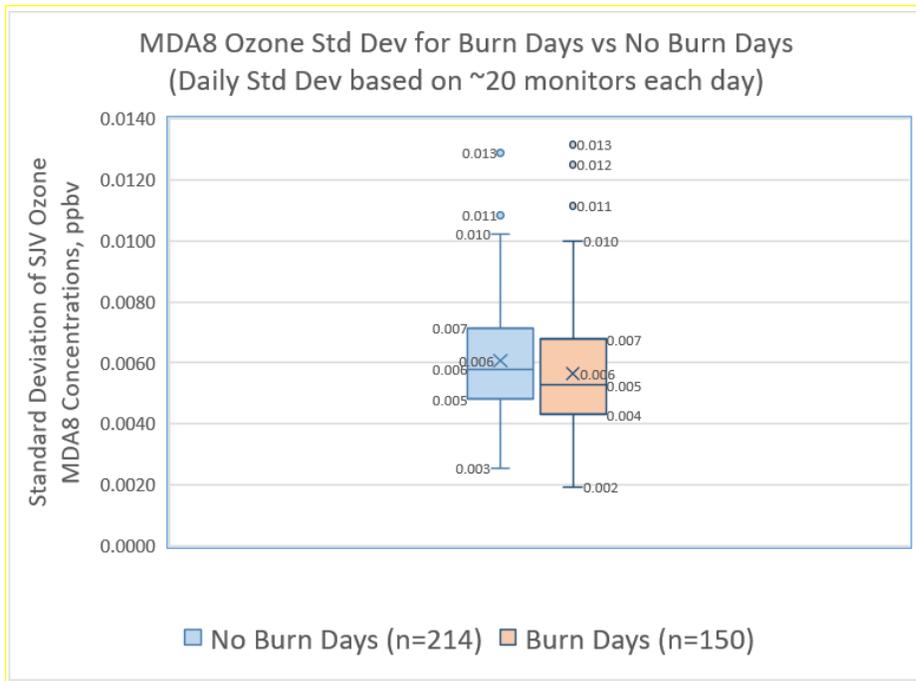
The MDA8 ozone concentrations for all monitors in the San Joaquin Valley were combined with the burn database to identify which days involved agricultural burning. Next, DEQ identified when ozone may have increased due to agricultural burning. Ozone is generally lower on burn days because the San Joaquin Valley Air Pollution Control District forecasts the ozone level and allocates burning at a level that will not threaten the NAAQS for any pollutant based on the expected air quality and meteorological conditions. The forecasted MDA8 is typically lower when burning is permitted and as a result, the magnitude of the MDA8 is not useful in identifying CRB contributions. On the other hand, it is the increase of ozone above the valley average background at one or more monitors downwind of the burns that would be the best indicator of any agricultural burning contribution. DEQ searched for such increases in the daily MDA8 record for 20 monitors in and around the San Joaquin Valley.

First, the valley-averaged ozone levels were determined to obtain a stable valley-wide measure of the day-to-day background ozone, and this average was subtracted from the highest MDA8 for any monitor for that day to quantify the highest single monitor increase above the valley average. Conceptually, any burn emissions in the valley would blow toward one end of the valley, typically up-valley in the afternoon, and one or more of the many downwind monitors would increase more than the non-impacted monitors if the burn emissions produced significant ozone. On the other hand, if agricultural burns do not produce significant ozone, the valley-wide ozone pattern would be very similar every day, regardless of whether it was a burn day or not. The “maximum MDA8 increase” above the valley average for burn days was compared to the maximum MDA8 increases for the nonburn days. The maximum MDA8 increases for burn days and nonburn days are shown in the box-whisker plots in Figure 17. The colored boxes reflect the days in the 25–75 percentile “interquartile range with the center line being the median or 50-50 line and the “X” being the average. The thin “whiskers” reflect the 5 and 95 percentile values and data points beyond them reflect extreme values. The distributions are very similar suggesting

no effect from burning. In fact, the nonburn days (blue) show slightly greater maximum MDA8 increases above the valley average at every point in the distribution, indicating that the burn days do not appear to increase the ozone MDA8 at any part of the valley when compared to the nonburn days. A broader look at variability is shown in Figure 18 where the valley-wide MDA8 standard deviations (n~20) are compared. If agricultural burning caused a significant increase in ozone, greater valley-wide variability would be expected with the upwind end of the valley remaining at background concentration levels while the end of the valley downwind of the burns would experience increased MDA8 concentrations. The variability appears to be greater on the nonburn days, again suggesting that agricultural burning does not increase downwind ozone in the downwind ends of the San Joaquin Valley.



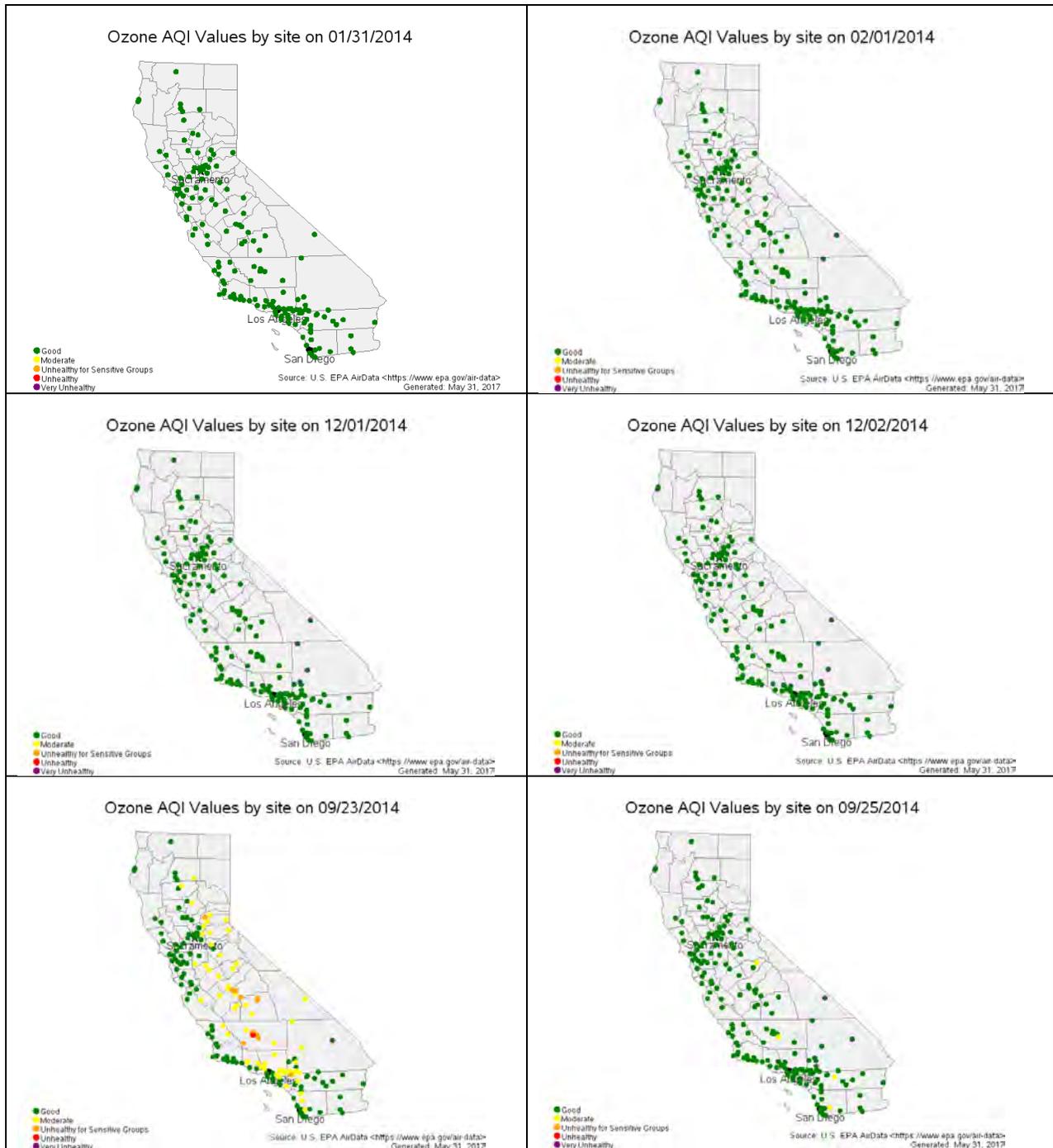
**Figure 17. Maximum MDA8 difference above San Joaquin Valley average on burn days versus nonburn days in 2014. The center line is the median value and the “X” is the average, while the colored boxes represent 25 and 75 percentile and the “whiskers” indicate the 5 and 95 percentile values.**



**Figure 18. Comparison of variability (i.e., standard deviations) in San Joaquin Valley-wide ozone MDA8 values for burn days versus nonburn days. If burning contributed significant ozone the burn days would be expected to have higher standard deviations, but they do not.**

#### 6.4.4 Potential for Increased CRB-Caused Ozone in Aged San Joaquin Valley Plumes

DEQ also considered whether burning and urban and transportation sources in the San Joaquin Valley may cause ozone to be partially titrated to lower levels within the valley by the urban and transportation  $\text{NO}_x$  emissions, and considered whether the burning emissions in the valley air become transported outside the valley and continue to “age” or react, increasing the ozone at more distant locations. To assess this possibility, DEQ obtained the statewide AQI maps for the largest burn days in the San Joaquin Valley showing the AQI pattern statewide (Figure 19). The statewide AQI maps with all or nearly all monitors in the green or “good” quality range indicate that no large increase occurs in the San Joaquin Valley or in other areas of California well outside the valley. To evaluate this possibility for burns during the warmer season, the two largest warm season burn days for Fresno County are shown in the bottom row of Figure 19, with five burns occurring on 9/23/2014 and six burns on 9/25/2014 when the temperatures reach 86°F and 93°F, respectively. While ozone does increase in the central California area on 9/23/2014 with some yellow and orange AQI days (“Moderate” and “Unhealthy for Sensitive Groups” respectively), there are no increases above green on the bigger burn day with higher temperatures, 9/25/2014, and the increases on 9/23/2014 are typical of regional ozone season patterns occurring on many of the other September days with no agricultural burning. A more detailed analysis of the 9/23/2014 case indicates that the higher ozone values on 9/23/2014 are typical of nonburn days in September and did not occur downwind of the 5 Fresno County burns in the afternoon. DEQ concludes that even with a dense monitoring network, there is no evidence of significantly greater ozone produced by the largest burn days in the San Joaquin Valley. In addition, the fact that such burning is allowed to occur in an ozone non-attainment area further suggests that agricultural burning does not contribute significantly to violations of the NAAQS nor to ozone concentrations above 54 ppb (AQI= good).



**Figure 19. California statewide AQI maps for the four highest burn days and two highest warm season burn days (9/23/2014 and 9/25/2014).**

## 7 CRB Program

Idaho's CRB program is one of the more comprehensive agricultural burning programs in the nation. Daily meteorological and air quality forecasts coupled with daily in-field surveillance, on-site approval requirements, and a rigorous permitting program designed to protect ISPs are core elements of the CRB program. These fundamental program components will continue to be part of Idaho's program and will not change as a result of the revision to IDAPA 58.01.01.621.01.

The change to Idaho's CRB rule does not result in additional emissions from CRB. Instead, the rule revision improves smoke management to avoid surface level smoke impacts by allowing the use of atmospheric conditions, when surface heating and vertical mixing are abundant, to make burn decisions that more effectively disperse smoke generated from agricultural burning.

The program elements described in this section—current and proposed operating guide conditions, roles and responsibilities within the program, permitting, and meteorological parameters that support burn decisions—will continue to be implemented to ensure protection of the ozone and PM<sub>2.5</sub> NAAQS as demonstrated over the past 9 years of implementing the CRB program.

### 7.1 Background

Idaho's CRB program changed significantly in 2007. Litigation challenging the basic rule allowing for CRB resulted in a court decision that banned CRB in Idaho. Safe Air For Everyone sued EPA, arguing that Idaho's latest SIP submittal did not clarify existing rules but changed them. The Ninth Circuit Court of Appeals agreed, vacating EPA's approval. The decision resulted in prohibiting open burning of crop residue in Idaho and applied only to CRB, but did not affect other forms of open burning allowed under Idaho's rules or any burning on Indian reservations in Idaho. Governor Otter called for the growers and air quality advocates to join with state regulators to negotiate a solution for CRB. In July 2007, the negotiation process began with the goal of designing a program that was protective of public health, transparent to the public, and restored the use of fire as a tool for the agricultural community.

On December 19, 2007, agreement points were reached. The following agreement points were incorporated into the CRB program and 2008 CRB SIP revision ([www.deq.idaho.gov/media/60180388/open-burning-crop-residue-state-implementation-plan-revision.pdf](http://www.deq.idaho.gov/media/60180388/open-burning-crop-residue-state-implementation-plan-revision.pdf)):

- Operate the program consistently statewide.
- Model the program after the Nez Perce Tribe program.
- Make CRB a transparent program in the manner of the state of Washington.
- Ensure adequacy of air quality monitoring.
- Build in cooperation with other regional smoke managers.
- Establish an annual and ongoing review process.
- Require a revised air quality analysis if bluegrass (turf grass) burning exceeds 20,000 acres statewide.

In 2008, Idaho changed its code and air quality rules to reflect the agreement, including the key elements, and to satisfy the court decision, allowing the CRB program to move forward.

On May 28, 2008, DEQ submitted a SIP revision pursuant to the CAA §110(l). This submittal and a June 11, 2008, supplemental submittal demonstrated that adopting the SIP revision would not interfere with any requirements concerning attainment or reasonable progress, or any other applicable requirement. On August 1, 2008, EPA published approval of this SIP revision in the Federal Register (73 FR 44915). EPA's approval of DEQ's CRB program was effective on September 1, 2008.

Spot burning, baled agricultural residue burning, and propane flaming rules were developed after the second year of DEQ's CRB program and were implemented in 2013. The spot and bale permit option and permit by rule option for propane flaming were developed to reduce the administrative requirements for burning very small amounts of residue while still protecting public health. This enhancement to DEQ's program was developed through the negotiated rulemaking process in 2010. EPA approved this minor SIP change on March 19, 2013. (78 FR 16791).

## 7.2 CRB Operating Guide

As an outcome of the 2007 agreement, DEQ developed the CRB program operating guide to serve as the main program smoke management implementation tool required by IDAPA 58.01.01.621.01 (DEQ 2016). The guide describes the overall and day-to-day operation in detail and is used to determine burn approvals. Designed to be dynamic, the CRB operating guide will be reviewed and improved each year as DEQ and stakeholders gain expertise in using and refining the forecast tools (<http://www.deq.idaho.gov/media/1117949/crb-operating-guide.pdf>).

DEQ also develops an annual report (IDAPA 58.01.01.622.02) and works with an advisory committee representing a broad range of interests to discuss issues and obtain valuable feedback on the program's implementation and improvement (IDAPA 58.01.01.622.03). Idaho's CRB Advisory Committee meets annually to review past program performance and discusses potential program improvements. Improvements that are identified during these discussions are submitted to DEQ's director as recommendations. DEQ's director retains final authority for changes to this program. The CRB operating guide will be revised based on information obtained from the advisory committee and shared with DEQ's director.

In the CRB operating guide, persons who conduct CRB are referred to as growers; however, this does not mean that only growers may conduct CRB. Any person may conduct CRB so long as the burning is conducted according to the requirements of the CRB operating guide, IDAPA 58.01.01.617–624, and the SIP.

The CRB operating guide is not part of the SIP and was not part of the 2008 SIP revision, and it will not be submitted as part of this proposed SIP revision.

## 7.3 Forecasting

An important aspect of any smoke management program is meteorological and air quality forecasting. The methodology used by most air quality forecasters is to first note the current observed values of pollutants and their respective trend over the past several hours by using

available monitoring data. Utilizing the many weather resources available, forecasters incorporate the tools that are appropriate for the area of interest into the air quality forecast. Tools useful in analyzing weather patterns with respect to generating an air quality forecast include the following:

- Current weather observations
- Observed atmospheric soundings and model sounding forecasts
- Meteograms
- Graphical output produced by the National Weather Service (NWS)
- Area Forecast Discussion produced by the NWS
- Model output at multiple levels of the atmosphere from multiple sources

Once current and forecast weather conditions have been considered alongside current pollutant levels, the air quality forecaster can generate a forecast for the specific airshed. Air quality forecasters also consider the features unique to their region such as the local impacts of topography and local sources.

## 7.4 Approval Requirements

DEQ must follow primary requirements when approving or denying crop residue burns. Each condition includes a description identifying if the requirements are from code, rule, operating guide, or a combination of the three. Permits for spot and bale burning and propane flaming were developed to reduce the administrative requirements for burning very small amounts of residue while still protecting public health. Because these programs make up a very minor part of the DEQ CRB smoke management program, approval requirements for these program options are not included in the description below.

### 7.4.1 Approve or Deny Requests to Burn

To approve or deny a request to burn, DEQ must determine that conditions will meet all of the following:

- Completed registration is received and approved by DEQ (code, rule, and operating guide).
- Two dollars per acre registration fee is paid (code, rule, and operating guide).
- Crop residue remains in the field which it was generated (code, rule, and operating guide).
- Conditions will not exceed 75% of the level of any NAAQS except ozone and are not projected to exceed such level over the next 24 hours (code, rule, and operating guide).
  - This cessation threshold represents 26 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ )  $\text{PM}_{2.5}$  concentration that equates to a moderate AQI of 80 and 112  $\mu\text{g}/\text{m}^3$   $\text{PM}_{10}$  concentration equal to a moderate AQI of 79. Moderate air quality is acceptable; however, for some pollutants, there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.
- Do not exceed 90% of the level of the ozone NAAQS on any day and are not projected to exceed such level over the next 24 hours (code, rule, and operating guide).
  - This represents 63 ppb ozone concentration equal to a moderate AQI of 77, which is lower than both  $\text{PM}_{10}$  (79) and  $\text{PM}_{2.5}$  (80) AQI levels for a cessation threshold. *The*

*previous threshold (75% of the 8-hour NAAQS) would have represented a 53 ppb ozone concentration or equivalent of a good AQI of 49.*

- Have not reached and are not forecasted to reach and persist at 80% of the 1-hour action criteria for PM under IDAPA 58.01.01.556. This threshold represents a 64  $\mu\text{g}/\text{m}^3$  PM<sub>2.5</sub> hourly concentration (code, rule, and operating guide).
- Notify the public before burning starts (code, rule, and operating guide).
- Bluegrass acreage burning will not exceed 20,000 acres annually (code, rule, and operating guide).
- May not approve CRB on weekends, federal or state holidays, after sunset or before sunrise, or during an episode of air stagnation or degraded air quality (rule and operating guide).
- The day has been designated a burn day (rule and operating guide).
- May not approve CRB within 3 miles of an ISP when surface wind speeds exceed 12 miles per hour (mph) at the field (rule and operating guide). ISPs include public schools while in session, hospitals; residential health care facilities for children, the elderly, or infirm; and other ISPs as approved by DEQ. DEQ Policy Memorandum 10-03 outlines the procedures by which other institutions may apply for sensitive population status and DEQ's process for evaluating and approving such requests (DEQ 2010) ([http://www.deq.idaho.gov/media/72445-pm10\\_3.pdf](http://www.deq.idaho.gov/media/72445-pm10_3.pdf)). DEQ will also add new ISPs to the CRB geographic information system database when discovered.
- The person conducting the burning must possess a portable form of communication (rule and operating guide).
- The person conducting the burning must have DEQ or Idaho State Department of Agriculture (ISDA) burner training within 5 years of the date of the approval (rule and operating guide criteria).

#### 7.4.2 Considerations for Making a Burn Decision

DEQ considers a number of parameters and associated factors to make a defensible decision whether to allow burning of each individual field. Generally, no single parameter is the basis for the burn decision. A combination of parameters allows DEQ to ensure the best possible conditions for smoke management on each day. Even when air quality monitoring data meet the approval conditions listed in Table 12, meteorological forecasts or observed weather conditions may be such that burning is not allowed due to poor dispersion characteristics.

The pollutants that are more likely to limit CRB are PM<sub>2.5</sub>, PM<sub>10</sub>, and ozone. The limits for these pollutants are defined in Table 12.

**Table 12. Air quality approval conditions.**

Pollutant	Averaging Period	Concentration
PM <sub>2.5</sub>	1 hour	64 $\mu\text{g}/\text{m}^3$
PM <sub>2.5</sub>	24 hour	26 $\mu\text{g}/\text{m}^3$
PM <sub>10</sub>	24 hour	112 $\mu\text{g}/\text{m}^3$
Ozone	8 hour	63 ppb

To approve a request to burn, DEQ considers the following criteria:

- Expected emissions from all burns proposed for the same date (rule and operating guide)
- Proximity and emissions from other burns within the area (rule and operating guide)
- Moisture content of the crop residue (rule and operating guide)
- Acreage, crop type, and fuel characteristics (rule and operating guide)
- Meteorological conditions (rule and operating guide)
- Proximity to ISPs (rule and operating guide)
- Proximity to public roadways and airports (rule and operating guide)
- Any other factors relevant to preventing exceedances of the program concentration limits of IDAPA 58.01.01.621 (rule and operating guide)

### **7.4.3 Designation of Burn and No Burn Days**

Each day the final burn decision is posted on DEQ's website. An email update service is also provided to disseminate this information. Each burn decision includes the following:

- Burn or no burn determination for each county or airshed (rule and operating guide)
- Locations of approved burns and number of acres permitted to be burned in each county (rule and operating guide)
- Meteorological conditions and real-time ambient air quality monitoring data (rule and operating guide)
- Toll-free number to receive requests for information (rule and operating guide)

## **7.5 Roles and Responsibilities**

Growers and DEQ staff are responsible for completing the following activities during the burn season.

### **7.5.1 Growers**

Growers are responsible for the following:

#### **Grower Training**

Per rule and CRB operating guide criteria, growers must successfully complete CRB training before being approved to burn crop residue, burn spots and bales, or conduct propane flaming. Refresher training must be completed at least every 5 years.

#### **Grower Submittal of Registrations and Fees**

Growers must register their fields before the proposed burn date per code, rule, and operating guide requirements. Location of the field, type of crop residue, acreage, fuel characteristics, and fire prevention measures are rule and operating guide requirements that must be included in the registration.

Growers must pay fees for each acre to be burned before the proposed burn date per code, rule, and operating guide requirements.

## Grower Notification of “Ready to Burn”

When ready to burn a registered field, the grower must notify DEQ either online or by phone so the field can be listed as “ready to burn” by noon on the day before the grower would like to burn. This is a specific operating guide requirement that provides DEQ the ability to meet the public notification rule requirement (IDAPA 58.01.01.623.02.b).

The CRB online application will not allow a field to be placed on the ready to burn list if the grower or burn manager does not have a valid CRB training date (IDAPA 58.01.01.622.01.f).

## Grower Burn Day Activity

When the grower approved to burn, the grower receives a permit that contains general permit requirements (IDAPA 58.01.01.621.02) (Table 13). In addition to the requirements identified in the rule, the permit includes any field-specific permit conditions including, but not limited to, specific ignition times, in-field verbal approval from DEQ staff before ignition can occur, and burning only when winds are blowing from a specific wind direction. The grower must abide by all permit requirements and may be subject to an enforcement action for failure to comply with any applicable code, rule, or permit requirements. During the burn, the grower must be reachable via a form of portable communication (IDAPA 58.01.01.622.01.c). The grower is responsible for shutting down burns when required by the seasonal smoke coordinator observing the burn activity (IDAPA 58.01.01.622.01.e).

**Table 13. Field-specific permit requirements.**

IDAPA 58.01.01.621.02	Rule Condition
a	Conditions for burns near institutions with sensitive populations
b	The requirement to withhold additional material such that the fire burns down if the Department determines pollutant concentrations reach the levels in Subsection 621.01 of this rule
c	Conditions to ensure the burn does not create a hazard for travel on a public roadway
d	The requirement to consult with the Department to determine actions to be taken if conditions at the burn site fail to satisfy the conditions specified in the notice of approval to burn

## 7.5.2 DEQ Staff

DEQ is responsible for the following:

### North and South Idaho Smoke Coordinator Approval Responsibilities

The North and South Idaho Smoke Coordinators are full-time permanent staff who make a preliminary burn decision by 5 p.m. the business day before and post this information on DEQ’s website (operating guide requirement). A final burn decision is made in the morning of the proposed burn date and posted by county by 10 a.m. local time (operating guide requirement). The number of approvable acres in each county and other criteria must be included for final burn decisions (IDAPA 58.01.01.623). All decisions are based on code, rule, and operating guide requirements and the CRB program processes discussed in this revision. Under the operating guide, the North and South Idaho Smoke Coordinators’ responsibilities include, but are not limited to, the following:

- Review and process registration forms.
- Determine completeness and contact grower if additional information is needed.
- Identify ISPs, public roadways, airports, and populated areas.
- Identify initial permit requirements.
- Approve the registration and issue the “Registration Receipt and Initial Permit Requirements” document and cover letter.
- Issue daily burn decisions by county.
- Review seasonal smoke coordinators’ or regional office analysts’ requests for increases in approvable acres during the burn day and approve or deny.
- Review air quality and meteorological data throughout a designated burn day and make decision to stop burning as needed.
- Notify seasonal smoke coordinators or regional office analysts when trigger levels for enhanced documentation have been reached to ensure postburn enhanced documentation, as described in the CRB operating guide (section 4.6.3) are completed appropriately.

### **Regional Office Approval Responsibilities**

DEQ employs approximately nine seasonal smoke coordinators who work out of various DEQ regional offices. The seasonal smoke coordinators are assigned to specific regions and are responsible for several CRB operating guide requirements such as providing a primary point of contact for growers during the burn season, outreach efforts, complaint investigation, and field observations for every burn day in their SMA. Seasonal smoke coordinator activities specifically associated with approvals of burns include the following:

- Review the meteorologist’s forecast to understand the potential for burning each day.
- Participate in daily conference calls that discuss meteorological conditions expected for the day and any coordination needed for other airshed users.
- Approve individual growers and fields according to the burn decision using database and other on-line tools developed for the CRB program. Approval acreage in the county must not exceed allotted acreage for the county as determined by the North and South Idaho Smoke Coordinators as described above.
- Notify growers by phone or in person of final burn approval—ask growers if they understand all permit requirements and remind them to notify the appropriate fire department and/or sheriff’s department.
- Stay in contact with growers throughout the day.
- Stop additional burning in the airshed or county when necessary due to deteriorating conditions.
- Request increases in approved acres from the North or South Idaho Smoke Coordinator if conditions are justified and the final burn decision included this option.

DEQ has assigned one regional office analyst for each of DEQ’s six regions to support the CRB program. The regional office analysts’ responsibilities include providing input on the burn-decision parameters that may be unique to their region, such as current and forecasted weather conditions, microclimates, terrain, and soil moisture levels. Regional staff review the current and forecasted air quality conditions in their area and make specific field approval recommendations during the burn decision process. Regional office analyst responsibilities also include the following:

- Serve as additional point of contact for growers and public (year-round).
- Train, supervise, and deploy seasonal smoke coordinators.
- Assist the seasonal smoke coordinators with the ready-to-burn list, acres per county, and final burn approvals.
- Assist with grower registrations.
- Observe burns when needed.
- Conduct enhanced documentation as needed.
- Respond to complaints.
- Investigate apparent violations.
- Develop enforcement referral packages for potential violations.
- Conduct outreach and grower training.

These regional office responsibilities are further delineated in the CRB operating guide (DEQ 2016) at <http://www.deq.idaho.gov/media/1117949/crb-operating-guide.pdf>.

### **DEQ Meteorologist Responsibilities**

The DEQ meteorologist reviews and evaluates many predictive and observational tools to make a daily smoke dispersion forecast and burn recommendation. The overall goal is to ensure good smoke management conditions exists or are expected to develop so that smoke rises from the ground as vertical as possible, remains aloft, disperses in the mixing layer, and drifts away from populated areas and ISPs with the transport winds.

The DEQ meteorologist participates in each burn decision process described above. The daily smoke dispersion forecast and burn recommendation from the meteorologist are pivotal components of the daily decision making process. This daily recommendation provides synoptic and mesoscale forecast elements that the DEQ field staff use for in-field approvals. Field staff also provide observational feedback to the meteorologist for additional future forecast input.

## **7.6 Surveillance and Documentation**

A robust smoke management program must include a surveillance component. The CRB program employs approximately nine seasonal smoke coordinators who work out of various regional offices to provide the majority of the field surveillance and documentation for the program. The seasonal smoke coordinators observe burning activity on days when burning is approved in their counties or regions. All burns within 3 miles of an ISP are observed directly unless an exception has been made.

Burns are continuously monitored throughout the day to determine how well they are going, and if unexpected weather conditions or smoke management issues occur, the field coordinators gather information to help determine why they have occurred. This information helps staff make necessary adjustments in the decision-making process for subsequent burn days.

If meteorological conditions in the field differ from those forecasted, coordinators immediately contact the regional office analyst for direction. If conditions deteriorate, the seasonal smoke coordinator has the authority to require the burn extinguished or to require withholding of additional fuel so the fire burns down.

Seasonal smoke coordinators, or regional office staff tasked with smoke management duties, are deployed into the field 1–2 times during the fall burn season on days when no burn approvals are issued, but conditions may seem conducive to potential unapproved CRB. Establishing a DEQ presence during these occasions provides an opportunity for grower outreach and education or enforcement actions and should improve program support and overall compliance. These surveillance responsibilities and others are described in the CRB operating guide (DEQ 2016).

In addition to documenting field observations during each burn day, the regional offices are tasked with operating and maintaining the seasonal CRB monitoring network. The monitors are operated by air quality monitoring network personnel trained in operation, maintenance, and data-handling requirements established by the Monitoring Modeling and Emission Inventory Program. In addition to the CRB specific seasonal monitors, DEQ operates several monitors, samplers, and meteorological stations throughout the year (Figure 20).

## 7.7 Permitting

No person shall conduct an open burn of crop residue without obtaining the applicable permit from DEQ. IDAPA 58.01.01.618.01 specifically states the following:

All persons shall be deemed to have a permit by rule if they comply with all the provisions of IDAPA 58.01.01 Sections 618 through 624. No person shall conduct an open burn of crop residue without obtaining the applicable permit by rule. Those persons applying for a spot burn, baled agricultural residue burn, or propane flaming permit shall comply with the provisions in Section 624. The permit by rule does not relieve the applicant from obtaining all other required permits and approvals required by other state and local fire agencies or permitting authorities.

The following burning is regulated under DEQ's CRB program and must comply with the rules and regulations of the program:

- Residue from traditional crops—Includes, but is not limited to, cereal grain, row crops, alfalfa, hay, Kentucky bluegrass, and other grass seed varieties.
- Conservation Reserve Program (CRP) and Conservation Reserve Enhancement Program (CREP) lands—includes the burning of CRP and CREP land while the land remains in the programs and when the land is being taken out of the program to return to agricultural production.
- Pasture—Grazing lands comprised of introduced or domesticated native forage species that are used primarily for livestock production. Lands receive periodic renovation and/or cultural treatments such as tillage, fertilization, mowing, and weed control and may be irrigated (NRCS 2003).
- Wildlife habitat areas or habitat improvement areas that include nonnative vegetation or food crops that provide forage.
- Weed patches within a crop field.
- Spot and bale burning.
- Propane flaming.

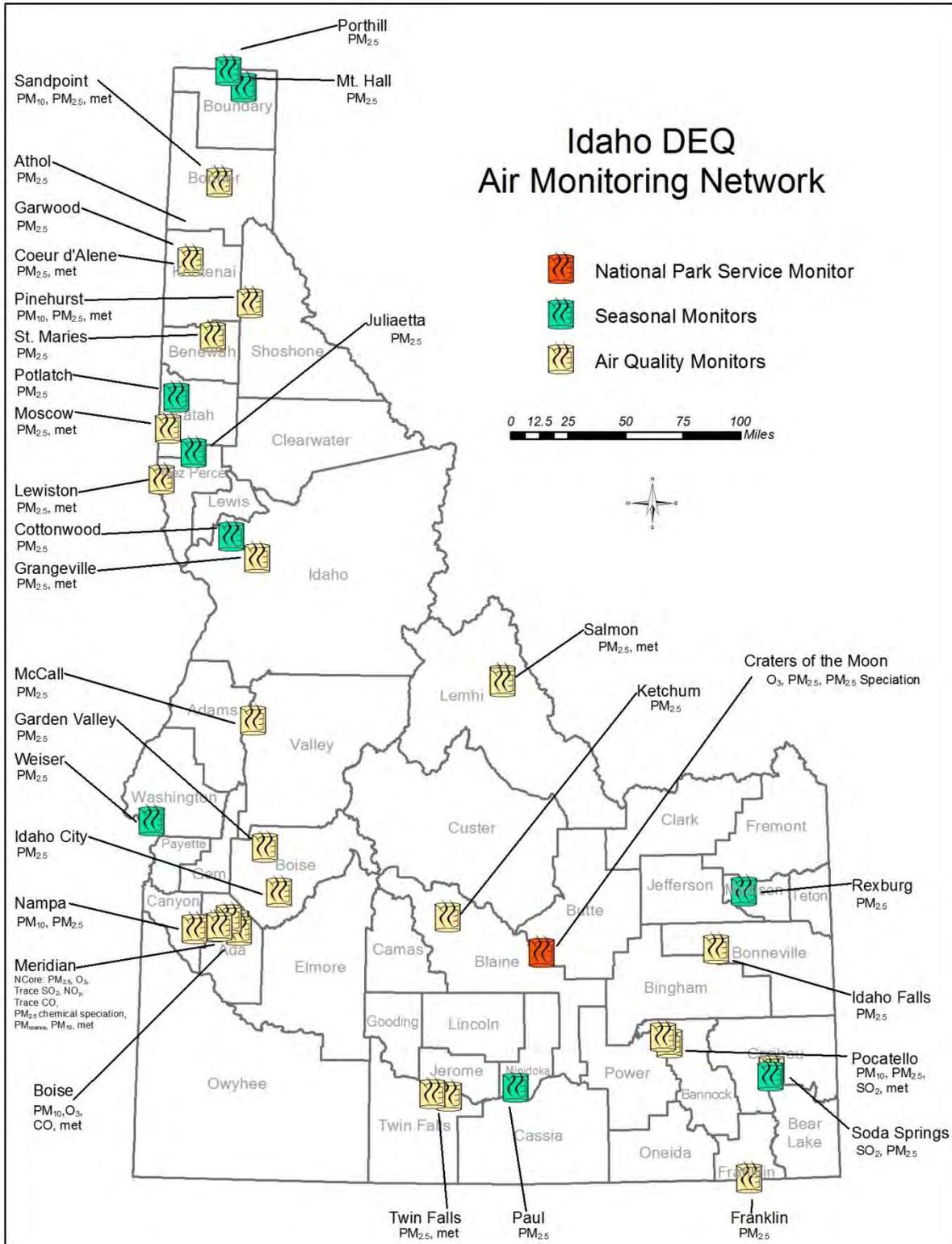


Figure 20. DEQ 2017 air monitoring network map.

## 7.8 DEQ Permit Processing

The North and South Idaho Smoke Coordinators review each registration to develop the initial permit requirements according to DEQ’s registration review standard operating procedure. The CRB database identifies ISPs located within 3 miles of each field, populated areas, public roads, and airfields. These locations are autopopulated on the permit. Any field-specific permit requirements added by the coordinators to address conditions such as large fields, types of crop residue that generate heavy smoke, growers that have not demonstrated good burning practices in the past, or areas with specific terrain or microclimates that may require a higher level of protection will remain attached to the field and will be applied every time the field is burned. One-time burn approval conditions may be added to the permit by the seasonal smoke coordinator or regional office analyst at any time during the burn approval process.

Once the coordinator has reviewed the registration, the “Registration Receipt and Initial Permit Requirements” document and cover letter is sent to the grower. This document verifies with the grower that the information submitted is complete, the registration has been accepted by DEQ, and the registration requirements have been met. This document also includes the general permit conditions that are applicable to all CRB, the field-specific requirements added by the coordinator, and a map of the field in relation to nearby ISPs. This document is not a permit to burn.

The seasonal smoke coordinator notifies the grower of the final approval the morning of the burn. The final burn approval notification and permit issuance are posted on DEQ’s website along with any additional permit requirements under which the burn is approved. Growers receive verbal confirmation of the final burn approval to ensure that the grower understands all permit requirements. Each field has its own permit and must be approved individually.

## 7.9 Meteorological Considerations

Table 14 lists the meteorological parameters that DEQ reviews and evaluates when making a burn decision. This information is for guidance only and is intended to help identify no burn and conditional burn days (when a limited number of acres may be approved). The parameters are obtained from a combination weather models, weather forecasts, and summaries of current conditions.

The meteorologist’s daily forecast and burn recommendation provide the following:

- Forecast for the current burn day, which is delivered by email to staff by 8 a.m. local time.
- A daylight hour-by-hour ventilation forecast on a poor, marginal, good, and excellent scale.
- A burn condition recommendation for each SMA. The recommendation will be burn, conditional, or no burn.
- Brief discussion of current day weather highlights and a separate discussion for day two outlook describing the expected change or no change in conditions for the day after the forecasted day.
- An extended forecast is included on the Friday forecast only. The extended forecast covers the weekend through Monday of the following week or Tuesday if Monday is an

observed holiday. Extended forecasts describe general weather conditions only and include any changes expected to occur by the next potential burn day.

- Meteorologist participates on the morning burn decision conference calls. During this call, the meteorologist shares highlights of the forecast and any additional weather or fuel conditions needing special attention or heightened consideration by field coordinators that day, and answers any weather related questions from the field staff.
- Each morning call includes a discussion of the previous day's observed weather and a description of smoke behavior if burning occurred. This interaction provides direct feedback for the meteorologist to employ in future forecasts and for additional discussions about the current burn day conditions.

Additional support from the meteorologist is available to field staff during each burn day for real-time consultation leading up to critical burns, during burns, and for follow-up spot forecasts, as needed.

**Table 14. Burn decision meteorological parameters.**

Parameter	Burn Day	Conditional Burn Day	No Burn Day
Ventilation (a factor of 20-meter wind speed and mixing height)	“Good” to “Excellent” ventilation is preferred; however, if ventilation is “Good” or “Excellent,” check to ensure surface wind speeds are <12 miles per hour (mph).	“Good” to “Excellent” ventilation may be unacceptable if surface winds are >12 mph Burning under “Marginal” ventilation may be acceptable only if other criteria are met and burning proceeds with caution. “Poor” ventilation should be avoided unless there is good vertical convection with enough fuel and/or wind to carry the fire and good transport winds aloft.	“Very Poor” ventilation should be avoided.
Cloud cover	Mostly sunny to partly cloudy (10%–40% cloud cover) is typically best.	Clear bright skies may indicate a high-pressure system with stagnant conditions. Ensure other criteria are met if this is the case. Cloudy conditions may be acceptable if clouds are high and all other criteria are met.	Mostly cloudy conditions with low clouds should be avoided.
Surface wind speed (sustained)	Moderate winds, 3 to 8 mph are preferred.	Calm or near calm winds should be avoided. Light winds <3 mph generally are insufficient to carry the fire. However, sunshine and abundant/dry fuel, especially on a hill, may result in good rise for lighter winds <3 mph. Winds 8–12 mph may be ok if there is strong sunshine to maximize vertical convection but proceed with caution.	Burning is not allowed at fields located within 3 miles of an ISP when wind speeds exceed 12 mph. Winds >12 mph should be avoided even in remote areas for fire safety reasons.
Surface wind direction	Avoid ISPs, populated areas, and nearby public roadways. If possible, also avoid large bodies of water and large canyons/valleys. Be aware of typical wind shifting patterns in an area and atypical forecasted wind shifts.	N/A	It is critical to avoid cities and institutions with sensitive populations.
Transport wind speed (at 850 millibar level or about 5,000 feet)	7–20 mph is preferred.	Use caution with transport winds that are <7 mph or >20 mph.	Upwind of cities and ISPs, transport winds >20 mph should be avoided.
Transport wind direction	Avoid ISPs, populated areas, and nearby public roadways, and airports.	Avoid transport winds taking smoke towards cities and ISPs unless ventilation is “Good” to “Excellent.”	It is critical to avoid cities and institutions with sensitive populations at all times.

Parameter	Burn Day	Conditional Burn Day	No Burn Day
Mixing height	Greater than 5,000 feet above ground level is desired.	With mixing heights of 2,000–5,000 feet, caution should be used. If transport winds will transport smoke over large bodies of water and large canyons/valleys, avoid burning if mixing height is less than 5,000 feet.	Avoid burning if the mixing height is <2,000 feet above ground level.
Relative humidity	20%–45% relative humidity is the ideal range.	Relative humidity <20% is acceptable if fire control/safety concerns with surrounding fuels are low. Relative humidity between 45% and 60% may inhibit plume rise and smoke dispersion. For bluegrass, relative humidity >30% may inhibit plume rise and smoke dispersion.	Relative humidity >60% should be avoided as it may inhibit smoke dispersion and may leave unburned materials.
Inversion conditions—two types of inversions (radiation and subsidence) should both generally be avoided.	Preferably, burns should occur after 10 a.m. and be extinguished before 5 p.m. to avoid trapping the smoke in mountain valleys by radiation inversions.	Radiation inversion—This is a surface-based inversion that exists on most mornings and evenings, particularly when daytime heating is strong. Burning should not be permitted before the inversion has mixed out unless transport conditions after breakup would best protect population centers and burning during an inversion does not cause adverse impacts. A sufficient amount of time should be allowed at the end of the burn day for any residual smoke to disperse before a radiation inversion returns.	Subsidence inversion—When a strong high-pressure system is present with clear skies, hot air subsides, causing stable air and poor dispersion. This condition is easy to forecast and a no burn day should be called when a strong high-pressure system is over the region.

## 7.10 Other State and Tribal Crop Residue Burning Programs

This section compares other state and tribal CRB programs in the West to demonstrate the uniqueness of Idaho's ozone considerations as part of the burn decision protocol.

Agricultural burning programs in Washington and portions of California and Oregon approve burning on days when the PM<sub>2.5</sub> NAAQS is forecasted to not exceed the NAAQS for the day rather than setting specific threshold criteria below the NAAQS for approval of burning as is the case for Idaho. While Washington and portions of California and Oregon include ozone NAAQS consideration, Idaho is the only regional program that sets a specific threshold standard prohibiting burning when ozone thresholds are well below the standard.

Table 15 provides a side-by-side analysis of several burn conditions found commonly throughout the northwest. The description identifies if the condition is specific criteria or a general consideration.

