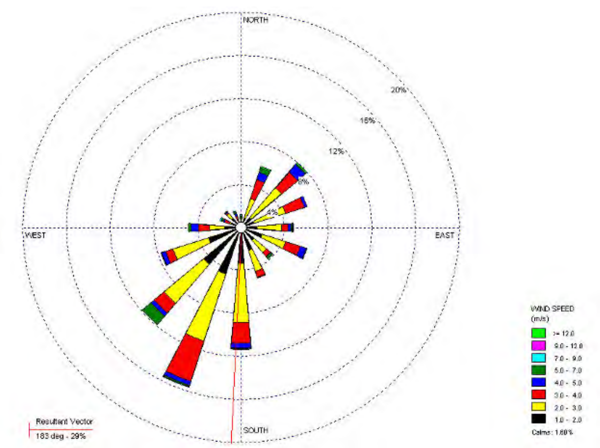
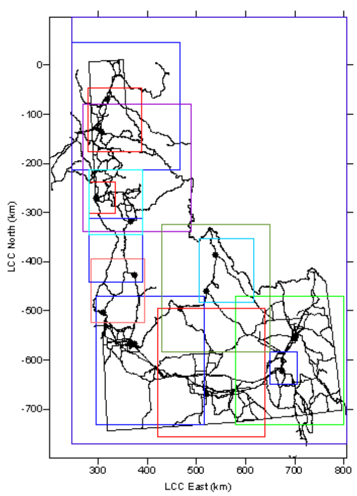
Open Burning of Crop Residue State Implementation Plan (SIP) Revision





State of Idaho Department of Environmental Quality
September 2009

Cover, starting at upper left and moving clockwise: weather monitor (DEQ, 2004); example wind rose using during supplemental modeling; plume of smoke from an agricultural burn rises over the Rathdrum Prairie, August 17, 2004 (DEQ, 2004); modeling domains superimposed on map of Idaho.

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Glossary

AH	acres harvested
AME	Absolute Mean Error
AQI	Air Quality Index
BART	Best available retro-fit technology
BlueSky/RAINS	Web-Based Information System to Help Manage Prescribed Burning, Wildland Fires, and Agricultural Burning (http://www.blueskyrains.org/)
CAA	Clean Air Act
CALMET	Meteorological Preprocessor for CALPUFF
CALPOST	Post-processor for CALPUFF
CALPUFF	A non-steady-state meteorological and air quality modeling system developed by the Atmospheric Studies Group (ASG) of TRC Companies, Inc. (http://www.src.com/calpuff/calpuff1.htm)
CDA	Coeur d'Alene region
CFR	Code of Federal Regulations
ClearSky	A dispersion forecasting system for management of crop residue burning smoke in the Inland Northwest (http://clearsky.wsu.edu/)
CO	Carbon Monoxide
CRB	crop residue burning
CRP	Conservation Reserve Program
DEM	Digital Elevation Model
DEQ	Department of Environmental Quality
EF	Emission factor
EI	Emissions Inventory
EPA	Environmental Protection Agency
EPHA	Environmental Protection and Health Act (Idaho)
FARR	Federal Air Rules for Reservations
FB	Fraction of harvested acres burned
FEM	Federal Equivalence Method
FETS	Fire Emissions Tracking System
FIP	Federal Implementation Plan
FR	Federal Register
FRM	Federal Reference Method
GIS	Geographic Information Systems
hr	hour
ID	Idaho

IDAPA	Idaho Administrative Procedures Act
ISDA	Idaho State Department of Agriculture
ISDL	Idaho State Department of Lands
K	Kelvin
km	Kilometer
lb/hr	pound per hour
lb/ton	pound per ton
LCC	Lambert Conformal Conic
LEW	Lewiston region
LULC	Land Use and Land Cover
m	meters
m/s	meters/second
MD	modeling domain
MM5	Mesoscale Model
MOU	Memorandum of Understanding
MSA	Metropolitan Statistical Area
NA	Not applicable
NAA	Nonattainment Area
NAAQS	National Ambient Air Quality Standards
NCAR	National Center for Atmospheric Research
NESHAPS	National Emission Standards for Hazardous Air Pollutants
NLCD	National Land Cover Database
NO_x	Oxides of Nitrogen
NOAA	National Oceanographic and Atmospheric Administration
O_3	Ozone
PBR	Permit by Rule
PDC	Poor Dispersion Conditions
PM_{10}	Particulate Matter under 10 microns in size
$PM_{2.5}$	Particulate Matter under 2.5 microns in size
ppm	parts per million
PRTMET	CALMET post-processor
PSD	Prevention of Significant Deterioration
PST	Pacific standard time
Q	Emission rate of pollutant
QAP	Quality Assurance Plan
QAPP	Quality Assurance Project Plan
Q-Q plot	Quantile-Quantile plot of wind speed, temperature

RL	Residue load
RPG	Reasonable Progress Goal
SAFE	Safe Air for Everyone (SAFE)
SIP	State Implementation Plan
SLAMS	State and Local Monitoring Sites
SMP	Smoke management program
SPM	Special Purpose Monitor
SRTM	Shuttle Radar Topography Mission
TAP	Technical Analysis Protocol
TBD	To be determined
TPY	Tons per Year
TSP	Total Suspended Particulate
UCAR	University Corporation for Atmospheric Research
URP	Uniform Rate of Progress
USEPA	See *EPA*
USGS	U.S. Geological Survey
UTC	Coordinated universal time
UTM	Universal Transverse Mercator
UW	University of Washington
VOCs	Volatile organic compounds
WA	Washington
wd	Wind direction
WRAP	Western Regional Air Partnership
WRF	Weather Research and Forecast Model
ws	Wind speed
WSU	Washington State University
WRCC	Western Regional Climate Center
$\mu g/m^3$	Micrograms per cubic meter
µm	micrometer

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Executive Summary

The open burning of crop residue (crop residue burning) is a historic agricultural practice in Idaho, as it is in many areas of the country. Burning of this type is considered an important tool for farmers, but burning of crop residue also produces significant emissions and, if not managed properly, can lead to significant smoke impacts and the endangerment of public health. Consequently, the use of burning by farmers and the resultant potential for smoke impacts on the public's health have been a contentious and heavily litigated issue in Idaho for a number of years.

This revision to Idaho's State Implementation Plan (SIP) is based upon an updated and improved open burning of crop residue (crop residue burning) Smoke Management Plan (SMP) that resulted from a landmark agreement between burners and those advocating enhanced protection of public health. This SIP revision will allow for the return of crop residue burning in Idaho by implementing a rigorous smoke management program focused on the protection of public health. This SIP revision does not apply to crop residue burning on the Indian Reservations in Idaho.

This revision to Idaho's SIP, which is submitted to the U. S. Environmental Protection Agency (USEPA) to satisfy requirements under Section 110(l) of the Clean Air Act, serves many purposes, and has two main goals:

- To address the deficiencies in Idaho's SIP, as outlined in the January 2007 Ninth Circuit Court of Appeals decision in Safe Air for Everyone (SAFE) v USEPA in a manner that restores crop residue burning as a tool for Idaho farmers while ensuring the practice is protective of public health and the environment.
- To document key aspects of the negotiated agreement reached by stakeholders. The stakeholders were agriculture representatives and those advocating for the protection of public health and the environment.

Crop residue burning was halted in January 2007, as a result of the Ninth Circuit Court of Appeals decision that Idaho's existing rules were illegal because there was not an adequate demonstration that the rules governing crop residue burning were compliant with the federal Clean Air Act (CAA).

In 1970, Idaho's Air Quality Rules allowed for the burning of crop residue. A series of events, including a 1986 statute prohibiting the Idaho Department of Environmental Quality (DEQ) from regulating crop residue burning, set the stage for SAFE's lawsuit and the Court's decision. The 1993 EPA-approved Idaho SIP no longer included crop residue burning as an allowable form of open burning. In 1999, the Idaho Legislature gave the Idaho State Department of Agriculture authority to regulate crop residue burning. DEQ then modified its rules to recognize the open burning of crop residue. DEQ's rule was submitted to EPA as a SIP clarification of a long standing existing state rule, and EPA approved it as such.

SAFE sued EPA, arguing that Idaho's SIP did not clarify existing rules but changed them. The Ninth Circuit Court of Appeals agreed, vacating EPA's approval. The decision resulted in the prohibition of open burning of crop residue in Idaho. This decision applied only to crop residue burning and did not affect other forms of open burning allowed under Idaho's rules or any burning on Indian Reservations in Idaho.

To restore crop residue burning in Idaho, it was determined that DEQ must revise its SIP to include a detailed air quality analysis, showing that its smoke management program for crop residue burning is compliant with the Clean Air Act. Although a SIP revision could be completed by DEQ to restore burning upon approval by EPA, without involving air quality activists and growers in the process, uncertainty in the program due to future litigation was likely. To avoid this potential for future litigation of crop residue burning and to reduce the uncertainty for growers, regulators, and the public, Governor Otter called for growers and activists to join with state regulators to negotiate a solution to this on-going problem. Both sides agreed to sit down at the table, and an expert negotiator was retained to facilitate the process.

The negotiation process began in earnest in July 2007, and a number of meetings were held to identify the issues and attempt to find common ground, if any. The goal of these meetings, if common ground could be found, was to design a program that addressed the concerns of all parties. The specific question to be answered was: could a program be designed that was protective of public health, totally transparent to the public, and that also restored the use of fire as a tool for agricultural community?

To help the negotiation team understand the underlying issues, informational meetings were set up to educate the group on pertinent issues. Experts were brought in to share information on the health effects of smoke, successful smoke management programs, air quality modeling, and air monitoring techniques. On December 19, 2007, agreement was reached. Both SAFE and grower representatives agreed, in principal, to a list of program objectives that would incorporate elements from the successful programs of the State of Washington, the Coeur d'Alene Tribe, and the Nez Perce Tribe.

The December agreement points to develop Idaho's new Crop Residue Burning Program included the following:

- Transfer program authority from the Idaho State Department of Agriculture (ISDA) to DEQ
- Operate the program consistently state-wide
- Model the program after the Nez Perce Tribe Program
- Design a totally transparent program modeled after the State of Washington Program
- Ensure adequacy of the air quality monitoring
- Build in cooperation with other regional smoke managers
- Establish an annual and on-going review process
- Require a revised air quality analysis if bluegrass burning exceeds 20,000 acres statewide

To implement the agreement, legislation was required. The negotiation team worked together to craft language for the Idaho State Legislature. House Bill 557 passed both the House and Senate and was signed into law by Governor Otter on March 7, 2008. The statute returned the authority to regulate crop residue burning to DEQ, providing better air quality protection by not approving burns if ambient air quality levels are exceeding or are expected to exceed 75% of any National Ambient Air Quality Standard (NAAQS) or have reached, or are forecasted to reach and persist at, eighty percent (80%) of the one-hour action criteria for particulate matter pursuant to Section 556 of IDAPA 58.01.01, Rules for the Control of Air Pollution in Idaho, and it establishes a fee for farmers on a per-acre-burned basis.

To implement House Bill 557, DEQ began a negotiated rulemaking process in early February 2008. This process was open to the public and included representatives from the negotiation team. An agreement on a temporary rule was reached. The temporary rule was approved on March 12, 2008, by the Idaho Department of Environmental Quality Board and became effective April 2, 2008.

Before open burning of crop residue can resume, this SIP revision must be approved by EPA.

Generally, this document provides an analysis of air quality monitoring data showing that air quality standards have not been violated in past when crop residue burning occurred. As a supplemental analysis, the report then examines meteorological conditions, crop residue burning emission inventories, modeling, and new program requirements. This supplemental analysis builds a "weight of evidence" demonstration affirming that the program will not only continue to be fully compliant with Clean Air Act requirements, as in the past, but will provide improvements to further the protection of air quality in Idaho. (Much of the supplemental analysis focuses on 2005 as the base year; this year was chosen because of the large number of acres burned and the availability of quality meteorological and emission inventory data.)

The specifics of the SIP document follow:

- The SIP outlines administrative requirements and documents that these requirements have been met.
- Meteorological conditions are evaluated on a statewide, airshed, and micro-scale basis to determine their influence on burn calls. Idaho's complex terrain, climate, and meteorological variability greatly affect the transport and dispersion of smoke. Careful considerations of these parameters are the cornerstone to any successful smoke management program.
- An emission inventory provides an accounting of burn acres for the 2005 base year with future emissions predicted. Emission estimates are best for those areas in Idaho north of the Salmon River, where the acres burned are well documented. Emission estimates for Southern Idaho are based upon the number of acres of croplands and assumptions about the percent of those fields burned. The new program will provide an accurate and thorough tracking on acres statewide in the future.
- Historical monitoring data is summarized, clearly showing that past crop residue burns have not caused or contributed to violations of national ambient air quality standards. Data was examined to show the additional days that will be restricted from burning under the new program to ensure air quality protection at 75% of the NAAQS.
- Supplemental analyses in the report support the demonstrations made in the SIP. These analyses are non-regulatory modeling analyses and other technical analyses that serve to a) add to the “weight of evidence” that crop residue burning is not violating or significantly contributing to a violation of the NAAQS, b) estimate the level of haze impacts in Class I wilderness areas and national parks in the region, and c) estimate the spatial distribution of crop residue burning air quality impacts, which indicates areas that should be considered for additional monitoring resources. Because limited characterization with non-FRM monitoring data indicate that it is not uncommon to exceed 80 percent of the 1-hour trigger level defined in Section 556 of the rule, great care must be required when any burns are conducted near areas of sensitive receptor populations.
- Finally, a complete program description and a summary of Air Quality Protection strategies are provided. This includes conditions for a burn approval, the burn permitting process, general provisions of the program, discussion of the transparency of the program, online-tools to be made available, the role of the Operating Guide, training, and the annual review process.

In conclusion, this document provides a rigorous look at Idaho’s crop residue burning program, a program that was conceived through an open negotiation process. The program, to be operated by DEQ and modeled after the Nez Perce Tribe Program, focuses on the protection of air quality while providing burning as a tool for agriculture. The document also shows that past smoke management practices did not contribute to NAAQS violations and that the new program will provide greater health protection through a more rigorous and open smoke management program.

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Section 1. Introduction

This revision to Idaho's State Implementation Plan (SIP) is submitted pursuant to Section 110(l) of the Clean Air Act (CAA) 42 USC §7410(l). The State of Idaho prepared this submittal as a result of the Ninth Circuit Court of Appeals decision in *Safe Air for Everyone v USEPA* 475 f.3d 1096, amended 488 f.3d 1088 (9th Cir 2007) and the subsequent efforts of stakeholders who negotiated an agreement that ensures protection of the public health and the environment and that allows farmers to burn crop residue when certain conditions are met. The following provides the history and applicable law regarding crop residue burning, a brief description of the court decision, the stakeholder agreement points, the resulting statute and administrative rules, data, administrative requirements, and an overview of the technical analysis. This SIP revision does not apply to crop residue burning on the Indian Reservations in Idaho.

1.1 Background

The history of crop residue burning in Idaho includes the following milestones:

- In 1970, Section 2, 3(H) of the state of Idaho's Air Quality Rules stated, "The open burning of plant life grown on the premises in the course of any agricultural, forestry or land clearing operation may be permitted when it can be shown that such burning is necessary and that no fire or traffic hazard will occur. Convenience of disposal is not of itself a valid necessity for burning." This rule was approved by the US Environmental Protection Agency (EPA) and included in Idaho's SIP on May 31, 1972. 37 Federal Register 10842, 10861.
- In 1982, the Air Quality Rules were amended to prohibit open burning unless it fell within a listed category. Agricultural burning was a listed category.
- In 1985, the Idaho legislature enacted the Smoke Management Act, which provided for the open burning of crop residue (House Bill 246, 41st Legislature, 1985). The Air Quality Rules were then amended to provide for more specific regulation of crop residue burning. Before these specific rules were submitted to EPA for SIP approval, in 1986, the Idaho Legislature (1) amended the Smoke Management Act to prohibit the Idaho Department of Health and Welfare, Division of Environmental Quality (currently the Department of Environmental Quality [DEQ]) from promulgating rules regarding the open burning of crop residue and (2) repealed the existing Air Quality Rules addressing the open burning of crop residue (House Bill 659, 42nd Legislature, 1986). Numerous changes to the Air Quality Rules were subsequently submitted to EPA for SIP approval.
- In 1993, EPA approved as a SIP revision the changes to the Air Quality Rules, including the repeal of the rules regarding the open burning of crop residue, which then left the rules silent on crop residue burning.
- In 1999, the Idaho Legislature repealed the Smoke Management Act and in its place enacted the Smoke Management and Crop Residue Disposal Act (House Bill 342, 55th Legislature, 1999). This Act authorized the Idaho State Department of Agriculture (ISDA) to promulgate rules regarding crop residue disposal and removed the prohibition against DEQ from doing so. DEQ subsequently amended the Air Quality Rules to recognize the open burning of crop residue. This Air Quality Rule, IDAPA 58.01.01.617, was submitted to EPA as a SIP clarification of long standing existing state law. EPA approved it into the SIP as such. Safe Air for Everyone ("SAFE") sued, arguing that the approval did not clarify the SIP but changed it, asserting that the SIP previously prohibited crop residue burning and now allowed it. The Ninth Circuit Court of Appeals agreed, vacating EPA's approval and remanding it back to EPA to consider the amendment a change to the preexisting SIP rather than a clarification. The decision resulted in the prohibition of open burning of crop residue on state lands in Idaho.

1.2 Negotiation and Agreement

Subsequent to the Ninth Circuit Court of Appeals decision, the parties to the lawsuit, and other key stakeholders, began discussions regarding the existing open burning of crop residue (crop residue burning) program and the SIP revision submittal components required to satisfy the CAA. Central parties to these discussions included representatives from SAFE, DEQ, ISDA, EPA, Coeur d'Alene Tribe, Kootenai Tribe, Nez Perce Tribe, and numerous farm organizations and farmers who burn crop residue. After several months of discussion, an independent mediator was hired to assist in the negotiation of an agreement amongst the stakeholders.

In December of 2007, agreement points were reached (Appendix A, page 63). The parties agreed (1) that DEQ would administer the crop residue burning program, (2) to model the program after the Nez Perce Tribe Program, specifically to protect air quality to 75% of the National Ambient Air Quality standards (NAAQS), (3) to incorporate the transparency aspects of the Washington State Department of Ecology program, (4) to examine the adequacy of the existing monitoring network, (5) to build in cooperation with other smoke management regulators, (6) to conduct monitoring and exposure studies if grant money is available, and (7) to conduct an air quality analysis prior to authorizing the annual open burning of 20,000 acres or more of bluegrass.

1.3 Legislation

House Bill 557 (Appendix B, page 69) was subsequently drafted, passed by the Idaho Legislature, and signed by Governor Otter, effective upon signing, on March 7, 2008. House Bill 557 adds a new section, section 38-114, to the Environmental Protection and Health Act. This bill provides the authorization of the open burning of crop residue so long as the open burning is conducted in accordance with the new statute and the rules promulgated pursuant thereto. It also amends Idaho's Public Records Act to allow for the disclosure of information regarding property locations of fields to be burned, persons responsible for the burn, and acreage and crop type of crop residue to be burned.

Of central importance to this SIP revision is the legal requirement that a farmer must obtain prior approval from DEQ to burn, and, further, DEQ is prohibited from approving a burn if it determines that ambient air quality levels: "[a]re exceeding, or are projected to exceed, seventy-five percent (75%) of the level of any national ambient air quality standard [NAAQS] on any day, and these levels are projected to continue or recur over at least the next twenty-four (24) hours" or "have reached, or are forecasted to reach and persist at, eighty percent (80%) of the one-hour action criteria for particulate matter pursuant to Section 556 of IDAPA 58.01.01, Rules for the Control of Air Pollution in Idaho." Idaho Code Section 39-114(3)(a) and (b).

1.4 Air Quality Rules

Five days after passage of House Bill 557, the Idaho Board of Environmental Quality approved rule docket number 58-0101-0801 (Appendix C, page 79), effective April 2, 2008. This rule docket contains rules that provide for the open burning of crop residue through a *Permit by Rule* program. The farmer must register thirty days in advance of the date of the proposed burn, pay a fee seven days prior to the burn, contact DEQ for initial approval 12 hours prior to the burn, obtain final approval from DEQ the morning of the burn, and submit a post-burn report to DEQ.

1.5 Program Summary

This SIP revision provides for the implementation of a new program that ensures protection of public health and the environment and that allows the open burning of crop residue. The program is patterned after the Nez Perce Tribe Reservation Burn Permit Program, which is part of the Federal Implementation Plan (FIP) under the CAA for Indian Reservations in Idaho, Oregon, and Washington. 40 CFR 49 10406 et seq. Any person desiring to burn crop residue within the state must receive prior approval from DEQ. The most recent program required approval in the ten northern counties of Idaho only.

1.6 Administrative Requirements

The following subsections provide a brief overview of the various CAA administrative requirements, pertaining to the crop residue burning SIP revision as well as the applicable Idaho Code.

1.6.1 Public Comment, Hearing, and Authority

Section 110(l) of the CAA requires the state to provide reasonable notice and a public hearing on each SIP revision submitted to EPA. 42 USC 7410; see also 40 CFR. 51.102. The State of Idaho has provided the public with reasonable notice and a public hearing: the Idaho Administrative Bulletin published on April 2, 2008 (Appendix D, page 103) provided notice announcing a public comment period on the SIP Revision through May 2, 2008, with a public hearing on May 2, 2008. Notice of the public comment period and hearing was posted in the major newspapers throughout the state. DEQ also notified those members of the public who have subscribed to the DEQ list server of the public comment period and hearing; the list server is an automated e-mail delivery system that provides notification when the DEQ Web site has been updated.

The SIP revision was made available at DEQ's state office in Boise and at all regional offices across the state (Coeur d'Alene, Idaho Falls, Lewiston, Pocatello, Twin Falls, and Boise). In addition, a copy was made available for review on DEQ's Web site:

http://www.deq.idaho.gov/air/prog_issues/burning/agricultural.cfm

Comments were accepted in a variety of forms: electronic mail, postal mail, and verbal testimony from the public hearing. Complete documentation of comments and public hearing testimony, including DEQ responses is contained in Appendix E (page 101).

Additionally, it should be noted that representatives from DEQ, ISDA, SAFE, and grower organizations testified before the Idaho legislature in support of House Bill 557, which includes the statutory changes to Idaho Code included in the SIP revision. The same representatives participated in negotiated rulemaking meetings on February 12, 15, and 21, 2008 and thereafter testified at the March 12, 2008 meeting of the Board of Environmental Quality in support of Rule Docket 58-0101-0801, which contains the Permit by Rule provision included in the SIP revision.

The Board of Environmental Quality adopted the temporary rule on March 12, 2008, with an effective date of April 2, 2008. Pursuant to the Idaho Administrative Procedures Act, the Rule Docket was published in the Administrative Bulletin as a temporary and proposed rule. Idaho Code § 67-5221 and 67-5226. The Rule Docket will be presented to the Board of Environmental Quality for adoption as a pending rule at the October 2008 board meeting and approved as a final rule by the Idaho Legislature in 2009. Although a temporary rule, it is effective now.

1.6.2 Assurance of Adequate Funding, Personnel, and Authority

Section 110(a)(2)(E) of the CAA requires that the state have adequate funding and staff to carry out the provisions of its SIP. The State of Idaho has adequate funding and personnel to carry out the procedures identified in this SIP revision. The fiscal note to House Bill 557 (Appendix B) noted that the enactment of the legislation would have one-time initial expenses of $186,700 as well as on-going annual costs of $419,700. The legislature appropriated these funds when they approved the statute change. Future receipts remitted to the state for crop residue burning shall be transferred to the General Fund to help defray ongoing program costs.

To accomplish all of the tasks associated with this SIP revision, DEQ will increase staff to ensure compliance statewide. A technical lead will be tasked with the development and implementation of open burning under the crop residue burning program. In addition, there will be a north Idaho coordinator, who will be the field expert for the implementation of the program. Finally, DEQ will hire and train seasonal burn coordinators, whose primary focus will be to provide burn season service to local communities, ensure air quality is protected, and ensure that crop residue burning is executed in accordance with state rules.

1.6.3 Data Access

The computing system and administrative procedures used for data access relative to this SIP revision analysis are described in this section.

This SIP revision document and all related documents and references are archived at the State Office of the Idaho Department of Environmental Quality. All data files used in the Supplemental Analysis are stored on DEQ's enterprise data storage system, which is fully backed up.

This SIP revision document and related documents are posted on the Idaho DEQ web page. All data inputs used in the development of this SIP revision, including input files, and raw output files, intermediate calculations, and monitoring data and related technical analyses are available upon request to Idaho Department of Environmental Quality, 1410 North Hilton, Boise, Idaho.

1.6.4 Applicable Idaho Administrative Code

The Rules for the Control of Air Pollution in Idaho, promulgated pursuant to the EPHA, are in the Idaho administrative code IDAPA 58.01.01.

The Crop Residue Rule IDAPA 58.01.01.617 defines the open burning of crop residue on fields where the crops were grown as an allowable form of open burning if conducted in accordance with Section 39-114, Idaho Code, and Sections 618 through 623. The air quality permit program in Idaho requires a demonstration that the source at issue will not cause or significantly contribute to a violation of NAAQS. IDAPA 58.01.01.203.02 and 401.03.b. IDAPA 58.01.01.618 describes the *Permit by Rule* requirements for crop residue burning. All persons shall be deemed to have a permit by rule if they comply with all the provisions of Sections 618 through 623.

In addition to the aforementioned authorities, the State has the authority to implement controls in response to air pollution forecasts, alerts, warnings, and emergency episodes. IDAPA 58.01.01.550 through 562.

1.7 Overview of Technical Analysis

The data and technical analyses presented in the following sections of this report will demonstrate, using data from an extensive monitoring network, statewide emission inventories, and supplementary, non-regulatory modeling analyses, that a) the crop residue burning activity in the State of Idaho is not causing nor significantly contributing to a violation of the NAAQS; b) Idaho's new Smoke Management Program (SMP), fashioned after the successful Nez Perce Tribe program, is expected to be adequately protective of air quality.

More specifically, the data and technical analyses in this document show the following:

- **Section 2, Air Quality** characterizes ambient air quality conditions throughout the state, with particular attention paid to areas of greatest crop residue burning activity, and describes an enhanced monitoring program being planned in these areas to better assess such impacts.
- **Section 3, Meteorology** describes meteorological conditions and smoke dispersion climatology throughout the state, with particular attention paid to areas of greatest crop residue burning activity.

- **Section 4, Emissions Inventory** presents the estimated base year emissions for crop residue burning activity statewide, including estimates of projected crop residue burning emissions for future years. As part of the emissions inventory analysis, it is demonstrated that the greatest crop residue burning emissions occur in the northern Idaho region (those counties north of the Salmon River) with significant, but somewhat smaller magnitude, crop residue burning in the southeast region of the state (counties of Bingham, Power and Cassia etc.) Based on these emission estimates, the fact that dispersion climatology and burning conditions are less favorable in the northern region than in the southeast and southwest areas of the state, and the incompleteness of the crop residue burning database in other parts of the state, this statewide SIP revision assumes that if the NAAQS are not violated in the north, then they are not likely to be violated in other areas of the state, so detailed supplemental analysis for other areas is not necessary.
- **Section 5, Supplemental Analysis** summarizes additional scrutiny to support the demonstrations made in the previous sections. This section summarizes a non-regulatory modeling analysis and other technical analyses that serve to a) add to the "weight of evidence" that crop residue burning is not violating or significantly contributing to a violation of the NAAQS, b) explore the potential to contribute to haze impacts at Class I wilderness areas and national parks in the region, and c) estimate the spatial distribution of crop residue burning air quality impacts, which indicates areas that should be considered for additional monitoring resources. (Actual placement of monitors and operation of the SMP via the Operating Guide is a dynamic process to be reviewed and updated annually.)

It should be emphasized here that non-regulatory modeling is used for supplementary, weight-of-evidence analysis for two primary reasons:

- NAAQS compliance is established based on monitoring data, so these supplemental analyses do not constitute a *modeled attainment demonstration* requiring an EPA guideline model; and
- There are currently no atmospheric models fully validated and approved by EPA as a "guideline model" for simulating pollutants released from a burning field.

Nevertheless, DEQ believes that the best tool available for modeling smoke impacts is the CALPUFF model. CALPUFF uses refined meteorology and source configurations as executed by the Washington State University ClearSky smoke forecasting tool and a similar tool, called BlueSky/RAINS, which is used by the U.S. Forest Service to forecast wildfire plume impacts and trajectories. Both have undergone some evaluation, and burn managers and others have understood their limitations and relied on them for several years. Thus, Idaho believes there is sufficient non-regulatory use of the CALPUFF model for fire sources to suggest that these supplementary analyses will add value to the technical analyses, even though the CALPUFF model used for this type of source does not have full EPA approval, and its use in this application should not be considered by EPA, nor others, as an "attainment demonstration" nor as any other regulatory application beyond the limited objectives outlined in Section 5.

- **Section 6, Program Description and Air Quality Protection Strategies** provides the conditions and requirements for burn permitting, the transparency of the program, online tools, Operating Guide elements, training requirements, and annual evaluation requirements. This section also addresses compliance with the NAAQS, interstate transport, and regional haze CAA programs.
- **Appendices A through I** provide additional, detailed information supporting several sections of the SIP revision.

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Section 2. Air Quality

As will be demonstrated in this section, this SIP revision to allow crop residue burning will not cause or significantly contribute to a violation of any ambient air quality standard. Table 1 presents the national ambient air quality standards for all criteria pollutants being evaluated in this SIP revision. This section describes DEQ's monitoring network, presents the historical air quality data, and applies the new crop residue burning rules to the historic air quality data.

Table 1. National Ambient Air Quality Standards

	Primary Standards		Secondary Standards	
Pollutant	**Level**	**Averaging Time**	**Level**	**Averaging Time**
Carbon Monoxide	9 ppm (10 mg/m^3)	8-hour[1]	None	
	35 ppm (40 mg/m^3)	1-hour[1]		
Lead	1.5 µg/m^3	Quarterly Average	Same as Primary	
Nitrogen Dioxide	0.053 ppm (100 µg/m^3)	Annual (Arithmetic Mean)	Same as Primary	
Particulate Matter (PM_{10})	150 µg/m^3	24-hour[2]	Same as Primary	
Particulate Matter ($PM_{2.5}$)	15.0 µg/m^3	Annual[3] (Arithmetic Mean)	Same as Primary	
	35 µg/m^3	24-hour[4]	Same as Primary	
Ozone	0.075 ppm (2008 std)	8-hour[5]	Same as Primary	
	0.08 ppm (1997 std)	8-hour[6]	Same as Primary	
Sulfur Dioxide	0.03 ppm	Annual (Arithmetic Mean)	0.5 ppm (1300 µg/m^3)	3-hour[1]
	0.14 ppm	24-hour[1]		

1. Not to be exceeded more than once per year.
2. Not to be exceeded more than once per year on average over 3 years.
3. To attain this standard, the 3-year average of the weighted annual mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m3.
4. To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m3 (effective December 17, 2006).
5. To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm. (effective May 27, 2008)
6. (a) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm. (b) The 1997 standard—and the implementation rules for that standard—will remain in place for implementation purposes as EPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.

2.1 Monitoring Network

The basis for determining the air quality of any area is accurate and adequate monitoring data. Data collected from an area's monitoring network are used to establish air quality trends, to determine if and when air quality standards are exceeded, and to aid in the development of appropriate air quality control strategies when standards are exceeded.

The Idaho monitoring network is a composite of meteorological and pollutant-specific monitoring equipment. DEQ currently operates a total of 38 monitors statewide year-round, primarily in areas of high population where the potential for human exposure is greatest. In accordance with 40CFR58 Appendix E, the DEQ monitoring network assesses the average population exposure to criteria pollutants using neighborhood to urban scale monitor locations. These monitors are not intended to measure maximum plume concentration from a single emissions source. However, over time the monitors will capture centerline concentrations of some plumes due to the variability of wind direction. These instances are identified as peaks in the monitoring data that are above the normal background for the area. Appendix I analyzes monitoring data for the 2005 burn season for peak concentration that were greater than the normal background concentration for the area.

Particulate matter is currently the most commonly measured criteria pollutant of concern in Idaho because particulate sources are widespread throughout the state. Common sources include windblown dust, re-entrained road dust, smoke (residential, crop residue burning, and forest fires), industrial emissions, and motor vehicle emissions. DEQ operates 23 $PM_{2.5}$ (particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers) monitoring sites year-round. $PM_{2.5}$ TEOMs (tapered element oscillating microbalance) and nephelometers support DEQ's air quality forecasting and smoke management programs, while the 24-hour integrated filter samplers on FRMs (Federal Reference Method) provide NAAQS compliance data. DEQ currently operates three continuous PM2.5 monitors in seasonally North Idaho specifically for smoke management purposes.

Even though the PM2.5 continuous monitors can not be used to determine compliance with the NAAQS, DEQ will use these monitors during the burn decision process. The continuous monitors provide real-time data that will ensure DEQ staff makes burn decisions that are in accordance with IDAPA 58.01.01.621.01.

Carbon monoxide (CO) was a pollutant of concern in the Boise area during the 1980s. The Boise area (Northern Ada County) is currently designated as a CO maintenance area. No violations of the 1 or 8-hour CO NAAQS have occurred since 1991.

DEQ has monitored for sulfur dioxide (SO_2) and/or nitrogen dioxide (NO_2) in Boise, Pocatello, Moyie Springs, Mountain Home, and Soda Springs. In the past 10 years of targeted monitoring, DEQ has not measured significant concentrations of these pollutants. DEQ initiated NO_2 monitoring near Coeur d'Alene on January 1, 2005 to characterize emissions in the area.

Ozone (O_3) has been monitored in the Treasure Valley since 2002, and in Coeur d'Alene beginning in 2005. Ozone has become a pollutant of concern since many summertime days are classified as moderate for ozone on the Air Quality Index (AQI). DEQ monitors ozone from May through September, as this is the period of concern for high O_3 levels in Idaho.

Appendix F includes tables that list the currently operating monitors for each of the criteria pollutants. These tables include the monitor site name, county, AIRS ID, Lat/Lon location, sample frequency, monitoring objective, monitor type ($PM_{2.5}$), and monitor designation for all monitors.

Figure 1 shows Idaho's Air Monitoring Network as it currently is operated.

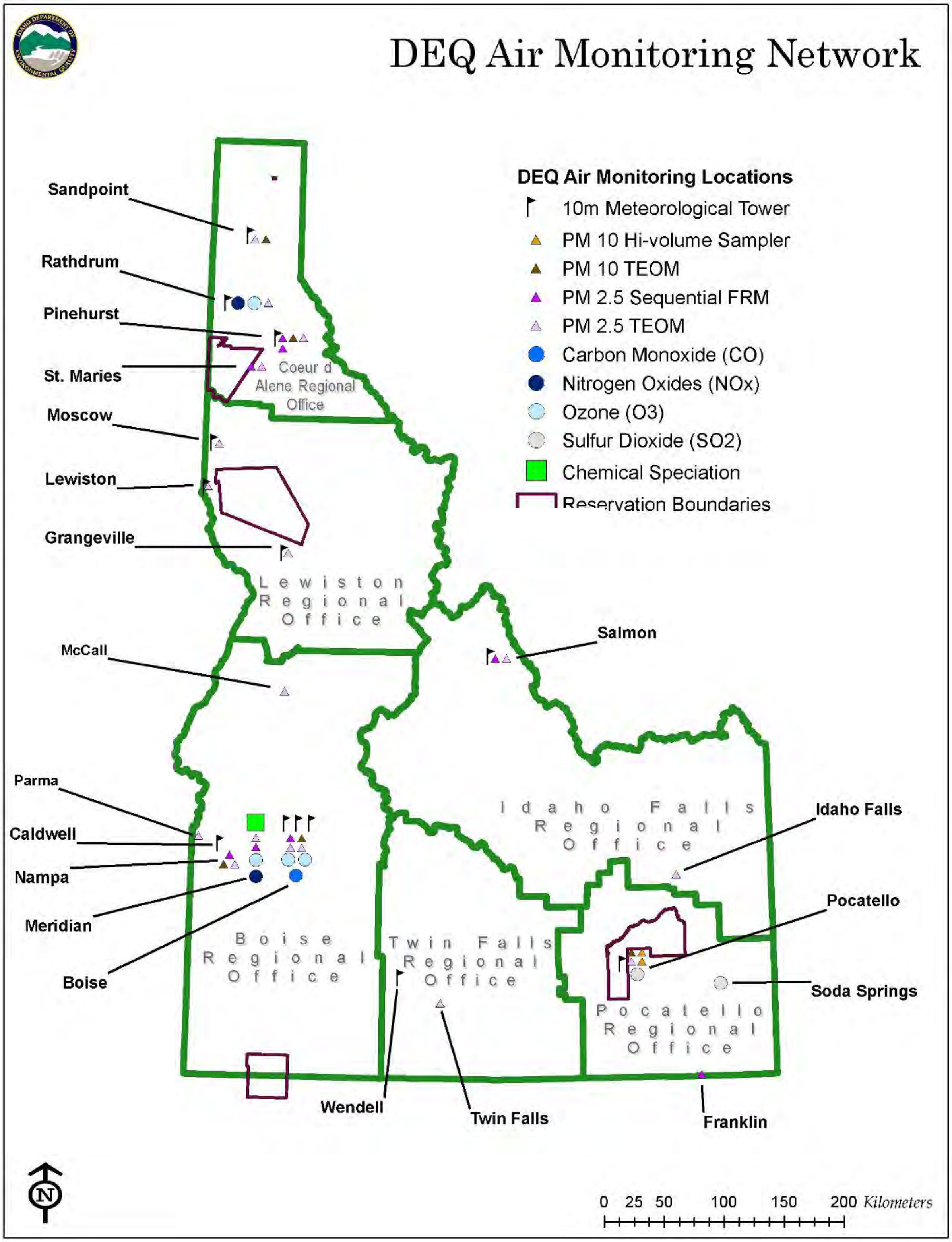

Figure 1. DEQ air monitoring network. Burn season nephelometer for CRB management at Rathdrum, Athol, and Hope are not shown.

2.2 Historical Air Quality Data

Tables showing monitoring data for all criteria pollutant FRM or Federal Equivalent Method (FEM) monitors operating in Idaho in 2004, 2005, and 2006 are included in Appendix F. This section summarizes the data in the appendix.

PM_{10}

DEQ staff examined particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (PM_{10}) FRM data from 2004, 2005, and 2006 and found no violations of the PM_{10} 24-hour standard of 150 µg/m^3. The highest values were typically found in the winter months although in 2006 values ranging from 43 to 56 µg/m^3 were measured in both Boise and Pocatello during the summer months.

CO

No violations of either the 1-hour standard of 35 parts per million (ppm) or the 8-hour standard of 9 ppm for CO during the years 2004, 2005, and 2006 were found. The highest 1-hour value during the time frame examined was 6.8 ppm on December 8, 2004 in Nampa and the highest 8-hour value was 3.4 ppm on December 14, 2004.

Ozone

An examination of the ozone FRM data from 2004, 2005, and 2006, found no violations of the ozone 8-hour standard of 0.08 ppm. (To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.) The highest values were typically found in the hottest summer months of July and August. While there were measured values higher than 0.08 ppm in 2005 and 2006, there were no violations of the standard because not all of the conditions for determining a violation were met.

SO_2

A review of the SO_2 FRM data from 2004, 2005, and 2006 showed no violations of either the annual standard of 0.03 ppm, the 24-hour standard of 0.14 ppm, nor the 3-hour, 0.5 ppm secondary standard.

NO_2

A review of the NO_2 FRM data from 2004, 2005, and 2006 showed no violations of the annual standard of 0.053 ppm.

$PM_{2.5}$

DEQ staff examined $PM_{2.5}$ FRM data from 2004, 2005, and 2006 and found only 1 area, Pinehurst, violating the $PM_{2.5}$ 24-hour standard of 35 µg/m^3, there were no areas in violation of the annual standard of 15 µg/m^3. In order to attain the annual standard, the 3-year average of the weighted annual mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m3. To attain the 24-hour standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m3 (effective December 17, 2006).

The highest 24-hour values were typically found in the winter months. However, there are a number of relatively high 24-hour values measured in September and October at various locations across the State.

In December of 2007, the state of Idaho submitted recommendations for area designations for the 2006 $PM_{2.5}$ NAAQS. In that document, DEQ recommended the airsheds of Pinehurst and the Idaho portion of the Cache Valley be designated at nonattainment. DEQ also recommended the airsheds of Benewah County, Treasure Valley, and Pocatello be designated as attainment while the remaining counties be designated as unclassifiable.

During the designation process, DEQ evaluated Pinehurst and Cache Valley using nine-factor analysis for non-attainment area designation. Emission Sources was one of the factors included. Both areas are characterized as having elevated $PM_{2.5}$ concentrations during wintertime air stagnation events. Residential wood heating, vehicles, open burning, and slash burning were determined to be the main emission sources for the Pinehurst airshed, while residential wood heating, vehicles, and agriculture (feedlot and dairy ammonia) are the main sources for the Idaho portion of the Cache Valley.

The available monitoring data meeting the requirements of 40 CFR 58 that was used for these area designation recommendations are presented in Table 2 and Table 3.

Table 2. 24-hour $PM_{2.5}$ Design Values[a]

City	County	MSA[b]	$PM_{2.5}$ 24-hour 98th Percentile			3-Year Average of 98th Percentiles[c]
			2004	2005	2006	2004 – 2006
Pocatello	Bannock	Pocatello	32.5	29.8	20.6	28
St. Maries	Benewah	N/A	24.8	34.3	32.9	31
Boise	Ada	Boise City – Nampa	35.5	26.4	28.5	30
Nampa	Canyon	Boise City – Nampa	43.8	36.3	22.4	34
Pinehurst	Shoshone	N/A	35.7	45.7	33.5	**38**

a. 24-hour $PM_{2.5}$ design value is the 3-year average of the 98th percentile for each year.

b. MSA – metropolitan statistical area.

c. A value of 36 or greater indicates a violation, and is indicated in bold face.

Table 3. Annual $PM_{2.5}$ Design Values[a]

City	County	MSA[b]	Weighted Annual Arithmetic Mean			3-Year Average of Annual Means[c]
			2004	2005	2006	2004 – 2006
Pocatello	Bannock	Pocatello	8.69	8.18	6.36	7.7
St. Maries	Benewah	N/A	9.30	9.51	9.69	9.5
Boise	Ada	Boise City – Nampa	8.98	8.59	7.99	8.5
Nampa	Canyon	Boise City – Nampa	9.10	9.22	7.61	8.6
Pinehurst	Shoshone	N/A	12.04	12.71	11.52	12.1

a. Annual $PM_{2.5}$ design value is the 3-year average of the annual means.

b. MSA – metropolitan statistical area

c. A value of 15.1 or greater indicates a violation.

Table 4 presents the design value for ozone using the 2005 – 2007 data. Both areas listed are in compliance with the 1997 8-hour rolling average ozone standard. However, as indicated in Table 1, EPA recently lowered the 8-hour ozone standard from 0.08 ppm to 0.075 ppm, effective May 28, 2008. Based on this new standard, the Treasure Valley (Boise City – Nampa, Idaho MSA) is at risk of violating the 8-hour ozone standard.

Table 4. Ozone design values[a]

City	County	MSA[b]	Annual Fourth-Highest 8-hour Ozone (ppm)			Three-Year Ave. of the Fourth-Highest[a]
			2005	2006	2007	(ppm)
Boise	Ada	Boise City – Nampa Idaho	0.075	0.082	0.078	0.078[c]
Coeur d'Alene	Kootenai	Coeur d'Alene – Kootenai Cnty	0.066	0.068	0.067	0.067

a. O_3 design values are the annual fourth-highest 8-hour maximum value averaged over a three-year period.

b. MSA – metropolitan statistical area.

c. A value of 0.076 or greater indicates a violation. As the O_3 standard has recently been changed, no violation has occurred yet because different data years than those listed above will be used for violation determination and designation of nonattainment status.

2.3 Conceptual description: air quality characterization

Sections 2.1 and 2.2 discuss DEQ's current monitoring network and the 2004 – 2006 FRM or FEM monitoring data for all criteria pollutants. The historical data presented in this section and Appendix F demonstrate that, with the exceptions listed below, smoke impacts from crop residue burning have not caused or contributed to a violation of any ambient air quality standards throughout the state. The areas listed below require more detailed analysis of the historical monitoring data to demonstrate that smoke impacts from crop residue burning will not cause or significantly contribute to a violation of any ambient air quality standard.

Very few areas in Idaho have been, currently are, or are a proposed nonattainment designation.

- Treasure Valley – maintenance for CO and PM_{10}
- Pocatello – maintenance for PM_{10}
- Sandpoint – nonattainment for PM_{10}
- Pinehurst – nonattainment for PM_{10}, proposed nonattainment for $PM_{2.5}$
- Cache Valley – proposed nonattainment for $PM_{2.5}$

In addition to these, the Treasure Valley is currently at risk of violating the 2008 O_3 standard that becomes effective May 27, 2008. Ozone is also considered a pollutant of concern in the Coeur d'Alene area.

In order to fully characterize the air quality and make a determination of NAAQS compliance, the historical data must be evaluated to determine whether or not crop residue burning has impacted the monitors, and if so, how much. Fortunately, it is a fairly easy process to isolate crop residue burning smoke impacts from background levels and from the contributions from all other sources. A crop residue burn season typically lasts from July through mid-November. Crop residue burns typically are only 30 - 90 minutes in duration and result in a brief and sharp "peak," increasing $PM_{2.5}$ levels for only an hour or two. Section 5.1 of this document analyzes the historical continuous $PM_{2.5}$ monitoring data for crop residue burning smoke impacts.

2.3.1 Current PM_{10} nonattainment and maintenance areas

Historical information for the nonattainment and maintenance areas must be more closely analyzed to ensure smoke impacts from crop residue burning will not interfere with the maintenance of the PM_{10} standard or cause or contribute to a violation of the standard. All the PM_{10} maintenance areas and nonattainment areas had historical air quality problems that were mainly wintertime. The data included in Appendix F demonstrate that the highest PM_{10} concentrations in these areas tend to occur in the winter months, January – March. Boise and Pocatello tend to have some high values in the mid to late summer months, June – September, which correspond to times when windblown dust increases due to high winds.

2.3.2 Current CO maintenance area

Similar to the PM_{10} maintenance areas, CO must be evaluated to ensure smoke impacts from crop residue burning will not interfere with the maintenance of the CO standard. An extrapolation of maximum measure near-field impacts in Section 5.3 demonstrates that the CO NAAQS is not threatened. The main emission source of CO in the Treasure Valley is vehicles. The maximum (6.1 ppm compared to the 35.5 ppm 1-hour standard) CO concentrations tend to occur in the late fall to winter. Carbon monoxide emissions from vehicles have been greatly reduced since the nonattainment designation. With these emission reductions from vehicles, DEQ has successfully solved the CO air quality problem.

2.3.3 Proposed $PM_{2.5}$ nonattainment areas

A recommendation for nonattainment designation for the 2006 $PM_{2.5}$ NAAQS was recently submitted to EPA for both Pinehurst and the Idaho portion of the Cache Valley. During the development of the designations, DEQ evaluated the air quality monitoring data for the area and the emission sources possibly impacting the area. DEQ determined that both areas had elevated $PM_{2.5}$ concentrations mainly in the wintertime. Data presented in Appendix F support this determination.

2.3.4 Ozone areas of concern

With the lowering of the 8-hour ozone standard from 0.08 ppm to 0.075 ppm, the Treasure Valley is at risk of violating the new 2008 O_3 standard. Even though the Coeur d'Alene area monitors generally measure lower concentrations, ozone is still considered a pollutant of concern for that area. Table 4 presents the design values for the 8-hour ozone standard. The data included in Appendix F demonstrate that ozone is a concern in these areas during the months of July and August when the temperatures are highest.

2.4 NAAQS Compliance

The information presented in Sections 2.1 through 2.3 and Appendix F demonstrates that smoke impacts from crop residue burning will not cause or significantly contribute to a violation of any ambient air quality standard in any area within Idaho.

In addition to the information presented in this section, a supplemental analysis of apparent crop residue burning plume impact contributions at all northern Idaho DEQ TEOMs and nephelometers during the 2005 burn season is presented in Section 5 (Supplemental Analyses). The crop residue burning contribution estimates in Section 5, based on non-FRM continuous monitors represent a "weight of evidence" analysis to support the attainment demonstration in the next section. When combined with data provided by the Tribes, the continuous monitoring data also allowed DEQ to evaluate the performance of non-regulatory modeling used for additional supplementary analyses summarized in Section 5 and described in more detail in Appendix H.

2.5 Applying crop residue burning rules to historical data

One of the main components of the new crop residue burning statute and rule designed to protect human health and the environment is the requirement that DEQ may not approve a burn if either of the following applies:

- Ambient air quality levels are exceeding or expected to exceed 75% of the level of any NAAQS on any day, and these levels are projected to continue or recur over at least the next 24 hours
- Ambient air quality levels have reached, or are forecasted to reach and persist at, 80% of the 1-hour action criteria for particulate matter (64 $\mu g/m^3$) pursuant to section 556 of IDAPA 58.01.01 (Idaho Code, Section 39-114(3) and IDAPA 58.01.01.621).

One way to evaluate this requirement is to apply the new criterion to the historical FRM monitoring data. Because $PM_{2.5}$ and O_3 are the 2 primary pollutants of concern, DEQ focused this evaluation on those 2 pollutants.

It is emphasized that EPA has recently changed the standards for both $PM_{2.5}$ and ozone (see Table 1). The 24-hour $PM_{2.5}$ standard was reduced from 65 µg/m^3 to 35 µg/m^3, effective December 17, 2006. The 8-hour ozone standard was lowered from 0.08 ppm to 0.075 ppm, effective May 27, 2008. In order to apply the new crop residue burning rules to the historical data, these new standards are applied to all historical data, regardless of whether or not the standard was in effect or not. This section is intended only to evaluate how the new crop residue burning rules would be applied to monitoring data, not compare monitoring data to the NAAQS to determine compliance.

2.5.1 $PM_{2.5}$ - Filter Based Sampling

Table 5 evaluates $PM_{2.5}$ FRM data from 5 northern counties where the majority of the crop residue burning has historically taken place. This table lists the number of days for each calendar year when the 24-hour monitored value was equal to or exceeded the “75% of the NAAQS” criterion. Under the new crop residue burning rules, these days would constitute a “no-burn day.” Where an "NA" is recorded, there was no FRM run at that site during those years. The zeroes mean no days were sampled where 75 percent of the 35 µg/m^3 NAAQS was reached.

Table 5. Applying the "75% of the NAAQS" criterion to historical $PM_{2.5}$ FRM data

	$PM_{2.5}$ FRM Data									
Site	Number of Days per Year >75% of the 2006 $PM_{2.5}$ NAAQS (26 µg/m³)									
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
St Maries (Benewah County)	NA	NA	NA	NA	NA	4	2	6	2	3
Sandpoint (Bonner County)	1	4	4	2	1	1	0	NA	NA	NA
Coeur d'Alene (Kootenai County)	NA	2	9	2	3	0	NA	NA	NA	NA
Lewiston (Nez Perce County)	NA	2	2	2	2	0	0	NA	NA	NA
Pinehurst (Shoshone County)	NA	1	4	6	17	12	11	16	7	11

Ozone (O_3)

Table 6 though Table 9 evaluate the available data for the ozone seasons (May 1 – September 30) of 2004 – 2007, respectively. Similar to the $PM_{2.5}$ FRM data tables, these tables show the number of days per month and total days per ozone season the maximum eight-hour rolling average was equal to or greater than the "75% of the NAAQS" criterion.

Table 6. Applying the "75% of the NAAQS" criterion to the 2004 ozone FRM data

Site	2004 Ozone Season							
	Number of Days per Month >75% of the NAAQS (0.056 ppm)							
	April	May	June	July	Aug	Sept	Oct	Total Days >75% of the NAAQS
Whitney Elementary School (Boise)	12	8	20	18	15	0	0	73

Table 7. Applying the "75% of the NAAQS" criterion to the 2005 ozone FRM data

Site	2005 Ozone Season					
	Number of Days per Month >75% of the 2008 NAAQS (0.056 ppm)					
	May	June	July	Aug	Sept	Total Days >75% of the NAAQS
Whitney Elementary School (Boise)	7	7	15	13	2	44
Lancaster (Coeur d'Alene)	1	0	5	10	0	16

Table 8. Applying the "75% of the NAAQS" criterion to the 2006 ozone FRM data

	2006 Ozone Season					
Site	Number of Days per Month >75% of the 2008 NAAQS (0.056 ppm)					
	May	June	July	Aug	Sept	Total Days >75% of the NAAQS
Whitney Elementary School (Boise)	17	18	18	24	10	87
Lancaster (Coeur d'Alene)	6	3	3	13	4	29

Table 9. Applying the "75% of the NAAQS" criterion to the 2007 ozone FRM data

	2007 Ozone Season					
Site	Number of Days per Month >75% of the NAAQS (0.056 ppm)					
	May	June	July	Aug	Sept	Total Days >75% of the NAAQS
Whitney Elementary School (Boise)	15	13	25	7	5	65
Lancaster (Coeur d'Alene)	6	3	6	6	2	23

2.5.2 Future Monitoring

DEQ will deploy at least additional seven monitors to support the management goals of this program. DEQ is evaluating certain types of monitors for the continuous measurement of $PM_{2.5}$ for applicability. Monitors must be portable, collect data in real-time, and be equipped with telecommunications devices so data can be available in near real-time on DEQ's Web site.

These types of monitors will be special purpose monitors (SPMs). That is, they will not be FRM or FEM, so data collected by these monitors will not be used to determine compliance with any NAAQS. However, the monitors must be able reliably predict $PM_{2.5}$ relative to FRM concentrations and therefore DEQ will operate one sampler at the Pinehurst site, collocated with a FRM monitor and perform statistical analysis of data comparability. Correction factors will be developed to make the real-time data "FRM-like."

DEQ will operate these monitors in accordance with the provisions detailed in Standard Operating Procedures contained in its *Quality Assurance Project Plan for Ambient Air Monitoring* or QAPP.

Monitors will be located in areas determined to have a high level of "smoke plume frequency," higher degrees of population exposure based on a combination of population density and smoke plume frequency, sensitive populations, and complaint volume. At this time the proposed new monitoring sites include the following areas: Payette/Weiser, Rupert, Rexburg, Potlatch, Harpster, Cottonwood, and Caribou County.

Real-time information provided by the monitors will be integral to burn-call decision-making, protection of institutions with sensitive populations and real-time evaluation of smoke impacts. The continuous monitors provide real-time data that will ensure DEQ staff makes burn decisions that are in accordance with IDAPA 58.01.01.621.01. Ongoing Monitoring to Ensure Success

DEQ will continue to monitor $PM_{2.5}$ by FRM at its current locations across the state for NAAQS compliance evaluation. Although data from the continuous non-FRM/FEM monitors cannot be used for NAAQS evaluations, the data from these monitors can be evaluated for trends in ambient air quality, and DEQ will evaluate this data for the potential need for FRM monitor deployment.

Section 3. Meteorology

Meteorology plays a crucial role in the crop residue burning SIP revision, including statewide trends and airshed specific meteorology, both of which will be used to make decisions about crop residue burning.

3.1 State

Idaho lies entirely west of the Continental Divide, with elevations in the northern part of the state that are, on average, lower than in the larger central and southern portions of the state, where numerous mountain ranges form barriers to the free flow of air (WRCC, 2008). In the north, the main barrier to the flow of air is the rugged chain of Bitterroot Mountains, which form much of the boundary between Idaho and Montana. Although located some 300 miles from the Pacific Ocean, Idaho is influenced by maritime air borne eastward on the prevailing westerly winds (WRCC, 2008).

The pattern of average annual temperatures for the state indicates the effect of both latitude and altitude (WRCC, 2008). The highest annual averages are found in the lower elevations of the Clearwater and Little Salmon River Basins, and in the stretch of the Snake River Valley from the vicinity of Bliss downstream to Lewiston, including the open valleys of the Boise, Payette, and Weiser rivers.

The average precipitation map for Idaho is as complex, due to the greater moisture supply in the west winds that pass over the northern part of the state and the greater frequency of cyclonic activity in the north (WRCC, 2008). Average valley precipitation in the north is considerably greater than in southern sections.

3.2 Airshed

Because of its complex physiography, Idaho can be divided into several airsheds for air quality study, with each airshed having unique weather patterns. Because critical information needed to fully evaluate air quality impacts of open burning of crop residue in southern Idaho does not exist, DEQ compared meteorological conditions of the north against those of the south. As shown in Table 11 and Table 12, mixing height and mean wind speed in the burning season is higher in southern Idaho, making overall ventilation conditions better. Consequently, if burning levels in southern Idaho are similar to or less than those in northern Idaho, then the impact in the south would be lower. DEQ does not have robust information on crop burning for southern Idaho, but the following evaluation for the meteorological conditions therein demonstrate why northern Idaho airsheds should be the primary focus of the analysis performed for this SIP.

Table 10. Mean mixing height (4 month, from July to October) in north and south Idaho. Data (1984 to 1991) from National Weather Services, Boise (ID) airport and Spokane (WA) airport.

Mean Mixing height from July 1 to October 31(m)	
Boise	Spokane
2168	1968

Table 11. Mean wind speeds (July 15 to October 15, 2005) at selected stations in north and south Idaho.

Mean wind speed (m/s) during July 15 to Oct 15, 2005.				
South Idaho			North Idaho[3]	
Station	Ws (m/s)		Station	Ws(m/s)
Twin Falls[1]	4.8		Moscow	2.2
Parma[1]	3.2		Grangeville	2.4
Nampa[1]	3.2		Sandpoint	1.5
Grandview[1]	3.8		Rathdrum	3.2
Picabo[1]	3.3			
Rexburg[1]	4.4			
Rupert[1]	6.1			
Pocatello[2]	4.2			
Idaho Falls[2]	3.9			

1. Stations of The Pacific Northwest Cooperative Agricultural Weather Network
2. Stations of National Weather Services
3. Idaho DEQ's network.

Although the stations listed in the table cover large areas and reflect the general ventilation conditions in north and south Idaho, DEQ cannot exclude the possibility that some individual airshed(s) in the south might have less favorable conditions for burning.

3.3 Conditions for Burn

Meteorological conditions should be considered to optimize plume rise, smoke dispersion, and fire and fuel characteristics. Knowledge of meteorological conditions is also important to determine if the area where burning is proposed might be impacted by other smoke sources, such as wild fires or crop residue burning in neighboring states. The preferred meteorological conditions are designed to ensure good plume rise; good transport and dispersion to move the smoke quickly out of the area but not to produce the curling effect that would bring the smoke back to the ground; proper wind direction to avoid impacting sensitive targets; and better fire control with less smoke production during burning.

To meet these requirements, the parameters of Table 12 will have to be evaluated before decisions are made. No one parameter can be the sole basis from which to make a burn decision; all of these factors must be considered. The detailed criteria are not given here but will be described in the operational guide.

Table 12. Burn decision parameters.

Parameter	Value
Ventilation index	Good to excellent ventilation
Cloud cover	"Mostly sunny" to "partly sunny"
Surface wind speed	Moderate. 3 to 8 mph is optimum
Surface wind direction	To avoid institutions with sensitive populations
Transport wind speed	Good wind speed but not too high (>10m/s)
Transport wind direction	To avoid institutions with sensitive populations
Mixing height	High
Relative humidity	Low, but need to consider fire control. Both the forecasted data and knowledge about the conditions before the burning (e.g. was it raining in previous day?) are needed.

Section 4. Crop Residue Burning Emissions Inventory

Development of the crop residue burning emissions inventory (EI) began with estimating emissions from the base year, 2005. Emissions for future years were then projected on the basis of expected trends in crop residue burning. Because of the limitations in the various data sources for the 2005 inventory, on-Reservation acreages were not extracted from the totals; estimated emissions for the off-Reservation areas this SIP applies to are therefore less than the totals shown in this section.

4.1 Base Year Emission Inventory

The year 2005 was selected as the base year for the emission inventory because it had the most acres burned in the last three years and the most complete burn database. Earlier years had less complete data, and 2006 had fewer acres burned. It is important to note that the burn database is only considered complete in northern Idaho (those areas north of the Salmon River). Compliance with registration requirements in southern Idaho has been improving, but data for the base year is inadequate to provide actual acres burned across the entire state. The new crop residue burning program will ensure Idaho is building and tracking higher quality databases. Due to the quality of Idaho's air quality monitoring data (Section 2), the lack of emissions data does not adversely impact the ability to adequately demonstrate that crop residue burning does not cause or contribute to violations of the NAAQS.

Where actual data did not exist, DEQ used alternative methods to estimate emissions.

4.1.1 Approach

The emission inventory provides information on the spatial distribution of emissions, the source of the emissions, and the amount of pollutants released as a function of time. The crop residue disposal SIP revision applies outside of Indian Reservations and only to open burning of crop residue on fields where the crops were grown and to Conservation Reserve Program (CRP) lands. Other forms of burning allowable under Idaho law (weed control fires, prescribed burning, orchard fires, etc) were not included in this inventory because the control measures of the crop residue disposal smoke management program do not apply to them.

The general equation used to estimate emissions from the open burning of crop residue is:

$$Q\,(\text{tons/year}) = \frac{EF\,(\text{lb/ton}) * RL\,(\text{ton/acre}) * AH * FB}{2000\ \text{lb/ton}}$$

Where: Q is the emission rate of a pollutant in tons per year.

EF is the pollutant emission factor in pounds per ton of residue.

RL is the residue load of the field in tons per acre.

AH is the acres harvested.

FB is the fraction of harvested acres that are burned.

To complete the inventory, DEQ determined which crops were burned at significant rates and then determined the most appropriate value for each of the four variables in the equation. This process was repeated for $PM_{2.5}$, CO, NO_x, VOCs, and SO_x. The details of that process and the resulting calculations are included in Appendix G, page 315.

4.1.2 Discussion

There were varying degrees of uncertainty involved in selecting the value for each variable used to calculate the estimated emissions. Examples of uncertainty include the lack of specific data for certain crops, the lack of specific data for crop residue burning rates in southern Idaho, and variable climatic conditions across the state. For example, moisture greatly affects emissions of certain pollutants. Higher moisture in the crop residue can greatly increase the emissions of CO and, to a lesser extent, the emissions of $PM_{2.5}$. Therefore, factors for the purposes of this emissions inventory were selected to have the widest possible applicability and to conservatively estimate emissions. (Which means to be most protective of air quality.)

Emission factors for wheat and turf grasses used in the supplemental modeling analysis differ from those in this emission inventory section. The emission factors and buoyant line and area source configurations used in the model were chosen to be consistent with those used in the ClearSky model (developed by Washington State University for crop residue burning). This model is used frequently by burn managers in the northwest in their decision-making process. As shown in Table 13, these factors differ from those selected in the emission inventory process documented in Appendix G, page 315.

Table 13. Emission factors for turf grasses and cereal grains.

	Turf grasses		Cereal Grain	
	Emission Factor ($PM_{2.5}$)	Residue Load	Emission Factor ($PM_{2.5}$)	Residue Load
ClearSky	66* lb/ton	2.8** ton/acre	7.2+ lb/ton	2.8++ ton/acre
Emission Inventory	30 lb/ton	4.0 ton/acre	5.7 lb/ton (low) 9.1 lb/ton (high)	2.9 ton/acre (low) 4.9 ton/acre (high)

* This factor is for irrigated fields in Rathdrum, Idaho (one of 3 study locations) where some of the residue was baled and removed prior to burning (*Quantifying Post-Harvest Emissions from Bluegrass Seed Production Field Burning*, W.J. Johnson, C.T. Golob, March 2004).

** This factor is an average of the preliminary data for residue load on all fields (all locations). (*Quantifying Post-Harvest Emissions from Bluegrass Seed Production Field Burning,* W.J. Johnson, C.T. Golob, March 2004).

\+ This factor is for Fall, head fire burns (3 of 26 burns). (*Final Report: Cereal-Grain Residue Open-Field Burning Emissions Study,* Air Sciences Inc., July 2003).

++ The origin of this factor is unclear. The matching factor for Fall, head fire burns is 1.7 tons/acre. (*Final Report: Cereal-Grain Residue Open-Field Burning Emissions Study*, Air Sciences Inc., July 2003).

The $PM_{2.5}$ supplemental modeling output for turf grasses is based on an emission rate of 185 pounds per acre whereas the emission inventory results are based on an emission rate of 120 pounds per acre. For cereal grains, the model output is based on an emission rate of 20 pounds per acre and the emission inventory results are based on emission rates of 17 (low residue load) to 45 (high residue load) pounds per acre. DEQ feels there is value in consistently using the same emission factors in the supplemental modeling analysis that have historically been used in the ClearSky model in making burn decisions and has not adjusted the model input to match this inventory.

The base year inventory does not include burning of acres qualifying for the Conservation Reserve Program (CRP). The CRP is designed to reduce soil erosion by encouraging farmers to convert highly erodible cropland or other environmentally sensitive acreage to vegetative cover, such as tame or native grasses, wildlife plantings, trees, filter strips, or riparian buffers. In 2005, some burning of CRP acres occurred, but there is insufficient documentation to reliably estimate total emissions from this activity in the base year.

There are approximately 200,000 acres in the CRP, mostly in southern Idaho. ISDA estimates that about ten percent of that acreage is burned annually. Burning is typically done to eradicate noxious weeds and to stimulate grass growth. Burning from this activity will be included in the future projection. CRP land is included in the definition of crop residue at Idaho Code § 39-114(3) and is subject to the Permit by Rule requirements in IDAPA 58.01.01.617 through 623. For more information on CRP, visit Idaho's Natural Resources Conservation Service (NRCS) Web site at the following address:

http://www.id.nrcs.usda.gov/

4.1.3 Results

The estimated 2005 annual emissions of $PM_{2.5}$, CO, NO_x, VOCs, and SO_x from the burning of residues of alfalfa (seed production), barley, turf grasses (seed production), mint, oats, and wheat were calculated for each county in Idaho. Idaho's total emissions in 2005 were as shown in Table 14. In addition, emissions from the 4,633 acres of CRP-type lands that were reported burned in 2005 were estimated. The counties with the highest emissions are clustered in northwestern Idaho due to the concentration of turf grass seed production in that area, as shown in Figure 2. The upper Snake River Plain in eastern Idaho is where most of the remainder of emissions from crop residue burning is generated.

The two counties with the highest estimated emissions of all pollutants are Benewah and Lewis. Because of the limitations in the various data sources for the 2005 inventory, on-Reservation acreages were not extracted from the totals; estimated emissions for the off-Reservation areas that this SIP applies to are therefore less than the totals shown in this section. Significant portions of these counties lie within the exterior boundaries of the Coeur d'Alene and Nez Perce reservations, respectively. This fact highlights why it is very important that Idaho's smoke management program work closely with the Tribe's programs whenever burning occurs in shared airsheds.

Table 14. 2005 Total Estimated Annual Emissions (expressed as tons per year; includes on-Reservation emissions; state-only emissions estimates are lower)

Crop	$PM_{2.5}$	CO	NO_x	VOCs	SO_x
Alfalfa Seed	44	190	7	35	1
Barley	1,135	13,059	284	836	5
Turf grasses	2,819	37,023	232	553	31
Mint	7	53	2	5	0.3
Oats	36	245	8	19	1
Wheat	2,124	24,871	554	979	116
CRP (incomplete data)	77	581	23	55	3

Figure 2 shows the total estimated annual $PM_{2.5}$ emissions in each county.

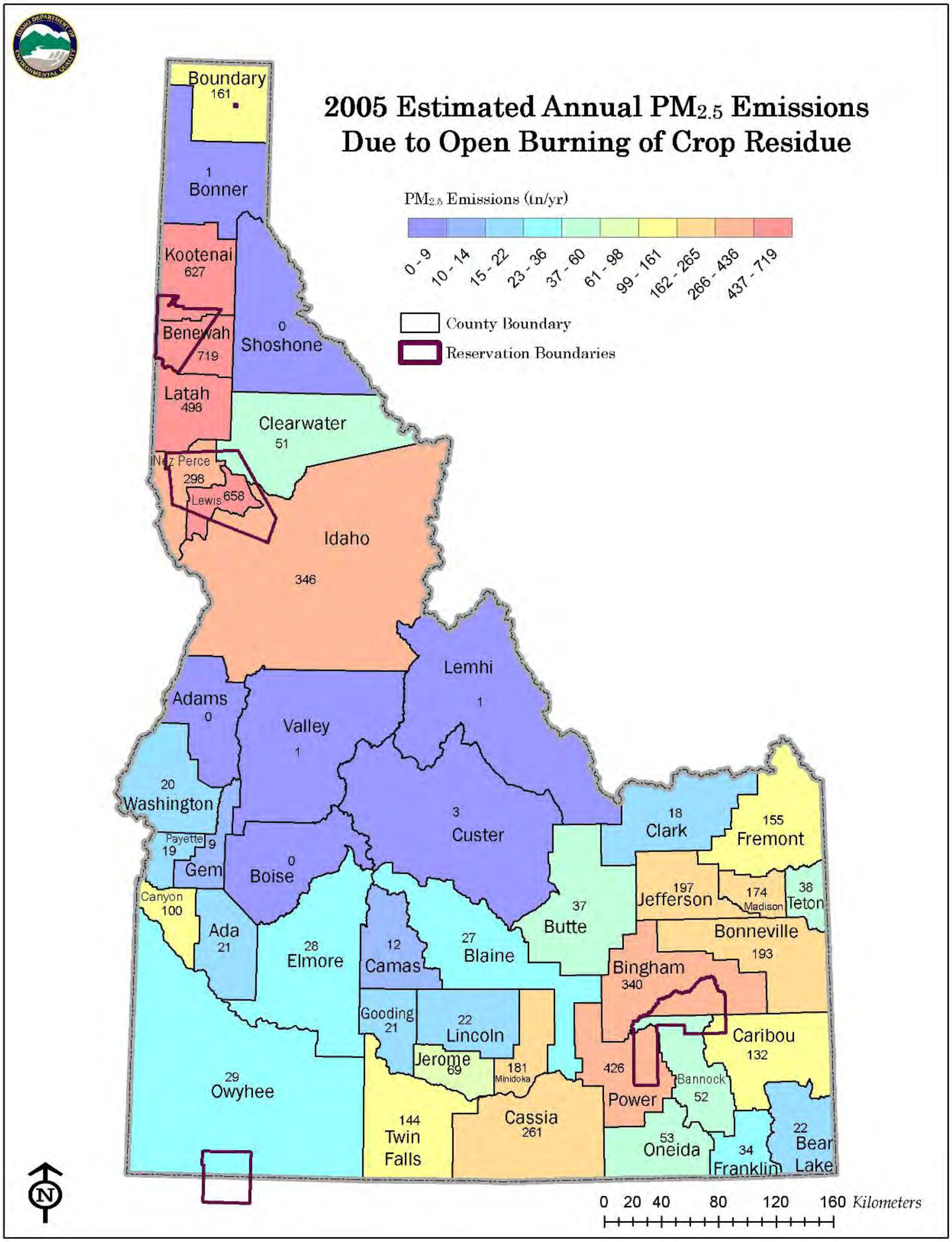

Figure 2. Total annual $PM_{2.5}$ emissions (tons per year) in each county (excluding CRP lands). Includes on-Reservation emissions; state-only emissions estimates are lower.

4.2 Projected Future Emissions

Future growth in acres of crop residue and CRP land burning is difficult to predict. Trends, using data from the United States Department of Agriculture National Agricultural Statistics Service, indicate flat or declining growth in the number of acres planted depending on the crop. In addition, the negotiated agreement (see Appendix A, page 63) caps the number of acres of bluegrass burning to less than 20,000 (not including Indian Reservations); any increase beyond that level will require an air quality analysis prior to approval. Conversely, changes in crop prices could increase production of certain crops and so could increase the number of acres requested to be burned.

DEQ, in consultation with various grower organizations, has determined that a one percent annual growth, or 10 percent in 10 years, is a reasonable conservative growth assumption. The estimated emissions from crop residue and CRP burning in 2015 are as shown in Table 15.

Table 15. 2015 Total Estimated Annual Emissions (expressed as tons per year).

Crop	$PM_{2.5}$	CO	NO_x	VOCs	SO_x
Alfalfa Seed	48	209	8	39	1
Barley	1,249	14,365	312	920	6
Turf grasses	3,101	40,725	255	608	34
Mint	8	58	2	6	0.3
Oats	40	270	9	21	1
Wheat	2,336	27,358	609	1,077	128
CRP	1,338	10,032	396	942	53

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Section 5. Supplemental Analysis

Section 2 and the data in Appendix F characterize the statewide ambient air quality and demonstrate that, with only one exception (Pinehurst), there are no violations of the NAAQS in regions of the state with the most crop residue burning activity. This conclusion is based largely on a fairly dense network of FRM and non-FRM monitoring locations operated for numerous years in the areas of greatest crop residue burning activity, which is in northern Idaho. In addition, Section 2 demonstrates that the violations that have occurred in Pinehurst occurred when no crop residue burning was taking place and are attributed to residential wood combustion and a 2007 localized slash burning incident. Thus, attainment has been demonstrated.

The overall goal of the supplemental analysis described in this section is to add to the weight of evidence that the NAAQS are not violated due to crop residue burning on state lands (excludes burning on Indian Reservations), even in unmonitored areas, but also to demonstrate that crop residue burning conducted on Idaho lands does not significantly contribute to violations of the NAAQS at current or expected PM_{10} and $PM_{2.5}$ nonattainment areas at Sandpoint and Pinehurst, Idaho and Libby, Thompson Falls, and Missoula, Montana. In addition, this section describes modeling results to provide additional information to address SMP elements and the Operating Guide, including recommendations for minimizing impacts from crop residue burning and identification of potential areas where additional monitoring resources could best be deployed to assure the maximum protection of both the greatest number of people and institutions with sensitive populations.

The supplemental analysis included the following:

- Crop residue burning impacts observed in continuous monitoring
- Model-estimated impacts of crop residue burning in 2005
- Near-field characterization
- Model-estimated crop residue burning contributions to NAAQS violations in nonattainment areas
- Approach for future evaluation of crop residue burning contributions to regional haze
- Analysis of potential areas for deployment of future monitoring resources

It is important to note that although much of the supplemental analyses is based on the use of the CALPUFF dispersion model, this model has not been approved by EPA for regulatory use in simulating emissions from a burning field. Therefore its use in this SIP revision request is strictly as a non-guideline application to add to the weight of evidence that crop residue burning does not cause nor significantly contribute to a violation of the NAAQS and to support other aspects of the Idaho SMP. The primary demonstration of compliance, sufficient to meet EPA's minimum requirements is based on the FRM monitoring discussed in Section 2. Thus, the use of this modeling for supplemental analyses does not require full EPA approval as a regulatory model as required for a stand-alone modeling attainment demonstration, a process which would demand a much more extensive and time consuming model evaluation and a lengthy EPA review and approval process.

Technical details of the supplemental analyses, including modeling objectives, modeling approach, model setup, model inputs, meteorological evaluation, and CALPUFF model evaluation are presented in Appendix H (page 373) of this document.

5.1 Crop Residue Burning Impacts Observed in Continuous Monitoring Data

This section describes an analysis of crop residue burning impacts observed at the continuous monitoring network. This network includes TEOMs and nephelometers that are operated, during the burn season, in those northern Idaho airsheds with extensive crop residue burning activity. The FRM monitoring network collects 24-hour integrated samples for determining compliance with the NAAQS. The continuous monitors provide near-real time operational data for evaluating background levels and detecting smoke impacts and also provide a method for post-analysis to understand how $PM_{2.5}$ from crop residue burning affects the region.

Although this SIP revision focuses on Idaho crop residue burning activity, smoke crosses Indian Reservation boundaries both ways, and the Nez Perce and Kootenai Tribes kindly shared their continuous monitoring data, including meteorology, to supplement the DEQ monitoring data for the model evaluation. However, because this SIP evaluates only the state program, the supplemental analyses in sections 5.4, 5.5, and 5.6 do not include Indian Reservations.

5.1.1 Differentiating Crop Residue Burning Smoke from Other Sources

For model evaluation, it was necessary to identify crop residue burning smoke impacts in the monitoring data and to isolate them from background levels and from the contributions from all other sources. Fortunately this is a fairly easy process since crop residue burns are typically only 30 to 90 minutes in duration and the resulting smoke appears at downwind monitors shortly afterward as a typically brief and sharp "peak," increasing $PM_{2.5}$ levels for only an hour or two. At times, especially when a late afternoon burn brings smoke to a monitor located in a valley, small basin, or lakeshore (Pinehurst, Lewiston, and Hope for example), the smoke can become trapped when stability conditions suddenly change with the loss of solar heating, and the impacts can last well into the evening; these impacts are still attributed to crop residue burning.

When sharply rising peaks occur, during the typical burn hours, downwind of crop residue burning fields on a burn day, they can usually be identified as crop residue burning-related pollutant with a reasonable certainty. Similar sharp peaks that occur late in the evening, or before 10 a.m., typically result from other sources and are routinely identified. (Examples include morning and evening rush hour peaks at Post Falls and late fall or wintertime evening peaks at Pinehurst caused by residential wood combustion.)