**Table 15. Program comparisons.**

	Idaho DEQ	Nez Perce Tribe	Coeur d'Alene Tribe	Washington DOE (WAC 2010)	Oregon Department of Agriculture (Willamette Valley) (OAR 2012)	California San Joaquin Valley
<b>Permit Required</b>	Yes	Yes	Yes	Yes	Yes	Yes
<b>PM<sub>2.5</sub> Preburn Threshold</b>	Forecasted 75% of NAAQS or 80% of the 1-hour trigger level.	75% NAAQS PM <sub>2.5</sub>	75% NAAQS PM <sub>2.5</sub>	NAAQS forecasted to be achieved for the day	NAAQS forecasted to be achieved for the day	NAAQS forecasted to be achieved for the day
<b>Ozone Preburn Threshold</b>	Forecasted 56 ppb (currently under revision)	None	None	NAAQS forecasted to be achieved for the day	NAAQS forecasted to be achieved for the day	NAAQS forecasted to be achieved for the day.
<b>Sensitive Populations Monitored</b>	Staff on site to monitor within 3 miles.	Staff in field to monitor smoke behavior	Staff in the field to monitor smoke behavior	Wind direction considerations	Priority areas. Field-by-field authorization required	Yes, preburn verification. Wind direction considerations
<b>Field Approvals</b>	By direct contact	By direct contact	By direct contact	Web based	Web based	Web/telephone based
<b>Wind Speed Criteria</b>	<12 mph when within 3 miles of ISP	Nothing specified. General smoke behavior only	Nothing specified. General smoke behavior only	Directional consideration only	Ventilation index criteria	Nothing specified. Forecasted no impacts
<b>Daily Burn Time Window</b>	Yes	Yes	Yes	Yes	Yes	Yes, allocation system
<b>Permit Fees</b>	\$2 per acre	\$3.75 per acre	\$4.00 per acre	\$3.75 per acre	\$4 per acre to register, then \$20 per acre for actual burned acres	\$36 per location \$50 for burn day exemption

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## 8 CRB Program Stability

Over the 9 years DEQ has managed the CRB program, emissions from CRB have remained consistent. DEQ's CRB program is a mature steady-state program, and adjusting the ozone threshold from 75% to 90% of the NAAQS will not result in an increase of the acres burned in Idaho as DEQ has determined from evaluating the following:

- Why growers burn
- Burning trends
- Total acres burned versus acres registered
- Acres of cereal grains harvested versus burned
- Growers in the CRB program
- Limits on Kentucky bluegrass residue burning
- Burn days versus annual acreage burned

### 8.1 Reasons Growers Burn

The open burning of crop residue is a historic agricultural practice in Idaho, as it is in many areas of the country. CRB is considered an important tool for growers in Idaho to manage crop residue, diseases and pests, weeds, or to increase crop yields and the economic viability of farms. For a number of reasons, growers may use or choose not to use open burning as a farming practice as a management tool. Some growers burn only as a last resort, while other may use the practice every year. The following list provides some reasons why the number of acres burned in Idaho varies year to year:

- Crop prices—Changes in crop prices could increase production of certain crops, which may result in an increase in the number of acres requested to be burned.
- Crop type and fire affects crop yields—Kentucky bluegrass, for example, is a crop type that if the residue is not burned, results in decreasing yields the following year.
- Crop rotation—Some growers burn their fields between crop rotations to speed up planting, deal with excess crop residue, or aid in weed management.
- Conservation Reserve Program—When acreage is enrolled in the CRP, burning may be considered the best management tool.
- Fire safety concerns—As wildfires become more prevalent in the Northwest, farmers are becoming more concerned about burning during high fire danger periods.
- Amount of residue left after harvest—A high amount of residue left after harvest may cause a farmer to choose to burn the residue instead of using alternative management options.
- Habit—For many Idaho farmers, the practice of burning crop residue has been passed down from previous generations.

Although variations do occur in the amount of acreage burned each year, these variations are primarily due to weather, crop prices, crop types, and other farming considerations that are unrelated to available burn days. In reality many burn days are not used each year. Based on the consistent percentage of registered acres burned per year, consistent percentage of acres harvested that are actually burned, consistency of the number of burn days per year, and the fact that the number of acres burned per year has no apparent correlation to the number of actual burn days per year, this program change will not lead to an annual increase in acres burned.

## 8.2 Burning Trends

Idaho's initial CRB SIP demonstration (approved by EPA in 2008) anticipated over 200,000 acres (DEQ 2008) burned each year by 2015. Figure 21 shows the historical acres burned by crop type in the CRB program. The actual acres burned are substantially less than originally estimated (the CRB program was implemented in September 2008, so 2008 data do not represent a full year). Figure 22 shows the difference between the actual acres burned and the 2008 SIP estimated acres to be burned. The total amount of acres burned in the 9-year history of the CRB program is only 460,681 acres. The highest number of acres burned in a single year over the last 9 years was in 2012 when approximately 67,500 acres were burned. Idaho has averaged a little over 51,000 acres a year over the life of the program.

The number of acres burned increased for the first couple of years that the program was implemented because DEQ was training southern Idaho growers how to register and obtain a permit. Before 2008, southern Idaho growers were not required to participate in a CRB program. After 2012, the number of acres burned decreased and has leveled off, which is consistent with a mature steady-state program.

In 2012 when the acres burned peaked, DEQ burned just over 20,000 acres of CRP lands. There are approximately 200,000 acres in the CRP, mostly in southern Idaho. ISDA estimates that about 10% of that acreage is burned annually (DEQ 2008); however, DEQ has not observed that trend. CRP land burning ranges from 1,252 acres in 2015 to 20,574 acres in 2012.

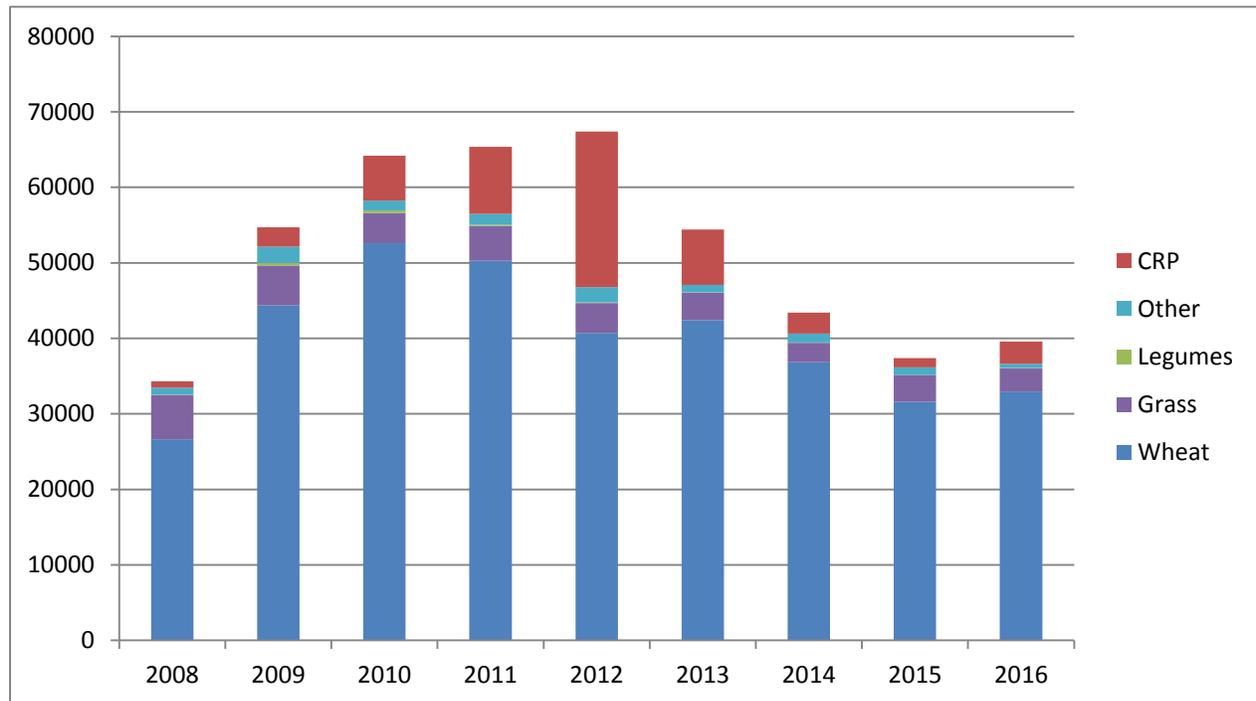
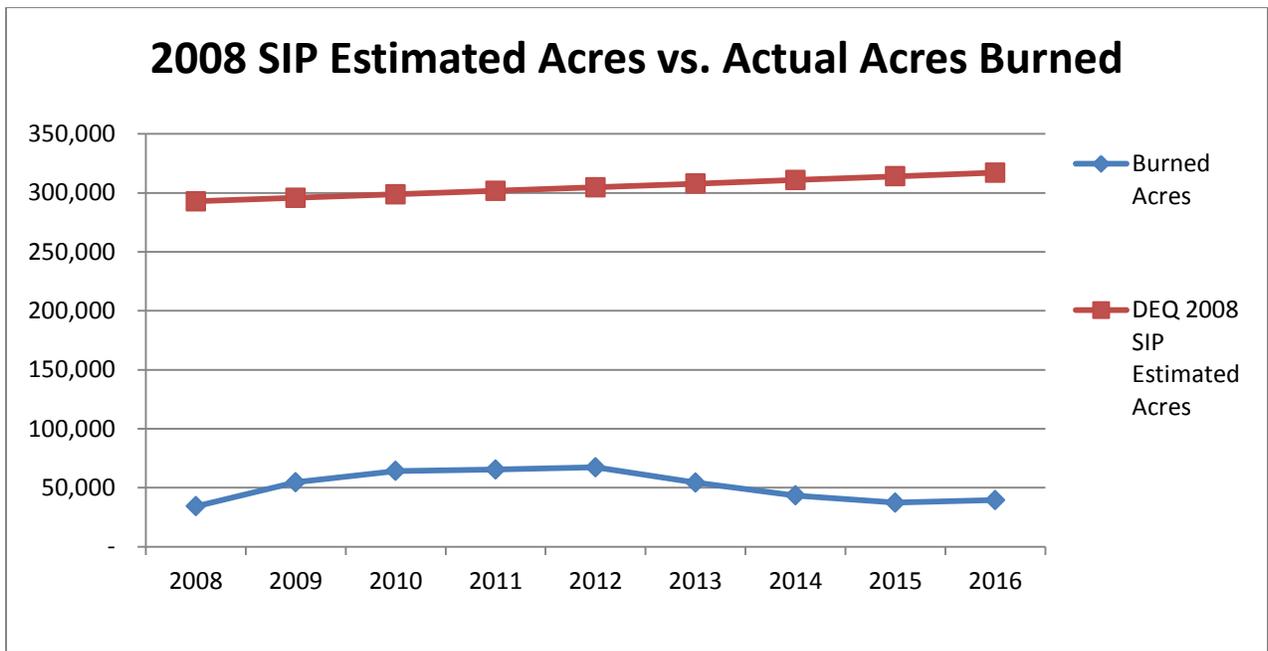


Figure 21. Total acres burned in DEQ's CRB program.



**Figure 22. DEQ's 2008 SIP estimated acres burned versus actual acres burned.**

Figure 23 shows the locations of fields burned from 2008 to 2016. Some fields are located on the Kootenai Tribe of Idaho reservation. DEQ implements the Kootenai Tribe's program under a memorandum of understanding. All other tribal burning in Idaho is independent of DEQ's CRB program. Current ozone monitor sites in Boise, Meridian, and Craters of the Moon are also shown. Coeur d'Alene's ozone monitor was removed in 2011.

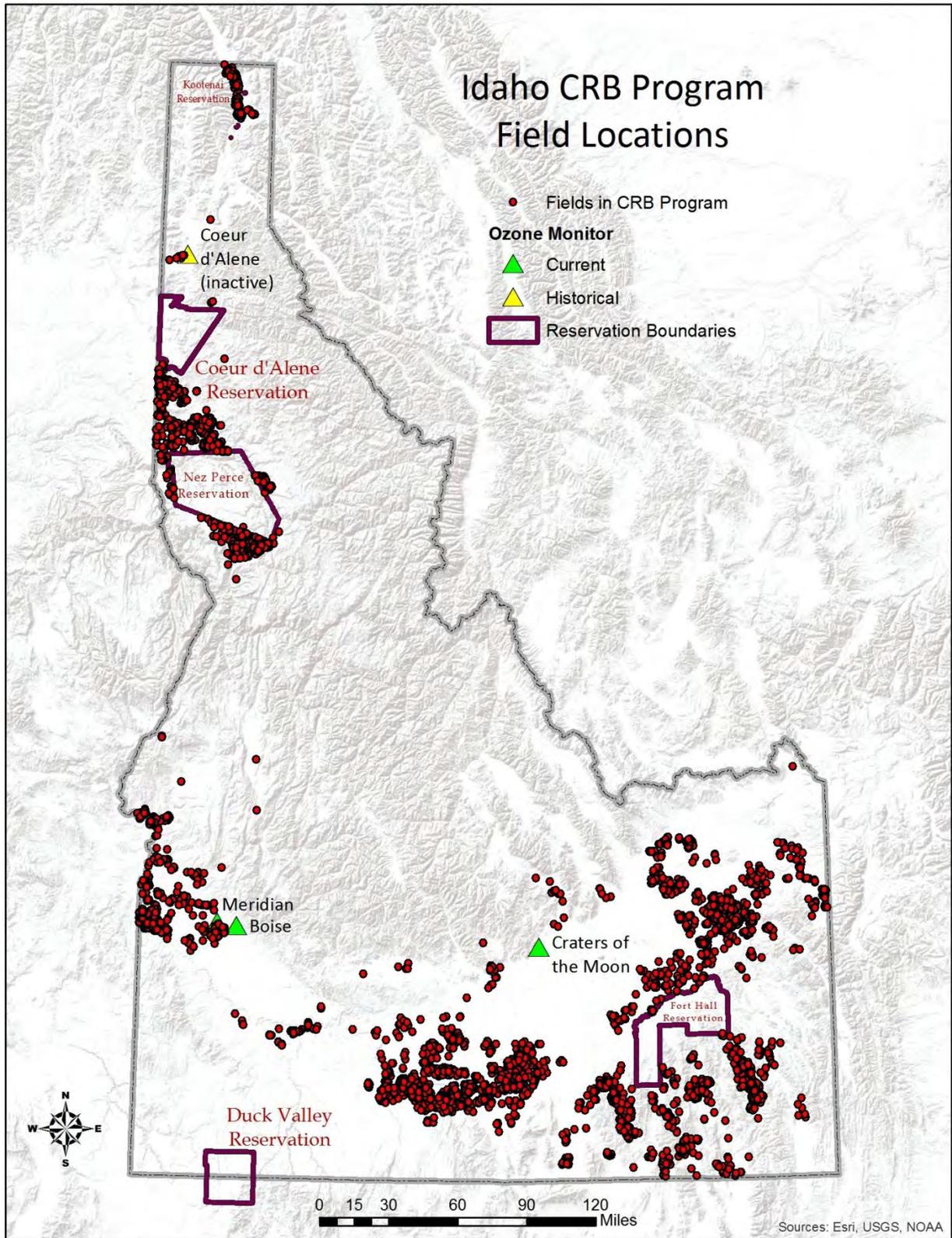


Figure 23. Locations of CRB field and ozone monitors in Idaho.

Figure 24 highlights the main geographic regions where crop residue is burned in Idaho. In the far northern Panhandle, fields in the Purcell Trench surrounding the Kootenai Tribe's reservation are regularly burned. A handful of fields in the Rathdrum Prairie north of Coeur d'Alene are also burned. In north-central Idaho, the Palouse, Weippe Prairie, and Camas Prairie are some of the most intensively burned areas in the state. In southwestern Idaho, fields in the lower Treasure Valley, Payette Valley, and area surrounding Weiser are burned. A small scattering of fields along the lower Snake River is another area in southwestern Idaho that is burned. The Magic Valley in south-central Idaho is the second most intensively burned area in the state, followed closely by large regions in the upper Snake River Plain in eastern Idaho and the southeastern highlands in the southeastern corner of the state.

Field sizes range from less than 50 acres to about 1,000 acres. All sizes are present in every burning region except for the Treasure Valley, Payette Valley, and around Weiser. The fields in this area tend to be smaller; all are less than 100 acres in size (Figure 25).

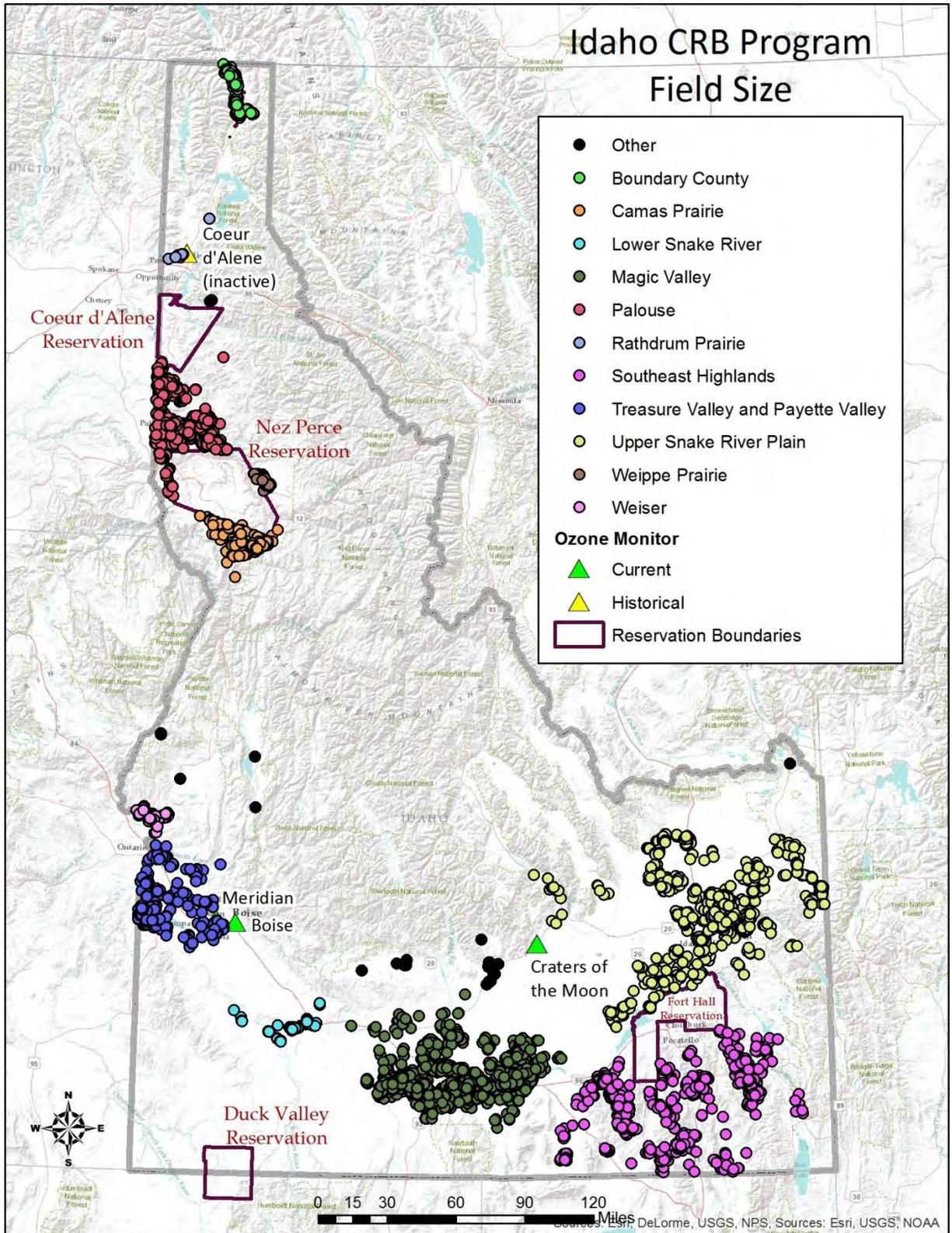


Figure 24. Geographic regions of CRB in Idaho.

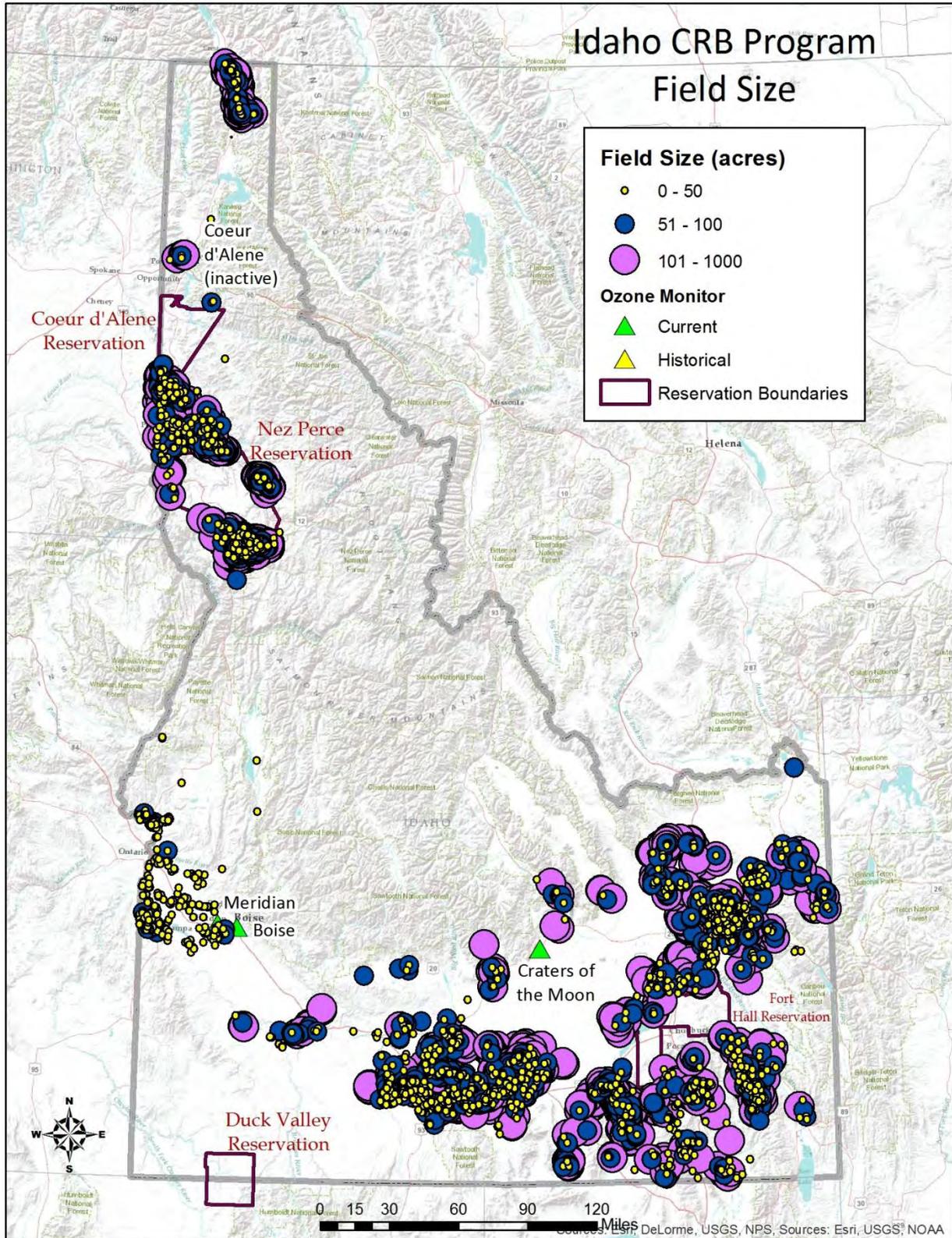


Figure 25. Relative field size of CRB across Idaho.

Fields are burned during any month of the year, as long as conditions are appropriate and all requirements are met (section 7.4). Figure 26 compiles the acres burned by month for each year since the CRB program began in 2008. Some burning typically occurs in the spring, during March, April, and May, but the main season is late summer and fall (August, September, and October) after the summer harvest. September usually sees the most acres burned, but August is usually the busier month. These numbers depend heavily on the meteorology and wildfire activity at the time.

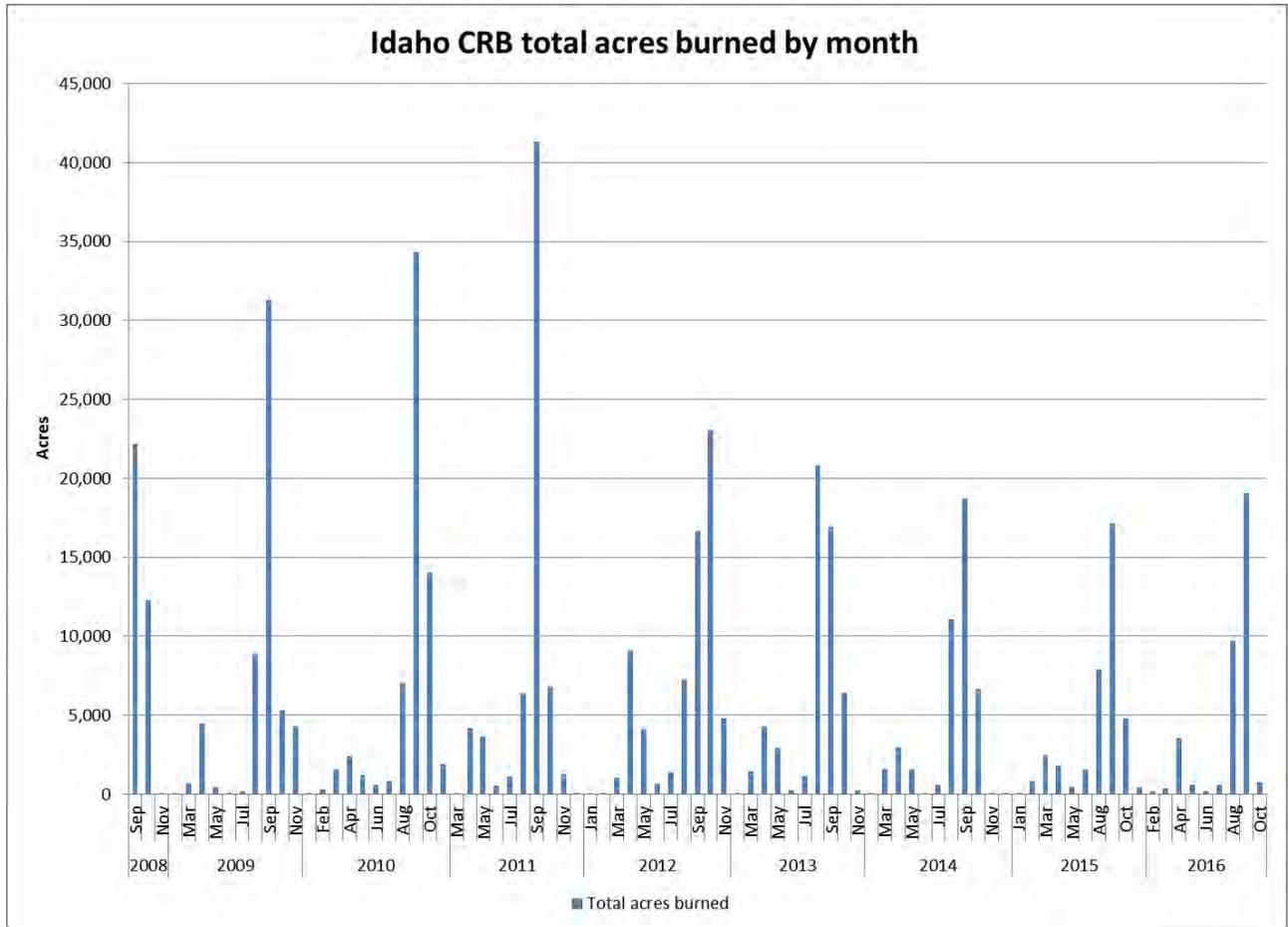


Figure 26. Monthly acres burned in CRB program since 2008 inception.

### 8.3 Acres Burned versus Acres Registered

DEQ maintains a database that contains the historical information about the CRB program. The CRB database contains grower profile and burning information including field locations and acreage, acres registered, and acres burned. Since 2008, an average of 87% of the acres registered in the CRB program have been burned. Table 16 displays the number of acres burned versus the acres registered from 2008 to 2016. Explanations vary for why all acres registered are not burned. Some growers register all of their fields whether they plan on burning the fields or not, and others may choose another alternative after they have registered. Other reasons include persistent unfavorable meteorological conditions or wildfire smoke.

In 2010, the greatest number of acres was registered and lowest percentage was burned. DEQ started to incorporate ozone into all burn decisions in southern Idaho outside of the Treasure Valley

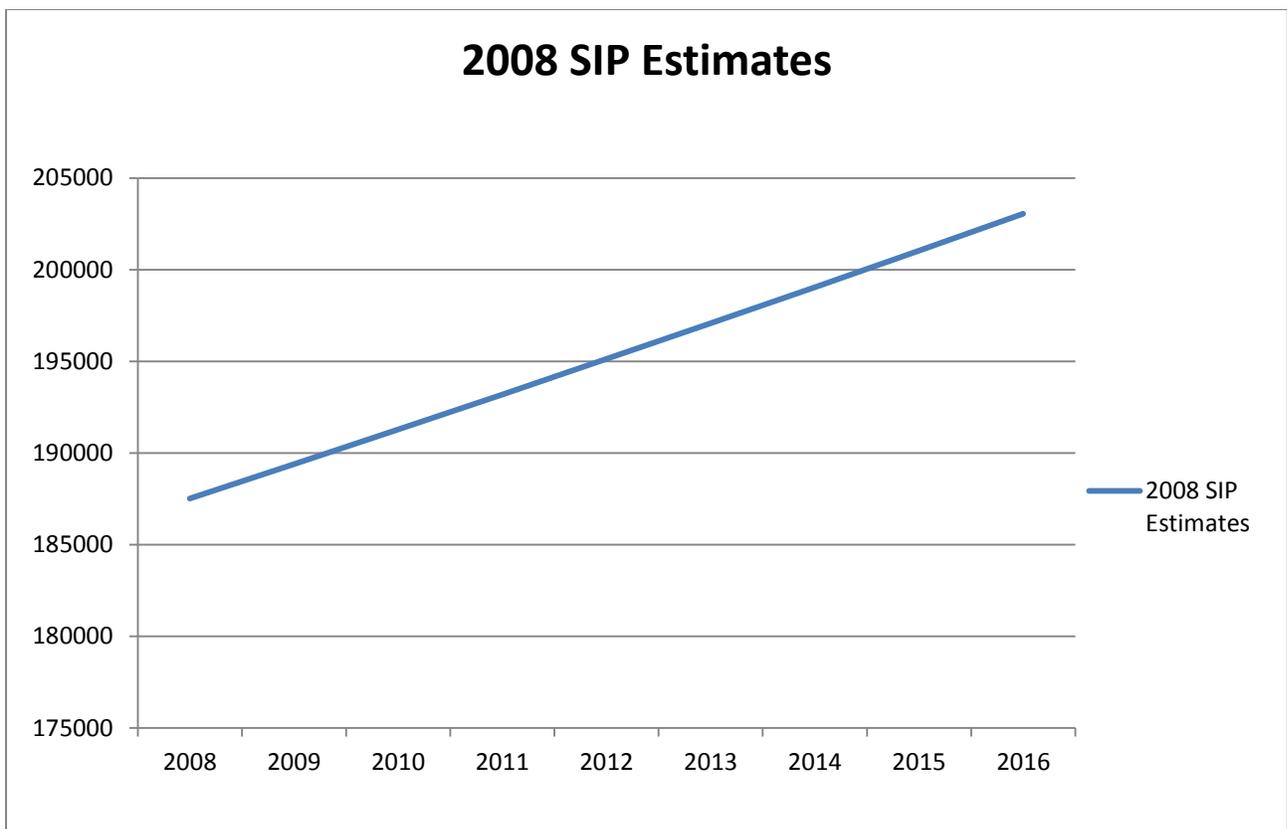
on May 10, 2011. During spring 2011, DEQ obtained access to real-time ambient ozone monitoring data from the National Park Service monitors at Craters of the Moon National Monument, City of Rocks National Reserve, and Yellowstone National Park. Combined with ozone monitoring data from Logan, UT (Utah DEQ) and ozone forecast models from the National Weather Service and the University of Washington, these data provided sufficient coverage of southern Idaho so that DEQ could forecast ozone concentrations and use those forecasts in the daily burn-decision process. Since real-time ozone data were not available until May 2011, including ozone in the burn decision process did not appear to be a limiting factor for acres not burned during that year. The lack of variation in percentage of registered acres burned over time also demonstrates the consistency of the program.

**Table 16. Acres registered verses acres burned in the CRB program.**

Year	Registered Acres	Burned Acres	Percent Burned
2008	38,022.82	34,310.15	90
2009	60,282.16	54,694.83	91
2010	81,136.14	64,165.00	79
2011	73,299.01	65,362.30	89
2012	79,541.37	67,370.07	85
2013	62,971.35	54,417.95	86
2014	49,385.09	43,389.64	88
2015	40,202.11	37,392.61	93
2016	43,225.50	39,578.00	92
Total	528,065.55	460,680.55	87

#### 8.4 Acres of Cereal Grains Harvested versus Burned

The 2008 SIP estimated that 17% of the harvested cereal grain acreage would be burned. It also projected the program would burn over 200,000 acres of cereal grain stubble in Idaho annually by 2015. Figure 27 shows the 2008 SIP estimates for the amount of cereal grain burned in Idaho. The total acres of cereal grain stubble burned in 2015 were just over 31,000 acres (1.8%) in 2015.



**Figure 27. The 2008 CRB SIP estimated cereal grain acres burned.**

Since 2009, Idaho has averaged just over 2% of the harvested acreage (41,488 acres) cereal grain stubble burning per year. A maximum 52,690 acres (2.9%) were burned in 2010. Table 17 demonstrates the consistency of the cereal grain acres burned in the CRB program each year.

**Table 17. Acres harvested in Idaho versus acres burned in the CRB program.**

Year	Acres Harvested in Idaho	Acres Burned in CRB Program	Percent Burned
2008	1,940,000	27,317	1
2009	1,804,000	44,993	2
2010	1,832,000	52,690	3
2011	1,921,000	50,274	3
2012	1,853,000	40,700	2
2013	1,896,000	42,082	2
2014	1,761,000	37,029	2
2015	1,750,000	31,211	2
2016	1,710,000	32,926	2
Average	1,816,000	41,488	2

## 8.5 Growers in the CRB Program

An analysis of the grower characteristics also provides evidence of a mature steady-state program. When DEQ started running the program, the number of new growers was at its peak, but DEQ has seen a decrease in the number of new growers in the CRB program in recent years. Figure 28 shows the number of new growers registered from 2008 to 2016. The average number of years a grower remains in the program is only 1 year. A grower appears to only join the program to burn a single field (possibly for CRP) and then returns to other means of crop residue management. Of the 1,118 growers that are registered in the CRB program, 623 growers only registered for 1 year. Figure 29 shows the years that growers stay in the CRB program. Only a small number of growers appear to burn consistently every year.

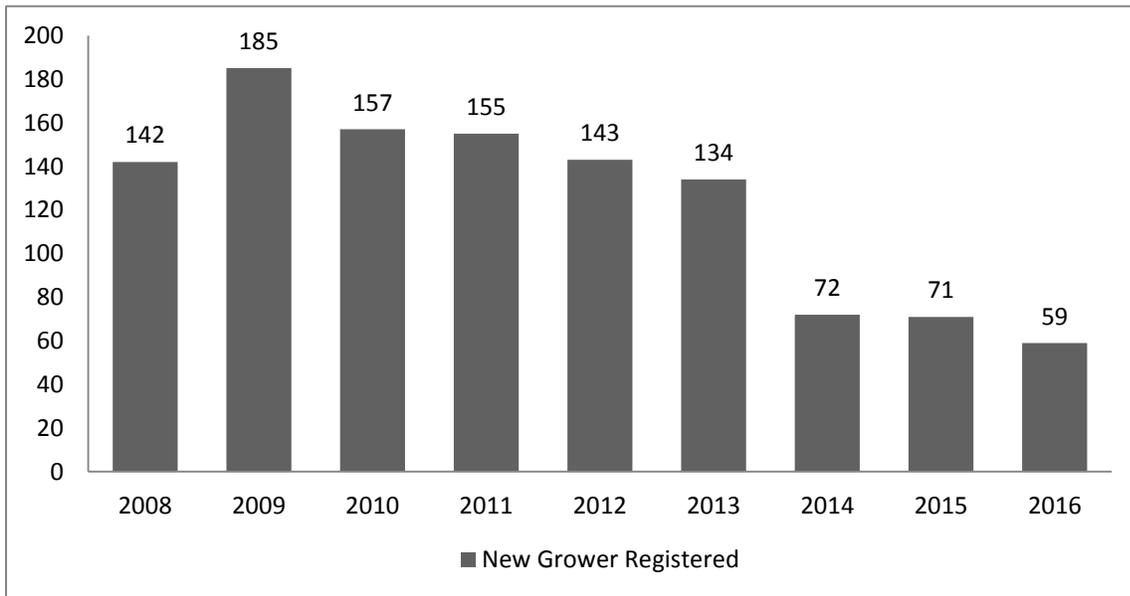
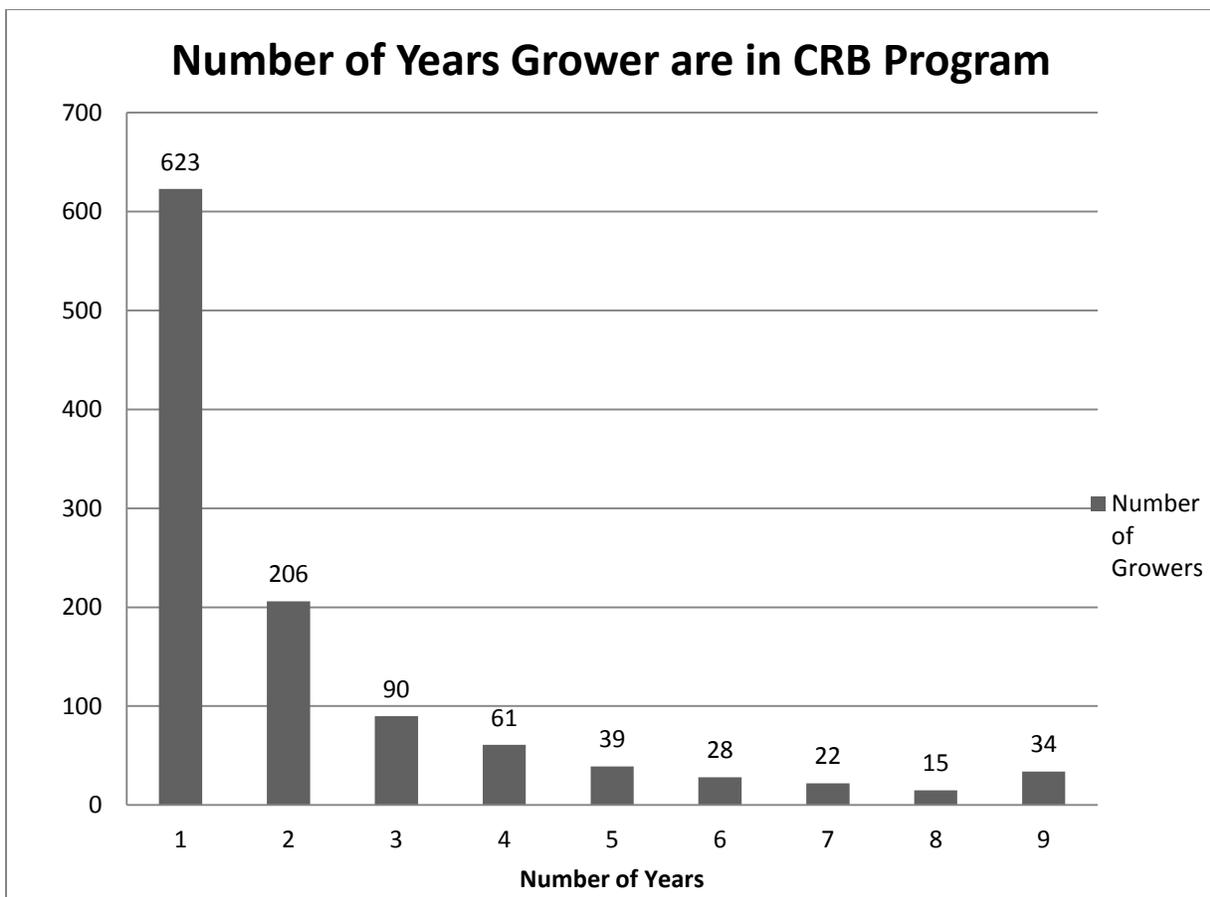


Figure 28. New growers registered in the CRB program in Idaho from 2008 to 2016.



**Figure 29. Number of years each grower has participated in the CRB program.**

## 8.6 Kentucky Bluegrass Burning

Several agreement points were reached in December 2007 by the parties involved in the negotiations for open burning of crop residue (section 7.1). One agreement point was that any increase beyond 20,000 acres would require an air quality analysis before approval. Figure 30 shows the number of Kentucky bluegrass acres along with all other grass species that have been burned in the CRB program.

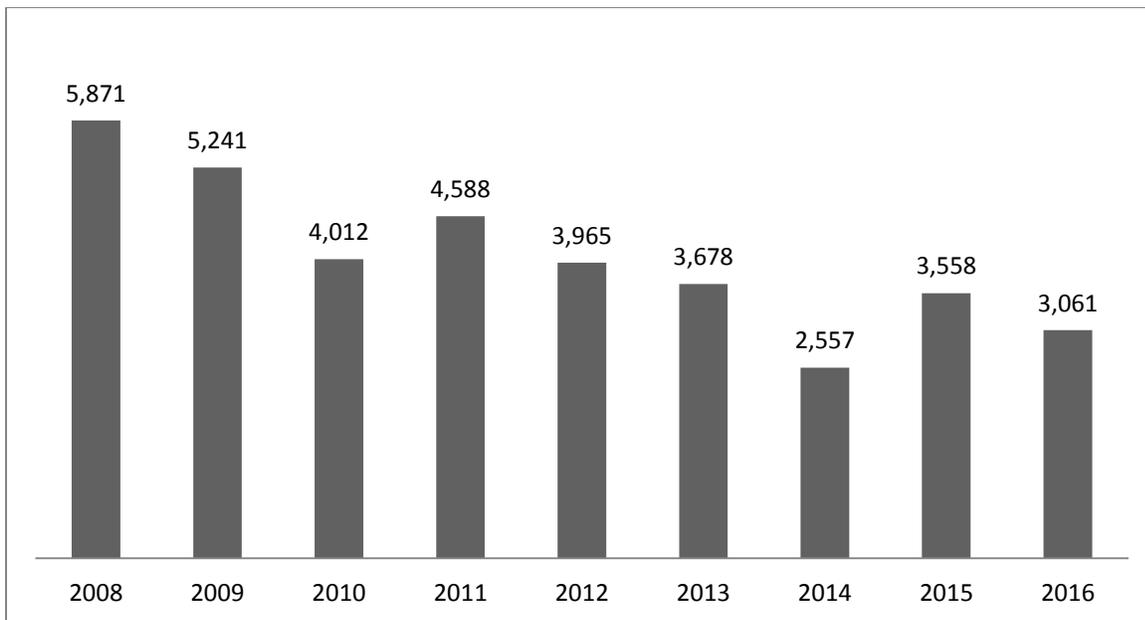


Figure 30. Total acres of Kentucky bluegrass and other grass species in the CRB program.

## 8.7 Burn days versus annual acreage burned

This revision has no effect on the amount of acreage that will be registered to burn in Idaho. The harvested acres in Idaho have remained consistent at 1.8 million acres per year since the program began. The assumption that an additional 160,000 acres could be burned in Idaho as a result of this revision would suggest roughly 4 times the existing burn acreage would be approved and burned during the additional days that a modification to the ozone threshold might produce. Data presented here show this is an unreasonable assumption.

For the life of the program, the number of days burning occurred (burn days) have consistently ranged between 97 and 114 days per year, averaging 105; while acres burned have ranged from 37,392 to 67,370, averaging 53,296 acres. Figure 31 shows the number of burn days in relation to the number of acres burned. There is not a direct correlation between the number burn days and the number of acres burned. For example in 2014, there were 99 burn days and 43,389 acres burned under the CRB program, while in the following 2 years, there was a decrease in acres burned and an increase in burn days. The year 2009 saw the fewest number of burn days, 97, while 54,694 acres were burned, which is about the average annual acres burned under the CRB program. It is important to note that there are a number of days when burning could occur, but a no burn day was issued due to no burning requests. Figure 31 shows only those days in which burning occurred.