A large number of wildfires influenced the northern Idaho region during the 2005 burn season, and some of the more significant smoke impacts have been identified as wildfires. Such impacts were excluded from the modeling evaluation. This includes primarily some of the impacts at Grangeville and Kamiah in late August and early September 2005, when winds from the east, south, and southwest appeared to bring wildfire smoke into the area when there was no crop residue burning activity in that area.

Another feature of crop residue burning signatures on continuous monitors is that the levels usually rise from a stable baseline background level (averaging about 6.5 $\mu g/m^3$ in northern Idaho) and return to that level. Thus, it is an easy matter to subtract background $PM_{2.5}$ concentrations to isolate the crop residue burning contribution to the 24-hour averaged $PM_{2.5}$ concentration for each day. This subtraction of the background is important because the modeled emissions represent only crop residue burning sources, allowing a direct comparison for model validation without having to develop a comprehensive emission inventory of all sources—typically required in more traditional SIP attainment demonstrations.

Limitations of this method of analysis include the following:

- Small mid-day $PM_{2.5}$ "peaks" in the 10 – 15 $\mu g/m^3$ range occur frequently and must be considered "noise" that is not included. Although these peaks usually represent less than about 0.6 $\mu g/m^3$ contribution to the 24-hour average, there are undoubtedly some minor crop residue burning-related impacts of this magnitude that were missed and not included in the long-term means, resulting in a small negative bias.

- Other non-crop residue burning sources may have caused some of the impacts identified as crop residue burning-related $PM_{2.5}$ and this would have resulted in a slight positive bias.
- TEOMs and nephelometers are both slightly biased in comparison to FRM measurement of $PM_{2.5}$, but these biases are not expected to be more than about 15 percent for the summer and fall operating conditions. This level of adjustment was not factored into this analysis.

5.1.2 Seasonal Mean for Crop Residue Burning

Seasonal mean and peak crop residue burning impacts for all available continuous monitors (TEOMs and nephelometers) on state land for the 2005 crop residue burning season from July 15 through October 15 are shown in Table 16. These values are based on apparent crop residue burning-related peaks, with background subtracted and recomputed as 24-hour averaged contributions, to put them on the same basis as the 24-hour $PM_{2.5}$ NAAQS. The complete database is provided in Appendix I.

The seasonal mean $PM_{2.5}$ averages in Table 16 represent a 3-month average. However, since there are also a small number of burns before July 15 and after October 15, and there is a smaller spring burn season, it might be conservatively estimated that these 3-month seasonal means occur for 6 months out of the year and annual average contributions could be estimated by dividing by two, as represented in the third column.

These supplementary analysis estimates of small annual crop residue burning contribution at the continuous monitors support the conclusion (Section 2), based on the FRM monitors, that crop residue burning impacts do not cause or contribute significantly to any violation of the NAAQS for $PM_{2.5}$ because the maximum 24-hour crop residue burning impact (9.7 $\mu g/m^3$ at Pinehurst) is only 28% of the 24-hour NAAQS (35 $\mu g/m^3$) and occurs in a season when other primary sources do not contribute. Likewise, the maximum estimated contribution to the annual mean $PM_{2.5}$ concentration (0.17 $\mu g/m^3$) is only 1% of the annual NAAQS for $PM_{2.5}$ (15$\mu g/m^3$). Because these are monitored values, the influence of Idaho, Washington, and on-Reservation burns cannot be separated, so these conclusions apply to all burns together. For example the highest impact at Pinehurst (9.7 $\mu g/m^3$) does not occur downwind of Idaho crop residue burning activity. Modeling is required to estimate the relative contributions due to crop residue burning on state lands.

Table 16. Apparent[a] crop residue burning-Related $PM_{2.5}$ Contributions at Continuous (non-FRM) Monitors.

	Seasonal Average $PM_{2.5}$ Contribution, $\mu g/m^3$	Peak 24-hour $PM_{2.5}$ crop residue burning Contribution, $\mu g/m^3$	Estimated Annual Average crop residue burning Contribution, $\mu g/m^3$	Number of Identified crop residue burning Plume Impacts
Rathdrum	0.04	3.7	0.02	1
Athol	0.05	3.5	0.03	2
Sandpoint	0.11	4.3	0.06	4
Lake Middle School (CDA)	0.10	3.0	0.05	8
Hope	0.04	1.8	0.02	3
Pinehurst	0.34	9.7	0.17	10
Moscow	0.09	2.3	0.04	1
Lewiston	0.06	5.5	0.03	1
Grangeville	0.17	4.4	0.08	6

Average, all sites	0.11	4.2	0.06	4
Maximum, all sites	0.34	9.7	0.17	10

Notes (a) "Apparent" crop residue burning contributions are elevated $PM_{2.5}$ concentration peaks above about 15µg/m3 1-hour average, that occur on documented burn days between 10am and 6 PM from which background has been subtracted and the resulting concentration recomputed as a 24-hour contribution.

5.2 Model-estimated Impacts of Crop Residue Burning

The CALPUFF dispersion model has been widely used for forecasting smoke impacts from crop residue burning (with the ClearSky application) and wildfire and prescribed burning (with the BlueSky/RAINS application). Thus, although it is not approved for regulatory use involving crop residue burning, DEQ believes CALPUFF is the best tool available for estimating crop residue burning impacts and has value in describing the spatial extent of $PM_{2.5}$ impacts from crop residue burning practices.

5.2.1 CALPUFF Modeling Evaluation

DEQ has conducted a limited evaluation of the CALPUFF model and its meteorological inputs produced by the MM5 and CALMET programs. DEQ's application borrows from the ClearSky application developed by Washington State University (WSU) for the purpose of forecasting where the smoke from crop residue burns will travel. WSU has evaluated the ClearSky model in 2003 and 2004 (WSU 2003, 2004), including a study of its ability to replicate the height of plume rise for buoyant smoke plumes from fires. Because of these earlier applications and the user confidence that ClearSky has gained status as a useful tool in forecasting smoke travel directions, DEQ elected to use the same burning field source parameters used in the ClearSky model. DEQ used CALPUFF to simulate $PM_{2.5}$ dispersion and transport from approximately 1250 burning fields from July 15 through October 15, 2005. The 2005 burn season is the most active in recent years and was selected as the "base-case" year for this SIP revision.

Two primary simulations of the 2005 Burn season were performed:

- **Base Case Scenario – with Reservation Burns**. A base case analysis was conducted including all burns in the ISDA burn database for 2005 (including Kootenai Tribe and Coeur d'Alene Tribe burns) and all burns in the Nez Perce Tribe burn database. Reservation burns were included in this scenario a) to support model evaluation, since the monitors pick up both Reservation and State crop residue burns; and b) to obtain a complete picture of potential gaps in the current monitoring network so additional monitoring resources can be most effectively employed to address smoke impacts from all jurisdictions. (Washington State burn impacts are removed from monitoring data as background but are included in Figure 9 and Figure 10 for the purpose of evaluating monitoring gaps.)
- **Base Case Scenario – without Reservation Burns**. A second simulation of the 2005 Base Case Scenario was conducted without Reservation burns. This simulation was conducted to add to the weight of evidence analysis for Idaho's SIP revision, which only addresses State crop residue burning activities. (Tribal activity is addressed in the FARR or under Tribal law.) This SIP revision and discussion of impacts in the region and contributions to the $PM_{10}/PM_{2.5}$ nonattainment Areas at Sandpoint and Pinehurst, Idaho, and Libby, Thompson Falls, and Missoula, Montana are in relation only to State of Idaho crop residue burning activity.

Details of the modeling inputs and setup and the meteorological model and dispersion model evaluations can be found in Appendix H. As expected, because of uncertainties in wind direction inputs, field locations, burn times and variability in fire behavior and emissions the model is not useful, nor is not intended to be, in describing crop residue burning smoke impacts at a specific location and at a specific time of day (as it may be in a prognostic mode). However, this type of diagnostic modeling can provide reasonable estimations of a) the maximum $PM_{2.5}$ concentrations that may be expected over the long-term somewhere in the airshed and b) long-term mean concentrations. A model evaluation sufficient to support these limited modeling objectives is described in Appendix H.

5.2.2 CALPUFF Modeling Evaluation for Base Case 2005 Burn Season (with Reservations)

Modeling results for the Base Case 2005 fall burn season, including both State and Reservation burns are shown in Figure 3 (Seasonal Peak 24-hour $PM_{2.5}$ concentration) and Figure 4 (Seasonal Mean $PM_{2.5}$ concentration).

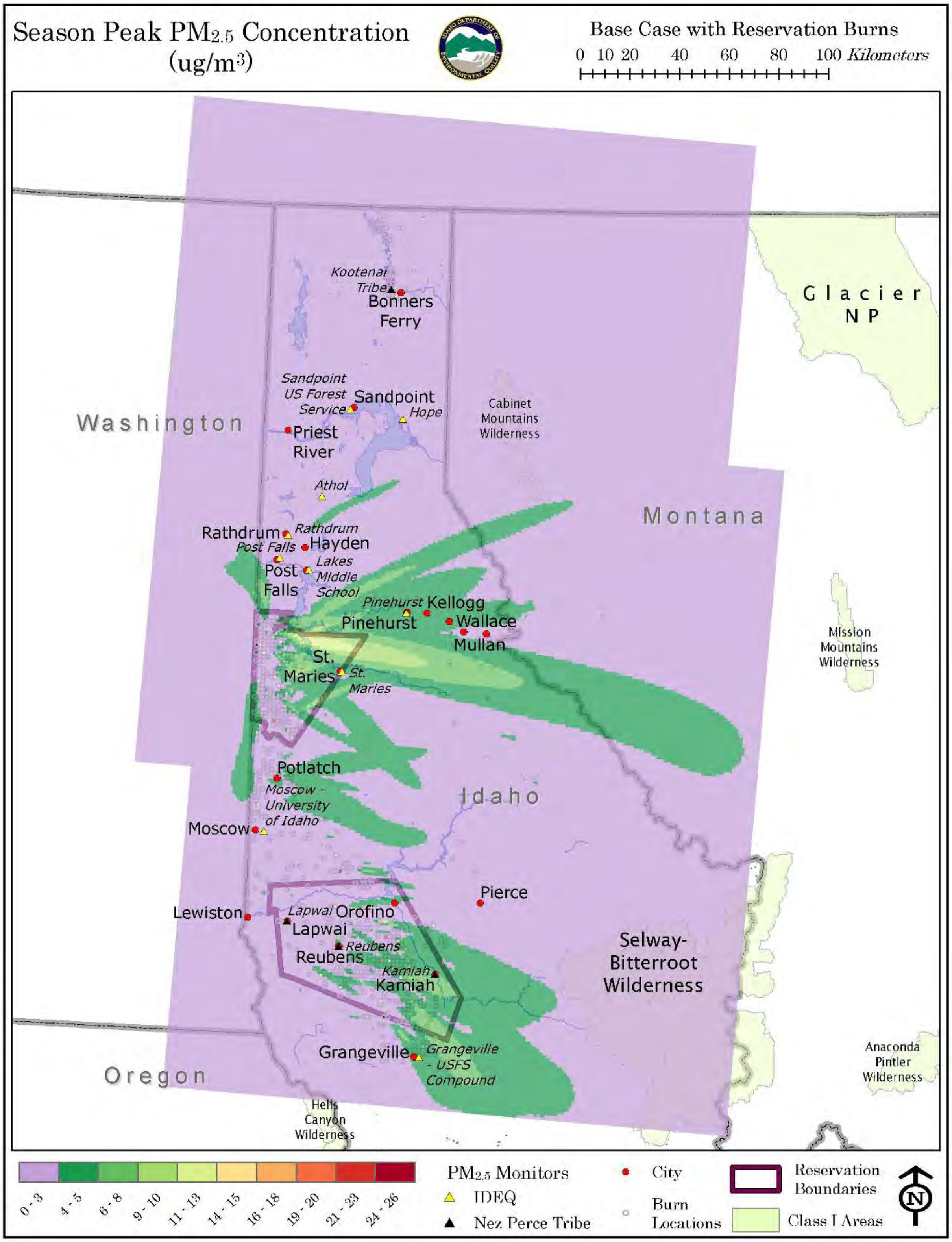

Figure 3. Seasonal Peak 24-hour $PM_{2.5}$ Concentration, with Reservation Burns

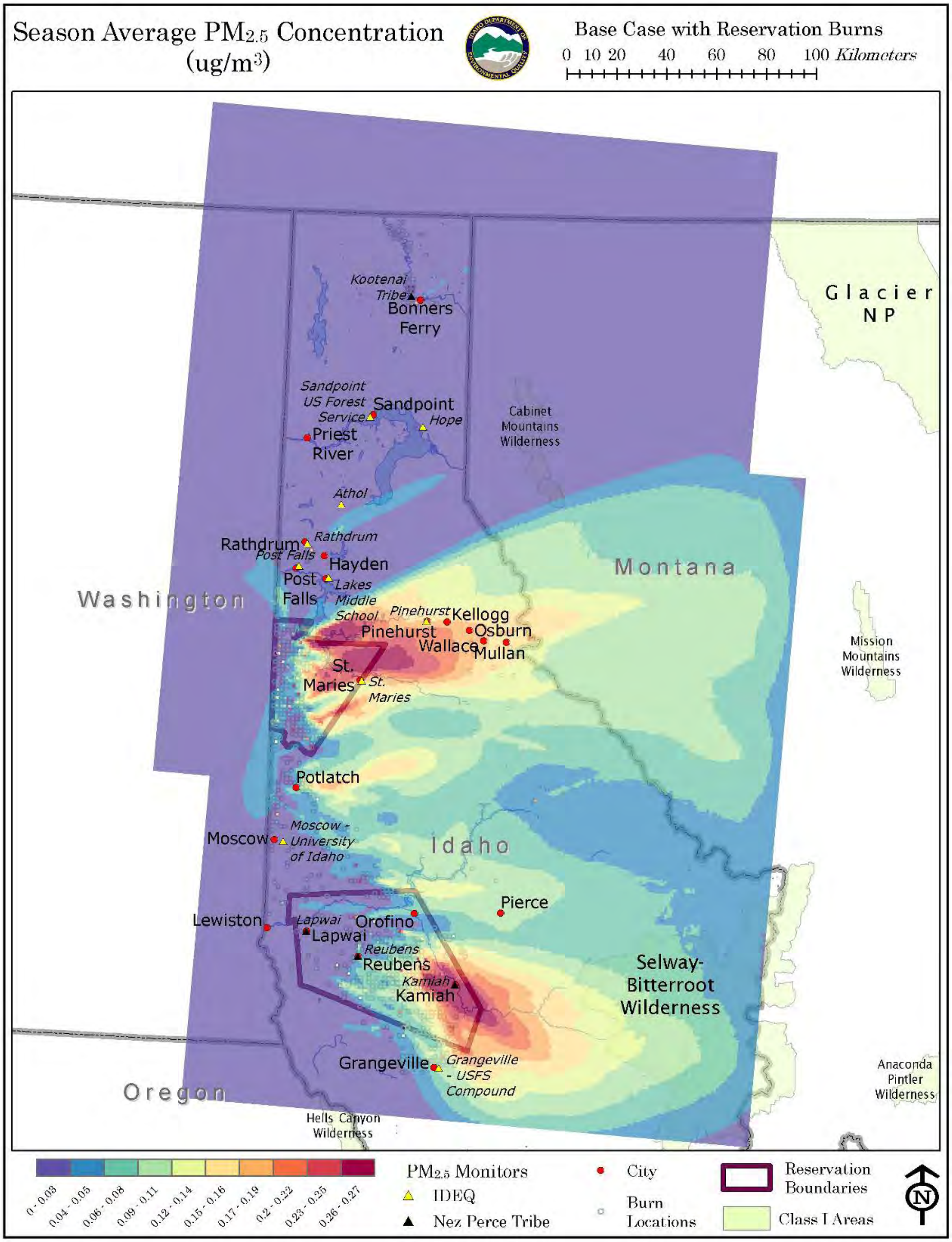

Figure 4. Seasonal Mean $PM_{2.5}$ concentration, with Reservation Burns.

As discussed in Appendix H, the model results are subject to a number of uncertainties (primarily in location, burn time, wind direction and emissions variability) so emphasis in these plots should not be so much on locational accuracy, however the value in these plots are in showing the approximate magnitude and spatial extent of crop residue burning-related smoke influence. The maximum 24- hour averaged concentration is in the range 11 – 13 μg/m^3, while the maximum seasonal average $PM_{2.5}$ concentration is about 0.34 - 0.35 μg/m^3.

5.2.3 CALPUFF Modeling Results for Base Case 2005 Idaho State Burn Season (without Reservations)

Modeling results for the Base Case 2005 Fall burn season, including only burns on State of Idaho lands are shown in Figure 5 (Seasonal Peak 24-hour $PM_{2.5}$ Concentration) and Figure 6 (Seasonal Mean $PM_{2.5}$ Concentration). (Relative contributions by airshed are given in Table 17.) Even though the monitoring data by itself demonstrates compliance with the NAAQS (Section 2), this model simulation allows an estimate to be made of the State-managed crop residue burning contribution alone to the monitored $PM_{2.5}$ concentration levels, the subject of this SIP revision.

The maximum 24-hour averaged concentration is in the range 6 – 8 μg/m^3, while the maximum seasonal average $PM_{2.5}$ concentration is in the range 0.17-0.19 μg/m^3, both of which occur in the Palouse airshed. These modeling estimates reinforce the conclusion, based on monitoring, that crop residue burning conducted by the State of Idaho during July 15 – October 15, 2005 Base Case modeling period, is very unlikely to contribute significantly to any exceedance of either the 24-hour $PM_{2.5}$ NAAQS nor the annual NAAQS.

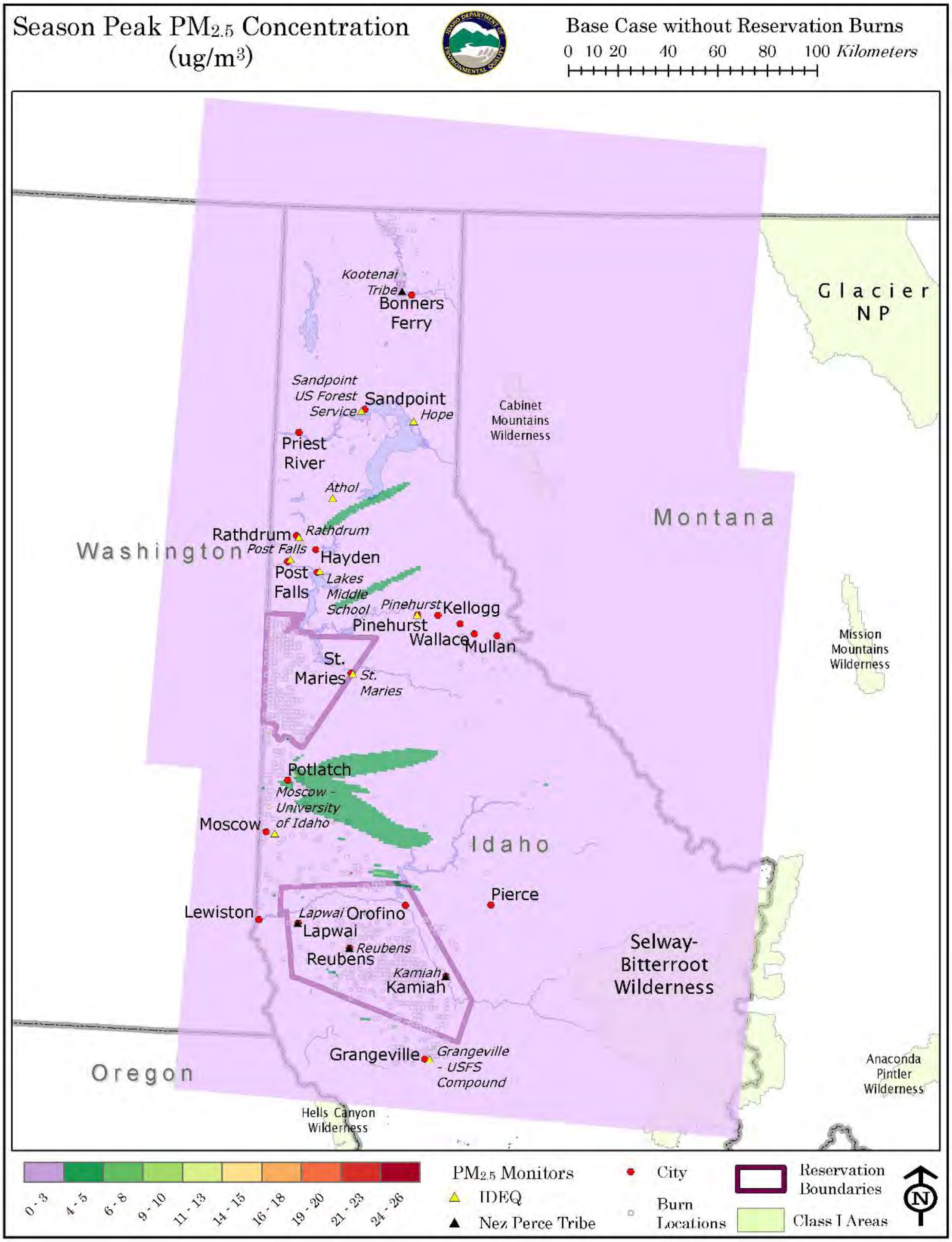

Figure 5. Seasonal Peak 24-hour $PM_{2.5}$ Concentration, without Reservation Burns

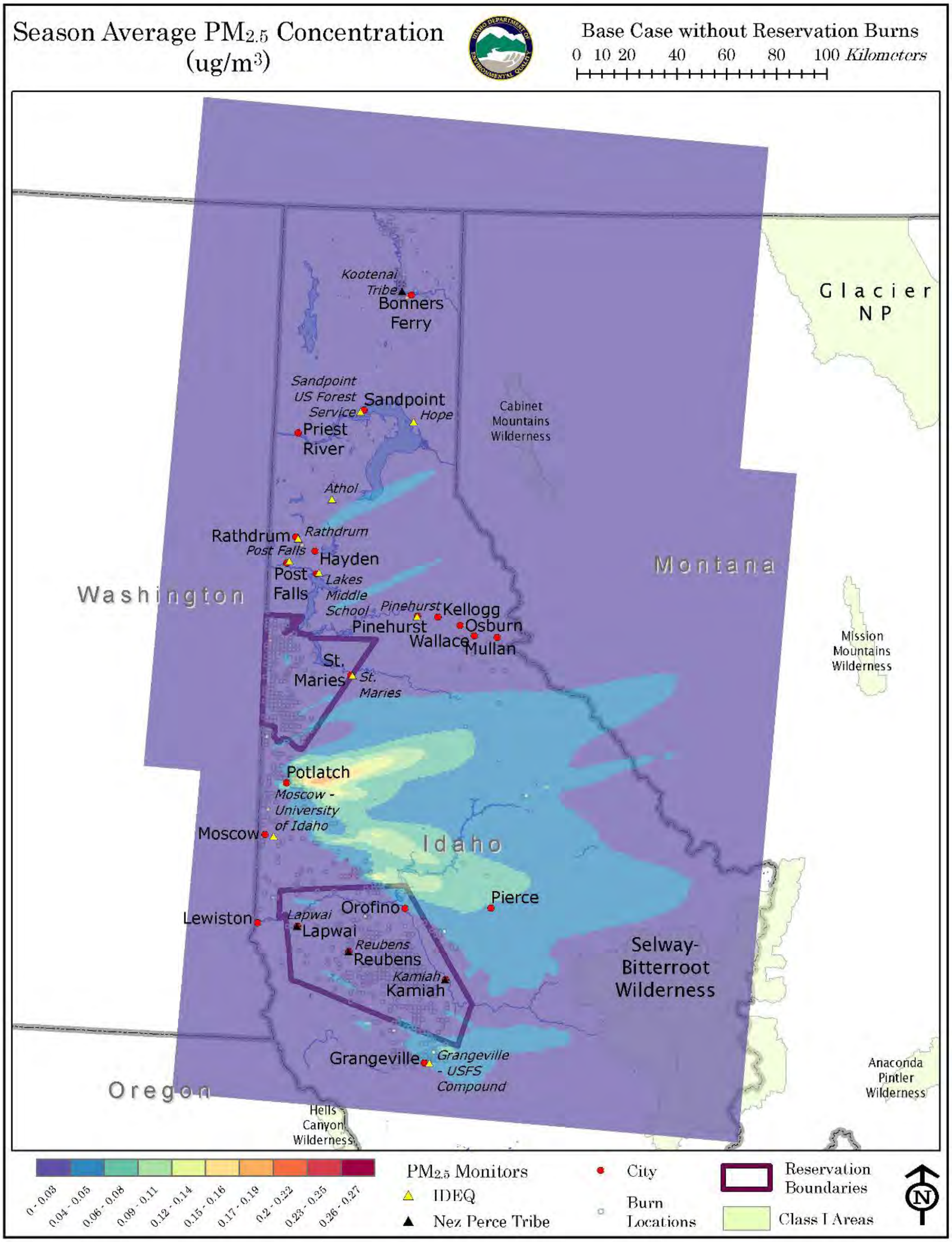

Figure 6. Seasonal Mean $PM_{2.5}$ concentration, without Reservation Burns

Table 17. Model-estimated crop residue burning contributions due to burns on state lands, 2005 Burn Season.

Airshed	Seasonal Mean $PM_{2.5}$ Contribution ($\mu g/m^3$)	Seasonal Peak 24-hr $PM_{2.5}$ Contribution ($\mu g/m^3$)
Boundary	0.04	<3
Rathdrum	0.05	4-5
Coeur d'Alene Reservation/Pinehurst	0.04	<3
Palouse	0.18	6-8
Clearwater	0.06	4-5

5.3 Near-Field Characterization

The model results described in the previous two sections are based on CALPUFF modeling methodologies designed for mid- to long-range transport and for sources in complex terrain. Simulation of complex buoyant sources such as wildfire or agricultural fires has been widely practiced in the Pacific Northwest as a useful tool (in ClearSky and BlueSky/RAINS applications), but this type of application is not approved by EPA for regulatory modeling. However, due primarily to the complex nature of the emission release mechanism associated with fire dynamics and buoyant plumes, no attempt has ever been made, (nor recommended) to use similar modeling technology to describe $PM_{2.5}$ impacts in the "near-field" region, although it is not clear what constitutes the "near-field." Such a capability is not currently possible and will require additional research and validation work before it becomes useable.

Another problem in modeling crop residue burns in the near-field is spatial uncertainty in the ISDA crop residue burning database for 2005 (and 2006). Field locations are specified using Township-Range-Section identifiers so individual field locations are only known to within a one square-mile section. Thus, to simplify preparation of modeling inputs, all fields in any section were located at the center of the section. This artifact has a small effect after 10 km or so, however in the near-field region, the locational inaccuracy may result in significant differences. A simplified Gaussian modeling exercise was conducted comparing an 80 acre area source (with all fields superimposed in the center of a section) with a 640 acre Section (with all fields spread out realistically). This exercise suggested that under typical burn conditions (unstable convective atmosphere and 2 m/s winds) the two scenarios provided similar results beyond about 5000 m or just a little over 3 miles. Thus, no CALPUFF model results with less than a 5 km source-to-receptor distance were used in the supplementary modeling study described in this document. In addition, this area of uncertainty is reflected in the 3-mile area of concern around institutions with sensitive receptor populations.

In the absence of modeling accuracy in the near-field region, it is nevertheless still important to understand the approximate level of $PM_{2.5}$ impacts that may occur in this region because they may often occur in regions where residents and institutions with sensitive receptor populations are present.

In an attempt to better characterize the region, we must currently rely primarily on measurements. Since there are typically not fixed monitors in these areas, we must rely upon limited data for a small number of crop residue burning operations that have occurred in very near proximity to continuous monitors. One-hour concentrations and resulting 24-hour $PM_{2.5}$ contributions (background subtracted) obtained from the 2005 data set can be seen in Table 13. These data represent all the data from continuous monitors that do not appear to be properly simulated by the model because they are in the near-field region. The Camas data represents a 2007 observation added to be as complete as possible (data provided by the Nez Perce Tribe).

Table 18. Summary of Near-Field Observations.

Airshed	Distance (m)	1-hr Avg $PM_{2.5}$ Concentration[a]	24-hr Avg $PM_{2.5}$ Contribution[b]
Camas[c]	600	312	13
Boundary	2462	54	17.2
Boundary	2676	125.9	10.8
Boundary	2700	36	6.7
Boundary	3418	59.3	6.3
Rathdrum	6200	82	3.7

Notes: (a) Peak 1-hr concentrations include background; (b) 24-hr average $PM_{2.5}$ contributions have background subtracted. Background was typically less than 6 µg/m^3 except at Rathdrum where it was 9.7 µg/m^3; (c) Camas data represent a value monitored in 2007 at the Nez Perce Reservation (data provided by the Nez Perce Tribe).

It appears, based on this limited characterization with non-FRM monitoring data, that it is not uncommon to exceed 80 percent of the 1-hour trigger level defined in Section 556 of the rule, so great care must be required when any burns are conducted near areas of sensitive receptor populations. However, neither the level of the 24-hour NAAQS (35µg/m^3) nor even 75% of it is threatened at any of the monitored locations, even as close as 600 m from the source. Finally, it should be noted that the maximum 1-hour $PM_{2.5}$ of 312 µg/m^3 is equivalent to a maximum 1-hour CO concentration of 3.3 ppm, which is less than 10 percent of the NAAQS for CO (based on CO/PM2.5 emission factor ratio 133.78/10.88 [WRAP, 2005]). Nevertheless, near-field characterization represents a gap in our abilities to forecast and assure protection of sensitive receptor populations and DEQ believes additional monitoring should focus on this area in the future. Some of the additional monitoring resources are proposed to be portable and will be deployed at sensitive receptor institutions located within the 3 mile buffer zone when practical. The data obtained through this effort will allow DEQ to better characterize the near-field region.

5.4 Model-Estimated Crop Residue Burning Contributions to NAAQS Violations in Nonattainment Areas

Monitoring data indicates some $PM_{2.5}$ contributions occur at PM_{10}/$PM_{2.5}$ nonattainment areas in northern Idaho (Pinehurst and Sandpoint) and may contribute on some days at the PM_{10}/$PM_{2.5}$ nonattainment areas in Montana (Libby, Thompson Falls and Missoula) although it is clear summer and fall crop residue burning impacts have never been a significant contributor to the nonattainment problem in any of these locations.

Modeling results evaluated for this SIP revision indicate that crop residue burning contributions from all ISDA and Reservation CRB activity to 24-hour $PM_{2.5}$ concentrations at Pinehurst Idaho are usually in the 4-5 µg/m^3 range although they could potentially reach the 9-10 µg/m^3 range as a result of wind direction uncertainty (see Figure 1). Neighboring states are also expected to contribute $PM_{2.5}$ amounts at Pinehurst; however, those contributions are expected to be lower and were removed from this analysis as background. This conclusion is in close agreement with the maximum monitored $PM_{2.5}$ episode related to crop residue burning, reaching 9.7 µg/m^3 for a 24-hour, background-subtracted contribution, which occurred on September 8, 2005 as a result of late afternoon burns which brought smoke into the Pinehurst area where it was subsequently trapped by the evening inversion.

In the subsequent modeling, summarized in Table 19, crop residue burning impacts from burns on state land were estimated to result in a maximum 24-hour contribution of no more than 0.74 µg/m^3 in the Pinehurst area and 1.8 µg/m^3 in the Libby, Montana area (Libby is more directly downwind from the Rathdrum Prairie than Pinehurst.) The seasonal mean contributions are extremely low. The Missoula, Montana airshed is even further away and is expected to experience even lower peak impacts from State crop residue burns than those estimated for Libby (Missoula was outside of the modeling domain), and Thompson Falls, a PM_{10} nonattainment areas is expected to have lower $PM_{2.5}$ contributions than Pinehurst. Seasonal peak 24-hour impacts at Sandpoint (a PM_{10} nonattainment area) resulting from State crop residue burning are estimated by the model to be less than 3 µg/m^3, but this result is biased low due to wind direction bias and the monitored peak concentration at Sandpoint was actually 4.3 µg/m^3 on a day influenced by state managed burns at Rathdrum, so the observed value provides the best estimate of peak impacts in Sandpoint.

Table 19. Modeled Impact of crop residue burns on State Lands, July 15 - October 15, 2005.

City (Nonattainment Pollutant)	Peak Contribution to 24-hour Averaged $PM_{2.5}$	Contribution to Seasonal Mean $PM_{2.5}$
Pinehurst, ID (PM_{10}, $PM_{2.5}$)	0.74 µg/m^3	0.004 µg/m^3
Sandpoint, ID (PM_{10})	4.3 µg/m^3 [a]	0.11 µg/m^3 [a]
Libby, MT (PM_{10}, $PM_{2.5}$)	1.8 µg/m^3	0.02 µg/m^3
Missoula, MT (PM_{10})	Assumed less than Libby[b]	Assumed less than Libby[b]
Thompson Falls, MT (PM_{10})	Assumed less than Pinehurst[c]	Assumed less than Pinehurst[c]

Notes: (a) Sandpoint values are actual measured State crop residue burning contributions for 2005 because the model wind direction bias results in the modeled plume missing the Sandpoint Monitor on the highest monitored days. (b) Libby is downwind of Rathdrum an active State crop residue burning area in the predominant wind direction, and Missoula is downwind, from the Palouse, another State crop residue burning area, so impacts should be less than at Libby. (c) Likewise, Thompson Falls is downwind from Pinehurst, an area of less State crop residue burning activity so its impacts should be less than those at Pinehurst.

Since the PM_{10} and $PM_{2.5}$ nonattainment problems in the region are largely wintertime episodes dominated by residential wood combustion, and since the crop residue burning in Idaho ends by the end of October, there is very little chance that crop residue burning on State Lands could cause or significantly contribute to an exceedance of the NAAQS, based on these results.

In the late fall of 2007, slash burning in the vicinity of Pinehurst resulted in one exceedance of the NAAQS level of 35 µg/m^3. Since some slash burning occurs during the later part of the crop residue burning season, there is some potential that they could be co-contributors to a NAAQS violation on some days. Idaho will guard against this possibility in the Operating Guide by requiring coordination with the Idaho State Department of Lands and the Idaho/Montana Airshed Group as part of the crop residue burning Operating Guide. Idaho expects to also address slash burning near Pinehurst in a $PM_{2.5}$ SIP process.

5.5 Approach for Future Evaluation of Crop Residue Burning Contributions to Regional Haze

Fires of all types, whether wild or agricultural, are known to contribute to regional haze and must be addressed in Idaho's Regional Haze SIP. Modeling conducted for this crop residue burning SIP revision indicates that $PM_{2.5}$ concentrations from crop residue burning may approach 1 - 2 µg/m^3, 24-hour average at nearby Class I areas such as Cabinet Mountains Wilderness in Montana and Selway-Bitterroot Wilderness in Idaho/Montana (Figure 3). The potential for such impacts is relatively low for crop residue burns on State lands (see Figure 5), however even satellite smoke analyses demonstrate that some crop residue burning smoke impacts from State crop residue burns do reach Cabinet Mountains Wilderness (see Appendix H).This level of fine particulate matter is likely to cause haze impacts in the Class I areas but the frequency is uncertain.

Crop residue burning impacts are already included in the regional haze grid modeling analyses conducted by WRAP and are thus already considered in Idaho's reasonable progress glide path. As necessary, in managing and evaluating Idaho's reasonable progress, DEQ may conduct additional analyses or modeling to better characterize the frequency of haze impacts at Class I areas statewide.

5.6 Analysis of Potential Areas for Deployment of Future Monitoring Resources

The Agreement points call for, and funding has been approved for, deployment of additional monitoring resources. The exact specification and locations of new fixed monitors will be determined as an element of the Operating Guide currently under development, and will be re-evaluated each year following an annual review of the SMP. In addition, it is anticipated that additional monitors will be placed near institutions with sensitive receptor populations as defined in IDAPA 58.01.01.621.01.f. The tools described below have been developed as part of this SIP revision modeling effort, to assist in understanding where additional monitoring resources would be most effectively employed.

5.6.1 Model-Based Monitoring Needs Map

It is important that final consideration for candidate monitoring sites will include frequent problem areas identified by burn managers and locations of key or numerous sensitive receptor institutions, etc. To provide additional information for locating new monitors in the Operating Guide, a new map was produced based on multiplying the seasonal mean $PM_{2.5}$ concentrations (Figure 4) by the population at each grid cell. This results in an relative population-wide exposure indicator in terms of "person-$\mu g/m^3$" as shown in Figure 7.

The first thing noticed on this map is that most of the places that are in the top-most category already have monitoring stations in place (Sandpoint, Coeur d'Alene, St. Maries, Pinehurst, Moscow, Lewiston, and Grangeville). However, additional locations are also suggested (red color) and such areas will be considered for deployment of new monitors.

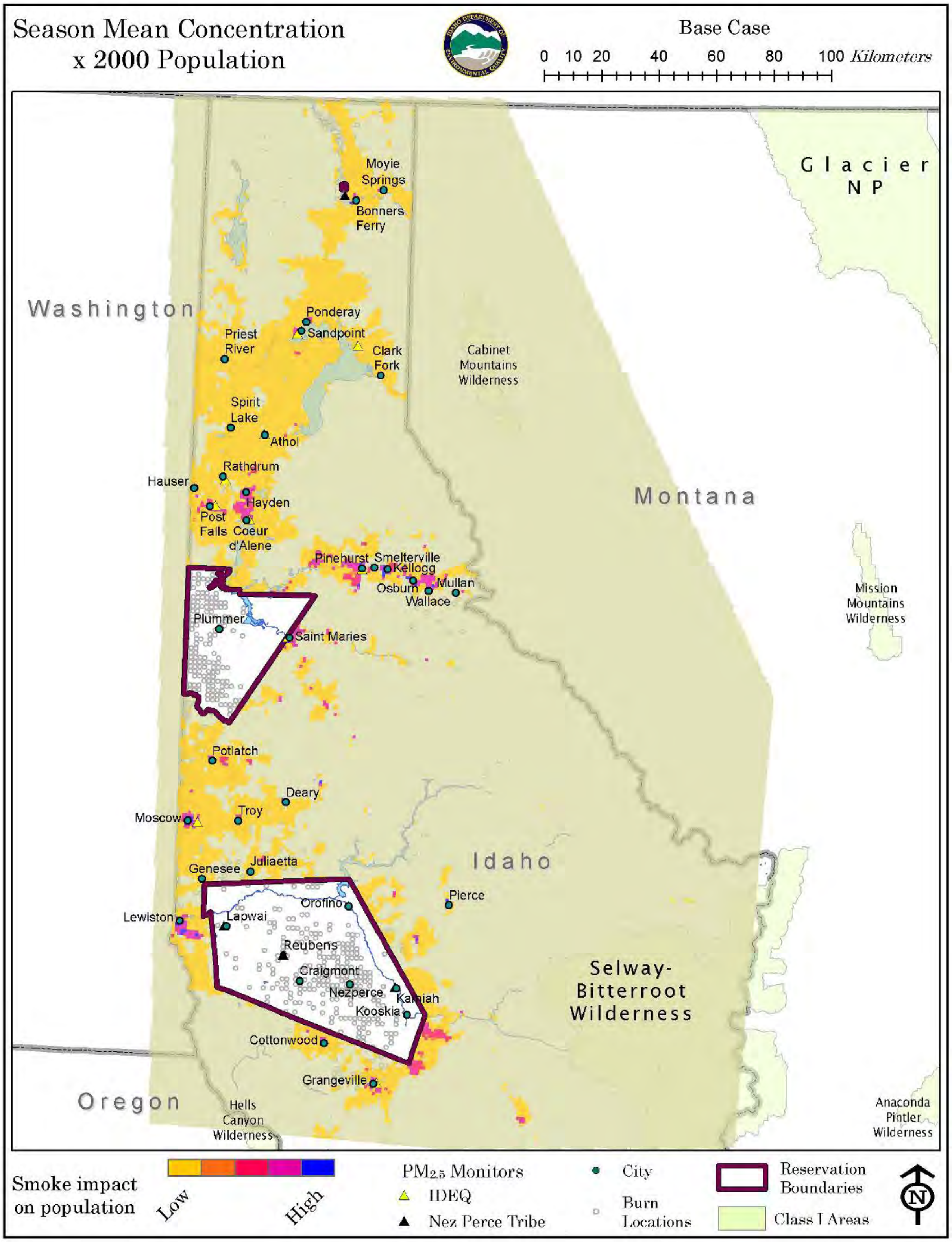

Figure 7. Season Mean Concentration x 2000 Population.