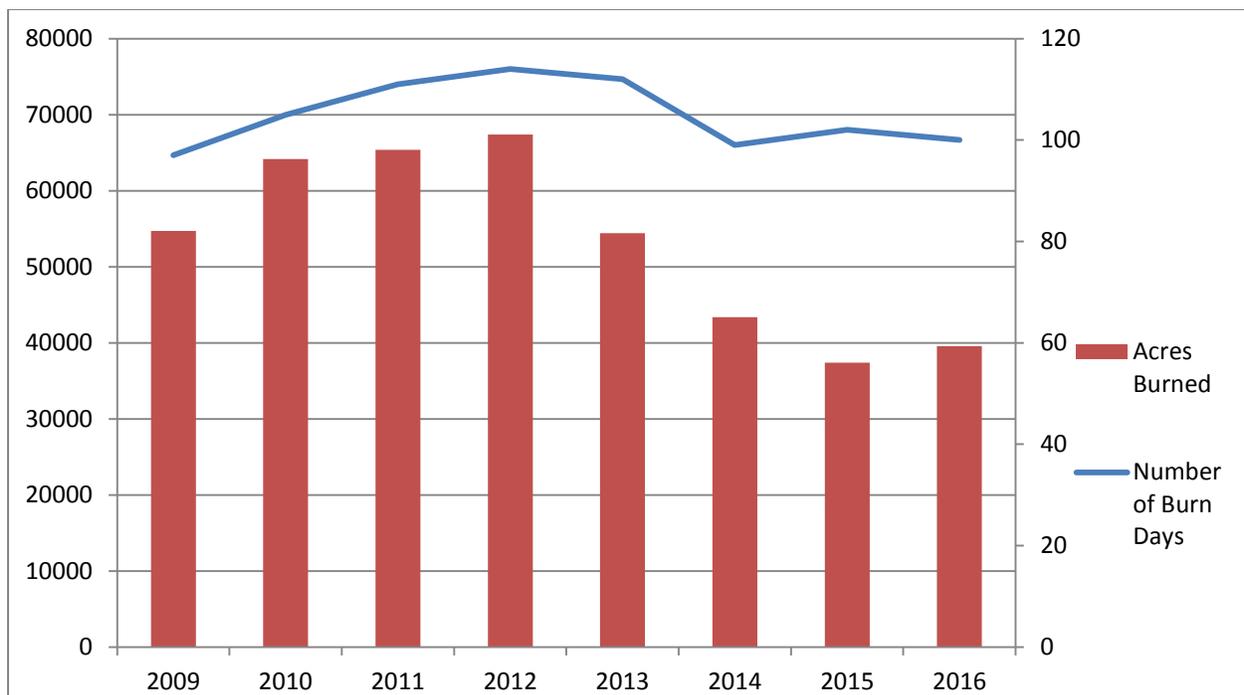


Figure 31. Number of burn days in relation to the acres burned per year.

## 9 Demonstration Conclusion

To make a change to an existing SIP element, DEQ must demonstrate that the proposed change will not interfere with attainment of the NAAQS or other CAA requirements (EPA 2013). Data and technical analyses presented in this report support this demonstration by showing the following:

- DEQ-approved program burns produce a fraction (<0.2%) of Idaho’s ozone precursor emissions. Most Idaho emissions are due to other types of burning (including forest fires) or transportation or industrial emissions.
- There are no current or historical NAAQS ozone nonattainment designations in Idaho or in the areas bordering Idaho.
- Based on EPA’s modeling guidance for interstate transport for the 2015 ozone standard, Idaho’s total ozone precursor emissions from all sources do not significantly contribute to any ozone interstate transport concerns in surrounding states. The maximum impact from all Idaho ozone precursor emissions to any monitor in surrounding states is 0.6 ppb and the maximum impact to a nonattainment or maintenance area is 0.16 ppb.
- DEQ’s quantified impacts on ozone monitors in Idaho and surrounding states observed minimal possible contributions from CRB program burns, even using the most conservative assumptions.
  - DEQ concludes from analysis of short-term monitoring “peaks” that the CRB program burns from 2011 to 2015 did not cause or contribute to a violation of the ozone NAAQS at any monitor in or adjacent to Idaho. All identified possible impacts are less than the conservative 7 ppb buffer and all days identified with possible impacts over 2 ppb cannot be attributed to CRB.
  - DEQ also looked at monitoring records downwind of the largest SMA burn days from 2011 to 2015. The results from this analysis suggest an insignificant impact on

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atmospheric ozone levels. Of the 169 CRB monitor days evaluated, only two, or 1.2%, were determined to have been potentially impacted by CRB. These 2 days only had 8-hour ozone impact equivalents of 0.19 ppb and 0.88 ppb, both less than the SIL for ozone, although each of the 169 CRB monitor days had a large number of acres burned in a relatively small area on these days.

- Based on the 95th-percentile impact analysis, only 5 days were identified where the MDA8 exceeded the historical MDA8 95th percentile. When those days were examined further, it was determined that CRB did not lead to the high monitor values observed. The results of the data analysis concluded that no direct relationship exists between CRB program burns and the hours and days when ozone concentrations exceeded the historical 95th-percentile value for each ozone monitoring site analyzed.
- DEQ's analysis of agricultural burning in California revealed no significant contributions to ozone monitors in the San Joaquin Valley even though they burned significantly more acres than are normally burned in Idaho and they have many more ozone monitors (20) in the same valley
- DEQ's fundamental program components that are working well, including meteorological and air quality forecasts, daily in-field surveillance, on-site approval requirements, and a rigorous permitting process, have not changed. Avoidance of smoke impacts will continue to be of primary concern to DEQ as we persistently improve our smoke management skills and program over time by implementing the latest tools, techniques, and understanding in smoke management principles.
- DEQ's 2008 SIP estimated a growing program with significant ozone precursor emissions. In contrast, DEQ's actual emissions from CRB remain at levels that represent only 10% of those estimated and DEQ-approved CRB acreage burning trends over the past 9 years have remained steady and are not anticipated to increase significantly.

Based on this analysis, DEQ concludes that agricultural burning conducted in Idaho using a 90% of NAAQS cessation threshold criteria for ozone will not cause or significantly contribute to a violation of the 2015 8-hour ozone NAAQS or interfere with any other applicable CAA requirement. This demonstration confirms the limited role agricultural emissions have on ozone formation in Idaho. DEQ has not identified any previous monitoring impacts (even with a reduced program buffer for ozone) that would have led to a NAAQS exceedance. DEQ's program is a mature steady-state program containing many unchanged program processes that will continue to minimize impacts on the community from CRB program burns. Approving this minor SIP revision will provide the CRB program the flexibility to approve program burns when atmospheric conditions will most effectively disperse smoke from agricultural burning in Idaho. DEQ requests that EPA approve this SIP revision.

This document was made available for public comment, as described in Appendix E. Following the public comment period, comments and DEQ responses will also be included in this appendix.

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## Appendix A. Emissions Inventory

### 1 Crop Residue Burning Emissions Inventory

The crop residue burning (CRB) emissions inventory looked at 2014 emissions from CRB using the United States Environmental Protection Agency's (EPA's) 2014 National Emissions Inventory (NEI). The Idaho Department of Environmental Quality (DEQ) reviewed the 2008 State Implementation Plan (SIP)-projected emissions for 2015. Emissions for future years were then projected on the basis of current trends in the CRB program.

### 2 2014 NEI Emissions Factors

Emissions factors for CRB are generally based on field burn measurements and in some cases, controlled laboratory burns. The *Air Quality Modeling Technical Support Document for the 2015 Ozone NAAQS Preliminary Interstate Transport Assessment* (EPA 2016) reports on EPA-developed emissions for 2014 agricultural field burning and provides fuel loads, combustion completeness, and emissions factors for carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), sulfur dioxide (SO<sub>2</sub>), particulate matter 2.5 and 10 (PM<sub>2.5</sub>, PM<sub>10</sub>), volatile organic compounds (VOC), and ammonia (NH<sub>3</sub>). The emissions factors used in the 2014 NEI are based primarily on a comprehensive review and averaging of all available factors by McCarty (2011), under contract to EPA for the 2011 NEI, and is the most recent and comprehensive set of emissions factors.

The 2014 NEI emissions factors do not specifically include all of the crop types reported in DEQ's CRB burn permit database; however, they do provide an "Other Crops" category for any crops not specifically included and a "Pasture/Grass" category, both of which have identical loads and factors to bluegrass, so it appears that EPA selected "Other Crops" and "Pasture/Grass" factors from the bluegrass values because they are the highest of any "Other Crops," while EPA's previous "Other Crops" factor in McCarty (2011) has slightly lower values that are no longer used.

DEQ reviewed two regional emissions factor studies of residue burning from Kentucky bluegrass seed (Johnston and Golob 2004) and cereal grain (Air Sciences 2003) to determine if they were more specific to Idaho and eastern Washington and better suited to the Pacific Northwest region than the EPA factors. It appears that both of these studies were included in the average factors developed by McCarty (2011) so they are already incorporated in these factors. Neither of these studies included the ozone precursors, NO<sub>x</sub> and VOC, in the emissions measurements so they do not contribute local/regional emissions knowledge most needed in this analysis, and the recent EPA factors are best used for consistency without deviation.

The emissions factors reported in the 2014 NEI documentation or the original McCarty (2011) compilation are shown in Table A-1. Table A-2 shows how the EPA/McCarty (2011) crop types are mapped to the DEQ burn database crop types.

**Table A-1. Emissions factors used in the 2014 NEI (EPA 2016) and (last row, for bluegrass) in the 2011 NEI (McCarty 2011).**

Crop Type	Fuel Load (ton/acre)	Combustion Completeness (%)	PM <sub>2.5</sub> (lb/ton)	NO <sub>x</sub> (lb/ton)	VOC (lb/ton)	CO (lb/ton)	SO <sub>2</sub> (lb/ton)	PM <sub>10</sub> (lb/ton)	NH <sub>3</sub> (lb/ton)
Corn	4.2	0.75	9.9	4.6	6.6	106	2.38	21.4	19.3
Wheat	1.9	0.85	8.1	4.7	7.6	110	0.88	14.1	33.7
Soybean	2.5	0.75	12.4	6.3	12.0	128	3.13	17.7	44.9
Cotton	2.18	0.65	12.4	6.9	12.0	146	3.13	17.7	48.9
Fallow	2.18	0.75	12.3	5.6	12.0	128	2.34	17.0	16.2
Rice	3	0.75	4.7	6.2	5.0	105	2.77	6.6	26.2
Sugarcane	4.75	0.65	8.7	6.1	9.0	117	3.32	9.8	43.0
Lentils	2.94	0.75	12.3	5.6	12.0	128	2.34	17.0	39.8
Other crops	1.9	0.85	23.2	4.3	10.7	182	0.80	31.6	12.5
Pasture/ grass	1.9	0.85	23.2	4.3	10.7	182	0.80	31.6	12.5
Bluegrass <sup>a</sup>	1.9 <sup>b</sup>	0.85 <sup>b</sup>	23.2 <sup>a</sup>	4.3 <sup>a</sup>	10.7 <sup>b</sup>	182 <sup>a</sup>	0.80 <sup>a</sup>	31.6 <sup>a</sup>	12.5 <sup>b</sup>

a. Bluegrass was not explicitly reported in the 2014 NEI documentation (EPA 2016) but was provided in the original McCarty (2011) evaluation upon which the 2014 NEI is based and is used here. EPA uses the bluegrass factors for “Other Crops” and for “Pasture/Grass” in the 2014 NEI

b. VOC and NH<sub>3</sub> values were not available in McCarty (2011) so the values for “Other Crops” are used for bluegrass for VOC and NH<sub>3</sub> values and for the fuel loading and combustion completeness.

**Table A-2. Crosswalk from DEQ Agburn Database crop types to NEI (EPA 2014) and McCarty (2011) crop types.**

DEQ Agburn Data Crop Type	Crop Type Assigned
Alfalfa	Other crops <sup>a</sup>
Cereal grain (wheat, barley)	Wheat
Corn	Corn <sup>a</sup>
CRP	Fallow <sup>a</sup>
Kentucky bluegrass	Bluegrass <sup>b</sup>
Legumes	Other crops <sup>a</sup>
Other	Other crops <sup>a</sup>
Other grass species	Bluegrass <sup>b</sup>
Pasture	Pasture_Grass <sup>a</sup>
Turf grass	Bluegrass <sup>b</sup>

a. EPA 2014 NEI

b. McCarty (2011)

Notes: In the 2014 NEI documentation, Pasture/Grass NEI crop type factors and characteristics are identical to EPA’s “Other Crops” category and both appear to come from bluegrass as all three are identical.

### 3 2014 Emissions

Table A-3 shows the actual emissions from DEQ's CRB program in 2014 using the emissions factors described in Table A-1. The total acreage used to calculate emissions for 2014 is 43,390.

**Table A-3. 2014 CRB emissions.**

	PM <sub>2.5</sub>	CO	NO <sub>x</sub>	VOC	SO <sub>2</sub>
Total CRB emissions	340	4123	166	286	34

### 4 2008 SIP Projections

Idaho's 2008 CRB SIP demonstration (EPA approved in 2008) estimated future growth in acres of crop residue and Conservation Reserve Program (CRP) land burning. Trends, using data from the United States Department of Agriculture National Agricultural Statistics Service, indicated flat or declining growth in the number of acres planted depending on the crop. The negotiated agreement caps the number of acres of bluegrass burning to less than 20,000 (not including Indian reservations); any increase beyond that level requires an air quality analysis before approval. Conversely, changes in crop prices could have increased production of certain crops and could increase the number of acres requested to be burned. DEQ, in consultation with various grower organizations, determined that a 1% annual growth, or 10% in 10 years, was a reasonable conservative growth assumption. The estimated emissions from crop residue and CRP burning in 2015 are as shown in Table A-4.

**Table A-4. 2008 SIP estimated emissions factors for 2015 (ton/year).**

	PM <sub>2.5</sub>	CO	NO <sub>x</sub>	VOC	SO <sub>2</sub>
Total estimated 2015 CRB emissions	8120	92987	1582	3613	223.3

Emissions factors used for the 2015 projections were from AP-42: Compilation of Air Emissions Factors (EPA1995), Air Sciences (2003), Johnson and Golob (2004), and the California Air Resources Board (CARB 2011). DEQ used CARB emissions factors for range improvement for the CRP.

### 5 2025 Projections

The actual acres burned in the DEQ's CRB program are substantially less than the original projections in the 2008 SIP. DEQ's CRB program has proven to be consistent with a mature steady-state program. Based on the trends of the CRB program over the past 9 years, DEQ projects the emissions from CRB remain consistent with the 2014 actual emissions. Table A-5 shows the estimated emissions from CRB in 2025.

**Table A-5. Estimated emissions factors for 2025 (ton/year).**

	PM <sub>2.5</sub>	CO	NO <sub>x</sub>	VOC	SO <sub>2</sub>
Total CRB emissions	340	4123	166	286	34

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## Appendix B. Monitoring Design Values

Table B-1. Site-level design values for the 2015 8-hour ozone NAAQS (<https://www.epa.gov/air-trends/air-quality-design-values>).

State	Core-Based Statistical Area	Local Site	Valid 2013–2015 Design Value (ppm) <sup>a,b</sup>	Invalid 2013–2015 Design Value (ppm) <sup>a,b</sup>	2014 Percent Complete	2015 Percent Complete	2014 Exceedance Days	2015 Exceedance Days	2013 4th Highest Daily Max Value	2014 4th Highest Daily Max Value	2015 4th Highest Daily Max Value
ID	Boise City, ID	St. Luke's Meridian	0.063	—	97	99	0	1	0.062	0.062	0.066
ID	Boise City, ID	White Pine	0.067	—	78	98	0	1	0.074	0.065	0.064
ID	Idaho Falls, ID	Craters of the Moon National Monument	0.061	—	97	96	0	0	0.060	0.062	0.061
UT	Logan, UT-ID	Logan #4	—	0.064	92	78	0	2	0.066	0.059	0.067
UT	Logan, UT-ID	—	—	—	—	7	—	0	—	—	0.048
WA	Spokane-Spokane Valley, WA	Cheney-Turnbull	—	0.062	83	83	0	0	0.061	0.060	0.066
WA	Spokane-Spokane Valley, WA	Spokane-Augusta Ave	—	0.061	79	80	0	0	0.061	0.060	0.062
WA	Spokane-Spokane Valley, WA	Spokane-Greenbluff	0.061	—	92	98	0	1	0.062	0.060	0.063
WY	Jackson, WY-ID	Grand Teton NP	0.059	—	96	96	0	0	0.060	0.060	0.059

a. The level of the 2015 8-hour ozone NAAQS is 0.070 parts per million (ppm). The design value is the 3-year average of the annual 4th highest daily maximum 8-hour ozone concentration. Monitors with design values less than or equal to 0.070 ppm must have 75% annual data capture and 90% 3-year average data capture to be considered valid.

b. The design values shown here are computed using Federal Reference Method or equivalent data reported by state, tribal, and local monitoring agencies to EPA's Air Quality System (AQS) as of June 24, 2016. Concentrations flagged by state, tribal, or local monitoring agencies as having been affected by an exceptional event (e.g., wildfire, volcanic eruption) and concurred by the associated EPA regional office are not included in these calculations.

Notes: AQS data retrieval: 6/24/2016; last updated: 7/21/2016

*Disclaimer:* The information listed in this report and in these tables is intended for informational use only and does not constitute a regulatory determination by EPA as to whether an area has attained a NAAQS. The information set forth in this report has no regulatory effect. To have regulatory effect, a final EPA determination as to whether an area has attained a NAAQS or attained a NAAQS as of its applicable attainment date can be accomplished only after rulemaking that provides an opportunity for notice and comment. No such determination for regulatory purposes exists in the absence of such rulemaking. This report does not constitute a proposed or final rulemaking.

**Table B-2. Site-level design value history for the 2015 8-hour ozone NAAQS (<https://www.epa.gov/air-trends/air-quality-design-values>).**

State	Core-Based Statistical Area	Local Site	2004–2006 Design Value (ppm) <sup>a,b</sup>	2005–2007 Design Value (ppm) <sup>a,b</sup>	2006–2008 Design Value (ppm) <sup>a,b</sup>	2007–2009 Design Value (ppm) <sup>a,b</sup>	2008–2010 Design Value (ppm) <sup>a,b</sup>	2009–2011 Design Value (ppm) <sup>a,b</sup>	2010–2012 Design Value (ppm) <sup>a,b</sup>	2011–2013 Design Value (ppm) <sup>a,b</sup>	2012–2014 Design Value (ppm) <sup>a,b</sup>	2013–2015 Design Value (ppm) <sup>a,b</sup>
ID	Boise City, ID	St. Luke's Meridian	—	—	—	—	0.068	—	—	—	0.065	0.063
ID	Boise City, ID	White Pine	—	—	—	—	—	0.068	0.067	0.069	0.069	0.067
ID	Boise City, ID	—	—	—	0.075	0.071	0.065	0.062	—	—	—	—
ID	Boise City, ID	Whitney Elementary	0.077	0.077	0.075	—	—	—	—	—	—	—
ID	Idaho Falls, ID	Craters of the Moon National Monument	—	—	—	0.064	0.062	0.061	0.063	0.063	0.062	0.061
ID	Coeur d'Alene, ID	Coeur d'Alene	—	0.067	—	0.060	0.056	0.056	—	—	—	—
UT	Logan, UT-ID	Logan #4	0.067	0.072	0.071	0.067	0.063	0.062	0.066	0.067	0.065	—
WA	Spokane-Spokane Valley, WA	Cheney-Turnbull	0.060	—	—	—	—	0.057	0.059	0.060	0.061	—
WA	Spokane-Spokane Valley, WA	Spokane-Augusta Ave	—	—	—	—	—	—	0.058	0.060	0.061	—
WA	Spokane-Spokane Valley, WA	Spokane-Greenbluff	0.068	0.066	0.063	0.059	0.057	0.057	0.059	0.060	0.061	0.061
WY	Jackson, WY-ID	Grand Teton NP	—	—	—	—	—	—	—	—	0.062	0.059

a. The level of the 2015 8-hour ozone NAAQS is 0.070 parts per million (ppm). The design value is the 3-year average of the annual 4th highest daily maximum 8-hour ozone concentration. Only valid design values are shown.

b. The design values shown here are computed using Federal Reference Method or equivalent data reported by state, tribal, and local monitoring agencies to EPA's Air Quality System (AQS) as of June 24, 2016. Concentrations flagged by state, tribal, or local monitoring agencies as having been affected by an exceptional event (e.g., wildfire, volcanic eruption) and concurred by the associated EPA regional office are not included in these calculations.

Notes: AQS data retrieval: 6/24/2016; Last updated: 7/21/2016

*Disclaimer.* The information listed in this report and in these tables is intended for informational use only and does not constitute a regulatory determination by EPA as whether an area has attained a NAAQS. The information set forth in this report has no regulatory effect. To have regulatory effect, a final EPA determination as to whether an area has attained a NAAQS or attained a NAAQS as of its applicable attainment date can be accomplished only after rulemaking that provides an opportunity for notice and comment. No such determination for regulatory purposes exists in the absence of such rulemaking. This report does not constitute a proposed or final rulemaking.

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## Appendix C. Impact Analysis

### 1 Introduction

Three analyses were performed to detect impacts from CRB program burns on ozone monitors in and around Idaho and are described in section 6. This appendix provides additional details for some of the analysis.

#### 1.1 Back Trajectory Details

In the back trajectory analysis in section 6.3, DEQ ran HYSPLIT back trajectory analyses combined with MODIS satellite images to confirm that wind trajectories did intersect with CRB program burns or identify if there were other potential contributors.

Back trajectories were run from the monitor location and the duration of the run was determined by the timing of peak ozone occurrence and typical burn window duration (or specific burn window time frame, when provided). Because only one site was analyzed for impacts on any given day, only one starting location was selected for the trajectories. Meteorology data used were the 12 kilometer (km) North American Model (NAM) with static pressure levels for the vertical resolution (26 levels at the following hPa: 1000, 975, 950, 925, 900, 875, 850, 825, 800, 775, 750, 725, 700, 650, 600, 550, 500, 450, 400, 350, 300, 250, 200, 150, 100, 50). This model was selected for the archive length (2007–present), as well as the relatively high horizontal resolution (12 km). Starting location was given in decimal degrees. Starting date was selected based on time of impact (converted to Coordinated Universal Time or UTC). Once this was selected, model parameters and output could be further tailored. Level 1 height and Level 2 height were selected at 500m AGL and 1000m above ground level (AGL) as to capture the transport winds (1000m AGL) and avoid surface terrain (500m AGL). In addition to running trajectories at 500m and 1000m AGL, back trajectories were generated at 50m AGL for key dates (values with MD8A over the 95<sup>th</sup> percentile of historical) that intersected potential field burns at the 500m AGL level. This was done to capture the near-surface flow and develop a more robust argument for the highest observed days. The resulting trajectories mirrored the 500m AGL and 1000m AGL quite well.

Model parameters selected included a backwards trajectory direction to determine where the winds at the prescribed levels originated. The vertical motion method used in the model is the default, model vertical velocity. Start time selected was determined based on time of highest impact for that date. Total run time was determined by typical burn window (11 a.m.–5 p.m. Local Standard Time). Starting a new trajectory was set to hourly, and the maximum number of trajectories depended upon the time of impact.

HYSPLIT back trajectories for all dates and starting heights were saved as shapefiles (ESRI GIS spatial format) and combined with satellite imagery, monitor locations, CRB sites, and satellite fire detection data for the overlay analysis. The objective of the overlay analysis was to determine if air parcels, represented by the back trajectories, intersected the locations of crop residue burns. If the back trajectories did intersect with the CRB program burns, then it can be logically stated that those burns may have impacted the monitor on that day.

For each date, the corresponding set of back trajectories was overlaid on that date's MODIS True Color imagery (<http://ge.ssec.wisc.edu/modis-today/>), the IDEQ crop residue burn locations, and the MODIS Active Fire Detects ([https://fsapps.nwcg.gov/afm/data/fireptdata/modisfire\\_2013\\_conus.htm](https://fsapps.nwcg.gov/afm/data/fireptdata/modisfire_2013_conus.htm)). If the back trajectories clearly intersected the CRB locations, then that date was classified as "possible impact." If the back trajectories came close to the CRB locations, the back trajectories were then buffered by 12 km (the grid cell resolution of the NAM meteorological data used in the HYSPLIT model). The 12 km buffer represents an envelope of model uncertainty. If the CRB locations intersected the back trajectory buffer zone, the date was then classified as "possible impact." If the CRB locations were further than 12 km away from the back trajectories, then that date was classified as "no impact." The resulting date lists labeled "possible impact" and "no impact" were then quantified according to the description in section 6.3. A table of the no impact dates is shown in Table C-1. There appears to be no difference between Table C-1 and Table 10 in section 6.3, which is further indication that there CRB is not a significant contributor to monitoring values that exceed the historical 95th-percentile values.

**Table C-1. Maximum potential contribution above the 95th percentile for CRB no impact days.**

Monitor	Date	CRB No Impact			Conclusions from Detailed Analysis
		MDA8 (ppm)	95th % MDA8 (for month of interest)	Contribution above 95th %	
Craters of the Moon	5/1/2015	0.064	0.059	0.005	Regional high, likely LT/SI
Washakie, UT	10/3/2011	0.054	0.050	0.004	Not investigated in detail
Grand Teton National Park, WY	10/3/2012	0.050	0.047	0.003	Not investigated in detail
Logan, UT	9/14/2012	0.059	0.057	0.002	Not investigated in detail
Grand Teton National Park, WY	9/20/2011	0.053	0.052	0.001	Not investigated in detail
Boise	8/18/2014	0.070	0.070	0.000	Not above 95 <sup>th</sup> %
Washakie, UT	5/6/2013	0.064	0.064	0.000	Not above 95 <sup>th</sup> %
Cheney, WA	5/10/2013	0.057	0.057	0.000	Not above 95 <sup>th</sup> %
Spokane-Greenbluff	8/7/2013	0.062	0.062	0.000	Not above 95 <sup>th</sup> %
Boise	9/13/2011	0.057	0.058	-0.001	Not above 95 <sup>th</sup> %
Craters of the Moon	8/31/2011	0.060	0.061	-0.001	Not above 95 <sup>th</sup> %
Spokane-Augusta Ave.	5/10/2013	0.055	0.056	-0.001	Not above 95 <sup>th</sup> %
Washakie, UT	9/14/2012	0.060	0.062	-0.002	Not above 95 <sup>th</sup> %
Cheney, WA	9/12/2013	0.052	0.055	-0.003	Not above 95 <sup>th</sup> %
Cheney, WA	9/13/2013	0.052	0.055	-0.003	Not above 95 <sup>th</sup> %
Washakie, UT	9/9/2011	0.058	0.062	-0.004	Not above 95 <sup>th</sup> %
Grand Teton National Park, WY	10/14/2012	0.043	0.047	-0.004	Not above 95 <sup>th</sup> %
Washakie, UT	9/5/2013	0.057	0.062	-0.005	Not above 95 <sup>th</sup> %
Washakie, UT	9/30/2011	0.057	0.062	-0.005	Not above 95 <sup>th</sup> %
Cheney, WA	9/8/2014	0.050	0.055	-0.005	Not above 95 <sup>th</sup> %
Spokane-Augusta Ave.	9/8/2014	0.044	0.050	-0.006	Not above 95 <sup>th</sup> %
Cheney, WA	8/1/2012	0.055	0.062	-0.007	Not above 95 <sup>th</sup> %
Logan, UT	5/25/2012	0.055	0.062	-0.007	Not above 95 <sup>th</sup> %
Logan, UT	9/7/2011	0.048	0.057	-0.009	Not above 95 <sup>th</sup> %
Washakie, UT	7/16/2012	0.060	0.071	-0.011	Not above 95 <sup>th</sup> %
Boise	9/16/2013	no value	—	—	—

Notes: parts per million (ppm); lower troposphere (LT); stratospheric intrusion (SI)

## 2 Additional Large Burn Day Analysis

In section 6.2, DEQ also focused on days when the most acreage was burned in each smoke management area (SMA). Only two days were identified as possible candidates for CRB monitor impacts but their quantified impact was minimal. Additional analysis of the data described in that section is included below.

The preliminary filter criterion of 30% of wind measurements directed toward a monitor used in this analysis was not a reliable predictor of CRB impacts on an ozone monitor. The lack of correlation again suggests CRB does not have a significant impact on ozone monitors, regardless of wind direction.

A student T-test performed on the data in this analysis supports the conclusion that CRB and wind direction are not reliable indicators of ozone peaks. The two sets of days for which there was a high percent of wind directed toward a monitor but that differed in the presence or absence of ozone peaks were compared. It was expected that a high percent of wind directed toward an ozone monitor would cause a higher incidence of ozone peak detection. When the number of days with peaks in each SMA was paired with the number of days without peaks in the same SMA, the student T-test resulted in a 78% probability that the two groups were the same. This means that if greater than 30% of daily wind measurements on a day with a large burn or cluster of burns are directed toward an ozone monitor, it cannot be predicted whether or not an ozone peak will be detected by that monitor.

Of the 11 burn days submitted to more detailed wind trajectory analysis, the two burn days determined to have possibly impacted the ozone monitors had wind directed toward the monitor only 10% and 33% of the day while the days with corresponding 60% and 90% of wind measurements were determined to have had no impact. This further suggests the lack of a relationship between CRB size and wind direction persistence to ozone impacts as measured by ozone monitors.

## 3 95% Percentile Threshold of Hourly Concentration Values

DEQ used the following process to rule out or identify CRB program burn as potential contributors to elevated ozone concentrations.

- Identify hourly ozone concentrations above the 5-year 95th percentile for the month of interest.
- Determine if CRB program burns were authorized on days when hourly ozone excursions above the 95th percentile were observed between 11 a.m. and 8 p.m.
- Identify all CRB program burn locations and acreage on such days.
- Identify the burn window approved for the county where the CRB program burns are located.
- Model back trajectories and overlay in ArcMap with monitor, CRB program burn and wildfire (if any) locations to see if they intersect.
- Quantify the possible ozone impacts on the NAAQS by subtracting the MDA8 ozone concentration from the 95th-percentile MDA8 on days CRB program burning occurred.

### 2.1.1 Idaho Ozone Monitoring

Historical 95th-percentile hourly ozone concentrations were highest in June and August at the Meridian and Boise monitors and peaked above 70 ppb between 12 p.m. and 8 p.m. (Figure C-1 and Figure C-2). Diurnal variations at the Craters of the Moon monitor were less pronounced and historical 95th percentiles remained below 65 ppb at their highest (Figure C-3). As shown, there have been no exceedances of the 8-hour ozone NAAQS at any of the Idaho monitors during 2011–2015. Up to 30% of the monitoring days examined had hourly ozone concentrations above normal historical fluctuations. No more than 15% of the ozone excursions occurred during the 11 a.m. to 8 p.m. burn impact window. Of these observed ozone excursions, a maximum of 7 days from any one monitor occurred on days when DEQ authorized CRB within 50 miles of the ozone monitors (Table C-2).

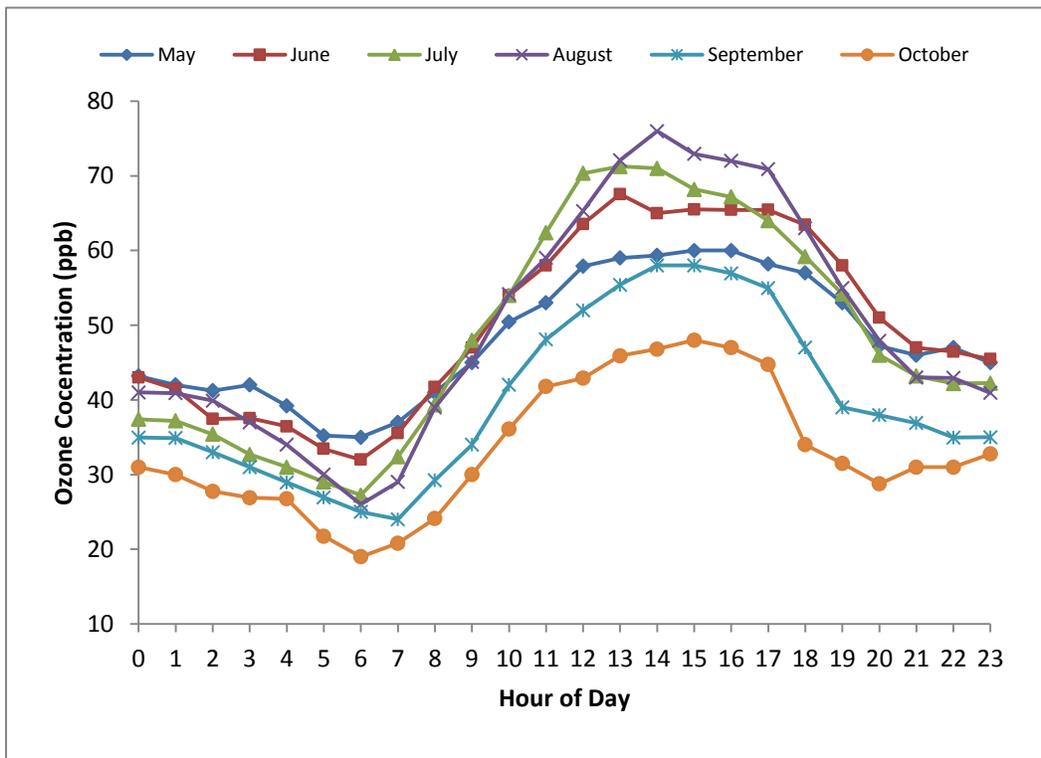


Figure C-1. Five-year hourly 95th-percentile ozone concentration at the Meridian monitor.

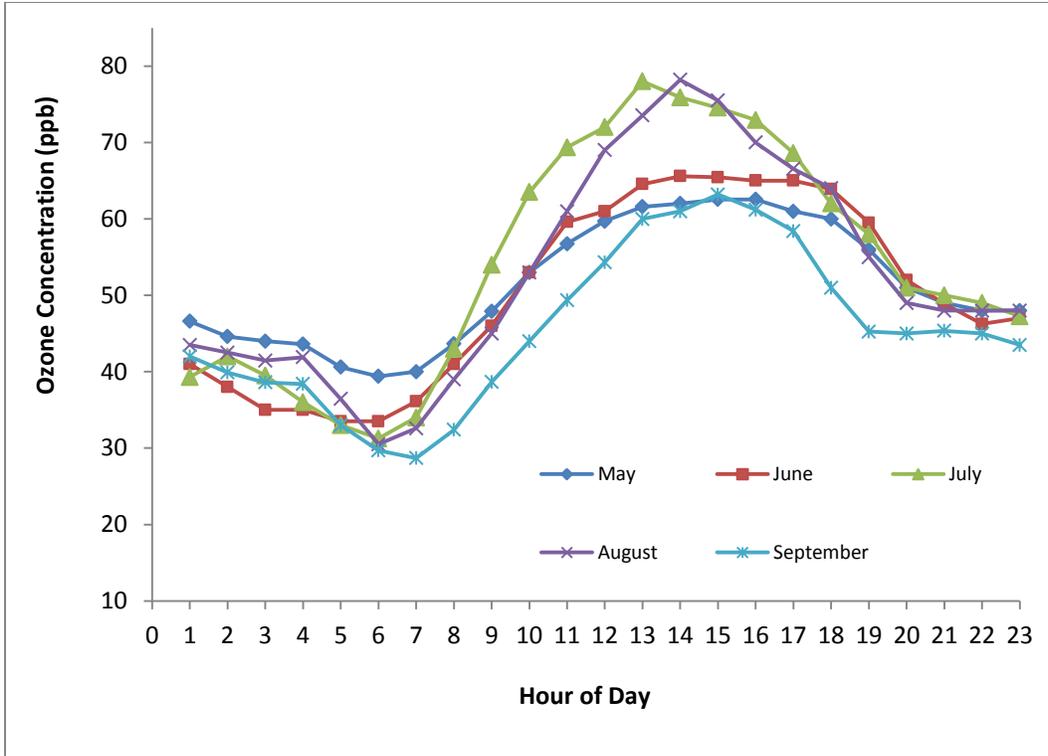


Figure C-2. Five-year hourly 95th-percentile ozone concentration at the Boise monitor.

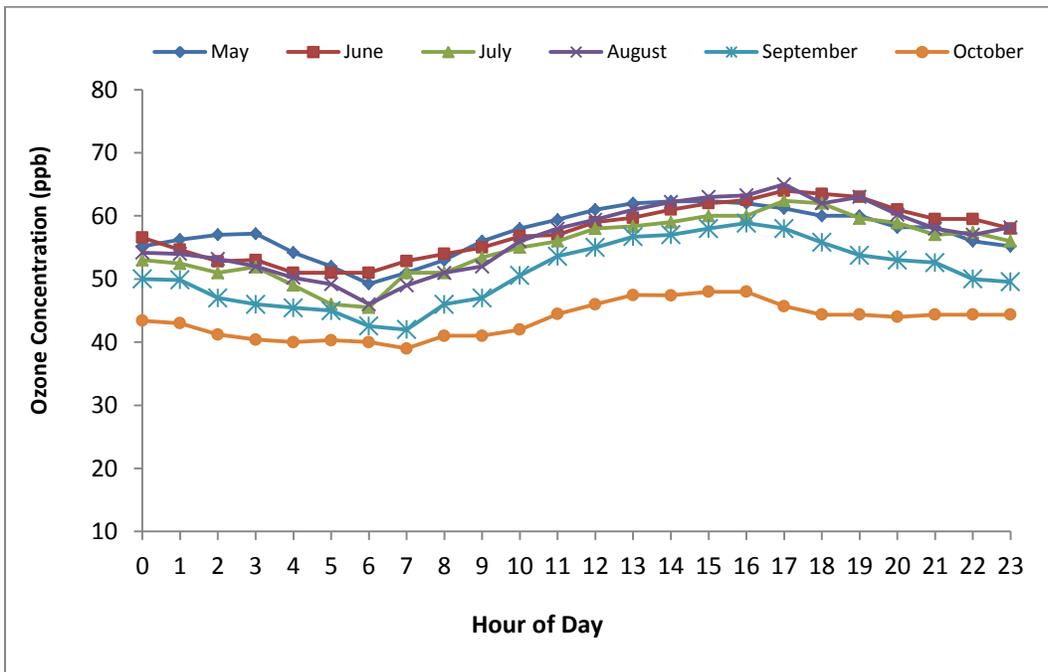


Figure C-3. Five-year hourly 95th-percentile ozone concentration at the Craters of the Moon monitor.

**Table C-2. Ozone monitoring at Idaho monitors.**

	Monitoring Stations		
	Meridian	Boise	Craters of the Moon National Monument
Months of ozone monitoring data available during peak CRB season	May–August 2011 May–October 2012–2015	May–September 2011–2015	May–October 2011–2015
Number of days with available hourly ozone data	850	738	884
Number of days with hourly ozone concentrations > historical 95th percentile	252 (29.65%)	211 (27.84%)	209 (23.64%)
Number of days with hourly ozone concentrations > historical 95th percentile during burn window	100 (11.76%)	104 (14.09%)	97 (10.97%)
Number of days with hourly ozone concentrations > historical 95th percentile during burn window and CRB within 50 miles	3	7	5

### 2.1.2 Crop Residue Burning in Idaho

From 2011 to 2015, DEQ authorized a total of 213, 205, and 69 crop residue burns within 50 miles of the Meridian monitor, Boise Monitor, and Craters of the Moon National Monument monitor during the main burn season (May–October; Table C-3). These field burns occurred on 91 (Meridian), 88 (Boise), and 43 (Craters of the Moon) distinct days. Ozone monitoring data were available on 79 out of the 91 burn days for Meridian, 76 out of the 88 burn days for Boise, and all 43 burn days for Craters of the Moon. There were a total of 15 days at all three monitors with hourly ozone excursions above the 95th percentile that coincided with CRB program burns within 50 mile of the monitor.

**Table C-3. Crop residue burns within 50 miles of Idaho ozone monitors between 2011 and 2015.**

Date	CMNM		Meridian		Boise	
	No. of Authorized CRB Fields	Total Acres Burned	No. of Authorized CRB fields	Total Acres Burned	No. of Authorized CRB fields	Total Acres Burned
<b>2011</b>	—	—	—	—	—	—
May	4	103	5	68	4	65
Jun	—	—	1	5	1	5
Jul	—	—	2	35.8	2	35.8
Aug	3	234	16	415.82	14	373.2
Sep	13	1611.3	29	520.88	23	415.6
Oct	—	—	2	35	2	35
<b>2012</b>	—	—	—	—	—	—
May	1	128	1	20	1	20
Aug	3	246	5	138	6	203
Sep	2	75	19	341.7	19	341.7
Oct	1	120	2	36	2	36
<b>2013</b>	—	—	—	—	—	—
May	1	65	3	72	3	72
Jun	—	—	1	10	1	10
Jul	—	—	9	230	9	230
Aug	22	2440	27	825	27	825
Sep	2	33	10	227	10	227
<b>2014</b>	—	—	—	—	—	—
Jun	1	41	—	—	—	—
Jul	—	—	4	120	4	120
Aug	4	277	17	279	17	279
Sep	2	130	19	354	19	354
Oct	1	30	4	43	4	43
<b>2015</b>	—	—	—	—	—	—
May	2	45	—	—	—	—
Jul	1	125	11	326.53	11	326.53
Aug	6	447	16	322	16	322
Sep	—	—	10	205	10	205
Total	69	6150.3	213	4629.73	205	4543.83

### 2.1.3 Utah Ozone Monitoring

There have been no exceedances of the 8-hour ozone NAAQS at any of the Utah monitors during 2011–2015. Historical 95th-percentile hourly ozone concentrations were highest in June and August and peaked above 70 ppb between 12 p.m. and 6 p.m. at the Washakie and Logan monitoring stations (Figure C-4 and Figure C-5).

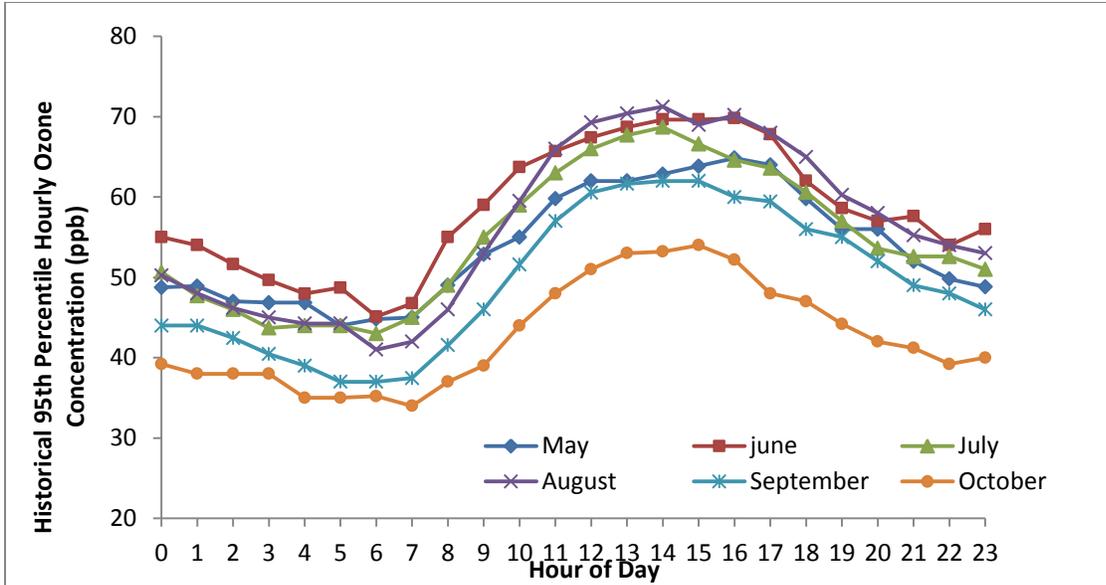


Figure C-4. Historical 95th-percentile ozone concentrations at the Washakie, UT monitor.