5.6.2 Satellite Smoke Detections based Monitoring Needs Map

The modeling based map described in the previous section has some limitations in that it only represents one year (2005), it only represents crop residue burning smoke, and there is some location uncertainty due to wind-field biases inherent in the modeling. To expand the time frame, and to also consider smoke from other sources, data was obtained form NOAA’s Satellite Smoke Analysis database (NOAA National Geographic Data Center, 2008, http://map.ngdc.gov/website/firedetects) to construct a similar map for locating monitors, this time based on frequency of smoke occurrence. Satellite smoke analysis represents an analyst’s interpretation of smoke visible in satellite photos. Thus, it is highly limited on cloudy days and for smaller smoke plumes that are difficult to see. Nevertheless, many of the crop residue burning plumes are visible as can be seen by comparing the model-based $PM_{2.5}$ contours on September 8 with the satellite smoke detections on that day, both of which are shown, side-by-side in Figure 8. Although satellite smoke analysis does not necessarily reflect smoke experienced at the surface (at the level where people are) the similarity suggests that the model is performing reasonably well on that day.

The Satellite Smoke Analysis detections for the July 15 through October 15 period in 2004 through 2006 combined to show relative frequency of smoke occurrences are shown in Figure 9. It is important to remember that prescribed fires and wildfire smoke are included in this map along with crop residue burning smoke; however, in the agricultural areas the majority of the smoke detections are believed to be agricultural in nature. Many of those however originate outside of Idaho in Eastern Washington. Wildfire activity was heaviest in eastern Clearwater County, and southeast of the Camas Prairie area in central Idaho. Wildfire activity is included in this map along with crop residue burning burns because in the areas where there is a significant frequency of wildfire smoke, it is still important for burn managers to consider smoke in the background, and to have a monitor to detect it, so that managers may curtail crop residue burning when necessary.

As before, for the modeled crop residue burning $PM_{2.5}$ seasonal mean concentrations, the Frequency of Smoke Occurrence (Figure 9) was multiplied by the population density at each grid point to obtain a relative geospatial surface representing potential “person-days” of smoke (Figure 10). A very similar pattern appears in Figure 10 as was seen in Figure 8, indicating that while there may be some minor location uncertainty in the modeling, the resulting indications of potential monitoring needs are very similar to the satellite based maps, which have relatively little spatial uncertainty.

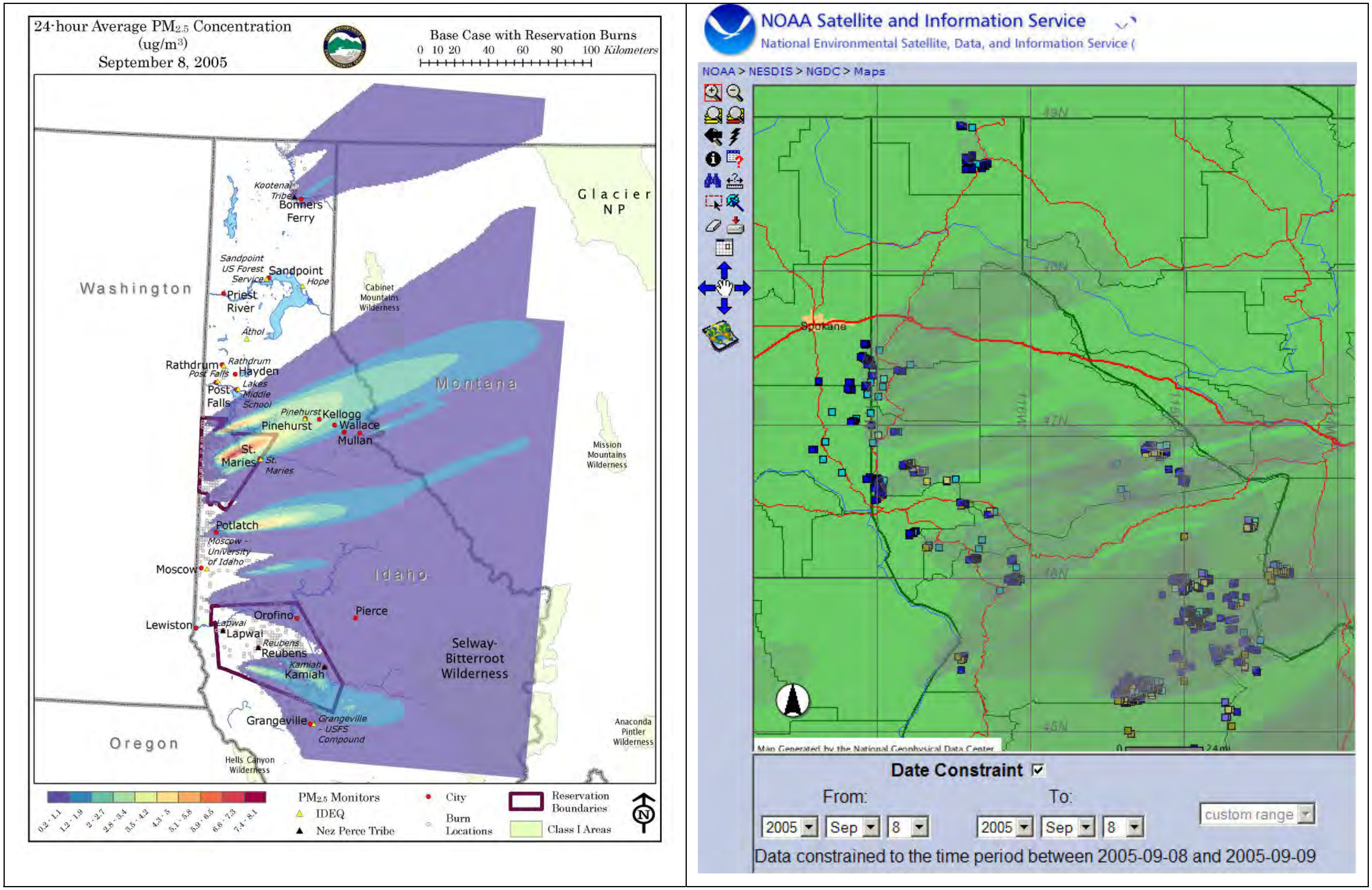

Figure 8 Comparison of satellite smoke analysis and modeled crop residue burning plumes on Sept 8, 2005.

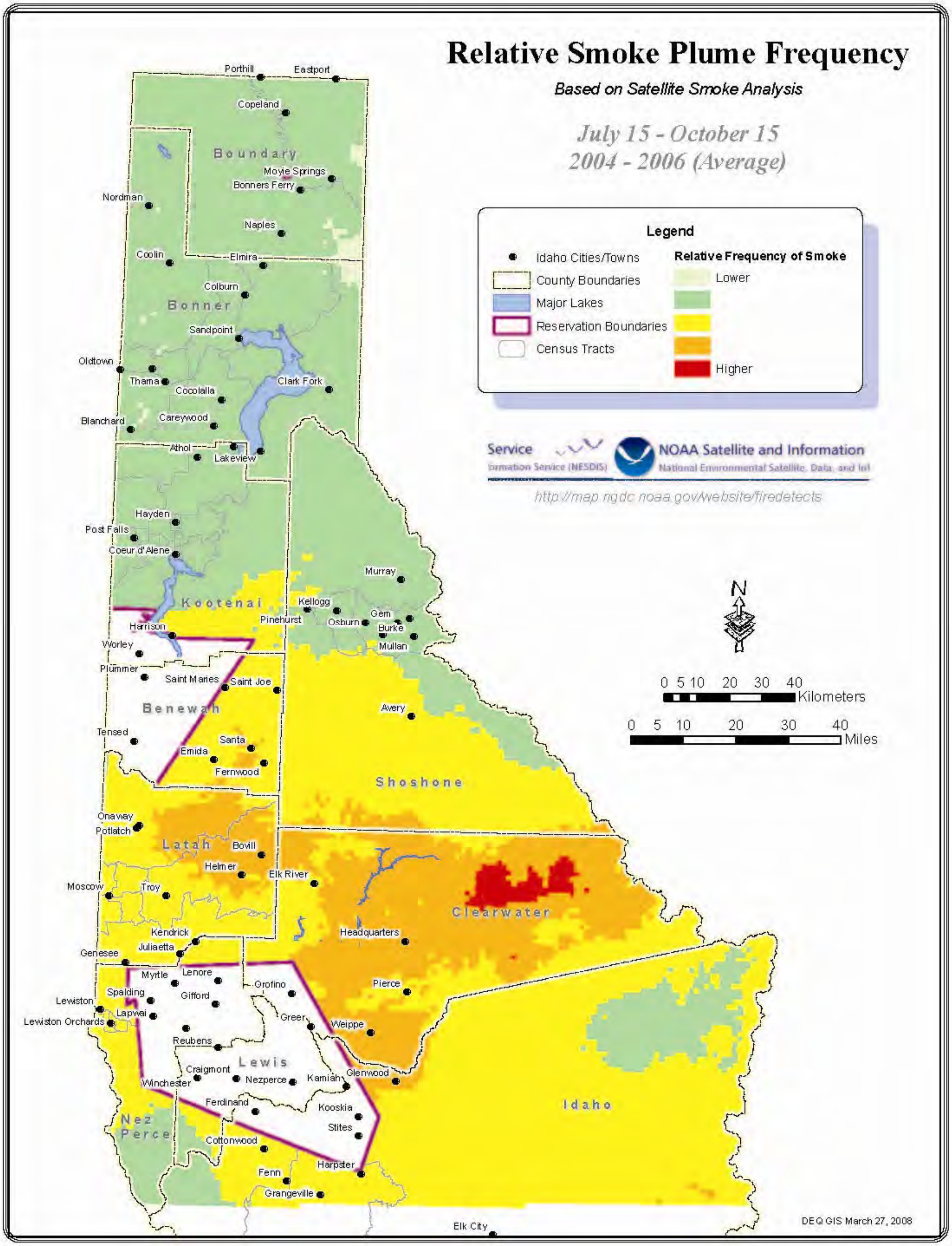

Figure 9. Relative Frequency of Smoke Occurrence.

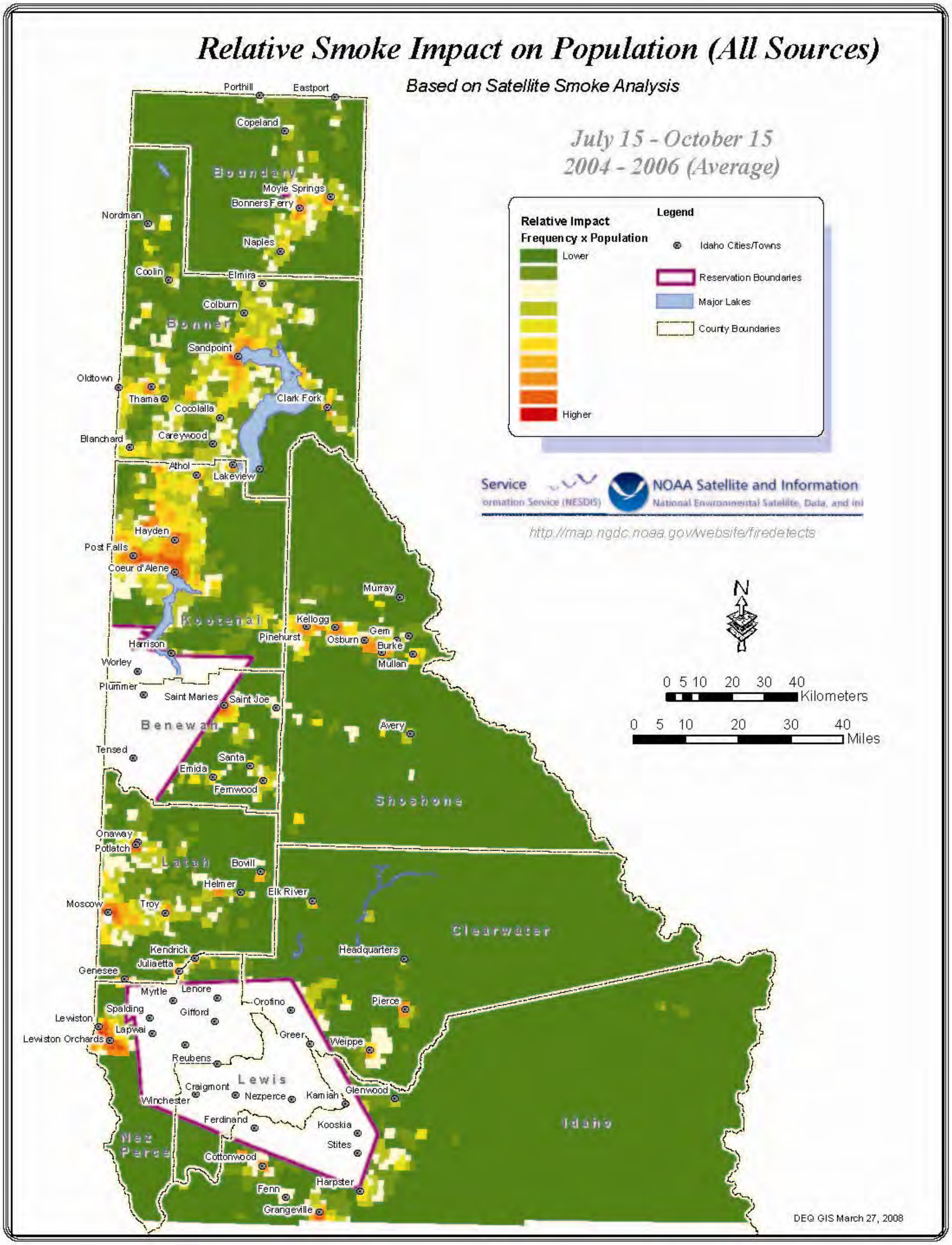

Figure 10. Relative Person-days of Smoke Occurrence.

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Section 6. Program Description and Air Quality Protection Strategies

6.1 Crop Residue Burning Program Description

6.1.1 Conditions for Burn Approval

DEQ may not approve a burn if either of the following applies:

- Ambient air quality levels are exceeding or expected to exceed 75% of the level of any NAAQS on any day, and these levels are projected to continue or recur over at least the next 24 hours.
- Ambient air quality levels have reached, or are forecasted to reach and persist at, 80% of the 1 hour action criteria for particulate matter pursuant to Section 556 of IDAPA 58.01.01 (Idaho Code, Section 39-114(3) and IDAPA 58.01.01.621).

In determining whether to approve the burn, DEQ must consider the expected emissions from the proposed burn, the proximity of the proposed burn to other burns, the moisture content of the fuel, the acreage, crop type and other fuel characteristics, existing and expected meteorological conditions, the proximity of the proposed burn to institutions with sensitive populations, public roadways, and airports, and other relevant factors (IDAPA 58.01.01.621.01).

6.1.2 Requirements for Burn Permitting

Any person desiring to burn crop residue must obtain a Permit by Rule, pursuant to IDAPA 58.01.01.617 through 623, and comply with following registration, payment, and approval requirements:

- At least thirty (30) days prior to the proposed burn date, the applicant must register with DEQ and provide the location of the property, application information, plot plan, type, acreage and fuel characteristics of crop residue proposed to be burned, preventative measures available, and the proposed date of burning (IDAPA 58.01.01.619). DEQ intends to provide application forms, on its Web site, similar to those provided in the Nez Perce Tribe Program.
- Seven days prior to the proposed burn, the permittee must pay a registration fee of $2 per acre to be burned to DEQ (IDAPA 58.01.01.620).
- Twelve hours prior to the burn, the permittee must obtain initial approval from DEQ and then confirm such approval with DEQ the morning of the burn (IDAPA 58.01.01.621.01).

DEQ developed an Operating Guide to assist the determination of burn approvals. However, just as the Nez Perce Tribe Operating Guide is not part of the FIP, this guide, which is a dynamic document that will be revised and improved over time, is not being submitted as part of the SIP revision. Instead, DEQ will develop an annual report, pursuant to IDAPA 58.01.01.622.02, and work with an advisory committee representing a broad range of interests to discuss issues and obtain valuable feedback on the program's implementation, IDAPA 58.01.01.622.03. As a result of information obtained, the Operating Guide may be revised accordingly.

6.1.3 General Provisions

IDAPA 58.01.01.622 contains a number of general provisions, including the following:

- The prohibition of burning on weekends, federal or state holidays, after sunset or before sunrise, or during an air stagnation or degraded air quality caution as identified in Section 552
- The requirement to obtain DEQ approval prior to burning, to carry a portable form of communication during the burn, to burn in the field where residue was generated, to attend a training session every five years, and to report to DEQ certain information after the burn
- If the burn permit conditions require, when burning in proximity to institutions with a sensitive populations, the permittee may be required to immediately extinguish the fire or withhold additional material, such that the fire burns down, unless DEQ determines the burn will not have an adverse impact on the institution.

An additional, central component of the negotiated Agreement included ensuring the public has ready access to pertinent information regarding burns in their area. House Bill 557 (Appendix B) amended Idaho Code Section 9-340D(9) to provide public access to public records regarding property locations subject to open burning, names of persons responsible for the open burn, acreage and crop type to be burned, and time frames for burning. DEQ intends to post on its Web site whether a day is a burn day or not, the location and number of acres permitted to be burned, meteorological conditions and any real time ambient air quality monitoring data, and a toll-free number to obtain information from (or provide information to) DEQ (IDAPA 58.01.01.623). It is anticipated that each Permit by Rule will be posted on DEQ's Web site with updated information posted as it is received.

As in the Nez Perce Tribal FIP, 40 CFR Section 49.124(c), and the previous Smoke Management and Crop Residue Disposal Act, the stakeholders agreed in the negotiated rulemaking that the opacity standard in IDAPA 58.01.01.625 shall not apply to the open burning of crop residue (IDAPA 58.01.01.625.05). This is completely fitting, as there is no valid means of conducting a Visible Emissions Evaluation (EPA Method 9) to evaluate a smoke plume from a burning field any more than doing the same for a prescribed forest burn. One simply cannot comply technically with the requirements in Method 9 while viewing emissions from a field. Thus, it is inappropriate to use Method 9 to assess an unconfined plume from burning vegetative matter because it is operationally unfeasible and the plume contains combined water vapor.

6.1.4 Transparency of Program

Throughout the negotiation process, transparency of the program was critical to SAFE in their acceptance of the agreement. DEQ agrees that a successful program must be transparent to all parties and is committed to making this program fully transparent. The concept of transparency is to design a program in which all aspects are totally visible to stakeholders and the public and that the program is set up to receive input from the outside for program enhancement and refinement. The State of Washington operates a successful transparent program and their program is the model that will be emulated. DEQ is committed to providing near real-time information on whether a given day is a burn or no-burn day, location and number of acres permitted to be burned, meteorological conditions and real time air quality monitoring data. In addition to daily information, DEQ's annual review of the program will be open to input from stakeholders and the public and reported in an annual report. As part of the agreement, the DEQ director will appoint an advisory committee made up of representatives from agriculture, public health and the environment entities to provide additional oversight and input to the program.

6.1.5 On-line Tools

A successful crop residue burning program requires many tools to meet the needs of all the stakeholders. Many tools are needed to successfully operate the crop residue burning program. The overall goals for the on-line tools are as follows:

- Increase consistency with other smoke management regulators

- Incorporate key aspects of transparency from the Washington Department of Ecology program
- Improve documentation of decision process and air quality
- Provide the public real-time (or near real-time) access to program decisions and monitoring data
- Provide information to the public using a simple mapping system
- Provide efficient, alternate means to disseminate information to the public
- Develop the ability to coordinate and collaborate with other smoke management regulators
- Collect and track data necessary to perform the annual program review
- Modify the on-line tools as the program is continually updated and improved

The tools can be organized into three main categories; applicant registration, fee payment, and post-burn reporting; public outreach and notification; and operational tools for staff. All of the tools will be built in coordination with other smoke management regulators such as the Tribes, other states, and land managers. The minimum requirements that will be met are discussed below.

Applicant registration, fee payment, and post-burn report

As required in IDAPA 58.01.01.619 and 620, DEQ will develop a tracking system for the following information for the applicant, at a minimum:

- Location of property, fields
- Applicant information
- Plot plan
- Type, acreage, and fuel characteristics of crop residue proposed to be burned
- Preventive measures
- Date of burning (proposed or when field will be available for burning)
- Payment of fees (amount, field, date)
- Date of actual burn
- Actual location of burn
- Actual number of acres burned

During collaboration with other smoke management regulators, additional information may be added to the tracking system to increase consistency and coordination among regulators.

Public outreach and notification

The agreement points, included as Appendix A, listed several specific items that will be met by development of the on-line tools. Specifically, DEQ is committed to do the following:

- Develop a real-time web-based mapping system that notifies the public of proposed and approved burn information, including the location, number of acres, and time of burn
- Post on its Web site whether a given day is a burn or no-burn day, location and number of acres permitted to burn, meteorological conditions and any real-time ambient air quality monitoring data
- Provide other methods of notifications, such as, server system/email, phone, and complaint system

Presenting the burn location, number of acres, and time of burn in two formats (map and text) will increase the transparency of the crop residue burning program.

Operational tools for DEQ staff

Operational staff needs additional tools in order to make an accurate burn decision. Staff needs to see, using a mapping system, location of all fields ready to burn, including those under other regulatory authority. They also need to see how close the locations are to roadways, airports, and institutions with sensitive populations. DEQ will develop a mapping system, similar to the public outreach and notification, which will allow staff to view the information and data required to be considered when making a burn decision. The tracking system for the applicant registration, fee payment, and post-burn report will be available to the staff on a real-time (or near) basis. A tool will be developed that focuses on enhancing the documentation of the decision process.

These three tool sets, when used together, will help ensure that the crop residue burning program does not cause or contribute to a violation of any NAAQS.

6.1.6 Operating Guide

DEQ will develop an Operating Guide to serve as the main crop residue burning SMP implementation tool. This document will describe in detail the overall and day-to-day operation of the program. The program is designed to be dynamic; it will be reviewed and improved on an annual basis as DEQ and stakeholders gain expertise through experience.

The Operating Guide will be developed with input from stakeholders and other burn managers. It will be designed to enhance consistency of the program across the State, it will attempt to maximize coordination with tribal, federal and contiguous states programs, and utilize on-line tools for both program operation and to provide real-time public information

The Operating Guide will incorporate the following:

- Applicable Agreement Points from Appendix A
- Air quality rule requirements
- Elements of the Nez Perce smoke management program
- Elements of the Washington smoke management program
- Elements specific to Idaho's program including specific meteorological, air quality, and burn parameters required for burn approval

The Operating Guide will contain specifics to promote operational success and consistency and clarify the following: the program air quality requirements, the burn decision parameters and process, how regional coordination in the decision process will be accomplished, specific permit and fee procedures, training requirements, specific staff and permittee pre-burn, burn and post-burn procedures, public information requirements, compliance procedures, and program evaluation and annual review procedures.

One item that will be addressed in the Operating Guide will be the treatment of institutions with sensitive populations in burn call determinations. This is very important to the protection of public health. Figure 11 provides an example of the type of mapping tool that DEQ will use in making these determinations. The figure shows fields burned within a three-mile radius of these institutions.

Another important item for inclusion in the Operating Guide is the red sheet/yellow sheet process used by the Washington State Department of Ecology. When hourly and/or 24-hour air quality levels reach cautionary levels, DEQ will provide additional documentation of the event so that burn call decisions can be analyzed in detail at a latter date. This documentation improves the program review process and enhances annual program improvement. DEQ levels for triggering the red sheet /yellow sheet process will be based upon a technical analysis of smoke impacts in Idaho; these levels may vary by airshed within the state.

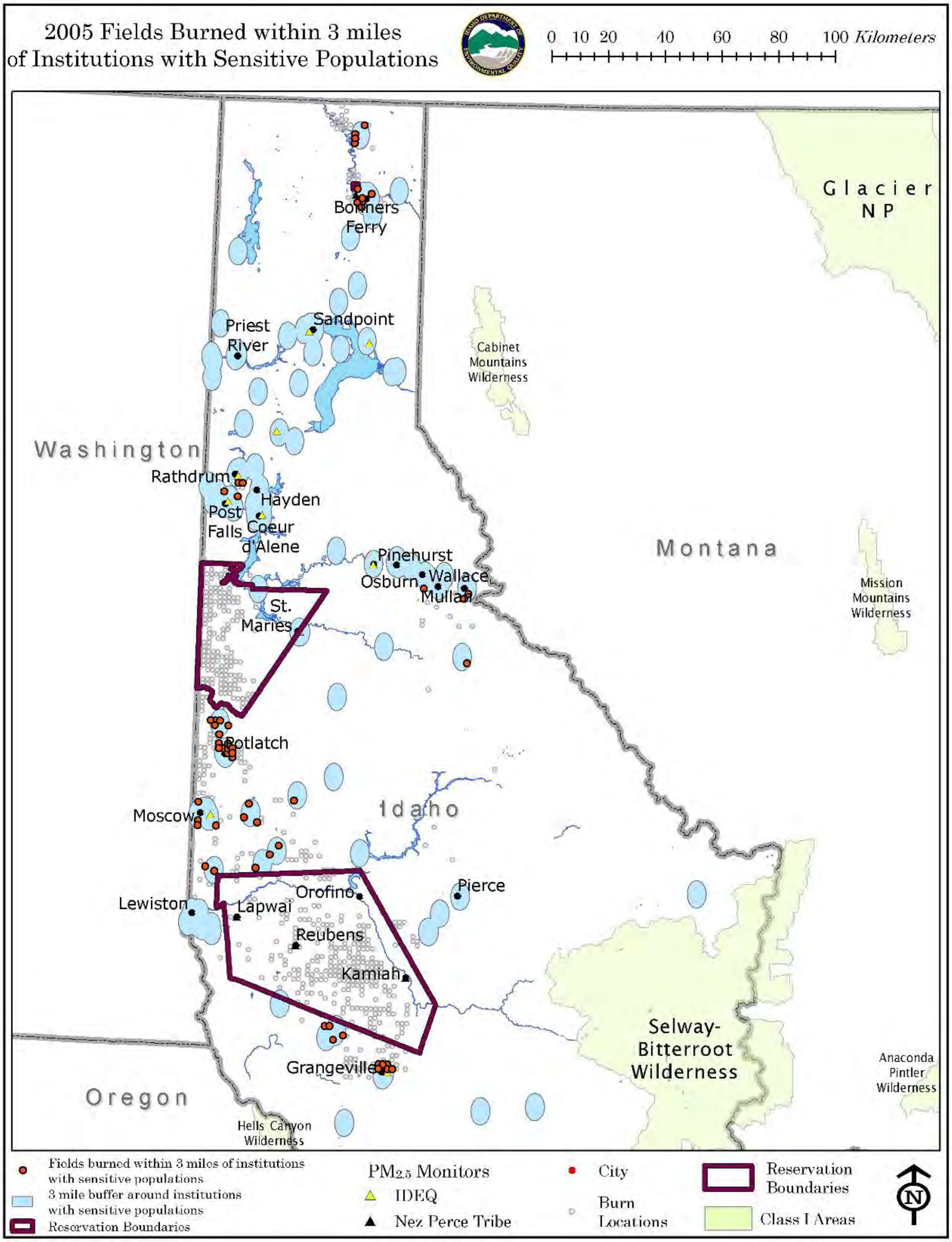

Figure 11. Example mapping of institutions with sensitive populations.

6.1.7 Training

The rules require all persons intending to burn crop residue to attend a crop residue burning training session at least once each five years. The training will cover: the health effects of smoke, the permitting process, operation of the program, responsibilities of burners, and on-the-ground techniques to ensure compliance and that smoke impacts are minimized.

Past training conducted by ISDA will carry forward to the DEQ program with refinements as appropriate. Information will be provided to all burners through the permitting process and outreach activities to ensure that all burners are well informed of the requirements of the DEQ's program.

6.1.8 Annual Evaluation

DEQ will conduct an annual review and compile a report summarizing the burn season. The review will be modeled after the Nez Perce Tribe annual review process and reporting. During the burn season, DEQ will provide additional documentation of outcomes whenever hourly and/or 24-hour $PM_{2.5}$ values become elevated (specific values will be defined in the Operating Guide). The enhanced documentation of impact days will be made available to improve and expedite the annual review process.

In the annual report, recommendations may be made to enhance the Operating Guide to improve air program efficiency and air quality protection.

The annual review process will be shared with stakeholders and the public and their input will be considered for program improvements. The report will be presented to the program Advisory Committee for their consideration and recommendations.

6.2 Compliance with Applicable Standards

Section 110(l) of the CAA requires that revisions to implementation plans must demonstrate that the revision does not "interfere with any applicable requirement concerning attainment and reasonable further progress (as defined in section 171), or any other applicable requirements of this Act." Data from DEQ's extensive monitoring network is sufficient to meet the minimum requirements of this SIP revision: to demonstrate compliance with the NAAQS at the monitor location.

As stated in Section 1 of this document, the following tools were used to demonstrate compliance with applicable standards:

- data from an extensive monitoring network
- statewide emission inventories
- supplementary, non-regulatory modeling analysis
- data provided by the Tribes

Using these tools, DEQ has demonstrated compliance with the following:

- NAAQS and Prevention of Significant Deterioration (PSD) in attainment, unclassified, and nonattainment areas within Idaho
- Interstate Transport Rule
- Regional Haze Rule

The information presented in the supplemental analysis (Section 5) demonstrates that modeling may be used as another tool by staff making burn decisions. Possible uses of this new tool are identifying areas that may need additional monitors (Section 5) and visualizing how the anticipated smoke plume may act.

The addition of new monitors will help ensure the crop residue burning program will not cause or contribute to a violation of any NAAQS in current attainment/unclassifiable areas.

6.2.1 NAAQS compliance in attainment and unclassified areas

The majority of the State is designated as attainment, unclassifiable, maintenance for all NAAQS. These designations are based on FRM or FEM monitoring data. Based on the FRM and FEM monitoring data presented in Section 2 of this document, the past crop residue disposal program did not cause or contribute to a violation of any NAAQS. The information presented in Section 5 of this document supports this determination. Table 16 summarizes the apparent crop residue burning-related $PM_{2.5}$ contributions to monitoring data. On average, the peak 24-hour contribution is less than 5 $\mu g/m^3$, while the seasonal average contribution is less than 0.2 $\mu g/m^3$.

This SIP revision will assist in meeting the NAAQS in all current attainment and unclassified areas in Idaho. This SIP revision will also minimize near-field impacts and impacts to sensitive populations. As stated previously, the purpose of the open burning rules is to reduce smoke emissions and impacts to protect human health and the environment.

As stated in Section 2, even though the PM2.5 continuous monitors cannot be used to determine compliance with the NAAQS, DEQ will use these monitors during the burn decision process. The continuous monitors provide real-time data that will ensure DEQ staff makes burn decisions that are in accordance with IDAPA 58.01.01.621.01. The proposed continuous monitoring sites of Payette/Weiser, Rupert, Rexburg, Potlatch, Harpster, Cottonwood, and Caribou County will improve DEQ's burn decision process.

The annual evaluation of the smoke management program will ensure the continuous monitors are in the appropriate location. The evaluation will also identify any new monitoring requirements that may be needed to ensure DEQ staff makes burn decisions in accordance with IDAPA 58.01.01.621.01.

6.2.2 NAAQS compliance in nonattainment areas

Currently, Sandpoint and Pinehurst PM_{10} nonattainment areas are the only nonattainment areas in Idaho. Both Sandpoint and Pinehurst had historical air quality problems that mainly occurred during wintertime stagnation events. The main emission source that contributed to the violations in these areas was residential wood heating. Monitoring in both Sandpoint and Pinehurst has shown PM_{10} attainment for many years.

In December of 2007, DEQ recommended a nonattainment designation for two airsheds for the 2006 $PM_{2.5}$ NAAQS; Pinehurst and the Cache Valley (Idaho portion). These designations are not final and are referred to as "proposed" $PM_{2.5}$ nonattainment areas in this document.

The Idaho Area Designation Recommendations for the 2006 $PM_{2.5}$ NAAQS document, submitted by the State of Idaho to EPA on December 14, 2007, evaluated areas violating the NAAQS using the 9-factor analysis recommended by EPA. This analysis included evaluating significant emission sources impacting the area.

The air quality problem in both Pinehurst and the Cache Valley is mainly a wintertime problem associated with air stagnation events. DEQ concluded the main emission sources that contribute to the proposed nonattainment status in Pinehurst are residential wood heating, vehicles, open burning of yard debris, and slash burning. Vehicles, residential wood heating, and agriculture (feedlot and dairy ammonia) are the main emission sources that contribute to the proposed nonattainment status in the Idaho portion of the Cache Valley.

As stated in Section 2.2 of this document, and supported by the Idaho Area Designation Recommendations for the 2006 $PM_{2.5}$ NAAQS document, none of the exceedances of the 2006 $PM_{2.5}$

standard were attributed to the burning of crop residue. This is also supported by the information discussed in Section 5 of this report. Table 16 shows that Pinehurst, a proposed $PM_{2.5}$ nonattainment area, is estimated to have the greatest crop residue burning-related contribution. The peak 24-hour contribution at Pinehurst is less than 10 $\mu g/m^3$. As discussed above, the air quality problem in Pinehurst occurs mainly in the winter months. Since the crop residue burning does not occur in the winter, this estimated contribution will not contribute to any violations in Pinehurst.

6.2.3 Interstate Transport

Section 110(a)(2)(D)(i) of the CAA requires that implementation plans must contain adequate provisions to prohibit any source or other type of emissions activity within the State from emitting an air pollutant in amounts which will:

- Contribute significantly to nonattainment in, or interfere with maintenance by, any other State with respect to any such national primary or secondary ambient air quality standard
- Interfere with measures required to be included in the applicable implementation plan for any other State under part C to prevent significant deterioration of air quality or to protect visibility.

The closest 8-hour ozone nonattainment area is Clark County, Nevada with Las Vegas being the primary populated area. Due to the distance from Idaho emission sources and prevailing wind patterns, Idaho's crop residue disposal program will not significantly contribute to the nonattainment area or interfere with the maintenance of the area.

However, the Libby, Montana, $PM_{2.5}$ nonattainment area is 25 miles from the Idaho border. This short distance warrants closer investigation to determine if Idaho's crop residue burning program is significantly contributing to the nonattainment or will interfere with the maintenance of the area. According to the State Implementation Plan for Libby, Montana, the problem is primarily a wintertime woodstove emissions problem during air stagnation periods. The question is whether the crop residue burning program is significantly contributing to the ambient background level and $PM_{2.5}$ nonattainment. According to the supplemental analysis in Section 5.4, the estimated peak 24-hour contribution at Libby, Montana is 1.8µg/m^3 with an estimated seasonal mean of only 0.02µg/m^3. This indicates that impacts from crop burning are not significantly contributing to Libby's PM2.5 nonattainment. Since Montana's other PM_{10} nonattainment areas are farther downwind than Libby, and the new PM 2.5 24-hour standard is much more restrictive than the PM_{10}, there should be no significant impact to those areas.

IDAPA 58.01.01.622(g) provides for the prohibition of crop residue burning during air stagnation events when the Department issues an air quality forecast and caution, alert, warning or emergency as identified in Section 552 of the rules. Since air quality stagnation is the primary meteorological condition contributing to Libby's $PM_{2.5}$ nonattainment the same meteorological conditions would constrain crop residue burning. Idaho DEQ has a documented history of cooperating closely with and supporting Montana during periods of air stagnation and smoke events; this will continue.

6.2.4 Regional Haze

The Regional Haze Rule, under 40 CFR Section 308(d)(1), requires states to establish Reasonable Progress Goals for Class I areas. Reasonable Progress Goals take into consideration emission reductions expected under Long Term Strategies (40 CFR Section 308(d) (3)). Control strategies for agricultural burning are specifically called out as a requirement under Long Term Strategies 40 CFR Section 308(d)(3)(v)(E). The Regional Haze Rule does not specifically spell out what is required in a smoke management program when developing long-term strategies. However, section 309(d)(6)(i) of the Regional Haze rule does spell out in more detail what is required for a more restrictive, enhanced smoke management program. That section states, *"the plan must include smoke management programs that include all necessary components including, but not limited to, actions to minimize emissions, evaluation* *of smoke dispersion, alternatives to fire, public notification, air quality monitoring, surveillance and enforcement, and program evaluation".*

The long-term strategies under Idaho's Regional Haze Rule, IDAPA 58.01.01..667.03(v) contain the same requirements for smoke management techniques for agriculture and forestry purposes as those required in 40 CFR Section 308(d)(3). The technical information developed to support the regional haze SIP included emissions from agricultural burning, as well as other types of fire emissions, in the baseline emissions and modeling demonstration.

The crop residue burning smoke management program satisfies all of the requirements of an enhanced smoke management program, under 40 CFR 309 (d)(6)(i). The following demonstrates how the crop residue burning program meets the requirements for an enhanced smoke management program.

1. **Minimizing emissions** – DEQ has field staff that will be checking local conditions to assure crops and humidity levels are suitable and will promote emission reductions. Wind speed will also be analyzed to promote proper combustion and lift.
2. **Evaluation of smoke dispersion** – The state will be using a professional meteorologist with extensive knowledge in smoke dispersion to assist in identifying burn days with optimal winds, temperature, humidity, mixing heights and upper air dispersion. DEQ field staff will use this information when determining whether to allow burning.
3. **Alternatives to fire** — The Regional Haze Rule requires that states consider alternatives to burning to meet the requirements of visibility protection. Through the annual crop residue burning program review process, alternatives to burning can be discussed and considered as necessary to protect visibility.
4. **Public notification** – The crop residue burning program offers several forms of public notification. The information will be available on DEQ's Web site concerning the acres to be burned and locations and the day the burn is to occur. This information will be available via a toll-free number and e-mail for interested persons wishing to sign up for automatic e-mail updates as required by IDAPA 58.01.01.623.03 The information will also be geographically displayed so individuals can identify burns that will be occurring in their area. The information gathered from the growers and DEQ field staff will be used to generate a database on crop residue burning. This information will be transferred to the Western Regional Air Partnership Fire Emissions Tracking System (FETS) so information can be viewed and analyzed on a Western Regional perspective for those outside Idaho or those wishing to see what other emissions may be impacting Idaho.
5. **Air quality monitoring** – DEQ is purchasing several mobile monitors that will be used to identify impacts and make adjustments to the program to protect the NAAQS and in situations with sensitive populations that may reside in the vicinity of the crop residue burns.
6. **Surveillance and enforcement** – The DEQ crop residue burning field staff will be observing burns to assure compliance with the permits issued under DEQ's program authorized under IDAPA 58.01.01.618. The burner must also adhere to the general provisions under IDAPA 58.01.01.622.
7. **Program evaluation** — IDAPA 58.01.01.622.02 requires DEQ to develop an annual report that includes at a minimum an analysis of the causes of exceedance of a limitation in IDAPA Section 621, if any, and an assessment of the circumstances associated with any reported endangerment to human health associated with the burn. The report shall include any proposed revisions to the IDAPA Open Burning Rules, or the Crop Residue Operating Guide that are deemed necessary to prevent future exceedances. The program will also make adjustments as needed to meet the Long Term Strategies for Regional Haze visibility as required under the general Open Burning Rules in IDAPA 58.01.01.600 and specified in IDAPA 58.01.01.667.3(v).

6.2.5 Enforceability

Idaho Code 39-108 provides DEQ with investigation, inspection, and enforcement authority over violations of Idaho Code 39-114 (the air quality rules) and a Permit by Rule issued pursuant to the Air Quality Rules. A notice of violation with an assessed penalty of up to $10,000 per day per violation may be assessed, Idaho Code 39-108(30) and (5). Civil and criminal enforcement actions may be taken for violations pursuant to Idaho Code 39-109.

The open burning of crop residue rules provide DEQ with the authority to make determinations on when burning will be allowed. This is based on the authorities outlined in IDAPA 58.01.01.621. To approve a burn, this section requires DEQ to determine that ambient air quality levels are not exceeding nor expected to exceed seventy five percent (75%) of the level of any national ambient air quality standards on any day and are not projected to exceed such level over the next twenty-four 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. Section 621.01 also includes the following factors be considered when making a burn call:

- expected emissions proposed for the day
- proximity of other burns and potential emission sources within the area to be affected by the proposed burn
- moisture content of the material to be burned
- acreage, crop type and fuel characteristics to be burned
- meteorological conditions
- other relevant factors, including air stagnations and air quality nearing 75 % of the NAAQS in areas impact by the burn. This provision would be protective of the interstate transport issues.

Section 622(g) also provides provisions on air quality stagnations, which shall prohibit crop residue burning when the Department issues an air quality forecast and caution, alert, warning or emergency as identified in Section 552 of the rules.

6.2.6 General Savings Clause

This SIP revision requires careful analysis of potential emission impacts of crop residue burning prior to approving the burn. The SIP in place before 1990 required no air quality impact analysis at all and applied not only to crop residue grown in the field generated but to any plant life grown on the premises of any agricultural operation. Thus, clearly this SIP revision ensures at least equivalent, if not greater, emission reduction impacts of particulate matter from crop residue burning than the SIP in place before 1990. Consequently, this SIP revision comports with Section 193 of the CAA.

Section 193 of the CAA states in pertinent part that “[n]o control requirement in effect, or required to be adopted by an order, settlement agreement, or plan in effect before November 15, 1990, in any area which is a nonattainment area for any air pollutant may be modified after November 15, 1990, in any manner unless the modification insures equivalent or greater emission reduction of such pollutant.” 42 U.S.C. 7515.

As discussed in Section 1, prior to 1990, Idaho’s SIP authorized the broad practice of agricultural burning. It stated: “The open burning of plant life grown on the premises in the course of any agricultural, forestry or land clearing operation may be permitted when it can be shown that such burning is necessary and no fire or traffic hazard will occur. Convenience of disposal is not of itself a valid necessity for burning.” 37 Fed.Reg. 10842, 10861 (May 13, 1972).

The crop residue burning program provided in this SIP revision creates an unquestionably stronger, more protective program than that in place prior to 1990. Moreover, as discussed in Section 5, the only two (2) nonattainment areas in the state, Sandpoint and Pinehurst, experience high concentrations of particulate matter in winter months, not in the early fall months when crop residue burning occurs. Approval of this SIP revision will not in any way relax any control requirement in effect in Pinehurst or Sandpoint. In approving the PM 10 SIP for Pinehurst, EPA stated: ”Further, RACM [Reasonably Available Control Measure] does not require the implementation of controls for prescribed silvicultural and agricultural burning for the Pinehurst nonattainment area, because the area is not significantly impacted by those activities on worst case days, according to the emission inventory analysis.” 59 Fed. Reg. 43745, 43749 (1994). In Sandpoint, EPA found the voluntary smoke management program sufficient for PM 10 attainment purposes. 40 C.F.R. Section 52.677(c)(35)(ii)(A). That said, as discussed in Section 5, the approval of crop residue burns in the vicinity of Pinehurst will be subject to greater scrutiny under this enhanced program.

Section 7. Conclusions

In conclusion, the components of this SIP revision, including Idaho Code Section 39-114, Rule Docket No. 58-0101-801, and the technical analysis provided in this document, not only meet, but exceed the requirements necessary to satisfy a SIP revision pursuant to Section 110(l) of the Clean Air Act. This transparent crop residue burning program, conceived through an open negotiation process, and modeled after EPA's federal Nez Perce Program, protects public health and the environment. The exhaustive analysis performed by DEQ technical staff concluded that the emissions from the open burning of crop residue have not caused or significantly contributed to a violation of the NAAQS for $PM_{2.5}$ because the maximum 24-hour impact (9.7 $\mu g/m^3$ at Pinehurst) is only 28% of the 24-hour NAAQS (35 $\mu g/m^3$) and occurs in a season when other primary sources do not contribute. Emissions will not interfere with applicable requirements for limiting interstate pollution or protecting visibility in Class 1 areas. Under this SIP revision, pre-1990 control requirements are strengthened, not relaxed. Thus, DEQ requests that EPA approve this SIP revision that all stakeholders have so diligently worked on and agreed to.

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Appendix A: December 2007 Agreement Points

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FINAL Agreement Points for CRD Negotiation
12/19/2007

- Enforceability of program

- DEQ run program

  - Switch Authorities/Management/Operation of Program from ISDA to DEQ
    - Statute change
      - Smoke Management Act Repealed (rules as well)
        - 48-01 through 04
      - Authorizing authority under existing DEQ rules
        - Title 39
    - Consensus on new DEQ air rules
      - Shift funding to DEQ
      - Develop Budget
      - Identify funding sources
  - State-wide program
  - DEQ consults with ISDA on technical/ag issues

- Model program after Nez Perce Program

  - Protect air quality to 75% of Air Quality Standard
    - PM2.5 not to exceed 26ug/m3 for 24 hour period
    - Daily dispersion forecast by professional meteorologist
    - Use Nez Perce Operating Guide as a starting point
    - Need consistency between programs (states, tribes)
    - Short-term impacts (1 hr) need to review (EPA's new AQI)

- Totally Transparent Program
  - Incorporate key aspects of transparency from Washington Program
  - Incorporate enforceability of transparency into SIP document

- Enhanced documentation of decision process/air quality when specified levels are reached (these levels are not "no burn" trigger levels, burn, no burn decisions will be made per program requirements)
  - Define and incorporate appropriate action levels based upon Idaho monitoring data
- Develop real-time GIS display system of data
  - Location, acres, time (not farmer's names)
  - Identify areas of critical concern
    - i.e. near-field concerns
    - alert neighbors
- Implement enhanced information dissemination system
  - Web based
  - Server system / email
  - Phone line
  - Complaint system
  - Notification (other)
- 2hr rolling average for documentation

- Legislation introduced by growers
  - Supported by DEQ, ISDA and SAFE

- Examine adequacy of existing Monitoring Network
  - DEQ to conduct modeling/meteorological analysis to determine adequacy of existing network
  - Purchase, install, and operate additional monitors as determined by analysis
  - Monitoring network comparable to Washington Program

- Build in cooperation with other Smoke Management Regulators
  - Tribes
  - Washington/other states
  - Land managers Wildfire/prescribed fire

- Annual and on-going review process
  - Set-up advisory committee (DEQ director appointed)
    - Representatives (ag., environmental/public health, etc.)
    - Open process

  - Annual review and update/improve program based upon recommendations

- Monitoring / exposure studies (If grant money, need can be identified)
  - Near field impacts
  - Saturation Study
  - Airshed analysis

- >20,000 acres in Blue Grass Burning triggers SIP Evaluation

- Develop concurrent timeline
  - Legislation
  - SMP
  - SIP

- Assemble implementation committee

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Appendix B: House Bill 557

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HOUSE BILL NO. 557

View Bill Status
View Bill Text
View Statement of Purpose / Fiscal Impact

Text to be added within a bill has been marked with Bold and Underline. Text to be removed has been marked with Strikethrough and Italic. How these codes are actually displayed will vary based on the browser software you are using.
This sentence is marked with bold and underline to show added text.
~~*This sentence is marked with strikethrough and italic, indicating text to be removed.*~~

Bill Status

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H0557.....................................................by STATE AFFAIRS
CROP BURNING - Adds to, amends and repeals existing law relating to crop
burning to provide for the open burning of crop residue; to provide that
certain information relating to open burning of crop residue shall not be
exempt from disclosure.

02/25    House intro - 1st rdg - to printing
02/26    Rpt prt - to Env
02/29    Rpt out - rec d/p - to 2nd rdg
    Rls susp - PASSED - 66-0-4
      AYES -- Anderson, Andrus, Barrett, Bayer, Bedke, Bell, Bilbao, Block,
      Bock, Boe, Bolz, Bowers, Brackett, Bradford, Chadderdon, Chavez,
      Chew, Clark, Collins, Crane, Durst, Eskridge, Hagedorn, Hart,
      Harwood, Henbest, Henderson, Jaquet, Killen, King, Kren, Labrador,
      LeFavour, Loertscher, Luker, Marriott, Mathews, McGeachin, Mortimer,
      Moyle, Nielsen, Nonini, Pasley-Stuart, Patrick, Pence, Raybould,
      Ringo, Roberts, Ruchti, Rusche, Sayler, Schaefer, Shepherd(08),
      Shirley, Shively, Smith(24), Smith(30)(Stanek), Snodgrass, Stevenson,
      Thayn, Thomas, Trail, Vander Woude, Wood(27), Wood(35), Mr. Speaker
      NAYS -- None
      Absent and excused -- Black, Lake, Shepherd(02), Wills
    Floor Sponsor - Roberts
    Title apvd - to Senate
02/29    Senate intro - 1st rdg - to Health/Wel
03/06    Rpt out - rec d/p - to 2nd rdg
    Rls susp - PASSED - 34-0-1
      AYES -- Andreason, Bair, Bastian, Bilyeu, Broadsword, Burkett,
      Cameron, Coiner, Corder, Darrington, Fulcher, Gannon, Geddes, Goedde,
      Hammond, Heinrich, Hill, Jorgenson, Kelly, Keough, Langhorst, Little,
      Lodge, Malepeai(Sagness), McGee, McKague, McKenzie, Pearce,
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Richardson, Schroeder, Siddoway, Stegner, Stennett, Werk
NAYS -- None
Absent and excused -- Davis
Floor Sponsor - Bair
Title apvd - to House
03/06 To enrol - Rpt enrol - Sp signed - Pres signed
To Governor
03/07 Governor signed
Session Law Chapter 71
Effective: 03/07/08

Bill Text

]]]] LEGISLATURE OF THE STATE OF IDAHO]]]]
Fifty-ninth Legislature Second Regular Session - 2008

IN THE HOUSE OF REPRESENTATIVES

HOUSE BILL NO. 557

BY STATE AFFAIRS COMMITTEE

AN ACT

RELATING TO CROP BURNING; AMENDING CHAPTER 1, TITLE 39, IDAHO CODE, BY THE ADDITION OF A NEW SECTION 39-114, IDAHO CODE, TO PROVIDE FOR THE OPEN BURNING OF CROP RESIDUE; AMENDING SECTION 9-340D, IDAHO CODE, TO PROVIDE THAT CERTAIN INFORMATION RELATING TO OPEN BURNING OF CROP RESIDUE SHALL NOT BE EXEMPT FROM DISCLOSURE AND TO MAKE TECHNICAL CORRECTIONS; TO PROVIDE THAT THE DEPARTMENT OF AGRICULTURE SHALL TRANSFER CERTAIN MONEYS TO THE STATE TREASURER; REPEALING CHAPTER 48, TITLE 22, IDAHO CODE, RELATING TO SMOKE MANAGEMENT AND CROP RESIDUE DISPOSAL; AMENDING SECTION 39-6717, IDAHO CODE, TO REVISE A CODE REFERENCE; AND DECLARING AN EMERGENCY.

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

SECTION 1. 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, so 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, seventy-five percent (75%) of the level of any national ambient air quality standard 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. The department shall remit all fees quarterly to the state treasurer, who shall deposit the moneys in the general fund.

SECTION 2. That Section 9-340D, Idaho Code, be, and the same is hereby amended to read as follows:

9-340D. RECORDS EXEMPT FROM DISCLOSURE -- TRADE SECRETS, PRODUCTION RECORDS, APPRAISALS, BIDS, PROPRIETARY INFORMATION. The following records are exempt from disclosure:

(1) Trade secrets including those contained in response to public agency or independent public body corporate and politic requests for proposal, requests for clarification, requests for information and similar requests. "Trade secrets" as used in this section means information, including a formula, pattern, compilation, program, computer program, device, method, technique, process, or unpublished or in progress research that:

(a) Derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by other persons who can obtain economic value from its disclosure or use; and

(b) Is the subject of efforts that are reasonable under the circumstances to maintain its secrecy.

(2) Production records, housing production, rental and financing records, sale or purchase records, catch records, mortgage portfolio loan documents, or similar business records of a private concern or enterprise required by law to

be submitted to or inspected by a public agency or submitted to or otherwise obtained by an independent public body corporate and politic. Nothing in this subsection shall limit the use which can be made of such information for regulatory purposes or its admissibility in any enforcement proceeding.

(3) Records relating to the appraisal of real property, timber or mineral rights prior to its acquisition, sale or lease by a public agency or independent public body corporate and politic.

(4) Any estimate prepared by a public agency or independent public body corporate and politic that details the cost of a public project until such time as disclosed or bids are opened, or upon award of the contract for construction of the public project.

(5) Examination, operating or condition reports and all documents relating thereto, prepared by or supplied to any public agency or independent public body corporate and politic responsible for the regulation or supervision of financial institutions including, but not limited to, banks, savings and loan associations, regulated lenders, business and industrial development corporations, credit unions, and insurance companies, or for the regulation or supervision of the issuance of securities.

(6) Records gathered by a local agency or the Idaho department of commerce, as described in chapter 47, title 67, Idaho Code, for the specific purpose of assisting a person to locate, maintain, invest in, or expand business operations in the state of Idaho.

(7) Shipping and marketing records of commodity commissions used to evaluate marketing and advertising strategies and the names and addresses of growers and shippers maintained by commodity commissions.

(8) Financial statements and business information and reports submitted by a legal entity to a port district organized under title 70, Idaho Code, in connection with a business agreement, or with a development proposal or with a

financing application for any industrial, manufacturing, or other business activity within a port district.

(9) Names and addresses of seed companies, seed crop growers, seed crop consignees, locations of seed crop fields, variety name and acreage by variety. Upon the request of the owner of the proprietary variety, this information shall be released to the owner. Provided however, that if a seed crop has been identified as diseased or has been otherwise identified by the Idaho department of agriculture, other state departments of agriculture, or the United States department of agriculture to represent a threat to that particular seed or commercial crop industry or to individual growers, information as to test results, location, acreage involved and disease symptoms of that particular seed crop, for that growing season, shall be available for public inspection and copying. This exemption shall not supersede the provisions of section 22-436, Idaho Code**, nor shall this exemption apply to information regarding specific property locations subject to an open burning of crop residue pursuant to section 39-114, Idaho Code, names of persons responsible for the open burn, acreage and crop type to be burned, and time frames for burning**.

(10) Information obtained from books, records and accounts required in chapter 47, title 22, Idaho Code, to be maintained by the Idaho oilseed commission and pertaining to the individual production records of oilseed grow-

ers.

(11) Records of any risk retention or self-insurance program prepared in anticipation of litigation or for analysis of or settlement of potential or actual money damage claims against a public entity and its employees or against the industrial special indemnity fund except as otherwise discoverable under the Idaho or federal rules of civil procedure. These records shall include, but are not limited to, claims evaluations, investigatory records, computerized reports of losses, case reserves, internal documents and correspondence relating thereto. At the time any claim is concluded, only statistical data and actual amounts paid in settlement shall be deemed a public record unless otherwise ordered to be sealed by a court of competent jurisdiction. Provided however, nothing in this subsection is intended to limit the attorney client privilege or attorney work product privilege otherwise available to any public agency or independent public body corporate and politic.

(12) Records of laboratory test results provided by or retained by the Idaho food quality assurance laboratory. Nothing in this subsection shall limit the use which can be made, or availability of such information if used, for regulatory purposes or its admissibility in any enforcement proceeding.

(13) Reports required to be filed under chapter 13, title 62, Idaho Code, identifying electrical or natural or manufactured gas consumption data for an individual customer or account.

(14) Voluntarily prepared environmental audits, and voluntary disclosures of information submitted on or before December 31, 1997, to an environmental agency as defined in section 9-803, Idaho Code, which are claimed to be confidential business information.

(15) Computer programs developed or purchased by or for any public agency or independent public body corporate and politic for its own use. As used in this subsection, "computer program" means a series of instructions or statements which permit the functioning of a computer system in a manner designed to provide storage, retrieval and manipulation of data from the computer system, and any associated documentation and source material that explain how to operate the computer program. Computer program does not include:

(a) The original data including, but not limited to, numbers, text, voice, graphics and images;

(b) Analysis, compilation and other manipulated forms of the original data produced by use of the program; or

(c) The mathematical or statistical formulas that would be used if the manipulated forms of the original data were to be produced manually.

(16) Active investigative records and trademark usage audits of the Idaho potato commission specifically relating to the enforcement of chapter 12, title 22, Idaho Code, until the commencement of formal proceedings as provided by rules of the commission; purchase and sales information submitted to the Idaho potato commission during a trademark usage audit, and investigation or enforcement proceedings. Inactive investigatory records shall be disclosed unless the disclosure would violate the standards set forth in subsections (1)(a) through (f) of section 9-335, Idaho Code. Nothing in this subsection shall limit the use which can be made, or availability of such information if used, for regulatory purposes or its admissibility in any enforcement proceeding.

(17) All records copied or obtained by the director of the department of agriculture or his designee as a result of an inspection pursuant to section 25-3806, Idaho Code, except:

(a) Records otherwise deemed to be public records not exempt from disclosure pursuant to this chapter; and

(b) Inspection reports, determinations of compliance or noncompliance and all other records created by the director or his designee pursuant to section 25-3806, Idaho Code.

(18) All data and information collected by the division of animal industries or the state brand board pursuant to the provisions of section 25-207B, Idaho Code, or rules promulgated thereunder.

(19) Records disclosed to a county official by the state tax commission pursuant to subsection (4)(c) of section 63-3029B, Idaho Code.

(20) Records, data, information and materials collected, developed, generated, ascertained or discovered during the course of academic research at public institutions of higher education if the disclosure of such could reasonably affect the conduct or outcome of the research, or the ability of the public institution of higher education to patent or copyright the research or protect intellectual property.

(21) Records, data, information and materials collected or utilized during the course of academic research at public institutions of higher education provided by any person or entity other than the public institution of higher education or a public agency.

(22) The exemptions from disclosure provided in subsections (20) and (21) of this section shall apply only until the academic research is publicly released, copyrighted or patented, or until the academic research is completed or terminated. At such time, the records, data, information, and materials shall be subject to public disclosure unless: (a) another exemption in this chapter applies; (b) such information was provided to the institution subject to a written agreement of confidentiality; or (c) public disclosure would pose a danger to persons or property.

(23) The exemptions from disclosure provided in subsections (20) and (21) of this section do not include basic information about a particular research project that is otherwise subject to public disclosure, such as the nature of the academic research, the name of the researcher, and the amount and source of the funding provided for the project.

(24) Records of a county assessor containing information showing the income and expenses of a taxpayer, which information was provided to the assessor by the taxpayer to permit the assessor to determine the value of property of the taxpayer.

5

(25) Results of laboratory tests which have no known adverse impacts to human health conducted by the Idaho state department of agriculture animal health laboratory, related to diagnosis of animal diseases of individual animals or herds, on samples submitted by veterinarians or animal owners unless:

(a) The laboratory test results indicate the presence of a state or federally reportable or regulated disease in animals;

(b) The release of the test results is required by state or federal law; or

(c) The test result is identified as representing a threat to animal or

HOUSE BILL NO. 557 - Crop residue burning

human health or to the livestock industry by the Idaho state department of agriculture or the United States department of agriculture. Nothing in this subsection shall limit the use which can be made, or availability of such information if used, for regulatory purposes or its admissibility in any enforcement proceeding, or the duty of any person to report contagious or infectious diseases as required by state or federal law.

(2~~5~~**6**) Results of laboratory tests conducted by the Idaho state department of agriculture seed laboratory on samples submitted by seed producers or seed companies. Nothing in this subsection shall limit the use which can be made, or availability of such information pursuant to the provisions of subsections (9) and (10) of section 22-418, Idaho Code.

(2~~5~~**7**) For policies that are owned by private persons, and not by a public agency of the state of Idaho, records of policies, endorsements, affidavits and any records that discuss policies, endorsements and affidavits that may be required to be filed with or by a surplus line association pursuant to chapter 12, title 41, Idaho Code.

SECTION 3. Any moneys in the state Agricultural Smoke Management Account referenced in Section 22-4804, Idaho Code, which are unexpended or unencumbered on June 30, 2008, shall be paid over to the State Treasurer by the Department of Agriculture and deposited in the General Fund.

SECTION 4. That Chapter 48, Title 22, Idaho Code, be, and the same is hereby repealed.

SECTION 5. That Section 39-6717, Idaho Code, be, and the same is hereby amended to read as follows:

39-6717. SAVINGS CLAUSE. Nothing in this chapter shall alter or affect the provisions of ~~*chapter 48, title 22*~~ **section 39-114**, Idaho Code, on ~~*smoke management and*~~ **the open burning of** crop residue**.** ~~*disposal.*~~

SECTION 6. An emergency existing therefor, which emergency is hereby declared to exist, this act shall be in full force and effect on and after its passage and approval.

Statement of Purpose / Fiscal Impact

STATEMENT OF PURPOSE

RS 18000

This bill repeals the Smoke Management and Crop Residue Disposal Act administered by the Idaho Department of Agriculture and creates a new statute providing the Department of Environmental Quality (DEQ) with the authority to administer the open burning of crop residue. The proposed legislation requires approval from DEQ prior to the burn and prohibits DEQ from granting that approval if it determines that ambient air-quality levels exceed or are projected to exceed seventy-five percent (75%) of the level of any national air ambient air quality standard on any burn day or eighty percent (80%) of the one hour action criteria for particulate matter under IDAPA 58.01.557; and it sets a two dollar $2.00)per acre fee for burning. The bill also requires DEQ to conduct further air-quality analysis prior to allowing the burning of more than 20,000 acres of bluegrass within the state, which does not include tribal lands within the reservation boundaries as recognized by the federal Clean Air Act. It also revises the public records act to specifically allow the public disclosure of the names(s) of persons responsible for the burning, the location, crop type, acres to be burned and times of burning.

FISCAL NOTE

The enactment of this legislation will have one-time initial start up expenses of $186,700 as well as ongoing program costs estimated to be $419,700 for a total impact of $606,377 to the General Fund for FY 2009. In addition to funding, the Department of Environmental Quality has indicated this program will require two additional full time positions and several seasonal positions.

To offset initial program costs, the Department of Agricultural will transfer $209,000 to the General Fund from the current field burning program. This transfer will reduce the total General Fund impact in FY 2009 to $397,377. This free fund balance is the result of previous years fees paid to the state by landowners for field burning.

All future receipts remitted to the state for field burning under this bill shall be transferred to the General Fund to help with the ongoing program costs.

Contact: Representative Ken Roberts; Representative Paul Shepherd
Phone (208) 332-1000

STATEMENT OF PURPOSE/FISCAL NOTE H 557

Reprint Reprint Reprint Reprint

Appendix C: Rule Docket Number 58-0101-0801

CERTIFICATE OF HEARING

SUBJECT: Rules for the Control of Air Pollution in Idaho,
Docket No. 58-0101-0801 and Proposed Revision to Idaho SIP

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

HEARING DATE: May 2, 2008

The undersigned designated hearing officer hereby certifies that on the 2nd day of May, 2008, a public hearing was held on the Rules for the Control of Air Pollution in Idaho, Docket No. 58-0101-0801, and the proposed revision to the Idaho SIP at the DEQ conference center in Boise, Idaho. The hearing commenced at 3:30 p.m. and was adjourned at 4 p.m. Members of the public attended the hearing but did not wish to present oral testimony.

Notice of this hearing appeared in the Idaho Administrative Bulletin, as required by Idaho Code Section 67-5221, on April 2, 2008. Notice of this hearing also appeared in the Coeur d'Alene Press, Idaho State Journal, Idaho Statesman, Lewiston Morning Tribune, Post Register, Spokesman Review, and Times News on April 2, 2008. These publications were timely made and all necessary notice requirements have been met.

DATED this 2nd day of May, 2008.

Larry Weeks
Larry Weeks
Hearing Officer

CERTIFICATE OF HEARING

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IDAPA 58 - DEPARTMENT OF ENVIRONMENTAL QUALITY

58.01.01 - RULES FOR THE CONTROL OF AIR POLLUTION IN IDAHO

DOCKET NO. 58-0101-0801

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 and 39-107, Idaho Code.

MEETING SCHEDULE: Those interested in participating in the negotiated rulemaking process are encouraged to attend the following meeting. For information regarding participation by telephone or scheduling of additional meetings, contact the undersigned. Requests to participate by telephone must be made by February 8, 2008.

February 12, 2008, 9 a.m. to noon
Department of Environmental Quality
Conference Room D
1410 N. Hilton, Boise, Idaho

February 21, 2008, 9 a.m. to noon
Department of Environmental Quality
Conference Room D
1410 N. Hilton, Boise, Idaho

PRELIMINARY DRAFT: A preliminary draft of the rule can be obtained at http://www.deq.idaho.gov/rules/air/58_0101_0801_negotiated.cfm or by contacting Paula Wilson at paula.wilson@deq.idaho.gov, (208)373-0418.

DESCRIPTIVE SUMMARY: Farmers desiring to burn crop residue, Safe Air for Everyone (SAFE), Idaho State Department of Agriculture (ISDA), and the Idaho Department of Environmental Quality (IDEQ) have agreed on various components of a Crop Residue Disposal (CRD) Program. The farmers will introduce legislation during the 2008 session to address the central components of the CRD Program; however, it is necessary to promulgate rules, subject to public input, to address the details and implement the legislation. Due to extremely tight time constraints, the rule must be negotiated in conjunction with the introduction and passage of the legislation.

Farmers desiring to burn crop residue, members of the regulated community who may be subject to Idaho's air quality rules as well as special interest groups (including SAFE), ISDA, tribes, public officials, and members of the public who have an interest in the regulation of air emissions from sources in Idaho may wish to participate in this rulemaking. Upon conclusion of negotiations, DEQ intends to present a rule to the Board of Environmental Quality for temporary adoption in March of 2008. If adopted by the Board, DEQ will then publish the temporary rule and initiate proposed rulemaking.

ASSISTANCE ON TECHNICAL QUESTIONS AND SUBMISSION OF WRITTEN COMMENTS: For assistance on technical questions concerning the negotiated rulemaking, contact Martin Bauer at (208)373-0440, martin.bauer@deq.idaho.gov.

Anyone may submit written comments during this negotiated rulemaking by mail, fax or e-mail at the address below. Written comments on the preliminary draft must be received by February 20, 2008. For information regarding submission of written comments on subsequent drafts of the negotiated rule, and to receive the most recent version of the draft negotiated rule, contact the undersigned.

Dated this 4th day of January, 2008.

Paula J. Wilson
Environmental Quality Section
Attorney General's Office
1410 N. Hilton
Boise, Idaho 83706-1255
(208)373-0418/Fax No. (208)373-0481
paula.wilson@deq.idaho.gov

Docket Number: 58-0101-0801
Effective Date: 4/2/08 (temporary)
Rules Title: Rules for the Control of Air Pollution in Idaho
Agency Contact and Phone: Martin Bauer, 373-0440

Public Notice
Hearings: [ ] Yes [X] No
Locations and Dates: N/A
Written Comment Deadline: N/A

Descriptive Summary:
The purpose of this rulemaking is to implement the provisions of House Bill 557, wherein the 2008 Idaho Legislature approved a program for the open burning of crop residue to be administered by the Idaho Department of Environmental Quality (IDEQ) and repealed the Smoke Management and Crop Residue Disposal Act previously administered by the Idaho State Department of Agriculture (ISDA). Field burning has been prohibited in Idaho since January 2007 as a result of a 9th Circuit Court of Appeals ruling. In December 2007 representatives of farming organizations, Safe Air for Everyone (SAFE), ISDA, and IDEQ agreed on various components of a program for the open burning of crop residue. House Bill 557 and this rule address the central components of that agreement.

This rule is modeled after the Nez Perce smoke management program which prohibits field burning if air quality levels exceed or are expected to exceed 75% of any national ambient air quality standard. Farmers are required to obtain a notice of approval to burn, provide notice of proposed burns, and pay a registration fee based upon the number of acres to be burned. The rule contains provisions to ensure that the public has ready access to this information. In addition, IDEQ is required to conduct ongoing and annual reviews of the program.
Adoption of this temporary rule does not in itself authorize the open burning of crop residue in Idaho. Before burning can resume in Idaho, several actions must take place, including development of a revised State Implementation Plan (SIP) and approval of the SIP by the U.S. Environmental Protection Agency.

Pursuant to Section 67-5226(1)(c), Idaho Code, the Governor has found that temporary adoption of the rule is appropriate in that the rules confers a benefit. Adoption of a temporary rule, along with other required actions, will ensure protection of public health and the environment and will enable farmers to use the tool of burning within a program agreed upon by SAFE, ISDA, IDEQ, and other interested parties.

DEQ recommends that the Board of Environmental Quality adopt the rule, as presented under Docket No. 58-0101-0801, as temporary with an effective date of April 2, 2008.

Negotiated Rule Making: [X] Yes [ ] No
Groups Involved: Sign in sheets attached.

The text of the rule has been drafted based on discussions held and concerns raised during negotiations conducted pursuant to Idaho Code Section 67-5220 and IDAPA 04.11.01.812-815. On February 6, 2008, the Notice of Negotiated Rulemaking was published in the Idaho Administrative Bulletin, Vol. 08-2, page 31, and a preliminary draft rule was made available for public review. Meetings were held on February 12, 15, and 21, 2008. Several members of the public participated in this negotiated rulemaking process by attending the meetings and by submitting written comments.

Cost Impact:
Costs To the Agency: Unknown at this time.
Costs To the Regulated Community: House Bill 557 imposes the necessary fees.

Relevant Statutes: Chapter 1, Title 39, Idaho Code and House Bill 557 (to be codified at Idaho Code § 39-114).

Idaho Code § 39-107D Statement: This rule does not regulate an activity not regulated by the federal government, nor is it broader in scope or more stringent than federal regulations.

Idaho Code § 67-5221(c) Fiscal Impact Statement: The adoption of this rule will have one time initial start-up expenses of $186,700 as well as ongoing program costs estimated to be $419,700 for a total impact of $606,377 to the general fund for FY2009. All future receipts remitted to the state for field burning under this rule shall be transferred to the general fund to help with ongoing program costs. At this time, it is unknown how much funding will come from this dedicated source annually.

Rulemaking and Public Comment Summary - Page 1

Temporary Rule	[ ] Necessary to protect public health, safety or welfare [ ] Compliance with deadlines in amendments to governing law or federal programs [X] Conferring a benefit

Docket Number: 58-0101-0801

Section	Existing Rule Summary	Temporary and/or Proposed Rule Summary	Summary of Rule Changes Based on Public Comment	
600	**Rules for Control of Open Burning.**	Revises reference to other rule section.	N/A	
601	**Fire Permits, Hazardous Materials, and Liability.**	Revises reference to other rule section.	N/A	
602	**Nonpreemption of Other Jurisdictions.**	Revises reference to other rule section.	N/A	
603	**General Restrictions.**	Revises reference to other rule section.	N/A	
606	**Categories of Allowable Burning.**	Revises reference to other rule section.	N/A	
617	**Crop Residue.**	Replaces reference to Idaho State Department of Agriculture's crop residue burning program with reference to DEQ's crop residue burning program.	N/A	
618	**Permit by Rule.**	New section.	N/A	
619	**Registration for Permit by Rule.**	New section.	N/A	
620	**Registration Fee.**	New section.	N/A	
621	**Burn Determination.**	New section.	N/A	
622	**General Provisions.**	New section.	N/A	
623	**Public Notification.**	New section.	N/A	
625	**Visible Emissions.**	Addition of new Subsection 625.05 stating that 625 does not apply to the open burning of crop residue.	N/A	

Name	Affiliation	Phone and FAX and E-MAIL
Dan Redline	DEQ -CDA	
The following participated by telephone:		
Paul Stearns Jeff Lee	PERC	
Wayne Meyer		
Linda Clovis	North Idaho Farmers	
Christine Oestmann	IEOSA Idaho Eastern Oregon Seed Association	
Bob Yuhnke	SAFE	
Andrea Boyer	Nez Perce Tribe	
Kevin Greenleaf	Kootenai Tribe	

MEETING SIGN-IN SHEET

Meeting Title: NEGOTIATED RULEMAKING

Rules for the Control of Air Pollution in Idaho, Docket No. 58-0101-0801

Meeting Date and Location: 2/15/08 – Boise

Name	Affiliation	Phone and FAX and E-MAIL
Paula Wilson	DEQ	paula.wilson@deq.idaho.gov
Phyllis Heitman	DEQ	phyllis.heitman@deq.idaho.gov
KENT LAUER	Idaho FARM Bureau	Klauer@idahofb.org
George Robinson	Idaho State Dept. of Ag	grobinso@agri.idaho.gov
Dar Olberding	Id Grain Producers	dolberding@idahograin.org
Lisa Kronberg	AG	on file
Mike McGown	DEQ	on file

Name	Affiliation	Phone and FAX and E-MAIL
Martin Bauer	DEQ	on-file
RWilkosz	DEQ	"
The following participated by telephone:		
Kevin Greenleaf	Kootenai Tribe	
Jeff Lee Paul Stearns 509/993-4314	Panhandle Environmental Resource Coalition (PERC) (representing grassgrowers, CdA Tribe reservation	+ Rathdrum prairie)
Joe Anderson	Potlatch	
Andrea Boyer Julie Simpson	Nez Perce Tribe	
Linda Clovis	North Idaho Farmers	

Name	Affiliation	Phone and FAX and E-MAIL
Bob Yahnke Patti Gora	SAFE	
Mark Boyle	DEQ	
Dan Redline	DEQ	

MEETING SIGN-IN SHEET

Meeting Title: NEGOTIATED RULEMAKING

Rules for the Control of Air Pollution in Idaho, Docket No. 58-0101-0801

Meeting Date and Location: 2/12/09 – Boise

Name	Affiliation	Phone and FAX and E-MAIL
Paula Wilson	DEQ	paula.wilson@deq.idaho.gov
Phyllis Heitman	DEQ - AG	phyllis.heitman@deq.idaho.gov
Mike McGown	DEQ	michael.mcgown@deq.idaho.gov
Dar Olberding	Id. Grain Producers	dolberding@idahograin.org
Patti Gora	SAFE	pattigora@gmail.com
Bob Yuhnke	SEFE	bob.yuhnke@prodigy.net
M Bauer	DEQ	on file

Name	Affiliation	Phone and FAX and E-MAIL
Toni Hardesty	DEQ	208-373-0240 toni.hardesty@deq.idaho.gov
Lisa Kronberg	H Gsoffice	lisa.kronberg@deq.idaho.gov
KENT LAUER	Id FARM BUREAU	Klauer@idahofb.org 921-2732
George Robinson	ISDA	grobinso@agri.idaho.gov
The following participated by telephone:		
Kevin Greenleaf	Kootenai Tribe	
Mark Boyle	DEQ	
Dan Redline	DEQ	
Robert Wilkosz	DEQ	

Name	Affiliation	Phone and FAX and E-MAIL
Dave Cummings	Nez Perce Tribe	
Mary Jaucy	Nez Perce Tribe	
Johna Bonlafentis	Nez Perce Tribe	

MEETING SIGN-IN SHEET

Meeting Title: NEGOTIATED RULEMAKING

Rules for the Control of Air Pollution in Idaho, Docket No. 58-0101-0801

Meeting Date and Location: 2/21/08 – Boise

Name	Affiliation	Phone and FAX and E-MAIL
Patti Gora	SAFE	208-301-2828 pattigora@gmail.com
[illegible]	DEQ	–
KENT LAUER	Fed FARM Bureau	333-7080 Klauer@idahofb.org
Paula Wilson	DEQ	
George Robinson	ISDA	grobinso@agri.idaho.gov 332-8593
Dar Olberding	IGPA	dolberding@idahograin.org
Wilkosz	DEQ	on file

Name	Affiliation	Phone and FAX and E-MAIL
Joe Anderson	Potlatch	
Michael McGown	DEQ	
Martin Bauer	DEQ	
Lisa Kronberg	DEQ	
Toni Hardesty	DEQ	

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
Toni Hardesty, Director

DECLARATION OF RULEMAKING
BY THE BOARD OF ENVIRONMENTAL QUALITY
ADOPTION OF TEMPORARY RULE
DOCKET NO. 58-0101-0801

Pursuant to the authority granted to the Board of Environmental Quality in Title 39, Chapter 1, Idaho Code, and under the provisions for temporary rule adoption contained in Section 67-5226, Idaho Code, I declare that the following rule sections contained in IDAPA 58.01.01, the Rules for the Control of Air Pollution in Idaho, are hereby adopted as temporary rules.