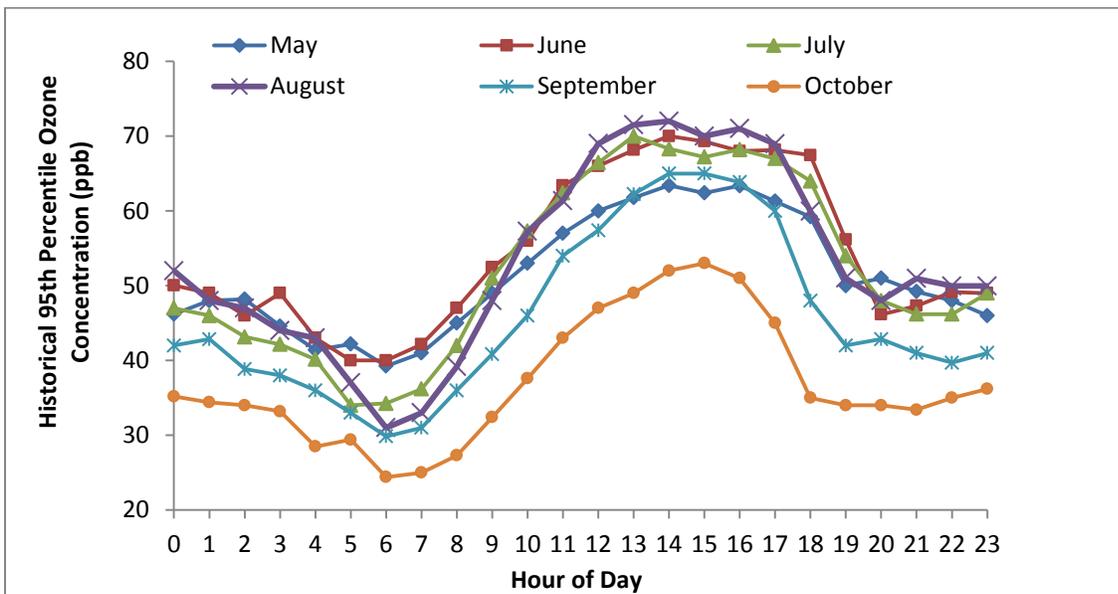


Figure C-5. Historical 95th-percentile ozone concentrations at the Logan, UT monitor.

Hourly ozone concentrations exceeded the historical 95th-percentile ozone concentration during the potential impact window at both monitoring stations on 11%–12% of the monitoring days that were analyzed. CRB program burns occurred on a small subset of those days (Table C-4).

**Table C-4. Ozone monitoring at Utah monitors.**

	Monitoring Stations	
	Washakie	Logan
Ozone monitoring data	May–October 2013–2015 June–October 2012 July–October 2011	May–October 2011–2015
Number of days with available hourly ozone data	839	868
Number of days with hourly ozone concentrations > historical 95th percentile	209 (24.91%)	251 (28.91%)
Number of days with hourly ozone concentrations > historical 95th percentile during burn window	92 (11%)	101 (11.63%)
Number of days with hourly ozone concentrations > historical 95th percentile during burn window and CRB within 50 miles	14	4

#### 2.1.4 Crop Residue Burning in Utah

During 2011–2015, DEQ authorized a total of 272 and 57 crop residue burns within 50 miles of the Washakie and Logan, UT monitors, respectively (Table C-5). These field burns occurred on 129 (Washakie) and 42 (Logan) distinct days. Ozone monitoring data were available on 122 out of 129 days for Washakie and on all 42 days in Logan. Overall, DEQ identified 18 days where CRB program burns coincided with elevated ozone levels between 11 a.m. and 8 p.m.

**Table C-5. Permitted crop residue burns with 50 miles of Utah ozone monitors.**

Date	Logan		Washakie	
	No. of Authorized CRB Fields	Total Acres Burned	No. of Authorized CRB Fields	Total Acres Burned
<b>2011</b>	—	—	—	—
May	—	—	6	638
Jun	—	—	1	30
Jul	3	170.5	6	420.5
Aug	1	150	4	240
Sep	7	1101.2	40	4743.4
Oct	6	314.95	25	1674.75
<b>2012</b>	—	—	—	—
May	2	67	9	864
Jun	1	0.1	1	0.1
Jul	—	—	4	275
Aug	—	—	13	1418
Sep	2	130	12	2251
Oct	3	358	17	2868.2
<b>2013</b>	—	—	—	—
May	3	257	10	672
Aug	1	7	14	864
Sep	1	30	16	1067
Oct	—	—	6	762
<b>2014</b>	—	—	—	—
May	8	544	16	954
Jun	1	3	1	3
Aug	—	—	1	200
Sep	3	231	21	1596
Oct	3	35	6	130
<b>2015</b>	—	—	—	—
May	—	—	3	42
Aug	5	388	9	888
Sep	4	248	23	1958
Oct	3	3	8	153
<b>Total</b>	<b>57</b>	<b>4037.75</b>	<b>272</b>	<b>24711.95</b>

## 2.1.5 Washington Ozone Monitoring

All three ozone monitors in eastern Washington operated seasonally. Ozone data were available from May to September during 2011–2015 except at Augusta where ozone data were not reported to Air Data in May 2012. (EPA 2017) Figure C-6, Figure C-7, and Figure C-8 show the historical fluctuations as the calculated hourly 95th percentile for each month over the 2011–2015 period. Historical hourly ozone concentrations were highest in July and August at all three stations and stayed under 70 ppb at their peaks. As shown, there have been no exceedances of the 8-hour ozone NAAQS at any of these Washington monitors during 2011–2015. Hourly ozone concentrations exceeded normal historical fluctuations between 11 a.m. and 8 p.m. on 10%–13% of the days when ozone data were available. DEQ authorized CRB within 50 miles of these monitors on 3% (Augusta), 8% (Cheney), and 1.33% (Greenbluff) of the days when these ozone excursions above the 95th-percentile concentration were observed (Table C-6).

**Table C-6. Ozone monitoring data from eastern Washington stations with corresponding CRB data.**

	Monitoring Stations		
	Augusta	Cheney	Greenbluff
Ozone monitoring data	May–September 2011  June–September 2012  July–September 2011–2015	May–September 2011–2015	May- September 2011–2015
Number of days with available hourly ozone data	705	716	757
Number of days with hourly ozone concentrations > historical 95th percentile	194 (27.52%)	182 (25.42%)	142 (18.76%)
Number of days with hourly ozone concentrations > historical 95th percentile during burn window	90 (12.77%)	75 (10.47%)	83 (10.96%)
Number of days with hourly ozone concentrations > historical 95th percentile during burn window and CRB within 50 miles	3	6	1

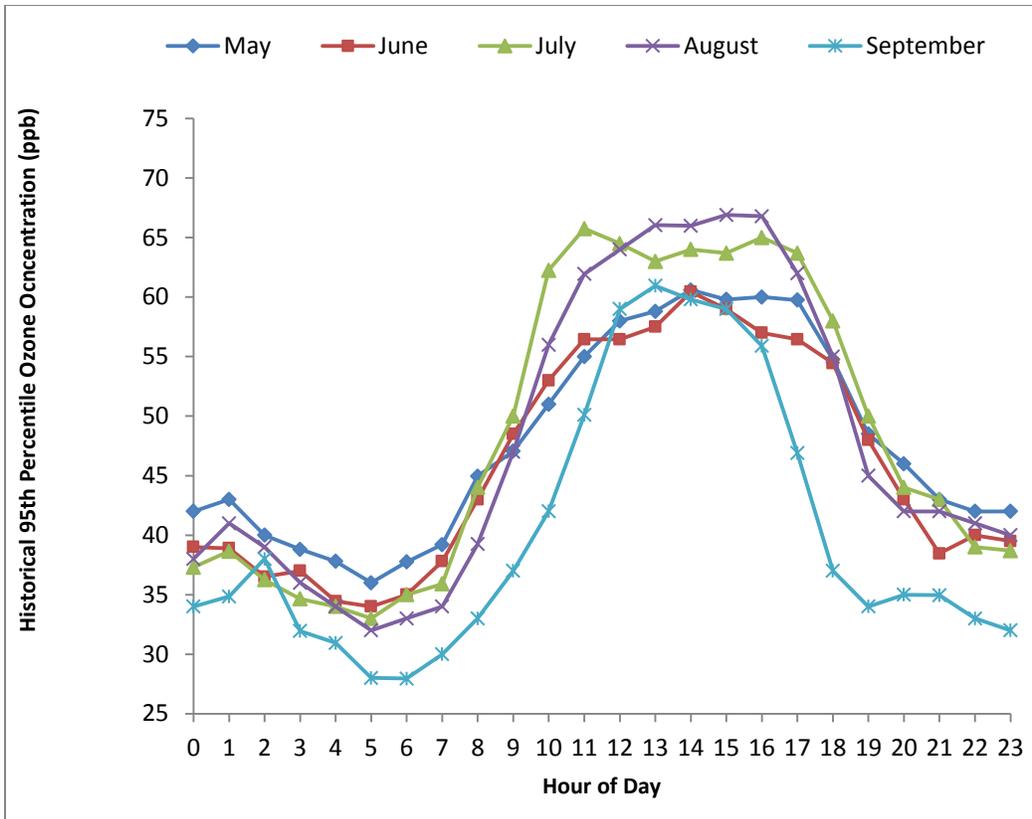


Figure C-6. Five-year hourly 95th-percentile ozone concentration at the Augusta monitor.

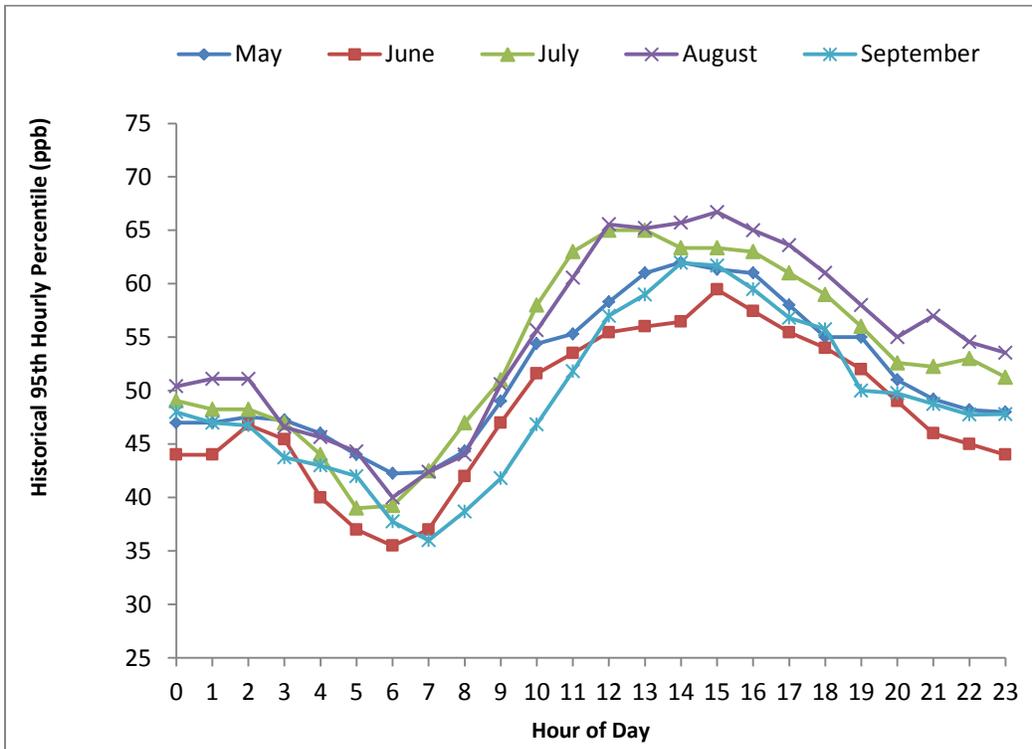


Figure C-7. Five-year hourly 95th-percentile ozone concentration at the Cheney monitor.

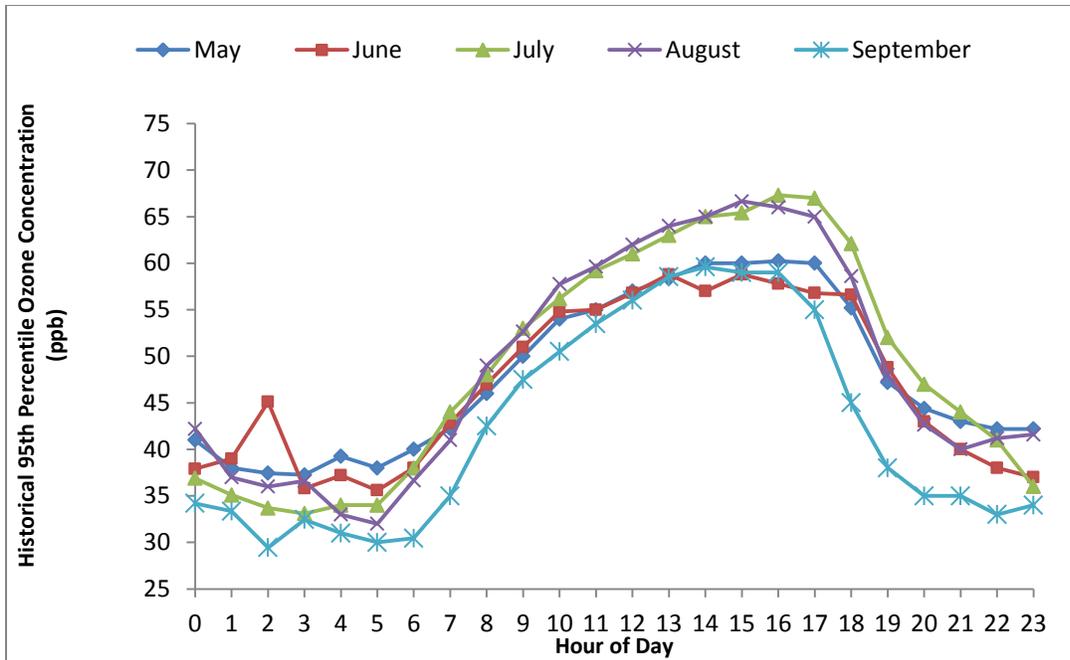


Figure C-8. Five-year hourly 95th-percentile ozone concentration at the Greenbluff monitor.

### 2.1.6 Crop Residue Burning in Washington

During 2011–2015, DEQ authorized a total of 43, 188, and 19 crop residue burns within 50 miles of the Augusta, Cheney, and Greenbluff ozone monitors, respectively (Table C-7). These field burns were distributed over 22 days for Augusta, 83 days for Cheney, and 11 days for Greenbluff. Hourly ozone monitoring data were available on 15 out of 22 CRB days for Augusta, 54 out of 83 CRB days in Cheney, and 8 out 11 CRB days for Greenbluff.

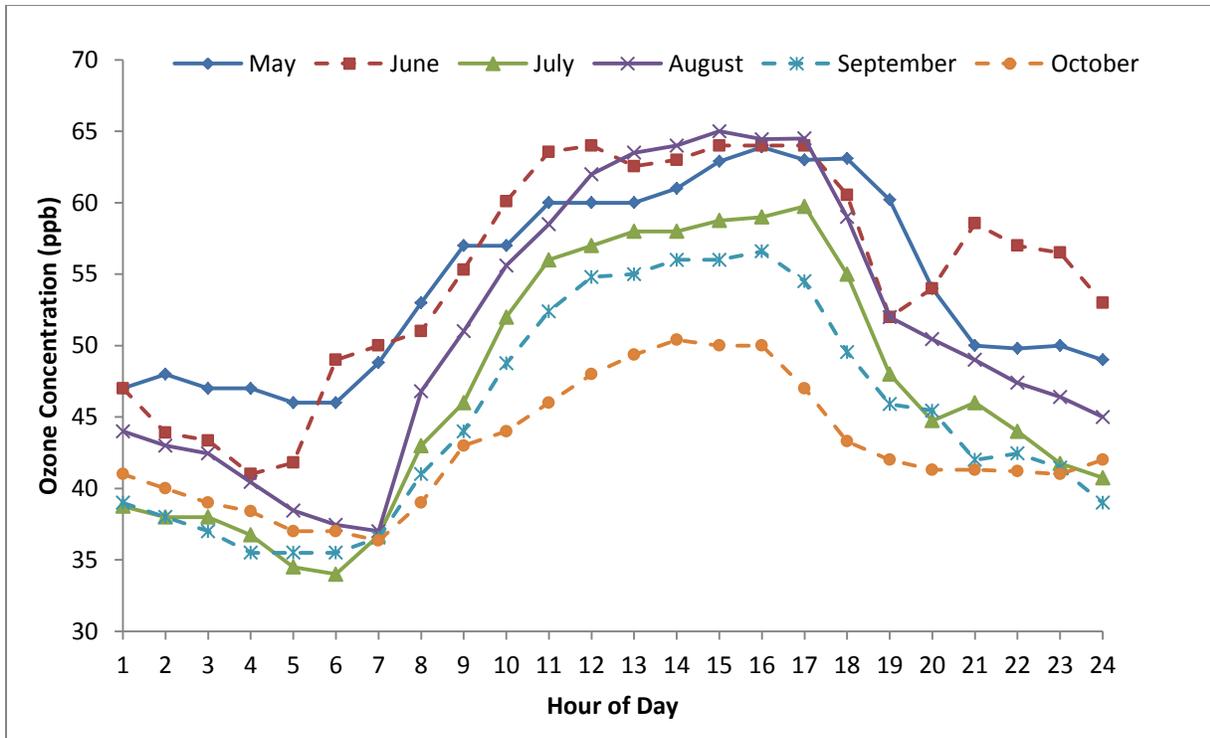
Table C-7. Permitted crop residue burns within 50 miles of Washington ozone monitors.

Date	Augusta		Cheney		Greenbluff	
	No. of Authorized CRB fields	Total Acres Burned	No. of Authorized CRB Fields	Total Acres Burned	No. of Authorized CRB Fields	Total Acres Burned
<b>2011</b>	—	—	—	—	—	—
May	—	—	3	290	—	—
Jun	—	—	2	12.93	—	—
Jul	—	—	4	571.1	—	—
Aug	2	370	14	1166.8	2	370
Sep	13	536	28	1688.7	2	50
Oct	—	—	14	537.7	—	—
<b>2012</b>	—	—	—	—	—	—
Jul	—	—	2	243	—	—
Aug	1	220	11	1080.1	1	220
Sep	2	100	6	496.2	2	100
Oct	6	476	22	1255.4	2	170
<b>2013</b>	—	—	—	—	—	—

Date	Augusta		Cheney		Greenbluff	
	No. of Authorized CRB fields	Total Acres Burned	No. of Authorized CRB Fields	Total Acres Burned	No. of Authorized CRB Fields	Total Acres Burned
May	2	26	3	96	—	—
Aug	3	375	8	754	3	375
Sep	3	480	15	1523	2	95
Oct	—	—	12	336	—	—
<b>2014</b>	—	—	—	—	—	—
May	1	90	1	90	—	—
Aug	—	—	3	121.5	—	—
Sep	7	543.5	14	830.5	2	88
Oct	—	—	7	241.75	—	—
<b>2015</b>	—	—	—	—	—	—
Aug	2	90	2	90	2	90
Sep	—	—	12	604	—	—
Oct	1	155	5	240	1	155
Total	43	3461.5	188	12268.68	19	1713

### 2.1.7 Wyoming Ozone Monitoring

As shown, there have been no exceedances of the 8-hour ozone NAAQS at the Grand Teton National Park monitor during 2011–2015. Historical 95th-percentile hourly ozone concentrations were highest in May, June, and August but stayed below 70 ppb at their daily peaks (Figure C-9). Hourly ozone data from the entire main burn season was available from 2012 to 2015 but only from August to October in 2011.



**Figure C-9. Five-year hourly 95th-percentile ozone concentration at the Grand Teton National Park ozone monitor.**

CRB occurred within 50 miles of the ozone monitor on 6 of the 89 days (7%; Table C-8) when hourly ozone levels were above the historical 95th percentile between 11 a.m. and 8 p.m.

**Table C-8. Ozone monitoring at the Teton monitor in Wyoming.**

	<b>Teton Monitoring Station</b>
Ozone monitoring data	May–October 2012–2015 August–October 2011
Number of days with available hourly ozone data	805
Number of days with hourly ozone concentrations > historical 95th percentile	197 (24.91%)
Number of days with hourly ozone concentrations > historical 95th percentile during burn window	89 (11%)
Number of days with hourly ozone concentrations > historical 95th percentile during burn window and CRB within 50 miles	6

### 2.1.8 Crop Residue Burning in Wyoming

During the 2011–2015, DEQ authorized a total of 57 CRB program burns within 50 miles of the Teton ozone monitor. These field burns were distributed over 27 days. Hourly ozone monitoring data were available on 25 out of the 27 CRB days. There were a total of 6 days with hourly

ozone excursions above the 95th percentile that coincided with CRB program burns within 50 miles of the monitor (Table C-9).

**Table C-9. Permitted crop residue burns within 50 miles of the Teton ozone monitor.**

<b>Date</b>	<b>No. of Authorized CRB Fields</b>	<b>Total Acres Burned</b>
<b>2011</b>	—	—
May	5	387
Sep	8	721
<b>2012</b>	—	—
Sep	3	359
Oct	17	1005
<b>2013</b>	—	—
May	1	65
Oct	5	325
<b>2014</b>	—	—
May	1	47
Sep	2	199
Oct	1	80
<b>2015</b>	—	—
May	1	98
Sep	1	245
Oct	12	1084
<b>Total</b>	<b>57</b>	<b>4615</b>

## References

EPA (United States Environmental Protection Agency). 2017. “Air Data: Air Quality Data Collected at Outdoor Monitors Across the US.” Accessed February 2, 2017.  
<https://www.epa.gov/outdoor-air-quality-data>.

## **Appendix D. Supporting Material**

# SENATE BILL 1009 – Idaho State Legislature

 [legislature.idaho.gov/sessioninfo/2017/legislation/S1009/](http://legislature.idaho.gov/sessioninfo/2017/legislation/S1009/)

## SENATE BILL 1009

The status of each bill, resolution, proclamation, and memorial is updated when the offices of the Secretary of the Senate and the Chief Clerk of the House publish the un-official daily journals and should not be deemed official. The official bill actions are located in the final journal, which are maintained by the offices of the Secretary of the Senate and the Chief Clerk of the House. **The daily journals are published at the end of each legislative day.**

[Full Bill Information](#)

### Individual Links:

S1009 by HEALTH AND WELFARE COMMITTEE

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CROP RESIDUE BURNING – Amends, repeals and adds provisions regarding the open burning of crop residue.

---

01/18 Introduced; read first time; referred to JR for Printing

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01/19 Reported Printed; referred to Health & Welfare

---

01/26 Reported out of Committee with Do Pass Recommendation; Filed for second reading

---

01/27 Read second time; filed for Third Reading

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01/30 Read third time in full – PASSED - 29-5-1  
AYES – Agenbroad, Anthon, Bair, Bayer, Brackett, Crabtree, Davis, Den Hartog, Foreman, Guthrie, Hagedorn, Harris, Heider, Hill, Johnson, Keough, Lakey, Lee, Lodge, Martin, Mortimer, Nonini, Patrick, Rice, Souza, Thayn, Vick, Ward-Engelking, Winder  
NAYS – Buckner-Webb, Bock(Burgoyne), Jordan, Nye, Stennett  
Absent and excused – Siddoway  
Floor Sponsor - Harris  
Title apvd - to House

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01/31 Received from the Senate, Filed for First Reading

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Read First Time, Referred to Environment, Energy & Technology

---

02/21 Reported out of Committee with Do Pass Recommendation, Filed for Second Reading

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02/22 Read second time; Filed for Third Reading

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02/23 U.C. to hold place on third reading calendar one legislative day

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02/24 Read Third Time in Full – PASSED - 62-7-1  
AYES – Amador, Anderson, Anderst, Armstrong, Barbieri, Bell, Blanksma, Boyle, Burtenshaw, Chaney, Cheatham, Clow, Collins, Crane, Dayley, DeMordaunt, Dixon, Gestrin, Gibbs, Giddings, Hanks, Harris, Hartgen, Hixon, Holtzclaw, Horman, Jordan, Kauffman, Kerby, Kingsley(Lohman), Loertscher, Luker, Malek, Manwaring, McCrostie, McDonald, Mendive, Miller, Monks, Moon, Moyle, Nate, Packer, Palmer, Perry, Raybould, Redman, Scott, Shepherd, Smith, Stevenson, Syme, Thompson, Toone, Troy, Trujillo, VanOrden, Vander Woude, Wood, Zito, Zollinger, Mr. Speaker  
NAYS – Chew, Erpelding, Gannon, King, Kloc, Rubel, Wintrow  
Absent – Youngblood  
Floor Sponsor - Chaney  
Title apvd - to Senate

---

02/27 Returned From House Passed; referred to enrolling

---

02/28 Reported enrolled; signed by President; to House for signature of Speaker

---

03/01 Received from Senate; Signed by Speaker; Returned to Senate

---

03/02 Reported signed by the Speaker & ordered delivered to Governor

---

03/03 Reported delivered to Governor at 10:45 a.m. on 03/02/17

---

03/08 Signed by Governor on 03/08/17  
Session Law Chapter 56  
Effective: 03/08/2017 SECTION 1;

02/28/2018 SECTION 2 & 3

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[Bill Text](#)

[Statement of Purpose / Fiscal Note](#)

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[Site Disclaimer](#)

IN THE SENATE

SENATE BILL NO. 1009

BY HEALTH AND WELFARE COMMITTEE

AN ACT

1 RELATING TO CROP RESIDUE BURNING; AMENDING SECTION 39-114, IDAHO CODE, TO  
2 REVISE PROVISIONS REGARDING NATIONAL AMBIENT AIR QUALITY STANDARDS AND  
3 TO MAKE TECHNICAL CORRECTIONS; REPEALING SECTION 39-114, IDAHO CODE,  
4 RELATING TO THE OPEN BURNING OF CROP RESIDUE; AMENDING CHAPTER 1, TITLE  
5 39, IDAHO CODE, BY THE ADDITION OF A NEW SECTION 39-114, IDAHO CODE, TO  
6 PROVIDE FOR THE OPEN BURNING OF CROP RESIDUE; DECLARING AN EMERGENCY AND  
7 PROVIDING EFFECTIVE DATES.  
8

9 Be It Enacted by the Legislature of the State of Idaho:

10 SECTION 1. That Section 39-114, Idaho Code, be, and the same is hereby  
11 amended to read as follows:

12 39-114. OPEN BURNING OF CROP RESIDUE. (1) The open burning of crop  
13 residue to develop physiological conditions conducive to increase crop  
14 yields, or to control diseases, insects, pests or weed infestations, shall  
15 be an allowable form of open burning, such that it is expressly authorized  
16 as referenced in section 52-108, Idaho Code, ~~so~~ as long as the open burning  
17 is conducted in accordance with the provisions of this section and the rules  
18 promulgated pursuant to this chapter.

19 (2) Crop residue means any vegetative material remaining in the field  
20 after harvest or vegetative material produced on designated conservation  
21 reserve program (CRP) lands.

22 (3) The open burning of crop residue shall be conducted in the field  
23 where it was generated. A burn may not take place without preapproval from  
24 the department. The department shall not approve a burn if it determines  
25 that ambient air quality levels:

26 (a) Are exceeding, or are expected to exceed, seventy-five percent  
27 (75%) of the level of any national ambient air quality standard (NAAQS)  
28 on any day, provided however, for purposes of the ozone NAAQS, the 2008  
29 standard of .075 parts per million, 73 federal register 16435, 16511  
30 (March 27, 2008) shall apply, and these levels are projected to continue  
31 or recur over at least the next twenty-four (24) hours; or

32 (b) Have reached, or are forecasted to reach and persist at, eighty per-  
33 cent (80%) of the one (1) hour action criteria for particulate matter  
34 pursuant to section 556 of IDAPA 58.01.01, rules for the control of air  
35 pollution in Idaho.

36 The department shall make available to the public, prior to the burn, infor-  
37 mation regarding the date of the burn, location, acreage and crop type to be  
38 burned. If the agricultural community desires to burn more than twenty thou-  
39 sand (20,000) acres annually of bluegrass within the state, that does not in-  
40 clude Indian or tribal lands within the reservation boundaries as recognized  
41 by the federal clean air act, then, prior to approving the burning of the ad-

ditional acres, the department shall complete an air quality review analysis to determine that the ambient air quality levels in this section will be met.

(4) A fee in an amount of two dollars (\$2.00) per acre to be burned shall be paid to the department prior to burning. This fee shall not apply to propane flaming, as defined in the rules promulgated pursuant to this chapter. The department shall remit all fees quarterly to the state treasurer, who shall deposit the moneys in the general fund.

SECTION 2. That Section 39-114, Idaho Code, be, and the same is hereby repealed.

SECTION 3. That Chapter 1, Title 39, Idaho Code, be, and the same is hereby amended by the addition thereto of a NEW SECTION, to be known and designated as Section 39-114, Idaho Code, and to read as follows:

39-114. OPEN BURNING OF CROP RESIDUE. (1) The open burning of crop residue to develop physiological conditions conducive to increase crop yields, or to control diseases, insects, pests or weed infestations, shall be an allowable form of open burning, such that it is expressly authorized as referenced in section 52-108, Idaho Code, as long as the open burning is conducted in accordance with the provisions of this section and the rules promulgated pursuant to this chapter.

(2) Crop residue means any vegetative material remaining in the field after harvest or vegetative material produced on designated conservation reserve program (CRP) lands.

(3) The open burning of crop residue shall be conducted in the field where it was generated. A burn may not take place without preapproval from the department. The department shall not approve a burn if it determines that ambient air quality levels:

(a) Are exceeding, or are expected to exceed, ninety percent (90%) of the ozone national ambient air quality standard (NAAQS) and seventy-five percent (75%) of the level of any other NAAQS on any day, and these levels are projected to continue or recur over at least the next twenty-four (24) hours; or

(b) Have reached, or are forecasted to reach and persist at, eighty percent (80%) of the one (1) hour action criteria for particulate matter pursuant to section 556 of IDAPA 58.01.01, rules for the control of air pollution in Idaho.

The department shall make available to the public, prior to the burn, information regarding the date of the burn, location, acreage and crop type to be burned. If the agricultural community desires to burn more than twenty thousand (20,000) acres annually of bluegrass within the state, that does not include Indian or tribal lands within the reservation boundaries as recognized by the federal clean air act, then, prior to approving the burning of the additional acres, the department shall complete an air quality review analysis to determine that the ambient air quality levels in this section will be met.

(4) A fee in an amount of two dollars (\$2.00) per acre to be burned shall be paid to the department prior to burning. This fee shall not apply to propane flaming, as defined in the rules promulgated pursuant to this chapter. The department shall remit all fees quarterly to the state treasurer, who shall deposit the moneys in the general fund.

1           SECTION 4. An emergency existing therefor, which emergency is hereby  
2 declared to exist, Section 1 of this act shall be in full force and effect on  
3 and after passage and approval. Sections 2 and 3 of this act shall be in full  
4 force and effect on and after February 28, 2018.

**STATEMENT OF PURPOSE**

**RS24817**

Passed in 2008, Idaho Code 39-114 requires DEQ to assess air quality conditions before approving the open burning of crop residue. DEQ must determine that air quality levels are not exceeding 75% of any National Ambient Air Quality Standard (NAAQS) and are not projected to exceed such levels over the next 24 hours prior to approving a crop residue burn. The program is difficult to manage because 75% of the current NAAQS for ozone is close to background ozone concentrations in rural Idaho. There are days when ozone concentrations are high enough to limit crop residue burns on what would otherwise be "good" burn days when burning is not predicted to cause or contribute to a violation of any NAAQS. In late 2015, EPA reduced the NAAQS for ozone which has made it even more difficult to identify burn days that meet all requirements. To address these limitations, DEQ is proposing an increase to the ozone evaluation threshold from 75% to 90%. To account for the time needed to obtain EPA approval for this change, it will be implemented in two stages. For the 2017 burn season, the ozone threshold will remain at the current level or 75% of the 2008 ozone standard. On February 28, 2018, which is the expected date of EPA approval of Idaho's state implementation plan which identifies the change, the 90% threshold of the 2015 ozone standard will become effective. The new threshold will continue to be protective of Idaho's air quality but will also preserve growers' ability to burn crop residue on good burn days when using smoke management best practices.

**FISCAL NOTE**

A revised threshold for ozone will not have any direct fiscal impact on the state General Fund. The change will not impact budgetary resources used by DEQ to implement the crop residue burn program as DEQ already reviews air quality data. This revision will only change the threshold data is evaluated against. The current crop residue burn fee structure outlined in 39-114(4) is not being changed.

**Contact:**

Tiffany Floyd  
 Department of Environmental Quality  
 (208) 373-0552

**DISCLAIMER: This statement of purpose and fiscal note are a mere attachment to this bill and prepared by a proponent of the bill. It is neither intended as an expression of legislative intent nor intended for any use outside of the legislative process, including judicial review (Joint Rule 18).**

Page 1

1 Department of Environmental Quality  
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 4 \* \* \* \* \*  
 5  
 6 Public Hearing  
 7  
 8 REPORTER'S TRANSCRIPT OF PROCEEDINGS  
 9  
 10 before Paula Wilson, Hearing Facilitator  
 11  
 12 IDAPA 58  
 13 DEPARTMENT OF ENVIRONMENTAL QUALITY 58.01.01  
 14 RULES FOR THE CONTROL OF AIR POLLUTION IN IDAHO  
 15 Docket Nos. 58-0101-1601 and 58-0101-1604  
 16 Location  
 17 Department of Environmental Quality  
 18 3 p.m., October 11, 2016  
 19 Conference Room A  
 20 1410 North Hilton  
 21 Boise, Idaho  
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 BROWN, Carl IDEQ..... 3  
 CHIN, Tanya IDEQ..... 3  
 FLOYD, Tiffany IDEQ..... 3

\* \* \* \* \*

Page 3

1 BOISE, IDAHO  
 2 October 11, 2016, 3:00 p.m.  
 3  
 4 HEARING FACILITATOR: Let the record that  
 5 Paula Wilson is the hearing facilitator for this  
 6 proceeding.  
 7 It is 3 p.m. on the 11th day of  
 8 October. The purpose of this hearing is to  
 9 receive comments on Air Quality Rule Dockets  
 10 58-0101-1601 and 58-0101-1604 as required by Idaho  
 11 Code Section 67-5222. Written comments will also  
 12 be accepted at this hearing.  
 13 We are in the DEQ conference center in  
 14 Boise, Idaho. Notice of this hearing appeared in  
 15 the Idaho Administrative Bulletin as required by  
 16 Idaho Code Section 67-5221 on September 7, 2016.  
 17 This publication was timely made, and all  
 18 necessary notice requirements have been met.  
 19 A sign-in sheet is available for you to  
 20 mark whether or not you intend to comment on the  
 21 rule dockets. After a brief statement made by  
 22 DEQ, those of you indicating a desire to comment  
 23 will be allowed an opportunity to present your  
 24 oral comment.  
 25 The commenters are asked to limit the

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1 comments to the subject of Rule Dockets  
 2 58-0101-1601 and 58-0101-1604.  
 3 Because the comments are being  
 4 recorded, I ask that you state your name clearly  
 5 and provide the spelling if necessary.  
 6 At this time DEQ will make its  
 7 statement. And I want to say that because the two  
 8 documents are related, that DEQ's statement will  
 9 cover both rule dockets, and also the comments can  
 10 be -- it's all going to be in the same transcript,  
 11 so it doesn't have to be there's this and there's  
 12 that. So just so you know that.  
 13 Okay. Go ahead.  
 14  
 15 MARY ANDERSON,  
 16 appeared and gave the following statement:  
 17 MS. ANDERSON: My name is Mary Anderson. I  
 18 am the Mobile and Area Source Program Manager for  
 19 the Idaho Department of Environmental Quality's  
 20 Air Quality Division. The purpose of this hearing  
 21 is to gather public comments on proposed Rule  
 22 Docket Nos. 58-0101-1601 and 58-0101-1604.  
 23 Through the negotiated rulemaking  
 24 process, DEQ developed a proposed rule that gives  
 25 DEQ the authority to allow crop residue burning

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1 when ozone levels are not exceeding, or expected  
 2 to exceed, 90 percent rather than 75 percent of  
 3 the ozone NAAQS. This new 90 percent level is  
 4 still protective of the ozone NAAQS, and also  
 5 provides farmers the ability to burn while  
 6 following smoke management best practices.  
 7 This rule will be promulgated under  
 8 Docket No. 58-0101-1601. As an outgrowth of the  
 9 negotiations, DEQ also developed an interim rule  
 10 that allows the CRB Program to continue operating  
 11 under the 2008 ozone NAAQS until EPA approves the  
 12 new 90 percent ozone level in a revised State  
 13 Implementation Plan. This rule will be  
 14 promulgated separately under Docket  
 15 No. 58-0101-1604.  
 16 HEARING FACILITATOR: Okay. So far the  
 17 person we have that is going to make comments,  
 18 Marc Fleisher, and it says he is with Save Our  
 19 Summers Northwest --  
 20 MR. FLEISHER: Yes.  
 21 HEARING FACILITATOR: He will comment on  
 22 both documents. Go ahead.  
 23 ///  
 24 ///  
 25 ///

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1 and the growers, that this rule be withdrawn.  
 2 That's the content of my statement.  
 3 HEARING FACILITATOR: Okay. Thank you.  
 4 MR. FLEISHER: How long is this meeting  
 5 open?  
 6 HEARING FACILITATOR: We will keep it open  
 7 until at least 3:30 or so.  
 8 (Recess.)  
 9 HEARING FACILITATOR: It is 3:30 p.m., and  
 10 the hearing is now closed.  
 11 (3:31 p.m. The proceedings adjourned.)  
 12  
 13  
 14 \* \* \* \* \*  
 15  
 16  
 17  
 18  
 19  
 20  
 21  
 22  
 23  
 24  
 25

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1 MARC FLEISHER,  
 2 appeared and gave the following statement:  
 3 MR. FLEISHER: First of all, Mary, hi.  
 4 MS. ANDERSON: Hi.  
 5 MR. FLEISHER: She is the only person maybe  
 6 that I know in this room.  
 7 My name is Marc Fleisher. I'm with  
 8 Save Our Summers Northwest.  
 9 And I am, up until the last meeting of  
 10 the Crop Residue Burning Advisory Board, I was a  
 11 member of that Board. My place was taken by  
 12 Austin Hopkins of the Idaho Conservation League.  
 13 So my statement is that, my  
 14 understanding from talking with Patty Gora-McRavin  
 15 is that at one point there was what you could call  
 16 a gentleman's agreement that in return for  
 17 loosening the requirements for ozone, that there  
 18 would be a corresponding and matching tightening  
 19 of the requirements for PM 2.5 NAAQS. And it  
 20 appears that the current rule that's being  
 21 promulgated does not do that.  
 22 I think that there is no good science  
 23 that allows this rule to go forward, and my  
 24 recommendation would be that since it ignored the  
 25 advise of both those concerned with public health

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1 REPORTER'S CERTIFICATE  
 2  
 3  
 4  
 5 I, Dianne E. Cromwell, Court Reporter, a  
 6 Notary Public, do hereby certify:  
 7 That I am the reporter who took the  
 8 proceedings had in the above-entitled action in  
 9 machine shorthand and thereafter the same was  
 10 reduced into typewriting under my direct  
 11 supervision; and  
 12 That the foregoing transcript contains a  
 13 full, true, and accurate record of the proceedings  
 14 had in the above and foregoing cause, which was  
 15 heard at BOISE, Idaho.  
 16 IN WITNESS WHEREOF, I have hereunto set  
 17 my hand November 2, 2016.  
 18  
 19  
 20  
 21  
 22 Dianne E. Cromwell, Court Reporter  
 23 CSR No. 21  
 24  
 25

<p style="text-align: center;"><b>A</b></p> <p>ability 5:5  <b>above-entitled</b> 8:8  <b>accepted</b> 3:12  <b>accurate</b> 8:13  <b>action</b> 8:8  <b>adjourned</b> 7:11  <b>Administrative</b>  3:15  <b>advise</b> 6:25  <b>Advisory</b> 6:10  <b>agreement</b> 6:16  <b>ahead</b> 4:13 5:22  <b>Air</b> 1:10 3:9 4:20  <b>allow</b> 4:25  <b>allowed</b> 3:23  <b>allows</b> 5:10 6:23  <b>Anderson</b> 2:4 4:15  4:17,17 6:4  <b>appeared</b> 3:14 4:16  6:2  <b>appears</b> 6:20  <b>approves</b> 5:11  <b>Area</b> 4:18  <b>asked</b> 3:25  <b>ASLETT</b> 2:11  <b>Austin</b> 6:12  <b>authority</b> 4:25  <b>available</b> 3:19</p>	<p>clearly 4:4  <b>closed</b> 7:10  <b>Code</b> 3:11,16  <b>comment</b> 3:20,22  3:24 5:21  <b>commenters</b> 3:25  <b>comments</b> 3:9,11  4:1,3,9,21 5:17  <b>concerned</b> 6:25  <b>conference</b> 1:13  3:13  <b>Conservation</b> 6:12  <b>contains</b> 8:12  <b>content</b> 7:2  <b>continue</b> 5:10  <b>CONTROL</b> 1:10  <b>corresponding</b> 6:18  <b>Court</b> 8:5,21  <b>cover</b> 4:9  <b>CRB</b> 5:10  <b>Cromwell</b> 1:22 8:5  8:21  <b>crop</b> 4:25 6:10  <b>CSR</b> 1:22 8:22  <b>current</b> 6:20</p>	<p><b>EPA</b> 5:11  <b>exceed</b> 5:2  <b>exceeding</b> 5:1  <b>expected</b> 5:1</p> <p style="text-align: center;"><b>F</b></p> <p><b>F</b> 8:1  <b>facilitator</b> 1:8 3:4,5  5:16,21 7:3,6,9  <b>far</b> 5:16  <b>farmers</b> 5:5  <b>First</b> 6:3  <b>Fleisher</b> 2:5 5:18  5:20 6:1,3,5,7 7:4  <b>FLOYD</b> 2:12  <b>following</b> 4:16 5:6  6:2  <b>foregoing</b> 8:12,14  <b>forward</b> 6:23  <b>full</b> 8:13</p>	<p>2:12  <b>ignored</b> 6:24  <b>Implementation</b>  5:13  <b>indicating</b> 3:22  <b>intend</b> 3:20  <b>interim</b> 5:9</p> <p style="text-align: center;"><b>J</b></p> <p style="text-align: center;"><b>K</b></p> <p><b>K</b> 2:2  <b>keep</b> 7:6  <b>know</b> 4:12 6:6</p> <p style="text-align: center;"><b>L</b></p> <p><b>L</b> 2:8  <b>League</b> 6:12  <b>level</b> 5:3,12  <b>levels</b> 5:1  <b>limit</b> 3:25  <b>Location</b> 1:12  <b>long</b> 7:4  <b>loosening</b> 6:17</p>	<p><b>Nos</b> 1:11 4:22  <b>Notary</b> 8:6  <b>notice</b> 3:14,18  <b>November</b> 8:17</p> <p style="text-align: center;"><b>O</b></p> <p><b>O</b> 2:8 8:1  <b>October</b> 1:13 3:2,8  <b>Okay</b> 4:13 5:16 7:3  <b>open</b> 7:5,6  <b>operating</b> 5:10  <b>opportunity</b> 3:23  <b>oral</b> 3:24  <b>outgrowth</b> 5:8  <b>ozone</b> 5:1,3,4,11,12  6:17</p>
<p style="text-align: center;"><b>B</b></p> <p><b>best</b> 5:6  <b>Board</b> 6:10,11  <b>Boise</b> 1:14 3:1,14  8:15  <b>brief</b> 3:21  <b>BROWN</b> 2:11  <b>Bulletin</b> 3:15  <b>burn</b> 5:5  <b>burning</b> 4:25 6:10</p>	<p style="text-align: center;"><b>D</b></p> <p><b>day</b> 3:7  <b>Department</b> 1:1,10  1:12 4:19  <b>DEQ</b> 3:13,22 4:6  4:24,25 5:9  <b>DEQ's</b> 4:8  <b>desire</b> 3:22  <b>developed</b> 4:24 5:9  <b>Dianne</b> 1:22 8:5,21  <b>direct</b> 8:10  <b>Division</b> 4:20  <b>Docket</b> 1:11 4:22  5:8,14  <b>dockets</b> 3:9,21 4:1  4:9  <b>documents</b> 4:8 5:22</p>	<p style="text-align: center;"><b>G</b></p> <p><b>gather</b> 4:21  <b>gentleman's</b> 6:16  <b>gives</b> 4:24  <b>go</b> 4:13 5:22 6:23  <b>going</b> 4:10 5:17  <b>good</b> 6:22  <b>Gora-McRavin</b>  6:14  <b>growers</b> 7:1</p> <p style="text-align: center;"><b>H</b></p> <p><b>hand</b> 8:17  <b>health</b> 6:25  <b>heard</b> 8:15  <b>hearing</b> 1:6,8 3:4,5  3:8,12,14 4:20  5:16,21 7:3,6,9,10  <b>hereunto</b> 8:16  <b>hi</b> 6:3,4  <b>Hilton</b> 1:14  <b>Hopkins</b> 6:12</p>	<p style="text-align: center;"><b>M</b></p> <p><b>machine</b> 8:9  <b>management</b> 5:6  <b>Manager</b> 4:18  <b>Marc</b> 2:5 5:18 6:1,7  <b>mark</b> 3:20  <b>Mary</b> 2:4 4:15,17  6:3  <b>matching</b> 6:18  <b>meeting</b> 6:9 7:4  <b>member</b> 6:11  <b>met</b> 3:18  <b>Mobile</b> 4:18</p>	<p style="text-align: center;"><b>P</b></p> <p><b>P</b> 2:2,8 8:1  <b>p.m</b> 1:13 3:2,7 7:9  7:11  <b>PAGE</b> 2:4,10  <b>Patty</b> 6:14  <b>Paula</b> 1:8 3:5  <b>percent</b> 5:2,2,3,12  <b>person</b> 5:17 6:5  <b>place</b> 6:11  <b>Plan</b> 5:13  <b>PM</b> 6:19  <b>point</b> 6:15  <b>POLLUTION</b> 1:10  <b>practices</b> 5:6  <b>present</b> 3:23  <b>proceeding</b> 3:6  <b>proceedings</b> 1:7  7:11 8:8,13  <b>process</b> 4:24  <b>Program</b> 4:18 5:10  <b>promulgated</b> 5:7  5:14 6:21  <b>proposed</b> 4:21,24  <b>protective</b> 5:4  <b>provide</b> 4:5  <b>provides</b> 5:5  <b>public</b> 1:6 4:21  6:25 8:6  <b>publication</b> 3:17  <b>purpose</b> 3:8 4:20</p>
<p style="text-align: center;"><b>C</b></p> <p><b>C</b> 8:1,1  <b>call</b> 6:15  <b>Carl</b> 2:11  <b>cause</b> 8:14  <b>center</b> 3:13  <b>certify</b> 8:6  <b>CHIN</b> 2:12</p>	<p style="text-align: center;"><b>E</b></p> <p><b>E</b> 1:22 2:2,2,8,8 8:1  8:1,1,1,5,21  <b>Environmental</b> 1:1  1:10,12 4:19</p>	<p style="text-align: center;"><b>I</b></p> <p><b>Idaho</b> 1:10,14 3:1  3:10,14,15,16  4:19 6:12 8:15  <b>IDAPA</b> 1:9  <b>IDEQ</b> 2:4,11,11,12</p>	<p style="text-align: center;"><b>N</b></p> <p><b>N</b> 2:8  <b>NAAQS</b> 5:3,4,11  6:19  <b>name</b> 4:4,17 6:7  <b>necessary</b> 3:18 4:5  <b>negotiated</b> 4:23  <b>negotiations</b> 5:9  <b>new</b> 5:3,12  <b>North</b> 1:14  <b>Northwest</b> 5:19 6:8</p>	

<p><b>Q</b></p> <p>Quality 1:1,10,12 3:9 4:20 Quality's 4:19</p> <hr/> <p><b>R</b></p> <p>R 2:2,8 8:1,1,1 R' 8:1 receive 3:9 Recess 7:8 recommendation 6:24 record 3:4 8:13 recorded 4:4 reduced 8:10 related 4:8 Reported 1:21 reporter 8:5,7,21 REPORTER'S 1:7 required 3:10,15 requirements 3:18 6:17,19 residue 4:25 6:10 return 6:16 revised 5:12 room 1:13 6:6 rule 3:9,21 4:1,9,21 4:24 5:7,9,13 6:20 6:23 7:1 rulemaking 4:23 RULES 1:10</p> <hr/> <p><b>S</b></p> <p>S 2:2,2,8,8 8:1 Save 2:5 5:18 6:8 says 5:18 science 6:22 Section 3:11,16 separately 5:14 September 3:16 set 8:16 sheet 3:19 shorthand 8:9 sign-in 3:19 smoke 5:6 Source 4:18 spelling 4:5 state 4:4 5:12 statement 3:21 4:7</p>	<p>4:8,16 6:2,13 7:2 subject 4:1 Summers 2:5 5:19 6:8 supervision 8:11</p> <hr/> <p><b>T</b></p> <p>T 2:8 8:1,1,1 taken 6:11 talking 6:14 Tami 2:11 Tanya 2:12 Thank 7:3 think 6:22 Tiffany 2:12 tightening 6:18 time 4:6 timely 3:17 transcript 1:7 4:10 8:12 true 8:13 two 4:7 typewriting 8:10</p> <hr/> <p><b>U</b></p> <p>understanding 6:14</p> <hr/> <p><b>V</b></p> <hr/> <p><b>W</b></p> <p>want 4:7 WHEREOF 8:16 Wilson 1:8 3:5 withdrawn 7:1 WITNESS 8:16 Written 3:11</p> <hr/> <p><b>X</b></p> <hr/> <p><b>Y</b></p> <hr/> <p><b>Z</b></p> <hr/> <p><b>0</b></p> <hr/> <p><b>1</b></p> <p>11 1:13 3:2 11th 3:7 1410 1:14</p>	<p><b>2</b></p> <p>2 8:17 2.5 6:19 2008 5:11 2016 1:13 3:2,16 8:17 21 1:22 8:22</p> <hr/> <p><b>3</b></p> <p>3 1:13 2:11,11,12 2:12 3:7 3:00 3:2 3:30 7:7,9 3:31 7:11</p> <hr/> <p><b>4</b></p> <p>4 2:4</p> <hr/> <p><b>5</b></p> <p>58 1:9 58-0101-1601 1:11 3:10 4:2,22 5:8 58-0101-1604 1:11 3:10 4:2,22 5:15 58.01.01 1:10</p> <hr/> <p><b>6</b></p> <p>6 2:5 67-5221 3:16 67-5222 3:11</p> <hr/> <p><b>7</b></p> <p>7 3:16 75 5:2</p> <hr/> <p><b>8</b></p> <hr/> <p><b>9</b></p> <p>90 5:2,3,12</p>		
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Date and Location: 10/11/16 - Boise, Idaho

Name and Email Address	Affiliation	Do you wish to comment on Rule Docket 58-0101-1601?  90% Ozone NAAQS	Do you wish to comment on Rule Docket 58-0101-1604?  Interim Rule
MARC FLEISHER MARC.FLEISHER@GMAIL.COM	SOS NW SAVE OUR SUMMERS NW	YES	YES
Tami Aslett	IDEQ		
Carl Brown	IDEQ		
Mary Anderson	DEQ		
Tamya Chin	DEQ		
Tiffany Floyd	DEQ		

**PRELIMINARY DRAFT RULE:** The preliminary draft rule can be obtained at [www.deq.idaho.gov/58-0101-1601](http://www.deq.idaho.gov/58-0101-1601) or by contacting Paula Wilson at [paula.wilson@deq.idaho.gov](mailto:paula.wilson@deq.idaho.gov), (208) 373-0418.

**DESCRIPTIVE SUMMARY:** The crop residue burning rules have been in effect since 2008. One aspect of the rule requires that, prior to approving a crop residue burn, DEQ determines that 1) air quality is not exceeding 75% of any National Ambient Air Quality Standards (NAAQS), and 2) air quality is not projected to exceed such level during the next 24 hours. Fine particulate matter (PM<sub>2.5</sub>) is the pollutant most directly affected by crop residue burning. There are days when PM<sub>2.5</sub> concentrations are not a concern, but ozone concentrations exceed or are projected to exceed 75% of the ozone NAAQS. As a result, crop residue burns are not approvable despite the fact that 1) the weather conditions exhibit good smoke dispersion characteristics, and 2) DEQ technical staff expects the burns to have minimal impact on ambient ozone concentrations (NAAQS). Therefore, burning may not be allowed on good burn days even when the burn is not predicted to cause or significantly contribute to a violation of the ozone NAAQS. The goal of this rulemaking is to develop a more appropriate threshold number for ozone that is still protective of the ozone NAAQS, but also providing farmers the ability to burn while following smoke management best practices. Additionally, threshold numbers for other pollutants, including PM<sub>2.5</sub>, may be revised.

The text of the rule will be drafted by DEQ in conjunction with a negotiating committee made up of persons having an interest in the development of this rule. Farmers desiring to burn crop residue, members of the regulated community who may be subject to Idaho's air quality rules, special interest groups, Idaho State Department of Agriculture, tribes, public officials, and members of the public who have an interest in the regulation of air emissions from sources in Idaho may be interested in participating in this rulemaking.

Upon conclusion of negotiations, DEQ intends to publish a proposed rule for public comment in the summer of 2016. DEQ intends to present the final proposal to the Idaho Board of Environmental Quality (Board) in May 2017 for adoption of a temporary/pending rule. However, before DEQ presents this rule docket to the Board for adoption, it will be necessary to revise Idaho Code § 39-114. Proposed legislation will be drafted in conjunction with the negotiated rulemaking and will be submitted to the 2017 Idaho Legislature. If the legislation is enacted and the temporary/pending rule is adopted by the Board, DEQ will develop a revised State Implementation Plan (SIP) and submit the SIP to the U.S. Environmental Protection Agency (EPA) for approval. The rule revisions made under this docket will not be implemented until approved by EPA.

**ASSISTANCE ON TECHNICAL QUESTIONS AND SUBMISSION OF WRITTEN COMMENTS:** For assistance on questions concerning this rulemaking, contact Mary Anderson at [mary.anderson@deq.idaho.gov](mailto:mary.anderson@deq.idaho.gov) or (208) 373-0202.

For those who cannot participate by attending the scheduled meetings, written comments may be submitted by mail, fax or email at the address below. Written comments on the preliminary draft rule must be received by May 25, 2016. For information regarding submission of written comments on subsequent drafts of the negotiated rule, to receive copies of submitted written comments, and to receive the most recent version of the draft negotiated rule, contact the undersigned.

Dated this 4th day of May, 2016.

Paula J. Wilson  
Hearing Coordinator  
Department of Environmental Quality  
1410 N. Hilton, Boise, Idaho 83706-1255  
Tel: (208) 373-0418 / Fax: (208) 373-0481  
[paula.wilson@deq.idaho.gov](mailto:paula.wilson@deq.idaho.gov)

**IDAPA 58 - DEPARTMENT OF ENVIRONMENTAL QUALITY**

**58.01.01 - RULES FOR THE CONTROL OF AIR POLLUTION IN IDAHO**

**DOCKET NO. 58-0101-1601**

**NOTICE OF INTENT TO PROMULGATE RULES - NEGOTIATED RULEMAKING**

**AUTHORITY:** In compliance with Section 67-5220, Idaho Code, and IDAPA 58.01.23, Rules of Administrative Procedure Before the Board of Environmental Quality, Sections 810 through 815, notice is hereby given that this agency intends to promulgate a rule and desires public participation before publishing a proposed rule. This rulemaking action is authorized by Sections 39-105, 39-107, and 39-114, Idaho Code.

**METHOD OF PARTICIPATION:** Those interested in participating in the negotiated rulemaking process are encouraged to attend the meetings at one of the following locations. The public may participate by telephone and web conferencing at any of the meeting locations or with individual connections. Individuals interested in participating by telephone and web conferencing should contact the undersigned by the dates provided in the table below. For those who cannot participate by attending the meetings, information for submitting written comments is provided at the end of this notice.

**MEETING SCHEDULE:** The negotiated rulemaking meetings will be held as follows. Additional meetings will be scheduled if necessary.

<b>*ORIGINATING LOCATION – LIVE MEETING*</b> DEQ State Office Conference Center 1410 N. Hilton, Boise, Idaho	
<b>*TELEPHONE &amp; WEB CONFERENCE LOCATIONS*</b>	
DEQ Coeur d’Alene Regional Office 2110 Ironwood Parkway Coeur d’Alene, Idaho	DEQ Lewiston Regional Office 1118 F Street Lewiston, Idaho
DEQ Twin Falls Regional Office 650 Addison Avenue West, Suite 110 Twin Falls, Idaho	DEQ Pocatello Regional Office 444 Hospital Way #300 Pocatello, Idaho
DEQ Idaho Falls Regional Office 900 N. Skyline, Suite B Idaho Falls, Idaho	
<b>*Meeting Date &amp; Times*</b>	<b>*Telephone &amp; Web Conferencing Information*</b>
Wednesday, May 18, 2016 9:00 a.m. - 12:30 p.m. (MT)	Contact the undersigned by <i>May 11, 2016</i> to make arrangements for participation by telephone and web conferencing
Thursday, June 23, 2016 9:00 a.m. - 12:30 p.m. (MT)	Contact the undersigned by <i>June 16, 2016</i> to make arrangements for participation by telephone and web conferencing

# MEETING SIGN-IN SHEET

Meeting Title: NEGOTIATED RULEMAKING

Rules for the Control of Air Pollution in Idaho, Docket No. 58-0101-1601

Meeting Date and Location: 6/23/16 - Coeur d'Alene, Idaho

Phone participation: AT&T call in number 646-364-1285/participant code 719448

Name	Affiliation	E-Mail Address
RALPH PAUL	IDEG - CRO	

**MEETING SIGN-IN SHEET**

Meeting Title: NEGOTIATED RULEMAKING  
 Rules for the Control of Air Pollution in Idaho, Docket No. 58-0101-1601  
 Meeting Date and Location: 6/23/16 - Lewiston, Idaho  
 Phone participation: AT&T call in number 646-364-1285/participant code 719448

Name	Affiliation	E-Mail Address
Amber Rand	DEQ	
Dennis Behler	DEQ	
Gayle Osburn	CHS Farmeland	Gayle.Osburn@chsinnc.com

## MEETING SIGN-IN SHEET

Meeting Title: NEGOTIATED RULEMAKING  
 Rules for the Control of Air Pollution in Idaho, Docket No. 58-0101-1601  
 Meeting Date and Location: 6/23/16 – Twin Falls, Idaho  
 Phone participation: AT&T call in number 646-364-1285/participant code 719448

Name	Affiliation	E-Mail Address
Angie Haddock	IDEQ - Twin Falls CO	angela-haddock@deq.idaho.gov
David Patrick	CRB Board member Southern Idaho Farmer	davidpatrick72@gmail.com
Bobby Dye	DEQ - TFRD	bobby.dye@deq.idaho.gov



**MEETING SIGN-IN SHEET**

Meeting Title: NEGOTIATED RULEMAKING  
 Rules for the Control of Air Pollution in Idaho, Docket No. 58-0101-1601  
 Meeting Date and Location: 6/23/16 – Idaho Falls, Idaho  
 Phone participation: AT&T call in number 646-364-1285/participant code 719448

Name	Affiliation	E-Mail Address
Roger Sauer	IDEQ	Roger.Sauer@DEQ.Idaho.gov
	IDEQ	Rensay.Owen@deg.idaho.gov

## MEETING SIGN-IN SHEET

**Meeting Title: NEGOTIATED RULEMAKING**

**Rules for the Control of Air Pollution in Idaho, Docket No. 58-0101-1601**

**Meeting Date and Location: 6/23/16 – Boise, Idaho**

**Phone participation: AT&T call in number 646-364-1285/host code 577254 (participant code 719448)**

Name	Affiliation	E-Mail Address
Phone participation:		
Stacey Satterlee	Idaho Grain Producers Association	
Roger Batt	Idaho-Eastern Oregon Seed Association	
Erik Olson	CRB Advisory Committee	

Meeting Title: NEGOTIATED RULEMAKING  
Rules for the Control of Air Pollution in Idaho, Docket No. 58-0101-1601  
Meeting Date and Location: 6/23/16 – Boise, Idaho

Name	Affiliation	E-Mail Address
Tiffany Floyd	DEQ	
Tami Aslett	DEQ	
Morrie Lewis	DEQ	
Lisa Carlson	AG's - DEQ	
Mary Anderson	DEQ	
Tanya Chin	DEQ	

Meeting Title: NEGOTIATED RULEMAKING  
 Rules for the Control of Air Pollution in Idaho, Docket No. 58-0101-1601  
 Meeting Date and Location: 6/23/16 – Boise, Idaho

Name	Affiliation	E-Mail Address
Benjamin Kelly	Inspere Prairie Grassowers Association	benjamin@angibbo.com
Alex Heath	EPA	heath.alex@epa.gov
Austin Hopkins	JLL	ahopkins@idahoconservation.org
Patti Gora McRum	CRB	Patti.gora@gmail.com
Craig Dietrich	IDHW	dietrich@dhw.idaho.gov
Carl Brown	IDEG	
Sean Ellis	capital press	sellis@capitalpress.com

Meeting Title: NEGOTIATED RULEMAKING  
 Rules for the Control of Air Pollution in Idaho, Docket No. 58-0101-1601  
 Meeting Date and Location: 6/23/16 – Boise, Idaho

Name	Affiliation	E-Mail Address
Courtney Washburn	Conservation Voters for Idaho	courtney@cuidaho.org
Brad Jensen	Idaho Farm Bureau	bjensen@idaho-fb.org
Justin McLeod	NPGC	Jrmax2851@live.com
Paula Wilson	DEQ	

# MEETING SIGN-IN SHEET

Meeting Title: NEGOTIATED RULEMAKING

Rules for the Control of Air Pollution in Idaho, Docket No. 58-0101-1601

Meeting Date and Location: 7/27/16 – Coeur d'Alene, Idaho

Phone participation: AT&T call in number 646-364-1285/participant code 719448

Name	Affiliation	E-Mail Address
Mark Boyle	Idaho DSP	

**MEETING SIGN-IN SHEET**

Meeting Title: NEGOTIATED RULEMAKING  
 Rules for the Control of Air Pollution in Idaho, Docket No. 58-0101-1601  
 Meeting Date and Location: 7/27/16 - Lewiston, Idaho  
 Phone participation: AT&T call in number 646-364-1285/participant code 719448

Name	Affiliation	E-Mail Address
MARK CAVILL	Lewiston DEQ	Mark.Cavill@deq.idaho.gov
Barry Green	Lewiston DEQ	Barry.Green@deq.idaho.gov
Gayle Osburn	CHS Pamelanet	Gayle.Osburn@chsinc.com
Dennis Behler	IDEG	Dennis.Behler@deo.idaho.gov

**MEETING SIGN-IN SHEET**

Meeting Title: NEGOTIATED RULEMAKING

Rules for the Control of Air Pollution in Idaho, Docket No. 58-0101-1601

Meeting Date and Location: 7/27/16 -- Twin Falls, Idaho

Phone participation: AT&T call in number 646-364-1285/participant code 719448

Name	Affiliation	E-Mail Address
Angie Haddock	TFRO-DEQ	angela.haddock@deq.idaho.gov
Bobby Day	TFRO	bobby.day@deq.idaho.gov

**MEETING SIGN-IN SHEET**

Meeting Title: NEGOTIATED RULEMAKING  
Rules for the Control of Air Pollution in Idaho, Docket No. 58-0101-1601  
Meeting Date and Location: 7/27/16 – Pocatello, Idaho  
Phone participation: AT&T call in number 646-364-1285/participant code 719448

Name	Affiliation	E-Mail Address
Melissa Gibbs	DEQ - PRO	Melissa.gibbs@dep.idaho.gov



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**Rules for the Control of Air Pollution in Idaho, Docket No. 58-0101-1601**  
**Meeting Date and Location: 7/27/16 – Boise, Idaho**  
**Phone participation: AT&T call in number 646-364-1285/host code 577254 (participant code 719448)**

Name	Affiliation	E-Mail Address
Phone participation:		
Kevin Greenleaf	Kootenai Tribe	
Stacey Satterlee	Idaho Grain Producers Association	
Cory Kress	Idaho Grain Producers Association/ CRB Advisory Committee	
Erik Olson	Idaho Grain Producers Association/ CRB Advisory Committee	
Andrea Boyer	Nez Perce Tribe	
Roger Batt	Idaho-Eastern Oregon Seed Association	
Jann Higdem	Shoshone County Rep	
Randall Ruddick	EPA Region 10	

Meeting Title: NEGOTIATED RULEMAKING  
Rules for the Control of Air Pollution in Idaho, Docket No. 58-0101-1601  
Meeting Date and Location: 7/27/16 - Boise, Idaho

Name	Affiliation	E-Mail Address
Paula Wilson	DEQ	
Mary Anderson	DEQ	
Tanya Chin	DEQ	
Carl Brown	DEQ	
DAVID LUFT	DEQ	
Pascale Warren	DEQ	
Lisa Carlson	DEQ	

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Name	Affiliation	E-Mail Address
Courtney Washburn	Conservation Voters for Idaho	courtney@videho.org
Austin Hopkins	Idaho Conservation League	ahopkins@idahoconservation.org
Rachel Aramburu	Idaho Water Users	rachel.aramburu@greenmtn.edu
Justin McLeod	NPEE	JMac2851@live.com
Benjamin Kelly	NP66A	benjaminh@amgidoaho.com
Braden Jensen	Idaho Farm Bureau	bjensen@idahofb.org
Tamara Aslett	IDEG	

Meeting Title: NEGOTIATED RULEMAKING  
 Rules for the Control of Air Pollution in Idaho, Docket No. 58-0101-1601  
 Meeting Date and Location: 7/27/16 – Boise, Idaho

Name	Affiliation	E-Mail Address
Craig Dietrich	BHW	dietrich@dhw.idaho.gov
Capital Press ↔	Sean Ellis	Capital

**MEETING SIGN-IN SHEET**

Meeting Title: NEGOTIATED RULEMAKING  
Rules for the Control of Air Pollution in Idaho, Docket No. 58-0101-1601  
Meeting Date and Location: 5/18/16 – Coeur d'Alene, Idaho  
Phone participation: AT&T call in number 646-364-1285/participant code 719448

Name	Affiliation	E-Mail Address
RALPH PAUL	IDEQ	

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 Rules for the Control of Air Pollution in Idaho, Docket No. 58-0101-1601  
 Meeting Date and Location: 5/18/16 – Lewiston, Idaho  
 Phone participation: AT&T call in number 646-364-1285/participant code 719448

Name	Affiliation	E-Mail Address
Dennis Behler	IDEQ	dennis.behler@dea.idaho.gov
Amber Rand	IDEQ	amber.rand@deg.idaho.gov

**MEETING SIGN-IN SHEET**

Meeting Title: **NEGOTIATED RULEMAKING**  
 Rules for the Control of Air Pollution in Idaho, Docket No. 58-0101-1601  
 Meeting Date and Location: **5/18/16 – Twin Falls, Idaho**  
 Phone participation: **AT&T call in number 646-364-1285/participant code 719448**

Name	Affiliation	E-Mail Address
Ed Anderson	DEQ-PRO	
David Patrick	Farmer S&RB Advisory Board	
Tamara Aslett	IDEO	tamara.aslett@deq.idaho.gov

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Meeting Title: NEGOTIATED RULEMAKING

Rules for the Control of Air Pollution in Idaho, Docket No. 58-0101-1601

Meeting Date and Location: 5/18/16 – Pocatello, Idaho

Phone participation: AT&T call in number 646-364-1285/participant code 719448

Name	Affiliation	E-Mail Address
Tom EDWARDS	IDEQ	thomas.edwards@ideq.idaho.gov deg.idaho.gov
Melissa Gibbs	IDEQ	Melissa.gibbs@deg.idaho.gov

**MEETING SIGN-IN SHEET**

Meeting Title: NEGOTIATED RULEMAKING  
 Rules for the Control of Air Pollution in Idaho, Docket No. 58-0101-1601  
 Meeting Date and Location: 5/18/16 – Idaho Falls, Idaho  
 Phone participation: AT&T call in number 646-364-1285/participant code 719448

Name	Affiliation	E-Mail Address
Rensay Owen	IDEQ	<del>Rensay.Owen@state.idaho.gov</del> Rensay.Owen@deg.idaho.gov

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Name	Affiliation	E-Mail Address
Phone participation:  Mike McGown Erik Olson	EPA Region 10	

Meeting Title: NEGOTIATED RULEMAKING  
 Rules for the Control of Air Pollution in Idaho, Docket No. 58-0101-1601  
 Meeting Date and Location: 5/18/16 - Boise, Idaho

Name	Affiliation	E-Mail Address
Braiden Jensen	Idaho Farm Bureau Federation	bjensen@idahofb.org
Craig Dietrich	IDHW	dietrich@dhw.idaho.gov
Austin Hopkins	Idaho Conservation League	ahopkins@idahiconservation.org
Kaye Platt	Idaho Eastern - Oregon Seed Association Innate Valley Water Users Association	kaye@amg.idaho.com
Sean Ellis	Capital Press	sellis@capitalpress.com
Patti Gora-McRavin	CRB Board	pattigora@gmail.com
Benjamin Kelly	Nezperce Prairie Grass Growers Association	benjamin@amg.idaho.com

Meeting Title: NEGOTIATED RULEMAKING  
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 Meeting Date and Location: 5/18/16 - Boise, Idaho

Name	Affiliation	E-Mail Address
SONJA Schriever	FRATTW	schrievs@dhw.idaho.gov
TOM TURCO	Boise State University	Thomasturco@boisestate.edu
Craig Jones	Idaho Power	file
Stacey Satterler	Idaho Grain Producers Assn	ssatterler@idahograin.org
Gayle Beatt	Idaho Legislature	gbeatt@house.idaho.gov
Carl Brown	Idaho DEQ	
Norke Padon	Idaho DES.	

Meeting Title: NEGOTIATED RULEMAKING  
 Rules for the Control of Air Pollution in Idaho, Docket No. 58-0101-1601  
 Meeting Date and Location: 5/18/16 – Boise, Idaho

Name	Affiliation	E-Mail Address
KAI ELBERTSON	US Public Health Service	k26@cdc.gov
Pascale Warren	DEQ	pascale.warren@deg.idaho.gov
Rong Li	DEQ	Rong.Li@deg.idaho.gov
Tiffany Floyd	DEQ	tiffany.floyd@deg.idaho.gov
Mary Anderson	DEQ	
Morie Lewis	DEQ	
Lisa Carlson		
Paula Wilson	AG / DEQ	

**MEETING SIGN-IN SHEET**

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 Meeting Date and Location: 7/20/16 – Coeur d'Alene, Idaho  
 Phone participation: AT&T call in number 646-364-1285/participant code 719448

Name	Affiliation	E-Mail Address
RALPH PAUL	IDEG	
Jann Higdem	Shoshone County Rep	jhigdem57@gmail.com
Larry Domingo	Mining/Land Dev	fixitree@gmail.com

**MEETING SIGN-IN SHEET**

Meeting Title: NEGOTIATED RULEMAKING  
 Rules for the Control of Air Pollution in Idaho, Docket No. 58-0101-1601  
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 Phone participation: AT&T call in number 646-364-1285/participant code 719448

Name	Affiliation	E-Mail Address
Gayle Osburn	CHS Pruneland	Gayle.Osburn@chsinc.com
Mark Carll	Lewiston DE&C	Mark.Carll@Doc.idaho.gov
Dennis Belter	IDEQ	dennis.belter@leq.idaho.gov

**MEETING SIGN-IN SHEET**

Meeting Title: NEGOTIATED RULEMAKING

Rules for the Control of Air Pollution in Idaho, Docket No. 58-0101-1601

Meeting Date and Location: 7/20/16 -- Twin Falls, Idaho

Phone participation: AT&T call in number 646-364-1285/participant code 719448

Name	Affiliation	E-Mail Address
Angie Haddock	TFR-DEQ	angela.haddock@deg.idaho.gov
Ed Anderson	PRO-DEQ	
David Patrick	CR Board member Farmer	

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 Rules for the Control of Air Pollution in Idaho, Docket No. 58-0101-1601  
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Name	Affiliation	E-Mail Address
Melissa Gibbs	DEA - PRO	Melissa.gibbs@deq.idaho.gov
Bred Jensen	Idaho Farm Bureau	<del>bjensen@idaho.org</del> bjensen@idaho.org

**MEETING SIGN-IN SHEET**

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Name	Affiliation	E-Mail Address
Rensay Owen	IDEQ – IFRO	Rensay.Owen@deq.idaho.gov

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Name	Affiliation	E-Mail Address
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Kevin Greenleaf	Kootenai Tribe	
Cory Kress	IGPA/CRB	
Andrea Boyer	Nez Perce Tribe	
Roger Batt	Idaho-Eastern Oregon Seed Association	

Meeting Title: NEGOTIATED RULEMAKING  
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Name	Affiliation	E-Mail Address
Stacy Satterlee	Idaho Grain Producers Assn	ssatterlee@idahograin.org
Lynn Carlson	AG's Office - DEQ	<del>lcarlson</del> @inf.le
Mary Anderson	DEQ - Air Quality	
Tami Aslett	DEQ - Air Quality	
Tanya Chin	DEQ Air Quality	
Mike Took	DEQ BRO	
Carl Brown	DEQ A-Q	

Meeting Title: NEGOTIATED RULEMAKING  
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Name	Affiliation	E-Mail Address
Austin Hopkins	ICL	ahopkins@idahiconservation.org
Mike McGown	EPA	mcgown.michael@epa.gov
Craig Dietrich	DHW	dietrichc@dhw.idaho.gov
Sean Ellis	Capital Press	sellis69@capitalpress.com
Justin McLeod	NPGAA	J5mic2851@live.com
Benjamin Kelly	NPGAA	benjamin@amg.idaho.com
Tom Torco	BSU	ThomasTorco@BoiseState.edu

Meeting Title: NEGOTIATED RULEMAKING  
Rules for the Control of Air Pollution in Idaho, Docket No. 58-0101-1601  
Meeting Date and Location: 7/20/16 – Boise, Idaho

Name	Affiliation	E-Mail Address
Pascale Warren	DEC	
Erik Olson	IAPA	
Paul Wilson	DEC	



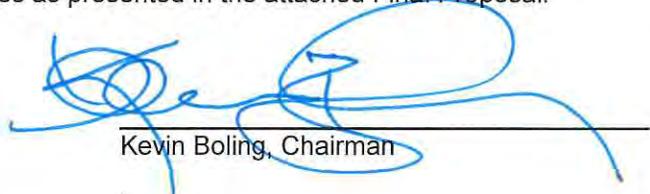
State of Idaho  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
Board of Environmental Quality

1410 North Hilton, Boise, ID 83706-1255, (208) 373-0502

C. L. "Butch" Otter, Governor  
John Tippetts, Director

**DECLARATION OF RULEMAKING  
BY THE BOARD OF ENVIRONMENTAL QUALITY  
ADOPTION OF TEMPORARY/PENDING RULES  
DOCKET NO. 58-0101-1601**

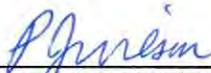
Pursuant to the authority granted to the Board of Environmental Quality in Title 39, Chapter 1, Idaho Code, and under the provisions for rule adoption contained in Sections 67-5224 and 67-5226, Idaho Code, I declare that the Rules for the Control of Air Pollution in Idaho are hereby adopted as temporary/pending rules as presented in the attached Final Proposal.

  
\_\_\_\_\_  
Kevin Boling, Chairman

STATE OF IDAHO            )  
                                      )        ss.  
County of Ada             )

On this 16<sup>th</sup> day of March, 2017, before me, the undersigned, a Notary Public in and for said State, personally appeared Kevin Boling, known to me to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same.

IN WITNESS WHEREOF, I have set my hand and affixed my official seal the day and year in this certificate first above written.

  
\_\_\_\_\_  
Notary Public for Idaho  
Residing at: Boise ID  
Expires: 9/23/17



**FINAL PROPOSAL  
(Dated March 1, 2017)**

RULES FOR THE CONTROL OF AIR POLLUTION IN IDAHO, DOCKET NO. 58-0101-1601

The Department of Environmental Quality recommends that the Board of Environmental Quality adopt the rule as initially proposed in the Idaho Administrative Bulletin, September 7, 2016, Vol. 16-9, pages 288 through 291.

## IDAPA 58 – DEPARTMENT OF ENVIRONMENTAL QUALITY

### 58.01.01 – RULES FOR THE CONTROL OF AIR POLLUTION IN IDAHO

DOCKET NO. 58-0101-1601

#### NOTICE OF RULEMAKING – ADOPTION OF TEMPORARY AND PENDING RULE

**EFFECTIVE DATE:** This rule has been adopted by the Board of Environmental Quality (Board) as a temporary and pending rule. The temporary rule will become effective on February 28, 2018. The pending rule will become final and effective immediately upon the adjournment sine die of the Second Regular Session of the Sixty-fourth Idaho Legislature unless prior to that date the Legislature specifies by concurrent resolution a different effective date, or rejects the rule in whole or in part by concurrent resolution in accordance with Idaho Code Sections 67-5224 and 67-5291. In no case shall the temporary or pending rule become effective before the date EPA approves the State Implementation Plan submittal that changes the percent of the ozone NAAQS, upon which no crop residue burning is allowed, from 75% to 90%, as promulgated under Docket No. 58-0101-1601.

**AUTHORITY:** In compliance with Sections 67-5224 and 67-5226, Idaho Code, notice is hereby given that the Board has adopted a temporary and pending rule. This action is authorized by Sections 39-105, 39-107, and 39-114, Idaho Code (S1009).

**DESCRIPTIVE SUMMARY:** A detailed summary of the reason for adopting this rule is set forth in the initial proposal published in the Idaho Administrative Bulletin, September 7, 2016, **Vol. 16-9, pages 288 through 291**. After consideration of public comments, the rule has been adopted as initially proposed. The Rulemaking and Public Comment Summary can be obtained at [www.deq.idaho.gov/58-0101-1601](http://www.deq.idaho.gov/58-0101-1601) or by contacting the undersigned.

**TEMPORARY RULE JUSTIFICATION:** Pursuant to Idaho Code § 67-5226(1)(c), the Governor has found that adoption of a temporary rule is appropriate as it will provide greater flexibility to farmers using the tool of crop residue burning while still following good smoke management best practices.

**IDAHO CODE SECTION 39-107D STATEMENT:** This rule does not regulate an activity not regulated by the federal government, nor is it more stringent than federal regulations.

In January 2007, the Ninth Circuit Court of Appeals held that Idaho's crop residue burning rules were illegal because there was not an adequate demonstration that the rules were compliant with the federal Clean Air Act. As a result, Governor Otter called for growers and activists to join with state regulators to negotiate a statute and implementing rules that would allow crop residue burning to resume under the Clean Air Act. The statute, Idaho Code § 39-114, and rules, IDAPA 58.01.01.618 through 624, together with an air quality demonstration that open burning when ambient air quality is at or below 75% of any NAAQS does not cause or significantly contribute to a violation of the NAAQS, were then submitted to EPA for approval as part of Idaho's SIP. EPA approved the SIP submittal as compliant with the Clean Air Act on August 1, 2008.

As noted, Idaho Code § 39-114 includes the requirement to review all NAAQS prior to approving a crop residue burn. Consequently, that is what is now required by state law and federal law in the federally approved SIP. The prohibition of crop residue burning if particulate matter is at, or expected to reach, 75% of the NAAQS mirrors EPA Region 10's Federal Air Rules for Reservations (FARR).

This rule is consistent with the revisions to Idaho Code § 39-114 enacted by the 2017 Legislature (S1009). Because the Interim Rule and 90% Ozone Rule require a review of all NAAQS prior to allowing a crop residue burn, while the FARR requires EPA and/or the Tribes to review the particulate matter NAAQS, one could argue the rules and statute are broader in scope than federal regulations. However, because the 2008 statute and rules are in the federally approved SIP, they are now considered federal law. The Interim Rule maintains the status quo while the 90% Ozone Rule will be submitted to EPA for approval as a SIP revision. To obtain EPA approval, DEQ will provide the best available peer reviewed science and supporting information to demonstrate that loosening the ozone burn approval criteria from 75% to 90% of the ozone NAAQS will not cause or significantly contribute to a violation of the ozone NAAQS.

**FISCAL IMPACT STATEMENT:** The following is a specific description, if applicable, of any negative fiscal impact on the state general fund greater than ten thousand dollars (\$10,000) during the fiscal year: N/A

**ASSISTANCE ON TECHNICAL QUESTIONS:** For assistance on technical questions concerning this rulemaking, contact Mary Anderson at [mary.anderson@deq.idaho.gov](mailto:mary.anderson@deq.idaho.gov) or (208) 373-0202.

Dated this 3rd day of May, 2017.

Paula J. Wilson  
Hearing Coordinator  
Department of Environmental Quality  
1410 N. Hilton  
Boise, Idaho 83706-1255  
Tel: (208) 373-0418 / Fax: (208) 373-0481  
[paula.wilson@deq.idaho.gov](mailto:paula.wilson@deq.idaho.gov)

**DOCKET NO. 58-0101-1601 - ADOPTION OF PENDING AND TEMPORARY RULE**  
**THE FOLLOWING IS THE TEXT OF THE TEMPORARY RULE FOR DOCKET NO. 58-0101-1604**  
**(Only Those Sections With Amendments Are Shown.)**

**Note: This rule was promulgated under Docket No. 58-0101-1601 (90% ozone NAAQS rule) and will become effective on February 28, 2018. Until the date this rule becomes effective, the interim rule promulgated under Docket No. 58-0101-1604 will remain in effect and is available at [www.deq.idaho.gov/58-0101-1604](http://www.deq.idaho.gov/58-0101-1604).**

**621. BURN DETERMINATION.**

**01. Burn Approval Criteria.** The Department shall develop a Crop Residue Operating Guide to use in assisting in the determination of burn approvals. The permittee shall obtain initial approval from the Department for the proposed burn at least twelve (12) hours in advance of the burn. The permittee shall confirm, with the Department, the approval the morning of the proposed burn. The Department may shorten this time frame if meteorological or other applicable conditions change that will impact the air quality during the proposed burn period. To approve a permittee's request to burn, the Department must determine that ambient air quality levels do not exceed ninety percent (90%) of the ozone national ambient air quality standard (NAAQS) and seventy-five percent (75%) of the level of any ~~national ambient air quality standards~~ other NAAQS on any day and are not projected to exceed such level over the next twenty-four (24) hours, and ambient air quality levels have not reached, and are not forecasted to reach and persist at, eighty percent (80%) of the one (1) hour action criteria for particulate matter under Section 556 of these rules. In making this determination, the Department shall consider the following: ~~(5-8-09)~~ (2-28-18)T

- a.** Expected Emissions. Expected emissions from all burns proposed for the same dates; (5-8-09)
- b.** Proximity of Other Burns. The proximity of other burns and other potential emission sources within the area to be affected by the proposed burn; (5-8-09)
- c.** Moisture Content. Moisture content of the material to be burned; (5-8-09)
- d.** Acreage, Crop Type, and Fuel Characteristics. Acreage, crop type, and fuel characteristics to be burned; (5-8-09)
- e.** Meteorological Conditions. Meteorological conditions; (5-8-09)

**f.** Proximity to Institutions with Sensitive Populations. The proximity of the burn to institutions with sensitive populations, including public schools while in session; hospitals; residential health care facilities for children, the elderly or infirm; and other institutions with sensitive populations as approved by the Department. The Department shall not authorize a burn if conditions are such that institutions with sensitive populations will be adversely impacted or when the plume is predicted to impact such institutions; (5-8-09)

**g.** Proximity to Public Roadways. Proximity to public roadways; (5-8-09)

**h.** Proximity to Airports. Proximity to airports; and (5-8-09)

**i.** Other Relevant Factors. Any other factors relevant to preventing exceedances of the air quality concentrations of Section 621. (5-8-09)

**02. Notification of Approval.** If the Department approves the burn, then it will post on its website written notification of the approval and any specific conditions under which the burn is approved. Special conditions may include, but are not limited to: (5-8-09)

**a.** Conditions for burns near institutions with sensitive populations; (5-8-09)

**b.** The requirement to withhold additional material such that the fire burns down if the Department determines pollutant concentrations reach the levels in Subsection 621.01 of this rule; (5-8-09)

**c.** Conditions to ensure the burn does not create a hazard for travel on a public roadway; and (5-8-09)

**d.** The requirement to consult with the Department to determine actions to be taken if conditions at the burn site fail to satisfy the conditions specified in the notice of approval to burn. (5-8-09)

# IDAPA 58 - DEPARTMENT OF ENVIRONMENTAL QUALITY

## 58.01.01 - RULES FOR THE CONTROL OF AIR POLLUTION IN IDAHO

DOCKET NO. 58-0101-1601

### NOTICE OF RULEMAKING - PROPOSED RULE

**AUTHORITY:** In compliance with Section 67-5221(1), Idaho Code, notice is hereby given that this agency has initiated proposed rulemaking. The action is authorized by Sections 39-105, 39-107, and 39-114, Idaho Code.

**PUBLIC HEARING SCHEDULE:** A public hearing concerning this proposed rulemaking will be held as follows:

**Tuesday, October 11, 2016 - 3:00 pm**

**Department of Environmental Quality  
Conference Room A  
1410 N. Hilton  
Boise, Idaho**

The hearing site will be accessible to persons with disabilities. Requests for accommodation must be made no later than five (5) days prior to the hearing. For arrangements, contact the undersigned at (208) 373-0418.

**DESCRIPTIVE SUMMARY:** The Crop Residue Burning (CRB) Program has been implemented by DEQ since 2008. One aspect of the program requires that, prior to approving a crop residue burn, DEQ must determine that 1) air quality is not exceeding 75% of any National Ambient Air Quality Standard (NAAQS), and 2) air quality is not projected to exceed such level during the next 24 hours. Fine particulate matter (PM<sub>2.5</sub>) is the pollutant most directly affected by crop residue burning. There are days when PM<sub>2.5</sub> concentrations are not a concern, but ozone concentrations exceed or are projected to exceed 75% of the ozone NAAQS.

In 2015, the U.S. Environmental Protection Agency (EPA) reduced the ozone NAAQS from 75 ppb to 70 ppb. The ozone NAAQS reduction is included in DEQ's incorporation by reference rule docket 58-0101-1603. As a result of the ozone NAAQS reduction, there would be fewer days when DEQ could approve crop residue burns despite the fact that 1) the weather conditions exhibit good smoke dispersion characteristics, and 2) DEQ technical staff expect the burns to have minimal impact on ambient ozone concentrations (NAAQS). Therefore, burning may not be allowed on good burn days even when the burn is not predicted to cause or significantly contribute to a violation of the ozone NAAQS.

Through the negotiated rulemaking process, DEQ developed a proposed rule that gives DEQ the authority to allow crop residue burning when ozone levels are not exceeding, or expected to exceed, 90% rather than 75% of the ozone NAAQS. This new 90% level is still protective of the ozone NAAQS, and also provides farmers the ability to burn while following smoke management best practices. This rule will be promulgated under Docket No. 58-0101-1601 and is published with this notice. As an outgrowth of the negotiations, DEQ also developed an interim rule that allows the CRB Program to continue operating under the 2008 ozone NAAQS until EPA approves the new 90% ozone level in a revised State Implementation Plan (SIP). This rule will be promulgated separately under Docket No. 58-0101-1604.

Before the Board of Environmental Quality (Board) can adopt the rule, it is necessary to revise Idaho Code § 39-114 for consistency with the revisions in this proposed rule docket. DEQ intends to submit draft proposed legislation to the 2017 Legislature. If the legislation is passed by the Legislature and approved by the Governor, it will become effective immediately. DEQ will then present the final rule proposal to the Board for adoption.

#### **Interim Rule Proposed Under Rule Docket 58-0101-1604:**

The proposed revisions in rule docket 58-0101-1604 allow that, for purposes of the ozone NAAQS, the 2008 NAAQS shall apply. The adoption of this proposed rule would maintain the status quo for the 2017 burn season, allowing the CRB Program to utilize the 2008 ozone NAAQS until EPA approves the SIP revision for rule docket 58-0101-1601. It is anticipated that EPA will approve the SIP revision by February 28, 2018. Without using the 2008 ozone NAAQS, the reduction in burn days could cause considerable economic hardship to grass seed growers for no environmental or

public health benefit.