IDAPA 58.01.01

Sections 600 - 603	ADOPT AS PRESENTED
Section 606	ADOPT AS PRESENTED
Section 617	ADOPT AS PRESENTED
Section 618	ADOPT AS PRESENTED
Section 619	ADOPT AS PRESENTED
Section 620	ADOPT AS PRESENTED
Section 621	ADOPT AS PRESENTED
Section 622	ADOPT AS PRESENTED
Section 623	ADOPT AS PRESENTED
Section 625	ADOPT AS PRESENTED

I hereby certify that this action has been taken in compliance with Title 67, Chapter 52, Idaho Code.

Joan M. Cloonan
Joan Cloonan, Chairman

STATE OF IDAHO)
) ss.
County of Ada)

On this 12th day of March, 2008, before me, the undersigned, a Notary Public in and for said State, personally appeared Joan Cloonan, known to me to be the person whose name is subscribed to the within instrument and acknowledged to me that she 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.

DEBRA CLINE
NOTARY
PUBLIC
STATE OF IDAHO

Debra Cline
Notary Public for Idaho
Residing at: Caldwell, ID
Expires: 7/26/2013

IDAPA 58 - DEPARTMENT OF ENVIRONMENTAL QUALITY

58.01.01 - RULES FOR THE CONTROL OF AIR POLLUTION IN IDAHO

DOCKET NO. 58-0101-0801

NOTICE OF RULEMAKING - TEMPORARY AND PROPOSED RULE

EFFECTIVE DATE: The temporary rule was adopted by the Board of Environmental Quality on March 12, 2008 with an effective date of April 2, 2008.

AUTHORITY: In compliance with Sections 67-5221(1) and 67-5226(1), Idaho Code, notice is hereby given that the Board of Environmental Quality has adopted a temporary rule and the Department of Environmental Quality is commencing proposed rulemaking. This action is authorized by Sections 39-105 and 39-107, Idaho Code, and House Bill 557 (to be codified at Section 39-114, Idaho Code).

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

Friday, May 2, 2008, 3:30 p.m.

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

The hearing site(s) 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 purpose of this rulemaking is to implement the provisions of House Bill 557, wherein the 2008 Idaho Legislature approved a program for the open burning of crop residue to be administered by the Idaho Department of Environmental Quality (IDEQ) and repealed the Smoke Management and Crop Residue Disposal Act previously administered by the Idaho State Department of Agriculture (ISDA). Field burning has been prohibited in Idaho since January 2007 as a result of a 9^{th} Circuit Court of Appeals ruling. In December 2007 representatives of farming organizations, Safe Air for Everyone (SAFE), ISDA, and IDEQ agreed on various components of a program for the open burning of crop residue. House Bill 557 and this rule address the central components of that agreement.

This rule is modeled after the Nez Perce smoke management program which prohibits field burning if air quality levels exceed or are expected to exceed 75% of any national ambient air quality standard. Farmers are required to obtain a notice of approval to burn, provide notice of proposed burns, and pay a registration fee based upon the number of acres to be burned. The rule contains provisions to ensure that the public has ready access to this information. In addition, IDEQ is required to conduct ongoing and annual reviews of the program.

Adoption of this temporary rule does not in itself authorize the open burning of crop residue in Idaho. Before burning can resume in Idaho, several actions must take place, including development of a revised State Implementation Plan (SIP) and approval of the SIP by the U.S. Environmental Protection Agency.

Farmers desiring to burn crop residue, members of the regulated community who may be subject to Idaho's air quality rules as well as special interest groups (including SAFE), ISDA, 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, DEQ intends to present the final proposal to the Board of Environmental Quality in October 2008 for adoption of a pending rule. The pending rule is expected to become final upon adjournment of the 2009 legislative session if adopted by the Board and approved by the Legislature.

TEMPORARY RULE JUSTIFICATION: Pursuant to Section 67-5226(1)(c), Idaho Code, the Governor has found that temporary adoption of the rule is appropriate in that the rules confers a benefit. Adoption of a temporary rule, along with other required actions, will ensure protection of public health and the environment and will enable farmers to use the tool of burning within a program agreed upon by SAFE, ISDA, IDEQ, and other interested parties.

NEGOTIATED RULEMAKING: The text of the rule has been drafted based on discussions held and concerns raised during negotiations conducted pursuant to Section 67-5220, Idaho Code, and IDAPA 04.11.01.812-815. On February 6, 2008, the Notice of Negotiated Rulemaking was published in the Idaho Administrative Bulletin, Vol. 08-2, page 31, and a preliminary draft rule was made available for public review. Meetings were held on February 12, 15, and 21, 2008. Several members of the public participated in this negotiated rulemaking process by attending the meetings and by submitting written comments.

IDAHO CODE SECTION 67-5221(c) FISCAL IMPACT STATEMENT: The adoption of this rule will have one time initial start-up expenses of $186,700 as well as ongoing program costs estimated to be $419,700 for a total impact of $606,377 to the general fund for FY2009. All future receipts remitted to the state for field burning under this rule shall be transferred to the general fund to help with ongoing program costs. At this time, it is unknown how much funding will come from this dedicated source annually.

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

ASSISTANCE ON TECHNICAL QUESTIONS AND SUBMISSION OF WRITTEN COMMENTS: For assistance on questions concerning the negotiated rulemaking, contact Martin Bauer at (208)373-0440, martin.bauer@deq.idaho.gov.

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 May 2, 2008.

DATED this 12th day of March, 2008.

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

THE FOLLOWING IS THE TEXT OF DOCKET NO. 58-0101-0801

600. RULES FOR CONTROL OF OPEN BURNING.
The purpose of Sections 600 through 6~~17~~23 is to reduce the amount of emissions and minimize the impact of open burning to protect human health and the environment from air pollutants resulting from open burning as well as to reduce the visibility impairment in mandatory Class I Federal Areas in accordance with the regional haze long-term strategy referenced at Section 667. ~~(3-30-07)~~(4-2-08)T

601. FIRE PERMITS, HAZARDOUS MATERIALS, AND LIABILITY.
Compliance with the provisions of Sections 600 through 6~~17~~23 does not exempt or excuse any person from complying with applicable laws and ordinances of other jurisdictions responsible for fire control or hazardous material disposal or from liability for damages or injuries which may result from open burning. ~~(3-21-03)~~(4-2-08)T

602. NONPREEMPTION OF OTHER JURISDICTIONS.
The provisions of Sections 600 through 6~~17~~23 are not intended to interfere with the rights of any city, county or other governmental entities or agencies to provide equal or more stringent control of open burning within their respective jurisdictions. ~~(3-21-03)~~(4-2-08)T

603. GENERAL RESTRICTIONS.

01. Categories and Materials. No person shall allow, suffer, cause or permit any open burning operation unless it is a category of open burning set forth in Sections 600 through 6~~17~~23 and the materials burned do not include any of the following: ~~(3-21-03)~~(4-2-08)T

a. Garbage, as defined in Section 006. (3-21-03)

b. Dead animals, animal parts, or animal wastes (feces, feathers, litter, etc.) except as provided in Section 616. (3-21-03)

c. Motor vehicles, parts, or any materials resulting from a salvage operation. (3-21-03)

d. Tires or other rubber materials or products. (3-21-03)

e. Plastics. (3-21-03)

f. Asphalt or composition roofing or any other asphaltic material or product. (3-21-03)

g. Tar, tar paper, waste or heavy petroleum products, or paints. (3-21-03)

h. Lumber or timbers treated with preservatives. (3-21-03)

i. Trade waste, as defined in Section 006, except as specifically allowed under Sections 600 through 6~~17~~23. ~~(3-21-03)~~(4-2-08)T

j. Insulated wire. (3-21-03)

k. Pathogenic wastes. (3-21-03)

l. Hazardous wastes. (5-1-94)

02. Air Pollution Episodes. No person shall allow, suffer, cause or permit any open burning to be initiated during any stage of an air pollution episode declared by the Department in accordance with Sections 550, through 562. (3-21-03)

03. Emergency Authority. In accordance with Title 39, Chapter 1, Idaho Code, the Department has the authority to require immediate abatement of any open burning in cases of emergency requiring immediate action to protect human health or safety. (3-21-03)

604. -- 605. (RESERVED).

606. CATEGORIES OF ALLOWABLE BURNING.
The purpose of Sections 606 through 6~~17~~23 is to establish categories of open burning that are allowed when done according to prescribed conditions. Unless specifically exempted each category in Sections 606 through 6~~17~~23 is subject to all of the provisions of Sections 600 through 605. ~~(3-21-03)~~(4-2-08)T

(BREAK IN CONTINUITY OF SECTIONS)

617. CROP RESIDUE DISPOSAL.
The open burning of crop residue on fields where the crops were grown is an allowable form of open burning if conducted in accordance with ~~*the Smoke Management and Crop Residue Disposal Act, Chapter 48, Title 22*~~ Section 39-114, Idaho Code, and~~*the rules promulgated pursuant thereto, IDAPA 02.06.16, "Crop Residue Disposal Rules."*~~

Sections 618 through 623 of these rules. ~~(3-21-03)~~(4-2-08)T

618. PERMIT BY RULE.

01. General Requirements. All persons shall be deemed to have a permit by rule if they comply with all the provisions of Sections 618 through 623. No person shall conduct an open burn of crop residue without obtaining the applicable permit by rule. 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. (4-2-08)T

02. Forms. The Department shall provide the appropriate forms to complete the permit by rule. Forms may be available at the Department offices or on the Department website. (4-2-08)T

619. REGISTRATION FOR PERMIT BY RULE.

Any person applying to burn crop residue shall annually provide the following registration information to the Department at least thirty (30) days prior to the date the applicant proposes to burn: (4-2-08)T

01. Location of Property. Street address of the property upon which the proposed burning of crop residue will occur or, if there is no street address of the property, the legal description of the property using longitude and latitude coordinates or township, range and section for the Idaho meridian; (4-2-08)T

02. Applicant Information. Name, mailing address, and telephone number of the applicant, and the person who will be responsible for conducting the proposed burning of crop residue and the portable form of communication referenced in Subsection 622.01.c. of this rule; (4-2-08)T

03. Plot Plan. A plot plan showing the location of each proposed crop residue burning area in relation to the property lines and indicating the distances and directions of the nearest residential, public, and commercial properties, and roads; (4-2-08)T

04. Type, Acreage and Fuel Characteristics of Crop Residue Proposed to be Burned. The crop type, area over which burning will be conducted (acres), and other fuel characteristics; (4-2-08)T

05. Preventive Measures. A description of the measures that will be taken to prevent escaped burns or withhold additional material such that the fire burns down, including but not limited to, the availability of water and plowed firebreaks; and (4-2-08)T

06. Date of Burning. The requested date(s) when the proposed crop residue burning would be conducted or the proposed date the field will be available to be burned. (4-2-08)T

620. REGISTRATION FEE.

01. Payment of Fee. The permit by rule registration fee set out in Section 39-114, Idaho Code, shall be paid in its entirety at least seven (7) days prior to the proposed burn date. The permit by rule registration form and fee should be sent to:

Crop Residue Burning Registration Fees
Fiscal Office
Idaho Department of Environmental Quality
1410 N. Hilton, Boise, ID 83706-1255 (4-2-08)T

02. Effect of Payment. Payment of the registration fee does not imply authorization or approval to burn. (4-2-08)T

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 seventy-five percent (75%) of the level of any national ambient air quality standards 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: (4-2-08)T

a. Expected Emissions. Expected emissions from all burns proposed for the same dates; (4-2-08)T

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; (4-2-08)T

c. Moisture Content. Moisture content of the material to be burned; (4-2-08)T

d. Acreage, Crop Type, and Fuel Characteristics. Acreage, crop type, and fuel characteristics to be burned; (4-2-08)T

e. Meteorological Conditions. Meteorological conditions; (4-2-08)T

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; (4-2-08)T

g. Proximity to Public Roadways. Proximity to public roadways; (4-2-08)T

h. Proximity to Airports. Proximity to airports; and (4-2-08)T

i. Other Relevant Factors. Any other factors relevant to preventing exceedances of the air quality concentrations of Section 621. (4-2-08)T

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: (4-2-08)T

a. Conditions for burns near institutions with sensitive populations; (4-2-08)T

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; (4-2-08)T

c. Conditions to ensure the burn does not create a hazard for travel on a public roadway; and (4-2-08)T

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. (4-2-08)T

622. GENERAL PROVISIONS.

01. Burn Provisions. All persons in Idaho intending to dispose of crop residue through burning shall abide by the following provisions: (4-2-08)T

a. Burning Prohibitions. Burning of crop residue shall not be conducted on weekends, federal or state holidays, or after sunset or before sunrise; (4-2-08)T

b. Designated Burn Day. Burning of crop residue shall not be conducted unless the Department has designated that day a burn day and the permittee has received individual approval specifying the conditions under which the burn may be conducted; (4-2-08)T

c. Portable Form of Communication. The person conducting the burning must have on their possession a portable form of communication such as a cellular phone or radio of compatible frequency with the Department in order to receive burn approval information or information that might require measures to withhold additional material such that the fire burns down; (4-2-08)T

d. Location of Field Burning. Open burning of crop residue shall be conducted in the field where it was generated; (4-2-08)T

e. Limitations on Burning. When required by the conditions of the notice of approval to burn, the permittee burning in proximity to institutions with sensitive populations shall immediately extinguish the fire or withhold additional material such that the fire burns down, unless the Department determines that the burn will not have an adverse impact on such institutions; (4-2-08)T

f. Training Session. All persons intending to burn crop residue shall attend a crop residue burning training session provided by the Idaho Department of Environmental Quality or the Idaho State Department of Agriculture and shall attend a crop residue disposal refresher training session every five (5) years; (4-2-08)T

g. Air Stagnation or Degraded Air Quality. All field burning shall be prohibited when the Department issues an air quality forecast and caution, alert, warning or emergency as identified in Section 552 of these rules; (4-2-08)T

h. Allowable Forms of Open Burning. The use of reburn machines, propane flamers, or other portable devices to ignite or reignite a field for the purposes of crop residue burning shall be considered an allowable form of open burning. Tires and other restricted material described in Subsection 603.01, of this rule, are not allowed for ignition of fields; (4-2-08)T

i. Additional Burn Permits. All persons intending to burn crop residue shall obtain any additional applicable permits from federal, state or local fire control authorities prior to receiving approval from the Department to burn crop residue; and (4-2-08)T

j. Reporting to the Department. All persons burning crop residue shall report to the Department the date burning was conducted, the actual number and location of acres burned, and other information as required by the Department. The Department may restrict further burning by a permittee until completed burns are reported. (4-2-08)T

02. **Annual Report**. The Department shall develop an annual report that shall include, at a minimum, an analysis of the causes of each exceedance of a limitation in Section 621 of this rule, if any, and an assessment of the circumstances associated with any reported endangerment to human health associated with a burn. The report shall include any proposed revisions to these rules or the Crop Residue Operating Guide deemed necessary to prevent future exceedances. (4-2-08)T

03. **Advisory Committee**. The Department will assemble an advisory committee consisting of representatives from environmental organizations, farming organizations, health organizations, tribal organizations, the Idaho State Department of Agriculture, the Idaho Department of Environmental Quality, and others to discuss open burning of crop residue issues. (4-2-08)T

623. PUBLIC NOTIFICATION.

01. **Designation of Burn Days**. The Director or his designee shall designate for a given county or airshed within a county burn or no-burn days. (4-2-08)T

02. **Posting on Website**. The Department shall post daily on its website: (4-2-08)T

a. Whether a given day is a burn or no-burn day; (4-2-08)T

b. The location and number of acres permitted to be burned; (4-2-08)T

c. Meteorological conditions and any real time ambient air quality monitoring data; and (4-2-08)T

d. A toll-free number to receive requests for information. (4-2-08)T

03. **E-Mail Update Service**. The Department shall provide an opportunity for interested persons to sign up to receive automatic e-mail updates for information regarding the open burning of crop residue. (4-2-08)T

~~618.~~ 624. **(RESERVED).**

625. VISIBLE EMISSIONS.
A person shall not discharge any air pollutant into the atmosphere from any point of emission for a period or periods aggregating more than three (3) minutes in any sixty (60) minute period which is greater than twenty percent (20%) opacity as determined by this section. (4-5-00)

01. **Exemptions**. The provisions of this section shall not apply to: (4-5-00)

a. Kraft Process Lime Kilns, if operating prior to January 24, 1969; or (5-1-94)

b. Carbon Monoxide Flare Pits on Elemental Phosphorous Furnaces, if operating prior to January 24, 1969; or (5-1-94)

c. Liquid Phosphorous Loading Operations, if operating prior to January 24, 1969; or (5-1-94)

d. Wigwam Burners; or (5-1-94)

e. Kraft Process Recovery Furnaces. (5-1-94)

f. Calcining Operations Utilizing an Electrostatic Precipitator to Control Emissions, if operating prior to January 24, 1969. (5-1-94)

02. **Standards for Exempted Sources**. Except as provided in Section 626, for sources exempted from the provisions of this section, a person shall not discharge into the atmosphere from any point of emission, for any air pollutant for a period or periods aggregating more than three (3) minutes in any sixty (60) minute period which is greater than forty percent (40%) opacity as determined by this section. (4-5-00)

03. **Exception**. The provisions of this section shall not apply when the presence of uncombined water, nitrogen oxides and/or chlorine gas are the only reason(s) for the failure of the emission to comply with the requirements of this rule. (4-5-00)

04. **Test Methods and Procedures**. The appropriate test method under this section shall be EPA Method 9 (contained in 40 CFR Part 60) with the method of calculating opacity exceedances altered as follows: (4-5-00)

a. Opacity evaluations shall be conducted using forms available from the Department or similar forms approved by the Department. (4-5-00)

b. Opacity shall be determined by counting the number of readings in excess of the percent opacity limitation, dividing this number by four (4) (each reading is deemed to represent fifteen (15) seconds) to find the number of minutes in excess of the percent opacity limitation. This method is described in the Procedures Manual for Air Pollution Control, Section II (Evaluation of Visible Emissions Manual), September 1986. (4-5-00)

c. Sources subject to New Source Performance Standards must calculate opacity as detailed above and as specified in 40 CFR Part 60. (4-5-00)

05. **Applicability**. Section 625 shall not apply to the open burning of crop residue. (4-2-08)T

DEQ received no written or oral comments on Rule Docket 58-0101-0801.

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Appendix D: Notice of Public Comment Period

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LEGAL NOTICE
NOTICE OF PUBLIC COMMENT PERIOD
AND PUBLIC HEARING

NOTICE IS HEREBY GIVEN by the Idaho Department of Environmental Quality that a public comment period and public hearing will be held as follows:

TOPIC: State Implementation Plan (SIP) revision pursuant to the requirements of Section 110(l) of the Clean Air Act regarding open burning of crop residue to be administered by the Idaho Department of Environmental Quality (IDEQ). Field burning has been prohibited in Idaho since January 2007 as a result of a 9th Circuit Court of Appeals ruling. In December 2007 representatives of farming organizations, Safe Air for Everyone (SAFE), ISDA, and IDEQ agreed on various components of a program for the open burning of crop residue.

This program prohibits field burning if air quality levels exceed or are expected to exceed 75% of any national ambient air quality standard. Farmers are required to obtain a notice of approval to burn, provide notice of proposed burns, and pay a registration fee based upon the number of acres to be burned. The program contains provisions to ensure that the public has ready access to this information. In addition, IDEQ will conduct ongoing and annual reviews of the program.

The SIP document can be viewed at DEQ's State office, 1410 N. Hilton, Boise, Idaho as well as at regional offices in Boise, Coeur d'Alene, Idaho Falls, Lewiston, Pocatello, and Twin Falls, and on DEQ's Web site at:
http://www.deq.idaho.gov/air/prog_issues/burning/agricultural.cfm.

PUBLIC HEARING:
Date-Time: May 2, 2008, 3:30 p.m. MST
Location: DEQ Office Building, 1410 N. Hilton St., Boise, Idaho

Anyone may submit written comments by mail, fax or e-mail at the address below regarding this SIP. DEQ will consider all written comments received on or before May 2, 2008.

Interested persons wishing to express their views at the hearing on the Crop Residue Disposal issue will be given an opportunity to do so. Questions concerning the hearing and related matters may be directed to:

Mike McGown, Smoke Management Coordinator
DEQ - Air Quality Division
1410 North Hilton
Boise, ID 83706
Phone: 208-373-0575
E-mail: mike.mcgown@deq.idaho.gov
Fax: 208-373-0340

Publish: April 2, 2008

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Appendix E: Comments and Public Hearing Testimony

CERTIFICATE OF HEARING

SUBJECT: Rules for the Control of Air Pollution in Idaho,
Docket No. 58-0101-0801 and Proposed Revision to Idaho SIP

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

HEARING DATE: May 2, 2008

The undersigned designated hearing officer hereby certifies that on the 2nd day of May, 2008, a public hearing was held on the Rules for the Control of Air Pollution in Idaho, Docket No. 58-0101-0801, and the proposed revision to the Idaho SIP at the DEQ conference center in Boise, Idaho. The hearing commenced at 3:30 p.m. and was adjourned at 4 p.m. Members of the public attended the hearing but did not wish to present oral testimony.

Notice of this hearing appeared in the Idaho Administrative Bulletin, as required by Idaho Code Section 67-5221, on April 2, 2008. Notice of this hearing also appeared in the Coeur d'Alene Press, Idaho State Journal, Idaho Statesman, Lewiston Morning Tribune, Post Register, Spokesman Review, and Times News on April 2, 2008. These publications were timely made and all necessary notice requirements have been met.

DATED this 2nd day of May, 2008.

Larry Weeks
Larry Weeks
Hearing Officer

CERTIFICATE OF HEARING

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Comments

No one provided verbal testimony at the public hearing.

AMERICAN LUNG ASSOCIATION.
of Idaho

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Boise, ID 83704
P: (208) 345-5864
F: (208) 345-5896
W: www.lungidaho.org

1-800-LUNG-USA
(1-800-586-4872)

Improving Life, One Breath at a Time

May 1, 2008

Michael McGown
Air Quality Division
DEQ State Office
1410 North Hilton
Boise, ID 83706
Michael.mcgown@deq.idaho.gov

Dear Mr. McGown:

The American Lung Association of Idaho's mission is to assure lung health for the people of Idaho. We engage our communities and support programs to improve lung health for Idahoans living with lung disease as well as all citizens in our state.

The American Lung Association of Idaho recognizes and applauds the Department of Environmental Quality for the thoughtful process used to design and develop a crop residue burning program that engaged stakeholders. Protecting our public health, especially those suffering from asthma, COPD, or other lung diseases, is a primary goal of our association.

To ensure protections for our public health, the American Lung Association of Idaho urges special consideration be given and adequate resources allocated for implementation of the new crop residue burning program to include the following:

- Adequate personnel resources added and trained for effective implementation, compliance, and enforcement.
- Adequate portable monitors available to be used by trained personnel to collect real-time and near field burn data. Priority should be given to data collection in Southern Idaho, near institutions with sensitive populations, and in areas at risk or in non-attainment.
- Clear guidelines and resources to monitor and measure the impact of approved burns to ensure protection for sensitive receptors, those Idahoans who cannot relocate during burn episodes. Compliance standards must be established.
- Clear enforcement guidelines with adequate personnel resources to monitor compliance, violations and fine collection.
- Data collection and analysis should be a critical part of the annual and on-going review process of the program to ensure its effectiveness in protecting public health.

The American Lung Association of Idaho thanks you for opportunity to submit comments on the State Implementation Plan revision and for your efforts to protect public health.

Sincerely,

Kristin Matthews

Kristin Matthews
Executive Director

May 1, 2008

Michael McGown
Air Quality Division
DEQ State Office
1410 N. Hilton
Boise, ID 83706

Dear Mr. McGown:

This letter is sent on behalf of Safe Air For Everyone ("SAFE"). We have several concerns about the new proposed State Implementation Plan ("SIP") that would allow crop residue burning again in the state of Idaho. Some of these concerns focus on how issues that we raised during the rule negotiations, but agreed to defer until after the rule was adopted, will be addressed by the State. We agreed to defer these issues based on a commitment by staff to resolve them before the program is finalized. We request that these issues be resolved and included in the SIP so that we will not have to raise these concerns with EPA.

SAFE is a non-profit foundation and has more than 1,000 members. SAFE was formed in 2001 over concerns by local physicians about the adverse human health effects of grass field burning. This burning produces large smoke plumes and extensive air pollution in Idaho and travels to neighboring states of Washington, Montana, and British Columbia as well. In the past, smoke from grass burning has caused deaths, impaired the health of citizens without pre-existing respiratory conditions, triggered the need for exposed individuals to seek urgent and emergency care, and has prevented children from being able to engage in outdoor sports activities or even attend school. In the case of Marsha Mason, the coroner found that the cause of death was air pollution from field burning. In other cases, death occurred following respiratory crises linked to exposure to air pollution, but where the cause of death was not fully investigated.

This past experience of adverse health impacts resulting from exposure to smoke plumes from grass burning have resulted in the enactment by the legislature of limits on concentrations in the ambient air that are intended to prevent such health threats, and to protect high-risk populations. SAFE was able to support the resumption of agricultural burning only because it believed that these additional protections would provide assurance that the NAAQS would not be exceeded, and the public health would be protected. SAFE's primary concerns about the SIP are related to the lack of explanation about how these protections will be implemented. Without adequate assurance that these protections will be implemented, SAFE has serious doubts that the SIP will be adequate to protect the NAAQS.

After reading the SIP in detail, SAFE has several concerns:

A. The attempt to demonstrate attainment by using monitor data from locations where monitors are currently sited and modeling using CALPUFF is not sufficient for a number of reasons. This demonstration is flawed because –

1) it relies upon the unsubstantiated inference that the existing monitors are located where they will detect the peak concentrations caused by agricultural burning;
2) there is no analysis to investigate whether concentrations were measured during burn smoke episodes known to have been harmful to health, and what inferences might be drawn from those episodes;
3) there is no analysis of data available from independent sources that provide reliable and relevant evidence of PM2.5 concentrations in smoke plumes; and
4) the CALPUFF modeling analysis to provide evidence to support a demonstration of attainment is invalid and not relevant to the showing that must be made because the model provides no useful information for estimating the near-field concentrations of PM2.5 where concentrations of primary PM2.5 emitted from the burn will be greatest..

1) The SIP provides no evidence that the monitors used to provide evidence of attainment are located in proximity to burn sites, or that the wind direction during burns would have caused a monitor to be exposed to the core of the plume where concentrations are highest. Absent a showing by the state that monitors were located in proximity to plumes, no conclusions can be drawn from the monitor data regarding exceedances of the level of the NAAQS.

   The experience of SAFE's members is that most of the FRM monitors are located many miles from known sites where fields are burned routinely, and that one site may be 3-5 miles from known burn sites. The monitored concentrations may provide relevant evidence of the contribution of smoke to downwind locations 3 to 5 miles or more from burn sites, but proving that the NAAQS is attained at these distances from burn locations is not proof that the NAAQS has been attained at locations closer to burn sites.

2) Numerous episodes during the last two decades have provided evidence that smoke has reached concentrations sufficient to cause harm to sensitive

individuals. These episodes provide a strong inference that concentrations have reached levels near to, or greater than, the NAAQS. EPA acknowledged in the 1997 NAAQS rulemaking that individual episodes greater than 75 µg/m3 were likely to cause harm to health. The State should review those episodes to determine if monitored data is available that demonstrate the PM2.5 conditions that occurred during the episodes in or near the locations where victims of the smoke were exposed. If monitored data relevant to assessing exposures are not available, then the inference that monitored data is relevant to demonstrating attainment is not supported by any credible evidence.

3) The state does not consider evidence from independent studies that have been performed to measure exposures to PM2.5 in smoke plumes. The farm worker exposure study by Dr. Sally Liu [attached Exhibit 1] demonstrates that farm hands involved in the ignition and supervision of field burning were exposed to concentrations far above the level of the NAAQS when averaged over 24-hours. Any hourly concentration above 840 µg/m3 that lasts only an hour will exceed the level of the 24-hour NAAQS. The exposures recorded in the Liu study demonstrate that exposures upwind on the fire where field hands are stationed far exceed hourly averages greater than 840 µg/m3. The downwind concentrations in the smoke plume must be 10 to 100 times greater than where the field hands were monitored. This evidence demonstrates that near the point of origin, smoke plumes are likely to far exceed the NAAQS.

For the purpose of the Idaho program, the attainment strategy depends on ensuring that concentrations do not exceed 75% of the level of the NAAQS or the 1-hour emergency standard. The evidence from the field burning exposure studies show that these levels are routinely exceeded upwind of the burn margin. The central question not addressed in the SIP demonstration is how burn decisions will be made to ensure that plume concentrations in the ambient air beyond the field to be burned will meet these tests. The monitoring data used in the SIP demonstration provide no information to show that plumes will comply at those locations, or for the first 3-5 miles downwind of the burn locations. More is needed to show that the program, as implemented, will ensure consistent attainment.

4) The reliance on the CALPUFF modeling provides no evidence relevant to demonstrating attainment in the near-field environment. The SIP revision admits that CALPUFF is not reliable for the purpose of estimating concentrations in the near-field environment. "It should be mentioned that there is an inherent region of uncertainty implicit to CALPUFF results ranging from the source edge to 5 or 7

kilometers from a buoyant source—a distance designated as *nearfield*. For this reason, near-field impacts must be characterized separately and no effort will be made to evaluate near-field impacts with CALPUFF." SIP, Appendix H, p. 291.

The lack of any modeling information for the near-field environment, when combined with the lack of any monitoring information other than the agricultural worker exposure data, demonstrate that the revision, as submitted to EPA for parallel processing, lacks any credible information to show that past burning has not caused or contributed to ambient concentrations in violation of the NAAQS. This also demonstrates the need to develop adequate modeling tools for predicting the impacts of proposed burns to determine the conditions under which burning may be authorized without a significant risk of violating the limitations in the Idaho statute.

B. The assumption relied upon in the SIP demonstration that short-term concentrations can be averaged over 24-hours to determine attainment regardless of the magnitude of the short-term peak concentration and its potential for harm to health is not permissible. Section 303 of the federal CAA establishes authority to take emergency action to prevent "an imminent and substantial endangerment to public health." 42 U.S.C. §7603. The drafters of § 303 explained that this provision was needed to allow for immediate intervention in the case of air pollution emergencies that threatened life and health: "[T]his emergency authority is necessary to provide for immediate, effective action whenever air pollution agents reach levels of concentration that are associated with (1) the production of significant health effects, (2) incapacitating body damage, or (3) irreversible body damage in any significant portion of the general population. The term 'significant portion' is not intended to exclude sensitive elements of society such as asthmatics …." S. Rep. No. 1196, 91st Cong., 2d Sess. 35-36 (1970).

The 1-hour emergency standard adopted by statute is the current limitation adopted to implement this protection required by the federal Act. The state may not demonstrate attainment with the NAAQS if the emergency standard is not complied with. The attainment demonstration must show that the permit program will be implemented to ensure compliance with both limits to comply with federal law.

2). A Demonstration of NAAQS **Compliance must be based upon the adequacy of the criteria selected to approve burns.**

The SIP is not based upon an EPA-approved model to demonstrate the near field impacts of agricultural burning. How the state will determine if a proposed burn will not violate the NAAQS and 1-hour emergency standard is critical to demonstrate the adequacy of the

SIP revision. At least 7 fatalities have occurred in Idaho from agricultural burning activities since 1995. Monitors have not been located in the primary impact zone of the plume to allow a determination whether the plumes from these burns violated the NAAQS. If meteorological and fuel conditions during past burns have caused NAAQS violations, then the SIP needs to include a description of the decision criteria that will be applied by the State to ensure that burns will not be authorized under such conditions in the future. These decision criteria need to be included in the SIP so that EPA will have reliable scientific evidence to show that burns with the potential to violate the NAAQS will not be allowed.

During past burns that created public health threats, such as the events associated with fatalities, it is not been demonstrated that monitors were optimally located to measure peak ground level plume concentrations. The State also cannot ensure that monitors will detect peak plume concentrations during future burns. This is true because the location of the peak concentrations cannot be identified without establishing an array of monitors to measure the gradient of concentrations across a cross-section of the plume, and because it is unlikely that the plume will remain centered on the monitor for enough hours of the burn to allow a maximum a 24-hour concentration to be measured. Therefore, it is critical to identify a model that can adequately replicate expected plume concentrations to identify the conditions that might cause NAAQS violations, and to determine safe distances from a burn so that the state DEQ can make informed decisions protective of public health before deciding to permit burns.

Furthermore, section 2.3.0 states that "crop burning only lasts from 30-90 minutes and raises monitor readings for an hour or two." This look exclusively to monitor data, and not the near-field data, shows a lack of understanding of the profound health effects of high concentrations of pollutants nearer to the field than monitors have measured in the past. In fact, EPA's own research conducted by Dr. Sally Liu of the NW EPA particulate research center shows PM 2.5 exposures up to 6,999 µg of PM 2.5 per hour for farmers who are igniting the fields.

The SIP does not provide a demonstration of how the State will implement the burn approval process to ensure that burns will not cause violations. **Conditions for Burn.** Section 3.3 is a critical element of the SIP because it describes the conditions that must be satisfied before the State will authorize a burn. Some of these criteria are ambiguous, and others refer to an Operating Guide that does not yet exist. The SIP, p. 42, defers many details to the Guide. "The detailed criteria are not given here but will be described in the operational guide." SAFE believes that the SIP cannot be complete for the purpose of demonstrating that the program, when implemented, will ensure attainment of the NAAQS without a full description of these conditions, including those elements of the Conditions that will be addressed in the referenced Operating Guide.

The adequacy of the SIP must be measured against EPA's requirements for an attainment demonstration. EPA requires by rule that a state's attainment SIP "must demonstrate that the measures, rules, and regulations contained in it are adequate to provide for the timely attainment and maintenance of the national standard that it implements." 40 C.F.R. §51.112(a).

EPA's rules also require SIPs to satisfy the Act's requirements for "a program to provide for the enforcement of the measures described [in the SIP]," 42 U.S.C. §7410(a)(2)(C), and for "enforceable" measures, *id.* §7502(c)(6), by submitting "a control strategy. . . ." 40 C.F.R. §51.111(a). EPA define the "control strategy" required by §51.111 to include measures that "achieve the aggregate reduction of emissions necessary for attainment." *Id.* §51.100(n). Each of these regulatory provisions requires that the control measures submitted in the SIP must be adequate to achieve the emissions reductions required for attainment.

The ambiguities in the SIP omit important information that is relevant to determine whether the measures in the SIP will provide for attainment of the NAAQS. Ambiguities that must be eliminated or resolved by the SIP demonstration include –

a) The narrative, p. 42, describes the need to account for background smoke from other burns including wildfires and field burning in tribal areas (p. 50) and upwind states. Not mentioned, but also relevant here are prescribed burns on public lands and other burns, including, but not limited to, burns such as landfill burns that occur throughout the state. The SIP, p. 50, describes the fact that wildfires occurred concurrent with the burn season in 2005, and implied that the PM2.5 concentrations from wildfire smoke was significant. At p. 63, the SIP acknowledges that managers must be able to account for smoke from wildfire and upwind states in order to ensure compliance. The need to account for the cumulative impacts of smoke from interstate and in-state tribal and public lands sources, as well as multiple proposed agricultural burns that require permission to ignite under the rule, is an important factor in determining whether a burn will cause or contribute to NAAQS violations, exceedances of the statutory limits or protections for sensitive populations in the rule. But the SIP documentation does not describe how these potential sources of smoke not under DEQ control will be identified and accounted for before a burn is approved. The SIP is inadequate to demonstrate that the NAAQS will be protected because it lacks any procedure for coordinating with upwind states, tribes or public land agencies regarding their burn decisions, and fails to establish any parameters for deciding when actual or expected smoke from upwind sources will consume the capacity of the atmosphere to accommodate additional smoke without causing NAAQS violations.

b) The emissions inventories for pollutants that contribute to PM2.5 and ozone are presented as annual inventories, but for episodic sources that emit only occasionally, these annual inventories are entirely irrelevant to determining whether emissions on any given day will cause the 24-hour or 8-hour NAAQS to be exceeded. The relevant inventory for an attainment demonstration is the inventory for days when burns will occur. Since inventories of actual emissions cannot be known, some estimation must be made of likely daily inventories, and what the maximum permissible emissions for a burn day would be so that there is some benchmark against which the expected cumulative emissions (including interstate transport, prescribed burns on public lands and all proposed agricultural burns) for a day may be compared. But the SIP contains neither an estimation of the maximum permissible emissions that may be consistent with attainment under meteorological conditions known to be associated with exceedances, nor any procedure for determining what the maximum permissible loadings would be under the expected meteorological conditions of a proposed burn day. In the absence of either a limit on total daily loadings based on historical meteorology, or a procedure for determining such limits for the expected meteorology of a proposed burn day, there is no demonstration that the SIP will provide for attainment as required by law, and no basis for EPA to approve the SIP.

c) Modeling analysis in the SIP averages plume concentrations across grid cells that do not account for actual plume concentrations. This may be appropriate for determining concentrations downwind at distances where the CALPUFF model is considered reliable, but not in the near-field environment.

d)

The new rules mandate protection for "sensitive receptors." Those are places with citizens who can't flee burns that go awry, and whose health is already at risk due to age or medical condition. They include hospitals, schools in session, and residential care facilities. The new proposed smoke management rule (IDAPA 58.01.01 Section 617-623) states that DEQ cannot approve a burn where a smoke plume will have any impact on these receptors. The State needs to explain how this provision of the rule will be implemented since there are neither enough monitors nor state personnel to measure impact on these protected zones, and another mechanism must be applied to ensure compliance. If the state does not explain how it will ensure compliance, then EPA has no basis for ensuring that compliance with the new rule, and hence the SIP and NAAQS will be assured.

D) **Future Monitoring**. Section 2.5.2 describes seven continuous monitors capable of reporting real-time concentrations during burning operations. The SIP explains that these are not FRM monitors, but will be collocated with an FRM monitor to establish correlations. The section states that data from these monitors will not be used to compare with the NAAQS.

During the negotiation, DEQ staff explained that these monitors would be portable and would be deployed and operated to measure PM2.5 concentrations in sensitive areas. During the discussion of how the rule provisions would be applied to protect institutions that serve sensitive populations, it was explained that data from these monitors would be used to shut down burns under conditions that threatened to exceed the statutory limit on PM2.5 (75% of NAAQS). The SIP does not explicitly provide for use of these monitor outputs to enforce the state's statutory standard, or describe the use of the monitor outputs for the purpose of enforcing the operating limitations defined in the rule. These uses of the data must be explicitly described in the SIP to ensure that there is no inference that because the data will not be used to determine federal NAAQS violations that it also may not be used to enforce the State's statutory and regulatory air quality limits and protections for sensitive populations.