**90% Ozone NAAQS Proposed Under Rule Docket 58-0101-1601:**

The proposed revision in rule docket 58-0101-1601 changes the percent of the ozone NAAQS, upon which no crop residue burning is allowed, from 75% to 90%. If the rule is adopted by the Board, DEQ will prepare a technical document demonstrating that the change from 75% to 90% will not cause or significantly contribute to a violation of the ozone NAAQS. DEQ will then submit the rule and technical document to EPA as a SIP revision under Section 110 of the Clean Air Act. Contingent upon EPA SIP approval, Subsection 621.01 adopted under rule docket 58-0101-1601 would take effect on February 28, 2018 replacing Subsection 621.01 adopted under rule docket 58-0101-1604. Consequently, state law and Idaho's federally approved SIP will mirror each other at that time.

Farmers desiring to burn crop residue, members of the regulated community who may be subject to Idaho's air quality rules, special interest groups, Idaho State Department of Agriculture, tribes, public officials, and members of the public who have an interest in the regulation of air emissions from sources in Idaho may be interested in commenting on this proposed rule. The proposed rule text is in legislative format. Language the agency proposes to add is underlined. Language the agency proposes to delete is struck out. It is these additions and deletions to which public comment should be addressed.

After consideration of public comments, and after passage of companion legislation revising Idaho Code § 39-114, DEQ intends to present the final rule proposal to the Board for adoption of a temporary/pending rule. If adopted by the Board, temporary rule docket 58-0101-1604 will become effective immediately and temporary rule docket 58-0101-1601 will become effective February 28, 2018. The rules will then be submitted to the 2018 Legislature for review and approval. Pursuant to Idaho Code § 67-5226(1)(c), the Governor has found that adoption of a temporary rule is appropriate as it will provide greater flexibility to farmers using the tool of crop residue burning while still following good smoke management best practices.

**NEGOTIATED RULEMAKING:** The text of the proposed rule was drafted based on discussions held and concerns raised during negotiations conducted pursuant to Idaho Code § 67-5220 and IDAPA 58.01.23.810-815. The Notice of Negotiated Rulemaking was published in the May 2016 issue of the Idaho Administrative Bulletin, and a preliminary draft rule was made available for public review. Meetings were held on May 18, June 23, July 20, and July 27, 2016. Members of the public participated in the negotiated rulemaking process by attending the meetings and by submitting written comments. The negotiated rulemaking record, which includes the negotiated rule drafts, written public comments, documents distributed during the negotiated rulemaking process, and the negotiated rulemaking summary, is available at [www.deq.idaho.gov/58-0101-1601](http://www.deq.idaho.gov/58-0101-1601).

All comments received during the negotiated rulemaking process were considered by DEQ when making decisions regarding development of the rule. At the conclusion of the negotiated rulemaking process, DEQ formatted the final draft (Draft No. 4) for publication as a proposed rule. DEQ is now seeking public comment on the proposed rule.

**IDAHO CODE SECTION 39-107D STATEMENT:** This proposed rule does not regulate an activity not regulated by the federal government, nor is it more stringent than federal regulations.

In January 2007, the Ninth Circuit Court of Appeals held that Idaho's crop residue burning rules were illegal because there was not an adequate demonstration that the rules were compliant with the federal Clean Air Act. As a result, Governor Otter called for growers and activists to join with state regulators to negotiate a statute and implementing rules that would allow crop residue burning to resume under the Clean Air Act. The statute, Idaho Code § 39-114, and rules, IDAPA 58.01.01.618 through 624, together with an air quality demonstration that open burning when ambient air quality is at or below 75% of any NAAQS does not cause or significantly contribute to a violation of the NAAQS, were then submitted to EPA for approval as part of Idaho's SIP. EPA approved the SIP submittal as compliant with the Clean Air Act on August 1, 2008.

As noted, Idaho Code § 39-114 includes the requirement to review all NAAQS prior to approving a crop residue burn. Consequently, that is what is now required by state law and federal law in the federally approved SIP. The prohibition of crop residue burning if particulate matter is at, or expected to reach, 75% of the NAAQS mirrors EPA Region 10's Federal Air Rules for Reservations (FARR).

It is anticipated the 2017 Legislature will revise Idaho Code § 39-114 for consistency with the revisions in the proposed rule docket. Because the Interim Rule and 90% Ozone Rule require a review of all NAAQS prior to allowing a crop residue burn, while the FARR requires EPA and/or the Tribes to review the particulate matter NAAQS, one could argue the rules and statute are broader in scope than federal regulations. However, because the current specifically negotiated statute and rules are in the federally approved SIP, they are now considered federal law. The Interim Rule maintains the status quo while the 90% Ozone Rule will be submitted to EPA for approval as a SIP revision. To obtain EPA approval, DEQ will provide the best available peer reviewed science and supporting information to demonstrate that loosening the ozone burn approval criteria from 75% to 90% of the ozone NAAQS will not cause or significantly contribute to a violation of the ozone NAAQS.

**INCORPORATION BY REFERENCE:** Pursuant to Section 67-5229(2)(a), Idaho Code, the following is a brief synopsis of why the incorporation by reference is necessary: Not Applicable

**FISCAL IMPACT STATEMENT:** The following is a specific description, if applicable, of any negative fiscal impact on the state general fund greater than ten thousand dollars (\$10,000) during the fiscal year: Not Applicable

**ASSISTANCE ON TECHNICAL QUESTIONS AND SUBMISSION OF WRITTEN COMMENTS:** For assistance on technical questions concerning this rulemaking, contact Mary Anderson at [mary.anderson@deq.idaho.gov](mailto:mary.anderson@deq.idaho.gov) or (208) 373-0202.

Anyone may submit written comments by mail, fax or e-mail at the address below regarding this proposed rule. DEQ will consider all written comments received by the undersigned on or before October 11, 2016.

Dated this 7th Day of September, 2016

Paula J. Wilson, Hearing Coordinator  
Department of Environmental Quality  
1410 N. Hilton, Boise, Idaho 83706-1255  
(208) 373-0418 / Fax No. (208) 373-0481  
[paula.wilson@deq.idaho.gov](mailto:paula.wilson@deq.idaho.gov)

**THE FOLLOWING IS THE PROPOSED TEXT OF DOCKET NO. 58-0101-1601**  
**(Only Those Sections With Amendments Are Shown.)**

**621. BURN DETERMINATION.**

**01. Burn Approval Criteria.** The Department shall develop a Crop Residue Operating Guide to use in assisting in the determination of burn approvals. The permittee shall obtain initial approval from the Department for the proposed burn at least twelve (12) hours in advance of the burn. The permittee shall confirm, with the Department, the approval the morning of the proposed burn. The Department may shorten this time frame if meteorological or other applicable conditions change that will impact the air quality during the proposed burn period. To approve a permittee's request to burn, the Department must determine that ambient air quality levels do not exceed ninety percent (90%) of the ozone national ambient air quality standard (NAAQS) and seventy-five percent (75%) of the level of any ~~national ambient air quality standards~~ other NAAQS on any day and are not projected to exceed such level over the next twenty-four (24) hours, and ambient air quality levels have not reached, and are not forecasted to reach and persist at, eighty percent (80%) of the one (1) hour action criteria for particulate matter under Section 556 of these rules. In making this determination, the Department shall consider the following: ~~(5-8-09)~~ ( )

- a. Expected Emissions. Expected emissions from all burns proposed for the same dates; (5-8-09)

- b.** Proximity of Other Burns. The proximity of other burns and other potential emission sources within the area to be affected by the proposed burn; (5-8-09)
  - c.** Moisture Content. Moisture content of the material to be burned; (5-8-09)
  - d.** Acreage, Crop Type, and Fuel Characteristics. Acreage, crop type, and fuel characteristics to be burned; (5-8-09)
  - e.** Meteorological Conditions. Meteorological conditions; (5-8-09)
  - f.** Proximity to Institutions with Sensitive Populations. The proximity of the burn to institutions with sensitive populations, including public schools while in session; hospitals; residential health care facilities for children, the elderly or infirm; and other institutions with sensitive populations as approved by the Department. The Department shall not authorize a burn if conditions are such that institutions with sensitive populations will be adversely impacted or when the plume is predicted to impact such institutions; (5-8-09)
  - g.** Proximity to Public Roadways. Proximity to public roadways; (5-8-09)
  - h.** Proximity to Airports. Proximity to airports; and (5-8-09)
  - i.** Other Relevant Factors. Any other factors relevant to preventing exceedances of the air quality concentrations of Section 621. (5-8-09)
- 02. Notification of Approval.** If the Department approves the burn, then it will post on its website written notification of the approval and any specific conditions under which the burn is approved. Special conditions may include, but are not limited to: (5-8-09)
- a.** Conditions for burns near institutions with sensitive populations; (5-8-09)
  - b.** The requirement to withhold additional material such that the fire burns down if the Department determines pollutant concentrations reach the levels in Subsection 621.01 of this rule; (5-8-09)
  - c.** Conditions to ensure the burn does not create a hazard for travel on a public roadway; and (5-8-09)
  - d.** The requirement to consult with the Department to determine actions to be taken if conditions at the burn site fail to satisfy the conditions specified in the notice of approval to burn. (5-8-09)

RULE PROMULGATION AUTHORITY CHECKLIST

Rules for the Control of Air Pollution in Idaho, IDAPA 58.01.01, Docket No. 58-0101-1601 ✓

and 58-0101-1604

DATE

INITIALS

4/1/16

JJC

Legal Review of Proposed Administrative Rules Form and Notice of Negotiated Rulemaking

4/4/16

J.N.T.

Director Approval of Proposed Administrative Rules Form and Notice of Negotiated Rulemaking

4/15/16

PJW ✓

Approval Received from DFM/Governor

8/3/14

JJC

Legal Review of Proposed/Temporary Rule Docket

8/22/16

JJC

~~Legal Review of Negotiated Rulemaking Summary~~

8/2/16

J.N.T.

Director Approval of Proposed/Temporary Rule Docket

8/25/16

J.N.T.

~~Director Approval of Negotiated Rulemaking Summary~~

n/a

n/a

Board Adoption of Temporary Rule

2/10/17

JJC

Legal Review of Pending/Temporary Rule Docket

2/21/17

J.N.T.

Director Approval of Pending/Temporary Rule Docket

3/16/17

PJW

Board Adoption of Pending/Temporary Rule

<p><b>Docket Number:</b> <u>58-0101-1601</u>  <b>Effective Date:</b> <u>2/28/18 (temporary rule)</u>  <b>Rules Title:</b> <u>Rules for the Control of Air Pollution in Idaho</u>  <b>Agency Contact and Phone:</b> <u>Tiffany Floyd, 373-0440</u></p>	<p style="text-align: center;"><b>Public Notice</b></p> <p><b>Hearings:</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  <b>Locations and Dates:</b> Boise, ID – 10/11/16  <b>Written Comment Deadline:</b> 10/11/16</p>
<p><b>Descriptive Summary of Rule as Initially Proposed:</b>  Through the negotiated rulemaking process, DEQ developed a proposed rule that gives DEQ the authority to allow crop residue burning when ozone levels are not exceeding, or expected to exceed, 90% rather than 75% of the ozone NAAQS. This new 90% level is still protective of the ozone NAAQS, and also provides farmers the ability to burn while following smoke management best practices. This rule will be promulgated under Docket No. 58-0101-1601. As an outgrowth of the negotiations, DEQ also developed an interim rule that allows the CRB Program to continue operating under the 2008 ozone NAAQS until EPA approves the new 90% ozone level in a revised State Implementation Plan (SIP). This rule will be promulgated separately under Docket No. 58-0101-1604.</p>	<p><b>Negotiated Rule Making:</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
	<p><b>Costs To the Agency:</b> No additional costs to the agency.</p> <p><b>Costs To the Regulated Community:</b> No additional costs to the regulated community.</p>
	<p><b>Relevant Statutes:</b> Idaho Code §§ 39-105, 39-107, and 39-114 (S1009).</p>
<p><b>Idaho Code § 39-107D Statement:</b> This rule does not regulate an activity not regulated by the federal government, nor is it more stringent than federal regulations.</p> <p>In January 2007, the Ninth Circuit Court of Appeals held that Idaho’s crop residue burning rules were illegal because there was not an adequate demonstration that the rules were compliant with the federal Clean Air Act. As a result, Governor Otter called for growers and activists to join with state regulators to negotiate a statute and implementing rules that would allow crop residue burning to resume under the Clean Air Act. The statute, Idaho Code § 39-114, and rules, IDAPA 58.01.01.618 through 624, together with an air quality demonstration that open burning when ambient air quality is at or below 75% of any NAAQS does not cause or significantly contribute to a violation of the NAAQS, were then submitted to EPA for approval as part of Idaho’s SIP. EPA approved the SIP submittal as compliant with the Clean Air Act on August 1, 2008.</p> <p>As noted, Idaho Code § 39-114 includes the requirement to review all NAAQS prior to approving a crop residue burn. Consequently, that is what is now required by state law and federal law in the federally approved SIP. The prohibition of crop residue burning if particulate matter is at, or expected to reach, 75% of the NAAQS mirrors EPA Region 10’s Federal Air Rules for Reservations (FARR).</p> <p>This rule is consistent with the revisions to Idaho Code § 39-114 enacted by the 2017 Legislature (S1009). Because the Interim Rule and 90% Ozone Rule require a review of all NAAQS prior to allowing a crop residue burn, while the FARR requires EPA and/or the Tribes to review the particulate matter NAAQS, one could argue the rules and statute are broader in scope than federal regulations. However, because the 2008 statute and rules are in the federally approved SIP, they are now considered federal law. The Interim Rule maintains the status quo while the 90% Ozone Rule will be submitted to EPA for approval as a SIP revision. To obtain EPA approval, DEQ will provide the best available peer reviewed science and supporting information to demonstrate that loosening the ozone burn approval criteria from 75% to 90% of the ozone NAAQS will not cause or significantly contribute to a violation of the ozone NAAQS.</p>	

Temporary Rule	<input type="checkbox"/> Necessary to protect public health, safety or welfare <input type="checkbox"/> Compliance with deadlines in amendments to governing law or federal programs <input checked="" type="checkbox"/> Conferring a benefit
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Docket Number: <u>58-0101-1601</u>		
Section	Section Title	Summary of Rule Changes Based on Public Comment
621.	Burn Determination.	No changes have been made. Response to Comments is attached.

DEQ's Response to Comments  
Docket Nos. 58-0101-1601 and 58-0101-1604

Commenter 1 - Safe Air for Everyone, American Lung Association of Idaho, Idaho Conservation League, Conservation Voters of Idaho	Commenter 2 - Nezperce Prairie Grass Growers Association (NPGGA)	Commenter 3 – Idaho Farm Bureau Federation
Commenter 4 – Idaho Grain Producers Association (IGPA)		
Commenter 5 - Alida Bockino, Moscow, ID	Commenter 6 - Ruth Ellis, Driggs, ID	Commenter 7 - Denise Thompson, Bonners Ferry, ID
Commenter 8 - Elaine French, Ketchum, ID	Commenter 9 - Alex Piet, Idaho Falls, ID	Commenter 10 - Katy Hefley, Careywood, ID
Commenter 11 – Robert Carroll, Cocolalla, ID	Commenter 12 – Carol Jenkins, Sagle, ID	Commenter 13 – Rhea Verbanic, Bonners Ferry, ID
Commenter 14 - Lexie de Fremery, Sagle, ID	Commenter 15 - Diane Ringler, Island Park, ID	Commenter 16 - Muriel Roberts, Pocatello, ID
Commenter 17 – Kam Majer, Sandpoint, ID	Commenter 18 – Karen Hendrickson, Kooskia, ID	Commenter 19 – Nathaniel Role, Clark Fork, ID
Commenter 20 – Erin Zaleski, Boise, ID	Commenter 21 – Shannon Mitchell, Sandpoint, ID	Commenter 22 – Marc Fleisher, Save Our Summers NW

Commenter	Comment	Response
1	<p>Summary of comment:</p> <p><b>Health Threat from Field Burning:</b></p> <p>The burning of thousands of acres of Idaho cropland each year generates large plumes of air pollution that can travel for many miles, impacting communities not only in Idaho, but also in other states and Canada. The pollution includes not only airborne particulates, but also nitrogen oxides (NOx) and volatile organic compounds (VOCs) that form ozone, a dangerous air pollutant that damages the lungs, sends people to emergency rooms, and in some cases kills. Idaho physicians have repeatedly reported serious health impacts on their patients due to field burning.</p> <p>In proposing to weaken Idaho's protections against pollution from field burning, DEQ is irresponsibly endangering people's health. DEQ is specifically proposing to weaken protections against elevated ozone levels. Ozone is a corrosive air pollutant that inflames the lungs and constricts breathing. 80 Fed. Reg. 65,308/3-09/1; Dkt-0405. It causes asthma attacks, hospitalizations for serious bronchial conditions, and other serious health harms. <i>E.g.</i>, Dkt-0404, 3-18, 3-26 to -29, 3-32. Ozone-induced health problems can force children to stay indoors and require people to take medication and miss work or school. <i>E.g.</i>, <i>id.</i> 4-12. Because their respiratory tracts are not fully developed, children are physiologically especially vulnerable to ozone pollution, particularly when they have elevated respiratory rates, as when playing outdoors. <i>E.g.</i>, <i>id.</i> 3-81 to -82. People with lung disease and the elderly also have heightened vulnerability, but ozone can affect healthy adults too. <i>See</i> 80 Fed. Reg. 65,310/3. Asthmatics suffer more severe impacts from ozone exposure than healthy individuals do and are more vulnerable at lower levels of exposure. <i>Id.</i> 65,311/1 n.37, 65,322/3. And ozone is linked to thousands of premature deaths each year. EPA, Health Risk and Exposure Assessment for Ozone (August 2014) at 8-6 to 8-7.</p> <p>When Idaho's current crop burning rules were adopted, all parties – including DEQ -agreed that protection of public health warranted prohibiting burning when pollution exceeded, or was projected to exceed within 24-hours, 75% of any national ambient air quality</p>	<p>This rule change does not weaken the protection against air pollution from field burning. The proposed rule still ensures crop residue burning will not cause or significantly contribute to a violation of any National Ambient Air Quality Standard (NAAQS). The rule change is specifically intended to further limit impacts on communities in Idaho, other states, and Canada. A NAAQS standard is designed to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly, with an adequate margin of safety. EPA set the 2015 ozone standard after looking at all available scientific data. While there have been some studies that look at the combined effects of pollutants on public health, EPA continues to evaluate each criteria pollutant individually.</p> <p>This change will strengthen protections from field burning as it will help decrease the impact of burns on public health by utilizing burn days when smoke dispersion (adequate smoke lift, proper mixing, appropriate air movement and direction, etc.) is good or better during times when ozone forecast is expected to reach between 75% and 90% of the ozone NAAQS.</p> <p>This 75% requirement is a backstop to ensure that DEQ is not approving burns that may cause a violation of a NAAQS. The 75% requirement was part of the original negotiated rule agreement based on other smoke management programs. None of the other smoke management programs include ozone as a burn criteria like Idaho. For ozone this 75% requirement has become problematic in Idaho since it is limiting available burn days, i.e. there are days when smoke would disperse well, and the NAAQS would not be expected to be exceeded, yet DEQ is prohibited from allowing burning due to forecasted ozone concentrations. This can result in more burns being approved on days when smoke dispersion is not as good, but still allowable according to the rules. DEQ believes burning on the days when smoke dispersion is good or better will limit</p>

Commenter	Comment	Response
	<p>standard (NAAQS). Now, after EPA has determined that ozone is even more dangerous than previously thought, and at lower levels, DEQ irrationally proposes to weaken the 75% threshold to 90% for ozone. The proposal arbitrarily treats ozone differently from other air pollutants for this purpose. There is no scientific or other reasoned basis for such differential treatment. And the choice of 90% as the new threshold for ozone means weaker protection in absolute as well as percentage terms. Under the pre-existing (2008) ozone standard of 75 parts per billion (ppb), the 75% threshold meant that burning could not occur if ozone levels exceeded or were predicted to exceed 56 ppb (75% of 75 ppb). Under the proposed rule amendment, burning will be allowed unless ozone levels exceed or are predicted to exceed 63 ppb --90% of the 70ppb standard adopted in 2015. In other words, DEQ is using the occasion of EPA's strengthening the ozone standard (based on science showing ozone is more dangerous than previously thought) to weaken protection against ozone in Idaho and nearby states. Such an approach is not only irrational in the extreme, but also flouts DEQ's responsibility to protect public health. ID STAT. §39-102A (1)(establishing DEQ "to protect human health and the environment as its sole mission"). We further note that leading medical societies and health organizations, including the America Medical Association, American Lung Association, American Academy of Pediatrics, American Thoracic Society, and American Heart Association all urged EPA to adopt a more protective ozone standard of 60 ppb, based on evidence that ozone harms people's health at (and even below) that level. Dkt-2720,-3863. DEQ's proposal would thus allow burning to occur even when ozone pollution already exceeds (or is expected to exceed) a level deemed unsafe by medical professionals.</p> <p>Nor is there any basis for claiming that violations of the NAAQS will not occur under the new weaker threshold. DEQ says it will provide supporting analysis later that purports to so demonstrate, but that approach is indefensible. It puts the cart before the horse: DEQ is weakening protection before it actually has proof that the weakening will not threaten violation of the NAAQS. At worst, it indicates that DEQ has already prejudged the outcome of such an analysis, rather than planning a truly objective, unbiased approach.</p> <p>Further, DEQ is not analyzing the cumulative impacts from all pollutants of concern, most notably how human health will be impacted due to both PM<sub>2.5</sub> and ozone concentrations in the air. Ozone and PM<sub>2.5</sub> pollution are both associated with adverse human health effects such as lung structure dysfunction, inflammation and infection, asthma, and premature deaths. A review of peer-reviewed scientific journal articles discussing threats to human health highlights the potential compounding effects of these pollutants (e.g. Fan et al., 2012 and Hou et al. 2015). Given the potential compounding effects PM<sub>2.5</sub> and ozone can have on human health, analyses of health impacts need to account for the combined effects of both pollutants. DEQ irrationally disregards such combined impacts, and instead analyzes the threats to human health from ozone and PM<sub>2.5</sub> on an individual basis with little regard to the cumulative or synergistic impact. DEQ's chosen method of</p>	<p>negative impacts on public health.</p> <p>Before approving a burn, DEQ evaluates a number of criteria, such as, proximity to institutions with sensitive populations, other burning activity, weather, and pollutant concentrations.</p> <p>After implementing the CRB program since 2008, DEQ has learned Idaho's crop residue burns have minimal impact on ozone concentrations. Thus by increasing the backstop to 90% for ozone alone, the program will still be protective of the NAAQS while providing the opportunity to approve burns when there will be good or better smoke dispersion. Overall this approach will be more protective of public health.</p> <p>DEQ will continue to use all elements of the existing program to ensure that CRB does not lead to an exceedance of any NAAQS, as well as, meeting all the requirements in the rules.</p> <p>DEQ intends to present scientific analysis that demonstrate to the satisfaction and approval of EPA that the change from 75% to 90% will not cause or contribute to an exceedance of the ozone NAAQS or interfere with an applicable requirement of the Clean Air Act</p> <p>EPA regulates each criteria pollutant separately. The compounding effects of pollutants have not been adequately determined and are an area of active research.</p>

Commenter	Comment	Response
	<p>analyzing these pollutants is not scientifically sound and therefore should not be deemed acceptable as protective of human health.</p> <p>Additionally, during the initial CRB rulemaking session, Dr. Craig Dietrich – a toxicologist with the Idaho Department of Health and Welfare – presented information on the health effects from ozone and PM<sub>2.5</sub>. Dr. Dietrich’s presentation included recent science available that analyzed data over variable geographic regions and time periods(both annually and seasonally). The science shows that for some significant health endpoints, PM<sub>2.5</sub> is even more harmful than ozone.</p> <p>In a later rulemaking session on July 20<sup>th</sup>, 2016, Dr. Dietrich made verbal comments providing a clear, thorough, and scientific justification as to why reducing both ozone and PM<sub>2.5</sub> was critical for the protection of human health. To briefly summarize, high ambient concentrations of ozone put sensitive populations at an increased risk for respiratory issues. High ozone combined with high PM<sub>2.5</sub> concentrations creates a compounding effect, exacerbating the stresses inflicted upon these populations. Although we strongly oppose weakening of protections against either pollutant, DEQ’s proposal to weaken ozone protection without strengthening PM<sub>2.5</sub> protection makes the threat to public health even worse.</p> <p>Of utmost concern is the underlying motivation for the changes in regulatory thresholds. DEQ asserts their decision is supported by science, yet it is clear that the science they are utilizing has been selectively chosen in order to fit their narrative. Any science evoking doubt on the selected course of action has been intentionally ignored and left out of consideration. Human health advocates present in the negotiated rulemakings found it concerning that proposals for better protection of human health were met with a high-degree of scrutiny and ultimately dismissed, whereas proposals for weakening protection were accepted by DEQ relatively unchallenged. When verbally questioned over this discrepancy during rulemaking sessions, DEQ’s AG responded that this was due to the State Legislature and their general unwillingness to pass more stringent rules. It is clear that the proposed rule changes are being influenced by politics and not the best available science. Regardless of political pressure, these rules must be protective of human health, and the science used to justify these changes cannot be selectively chosen in order to be politically appealing.</p>	
1	<p><b>Breach of Agreement</b></p> <p>The proposal represents a deplorable breach of the agreement reached by all parties in good faith on a resolution of the field burning issue in 2008. This proposal is not only a breach of an agreement, but a breach of trust. Public officials and others regularly urge concerned citizens and environmental groups to work cooperatively with agencies and business interests to achieve consensus-based solutions to their disagreements. Yet DEQ</p>	<p>DEQ is required to protect the NAAQS and this change does not alter that purpose. All aspects of the CRB program will be used to ensure that any crop residue burning does not lead to a NAAQS violation.</p>

Commenter	Comment	Response
	<p>now seeks to renege on the very agreement they made with affected citizens only a few years ago. This duplicity is all the more inexcusable given that members of the CRB Board and affected citizens offered a constructive compromise proposal to address concerns that were raised, but DEQ refused to seriously consider it.</p> <p>The fact that the ozone NAAQS was revised hardly justifies a breach of the original agreement. The parties agreed to the “percent of the NAAQS” approach knowing full well that EPA is required to review and update the NAAQS every five years, that the NAAQS could therefore change, and knowing that EPA’s science advisers had recommended a range of ozone standards going down to as low as 60 ppb. It is too late in the day for DEQ and agri-business to pull a bait-and-switch to support a weaker approach.</p> <p>Relatedly, DEQ here failed to comply with the requirements for negotiated rulemaking. By statute, negotiated rulemaking is defined as “a process in which all interested persons and the agency seek consensus on the content of a rule.” ID ST §675220(2). There was no consensus on the content of the rule here. As indicated by the record, citizen and environmental group representatives strongly disagreed with the final proposal developed by DEQ. Further, DEQ arbitrarily refused to accept a compromise framework verbally agreed to by the growers and the public health representatives, with DEQ present, under which the PM<sub>2.5</sub> threshold would be tightened proportionately in exchange for a loosening of ozone restrictions. DEQ simply ignored the consensus proposal and drafted the rule to only loosen ozone protections. It is therefore unlawful, arbitrary, and grossly misleading to present the proposal as a negotiated rulemaking.</p>	<p>Furthermore, the agreement points reached on December 19, 2007 stated the program would be modelled after the Nez Perce program with 75% of the PM2.5 NAAQS used as a threshold for burn decisions. See Appendix A at <a href="http://www.deq.idaho.gov/media/347121-crb_sip.pdf">http://www.deq.idaho.gov/media/347121-crb_sip.pdf</a></p> <p>The Nez Perce program does not require the review of ozone levels when making burn decisions.</p> <p>DEQ followed all standard negotiated rulemaking practices in this rulemaking. Although a consensus is the goal, it is not required. A consensus was not reached in this case.</p>
1	<p><b>DEQ’s Justifications for the Proposal are Unsupported and Irrelevant:</b></p> <p>In support of the proposal, DEQ cites potential economic hardship to growers if the existing rule isn’t revised. Under the Clean Air Act, however, claims of economic impact are not sufficient to support a SIP revision. The state must show that the revision will not cause or contribute to a NAAQS violation, or interfere with any applicable requirements of the Act. Moreover, promoting the economic interests of agribusiness is not DEQ’s function. See ID STAT. §39-102A(1). In any event, the record lacks a reasoned analysis supported by evidence showing that economic hardship is likely. Bare assertions by agri-business interests do not suffice as actual evidence and do not provide a rational basis for claiming proof or likelihood of hardship. Even if retention of the current rule would result in materially fewer burn days, there is no showing of why that would result in hardship. Moreover, DEQ has not considered or evaluated alternatives to burning, such as those adopted or encouraged in other states. In Washington, the State mandated a phase-out of grass residue burning after an exhaustive research and public participation process determined that alternatives were economically available and feasible, and after a peer-reviewed study showed that the public health costs from grass residue burning outweighed the economic benefits. See attached EPA Itr. Research conducted by</p>	<p>Economic hardship is not the reason for the proposed change. Economic hardship was mentioned as a reason for the temporary measure that will keep the current program in place until EPA approval of the proposed final change into the Idaho SIP.</p> <p>The current rulemaking only focused on addressing the 75% threshold for ozone and consideration of alternatives to burning was outside the scope of this rulemaking. DEQ agrees that large fires like wildfires and very large rangeland prescribed burns like the ones cited from Kansas can produce ozone concentration changes. In the Kansas example referenced by the commenter (<a href="https://www3.epa.gov/ttn/chief/conference/ei21/session5/reid_pres.pdf">https://www3.epa.gov/ttn/chief/conference/ei21/session5/reid_pres.pdf</a>), when over 250,000 acres were burned in <u>a single day</u>, there were impacts on ozone monitors. For comparison, the Idaho CRB program has averaged burning 40,000 acres <u>a year</u> Statewide for the past 2 years, with about 6,400 acres statewide being the most burned in a single day. Again in the Kansas reference provided by the commenter, on the day when there were only 19,000 acres burned in a single day, there were estimated to be no impacts on ozone concentrations from approved burns.</p>

Commenter	Comment	Response
	<p>Washington State University and Oregon State University supports the conclusion that there are economically viable alternatives available that reduce or eliminate the need for burning. Id.</p> <p>DEQ also asserts without factual support that field burning has minimal impact on ozone levels. It well established that biomass burning produces substantial emissions of NOx and VOCs, the main ozone-forming pollutants. Moreover, studies have shown that field burning and wildland fires do in fact contribute significantly to elevated ozone levels. See, e.g., <a href="https://www3.epa.gov/ttn/chief/conference/ei21/session5/reid_pres.pdf">https://www3.epa.gov/ttn/chief/conference/ei21/session5/reid_pres.pdf</a> ;<a href="https://www2.ucar.edu/atmosnews/news/916/wildfires-cause-ozone-pollution-violatehealth-standards-new-study-shows">https://www2.ucar.edu/atmosnews/news/916/wildfires-cause-ozone-pollution-violatehealth-standards-new-study-shows</a>. Indeed, the first of the foregoing cites found that ozone resulting from field burning was the “but-for” cause of ozone NAAQS violations.</p> <p>DEQ also asserts that 75% of the ozone NAAQS is close to background ozone concentrations in rural Idaho. But DEQ cites no data to support of this claim, and in any event it is truly beside the point. Because ozone pollution at levels in excess of the NAAQS is dangerous, especially to children, asthmatics, and senior citizens, it does not matter whether the ozone is “background” or not. On those days when ozone exceeds or is predicted to exceed 75% of the NAAQS, it is approaching levels that EPA has determined are unsafe: That is why the current rule correctly prohibits burning at such times.</p>	<p>Based on a review of data collected in Idaho, DEQ has not observed any impacts on ozone concentrations from CRB over the past 8 years. As part of a SIP demonstration, DEQ will present scientific analysis that the change from 75% to 90% will not cause or contribute to an exceedance of the ozone NAAQS or interfere with an applicable requirement of the Clean Air Act.</p>
2	<p>Summary of comment: Supports the proposed rulemaking. Agrees that there is no reason to change the PM threshold at this time.</p>	<p>This comment is in support of the rule. No response required.</p>
3	<p>Summary of comment: States that the current CRB program has been protective of public health. Supports raising the approval criteria to 90% of the ozone standard since this would increase the number of good burn days Opposed to tightening the PM criteria Highlighted additional criteria that must also be met prior to approving a crop residue burn Supports the temporary measure to keep the current criteria in place until EPA approval of the change.</p>	<p>This comment is in support of the rule. No response required.</p>
4	<p>Summary of comment: Supports burning as an agricultural practice. Supports changing the ozone threshold to 90% of the NAAQS since it opens up more good burn days. Supports the temporary measure (Docket 1604) until the final change can be put in the Idaho SIP.</p>	<p>This comment is in support of the rule. No response required.</p>
5 through 13	<p>Proposed rule changes in Docket No. 58-0101-1601 do not reflect new research on ozone's effect on human health and should be withdrawn.</p>	<p>See answer to commenter 1.</p>
14	<p>Proposed rule changes in Docket No. 58-0101-1601 do not reflect new research on</p>	<p>See answer to commenter 1.</p>

Commenter	Comment	Response
	ozone's effect on human health and should be withdrawn. The current rules work. Let's not relax protections to human health.	
15	Proposed rule changes in Docket No. 58-0101-1601 do not reflect new research on ozone's effect on human health and should be withdrawn. You should be more stringent in your allowance of any type of burning. The air quality in Island Park and other areas was severely compromised this summer due to all the fires. Waking up with headaches and parched throats is an indication that there is a problem. I think you should be more restrictive.	See answer to commenter 1. The CRB program only applies to agricultural burns.
16	Proposed rule changes in Docket No. 58-0101-1601 do not reflect new research on ozone's effect on human health and should be withdrawn. Please consider the Crop Residue Burning Advisory Board's terms collaboratively agreed to. The DEQ should be strengthening, not weakening air pollution rules to protect Idahoans' health.	See answer to commenter 1.
17	Proposed rule changes in Docket No. 58-0101-1601 do not reflect new research on ozone's effect on human health and should be withdrawn. Instead of relaxing current regulations, the DEQ should protect the air quality. What is their motivation for a change? Please do not support these rule changes.	See answer to commenter 1.
18	Proposed rule changes in Docket No. 58-0101-1601 do not reflect new research on ozone's effect on human health and should be withdrawn. As I drove towards Grangeville for lunch on Sept. 30th, I saw black (and I mean BLACK) billows of smoke rising from a crop field RIGHT NEXT DOOR TO TOWN. The blackness of that smoke told me that smoke was unquestionably toxic. This summer North Central Idaho was enjoying a relatively fire-free, smoke-free summer of breathable air until field burning began. I live in the valley, yet daily was forced to breathe in smoke drifting into the valley from Camas Prairie fields. The thousands of us who live in my area deserve clean air. Farmers have no right to pollute our air and, by doing so, risk harming all the rest of us. WSU and OSU research shows that alternatives, economically feasible alternatives, to burning are available. DEQ must consider these alternatives to reduce or eliminate any need for field burning and, in turn, to reduce or eliminate health risks to Idahoans caused by field burning. Please care about 'the rest of us.' Withdraw proposed CRB rule changes today.	See answer to commenter 1.
19	Proposed rule changes in Docket No. 58-0101-1601 do not reflect new research on ozone's effect on human health and should be withdrawn. I live in Idaho because I value good air quality and would prefer, if anything, STRICTER regulations against burning.	See answer to commenter 1.
20	Proposed rule changes in Docket No. 58-0101-1601 do not reflect new research on ozone's effect on human health and should be withdrawn. You may not think this is a big deal, but you must think of those with respiratory diseases. To some this change could be potentially fatal! Let's show respect for life and keep the current rules in place. If preserving a human life isn't a concern to you, think of our budgets that will be stressed by	See answer to commenter 1.

Commenter	Comment	Response
	<p>having to go to the emergency room to get treatments that keep our airways open and us breathing. If you think this is an exaggeration, visit some hospitals with kids suffering from respiratory diseases and find out what this rule change will mean to them.</p>	
<p><b>21</b></p>	<p>Proposed rule changes in Docket No. 58-0101-1601 do not reflect new research on ozone's effect on human health and should be withdrawn. The current rules already work to protect public health while also allowing farmers to burn crop residue. The EPA and leading medical groups and organizations are learning more about ozone and its harmful effects to human health. Based on this research, DEQ should enact more protective measures, not weaken the protections we now have. DEQ's proposed rule changes breach the collaborative agreement reached in 2008. The Crop Residue Burning Advisory Board—consisting of members from the farming, human health and environmental communities—reached agreeable terms earlier in 2016. Research conducted by Washington State University and Oregon State University indicates that economically viable alternatives are available to farmers. These alternatives reduce or eliminate the need for burning. Please withdraw the proposed rule changes in adherence of the DEQ's mission of protecting people and the environment.</p>	<p>See answer to commenter 1. This rule was developed through a negotiated rulemaking that allowed all interested stakeholders to voice opinions and to provide pertinent scientific data.</p>
<p><b>22</b></p>	<p>My understanding from talking with Patty Gora-McRavin is that at one point there was what you could call a gentleman's agreement that in return for loosening the requirements for ozone, that there would be a corresponding and matching tightening of the requirements for PM 2.5 NAAQS. And it appears that the current rule that's being promulgated does not do that.</p> <p>I think that there is no good science that allows this rule to go forward, and my recommendation would be that since it ignored the advice of both those concerned with public health and the growers, that this rule be withdrawn.</p>	<p>See answer to commenter 1.</p>

**From:** [Alex Piet](#)  
**To:** [Paula Wilson](#)  
**Subject:** Please withdraw proposed CRB rule changes protect our air quality  
**Date:** Wednesday, October 05, 2016 4:07:57 PM

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Dear Paula Wilson,

Proposed rule changes in Docket No. 58-0101-1601 do not reflect new research on ozone's effect on human health and should be withdrawn.

Alex Piet  
173 Springwood In  
Idaho Falls, ID 83404

**From:** [Alida Bockino](#)  
**To:** [Paula Wilson](#)  
**Subject:** Please withdraw proposed CRB rule changes protect our air quality  
**Date:** Wednesday, October 05, 2016 9:54:38 PM

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Dear Paula Wilson,

Proposed rule changes in Docket No. 58-0101-1601 do not reflect new research on ozone's effect on human health and should be withdrawn.

Alida Bockino  
1104 Pine Crest Rd  
Moscow, ID 83843

Paula Wilson  
Idaho Department of Environmental Quality  
1410 N. Hilton, Boise, ID 83706  
paula.wilson@deq.idaho.gov

October 7, 2016

Re: Comments on proposed rule amendment to Idaho Crop Residue Burning Program, docket no. 58-0101-1601, published in Idaho Administrative Bulletin September 7, 2016 at page 291.

Dear Ms. Wilson,

For the reasons set forth below, the following organizations strongly oppose the above-referenced proposal: Conservation Voters for Idaho, Idaho Conservation League, American Lung Association in Idaho, and Safe Air for Everyone.

**1. Health Threat from Field Burning:** The burning of thousands of acres of Idaho cropland each year generates large plumes of air pollution that can travel for many miles, impacting communities not only in Idaho, but also in other states and Canada.<sup>1</sup> The pollution includes not only airborne particulates, but also nitrogen oxides (NOx) and volatile organic compounds (VOCs) that form ozone, a dangerous air pollutant that damages the lungs, sends people to emergency rooms, and in some cases kills. Idaho physicians have repeatedly reported serious health impacts on their patients due to field burning.

In proposing to weaken Idaho's protections against pollution from field burning, DEQ is irresponsibly endangering people's health. DEQ is specifically proposing to weaken protections against elevated ozone levels. Ozone is a corrosive air pollutant that inflames the lungs and constricts breathing. 80 Fed. Reg. 65,308/3-09/1; Dkt<sup>2</sup>-0405. It causes asthma attacks, hospitalizations for serious bronchial conditions, and other serious health harms. *E.g.*, Dkt-0404, 3-18, 3-26 to -29, 3-32. Ozone-induced health problems can force children to stay indoors and require people to take medication and miss work or school. *E.g.*, *id.* 4-12. Because their respiratory tracts are not fully developed, children are physiologically especially vulnerable to ozone pollution, particularly when they have elevated respiratory rates, as when playing outdoors. *E.g.*, *id.* 3-81 to -82. People with lung disease and the elderly also have heightened vulnerability, but ozone can affect healthy adults too. *See* 80 Fed. Reg. 65,310/3. Asthmatics suffer more severe impacts

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<sup>1</sup> Statements in this section of our comments are supported by the record in *Safe Air for Everyone v. EPA*, No. 05-75269 (9<sup>th</sup> Cir. filed 9-5-2005). That record is incorporated herein by reference.

<sup>2</sup> All "Dkt" references are to document numbers in EPA docket EPA-HQ-OAR-2008-0699 (*e.g.*, "Dkt-0405" means EPA-HQ-OAR-2008-0699-0405).

from ozone exposure than healthy individuals do and are more vulnerable at lower levels of exposure. *Id.* 65,311/1 n.37, 65,322/3. And ozone is linked to thousands of premature deaths each year. EPA, *Health Risk and Exposure Assessment for Ozone* (August 2014) at 8-6 to 8-7.

When Idaho's current crop burning rules were adopted, all parties – including DEQ - agreed that protection of public health warranted prohibiting burning when pollution exceeded, or was projected to exceed within 24-hours, 75% of any national ambient air quality standard (NAAQS). Now, after EPA has determined that ozone is even more dangerous than previously thought, and at lower levels, DEQ irrationally proposes to weaken the 75% threshold to 90% for ozone. The proposal arbitrarily treats ozone differently from other air pollutants for this purpose. There is no scientific or other reasoned basis for such differential treatment. And the choice of 90% as the new threshold for ozone means weaker protection in absolute as well as percentage terms. Under the pre-existing (2008) ozone standard of 75 parts per billion (ppb), the 75% threshold meant that burning could not occur if ozone levels exceeded or were predicted to exceed 56 ppb (75% of 75 ppb). Under the proposed rule amendment, burning will be allowed unless ozone levels exceed or are predicted to exceed 63 ppb --90% of the 70 ppb standard adopted in 2015. In other words, DEQ is using the occasion of EPA's strengthening the ozone standard (based on science showing ozone is more dangerous than previously thought) to weaken protection against ozone in Idaho and nearby states. Such an approach is not only irrational in the extreme, but also flouts DEQ's responsibility to protect public health. ID STAT. §39-102A(1)(establishing DEQ "to protect human health and the environment as its sole mission").

We further note that leading medical societies and health organizations, including the American Medical Association, American Lung Association, American Academy of Pediatrics, American Thoracic Society, and American Heart Association all urged EPA to adopt a more protective ozone standard of 60 ppb, based on evidence that ozone harms people's health at (and even below) that level. Dkt-2720,- 3863. DEQ's proposal would thus allow burning to occur even when ozone pollution already exceeds (or is expected to exceed) a level deemed unsafe by medical professionals.

Nor is there any basis for claiming that violations of the NAAQS will not occur under the new weaker threshold. DEQ says it will provide supporting analysis later that purports to so demonstrate, but that approach is indefensible. It puts the cart before the horse: DEQ is weakening protection before it actually has proof that the weakening will not threaten violation of the NAAQS. At worst, it indicates that DEQ has already prejudged the outcome of such an analysis, rather than planning a truly objective, unbiased approach.

Further, DEQ is not analyzing the cumulative impacts from all pollutants of concern, most notably how human health will be impacted due to both PM<sub>2.5</sub> and ozone concentrations in the air. Ozone and PM<sub>2.5</sub> pollution are both associated with adverse human health effects such as lung structure dysfunction, inflammation and infection, asthma, and premature deaths. A review of peer-reviewed scientific journal articles

discussing threats to human health highlights the potential compounding effects of these pollutants (e.g. Fan et al., 2012 and Hou et al. 2015). Given the potential compounding effects PM<sub>2.5</sub> and ozone can have on human health, analyses of health impacts need to account for the combined effects of both pollutants. DEQ irrationally disregards such combined impacts, and instead analyzes the threats to human health from ozone and PM<sub>2.5</sub> on an individual basis with little regard to the cumulative or synergistic impact. DEQ's chosen method of analyzing these pollutants is not scientifically sound and therefore should not be deemed acceptable as protective of human health.

Additionally, during the initial CRB rulemaking session, Dr. Craig Dietrich – a toxicologist with the Idaho Department of Health and Welfare – presented information on the health effects from ozone and PM<sub>2.5</sub>. Dr. Dietrich's presentation included recent science available that analyzed data over variable geographic regions and time periods (both annually and seasonally). The science shows that for some significant health endpoints, PM<sub>2.5</sub> is even more harmful than ozone.

In a later rulemaking session on July 20<sup>th</sup>, 2016, Dr. Dietrich made verbal comments providing a clear, thorough, and scientific justification as to why reducing both ozone and PM<sub>2.5</sub> was critical for the protection of human health. To briefly summarize, high ambient concentrations of ozone put sensitive populations at an increased risk for respiratory issues. High ozone combined with high PM<sub>2.5</sub> concentrations creates a compounding effect, exacerbating the stresses inflicted upon these populations. Although we strongly oppose weakening of protections against either pollutant, DEQ's proposal to weaken ozone protection without strengthening PM<sub>2.5</sub> protection makes the threat to public health even worse.

Of upmost concern is the underlying motivation for the changes in regulatory thresholds. DEQ asserts their decision is supported by science, yet it is clear that the science they are utilizing has been selectively chosen in order to fit their narrative. Any science evoking doubt on the selected course of action has been intentionally ignored and left out of consideration. Human health advocates present in the negotiated rulemakings found it concerning that proposals for better protection of human health were met with a high-degree of scrutiny and ultimately dismissed, whereas proposals for weakening protection were accepted by DEQ relatively unchallenged. When verbally questioned over this discrepancy during rulemaking sessions, DEQ's AG responded that this was due to the State Legislature and their general unwillingness to pass more stringent rules. It is clear that the proposed rule changes are being influenced by politics and not the best available science. Regardless of political pressure, these rules must be protective of human health, and the science used to justify these changes cannot be selectively chosen in order to be politically appealing.

## **2. Breach of Agreement**

The proposal represents a deplorable breach of the agreement reached by all parties in good faith on a resolution of the field burning issue in 2008. This proposal is not only a breach of an agreement, but a breach of trust. Public officials and others regularly urge concerned citizens and environmental groups to work cooperatively with agencies and business interests to achieve consensus-based solutions to their disagreements. Yet DEQ now seeks to renege on the very agreement they made with affected citizens only a few years ago. This duplicity is all the more inexcusable given that members of the CRB Board and affected citizens offered a constructive compromise proposal to address concerns that were raised, but DEQ refused to seriously consider it.

The fact that the ozone NAAQS was revised hardly justifies a breach of the original agreement. The parties agreed to the “percent of the NAAQS” approach knowing full well that EPA is required to review and update the NAAQS every five years, that the NAAQS could therefore change, and knowing that EPA’s science advisers had recommended a range of ozone standards going down to as low as 60 ppb. It is too late in the day for DEQ and agri-business to pull a bait-and-switch to support a weaker approach.

Relatedly, DEQ here failed to comply with the requirements for negotiated rulemaking. By statute, negotiated rulemaking is defined as “a process in which all interested persons and the agency seek consensus on the content of a rule.” ID ST §67-5220(2). There was no consensus on the content of the rule here. As indicated by the record, citizen and environmental group representatives strongly disagreed with the final proposal developed by DEQ. Further, DEQ arbitrarily refused to accept a compromise framework verbally agreed to by the growers and the public health representatives, with DEQ present, under which the PM<sub>2.5</sub> threshold would be tightened proportionately in exchange for a loosening of ozone restrictions. DEQ simply ignored the consensus proposal and drafted the rule to only loosen ozone protections. It is therefore unlawful, arbitrary, and grossly misleading to present the proposal as a negotiated rulemaking.

## **3. DEQ’s Justifications for the Proposal are Unsupported and Irrelevant:**

In support of the proposal, DEQ cites potential economic hardship to growers if the existing rule isn’t revised. Under the Clean Air Act, however, claims of economic impact are not sufficient to support a SIP revision. The state must show that the revision will not cause or contribute to a NAAQS violation, or interfere with any applicable requirements of the Act. Moreover, promoting the economic interests of agribusiness is not DEQ’s function. See ID STAT. §39-102A(1). In any event, the record lacks a reasoned analysis supported by evidence showing that economic hardship is likely. Bare assertions by agri-business interests do not suffice as actual evidence and do not provide a rational basis for claiming proof or likelihood of hardship. Even if retention of the current rule would result in materially fewer burn days, there is no showing of why that would result in hardship. Moreover, DEQ has not considered or evaluated alternatives to

burning, such as those adopted or encouraged in other states. In Washington, the State mandated a phase-out of grass residue burning after an exhaustive research and public participation process determined that alternatives were economically available and feasible, and after a peer-reviewed study showed that the public health costs from grass residue burning outweighed the economic benefits. See attached EPA Itr. Research conducted by Washington State University and Oregon State University supports the conclusion that there are economically viable alternatives available that reduce or eliminate the need for burning. Id.

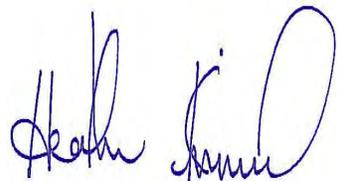
DEQ also asserts without factual support that field burning has minimal impact on ozone levels. It well established that biomass burning produces substantial emissions of NO<sub>x</sub> and VOCs, the main ozone-forming pollutants. Moreover, studies have shown that field burning and wildland fires do in fact contribute significantly to elevated ozone levels. See, e.g., [https://www3.epa.gov/ttn/chief/conference/ei21/session5/reid\\_pres.pdf](https://www3.epa.gov/ttn/chief/conference/ei21/session5/reid_pres.pdf) ; <https://www2.ucar.edu/atmosnews/news/916/wildfires-cause-ozone-pollution-violate-health-standards-new-study-shows>. Indeed, the first of the foregoing cites found that ozone resulting from field burning was the “but-for” cause of ozone NAAQS violations.

DEQ also asserts that 75% of the ozone NAAQS is close to background ozone concentrations in rural Idaho. But DEQ cites no data to support of this claim, and in any event it is truly beside the point. Because ozone pollution at levels in excess of the NAAQS is dangerous, especially to children, asthmatics, and senior citizens, it does not matter whether the ozone is “background” or not. On those days when ozone exceeds or is predicted to exceed 75% of the NAAQS, it is approaching levels that EPA has determined are unsafe: That is why the current rule correctly prohibits burning at such times.

For all the foregoing reasons, DEQ must withdraw the proposed rule. These comments were prepared with the assistance of attorneys from Earthjustice.



Patti Gora-McRavin  
Safe Air for Everyone



Heather Kimmel  
American Lung Association in Idaho

*Austin Hopkins*

Austin Hopkins  
Idaho Conservation League

*Courtney E. Washburn*

Courtney E. Washburn  
Conservation Voters for Idaho

**From:** [Carol Jenkins](#)  
**To:** [Paula Wilson](#)  
**Subject:** Please withdraw proposed CRB rule changes protect our air quality  
**Date:** Monday, October 10, 2016 2:04:26 PM

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Dear Paula Wilson,

Proposed rule changes in Docket No. 58-0101-1601 do not reflect new research on ozone's effect on human health and should be withdrawn.

Carol Jenkins  
P O Box 453  
Sagle, ID 83860

**From:** [Denise Thompson](#)  
**To:** [Paula Wilson](#)  
**Subject:** Please withdraw proposed CRB rule changes protect our air quality  
**Date:** Wednesday, October 05, 2016 5:44:35 PM

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Dear Paula Wilson,

Proposed rule changes in Docket No. 58-0101-1601 do not reflect new research on ozone's effect on human health and should be withdrawn.

Denise Thompson  
P o box 1789  
Bonners Ferry, ID 83805

**From:** [Diane Ringler](#)  
**To:** [Paula Wilson](#)  
**Subject:** Please withdraw proposed CRB rule changes protect our air quality  
**Date:** Wednesday, October 05, 2016 4:34:00 PM

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Dear Paula Wilson,

Proposed rule changes in Docket No. 58-0101-1601 do not reflect new research on ozone's effect on human health and should be withdrawn.

You should be more stringent in your allowance of any type of burning. The air quality in Island Park and other areas was severely compromised this summer due to all the fires. Waking up with headaches and parched throats is an indication that there is a problem. I think you should be more restrictive.

Diane Ringler  
4216 Mountain View Drive  
Island Park, ID 83429

**From:** [Elaine French](#)  
**To:** [Paula Wilson](#)  
**Subject:** Please withdraw proposed CRB rule changes protect our air quality  
**Date:** Wednesday, October 05, 2016 4:29:48 PM

---

Dear Paula Wilson,

Proposed rule changes in Docket No. 58-0101-1601 do not reflect new research on ozone's effect on human health and should be withdrawn.

Thank you, Elaine French

Elaine French  
114 Wall St., PO Box 9320  
Ketchum, ID 83340

**From:** [Erin Zaleski](#)  
**To:** [Paula Wilson](#)  
**Subject:** Please withdraw proposed CRB rule changes protect our air quality  
**Date:** Thursday, October 06, 2016 11:08:13 AM

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Dear Paula Wilson,

Proposed rule changes in Docket No. 58-0101-1601 do not reflect new research on ozone's effect on human health and should be withdrawn.

You may not think this is a big deal, but you must think of those with respiratory diseases. To some this change could be potentially fatal! Let's show respect for life and keep the current rules in place.

If preserving a human life isn't a concern to you, think of our budgets that will be stressed by having to go to the emergency room to get treatments that keep our airways open and us breathing. If you think this is an exaggeration, visit some hospitals with kids suffering from respiratory diseases and find out what this rule change will mean to them.

God bless,

Erin Zaleski  
6311 Solar Way  
Boise, ID 83709

Page 1

1 Department of Environmental Quality  
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 6 Public Hearing  
 7  
 8 REPORTER'S TRANSCRIPT OF PROCEEDINGS  
 9  
 10 before Paula Wilson, Hearing Facilitator  
 11  
 12 IDAPA 58  
 13 DEPARTMENT OF ENVIRONMENTAL QUALITY 58.01.01  
 14 RULES FOR THE CONTROL OF AIR POLLUTION IN IDAHO  
 15 Docket Nos. 58-0101-1601 and 58-0101-1604  
 16 Location  
 17 Department of Environmental Quality  
 18 3 p.m., October 11, 2016  
 19 Conference Room A  
 20 1410 North Hilton  
 21 Boise, Idaho  
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 23 \* \* \* \* \*  
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 25  
 26 Reported by  
 27 Dianne E. Cromwell  
 28 CSR No. 21  
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Page 3

1 BOISE, IDAHO  
 2 October 11, 2016, 3:00 p.m.  
 3  
 4 HEARING FACILITATOR: Let the record that  
 5 Paula Wilson is the hearing facilitator for this  
 6 proceeding.  
 7 It is 3 p.m. on the 11th day of  
 8 October. The purpose of this hearing is to  
 9 receive comments on Air Quality Rule Dockets  
 10 58-0101-1601 and 58-0101-1604 as required by Idaho  
 11 Code Section 67-5222. Written comments will also  
 12 be accepted at this hearing.  
 13 We are in the DEQ conference center in  
 14 Boise, Idaho. Notice of this hearing appeared in  
 15 the Idaho Administrative Bulletin as required by  
 16 Idaho Code Section 67-5221 on September 7, 2016.  
 17 This publication was timely made, and all  
 18 necessary notice requirements have been met.  
 19 A sign-in sheet is available for you to  
 20 mark whether or not you intend to comment on the  
 21 rule dockets. After a brief statement made by  
 22 DEQ, those of you indicating a desire to comment  
 23 will be allowed an opportunity to present your  
 24 oral comment.  
 25 The commenters are asked to limit the

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 3 S P E A K E R S  
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 5 PAGE:  
 6 ANDERSON, Mary IDEQ..... 4  
 7 FLEISHER, Marc Save Our Summers..... 6  
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1 comments to the subject of Rule Dockets  
 2 58-0101-1601 and 58-0101-1604.  
 3 Because the comments are being  
 4 recorded, I ask that you state your name clearly  
 5 and provide the spelling if necessary.  
 6 At this time DEQ will make its  
 7 statement. And I want to say that because the two  
 8 documents are related, that DEQ's statement will  
 9 cover both rule dockets, and also the comments can  
 10 be -- it's all going to be in the same transcript,  
 11 so it doesn't have to be there's this and there's  
 12 that. So just so you know that.  
 13 Okay. Go ahead.  
 14  
 15 MARY ANDERSON,  
 16 appeared and gave the following statement:  
 17 MS. ANDERSON: My name is Mary Anderson. I  
 18 am the Mobile and Area Source Program Manager for  
 19 the Idaho Department of Environmental Quality's  
 20 Air Quality Division. The purpose of this hearing  
 21 is to gather public comments on proposed Rule  
 22 Docket Nos. 58-0101-1601 and 58-0101-1604.  
 23 Through the negotiated rulemaking  
 24 process, DEQ developed a proposed rule that gives  
 25 DEQ the authority to allow crop residue burning

Page 5

1 when ozone levels are not exceeding, or expected  
 2 to exceed, 90 percent rather than 75 percent of  
 3 the ozone NAAQS. This new 90 percent level is  
 4 still protective of the ozone NAAQS, and also  
 5 provides farmers the ability to burn while  
 6 following smoke management best practices.  
 7 This rule will be promulgated under  
 8 Docket No. 58-0101-1601. As an outgrowth of the  
 9 negotiations, DEQ also developed an interim rule  
 10 that allows the CRB Program to continue operating  
 11 under the 2008 ozone NAAQS until EPA approves the  
 12 new 90 percent ozone level in a revised State  
 13 Implementation Plan. This rule will be  
 14 promulgated separately under Docket  
 15 No. 58-0101-1604.  
 16 HEARING FACILITATOR: Okay. So far the  
 17 person we have that is going to make comments,  
 18 Marc Fleisher, and it says he is with Save Our  
 19 Summers Northwest --  
 20 MR. FLEISHER: Yes.  
 21 HEARING FACILITATOR: He will comment on  
 22 both documents. Go ahead.  
 23 ///  
 24 ///  
 25 ///

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1 and the growers, that this rule be withdrawn.  
 2 That's the content of my statement.  
 3 HEARING FACILITATOR: Okay. Thank you.  
 4 MR. FLEISHER: How long is this meeting  
 5 open?  
 6 HEARING FACILITATOR: We will keep it open  
 7 until at least 3:30 or so.  
 8 (Recess.)  
 9 HEARING FACILITATOR: It is 3:30 p.m., and  
 10 the hearing is now closed.  
 11 (3:31 p.m. The proceedings adjourned.)  
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Page 6

1 MARC FLEISHER,  
 2 appeared and gave the following statement:  
 3 MR. FLEISHER: First of all, Mary, hi.  
 4 MS. ANDERSON: Hi.  
 5 MR. FLEISHER: She is the only person maybe  
 6 that I know in this room.  
 7 My name is Marc Fleisher. I'm with  
 8 Save Our Summers Northwest.  
 9 And I am, up until the last meeting of  
 10 the Crop Residue Burning Advisory Board, I was a  
 11 member of that Board. My place was taken by  
 12 Austin Hopkins of the Idaho Conservation League.  
 13 So my statement is that, my  
 14 understanding from talking with Patty Gora-McRavin  
 15 is that at one point there was what you could call  
 16 a gentleman's agreement that in return for  
 17 loosening the requirements for ozone, that there  
 18 would be a corresponding and matching tightening  
 19 of the requirements for PM 2.5 NAAQS. And it  
 20 appears that the current rule that's being  
 21 promulgated does not do that.  
 22 I think that there is no good science  
 23 that allows this rule to go forward, and my  
 24 recommendation would be that since it ignored the  
 25 advise of both those concerned with public health

Page 8

1 REPORTER'S CERTIFICATE  
 2  
 3  
 4  
 5 I, Dianne E. Cromwell, Court Reporter, a  
 6 Notary Public, do hereby certify:  
 7 That I am the reporter who took the  
 8 proceedings had in the above-entitled action in  
 9 machine shorthand and thereafter the same was  
 10 reduced into typewriting under my direct  
 11 supervision; and  
 12 That the foregoing transcript contains a  
 13 full, true, and accurate record of the proceedings  
 14 had in the above and foregoing cause, which was  
 15 heard at BOISE, Idaho.  
 16 IN WITNESS WHEREOF, I have hereunto set  
 17 my hand November 2, 2016.  
 18  
 19  
 20  
 21  
 22 Dianne E. Cromwell, Court Reporter  
 23 CSR No. 21  
 24  
 25

<p style="text-align: center;"><b>A</b></p> <p>ability 5:5  <b>above-entitled</b> 8:8  <b>accepted</b> 3:12  <b>accurate</b> 8:13  <b>action</b> 8:8  <b>adjourned</b> 7:11  <b>Administrative</b>  3:15  <b>advise</b> 6:25  <b>Advisory</b> 6:10  <b>agreement</b> 6:16  <b>ahead</b> 4:13 5:22  <b>Air</b> 1:10 3:9 4:20  <b>allow</b> 4:25  <b>allowed</b> 3:23  <b>allows</b> 5:10 6:23  <b>Anderson</b> 2:4 4:15  4:17,17 6:4  <b>appeared</b> 3:14 4:16  6:2  <b>appears</b> 6:20  <b>approves</b> 5:11  <b>Area</b> 4:18  <b>asked</b> 3:25  <b>ASLETT</b> 2:11  <b>Austin</b> 6:12  <b>authority</b> 4:25  <b>available</b> 3:19</p>	<p>clearly 4:4  <b>closed</b> 7:10  <b>Code</b> 3:11,16  <b>comment</b> 3:20,22  3:24 5:21  <b>commenters</b> 3:25  <b>comments</b> 3:9,11  4:1,3,9,21 5:17  <b>concerned</b> 6:25  <b>conference</b> 1:13  3:13  <b>Conservation</b> 6:12  <b>contains</b> 8:12  <b>content</b> 7:2  <b>continue</b> 5:10  <b>CONTROL</b> 1:10  <b>corresponding</b> 6:18  <b>Court</b> 8:5,21  <b>cover</b> 4:9  <b>CRB</b> 5:10  <b>Cromwell</b> 1:22 8:5  8:21  <b>crop</b> 4:25 6:10  <b>CSR</b> 1:22 8:22  <b>current</b> 6:20</p>	<p><b>EPA</b> 5:11  <b>exceed</b> 5:2  <b>exceeding</b> 5:1  <b>expected</b> 5:1</p> <p style="text-align: center;"><b>F</b></p> <p><b>F</b> 8:1  <b>facilitator</b> 1:8 3:4,5  5:16,21 7:3,6,9  <b>far</b> 5:16  <b>farmers</b> 5:5  <b>First</b> 6:3  <b>Fleisher</b> 2:5 5:18  5:20 6:1,3,5,7 7:4  <b>FLOYD</b> 2:12  <b>following</b> 4:16 5:6  6:2  <b>foregoing</b> 8:12,14  <b>forward</b> 6:23  <b>full</b> 8:13</p>	<p>2:12  <b>ignored</b> 6:24  <b>Implementation</b>  5:13  <b>indicating</b> 3:22  <b>intend</b> 3:20  <b>interim</b> 5:9</p> <p style="text-align: center;"><b>J</b></p> <p style="text-align: center;"><b>K</b></p> <p><b>K</b> 2:2  <b>keep</b> 7:6  <b>know</b> 4:12 6:6</p>	<p><b>Nos</b> 1:11 4:22  <b>Notary</b> 8:6  <b>notice</b> 3:14,18  <b>November</b> 8:17</p> <p style="text-align: center;"><b>O</b></p> <p><b>O</b> 2:8 8:1  <b>October</b> 1:13 3:2,8  <b>Okay</b> 4:13 5:16 7:3  <b>open</b> 7:5,6  <b>operating</b> 5:10  <b>opportunity</b> 3:23  <b>oral</b> 3:24  <b>outgrowth</b> 5:8  <b>ozone</b> 5:1,3,4,11,12  6:17</p>
<p style="text-align: center;"><b>B</b></p> <p><b>best</b> 5:6  <b>Board</b> 6:10,11  <b>Boise</b> 1:14 3:1,14  8:15  <b>brief</b> 3:21  <b>BROWN</b> 2:11  <b>Bulletin</b> 3:15  <b>burn</b> 5:5  <b>burning</b> 4:25 6:10</p>	<p style="text-align: center;"><b>D</b></p> <p><b>day</b> 3:7  <b>Department</b> 1:1,10  1:12 4:19  <b>DEQ</b> 3:13,22 4:6  4:24,25 5:9  <b>DEQ's</b> 4:8  <b>desire</b> 3:22  <b>developed</b> 4:24 5:9  <b>Dianne</b> 1:22 8:5,21  <b>direct</b> 8:10  <b>Division</b> 4:20  <b>Docket</b> 1:11 4:22  5:8,14  <b>dockets</b> 3:9,21 4:1  4:9  <b>documents</b> 4:8 5:22</p>	<p style="text-align: center;"><b>G</b></p> <p><b>gather</b> 4:21  <b>gentleman's</b> 6:16  <b>gives</b> 4:24  <b>go</b> 4:13 5:22 6:23  <b>going</b> 4:10 5:17  <b>good</b> 6:22  <b>Gora-McRavin</b>  6:14  <b>growers</b> 7:1</p>	<p style="text-align: center;"><b>L</b></p> <p><b>L</b> 2:8  <b>League</b> 6:12  <b>level</b> 5:3,12  <b>levels</b> 5:1  <b>limit</b> 3:25  <b>Location</b> 1:12  <b>long</b> 7:4  <b>loosening</b> 6:17</p>	<p style="text-align: center;"><b>P</b></p> <p><b>P</b> 2:2,8 8:1  <b>p.m</b> 1:13 3:2,7 7:9  7:11  <b>PAGE</b> 2:4,10  <b>Patty</b> 6:14  <b>Paula</b> 1:8 3:5  <b>percent</b> 5:2,2,3,12  <b>person</b> 5:17 6:5  <b>place</b> 6:11  <b>Plan</b> 5:13  <b>PM</b> 6:19  <b>point</b> 6:15  <b>POLLUTION</b> 1:10  <b>practices</b> 5:6  <b>present</b> 3:23  <b>proceeding</b> 3:6  <b>proceedings</b> 1:7  7:11 8:8,13  <b>process</b> 4:24  <b>Program</b> 4:18 5:10  <b>promulgated</b> 5:7  5:14 6:21  <b>proposed</b> 4:21,24  <b>protective</b> 5:4  <b>provide</b> 4:5  <b>provides</b> 5:5  <b>public</b> 1:6 4:21  6:25 8:6  <b>publication</b> 3:17  <b>purpose</b> 3:8 4:20</p>
<p style="text-align: center;"><b>C</b></p> <p><b>C</b> 8:1,1  <b>call</b> 6:15  <b>Carl</b> 2:11  <b>cause</b> 8:14  <b>center</b> 3:13  <b>certify</b> 8:6  <b>CHIN</b> 2:12</p>	<p style="text-align: center;"><b>E</b></p> <p><b>E</b> 1:22 2:2,2,8,8 8:1  8:1,1,1,5,21  <b>Environmental</b> 1:1  1:10,12 4:19</p>	<p style="text-align: center;"><b>H</b></p> <p><b>hand</b> 8:17  <b>health</b> 6:25  <b>heard</b> 8:15  <b>hearing</b> 1:6,8 3:4,5  3:8,12,14 4:20  5:16,21 7:3,6,9,10  <b>hereunto</b> 8:16  <b>hi</b> 6:3,4  <b>Hilton</b> 1:14  <b>Hopkins</b> 6:12</p> <p style="text-align: center;"><b>I</b></p> <p><b>Idaho</b> 1:10,14 3:1  3:10,14,15,16  4:19 6:12 8:15  <b>IDAPA</b> 1:9  <b>IDEQ</b> 2:4,11,11,12</p>	<p style="text-align: center;"><b>M</b></p> <p><b>machine</b> 8:9  <b>management</b> 5:6  <b>Manager</b> 4:18  <b>Marc</b> 2:5 5:18 6:1,7  <b>mark</b> 3:20  <b>Mary</b> 2:4 4:15,17  6:3  <b>matching</b> 6:18  <b>meeting</b> 6:9 7:4  <b>member</b> 6:11  <b>met</b> 3:18  <b>Mobile</b> 4:18</p> <p style="text-align: center;"><b>N</b></p> <p><b>N</b> 2:8  <b>NAAQS</b> 5:3,4,11  6:19  <b>name</b> 4:4,17 6:7  <b>necessary</b> 3:18 4:5  <b>negotiated</b> 4:23  <b>negotiations</b> 5:9  <b>new</b> 5:3,12  <b>North</b> 1:14  <b>Northwest</b> 5:19 6:8</p>	

<p><b>Q</b></p> <p>Quality 1:1,10,12 3:9 4:20 Quality's 4:19</p> <hr/> <p><b>R</b></p> <p>R 2:2,8 8:1,1,1 R' 8:1 receive 3:9 Recess 7:8 recommendation 6:24 record 3:4 8:13 recorded 4:4 reduced 8:10 related 4:8 Reported 1:21 reporter 8:5,7,21 REPORTER'S 1:7 required 3:10,15 requirements 3:18 6:17,19 residue 4:25 6:10 return 6:16 revised 5:12 room 1:13 6:6 rule 3:9,21 4:1,9,21 4:24 5:7,9,13 6:20 6:23 7:1 rulemaking 4:23 RULES 1:10</p> <hr/> <p><b>S</b></p> <p>S 2:2,2,8,8 8:1 Save 2:5 5:18 6:8 says 5:18 science 6:22 Section 3:11,16 separately 5:14 September 3:16 set 8:16 sheet 3:19 shorthand 8:9 sign-in 3:19 smoke 5:6 Source 4:18 spelling 4:5 state 4:4 5:12 statement 3:21 4:7</p>	<p>4:8,16 6:2,13 7:2 subject 4:1 Summers 2:5 5:19 6:8 supervision 8:11</p> <hr/> <p><b>T</b></p> <p>T 2:8 8:1,1,1 taken 6:11 talking 6:14 Tami 2:11 Tanya 2:12 Thank 7:3 think 6:22 Tiffany 2:12 tightening 6:18 time 4:6 timely 3:17 transcript 1:7 4:10 8:12 true 8:13 two 4:7 typewriting 8:10</p> <hr/> <p><b>U</b></p> <p>understanding 6:14</p> <hr/> <p><b>V</b></p> <hr/> <p><b>W</b></p> <p>want 4:7 WHEREOF 8:16 Wilson 1:8 3:5 withdrawn 7:1 WITNESS 8:16 Written 3:11</p> <hr/> <p><b>X</b></p> <hr/> <p><b>Y</b></p> <hr/> <p><b>Z</b></p> <hr/> <p><b>0</b></p> <hr/> <p><b>1</b></p> <p>11 1:13 3:2 11th 3:7 1410 1:14</p>	<p><b>2</b></p> <p>2 8:17 2.5 6:19 2008 5:11 2016 1:13 3:2,16 8:17 21 1:22 8:22</p> <hr/> <p><b>3</b></p> <p>3 1:13 2:11,11,12 2:12 3:7 3:00 3:2 3:30 7:7,9 3:31 7:11</p> <hr/> <p><b>4</b></p> <p>4 2:4</p> <hr/> <p><b>5</b></p> <p>58 1:9 58-0101-1601 1:11 3:10 4:2,22 5:8 58-0101-1604 1:11 3:10 4:2,22 5:15 58.01.01 1:10</p> <hr/> <p><b>6</b></p> <p>6 2:5 67-5221 3:16 67-5222 3:11</p> <hr/> <p><b>7</b></p> <p>7 3:16 75 5:2</p> <hr/> <p><b>8</b></p> <hr/> <p><b>9</b></p> <p>90 5:2,3,12</p>		
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Date and Location: 10/11/16 - Boise, Idaho

Name and Email Address	Affiliation	Do you wish to comment on Rule Docket 58-0101-1601?  90% Ozone NAAQS	Do you wish to comment on Rule Docket 58-0101-1604?  Interim Rule
MARC FLEISHER MARC.FLEISHER@GMAIL.COM	SOS NW SAVE OUR SUMMERS NW	YES	YES
Tami Aslett	IDEQ		
Carl Brown	IDEQ		
Mary Anderson	DEQ		
Tamya Chin	DEQ		
Tiffany Floyd	DEQ		



## **Idaho Farm Bureau Federation**

500 West Washington Street  
Boise, Idaho 83702  
(208) 342-2688 Fax (208) 342-8585

October 11, 2016

Ms. Paula Wilson  
Idaho Department of Environmental Quality  
1410 N. Hilton Street, Boise, Idaho 83706

RE: COMMENTS – Docket No. 58-0101-1601 & Docket No. 58-0101-1604

Dear Ms. Wilson:

On behalf of the more than 76,000 member families of the Idaho Farm Bureau Federation, I offer these comments for the two docket items regarding the proposed rule change to the burning approval criteria for crop residue burning (CRB), and rule implementation plan. For more than 75 years, the Idaho Farm Bureau has been recognized as the leading advocate for private property rights and prosperity which comes through the wise use of and responsible stewardship of our natural resources. We thank the Department of Environmental Quality (DEQ) for this opportunity.

During the negotiated rule making process, the success and effectiveness of the CRB program was acknowledged and discussed. In fact, since the inception of the CRB negotiated agreement, there have been no documented hospitalizations or deaths caused by CRB events within the state.<sup>i</sup>

Recent changes made by the Environmental Protection Agency (EPA) to the Ozone National Ambient Air Quality Standards (NAAQS) from 75 ppb to 70 ppb would severely alter the value of the CRB program, which enables farmers to use this essential agriculture tool, while being protective of the state's most sensitive populations. In fact, under the current CRB regime, the new lower ozone standard used to determine burn days would be very close to natural ozone background levels, leaving a very small window within which to authorize the program. Based on historic data, it is estimated that the number of no burn days for CRB events could more than double.<sup>ii</sup>

The proposed rule as outlined in Docket No. 58-0101-1601, would adjust the state's burning approval criteria for CRB events from 75% of the 2008 Ozone NAAQS (the equivalent 56 ppb) to 90% of the 2015 Ozone NAAQS (the equivalent of 63 ppb). This adjustment would allow the program to successfully continue in the future with ongoing robust safeguards for human health, and an improved use of the management tool for farmers.

As an example of how this rule change will improve the efficiency of the CRB program, there have been repeated occurrences over the last eight years when CRB was denied due to the current ozone standard on days when it would have been an ideal time to burn (adequate smoke lift, proper mixing, appropriate air movement and direction, etc.). The proposed change would allow farmers to spread necessary burning out over a few more good days, thus further diluting the smoke rather than concentrating it on the few days that meet current criteria. Idaho Farm Bureau supports this proposed change.

Much consideration was given to the PM<sub>2.5</sub> criteria of the burn decision during the negotiated rule making process. DEQ determined that it could not scientifically justify adjusting the criteria to an even more stringent and overly burdensome standard.<sup>iii</sup> Idaho has successfully operated under a 25% margin of safety with the current PM<sub>2.5</sub> standard of the CRB program, and any further increase of the margin would be highly unnecessary and economically detrimental. Idaho Farm Bureau is opposed to any tightening of the PM<sub>2.5</sub> criteria for the CRB program.

It is important for all to remember that this proposed rule change only considered one portion of the DEQ's burn decision criteria. The second tier of the existing burn decision rule states that DEQ must also determine that "ambient air quality levels have not reached, and are not forecasted to reach and persist at, eighty percent (80%) of the one (1) hour action criteria for particulate matter under Section 556 of these rules."<sup>iv</sup> This portion of the rule sets a PM<sub>2.5</sub> 1-hour average concentration limit of 64 µg/m<sup>3</sup> that is required to be met when DEQ makes a burn decision. This portion of the existing rule provides an added layer of protection for public health and the State's most sensitive populations.

In the 2015 Annual Report of the CRB Program, it cites several dates and locations where CRB events were approved and conducted near institutions with sensitive populations.<sup>v</sup> These events document PM<sub>2.5</sub> 1-hour average concentrations nowhere near 80% of the 1-hour action criteria for particulate matter. The Idaho Farm Bureau views this second tier of the burn decision rule, together with the first tier criteria for PM<sub>2.5</sub> 24-hour average, as substantial and robust protection to public health as demonstrated over the past eight years.

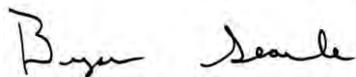
The proposed implantation plan, as outlined in Docket No. 58-0101-1604, would allow DEQ to operate the CRB program using the 2008 Ozone NAAQS through the 2017 burn season. This would allow the CRB program to function as it currently operates, using the same NAAQS as the past eight years through the specified time frame.

After approval from the state legislature and other governing agencies, the CRB program would then operate under the new rules as proposed in Docket No. 58-0101-1601, with the adjusted ozone criteria. The implementation strategy will offer fewer complications and interferences to farmers that use CRB as a management tool, while continuing to provide the public with the necessary air quality standards. Idaho Farm Bureau is supportive of the proposed implementation strategy.

In conclusion, we would like to thank DEQ for their work during the negotiated rule making process. With many hours of discussion, analysis and careful deliberation, DEQ's efforts have resulted in a proposed rule that we can support.

On behalf of the entire membership at the Idaho Farm Bureau, I thank you for your consideration of these comments. Please contact Braden Jensen at 342-2688 if you have any questions regarding this this topic.

Sincerely,



Bryan Searle, President  
Idaho Farm Bureau Federation

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<sup>i</sup> <http://www.deq.idaho.gov/media/60165788/crb-advisory-committee-meeting-minutes-021715.pdf> (page2)

<sup>ii</sup> <http://www.deq.idaho.gov/media/60178476/58-0101-1601-rulemaking-presentation-051816.pdf> (page 7-8)

<sup>iii</sup> <http://www.deq.idaho.gov/media/60178630/58-0101-1601-draft-2-0616.pdf>

<sup>iv</sup> <https://adminrules.idaho.gov/rules/current/58/0101.pdf> (page 171)

<sup>v</sup> <http://www.deq.idaho.gov/media/60178051/crb-annual-report-2015.pdf> (page 6-7)



**Idaho Grain Producers Association**

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Boise, Idaho 83702-5832

**O:** (208) 345-0706

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[www.idahograin.org](http://www.idahograin.org)

October 11, 2016

Director John Tippetts  
Idaho Department of Environmental Quality  
1410 N. Hilton  
Boise, ID 83706

Re: Air Quality: Docket No. 58-0101-1601 – Proposed Rule  
Air Quality: Docket No. 58-0101-1604 – Proposed Rule

Dear Director Tippetts,

As the president of the Idaho Grain Producers Association (IGPA), I appreciate the opportunity to comment on the proposed changes to Idaho's burn approval criteria. With over 600 wheat and barley farm families as members, IGPA is the key policy advocacy organization working on behalf of Idaho's grain industry with local, state, and federal leaders.

IGPA supports the use of burning as a Best Management Practice in managing heavy crop residue. Burning allows grain farmers to effectively and efficiently eradicate and prevent pests and diseases while maintaining yields, protecting water quality, decreasing chemical use, decreasing diesel use, and decreasing soil erosion on productive farm acres.

The U.S. Environmental Protection Agency (EPA) recently reduced the National Ambient Air Quality Standard (NAAQS) for ozone. Idaho's current statute allows for burning at 75 percent of the NAAQS – these two facts combined would have resulted in a significant reduction of allowable burn days.

IGPA is very pleased to see the proposed rule change the requirement that ambient air quality levels not exceed 90 percent of the ozone NAAQS for burns to be approved. Agency staff suggested that this change will result in anywhere from 20 – 80 additional high quality burn days per year, the actual number varying throughout the state (on the lower end of the range in North Idaho, on the higher end in South Idaho). This higher standard for ozone will allow DEQ to approve crop residue burning on days that present ideal conditions while still protecting public health – IGPA strongly supports this proposed rule.

The current timeline proposed by DEQ puts a statute change, a rule change, and an update to our State Implementation Plan in place by 2018. That leaves the 2017 burning season with significantly fewer allowable burn days (estimated at half to two-third fewer days for burning). IGPA supports the solution in Docket No. 58-0101-1604 that would allow the Crop Residue Burning Program to continue operating under the 2008 ozone NAAQS until EPA approves the new 90 percent ozone level in a revised State Implementation Plan.

In closing, IGPA would like to thank DEQ for hosting a series of thoughtful and engaging negotiated rulemaking meetings. We strongly support the proposed rules that were a result of that process.

Sincerely,

A handwritten signature in black ink that reads "Terry Kulik". The signature is written in a cursive style with a prominent loop on the letter 'K'.

Terry Kulik  
President  
Idaho Grain Producers Association

**From:** [Kam Majer](#)  
**To:** [Paula Wilson](#)  
**Subject:** Please withdraw proposed CRB rule changes protect our air quality  
**Date:** Wednesday, October 05, 2016 5:28:50 PM

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Dear Paula Wilson,

Proposed rule changes in Docket No. 58-0101-1601 do not reflect new research on ozone's effect on human health and should be withdrawn.

Instead of relaxing current regulations, the DEQ should protect the air quality. What is their motivation for a change?

Please do not support these rule changes.

Thank you for your attention.

Kam Majer, PhD

Kam Majer  
1501 Westwood Drive  
Sandpoint, ID 83864

**From:** [Karen Hendrickson](#)  
**To:** [Paula Wilson](#)  
**Subject:** Please withdraw proposed CRB rule changes protect our air quality  
**Date:** Wednesday, October 05, 2016 4:19:25 PM

---

Dear Paula Wilson,

Proposed rule changes in Docket No. 58-0101-1601 do not reflect new research on ozone's effect on human health and should be withdrawn.

As I drove towards Grangeville for lunch on Sept. 30th, I saw black (and I mean BLACK) billows of smoke rising from a crop field RIGHT NEXT DOOR TO TOWN. The blackness of that smoke told me that smoke was unquestionably toxic.

This summer North Central Idaho was enjoying a relatively fire-free, smoke-free summer of breathable air until field burning began. I live in the valley, yet daily was forced to breathe in smoke drifting into the valley from Camas Prairie fields.

The thousands of us who live in my area deserve clean air. Farmers have no right to pollute our air and, by doing so, risk harming all the rest of us.

WSU and OSU research shows that alternatives, economically feasible alternatives, to burning are available. DEQ must consider these alternatives to reduce or eliminate any need for field burning and, in turn, to reduce or eliminate health risks to Idahoans caused by field burning.

Please care about 'the rest of us.' Withdraw proposed CRB rule changes today.

Karen Hendrickson  
5695 Highway 12  
Kooskia, ID 83539

**From:** [katy Hefley](#)  
**To:** [Paula Wilson](#)  
**Subject:** Please withdraw proposed CRB rule changes protect our air quality  
**Date:** Wednesday, October 05, 2016 4:06:36 PM

---

Dear Paula Wilson,

Proposed rule changes in Docket No. 58-0101-1601 do not reflect new research on ozone's effect on human health and should be withdrawn. Please keep our air clean.

Thank you

katy Hefley  
794 Silverado Road  
Careywood, ID 83809

**From:** [Lexie de Fremery](#)  
**To:** [Paula Wilson](#)  
**Subject:** Please withdraw proposed CRB rule changes protect our air quality  
**Date:** Wednesday, October 05, 2016 8:53:18 PM

---

Dear Paula Wilson,

Proposed rule changes in Docket No. 58-0101-1601 do not reflect new research on ozone's effect on human health and should be withdrawn. The current rules work. Let's not relax protections to human health.

Sincerely,

Lexie de Fremery

Lexie de Fremery  
7837 Lakeshore Dr.  
Sagle, ID 83860

**From:** [Muriel Roberts](#)  
**To:** [Paula Wilson](#)  
**Subject:** Please withdraw proposed CRB rule changes protect our air quality  
**Date:** Wednesday, October 05, 2016 8:30:52 PM

---

Dear Paula Wilson,

Proposed rule changes in Docket No. 58-0101-1601 do not reflect new research on ozone's effect on human health and should be withdrawn.

Please consider the Crop Residue Burning Advisory Board's terms collaboratively agreed to.

The DEQ should be strengthening, not weakening air pollution rules to protect Idahoans' health.

Muriel Roberts  
545 1/2 South Nineteenth Avenue  
Pocatello ID 83201, ID 83201

**From:** [Nathaniel Role](#)  
**To:** [Paula Wilson](#)  
**Subject:** Please withdraw proposed CRB rule changes protect our air quality  
**Date:** Thursday, October 06, 2016 12:54:02 PM

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Dear Paula Wilson,

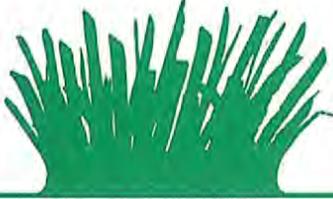
Proposed rule changes in Docket No. 58-0101-1601 do not reflect new research on ozone's effect on human health and should be withdrawn.

I live in Idaho because I value good air quality and would prefer, if anything, STRICTER regulations against burning.

Sincerely,

Nathaniel Role

Nathaniel Role  
322 W. 6th Ave.  
Clark Fork, ID 83811



# Nezperce Prairie Grass Growers Association

*Pride of the Prairie - We Make Your World Green*

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October 10, 2016

Director John Tippetts  
DEQ State Office  
1410 N. Hilton  
Boise, ID 83706

Re: Air Quality - Docket No. 58-0101-1601 & 58-0101-1604 - Negotiated Rule Making

Director Tippetts:

The Nezperce Prairie Grass Growers Association, representing blue grass seed producers in five northern Idaho counties, appreciates the opportunity to comment on Docket No. 58-0101-1601 & 58-0101-1604 and the Department's work through the negotiated rules process. Our growers have continued to follow, comment, participate, and engage in the crop residue program administered by the Department of Environmental Quality (DEQ) since its inception. We have a vested interest in seeing the program continue into the future, and over the past decade, we have valued the willingness of stakeholders to work together to find equitable resolutions.

In discussing the latest proposed rules provided by DEQ, NPGGA supports the proposals specified in Docket No. 58-0101-1601 & 58-0101-1604 as an acceptable path forward. We appreciate the response to the concerns that lack of implementation would significantly hinder production in the upcoming growing season. In that discussion the Board of Directors agreed that it is vital to continue to support a strong Crop Residue Burn Program that addresses the concerns of the environmental advocacy representatives and allows farmers to participate in basic and approved agricultural practices to raise their crops. We also agreed that the proposed state standard of 90% of EPA's revised ozone standard of 70 parts per billion is beneficial. Though the national standard is being tightened, Idaho has consistently fallen well below the ceiling of the standard due to a successful agreement and a program that has taken on the responsibility of weighing both health concerns and the necessities of agriculture.

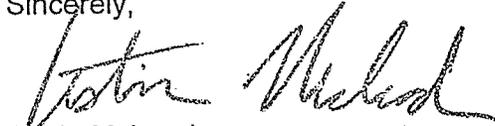
Early in the process, we had great concern with the segment of the draft proposal that would have tightened the state standard of 75% for PM<sub>2.5</sub> to 65% of EPA's PM<sub>2.5</sub> standard (35 µg/m<sup>3</sup>). The Clean Air Act requires EPA set National Ambient Air Quality Standards (NAAQS) and also requires EPA to periodically review and to update those standards as necessary. The circumstances leading to the promulgation of negotiated rules by DEQ and a proposal to revise the state statute after eight years, is due to the revision made by EPA on October 26, 2015, to the Ozone (NAAQS) standard. EPA has initiated the next review of the PM<sub>2.5</sub> (NAAQS) standard and our concern was with the likelihood that this standard will change in the near future.