E.) **Enforcement**: Although DEQ has the authority to investigate violations and assess penalties, no clear and consistent policy has yet to be defined to address illegal agricultural burning. One incident described by a DEQ airshed coordinator *(This was Melissa Gibbs of the Pocatello Office*) detailed a wheat farmer in Southern Idaho who tilled a firebreak around his land, and lit it on fire. When the local sheriff investigated the burn, and DEQ investigated to confirm the circumstances of the burn, the farmer was given no penalty whatsoever, even though the evidence was clear and convincing. He stated that he only "intended" to burn his fenceline, a statement contradicted by the collection of evidence. The lack of meaningful enforcement calls into question the enforcement capability and intentions of the department. The DEQ is aware that illegal burning is taking place as of April, and has issued a press release to educate growers. However, much more needs to be done and included in the SIP to assure that compliance is enforced and meaningful, as well as consistent throughout the state. Rather than giving Southern Idaho growers a "pass" because the program is new and resistance to the burn program high, enforcement capability needs to be stepped up, staffed adequately (some air offices supervise numerous counties and don't have enough staff to perform enforcement tasks), and there needs to be a consistent enforcement scheme and penalties throughout the state.

F.) We believe the state made a questionable estimate of Conservation Reserve Program ("CRP") lands, underestimating significantly the amount of acres in CRP designation. This is important because the Crop Residue disposal program allows for burning of CRP lands, and the state may have underestimated the acres which would influence emissions inventories and potential burn sources for future emissions. DEQ estimates only 200,000 acres of Conservation Reserve Program lands, but I found evidence it may be much higher, at 800,000 acres. That land can be burned, too and should be accurate. NRCS estimates can be found at (http://www.id.nrcs.usda.gov/technical/nri/sig_find.html have put CRP lands at about 800,000 acres in Idaho. (starting from 1997) At this link from the Farm Services Agency, http://content.fsa.usda.gov/crpstorpt/r1sumyr/id.htm we can see the total of contracts for a 10 year period in Idaho cover acres of 787,591.

G. **The SIP is based on North Idaho data only**. (SECTION 1.7, PAGE 27)
No one knows how much burning, or where burning occurs in Southern. Idaho. The SIP relies on an inference that based on North Idaho numbers, South Idaho should not violate the new laws and rules. But this is an assumption that cannot be justified given the lack of data. Without further investigation, we do not believe this leap in assumptions is appropriate. As we have learned from smoke management programs in the past, understanding local conditions is important to ensure that the program will protect public health. The dearth of information on the amount, types, and execution of crop burns in Southern Idaho does not give the state adequate tools to inventory such burns nor make a reasonable plan to assure that the SIP will protect public health.

Respectfully submitted,

Patti Gora

Cc: Robert Yuhnke

KEN BARBER
3716 N. 2544 E.
Twin Falls, ID. 83301-1002

RECEIVED

APR 25 2008

DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE A Q PROGRAM

April 23, 2008

Mike McGown
1410 N Hilton
Boise, ID 83706

RE: <u>BURNING ISSUE</u>

Mr. McGown,

Field burning??!! I can't believe this practice is even being considered, has anyone looked at a calendar, its 2008, not 1908. As explained to me by DEQ's own; Stephen VanZant of the Twin Falls office, field burning has no agricultural value; it's just an easy way for a farmer to clear a field; *which will be disked under anyway!*

On April 17th I drove from Twin Falls to Boise, on the way there and back the state was up in smoke; ditch burning. I imagine from a view from space the entire state would look like it was on fire!! I had a sinus head ache for 2 days. So much for Global Warming. I think ditch burning is quite enough!

Smoke makes people sick; you know it as do millions of people. The American Lung Association explains it on their website. For field burning to be allowed would be a crime to our citizens, putting the young, the elderly and the sick at risk. Let's keep Idaho in the 21st century, NO FIELD BURNING!!

Ken Barber
Twin Falls, ID.

Barber, Ken - Public Comment SIP.txt

-----Original Message-----
From: PublicComment@deq.idaho.gov [mailto:PublicComment@deq.idaho.gov]
Sent: Wednesday, April 23, 2008 10:13 AM
To: Michael McGown
Subject: Public Comment

You have received a public comment on:
DEQ seeks comment on proposed revision to air quality plan to implement new crop residue burning program; public hearing scheduled for May 2 in Boise

http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2236#comments

Name: Ken Barber
Email Address: knllcintf@yahoo.com
Affiliation: resident
Comments: Field burning??? !!! I can't believe this practice is even being considered; has anyone looked at a calendar, it's 2008 not 1908.. As explained to me by DEQ;s own Stephen VanZant of the Twin Falls Office, field burning has no agricultural value, it's just an easy way for a farmer to clear a field; which will be disked under anyway!
Smoke makes people sick, you know it as do millions of people. The American Lung Association explains it on the web. For field burning to be allowed would be a crime to our citizens; putting the young, the elderly and the sick at risk. Let's keep Idaho in the 21st century. NO FIELD BURNING!!
On April 17th I drove to Boise from Twin Falls, on the way up and back the state was up in smoke; ditch burning. I imagine from a view from space the entire state would look like it was on fire. So much for global warming. I think ditch burning is quite enough.
Ken Barber
Twin Falls

Page 1

Call, Judy - Public Comment SIP.txt

-----Original Message-----
From: PublicComment@deq.idaho.gov [mailto:PublicComment@deq.idaho.gov]
Sent: Thursday, April 17, 2008 1:51 PM
To: Michael McGown
Subject: Public Comment

You have received a public comment on:
DEQ seeks comment on proposed revision to air quality plan to implement new crop residue burning program; public hearing scheduled for May 2 in Boise

http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2236#comments

Name: Judy Call
Email Address: judycall@pianotuner.myrf.net
Affiliation: Just Me
Comments: I would hope that you are honestly concerned about the public health and not just the cheapest method of clearing fields. Too many of us suffer respiratory illness throughout the summer months just from the range fires that rage throughout the state. Would your new regulations only increase the possibility of more suffering? I am concerned about this because I hate being sick and there is really no
place to go to escape. Thanks for listening.

Page 1

From: North Idaho Farmers [mailto:info@northidahofarmers.org]
Sent: Thursday, May 01, 2008 12:05 AM
To: Michael McGown
Subject: support for the proposed revision to Idaho's air quality plan

On behalf of the farmers of North Idaho, I respectfully submit this letter regarding support for the proposed revision to Idaho's air quality plan (State Implementation Plan (SIP)).

Linda Clovis, representing the Farmers of North Idaho

P.E.R.C.
Panhandle Environmental Resource Coalition Inc.
1801 N. Government Way
Coeur d'Alene, Idaho 83814

April 30, 2008

Michael McGown
Air Quality Division
DEQ State Office
1410 N. Hilton
Boise, ID 83706
Email: michael.mcgown@deq.idaho.gov

Dear Mr. McGown,
On behalf of the farmers of North Idaho, I respectfully submit this letter regarding support for the proposed revision to Idaho's air quality plan (State Implementation Plan (SIP)).
The work done this past year by the State of Idaho through negotiations of various entities (representatives of DEQ, Idaho State Department of Agriculture (ISDA), Safe Air for Everyone (SAFE), the Idaho Farm Bureau, grain and grass growers, Tribes, and others) proves that a balance between public welfare and sustainability for our family farms can occur.
The development to this statewide revision of terms is acceptable and sensible for all involved.
We are pleased that all involved in negotiations have approved this plan which will allow farmers to practice field burning as a tool to eliminate crop residue. By adapting rules that have proven successful in North Idaho and other locations, all family farms will be protected for many years to come.
Population growth has irrevocably changed Idaho, and farmers are willing implement the new SIP in order to support concerns.

It should be noted that farmers do have support by their fellow citizens, and in particular, a large majority of local citizens support the grass farmers. A University of Idaho study on public perception of air quality/grass field burning discovered 85% stated overall air quality as "good" or "very good." 60% percent stated that if they were asked to vote on smoke management issues, they'd allow burning to occur. Only 10% stated they would want to put a total ban on burning. Sixty-three (63)% responded that the news media does not report all sides of the bluegrass burning issue fairly.

As unpleasant as the smoke may look, studies have proven that 90% of the smoke is water vapor.

We understand the new program is designed to be more protective of public health. We understand the concerns but also wish to acknowledge for public record that not a single peer-reviewed report has ever demonstrated that a causal connection between exposure to smoke or particulates from the burning of bluegrass and adverse public health effects exists. For example, not a single physician, including the Moon plaintiffs' doctors (recent lawsuit that the insurance companies made the farmers settle out of court) has ever identified the amount of particulates or concentration of exposure that any person was exposed to, at any time. Persons who were purportedly sick enough to file a class action lawsuit were not so ill to justify a visit to the emergency room or even to their physician. Of course, these persons were admittedly ill for a wide variety of other reasons, including years of smoking cigarettes and cigars.

A 2004 Washington State University study showed no correlation between the burns and asthma problems. The summary released by WSU researchers states that 8 weeks of exposure to smoke from field burns in 33 asthmatic adults showed few health effects. Stated the scientist: "We did a lot of particle analysis 25 years ago and most of it is within safe levels. Farmers breathe in more smoke than anybody and so far there haven't been any adverse effects on their health that we're aware of."

It is good to know that those who developed the revision did identify that when field burning occurs in a responsible manner it does play an important role to reduce water pollution caused by water erosion, reduces seasonal wind-blown particulates, reduces each farmer's use of and reliance on fossil fuels, and reduces the need for chemical fertilization. Field burning as a tool also allows farmers to deal with excess residue while simultaneously returning essential nutrients and elements back to the soil.

In North Idaho, growing Kentucky bluegrass is essential to protection of the aquifer, which serves as our drinking water source. Bluegrass farming also serves to prevent erosion and pollution. This reduction in erosion keeps our streams and lakes clean for fish, wildlife and recreation.
For our part, we will continue to work with everyone to limit smoke impacts in the area and abide by the new SIP once it is implemented. Leading scientists from the University of Idaho continue to seek alternatives to field burning and we are supportive of their research, offering acres for test plots and attending research sessions. We will continue to do our part to reducing emissions and look forward to continuing our cooperative efforts with EPA, ISDA, Idaho reservations and the public-at-large in the future.
We respectfully request that you support this new revision of the SIP. With Idaho DEQ's approval and the U.S. Environmental Protection Agency's approval, we fully support the allowance of field burning to resume in late-summer or early-fall.
Once again, thank you for all the hard work that went into a suitable agreement and thank you for the opportunity to allow us to submit this letter.

Sincerely,

Linda Clovis

Linda Clovis
Representing the Farmers of North Idaho

Davis, Thad - Public Comment SIP.txt

-----Original Message-----
From: PublicComment@deq.idaho.gov [mailto:PublicComment@deq.idaho.gov]
Sent: Friday, April 18, 2008 1:49 PM
To: Michael McGown
Subject: Public Comment

You have received a public comment on:
DEQ seeks comment on proposed revision to air quality plan to implement new crop residue burning program; public hearing scheduled for May 2 in Boise

http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2236#comments

Name: Thad Davis
Email Address: aristata@tds.net
Affiliation:
Comments: I moved to north central Idaho, rural Latah Co., nearly three years ago. I am disabled due to the respiratory disease COPD. The first time I saw a local pulmonologist I was told this area was not good for me due to the farming activity and air pollution it causes. (But I like it here and will not move.)

My dad was a farmer and grew wheat and other crops in Kansas, so I do not have a huge issue with the activities involved in growing field crops. (But I would never live directly next to farmland.)

However, I believe any sort of field burning is poor farming practice -- in the long run it will diminish soil fertility, and following every burn, every year, all that soot and particulate matter is going to settle out somewhere nearby, more than likely in someone's breathing "space."

I know what it's like to have to gasp for a lungful of air, something I wouldn't wish on anybody. Do the citizens of Idaho absolutely have to put up with this?

What type of monitoring has the DEQ done and will do in the future? How can you assure that the most vulnerable population, children, other people like me, etc., will not be adversely affected by field burning?

I hope that state officials who read this can adequately answer my concerns before field burning resumes.

Thank you.

Page 1

DeArmond, Don - Public Comment SIP.txt

-----Original Message-----
From: PublicComment@deq.idaho.gov [mailto:PublicComment@deq.idaho.gov]
Sent: Saturday, April 19, 2008 8:28 AM
To: Michael McGown
Subject: Public Comment

You have received a public comment on:
DEQ seeks comment on proposed revision to air quality plan to implement new crop residue burning program; public hearing scheduled for May 2 in Boise

http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2236#comments

Name: Don DeArmond /DeArmond Ranch Co.
Email Address: cpmud@yahoo.com
Affiliation: Farmer
Comments: The issue of residue management with the option of burning is critical for my farming operation. The past two years has been very costly and has resulted in reduced yeilds.
I would hope that this issue while not perfect, would be implemented as soon as possible.
My main crops are blue grass & wheat, both need the option of burning as a good managment tool.
Sincerley, Don DeArmond

Page 1

From: Louis.H.Dersch@aphis.usda.gov [mailto:Louis.H.Dersch@aphis.usda.gov]
Sent: Friday, April 18, 2008 12:06 PM
To: Michael McGown
Subject: comment on crop burning rules

Mr. McGown:

How can a fee offset any amount of air pollution, or compensate someone with respiratory health problems, or make things better for someone who can't see the mountains any more? The farmers' claims af all the benefits of burning are just plain wrong. Any plant pathologist will tell you that a field doesn't burn hot enough long enough to kill fungus spores. Burning does cause a transient spike in either potassium or phosphorus, I forgot which one. But nitrogen and the other (potassium or phosphorus) literally go up in smoke. Why else do fertilizer companies defend farmers' right to burn? I heard on the radio that most of the smoke you see is water vapor. How much water is left in grain stubble that has been cooked in the Magic Valley's late summer conditions? However much there is, does anybody really believe that in this heat and low humidity, water vapor would be visible for more than a few seconds? I've seen smoke plumes that go to the horizon.

Granted, there is higher Kentucky bluegrass seed production in a burned field. Maybe we should switch to another species??? Or consider zeriscaping???

My opinion is that all field burning, ditch burning, burning on farms and in town, and burn barrels should be permanently banned. Then the ban needs to be enforced with heavy fines. All those practices are outmoded holdouts from the past. Our air quality problems are not caused by La Nina or inversions or smog from LA or volcanic activity or anything else. People create the problems here and we can stop the problems here.

Thank you for considering this.

Lou Dersch, Twin Falls

From: Michael McGown
Sent: Monday, April 21, 2008 11:29 AM
To: Stephen Vanzandt; Phyllis Heitman
Subject: FW: This is why all burning should be banned.

Attachments: P4170022.JPG; Copy of P4170016.JPG; Copy of P4170017.JPG; Copy of P4170018.JPG; Copy of P4170019.JPG; Copy of P4170020.JPG; P4170016.JPG; P4170018.JPG; P4170019.JPG
FYI

From: Louis.H.Dersch@aphis.usda.gov [mailto:Louis.H.Dersch@aphis.usda.gov]
Sent: Monday, April 21, 2008 10:56 AM
To: Michael McGown
Subject: This is why all burning should be banned.

Mr. McGown:

Here's a follow-up to my previous comments to you about DEQ's new burning proposals. This was last week in the city limits of Twin Falls, and your nose would tell you that this was not a business burning a couple scrap pallets. The really galling thing about this is that the transfer station for the landfill is about 300 yards from the fire. Something like this should have a stiff fine, not a warning letter.

Lou Dersch

P.S. - I'm sorry, I must have sent one twice.

Eichner, Tim - Public Comment SIP.txt

-----Original Message-----
From: PublicComment@deq.idaho.gov [mailto:PublicComment@deq.idaho.gov]
Sent: Friday, April 18, 2008 12:45 PM
To: Michael McGown
Subject: Public Comment

You have received a public comment on:
DEQ seeks comment on proposed revision to air quality plan to implement new crop residue burning program; public hearing scheduled for May 2 in Boise

http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2236#comments

Name: Tim R. Eichner
Email Address: teichner@cpcinternet.com
Affiliation: Grower-Grass Producer
Comments: Attn: Micheal Mcgown

My comment is mainly concerning the timetable for the burn season to begin.Information and news leads me to believe that the burn season may not begin until September. I urge you to please focus on a beginning burn season of JULY 15.I am a bromegrass grower and in the past 30 years normal burn time for us is July 20-Sept10. If possible please complete the hearing and rules process quickly so the burn season can begin in JULY!

Thanks   Tim R. Eichner H 208-289-3181
c 208-883-6609

Page 1

Emerson, James FW Public Comment SIP.txt

-----Original Message-----
From: PublicComment@deq.idaho.gov [mailto:PublicComment@deq.idaho.gov]
Sent: Friday, May 02, 2008 7:49 AM
To: Michael McGown
Subject: Public Comment

You have received a public comment on:
DEQ seeks comment on proposed revision to air quality plan to implement new crop residue burning program; public hearing scheduled for May 2 in Boise

http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2236#comments

Name: James A. "Sandy" Emerson
Email Address: sjemerson@c2bandwidth.net
Affiliation: Citizen - Coeur d'Alene
Comments: I strongly support the grassgrowing on the Rathdrum Prairie and surrounding areas to preserve open space and park-like fields in the North Idaho landscape, as it protects the aquifer and watersheds from increasing runoff and possible contamination and/or pollution and sedimentation due to over development in sensitive areas. The shortened burning season at the beginning of fall is a small price to pay for the ecological and environmental benefits received and enjoyed by the entire community. New growth and new residents should not be able to upset a long-standing practice seen as beneficial to the area in general.
Thank you.
Sandy Emerson

Page 1

Frei, Ron - Public Comment SIP.txt

-----Original Message-----
From: PublicComment@deq.idaho.gov [mailto:PublicComment@deq.idaho.gov]
Sent: Thursday, April 17, 2008 2:16 PM
To: Michael McGown
Subject: Public Comment

You have received a public comment on:
DEQ seeks comment on proposed revision to air quality plan to implement new crop residue burning program; public hearing scheduled for May 2 in Boise

http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2236#comments

Name: Ron Frei
Email Address: franch@connectwireless.us
Affiliation: farmer & Rancher
Comments: Concerning the residue burning I hope every effort will be made to burn by the first of September. Any later could burn off new growth or prevent a clean burn. The shock stimulus to the grass crowns and disease control will be severely hampered.

Page 1

Mihalka, Mike - Public Comment SIP.txt

-----Original Message-----
From: PublicComment@deq.idaho.gov [mailto:PublicComment@deq.idaho.gov]
Sent: Tuesday, April 22, 2008 10:05 AM
To: Michael McGown
Subject: Public Comment

You have received a public comment on:
DEQ seeks comment on proposed revision to air quality plan to implement new crop residue burning program; public hearing scheduled for May 2 in Boise

http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2236#comments

Name: Mike Mihalka
Email Address: mjmihalka@micron.com
Affiliation:
Comments: The burn ban needs to remain in effect. It took many years to enact the ban, lets not go backwards. Why should an industry be able to destroy the quality of life, of some many Idahoans? When burning is in effect, regardless of location, it is almost impossible to avoid the soot, smell, negative respiratory and aesthetic effects.

There is currently a global food crisis, due to the ethanol industry's use of corn/grain products. However, ethanol can be produced from the cellulose of crop residue as well. Instead of this resource going up in smoke and creating a negative environmental impact, we should be exploring making use of this wasted crop residue, by employing ethanol technology currently available.

How many times have when seen an industry resist change, only to see new companies emerge within the industry and adapt successfully. Yes, the burn ban will effect farmers who resist change and refuse to take advantage of viable alternatives for the way they conduct business. Yes, it takes an initial monetary sacrifice, but the long term social and economic returns on the investment warrant it.

We need to continue the burn ban and move forward - build a ethanol plant up north that can use the agricultural wastes and lets not worry about those unwilling to change at the expense of the public and the environment.

Thank you.

Newell, Betty - Public Comment SIP.txt

-----Original Message-----
From: PublicComment@deq.idaho.gov [mailto:PublicComment@deq.idaho.gov]
Sent: Sunday, April 06, 2008 6:26 PM
To: Michael McGown
Subject: Public Comment

You have received a public comment on:
DEQ seeks comment on proposed revision to air quality plan to implement new crop residue burning program; public hearing scheduled for May 2 in Boise

http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2236#comments

Name: Betty Newell
Email Address: bettynewell@hotmail.com
Affiliation: Ada County Resident
Comments: All people are affected by second hand smoke. We all know how dangerous it is to inhale second hand smoke.
Most people with allergies and/or asthma are affected deeply by smoke of all kinds.
Please help us rid our air of all sources of smoke. Ditch burning, field burning, brush burning, and wood burning.
Our Health Depends on it.
Thank You

Page 1

Newell, Lincoln - Public Comment SIP.txt

-----Original Message-----
From: PublicComment@deq.idaho.gov [mailto:PublicComment@deq.idaho.gov]
Sent: Sunday, April 06, 2008 6:16 PM
To: Michael McGown
Subject: Public Comment

You have received a public comment on:
DEQ seeks comment on proposed revision to air quality plan to implement new crop residue burning program; public hearing scheduled for May 2 in Boise

http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2236#comments

Name: Lincoln Newell
Email Address: lincoln_newell@hotmail.com
Affiliation: Resident
Comments: Agricultural Burning emits large amounts of Carbon into our Air.

Carbon emissions are responsible for Global Warming.

Alternatives are available.

We would not allow anyone to dump garbage into our rivers.

We should not allow anyone to dump garbage into our air!!

Thank You

Page 1

Newell, Lincoln (2) - Public Comment SIP.txt

-----Original Message-----
From: PublicComment@deq.idaho.gov [mailto:PublicComment@deq.idaho.gov]
Sent: Sunday, April 06, 2008 6:05 PM
To: Michael McGown
Subject: Public Comment

You have received a public comment on:
DEQ seeks comment on proposed revision to air quality plan to implement new crop residue burning program; public hearing scheduled for May 2 in Boise

http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2236#comments

Name: Lincoln Newell
Email Address: lincoln_newell@hotmail.com
Affiliation: Air Breather in Idaho
Comments: Carbon Emissions are responsible for Global Warming. With Global Warming a very serious and immediate issue for all of us here on Earth it is absolutely critical that we STOP BURNING!!

Any burning causes large amounts of Carbon Emissions. All Burning of wood for heating our homes, agricultural burning of fields and ditch banks, and any other burning that Can Be Stopped needs to STOP!!

We have alternatives other than burning that do not emit large amounts of carbon into the air.

Thank you

Page 1

From: rotorpaul@aol.com [mailto:rotorpaul@aol.com]
Sent: Saturday, April 12, 2008 11:27 AM
To: Michael McGown
Cc: linda@northidahofarmers.org
Subject: Revised Field Burning SIP

To Whom it May Concern:

Thank you for providing me the opportunity to write in support of the recently revised SIP dealing with field burning in Idaho. As a farmer in Idaho, I am very aware of the importance of maintaining field burning in this state. I am also aware of the contentious nature of this practice. My thanks go out to all who worked to achieve such a rare agreement. One that was supported by regulatory agencies, agricultural interests and the environmental and health interests in the state. The adoption of this new SIP will allow me to continue my farming activities, contribute to the state's economy and still meet the needs of Idaho's other citizens.

Sincerely,
Paul Stearns

From: barb schultz [mailto:bschultz@imbris.net]
Sent: Thursday, April 24, 2008 9:18 AM
To: Michael McGown
Subject: Crop residue burning program

Dear Mr. McGown,

As farmers in north Idaho we would like to encourage the Idaho DEQ to approve the proposed plan for new crop residue burning program. This plan, agreed to by farmers and other clean-air advocates, allows us to deal with excess residue and returns essential nutrients and elements back into our soil. Burning is a very necessary tool for our operation and we thank you for supporting for this plan.

Sincerely,

John and Barbara Schultz
25512 S Cave Bay Road
Worley, Idaho 83867

Walters Public Comment SIP.txt

From: Michael McGown
Sent: Thursday, May 01, 2008 9:40 AM
To: Phyllis Heitman
Subject: FW: Public Comment

-----Original Message-----
From: PublicComment@deq.idaho.gov [mailto:PublicComment@deq.idaho.gov]
Sent: Wednesday, April 30, 2008 7:49 PM
To: Michael McGown
Subject: Public Comment

You have received a public comment on:
DEQ seeks comment on proposed revision to air quality plan to implement new crop residue burning program; public hearing scheduled for May 2 in Boise

http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2236#comments

Name: Steve Walters
Email Address: jjmwalters@aol.com
Affiliation: Farmer
Comments: I am for allowing fields to be burned. If burning is not allowed the cost of getting rid of the residue is subtantial.

Page 1

-----Original Message-----
From: PublicComment@deq.idaho.gov [mailto:PublicComment@deq.idaho.gov]
Sent: Wednesday, April 30, 2008 7:49 PM
To: Michael McGown
Subject: Public Comment

You have received a public comment on:
DEQ seeks comment on proposed revision to air quality plan to implement new crop residue burning program; public hearing scheduled for May 2 in Boise
http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=2236#comments

Name: Steve Walters
Email Address: jjmwalters@aol.com
Affiliation: Farmer
Comments: I am for allowing fields to be burned. If burning is not allowed the cost of getting rid of the residue is subtantial.

April 23, 2008

Melinda F. Wiebush
139 Sill Creek Road
Clearwater, Idaho 83552

Michael McGown
Air Quality Division
DEQ State Office
1410 N. Hilton
Boise, Idaho 83706

RECEIVED
APR 28 2008
DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE A Q PROGRAM

Mr. McGown,

Thank you for the opportunity to comment on the proposed revision to the State Implementation Plan to implement a new crop residue burning program in Idaho.

I have two comments to make. First, we need to limit the cumulative effects of smoke generated by fire of all sorts. Secondly we need more and better data about where the smoke from field burning actually goes.

In 2005 here in Idaho County we were burdened by smoke from the Blackerby Fire and China Ten Fire. One day we were under a smoke advisory from the wildfires and the next day field burning and controlled burning began. The *cumulative number days* of smoke was unhealthy, burdensome and depressing. I would like to see the allowable number of smoky days for public agencies, farmers and wildfires be combined. That is to say, only a limited number of days would be allowed to be smoky. The number of days of discretionary burning (field burning, controlled forest burns) by private and public agencies may have to be limited when we have had too many days of wildfire smoke.

Second, my feeling is that we may not have enough data describing the behavior of smoke and how many people are effected by it. It has been my experience that the smoke from the field burning on the Camas Prairie in Idaho County does not disperse into the upper atmosphere but settles into the valley of the South Fork of the Clearwater River and other drainages east of Grangeville. There are times when I have had grass-shaped pieces of ash fall on my house and property in Clearwater and have had landmarks obscured by the smoke from the Camas Prairie which is approximately 10 miles east of me. I believe *we need better data on smoke behavior* and I invite you to put a monitoring station on my property.

I realize my comments may not directly address the issues in SIP but SIP may not be addressing my issues which are too many days of smoke from too many sources, and not enough data collection on smoke behavior and its effects on surrounding residents. Thank-you for taking time to read this letter.

Sincerely,
Melinda F. Wiebush

Melinda F. Wiebush

Draft Comments on ID CRB SIP

Clarification Comments on "Open Burning of Crop Residue State Implementation Plan (SIP) Revision" –
Nez Perce Tribe ERWM Air Quality Program
29 April 08

- Front Cover: Given that the SIP does not apply within Reservation boundaries, I would suggest removing the modeling photo (upper right photo showing example CALPUFF modeling output) because it shows burns on Reservations, which is confusing to the reader because it implies this document applies to all these burns.
- Page ix: We really appreciate being listed under Acknowledgements. Would it be possible to add Mary Fauci's name to the list? She was the one that pulled together the NPT AQ monitoring data supplied to IDEQ for the SIP modeling and analysis.
- Page xii: 5.2.2 Title: CALPUFF Modeling Evaluation for Base Case 2005 Burn Season (<u>with Reservations</u>). 5.2.3 Title: CALPUFF Modeling Results….Burn Season (<u>without Reservations</u>) -- [additional suggested language marked with underline]
- Page xiii: Figures 3-6, use "Reservation Burns" instead of "Tribal Burns".
- Page xix: Add clarifying sentence at the end of the second paragraph: This SIP does not apply to crop residue burning on the five Indian Reservations in Idaho. Last sentence of the sixth paragraph (second from the bottom) that starts with "This decision applied only to crop residue burning….": Rework this sentence a bit to read, "This decision applied only to crop residue burning on state lands and did not affect other forms of open burning allowed under Idaho's rules or burning on Indian Reservations in Idaho."
- Page 23: Add sentence after 1st sentence in the 1st paragraph: "This SIP does not apply to crop residue burning on the five Indian Reservations in Idaho."
- Page 24: 1st paragraph: Please delete "Native American Tribes" and instead list the specific Tribes involved in the negotiations, <u>if applicable</u> (I recommend specifically asking each Tribe about this). The last sentence of the paragraph suggests that the Tribes were involved in the negotiations and were stakeholders. It may be different for the other Tribes, but this is not accurate for the Nez Perce Tribe. The NPT was not involved at a policy level in the negotiations nor as a stakeholder. NPT was involved only after the mediation started and only in a technical assistance capacity.
- Page 31: Please include the 3 Reservation boundaries.
- Page 35, Sec. 2.4 NAAQS Compliance, 2nd paragraph, first sentence: clarify to read, "…at all northern Idaho <u>DEQ</u> TEOMs…". Last sentence, clarify to read, "When combined with data provided by the Tribes, the continuous monitoring data also allowed DEQ to evaluate the performance…." or "The combination of DEQ data with continuous monitoring data provided by the Tribes allowed DEQ to evaluate the performance…" or "The continuous monitoring data, when combined with data provided by the Tribes, also allowed DEQ to evaluate the performance…".
- Pages 43-47 and 233-286, Emissions Inventory: It would be optimum in these sections to extract on-Reservation acreages from the emissions inventory since the SIP determination only applies to off-Reservation burning. An alternative would be to add the following clarifications:
    - Page 43, Section 4, 1st paragraph: Because of the limitations in the various data sources for the 2005 inventory, on-Reservation acreages were not extracted from

Page 1 of 5

the totals. The estimated emissions for the off-Reservation areas this SIP applies to are therefore less than the totals shown in this section.

- Page 43, Section 4.1.1, 1st paragraph, 2nd sentence: Add some clarifying language, " The crop residue disposal SIP revision applies outside of Indian Reservations and only to open burning of crop…."
- Page 45, Sec. 4.1.3, 2nd paragraph: Add two sentences after the first one, "Because of the limitations in the various data sources for the 2005 inventory, on-Reservation acreages were not extracted from the totals. The estimated emissions for the off-Reservation areas this SIP applies to are therefore less than the totals shown in this section." Rework the second sentence to read, "This fact highlights why it is very important that Idaho's smoke management program work closely with the Tribes' programs whenever burning occurs in shared airsheds."
- Page 45, Table 14, title: add clarifying language, "(expressed as tons per year, includes on-Reservation emissions, state-only emissions estimates are less)".
- Page 46, Figure 2, Map: On the description sentence at the bottom of the map add, "Includes on-Reservation emissions, state-only emissions estimates are less." Also include the boundaries of the 3 Reservations on the map.
- Page 47, 1st paragraph, 3rd sentence, replace "tribal lands" with "….acres of bluegrass burning to less than 20,000 (not including Indian Reservations);…"
- Page 231, add a clarifying language paragraph just before the PM2.5 heading: "Because of the limitations in the various data sources for the 2005 inventory, on-Reservation acreages were not extracted from the totals. The estimated emissions for the off-Reservation areas this SIP applies to are therefore less than the totals shown in this appendix."
- Page 233, Turf Grass Seed, 2nd sentence: clarify to read, "DEQ used ISDA and Nez Perce Tribe records for crop residue burning…"

- Page 49, 2nd paragraph, first sentence: add clarifying language to read "…that the NAAQS are not violated due to crop residue burning on state lands (excludes burning on Indian Reservations), even in unmonitored…."
- Page 50, 2nd paragraph, delete "Tribal" in the first line and replace with "Indian Reservation". Add a clarifying sentence after this sentence to read, "However, because this SIP evaluates only the state program, the supplemental analyses in sections 5.4, 5.5, and 5.6 do not include Indian Reservations.
- Page 50, 5.1.1: Paragraphs 1 & 3 list Kamiah, which is on the NP Reservation. I would suggest substituting Lewiston for Kamiah in the first paragraph since it talks about crop residue disposal and this SIP concerns off-Reservation CRB. In the 3rd paragraph, Kamiah is OK since it concerns primarily wildfire impacts in general and less the CRB programmatic descriptions.
- Page 51, 5.1.2, 3rd paragraph, 3rd & 2nd from last sentence: clarify to read, "Because these are monitored values, the influence of Idaho, Washington, and on-Reservation burns cannot be separated,…. For example…downwind of Idaho crop residue…"
- Page 52, 5.2.1, the bullets:
  - First bullet: "Base Case Scenario – with Reservation Burns". Also spell out Coeur d'Alene Tribe. Delete, "(the ISDA database was not complete with respect to Nez Perce Tribe burns.)" Last sentence, replace "tribal" with "Reservation" twice in the sentence.

- 2nd bullet: "Base Case Scenario – without Reservation Burns". Replace "tribal" with "Reservation" the first occurrence in this paragraph, and replace it with "Reservation burns" in the second occurrence. Add clarifying language after FARR, "..is addressed in the FARR or under Tribal law).
- Please explain why WA burns were not also included to support model evaluation and to obtain a complete picture of potential gaps in the current monitoring network.

- Page 52, 5.2.2: replace "Tribes" with "Reservation Burns" in the title. Replace "Tribes" with "Reservation" in the first sentence.
- Pages 53 & 54 upper right hand corner title: replace "Tribe" with "Reservation Burns" on both maps
- Page 55, 5.2.3, Title: replace "Tribes" with "Reservation Burns"
- Pages 56 & 57 upper right hand corner title: replace "Tribe" with "Reservation Burns" on both maps
- Page 58, last paragraph, add clarifying language: "…to be as complete as possible (data provided by the Nez Perce Tribe)."
- Page 59, Table 18, end of Notes: add clarifying language, "…a value monitored in 2007 on the Nez Perce Reservation (data provided by the Nez Perce Tribe)."
- Page 59, 1st sentence refers to the 1-hr action level of 64: This appears to be the first and only time the 64 level is mentioned in the document, so there doesn't seem to be a context for it. Was this part of the agreement points? Perhaps some clarification is needed here.
- Page 59, section 5.4, 2nd paragraph, 1st sentence refers to "contributions from all parties to 24-hour concentrations at Pinehurst…": Clarification is needed here. Does "all parties" mean ID, WA and Reservation burning?
- Page 62 map: delete "with Tribe" in title upper right corner; "blank out" modeled analyses on the Reservations. Add Kootenai Tribe. Also, the key shows smoke impact from low to high, which needs some clarification. What does "high" mean? You have demonstrated that NAAQS are not exceeded, but "high" suggests a lot of smoke. What is "high" relative to?
- Page 63, section 5.6.2, and pages 64, 65 & 66: Add some qualifying language in this section and on the maps, or consider not using this type of analysis to determine monitoring locations. From my understanding, satellite plume observations do not necessarily reflect smoke experienced at the surface (at the level where people are). A plume observation (as opposed to a "saturation" observation that traces the lines of a river valley or more uniformly covers an area (e.g. the Columbia River Basin)) more likely reflects smoke observed in the air in general, which, if burned on a reasonably good dispersion day with SMP practices (which would have been the case from 2005-2007), may not be on the surface (person level) at all. Therefore, the statements in the last paragraph of this page, "geospatial surface representing 'person-days' of smoke" and "emphasizes how frequently persons in each area are affected by smoke in the air from all sources" and the resulting conclusion about potential monitoring needs in the map imply that the satellite smoke is at the surface level (see also the term "smoke days" in the map key on p. 65, and "person-days of smoke occurrence" from the map on p. 66). This is misleading information when trying to make assumptions about where to possible add monitors. The estimate of "smoke days" in Figure 9 is really an estimate of smoke

observed on the satellite most likely above population centers and no conclusions about impacts to the surface (or person) level can be made without very clear qualifiers, such as "an absolutely worst case scenario" which would be no SMP, an extremely poor burn day, all smoke hitting the surface. However, the "absolutely worst case scenario" is exceptionally unlikely given that even in 2005 both the state and the Tribes had SMPs. Even if that "absolutely worst case scenario" did happen, it wouldn't happen that way. The smoke observed in the satellite was observed that way on a burn day, which, since the SMPs were in place, assumes reasonably good dispersion characteristics. If those burns somehow were to have happened during the very poor dispersion characteristics required for the smoke to inundate the surface, the observed satellite smoke would look different, and monitor readings would probably be more reflective of what we see on the TEOMs during wildfire events when we actually see NAAQS violations, or what we see on the satellite photos during smoke incursions and elevated monitors (smoke would appear not as plumes dispersing out in a triangle, but saturations following valleys and lower lying areas). For the sake of making modeled determinations for at risk communities for smoke impacts, it may be more useful to not make smoke impact implications from the satellite data that show a dispersing plume.

- Page 64, Figure 8, left map, title upper right – change "Tribe" to "Reservation Burns".
- Page 65 & 66 & 71: "blank out" modeled analyses on the Reservations. Add Kootenai Tribe.
- Page 72, Section 6.2, first set of bullets: add "data provided by the Tribes"
- Pages 172-174: add a footnote on the Idaho County data from Kamiah (three places, on on 172, 2 on 173, 2 on 174), "Monitor owned and operated by the Nez Perce Tribe"
- Page 289, 1st paragraph: "…TEOMS and nephelometers (Section 5, Table <u>16</u>) indicates that PM2.5 increases associated with Idaho and <u>on-Reservation</u> crop residue burning…Idaho crop residue burning activity <u>alone</u> are less than…."
- Page 290, Summary of Modeling Methods, 1st paragraph: change "ISDA/Nez Perce burn database" to "ISDA and Nez Perce Tribe burn databases". After this sentence add the sentence, "On-Reservation burns were included for model verification purposes only." 3rd paragraph, 1st sentence, change "all tribal burns" to "all Reservation burns". Next sentence change "base case with Tribes" to "base case with Reservations".
- Page 292, Specification of Modeling Domain, bullets: "Coeur" is spelled incorrectly, and the terms "Coeur d'Alene (CDA)" and "Lewiston (LEW)" should be switched.
- Page 292 map: include the 3 Indian Reservations and add the boundary line to the key.
- Page 297 map: add Kootenai Tribe
- Page 299, first paragraph: delete 1st sentence and change paragraph to read "The ISDA burn database for 2005 is believed to be complete for northern Idaho; however, a relatively low compliance rate was achieved in other parts of the state. Kootenai Reservation and Coeur d'Alene Reservation burn information was expected to be very complete in the database. Nez Perce Reservation burn information was provided by the Nez Perce Tribe and added to the ISDA database.
- Page 300, Figure 18: For purposes of increasing clarity and understanding to the public, it may be more useful to run the figure as Pacific Daylight Time rather than Standard Time (since the July-October burning is done during PDT).
- Page 330, Table 54: the NPT Kamiah, Reubens and Lapwai monitors are TEOMS, not Nephs. Also add "Tribe" to "(Nez Perce Tribe)".