- over -

Whether the standard for PM<sub>2.5</sub> decreases, increases, or stays the same, we did not see the haste or necessity to change the state standard of PM<sub>2.5</sub> that has been agreed upon to protect health and be well below EPA's standard. We appreciate that this has been reflected and we support keeping the state standard at 75% of EPA's standard for PM<sub>2.5</sub>. It is both logical and equitable to only address the national standards that have changed and we will anticipate being at the table with growers and the environmental advocacy groups to work towards compromise on PM<sub>2.5</sub> at that time.

The grass growing community has taken comfort and great pride in knowing that there have not been adverse health effects while the state agreement has been in place. Our farmers have always taken ownership of keeping our communities healthy and the Nezperce Prairie Grass Growers Association stands behind a negotiated rule process that allows agreement by stakeholders and the Idaho Legislature to be fostered by DEQ and approved by EPA without interruption to the 2017 crop residue burn season.

Sincerely,

A handwritten signature in black ink, appearing to read "Justin McLeod". The signature is written in a cursive, flowing style.

Justin McLeod  
President

**From:** [Rhea Verbanic](#)  
**To:** [Paula Wilson](#)  
**Subject:** Please withdraw proposed CRB rule changes protect our air quality  
**Date:** Tuesday, October 11, 2016 10:16:28 AM

---

Dear Paula Wilson,

Proposed rule changes in Docket No. 58-0101-1601 do not reflect new research on ozone's effect on human health and should be withdrawn.

Rhea Verbanic  
175 Goat Mountain Rd  
Bonnors Ferry, ID 83805

**From:** [Robert Carroll](#)  
**To:** [Paula Wilson](#)  
**Subject:** Please withdraw proposed CRB rule changes protect our air quality  
**Date:** Friday, October 07, 2016 12:57:46 PM

---

Dear Paula Wilson,

Proposed rule changes in Docket No. 58-0101-1601 do not reflect new research on ozone's effect on human health and should be withdrawn.

Robert Carroll  
P O box 408  
Cocolalla , Idaho 83813, ID 83813

**From:** [Ruth Ellis](#)  
**To:** [Paula Wilson](#)  
**Subject:** Please withdraw proposed CRB rule changes protect our air quality  
**Date:** Wednesday, October 05, 2016 7:46:33 PM

---

Dear Paula Wilson,

Proposed rule changes in Docket No. 58-0101-1601 do not reflect new research on ozone's effect on human health and should be withdrawn.

Ruth Ellis  
1989 Mt. Davidson Dr.  
Driggs, ID 83422

**From:** [Shannon Mitchell](#)  
**To:** [Paula Wilson](#)  
**Subject:** Please withdraw proposed CRB rule changes protect our air quality  
**Date:** Tuesday, October 11, 2016 12:35:47 PM

---

Dear Paula Wilson,

Proposed rule changes in Docket No. 58-0101-1601 do not reflect new research on ozone's effect on human health and should be withdrawn.

The current rules already work to protect public health while also allowing farmers to burn crop residue.

The EPA and leading medical groups and organizations are learning more about ozone and its harmful effects to human health. Based on this research, DEQ should enact more protective measures, not weaken the protections we now have.

DEQ's proposed rule changes breach the collaborative agreement reached in 2008. The Crop Residue Burning Advisory Board—consisting of members from the farming, human health and environmental communities—reached agreeable terms earlier in 2016.

Research conducted by Washington State University and Oregon State University indicates that economically viable alternatives are available to farmers. These alternatives reduce or eliminate the need for burning.

Please withdraw the proposed rule changes in adherence of the DEQ's mission of protecting people and the environment.

Sincerely,

Shannon Mitchell

Shannon Mitchell  
2118 Browning Way  
Sandpoint, ID 83864

## **Appendix E. Public Participation and Public Comments**

CERTIFICATE OF HEARING

SUBJECT: SIP Submittal to Address a Crop Residue Burning Program Rule Revision

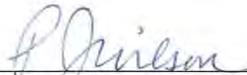
LOCATION: DEQ Conference Center, 1410 N. Hilton, Boise, Idaho

HEARING DATE: September 14, 2017

The undersigned designated hearing facilitator hereby certifies that on the 14<sup>th</sup> day of September, 2017, a public hearing was held on the state implementation plan submittal to address a crop residue burning program rule revision, at the DEQ conference center in Boise, Idaho. The hearing commenced at 3:00 p.m. and was adjourned at 3:30 p.m. No members of the public attended the hearing.

Notice of this hearing appeared in the Idaho Statesman on August 14, 2017. This publication was timely made and other necessary notice requirements have been met.

DATED this 14<sup>th</sup> day of September, 2017

  
\_\_\_\_\_  
Paula J. Wilson  
Hearing Facilitator

CERTIFICATE OF HEARING

August 24, 2017

Tanya Chin (tanya.chin@deq.idaho.gov)  
Air Quality Division  
DEQ State Office  
Boise, ID 83706

Crop Residue Burning; a view from Sandpoint, ID

When we moved to Sandpoint in 1999, late summer skies were filled with choking smoke from crop residue burning to the south. It made much of the best season in this place of wonderful lakes and impressive mountains unhealthy and virtually untenable. Then, the legislature curtailed crop residue burning and summers here became healthy and lovely.

With warmer summers, the last three years have seen significant smoke here from wildfires. At time, it has been very unhealthy. There is no reason to believe that these will abate in the future.

If we have smoke in Sandpoint from crop residue burning, it will be unhealthy. Crop residue burning previously deterred summer visits to Sandpoint by tourists (an economic lifeline here), sent many to emergency care for asthma, heart problems, etc., and made our area an unpleasant place to live or to enjoy the outdoors.

Please consider this a comment to NOT increase smoke impacts in Sandpoint at all from crop residue burning.

Sincerely,

Molly O'Reilly

Steve Lockwood  
413 St Clair Ave.  
Sandpoint, ID 83864



208-345-6933 • PO Box 894, Boise, ID 83702 • [www.idahoconservation.org](http://www.idahoconservation.org)

9/7/2017

Tanya Chin  
Air Quality Division  
DEQ State Office  
1410 N. Hilton  
Boise, ID 83706

Mary Anderson  
DEQ State Office  
Air Quality Division  
1410 N. Hilton  
Boise, ID 83706

Submitted via email: [tanya.chin@deq.idaho.gov](mailto:tanya.chin@deq.idaho.gov) and [mary.anderson@deq.idaho.gov](mailto:mary.anderson@deq.idaho.gov)

**RE: Draft Air Quality Implementation Plan for Crop Residue Burning**

Dear Ms. Chin and Ms. Anderson:

Thank you for the opportunity to comment on the draft air quality implementation plan for crop residue burning (CRB).

Since 1973, the Idaho Conservation League has been Idaho's leading voice for clean water, clean air and wilderness—values that are the foundation for Idaho's extraordinary quality of life. The Idaho Conservation League works to protect these values through public education, outreach, advocacy and policy development. As Idaho's largest state-based conservation organization, we represent over 25,000 supporters, many of whom have a deep personal interest in protecting Idaho's air quality.

As presented, this proposed SIP revision is incomplete due to lacking appropriate analyses on the potential impacts this decision could have on public health. DEQ should analyze the scenarios discussed herein prior to submittal of this revision to the EPA.

Our detailed comments are attached to the end of this letter. Please do not hesitate to contact me at 208-345-6933 ext. 23 or [ahopkins@idahoconservation.org](mailto:ahopkins@idahoconservation.org) if you have any questions regarding our comments or if we can provide you with any additional information on this matter.

Sincerely,

A handwritten signature in black ink, appearing to read "Austin Hopkins".

Austin Hopkins  
Conservation Associate

CC:

Randall Ruddick, ruddick.randall@epa.gov  
Air Planning Unit, Office of Air and Waste  
USEPA REGION 10  
1200 Sixth Avenue  
Seattle, WA 98101

Debra Suzuki, suzuki.debra@epa.gov  
Air Planning Unit Manager, Office of Air and Waste  
USEPA REGION 10  
1200 Sixth Avenue  
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Tim Hamlin, hamlin.tim@epa.gov  
Director, Office of Air & Waste  
USEPA REGION 10  
1200 Sixth Avenue  
Seattle, WA 98101

*ICL comments regarding DEQ's Draft Air Quality Implementation Plan for Crop  
Residue Burning*

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### **Analysis of Cumulative Effects on Public Health**

The proposed SIP revision remains incomplete as it fails to analyze realistic effects on public health from the cumulative impacts of comingling of all pollutants present in the air. DEQ presents this change as a “minor SIP revision” with no effect on emissions and therefore no change in impact to public health. However, classifying this change so narrowly fails to capture the full impact this decision could have on public health and thus fails to meet applicable requirements set forth in the Clean Air Act (CAA).

DEQ asserts that the proposed changes would not cause or contribute to a violation of the 2015 8-hour ozone NAAQS or interfere with any other applicable CAA requirement. While DEQ’s SIP revision document focused heavily on compliance with the ozone NAAQS, they have failed to provide sufficient justification that remaining CAA requirements would not be violated. Specifically, the CAA’s declaration codifies the requirement to protect and enhance the quality of the Nation’s air resources so as to promote the public health and welfare and the productive capacity of its population. 42 U.S.C. § 7401(b)(1).

Implicit in the requirement to protect air quality in the interest of public’s health is a need to determine how proposed changes will realistically affect the air people breathe. The air we all breathe has numerous constituents present, and numerous studies have highlighted the legal and scientific need to analyze pollutants in aggregate (see Behles (2010)<sup>1</sup>, Fann et. al (2012)<sup>2</sup>). A proposed altering of a tolerable allowance for one pollutant must be analyzed in the context of its relation with other pollutants. This is contrary to DEQ’s approach of focusing solely on ozone, with no regard to the effect elevated ozone levels could have in combination with pollutants such as PM<sub>2.5</sub> or PM<sub>10</sub>.

While DEQ is proposing only to change the ozone threshold, this revision would have far greater implications on public health beyond simply ozone. DEQ has yet to demonstrate that this change will not increase risks to the public’s health. Until such time that this demonstration is complete DEQ should not approve this revision.

### **Adverse Effects to Human Health Below NAAQS**

DEQ repeatedly argues that this change is not likely to result in a violation of the ozone NAAQS and is therefore protective of human health. This presumption however is counter to recent scientific studies that have demonstrated human health effects at and

<sup>1</sup> Deborah Behles. (2010). *Examining the Air We Breathe: EPA Should Evaluate Cumulative Impacts When It Promulgates National Ambient Air Quality Standards*. Pace Environmental Law Review. Vol. 28, Iss. 1.

<sup>2</sup> Neal Fann, Lamson A.D., Anenberg S.C., Wesson K., Risley D., and Hubbel B.J. (2012). *Estimating the*

<sup>2</sup> Neal Fann, Lamson A.D., Anenberg S.C., Wesson K., Risley D., and Hubbel B.J. (2012). *Estimating the National Public Health Burden Associated with Exposure to Ambient PM<sub>2.5</sub> and Ozone*. Society for Risk Analysis. Vol. 32, No. 1. doi: 10.1111/j.1539-6924.2011.01630.x

***ICL comments regarding DEQ’s Draft Air Quality Implementation Plan for Crop Residue Burning***

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well below established NAAQS. For example, Kim et al. (2011)<sup>3</sup> showed that exposure of healthy young adults to 0.06 ppm ozone for 6.6 hours causes a significant decrement of FEV(1) – an indicator to the degree of obstruction in the lungs – and an increase in neutrophilic inflammation in the airways. There are two critical components one must consider when reviewing these results. First, this test was conducted on healthy young adults, which are among the most resilient population to air pollution. Sensitive populations such as youth, elderly, or those with respiratory or cardiovascular impairments would respond more negatively to these tests. Second, these results were generated in a lab and are entirely independent of any other pollutant that would otherwise be present in the natural world (see previous comment).

In a similar study, Bell et al. (2006)<sup>4</sup> analyzed the exposure–response curve for ozone to understand the risk of premature mortality at low concentrations and the adequacy of current ozone regulations. The authors utilized multiple methods in their analysis, including a linear approach and subset, threshold, and spline models. The authors concluded their study with the following summary:

“...our nationwide study provides strong and consistent evidence that daily changes in ambient O<sub>3</sub> exposure are linked to premature mortality, even at very low pollution levels, including an idealized scenario of complete adherence to current O<sub>3</sub> regulations. We also found robust evidence of this relationship between O<sub>3</sub> exposure and mortality when we used data that included only O<sub>3</sub> levels nearing background concentrations, which typically range from 10 to 25 ppb (Fiore et al. 2003, 2004)<sup>5</sup>. Therefore, any anthropogenic contribution to ambient O<sub>3</sub>, however slight, still presents an increased risk for premature mortality.”

Lastly, the authors provide a cautionary note that pollution levels below air quality regulatory standards should not be misinterpreted as safe for human health.

These studies both indicate that reliance solely on the NAAQS to protect public health is inadequate. DEQ is obligated to protect public health using the best available science, therefore the current SIP revision should be deemed inadequate due to its reliance on the ozone NAAQS to protect public health. The revision should be redone with

<sup>3</sup> Kim CS, Alexis NE, Rappold AG, Kehl H, Hazucha MJ, Lay JC, Schmitt MT, Case M, Devlin RB, Peden DB, Diaz-Sanchez D. (2011). *Lung function and inflammatory responses in healthy young adults exposed to 0.06 ppm of ozone for 6.6 hours*. American Journal of Respiratory and Critical Care Medicine. doi: 10.1164/rccm.201011-1813OC

<sup>4</sup> Michelle L. Bell, Roger D. Peng, and Francesca Dominici. 2006. “The Exposure-Response Curve for Ozone and Risk of Mortality and the Adequacy of Current Ozone Regulations.” Environmental Health Perspectives. doi: 10.1289/ehp.8816

<sup>5</sup> Fiore A, Jacob DJ, Liu H, Yantosca RM, Fairlie TD, Li Q. 2003. “Variability in surface ozone background over the United States implications for air quality policy.” J Geophys Res Atmos. 10.1029/2003JD003855; and Fiore A, Jacob D J, Liu H, Yantosca RM, Fairlie TD, Li Q. 2004. Correction to “Variability in surface ozone background over the United States implications for air quality policy.” J Geophys Res Atmos. 10.1029/2004JD004567.

***ICL comments regarding DEQ’s Draft Air Quality Implementation Plan for Crop Residue Burning***

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consideration given to both established and emerging science on the detrimental effects ozone can have on public health.

### **Lack of Review of Alternative Options**

DEQ's introductory sentence states: "The goal of any smoke management program is to protect public health by reducing smoke impacts from allowable forms of open burning while protecting the NAAQS and maintaining fire as a tool." We are concerned that DEQ appears to be prioritizing maintaining fire as a tool over the protection of air quality and the public's health.

During the EPA's rulemaking to tighten the ozone NAAQS, leading medical societies and health organizations, including the American Medical Association, American Lung Association, American Academy of Pediatrics, American Thoracic Society, and American Heart Association all urged EPA to adopt a more protective ozone standard of 60 ppb, based on evidence that ozone harms people's health at (and even below) that level. Dkt-2720, -3863<sup>6</sup>. DEQ's proposal would thus allow burning to occur even when ozone pollution already exceeds (or is expected to exceed) a level deemed unsafe by medical professionals. It is unclear why DEQ, whose decisions should be based on sound science and informed by leading experts, would choose to ignore multiple preeminent medical societies and health organizations.

In addition to the dismissal of medical experts, DEQ also never considered any alternatives to field burning. According to DEQ, the impetus for this revision is due to the difficulties in denying burns because of ozone when all other atmospheric conditions were ideal for smoke dispersion. Yet, if there were no smoke to begin with DEQ wouldn't have to worry about ambient ozone concentrations and the decision would become infinitely easier. Despite this alternative approach, DEQ appears to not have even considered alternatives to field burning such as those prepared for the State of Washington's Department of Ecology<sup>7</sup> or the Fire Emissions Joint Forum of the Western Regional Air Partnership<sup>8</sup>.

First and foremost, DEQ is tasked with protecting public health. This SIP revision should be researched, prepared, and reviewed in that context. In its present form, the proposed revisions succeed at preserving fire as a tool, but are inadequate in terms of assuring protections for public health. DEQ should not approve the current revision, and instead prepare a document that focuses first on the protection of all Idahoans, then on the tools

<sup>6</sup> All "Dkt" references are to document numbers in EPA docket EPA-HQ-OAR-2008-0699 (e.g., "Dkt-0405" means EPA-HQ-OAR-2008-0699-0405).

<sup>7</sup> See ALTERNATIVES to AGRICULTURAL BURNING, available: [http://www.ecy.wa.gov/programs/air/aginfo/research\\_pdf\\_files/AlternativesAgBurn.pdf](http://www.ecy.wa.gov/programs/air/aginfo/research_pdf_files/AlternativesAgBurn.pdf)

<sup>8</sup> See VOLUME I: NON-BURNING MANAGEMENT ALTERNATIVES ON AGRICULTURAL LANDS IN THE WESTERN UNITED STATES and VOLUME II: NON-BURNING MANAGEMENT ALTERNATIVES AND IMPLEMENTATION PLAN STRATEGIES, available: <https://deq.utah.gov/Pollutants/R/regionalhaze/rhsip/docs/2006/05May/VolumeII-NonburningAgLandFinal.pdf>

***ICL comments regarding DEQ's Draft Air Quality Implementation Plan for Crop Residue Burning***

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and strategies available to deal with crop residue. The redone analysis should include considerations of alternatives to burning such as those detailed in the aforementioned studies.

### **Figure 1 is Misleading**

Figure 1 in the SIP revision document shows the six criteria air pollutants and their corresponding AQI values at 75% and 90% of each respective NAAQS. DEQ is utilizing this figure to show that 75% of the ozone NAAQS is the only value that falls within the “good” air quality index range, whereas 75% of the NAAQS for all other pollutants reside in the “moderate” range of the air quality index. We feel this figure is misleading and should be either removed or discussed within the appropriate context.

It appears this figure is utilizing the recently updated 2015 NAAQS for ozone. It is therefore likely that ozone is the pollutant that has most recently undergone a NAAQS review and has subsequently been made more stringent based upon a greater understanding of ozone. As the science of air pollution emerges, it is not uncommon for standards to become more stringent as scientists develop better understandings of the risk to public health. Thus, the lower value of ozone could be indicative of a trend in which all criteria pollutants become more stringent during their upcoming NAAQS review. DEQ should discuss Figure 1 in this context, rather than attempting to utilize it to justify weakening ozone protections.

### **Approval of Burning on Poor Ambient Air Quality Days**

Table 10 lists five (5) burn days that corresponded to MDA8 values greater than the 95<sup>th</sup> percentile MDA8 at nearby monitoring sites. DEQ goes on to justify how these elevated events were attributable to either wildfires (e.g. Boise exceedances on 8/13/2013) or regionally high ozone concentrations due to lower troposphere/stratosphere intrusions (e.g. Washakie, UT event on 5/1/2015). For both the Boise and Washakie event, the MDA8 was recorded to be 74 ppb and 67 ppb, respectively. These values are greater than both the existing and proposed ozone threshold for burn approval. We are therefore confused as to how burning on these days was ever initially approved, as DEQ is expressly prohibited from approving burns when ambient air quality levels are exceeding, or are expected to exceed, seventy-five percent (75%) of the level of any national ambient air quality standard (NAAQS) on any day. Idaho Code 39-114(3)(a). We ask that DEQ provide details and justification as to how the decision to allow burning on these days was made, as well as details on what measures are in place to ensure that the approval of burns on inappropriate days doesn't happen again.

### **Additional Context Needed in Section 7.2**

*ICL comments regarding DEQ's Draft Air Quality Implementation Plan for Crop Residue Burning*

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Section 7.2 states that DEQ works with an advisory committee representing a broad range of interests to discuss issues and obtain valuable feedback on the program's implementation and improvement. This section should note that in preparing these changes DEQ disregarded the committee's recommendation on a SIP revision. Further, DEQ should note that all of the environment and public health advocates resigned from the advisory board as a result of these proposed changes to DEQ's CRB program. Inclusion of this information is consistent with DEQ's goal of running a transparent program.

#### **Reporting Requirements in Section 7.6**

DEQ outlines the surveillance and documentation components of their smoke management program. This section should also detail the reporting requirements for staff responsible or associated with any burn decision. For example, DEQ states that seasonal smoke coordinators observe burning activity on days when burning is approved in their counties or regions. However, through e-mail contact with Ms. Mary Anderson of DEQ, we learned that DEQ doesn't keep track of the number of burns observed nor reports this information to the public.

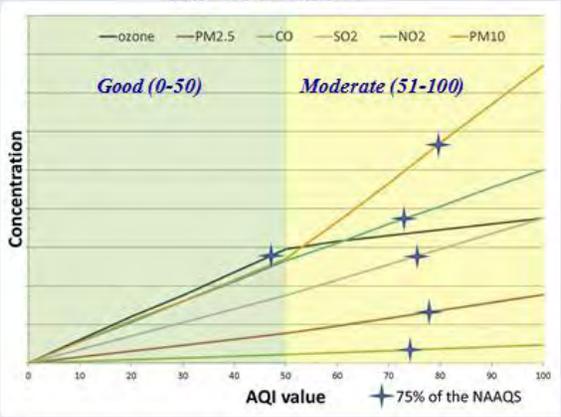
DEQ states they adhere to *Section 4.5.4 – Field Observation* of the Crop Residue Burning Program Operating Guide for determining which fields will be observed. However, the public is left unaware of whether this requirement was fulfilled unless record keeping and reporting are included as part of this program. Running a program that was transparent to the public was a key component to the original agreement reached in 2007. Public reporting on which burns were observed by DEQ staff is therefore well within the scope of DEQ's CRB program and should clearly be codified in this SIP revision.

DEQ's Response to Comments on the 2017 Crop Residue Burning Ozone State Implementation Plan Revision

Commenter 1 – Molly O'Reilly and Steve Lockwood		Commenter 2 – Austin Hopkins ICL
Commenter	Comment	Response
1	<p>Crop Residue Burning; a view from Sandpoint, ID</p> <p>When we moved to Sandpoint in 1999, late summer skies were filled with choking smoke from crop residue burning to the south. It made much of the best season in this place of wonderful lakes and impressive mountains unhealthy and virtually untenable. Then, the legislature curtailed crop residue burning and summers here became healthy and lovely. With warmer summers, the last three years have seen significant smoke here from wildfires. At time, it has been very unhealthy. There is no reason to believe that these will abate in the future.</p> <p>If we have smoke in Sandpoint from crop residue burning, it will be unhealthy. Crop residue burning previously deterred summer visits to Sandpoint by tourists (an economic lifeline here), sent many to emergency care for asthma, heart problems, etc., and made our area an unpleasant place to live or to enjoy the outdoors.</p> <p>Please consider this a comment to NOT increase smoke impacts in Sandpoint at all from crop residue burning.</p>	<p>This SIP Revision does not weaken the protection against air pollution from field burning. The Revision still ensures crop residue burning will not cause or significantly contribute to a violation of any National Ambient Air Quality Standard (NAAQS). The rule change is specifically intended to further limit impacts on communities in Idaho, other states, and Canada. A NAAQS standard is designed to protect public health, including the health of “sensitive” populations such as asthmatics, children, and the elderly, with an adequate margin of safety. EPA set the 2015 ozone standard after looking at all available scientific data. While there have been some studies that look at the combined effects of pollutants on public health, EPA continues to evaluate each criteria pollutant individually.</p> <p>This change will strengthen protections from field burning as it will help decrease the impact of burns on public health by utilizing burn days when smoke dispersion (adequate smoke lift, proper mixing, appropriate air movement and direction, etc.) is good or better during times when ozone is forecasted to reach between 75% and 90% of the ozone NAAQS.</p>
2	<p>Analysis of Cumulative Effects on Public Health</p> <p>The proposed SIP revision remains incomplete as it fails to analyze realistic effects on public health from the cumulative impacts of comingling of all pollutants present in the air. DEQ presents this change as a “minor SIP revision” with no effect on emissions and therefore no change in impact to public health. However, classifying this change so narrowly fails to capture the full impact this decision could have on public health and thus fails to meet applicable requirements set forth in the Clean Air Act (CAA).</p> <p>DEQ asserts that the proposed changes would not cause or contribute to a violation of the 2015 8-hour ozone NAAQS or interfere with any other applicable CAA requirement. While DEQ's SIP revision document focused heavily on compliance with the ozone NAAQS, they have failed to provide sufficient justification that remaining CAA requirements would not be violated. Specifically, the CAA's declaration codifies the requirement to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population. 42 U.S.C. § 7401(b)(1).</p> <p>Implicit in the requirement to protect air quality in the interest of public's health is a need to determine how proposed changes will realistically affect the air people breathe. The air we all breathe has numerous constituents present, and numerous studies have highlighted the legal and scientific need to analyze pollutants in aggregate (see Behles (2010), Fann et. al (2012)). A proposed altering of a tolerable allowance for one pollutant must be analyzed in the context of its relation with other pollutants. This is contrary to DEQ's</p>	<p>In Table 1 of the SIP Revision, DEQ summarizes how all applicable requirements of the Clean Air Act are addressed. The CAA does not require states to evaluate additive effects of pollutants. A NAAQS standard is designed to protect public health, including the health of “sensitive” populations such as asthmatics, children, and the elderly, with an adequate margin of safety. EPA set the 2015 ozone standard after looking at all available scientific data. While there have been some studies that look at the combined effects of pollutants on public health, EPA continues to evaluate each criteria pollutant individually. Since the only aspect of the program that is changing focuses on ozone, ozone comprises the majority of our analysis. Even though DEQ determined that this SIP Revision qualifies as a minor SIP revision, a full demonstration is presented.</p>

	<p>approach of focusing solely on ozone, with no regard to the effect elevated ozone levels could have in combination with pollutants such as PM2.5 or PM10.</p> <p>While DEQ is proposing only to change the ozone threshold, this revision would have far greater implications on public health beyond simply ozone. DEQ has yet to demonstrate that this change will not increase risks to the public's health. Until such time that this demonstration is complete DEQ should not approve this revision.</p>	
<p>2</p>	<p><b>Adverse Effects to Human Health Below NAAQS</b></p> <p>DEQ repeatedly argues that this change is not likely to result in a violation of the ozone NAAQS and is therefore protective of human health. This presumption however is counter to recent scientific studies that have demonstrated human health effects at and well below established NAAQS. For example, Kim et al. (2011)<sup>3</sup> showed that exposure of healthy young adults to 0.06 ppm ozone for 6.6 hours causes a significant decrement of FEV(1) – an indicator to the degree of obstruction in the lungs – and an increase in neutrophilic inflammation in the airways. There are two critical components one must consider when reviewing these results. First, this test was conducted on healthy young adults, which are among the most resilient population to air pollution. Sensitive populations such as youth, elderly, or those with respiratory or cardiovascular impairments would respond more negatively to these tests. Second, these results were generated in a lab and are entirely independent of any other pollutant that would otherwise be present in the natural world (see previous comment).</p> <p>In a similar study, Bell et al. (2006)<sup>4</sup> analyzed the exposure–response curve for ozone to understand the risk of premature mortality at low concentrations and the adequacy of current ozone regulations. The authors utilized multiple methods in their analysis, including a linear approach and subset, threshold, and spline models. The authors concluded their study with the following summary:</p> <p>“...our nationwide study provides strong and consistent evidence that daily changes in ambient O3 exposure are linked to premature mortality, even at very low pollution levels, including an idealized scenario of complete adherence to current O3 regulations. We also found robust evidence of this relationship between O3 exposure and mortality when we used data that included only O3 levels nearing background concentrations, which typically range from 10 to 25 ppb (Fiore et al. 2003, 2004)<sup>5</sup>. Therefore, any anthropogenic contribution to ambient O3, however slight, still presents an increased risk for premature mortality.”</p> <p>Lastly, the authors provide a cautionary note that pollution levels below air quality regulatory standards should not be misinterpreted as safe for human health. These studies both indicate that reliance solely on the NAAQS to protect public health is inadequate. DEQ is obligated to protect public health using the best available science, therefore the current SIP revision should be deemed inadequate due to its reliance on the ozone NAAQS to protect public health. The revision should be redone with consideration given to both established and emerging science on the detrimental effects ozone can have on public health.</p>	<p>EPA sets NAAQS standards to be protective of public health. The Idaho SIP demonstrates how DEQ will implement those standards in Idaho. The CAA does not require states to implement standards more protective than the NAAQS.</p>
	<p><b>Lack of Review of Alternative Options</b></p> <p>DEQ's introductory sentence states: “The goal of any smoke management program is to protect public health by reducing smoke impacts from allowable forms of open burning while protecting the NAAQS and maintaining fire as a tool.” We are concerned that DEQ</p>	<p>This SIP Revision only focuses on addressing the 75% threshold for ozone and consideration of alternatives to burning was outside the scope of this SIP Revision, as it is not a Clean Air Act requirement.</p>

	<p>appears to be prioritizing maintaining fire as a tool over the protection of air quality and the public's health.</p> <p>During the EPA's rulemaking to tighten the ozone NAAQS, leading medical societies and health organizations, including the American Medical Association, American Lung Association, American Academy of Pediatrics, American Thoracic Society, and American Heart Association all urged EPA to adopt a more protective ozone standard of 60 ppb, based on evidence that ozone harms people's health at (and even below) that level. Dkt-2720, -38636. DEQ's proposal would thus allow burning to occur even when ozone pollution already exceeds (or is expected to exceed) a level deemed unsafe by medical professionals. It is unclear why DEQ, whose decisions should be based on sound science and informed by leading experts, would choose to ignore multiple preeminent medical societies and health organizations.</p> <p>In addition to the dismissal of medical experts, DEQ also never considered any alternatives to field burning. According to DEQ, the impetus for this revision is due to the difficulties in denying burns because of ozone when all other atmospheric conditions were ideal for smoke dispersion. Yet, if there were no smoke to begin with DEQ wouldn't have to worry about ambient ozone concentrations and the decision would become infinitely easier. Despite this alternative approach, DEQ appears to not have even considered alternatives to field burning such as those prepared for the State of Washington's Department of Ecology<sup>7</sup> or the Fire Emissions Joint Forum of the Western Regional Air Partnership<sup>8</sup>.</p> <p>First and foremost, DEQ is tasked with protecting public health. This SIP revision should be researched, prepared, and reviewed in that context. In its present form, the proposed revisions succeed at preserving fire as a tool, but are inadequate in terms of assuring protections for public health. DEQ should not approve the current revision, and instead prepare a document that focuses first on the protection of all Idahoans, then on the tools and strategies available to deal with crop residue. The redone analysis should include considerations of alternatives to burning such as those detailed in the aforementioned studies.</p>	<p>The implementation plan revision addressed in this SIP is intended to improve Idaho's CRB program effectiveness in our smoke management decisions by providing the opportunity to utilize atmospheric conditions that maximize smoke dispersion that had previously been excluded. This will help ensure that public health is protected.</p> <p>EPA sets NAAQS standards to be protective of public health. The Idaho SIP demonstrates how DEQ will implement those standards in Idaho. The CAA does not require states to implement standards more protective than the NAAQS. In Table 1 of the SIP Revision, DEQ summarizes how it addresses all applicable requirements of the Clean Air Act. DEQ is not required by the CAA to evaluate alternative disposal methods when emission reductions are not needed to ensure NAAQS compliance.</p> <p>The previous CRB SIP (DEQ 2008) estimated that 17% of the harvested cereal grain acreage would be burned in Idaho on an annual basis. The total acres of cereal grain stubble burned in 2015 were just under 2% of the total acres harvested. Over 97% of harvested cereal grain acreage in Idaho is currently treated through alternative measures.</p>
2	<p><b>Figure 1 is Misleading</b></p> <p>Figure 1 in the SIP revision document shows the six criteria air pollutants and their corresponding AQI values at 75% and 90% of each respective NAAQS. DEQ is utilizing this figure to show that 75% of the ozone NAAQS is the only value that falls within the "good" air quality index range, whereas 75% of the NAAQS for all other pollutants reside in the "moderate" range of the air quality index. We feel this figure is misleading and should be either removed or discussed within the appropriate context.</p> <p>It appears this figure is utilizing the recently updated 2015 NAAQS for ozone. It is therefore likely that ozone is the pollutant that has most recently undergone a NAAQS review and has subsequently been made more stringent based upon a greater understanding of ozone. As the science of air pollution emerges, it is not uncommon for standards to become more stringent as scientists develop better understandings of the risk to public health. Thus, the lower value of ozone could be indicative of a trend in which all criteria pollutants become more stringent during their upcoming NAAQS review. DEQ should discuss Figure 1 in this context, rather than attempting to utilize it to justify weakening ozone protections.</p>	<p>In 2012, the following figure was presented to the CRB Advisory Committee.</p>

		<p style="text-align: center;"><b>Comparison of AQI All Pollutants</b></p>  <p>It is clear that the 2008 ozone NAAQS had the same issue. 75% of the NAAQS for ozone when plotted on an AQI scale is considered green or good air quality. The plot shown in the SIP revision is not an artifact of using a more updated NAAQS value for ozone.</p>
2	<p><b>Approval of Burning on Poor Ambient Air Quality Days</b></p> <p>Table 10 lists five (5) burn days that corresponded to MDA8 values greater than the 95<sup>th</sup> percentile MDA8 at nearby monitoring sites. DEQ goes on to justify how these elevated events were attributable to either wildfires (e.g. Boise exceedances on 8/13/2013) or regionally high ozone concentrations due to lower troposphere/stratosphere intrusions (e.g. Washakie, UT event on 5/1/2015). For both the Boise and Washakie event, the MDA8 was recorded to be 74 ppb and 67 ppb, respectively. These values are greater than both the existing and proposed ozone threshold for burn approval. We are therefore confused as to how burning on these days was ever initially approved, as DEQ is expressly prohibited from approving burns when ambient air quality levels are exceeding, or are expected to exceed, seventy-five percent (75%) of the level of any national ambient air quality standard (NAAQS) on any day. Idaho Code 39-114(3)(a). We ask that DEQ provide details and justification as to how the decision to allow burning on these days was made, as well as details on what measures are in place to ensure that the approval of burns on inappropriate days doesn't happen again.</p>	<p>The comment is outside the scope of this SIP Revision.</p> <p>DEQ uses the same methodology used by most air quality forecasters to forecast ozone concentrations. DEQ uses multiple tools when developing a forecasted ozone concentration, including weather forecast, current air quality, previous day air quality, and air quality model estimates. DEQ forecasts whether the ozone concentration at the location of the proposed burn has reached or is forecasted to reach the ozone threshold. The ozone threshold in the CRB program is a backstop to ensure that DEQ is not approving burns that may cause a violation of the NAAQS. DEQ continually works to improve the accuracy of forecasting. In no case did DEQ approved burns cause a violation of the NAAQS.</p> <p>On the one day that the Boise monitor recorded a MDA8 value of 74 ppb, DEQ approved 4 burns, total of 122 acres, approximately 35 miles west of the monitor. The Boise monitor was impacted by the Elk Complex Fire that was located east of Boise. Ozone concentration was forecast to be 54 ppb at the location of the burns. Wildfire smoke was not forecast to come into the Boise area. Wildfire smoke unexpectedly blew into the Treasure Valley in the early afternoon when the burn approvals for the day had already been made and growers had already started burning their fields. Reports from the field indicated that the vicinity of the approved crop residue burning had remained mostly free of wildfire smoke.</p>

		<p>On all of the days that DEQ approved burns, the ozone concentrations were forecasted to be less than 56 ppb at the burn location.</p> <p>An important aspect of any smoke management program is meteorological and air quality forecasting. DEQ’s Meteorologist provides a daily forecast and burn recommendation based on interpretations of the latest predictive weather model data. DEQ’s CRB Coordinators predict ozone concentrations for the day for all areas excluding the Southwest Smoke Management Area where this task is assigned to the Regional Analyst. The overall goal is to identify when good smoke management conditions exist or are expected to develop and burning occurs only when program criteria thresholds are expected.</p> <p>Forecast performance requires looking backwards at one hour or multi-hour intervals or, at times, entire day intervals. The CRB smoke management program is designed to ensure looking backwards is a routine activity. These look-backs identify when levels for enhanced documentation have been reached to ensure postburn enhanced documentation, as described in the CRB operating guide (section 4.6.3) are completed appropriately. This program element is designed to improve forecast and other burn decisions as staff and the program identify necessary changes.</p> <p>Improvement in web-based ozone forecast tools and experience in forecasting are expected to continue to improve over time. The CRB Smoke Management program has many measures in place to limit excursions of program criteria thresholds.</p>
2	<p><b>Additional Context Needed in Section 7.2</b>  Section 7.2 states that DEQ works with an advisory committee representing a broad range of interests to discuss issues and obtain valuable feedback on the program’s implementation and improvement. This section should note that in preparing these changes DEQ disregarded the committee’s recommendation on a SIP revision. Further, DEQ should note that all of the environment and public health advocates resigned from the advisory board as a result of these proposed changes to DEQ’s CRB program. Inclusion of this information is consistent with DEQ’s goal of running a transparent program.</p>	<p>This comment is outside the scope of this SIP Revision and therefore no changes will be made to the document.</p> <p>DEQ disagrees that it disregarded the recommendations of the CRB Advisory Committee. The recommendation agreed upon at the 2017 annual Committee meeting was to enter into negotiated rulemaking to modify IDAPA 58.01.01.621.01 as it relates to the requirement of 75% of the ozone NAAQS. That is what this proposed SIP revision does.</p> <p>DEQ properly followed IDAPA 58.01.23 and the Idaho Administrative Procedures Act to ensure the negotiations were open and transparent. No decisions were made without listening to all participants in the negotiating group. All comments were considered.</p>
2	<p><b>Reporting Requirements in Section 7.6</b>  DEQ outlines the surveillance and documentation components of their smoke management program. This section should also detail the reporting requirements for staff responsible or associated with any burn decision. For example, DEQ states that seasonal smoke coordinators observe burning activity on days when burning is approved in their counties or regions. However, through e-mail contact with Ms. Mary Anderson of DEQ, we learned that DEQ doesn’t keep track of the number of burns observed nor reports this</p>	<p>This comment is outside the scope of this SIP Revision.</p> <p>This SIP Revision is not proposing to change any requirements other than the ozone threshold for approving burning. The information referenced in this comment is not part of the SIP approved rules but included in the Operating Guide. Notably, field notes are kept on all observed burns and can be requested through the public record review process.</p>

	<p>information to the public.  DEQ states they adhere to <i>Section 4.5.4 – Field Observation</i> of the Crop Residue Burning Program Operating Guide for determining which fields will be observed. However, the public is left unaware of whether this requirement was fulfilled unless record keeping and reporting are included as part of this program. Running a program that was transparent to the public was a key component to the original agreement reached in 2007. Public reporting on which burns were observed by DEQ staff is therefore well within the scope of DEQ’s CRB program and should clearly be codified in this SIP revision.</p>	

**LEGAL PROOF OF PUBLICATION**

DEPARTMENT OF ENVIRONMENTAL QUALITY  
STATE ADOPTION

Account #	Ad Number	Identification	PO	Amount	Cols	Lines
283916	0003221347	LEGAL NOTICE NOTICE OF 30-DAY PUBLIC C	Crop Burning	\$166.64	2	94

**Attention: TANYA CHIN**

IDAHO DEPT OF ENVIRONMENTAL QUALITY  
1410 N HILTON ST  
BOISE, ID 837061253

**LEGAL NOTICE**

**NOTICE OF 30-DAY PUBLIC COMMENT PERIOD REGARDING A SIP SUBMITTAL TO ADDRESS A CROP RESIDUE BURNING PROGRAM RULE REVISION.**

**PROPOSED ACTION:** The Idaho Department of Environmental Quality (DEQ) is proposing to submit a revision to the State Implementation Plans (SIP) to the US Environmental Protection Agency (EPA). This SIP Revision demonstrates that Idaho's proposed rule revision to update the crop residue burning (CRB) ozone requirements meets the requirements of Section 110(l) of the Clean Air Act. This revision will not interfere with attainment of the National Ambient Air Quality Standards (NAAQS) or any other applicable requirement of the Clean Air Act.

**BACKGROUND:** The CRB Program has been implemented by DEQ since 2008. One aspect of the program requires that, prior to approving a crop residue burn, DEQ must determine that 1) air quality is not exceeding 75% of any NAAQS, and 2) air quality is not projected to exceed such level during the next 24 hours. Fine particulate matter (PM2.5) is the pollutant most directly affected by crop residue burning. There are days when PM2.5 concentrations are not a concern, but ozone concentrations exceed or are projected to exceed 75% of the ozone NAAQS. As a result, there are fewer days when DEQ can approve crop residue burns despite the fact that 1) the weather conditions exhibit good smoke dispersion characteristics, and 2) DEQ technical staff expect the burns to have minimal impact on ambient ozone concentrations (NAAQS). Therefore, burning may not be allowed on good burn days even when the burn is not predicted to cause or significantly contribute to a violation of the ozone NAAQS.

Through the negotiated rulemaking process, DEQ developed a rule that gives DEQ the authority to approve crop residue burning when ozone levels are not exceeding, or expected to exceed, 90% rather than 75% of the ozone NAAQS only. This new 90% level is still protective of the ozone NAAQS, and also provides farmers the ability to burn while following smoke management best practices. The DEQ rule improves overall smoke management by modifying a decision making threshold to provide greater flexibility on available burn days. The increased flexibility will lead to greater air quality protection.

**PUBLIC COMMENT AND HEARING:** The public comment period will last from August 14 to September 14, 2017. Questions regarding the public comment process should be directed to:

Tanya Chin, Department of Environmental Quality, 1410 N. Hilton, Boise, ID 83706, tanya.chin@deq.idaho.gov, or 208-373-0440. A public hearing will be held:

September 14, 2017 at 3 pm MST  
DEQ State Office  
1410 N. Hilton  
Boise Idaho

The meeting location will be accessible to persons with disabilities, and language translators will be made available upon request. Requests for these accommodations must be made no later than five (5) days prior to the meeting date. For arrangements, contact Tanya Chin.

**AVAILABILITY OF MATERIALS:** The document "2017 Crop Residue Burning Ozone State Implementation Plan Revision" is available for public review on DEQ's website at <http://www.deq.idaho.gov/news-public-comments-events/>. Printed materials will be made available upon request at the DEQ state office.

**SUBMISSION OF WRITTEN COMMENTS-ASSISTANCE ON TECHNICAL QUESTIONS:** Anyone may submit written comments regarding the document. To be most effective, comments should address air quality considerations and include support materials where available.

Please reference the document title listed above when sending comments or requesting information. Comments should focus on whether Idaho has met the Clean Air Act Requirements under Section 110(l) or whether this change interferes with the attainment of the NAAQS or any other applicable requirement of the Clean Air Act. For technical assistance on questions concerning this document, please contact Mary Anderson at (208) 373-0202 or mary.anderson@deq.idaho.gov. All written comments concerning this document must be directed to and received by the undersigned on or before 5:00 p.m., MST/MDT, September 14, 2017.

DATED this 14th day of August, 2017.  
Tanya Chin  
Air Quality Division

JANICE HILDRETH, being duly sworn, deposes and says: That she is the Principal Clerk of The Idaho Statesman, a daily newspaper printed and published at Boise, Ada County, State of Idaho, and having a general circulation therein, and which said newspaper has been continuously and uninterruptedly published in said County during a period of twelve consecutive months prior to the first publication of the notice, a copy of which is attached hereto: that said notice was published in The Idaho Statesman, in conformity with Section 60-108, Idaho Code, as amended, for:

1 Insertions

Beginning issue of: 08/14/2017

Ending issue of: 08/14/2017

*Janice Hildreth*  
(Legals Clerk)

STATE OF IDAHO )

) SS

COUNTY OF ADA )

On this 14th day of August in the year of 2017 before me, a Notary Public, personally appeared before me Janice Hildreth known or identified to me to be the person whose name subscribed to the within instrument, and being by first duly sworn, declared that the statements therein are true, and acknowledged to me that she executed the same.

*Heather Harradine*

Notary Public FOR Idaho  
Residing at: Boise, Idaho

My Commission expires: 2/11/2020