- Page 332, paragraph: Clarify to read, "….included all burns in the combined ISDA/ Nez Perce Tribe database including both State managed burns and on-Reservation burns. This simulation combined State and on-Reservation burns to evaluate model performance since it is not possible to separate impacts in the monitoring database. The initial simulation is referred to as "Base Case with Reservations".
- Page 333, title upper right hand corner, change "Tribes" to "Reservations"
- Page 334, second paragraph, spell out "Coeur d'Alene"
- Page 339, 1st full paragraph, change "Tribes" to "Reservations" both times in the italics sentence. 3rd full paragraph that starts with "First, near-field impacts": In the last sentence should the "Nevertheless" be an "In addition"?
- Page 339 end of the page and 340: Change "Clearwater/Camas Airshed" and "Palouse Airshed" to "Clearwater-Camas" and "Clearwater-Palouse" (this better represents the Clearwater Airshed MOA).

From: Courtney Washburn [mailto:cwashburn@wildidaho.org]
Sent: Thursday, May 01, 2008 12:19 PM
To: Michael McGown
Subject: Crop Residue Burning SIP

Please accept the attached comments on the proposed revision on the SIP for crop residue burning. I am unable to attend the public hearing so I am submitting these in lieu of testimony.

Thanks-

Courtney

Courtney E. Washburn
Community Conservation Director
Idaho Conservation League
PO Box 844, Boise, ID 83701
208.345.6942 x 17 • fax 208.344.0344
http://www.wildidaho.org • http://blog.wildidaho.org

Idaho Conservation League preserves Idaho's clean water, wilderness and quality of life.

www.wildidaho.org

Idaho Conservation League
PO Box 844, Boise, ID 83701
208.345.6933

May 1, 2008

Michael McGown
Air Quality Division
DEQ State Office
1410 N. Hilton
Boise, ID 83706

Re: State Implementation Plan to implement crop residue burning

Dear Mr. McGown:

On behalf of The Idaho Conservation League (ICL), I submit the following comments on the proposed revision to the State Implementation Plan (SIP) to implement a new crop residue burning program in Idaho.

For thirty-four years, the Idaho Conservation League has worked to protect Idaho's clean water, wilderness, wildlife, and quality of life. As Idaho's largest state-based conservation organization we represent over 9,500 members, many of whom have a deep personal interest in responsible management of crop residue burning. The open burning of crop residue results in significant air emissions that can lead to negative impacts on public health and air quality.

Background
The Idaho Conservation League is supportive of the negotiation process that lead to a compromise between Safe Air for Everyone (SAFE), and grower representatives. We are supportive of the agreement points that were reached (Appendix A, page 8). We were supportive of House bill 557 (Appendix B, page 83) which passed the Idaho Legislature and was signed into law on March 7th, 2008. We also supported the rule docket number 58-0101-0801 (Appendix C, page 97) that became effective on April 2, 2008.

We are supportive of the efforts to resume crop residue burning because additional protections provide assurance that the National Ambient Air Quality Standards (40 CFR part 50) would not be exceeded, and the public health would be protected. Our main interest is the protection of public health and air quality so if at anytime it is determined that the protections are not adequate we will advocate for the revision of this program. If it is found that crop residue burning cannot be done in away that is protective of public health and air quality then will advocate for the termination of crop residue burning

Comments
The Idaho Conservation League is generally supportive of the Open Burning of Crop Residue State Implementation Plan (SIP) Revision but we have identified the following issues that require further clarification.

Enforcement
We believe that the SIP Revision is lacking information on how that state intends to enforce the program and the standards within. Enforcement is an important component to ensure that if the NAAQS is violated then appropriate steps will be taken. We believe it is the states obligation to demonstrate how it will enforce the standards.

Section 1.7, page 27
"Based on these emission estimates, the fact that southeast and southwest areas of the state, and the incompleteness of the crop residue burning database in other parts of the state, this statewide SIP revision assumes that if the NAAQS are not violated in the north, then they are not likely violated in other areas of the state, so detailed supplemental analysis for other areas is not necessary."

We do not believe there is adequate information available to make the determination that supplemental analysis for other areas of the state is unnecessary. The incompleteness of the database and the unknowns associated with crop residue burning in other parts of the state leads us to believe that supplemental analysis is necessary to ensure the NAAQS are not violated. The lack of information for other areas of Idaho is further evidenced by the fact that all the models in the exhibits only show North Idaho.

There seems to need for a modeled attainment demonstration and a need for atmospheric modeling to serve as a "guideline model" for simulating pollutants released from a burning field. These two pieces of information would lead to better information to base program compliance off of to ensure the protection of public health.

Section 2.3, page 34
"Crop residue burns typically are only 30-90 minutes in duration and result in a brief and sharp peak," increasing $PM_{2.5}$ levels for only an hour or two."

We do not believe this statement reflects the total impact of crop residue burns because the information solely based on monitor readings. Near-field data is critical to understanding the health impacts particularly in regards to sensitive populations.

Section 3.3, page 42
Conditions for burn is an essential component to the SIP because it contains the criteria that the state will use to authorize a burn. We found this section to be lacking in regards to detailed criteria. This section also makes a reference to an operational guide that either does not yet exist or was not included in the revision. The criteria must be included to fulfill the state's obligation to demonstrate compliance with NAAQS.

Section 4.1.2, page 44

"There are approximately 200,000 acres in the CRP, mostly in southern Idaho. ISDA estimates that about ten percent of that acreage is burned annually."

There are conflicting numbers in regards to CRP acres in Idaho. We would recommend validating the estimate and citing the source of the information stated in the report to clear up any confusion. We would also like to see what information ISDA used to estimate that number of acres burned annually since Southern Idaho was not registering the numbers of acres burned in the previous program.

Section 5.3, page 59
"Some of the additional monitoring resources are proposed to be portable and will be deployed at sensitive receptor institutions located within the 3 mile buffer zone when practical."

It is our understanding that under this SIP, crop residue burning needs to done in a manner to protect sensitive receptors so we are unclear what role a 3-mile buffer zone plays in this process.

Section 5.5, page 60
"As necessary, in managing and evaluating Idaho's reasonable progress, DEQ may conduct analysis or modeling to better characterize the frequency of haze impacts at Class I areas statewide."

We believe the DEQ should conduct analysis and/or modeling to look at the haze impacts of crop residue burning. This should not be optional information gathering but required data to understand the impact to Class I areas in Idaho.

The Idaho Conservation League appreciates the opportunity to provide comments on the proposed revision to the State Implementation Plan (SIP) to implement a new crop residue- burning program in Idaho.

Sincerely,

Courtney E. Washburn

Courtney E. Washburn
Community Conservation Director

Phyllis Heitman

From: Karen Burnett [ktrujillo@hotmail.com]
Sent: Friday, May 02, 2008 2:47 PM
To: Michael McGown
Cc: Phyllis Heitman
Subject: Revised State Implementation Plan on Field Burning

Dear Mr. McGown:

Thank you for the opportunity to comment on the revised state implementation plan regarding field burning.

I live in Moscow, Idaho, and I have respiratory and allergic reactions whenever there is smoke in the air. I'm concerned that although a good-faith effort seems to have been made within the governor's appointed committee, the fact that field burning is likely to continue still poses a hazard to my health. I'm not the only one affected. While children and the elderly are most at risk, there's a growing population of citizens like me who lose work time and a valuable quality of life due to allergic reactions. I appreciate that hospitals and nursing homes are being given additional consideration, but the public at large is also at risk.

I've read the proposed revision and conclude that given the number of variables that DEQ must consider in deciding and monitoring when burning takes place, there is ample opportunity for our communities to be polluted by smoke at levels injurious to health. Weather is a dynamic system that is not entirely predictable. With so much variability, monitoring air quality could only be entirely accurate after the fact when people have already been subjected to the smoke. The document talks about using the CALPUFF model, but it also states:

> "There are currently no atmospheric models fully validated and approved by EPA as a 'guideline model' for stimulting pollutants released from a burning field."

I, for one, feel there can be no compomise when it comes to a documented public health hazard. Those farmers who insist on their right to burn fields form a minority group that is being allowed to place economic profitability ahead of the common good. Determining public health policy by an appointed committee heavily weighted with economic interests doesn't seem sound or just. A public referendum would be a more accurate gauge of the public's desire to abate air pollution in our state.

For there reasons, and also because Idaho should be more sensitive to the larger issue of global warming, I encourage the EPA to continue the ban on field burning in the state of Idaho.

Sincerely,

Karen T Burnett
1423 Alpowa St
Moscow, ID 83843

5/2/2008

Responses to Comments

Number	Commenter	Comment	Response
1.	Nez Perce Tribe ERWM Air Quality Program	Front Cover: Given that the SIP does not apply within Reservation boundaries, I would suggest removing the modeling photo (upper right photo showing example CALPUFF modeling output) because it shows burns on Reservations, which is confusing to the reader because it implies this document applies to all these burns.	The modeling photo has been replaced with a picture of a wind rose for Grangeville.
2.	Nez Perce Tribe ERWM Air Quality Program	Page ix: We really appreciate being listed under Acknowledgements. Would it be possible to add Mary Fauci's name to the list? She was the one that pulled together the NPT AQ monitoring data supplied to IDEQ for the SIP modeling and analysis.	Mary's name has been added.
3.	Nez Perce Tribe ERWM Air Quality Program	Page xii: 5.2.2 Title: CALPUFF Modeling Evaluation for Base Case 2005 Burn Season (<u>with Reservations</u>). 5.2.3 Title: CALPUFF Modeling Results….Burn Season (<u>without Reservations</u>) -- [additional suggested language marked with underline]	Wording changed as indicated in the appropriate headings; the corresponding entries in the Table of Contents (TOC) will be updated when the TOC field is refreshed.
4.	Nez Perce Tribe ERWM Air Quality Program	Page xiii: Figures 3-6, use "Reservation Burns" instead of "Tribal Burns".	The captions for these figures have been changed as requested. The List of Figures will be updated when the List of Figures field is refreshed.
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6.	Nez Perce Tribe ERWM Air Quality Program	Page 23: Add sentence after 1st sentence in the 1st paragraph: "This SIP does not apply to crop residue burning on the five Indian Reservations in Idaho."	This clarification has been made with the following changes: "This SIP does not apply to crop residue burning on the ~~five~~ Indian Reservations in Idaho." In addition, the page numbering in this section, which marks the beginning of the body of the document, has been re-sequenced to start at

			page 1.
7.	Nez Perce Tribe ERWM Air Quality Program	Page 24: 1st paragraph: Please delete "Native American Tribes" and instead list the specific Tribes involved in the negotiations, if applicable (I recommend specifically asking each Tribe about this). The last sentence of the paragraph suggests that the Tribes were involved in the negotiations and were stakeholders. It may be different for the other Tribes, but this is not accurate for the Nez Perce Tribe. The NPT was not involved at a policy level in the negotiations nor as a stakeholder. NPT was involved only after the mediation started and only in a technical assistance capacity.	The Coeur d'Alene Tribe, Kootenai Tribe, Nez Perce tribes have each been listed in this sentence.
8.	Nez Perce Tribe ERWM Air Quality Program	Page 31: Please include the 3 Reservation boundaries.	This clarification has been added.
9.	Nez Perce Tribe ERWM Air Quality Program	Page 35, Sec. 2.4 NAAQS Compliance, 2nd paragraph, first sentence: clarify to read, "…at all northern Idaho DEQ TEOMs…". Last sentence, clarify to read, "When combined with data provided by the Tribes, the continuous monitoring data also allowed DEQ to evaluate the performance…." or "The combination of DEQ data with continuous monitoring data provided by the Tribes allowed DEQ to evaluate the performance…" or "The continuous monitoring data, when combined with data provided by the Tribes, also allowed DEQ to evaluate the performance…".	These sentences have been modified as requested.
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		Page 45, Sec. 4.1.3, 2nd paragraph: Add two sentences after the first one, “Because of the limitations in the various data sources for the 2005 inventory, on-Reservation acreages were not extracted from the totals. The estimated emissions for the off-Reservation areas this SIP applies to are therefore less than the totals shown in this section.” Rework the second sentence to read, “This fact highlights why it is very important that Idaho’s smoke management program work closely with the Tribes’ programs whenever burning occurs in shared airsheds.” Page 45, Table 14, title: add clarifying language, “(expressed as tons per year, includes on-Reservation emissions, state-only emissions estimates are less)”. Page 46, Figure 2, Map: On the description sentence at the bottom of the map add, “Includes on-Reservation emissions, state-only emissions estimates are less.” Also include the boundaries of the 3 Reservations on the map. Page 47, 1st paragraph, 3rd sentence, replace “tribal lands” with “….acres of bluegrass burning to less than 20,000 (not including Indian Reservations);…” Page 231, add a clarifying language paragraph just before the PM2.5 heading: “Because of the limitations in the various data sources for the 2005 inventory, on-Reservation acreages were not extracted from the totals. The estimated emissions for the off-Reservation areas this SIP applies to are therefore less than the totals shown in this appendix.” Page 233, Turf Grass Seed, 2nd sentence: clarify to read, “DEQ used ISDA and Nez Perce Tribe records for crop residue burning…”	
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12.	Nez Perce Tribe ERWM Air Quality Program	Page 50, 2nd paragraph, delete “Tribal” in the first line and replace with “Indian Reservation”. Add a clarifying sentence after this sentence to read, “However, because this SIP evaluates only the state program, the supplemental analyses in sections 5.4, 5.5, and 5.6 do not include Indian Reservations.	This clarification has been added.
13.	Nez Perce Tribe ERWM Air Quality	Page 50, 5.1.1: Paragraphs 1 & 3 list Kamiah, which is on the NP Reservation. I would suggest substituting Lewiston for Kamiah in the first paragraph since it talks about crop residue	This clarification has been added.

	Program	disposal and this SIP concerns off-Reservation CRB. In the 3rd paragraph, Kamiah is OK since it concerns primarily wildfire impacts in general and less the CRB programmatic descriptions.	
14.	Nez Perce Tribe ERWM Air Quality Program	Page 51, 5.1.2, 3rd paragraph, 3rd & 2nd from last sentence: clarify to read, "Because these are monitored values, the influence of Idaho, Washington, and on-Reservation burns cannot be separated,…. For example…downwind of Idaho crop residue…"	This clarification has been added.
15.	Nez Perce Tribe ERWM Air Quality Program	Page 52, 5.2.1, the bullets: First bullet: "Base Case Scenario – with Reservation Burns". Also spell out Coeur d'Alene Tribe. Delete, "(the ISDA database was not complete with respect to Nez Perce Tribe burns.)" Last sentence, replace "tribal" with "Reservation" twice in the sentence. 2nd bullet: "Base Case Scenario – without Reservation Burns". Replace "tribal" with "Reservation" the first occurrence in this paragraph, and replace it with "Reservation burns" in the second occurrence. Add clarifying language after FARR, "..is addressed in the FARR or under Tribal law). Please explain why WA burns were not also included to support model evaluation and to obtain a complete picture of potential gaps in the current monitoring network.	This clarification has been added. Washington burns were not included in the model evaluation modeling analyses for a number of purely technical reasons. First, Washington burns are more distant and as a result, their hourly $PM_{2.5}$ impacts were lower and the peaks less distinct and more difficult to separate from the non-CRB background. ISDA and Reservation burns on the other hand produced more distinct "peaks" when detected at a monitoring stations due to their proximity and background subtraction was reasonably clear cut. Without this method of background subtraction, comprehensive Emissions Inventories for all $PM_{2.5}$ sources would have bee required and this would have made an expedited SIP analysis infeasible. In addition, the added domain area and computational burden from many more CALPUFF sources was neither feasible nor necessary technically. As a result, the background levels resulting from all Reservation CRB activity, all nearby State CRB activity and all non-CRB sources was accounted for in the evaluation, however the specific technical approach for doing so was a function of proximity to the monitors and a number of technical or analytical issues.
16.	Nez Perce Tribe ERWM Air Quality Program	Page 52, 5.2.2: replace "Tribes" with "Reservation Burns" in the title. Replace "Tribes" with "Reservation" in the first sentence.	This clarification has been added.
17.	Nez Perce Tribe ERWM Air Quality Program	Pages 53 & 54 upper right hand corner title: replace "Tribe" with "Reservation Burns" on both maps	This clarification has been added.
18.	Nez Perce Tribe ERWM Air Quality Program	Page 55, 5.2.3, Title: replace "Tribes" with "Reservation Burns"	This clarification has been added.

19.	Nez Perce Tribe ERWM Air Quality Program	Pages 56 & 57 upper right hand corner title: replace "Tribe" with "Reservation Burns" on both maps	This clarification has been added.
20.	Nez Perce Tribe ERWM Air Quality Program	Page 58, last paragraph, add clarifying language: "…to be as complete as possible (data provided by the Nez Perce Tribe)."	This clarification has been added.
21.	Nez Perce Tribe ERWM Air Quality Program	Page 59, Table 18, end of Notes: add clarifying language, "…a value monitored in 2007 on the Nez Perce Reservation (data provided by the Nez Perce Tribe)."	This clarification has been added.
22.	Nez Perce Tribe ERWM Air Quality Program	Page 59, 1st sentence refers to the 1-hr action level of 64: This appears to be the first and only time the 64 level is mentioned in the document, so there doesn't seem to be a context for it. Was this part of the agreement points? Perhaps some clarification is needed here.	Additional references to 80 percent of the 1-hour trigger level defined in Section 556 of the rule have been added to the Executive Summary and Section 1.3 of the SIP revision.
23.	Nez Perce Tribe ERWM Air Quality Program	Page 59, section 5.4, 2nd paragraph, 1st sentence refers to "contributions from all parties to 24-hour concentrations at Pinehurst…": Clarification is needed here. Does "all parties" mean ID, WA and Reservation burning?	The text has been modified to clarify that "contributions from all ISDA and Reservation CRB activity to 24-hour concentrations at Pinehurst…" An additional clarifying comment was also inserted to indicate that "Neighboring states are also expected to contribute $PM_{2.5}$ amounts at Pinehurst, however those contributions are expected to be lower and were removed from this analysis as background."
24.	Nez Perce Tribe ERWM Air Quality Program	Page 62 map: delete "with Tribe" in title upper right corner; "blank out" modeled analyses on the Reservations. Add Kootenai Tribe. Also, the key shows smoke impact from low to high, which needs some clarification. What does "high" mean? You have demonstrated that NAAQS are not exceeded, but "high" suggests a lot of smoke. What is "high" relative to?	This clarification has been added. The figure shows the product of multiplying the modeled season mean $PM_{2.5}$ concentration by the population of Idaho in the year 2000. This results in a number scale from 0 to 112.5. The higher numbers represent areas occupied by either a low population and a high concentration or a high population and a low concentration (or a high population and a high concentration...). DEQ interprets these numbers as a measure of modeled smoke impact on population. A low impact means that residents are less impacted by smoke from CRB activities and a high impact means that residents are more highly impacted by smoke from CRB activities.
25.	Nez Perce Tribe ERWM Air Quality Program	Page 63, section 5.6.2, and pages 64, 65 & 66: Add some qualifying language in this section and on the maps, or consider not using this type of analysis to determine monitoring locations. From my understanding, satellite plume observations do not necessarily reflect smoke experienced at the surface (at the level where people are). A plume observation (as opposed	This comment is well taken and the maps have been labeled to indicate that they show how relative patterns of smoke occurrence interact with population. As the comment suggests, the goal of a good smoke management program is to put most of the smoke into the transport winds aloft, so that it does not impact people on the ground while the concentrations are still high; thus, if all goes well, there are often smoky

		to a "saturation" observation that traces the lines of a river valley or more uniformly covers an area (e.g. the Columbia River Basin)) more likely reflects smoke observed in the air in general, which, if burned on a reasonably good dispersion day with SMP practices (which would have been the case from 2005-2007), may not be on the surface (person level) at all. Therefore, the statements in the last paragraph of this page, "geospatial surface representing 'person-days' of smoke" and "emphasizes how frequently persons in each area are affected by smoke in the air from all sources" and the resulting conclusion about potential monitoring needs in the map imply that the satellite smoke is at the surface level (see also the term "smoke days" in the map key on p. 65, and "person-days of smoke occurrence" from the map on p. 66). This is misleading information when trying to make assumptions about where to possible add monitors. The estimate of "smoke days" in Figure 9 is really an estimate of smoke observed on the satellite most likely above population centers and no conclusions about impacts to the surface (or person) level can be made without very clear qualifiers, such as "an absolutely worst case scenario" which would be no SMP, an extremely poor burn day, all smoke hitting the surface. However, the "absolutely worst case scenario" is exceptionally unlikely given that even in 2005 both the state and the Tribes had SMPs. Even if that "absolutely worst case scenario" did happen, it wouldn't happen that way. The smoke observed in the satellite was observed that way on a burn day, which, since the SMPs were in place, assumes reasonably good dispersion characteristics. If those burns somehow were to have happened during the very poor dispersion characteristics required for the smoke to inundate the surface, the observed satellite smoke would look different, and monitor readings would probably be more reflective of what we see on the TEOMs during wildfire events when we actually see NAAQS violations, or what we see on the satellite photos during smoke incursions and elevated monitors (smoke would appear not as plumes dispersing out in a triangle, but saturations following valleys and lower lying areas). For the sake of making modeled determinations for at risk communities for smoke impacts, it may be more useful to not make smoke impact implications from the satellite data that show a dispersing plume.	layers aloft when persons on the ground are not experiencing significant smoke. However, DEQ believes that some fraction of satellite-detected smoke plumes do affect people on the ground, and since we can probably assume the ground plumes are some relatively constant fraction of the total (ground and aloft) plumes, the relative pattern should still contain useful information and should be of assistance in siting monitors. The satellite detection methodology does not capture 100 percent of all smoke plumes either because of cloudy conditions and satellite coverage. In addition, it should be noted that the satellite-based map of "smoke x population" indicates very similar outcomes to the analogous model-based map shown in Figure 7, which is based on ground-level modeled impacts. Nevertheless, the maps should only be considered in a relative sense and have been revised to reflect this fact. Qualifying language has been added to indicate that the satellite analysis shows relative surface level smoke impacts.
26.	Nez Perce Tribe ERWM Air Quality	Page 64, Figure 8, left map, title upper right – change "Tribe" to "Reservation Burns".	This clarification has been added.

	Program		
27.	Nez Perce Tribe ERWM Air Quality Program	Page 65 & 66 & 71: "blank out" modeled analyses on the Reservations. Add Kootenai Tribe.	This clarification has been added.
28.	Nez Perce Tribe ERWM Air Quality Program	Page 72, Section 6.2, first set of bullets: add "data provided by the Tribes"	This clarification has been added.
29.	Nez Perce Tribe ERWM Air Quality Program	Pages 172-174: add a footnote on the Idaho County data from Kamiah (three places, on 172, 2 on 173, 2 on 174), "Monitor owned and operated by the Nez Perce Tribe"	Notes have been added below each graphic.
30.	Nez Perce Tribe ERWM Air Quality Program	Page 289, 1st paragraph: "…TEOMS and nephelometers (Section 5, Table 16) indicates that PM2.5 increases associated with Idaho and on-Reservation crop residue burning…Idaho crop residue burning activity alone are less than…."	These clarifications have been added.
31.	Nez Perce Tribe ERWM Air Quality Program	Page 290, Summary of Modeling Methods, 1st paragraph: change "ISDA/Nez Perce burn database" to "ISDA and Nez Perce Tribe burn databases". After this sentence add the sentence, "On-Reservation burns were included for model verification purposes only." 3rd paragraph, 1st sentence, change "all tribal burns" to "all Reservation burns". Next sentence change "base case with Tribes" to "base case with Reservations".	These clarifications have been added.
32.	Nez Perce Tribe ERWM Air Quality Program	Page 292, Specification of Modeling Domain, bullets: "Coeur" is spelled incorrectly, and the terms "Coeur d'Alene (CDA)" and "Lewiston (LEW)" should be switched.	These clarifications have been added.
33.	Nez Perce Tribe ERWM Air Quality Program	Page 292 map: include the 3 Indian Reservations and add the boundary line to the key.	This clarification has been added.
34.	Nez Perce Tribe ERWM Air Quality Program	Page 297 map: add Kootenai Tribe	No change needed, the Kootenai Reservation boundary is already included, just hard to see at that scale.
35.	Nez Perce Tribe ERWM	Page 299, first paragraph: delete 1st sentence and change paragraph to read "The ISDA burn database for 2005 is	These clarifications have been added.

	Air Quality Program	believed to be complete for northern Idaho; however, a relatively low compliance rate was achieved in other parts of the state. Kootenai Reservation and Coeur d'Alene Reservation burn information was expected to be very complete in the database. Nez Perce Reservation burn information was provided by the Nez Perce Tribe and added to the ISDA database.	
36.	Nez Perce Tribe ERWM Air Quality Program	Page 300, Figure 18: For purposes of increasing clarity and understanding to the public, it may be more useful to run the figure as Pacific Daylight Time rather than Standard Time (since the July-October burning is done during PDT).	A clarification has been added to the caption for this figure: The burn season occurs while on Pacific Daylight Time [PDT], but the model has to run in Pacific Standard Time [PST]; 9 AM to 2:30 PM PST represents 10 AM to 3:30 PM PDT.
37.	Nez Perce Tribe ERWM Air Quality Program	Page 330, Table 54: the NPT Kamiah, Reubens and Lapwai monitors are TEOMS, not Nephs. Also add "Tribe" to "(Nez Perce Tribe)".	These corrections have been made, and the table was sorted to list the monitors alphabetically.
38.	Nez Perce Tribe ERWM Air Quality Program	Page 332, paragraph: Clarify to read, "….included all burns in the combined ISDA/ Nez Perce Tribe database including both State managed burns and on-Reservation burns. This simulation combined State and on-Reservation burns to evaluate model performance since it is not possible to separate impacts in the monitoring database. The initial simulation is referred to as "Base Case with Reservations".	These clarifications have been made.
39.	Nez Perce Tribe ERWM Air Quality Program	Page 333, title upper right hand corner, change "Tribes" to "Reservations"	This clarification has been added.
40.	Nez Perce Tribe ERWM Air Quality Program	Page 334, second paragraph, spell out "Coeur d'Alene"	This clarification has been made.
41.	Nez Perce Tribe ERWM Air Quality Program	Page 339, 1st full paragraph, change "Tribes" to "Reservations" both times in the italics sentence. 3rd full paragraph that starts with "First, near-field impacts": In the last sentence should the "Nevertheless" be an "In addition"?	The clarification from Tribes to Reservations was made. Removed the transitional word "nevertheless," which did not seem necessary.
42.	Nez Perce Tribe ERWM Air Quality Program	Page 339 end of the page and 340: Change "Clearwater/Camas Airshed" and "Palouse Airshed" to "Clearwater-Camas" and "Clearwater-Palouse" (this better represents the Clearwater Airshed MOA).	These clarifications have been made.

43.	SAFE Robert Yuhnke	The attempt to demonstrate attainment by using monitor data from locations where monitors are currently sited and modeling using CALPUFF is not sufficient for a number of reasons. This demonstration is flawed because I) it relies upon the unsubstantiated inference that the existing monitors are located where they will detect the peak concentrations caused by agricultural burning; 2) there is no analysis to investigate whether concentrations were measured during burn smoke episodes known to have been harmful to health, and what inferences might be drawn from those episodes; 3) there is no analysis of data available from independent sources that provide reliable and relevant evidence of PM2.5 concentrations in smoke plumes; and 4) the CALPUFF modeling analysis to provide evidence to support a demonstration of attainment is invalid and not relevant to the showing that must be made because the model provides no useful information for estimating the near-field concentrations of P M2.5 where concentrations of primary PM2.5 emitted from the burn will be greatest.	The following text has been added to section 2.1 Monitoring Network: In accordance with 40 CFR 58 Appendix E, the DEQ monitoring network assesses the average population exposure to criteria pollutants using neighborhood to urban scale monitor locations. These monitors are not intended to maximum plume concentration from a single emissions source. However, over time the monitors will capture centerline concentrations of some plumes due to the variability of wind direction. These instances are identified as peaks in the monitoring data that are above the normal background for the area. Appendix I analyzes monitoring data for the 2005 burn season for peak concentration that were greater than the normal background concentration for the area. DEQ currently operates three continuous PM2.5 monitors in seasonally North Idaho specifically for smoke management purposes. Even though the PM2.5 continuous monitors can not be used to determine compliance with the NAAQS, DEQ will use these monitors during the burn decision process. The continuous monitors provide real-time data that will ensure DEQ staff makes burn decisions that are in accordance with IDAPA 58.01.01.621.01. Two additional data sets have been included in DEQ's analysis of near-field impacts. (See Appendix J). Near-field data from the existing monitoring network were summarized in Section 5.3, Table 18. A supplemental analysis off PM2.5 data from two additional studies in incorporated in the Near Field Analysis in Appendix J.
44.	SAFE Robert Yuhnke	The SIP provides no evidence that the monitors used to provide evidence of attainment are located in proximity to burn sites, or that the wind direction during burns would have caused a monitor to be exposed to the core of the plume where concentrations are highest. Absent a showing by the state that monitors were located in proximity to plumes, no conclusions can be drawn from the monitor data regarding exceedances of the level of the NAAQS. The experience of SAFE's members is that most of the FRM monitors are located many miles from known sites where fields are burned routinely, and that one site may be 3-5 miles from known burn sites. The monitored concentrations may provide relevant evidence of the contribution of smoke to downwind locations 3 to 5 miles or more from burn sites, but proving that the NAAQS is attained at these distances from burn locations is not proof that the NAAQS has been attained at locations closer	The following text has been added to section 2.1 Monitoring Network In accordance with 40CFR58 Appendix E, the DEQ monitoring network assesses the average population exposure to criteria pollutants using neighborhood to urban scale monitor locations. These monitors are not intended to maximum plume concentration from a single emissions source. However, over time the monitors will capture centerline concentrations of some plumes due to the variability of wind direction. These instances are identified as peaks in the monitoring data that are above the normal background for the area. Appendix I analyzes monitoring data for the 2005 burn season for peak concentration that were greater than the normal background concentration for the area. DEQ currently operates three continuous PM2.5 monitors in seasonally North Idaho specifically for smoke management purposes. Even though the PM2.5 continuous monitors can not be used to determine compliance with the NAAQS, DEQ will use these monitors

		to burn sites.	during the burn decision process. The continuous monitors provide real-time data that will ensure DEQ staff makes burn decisions that are in accordance with IDAPA 58.01.01.621.01.

45.	SAFE Robert Yuhnke	Numerous episodes during the last two decades have provided evidence that smoke has reached concentrations sufficient to cause harm to sensitive individuals. These episodes provide a strong inference that concentrations have reached levels near to, or greater than, the NAAQS. EPA acknowledged in the 1997 NAAQS rulemaking that individual episodes greater than 75 kg/m3 were likely to cause harm to health. The State should review those episodes to determine if monitored data is available that demonstrate the PM2.5 conditions that occurred during the episodes in or near the locations where victims of the smoke were exposed. If monitored data relevant to assessing exposures are not available, then the inference that monitored data is relevant to demonstrating attainment is not supported by any credible evidence. The state does not consider evidence from independent studies that have been performed to measure exposures to PM2.5 in smoke plumes. The farm worker exposure study by Dr. Sally Liu [attached Exhibit 1] demonstrates that farm hands involved in the ignition and supervision of field burning were exposed to concentrations far above the level of the NAAQS when averaged over 24-hours. Any hourly concentration above 840 kg/m3 that lasts only an hour will exceed the level of the 24-hour NAAQS. The exposures recorded in the Liu study demonstrate that exposures upwind on the fire where field hands are stationed far exceed hourly averages greater than 840 kg/m3. The downwind concentrations in the smoke plume must be 10 to 100 times greater than where the field hands were monitored. This evidence demonstrates that near the point of origin, smoke plumes are likely to far exceed the NAAQS. For the purpose of the Idaho program, the attainment strategy depends on ensuring that concentrations do not exceed 75% of the level of the NAAQS or the 1-hour emergency standard. The evidence from the field burning exposure studies show that these levels are routinely exceeded upwind of the burn margin. The central question not addressed in the SIP demonstration is how burn decisions will, be made to ensure that plume concentrations in the ambient air beyond the field to be burned will meet these tests. The monitoring data used in the SIP demonstration provide no information to show that plumes will comply at those locations, or for the first 3-5 miles downwind of the burn locations. More is needed to show that the program, as implemented, will ensure consistent attainment. The reliance on the CALPUFF modeling provides no evidence	As detailed in Section 2 and Appendices H and I multiple years of monitoring data were analyzed to determine whether or not the NAAQS has been violated and has determined that no violations have been recorded. A supplemental analysis of PM2.5 data from two additional studies has been incorporated into supplemental weight-of-evidence arguments in the Near Field Analysis in Appendix J. All the data taken together are internally consistent and indicate that the level of the $PM_{2.5}$ NAAQS may conservatively, and infrequently, be exceeded out to about 700 meters from a typical field, however since this only occurs one time each year, it is shown to be not likely that the NAAQS could be violated. The 1-hour emergency value is not a standard, but rather an action level for stopping or mitigating activities that may be expected to contribute or persist above the action level. The program past program is demonstrated to be in attainment and an improved program is expected to remain in attainment. The near-field conditions were summarized in Section 5.3, Table 18. Additional studies were also analyzed in a supplemental, weight-of-evidence analysis (Appendix J) that characterizes the near-field environment. Refer to Appendix J.

		relevant to demonstrating attainment in the near-field environment. The SIP revision admits that CALPUFF is not reliable for the purpose of estimating concentrations in the near-field environment. "It should be mentioned that there is an inherent region of uncertainty implicit to CALPUFF results ranging from the source edge to 5 or 7 kilometers from a buoyant source-a distance designated as *nearfield*. For this reason, near-field impacts must be characterized separately and no effort will be made to evaluate near-field impacts with CALPUFF." SIP, Appendix H, p. 291. The lack of any modeling information for the near-field environment, when combined with the lack of any monitoring information other than the agricultural worker exposure data, demonstrate that the revision, as submitted to EPA for parallel processing, lacks any credible information to show that past burning has not caused or contributed to ambient concentrations in violation of the NAAQS. This also demonstrates the need to develop adequate modeling tools for predicting the impacts of proposed burns to determine the conditions under which burning may be authorized without a significant risk of violating the limitations in the Idaho statute.	

46.	SAFE Robert Yuhnke	The assumption relied upon in the SIP demonstration that short-term concentrations can be averaged over 24-hours to determine attainment regardless of the magnitude of the short-term peak concentration and its potential for harm to health is not permissible. Section 303 of the federal CAA establishes authority to take emergency action to prevent "an imminent and substantial endangerment to public health." 42 U.S.C. §7603. The drafters of § 303 explained that this provision was needed to allow for immediate intervention in the case of air pollution emergencies that threatened life and health: "[T]his emergency authority is necessary to provide for immediate, effective action whenever air pollution agents reach levels of concentration that are associated with (1) the production of significant health effects, (2) incapacitating body damage, or (3) irreversible body damage in any significant portion of the general population. The term 'significant portion' is not intended to exclude sensitive elements of society such as asthmatics ...." S. Rep. No. 1196, 91st Cong., 2d Sess. 35-36 (1970). The 1-hour emergency standard adopted by statute is the current limitation adopted to implement this protection required by the federal Act. The state may not demonstrate attainment with the NAAQS if the emergency standard is not complied with. The attainment demonstration must show that the permit program will be implemented to ensure compliance with both limits to comply with federal law.	Pursuant to Idaho Code Section 39-114(3)(b), DEQ will not authorize a crop residue burn if it determines that air quality levels have reached, or are forecasted to reach and persist at, eighty percent of the one hour action criteria for particulate matter pursuant to IDAPA 58.01.01.556. The one-hour criteria action level was not developed by EPA pursuant to the Clean Air Act. Rather, DEQ promulgated this rule. It is not a national ambient air quality standard. The one-hour level is a trigger level upon which the state must declare a Stage 1 – Forecast and Caution when particulate concentrations reach, or are forecasted to reach, and persist at above the levels listed in Section 556. Upon such a declaration, there shall be no new ignition of open burning of any kind. The Director may require, if practicable, or in an emergency situation, the cessation of any open burning" IDAPA 58.01.01.561.01. It should also be noted, that Idaho Code Section 39-112 provides DEQ with the authority similar to section 303 of the Clean Air Act.
47.	SAFE Robert Yuhnke	A Demonstration of NAAQS Compliance must be based upon the adequacy of the criteria selected to approve burns. The SIP is not based upon an EPA-approved model to demonstrate the near field impacts of agricultural burning. How the state will determine if a proposed burn will not violate the NAAQS and 1-hour emergency standard is critical to demonstrate the adequacy of the SIP revision. At least 7 fatalities have occurred in Idaho from agricultural burning activities since 1995. Monitors have not been located in the primary impact zone of the plume to allow a determination whether the plumes from these burns violated the NAAQS. If meteorological and fuel conditions during past burns have caused NAAQS violations, then the SIP needs to include a description of the decision criteria that will be applied by the State to ensure that burns will not be authorized under such conditions in the future. These decision criteria need to be included in the SIP so that EPA will have reliable scientific evidence to show that burns with the potential	The following text has been added to Section 6.2.1 NAAQS Compliance in attainment and unclassified areas As stated in Section 2, even though the PM2.5 continuous monitors can not be used to determine compliance with the NAAQS, DEQ will use these monitors during the burn decision process. The continuous monitors provide real-time data that will ensure DEQ staff makes burn decisions that are in accordance with IDAPA 58.01.01.621.01. The proposed continuous monitoring sites of Payette/Weiser, Rupert, Rexburg, Potlatch, Harpster, Cottonwood, and Caribou County will improve DEQ's burn decision process. The annual evaluation of the smoke management program will ensure the continuous monitors are in the appropriate location. The evaluation will also identify any new monitoring requirements that may be needed to ensure DEQ staff makes burn decisions in accordance with IDAPA 58.01.01.621.01.

		to violate the NAAQS will not be allowed. During past burns that created public health threats, such as the events associated with fatalities, it is not been demonstrated that monitors were optimally located to measure peak ground level plume concentrations. The State also cannot ensure that monitors will detect peak plume concentrations during future burns. This is true because the location of the peak concentrations cannot be identified without establishing an array of monitors to measure the gradient of concentrations across a cross-section of the plume, and because it is unlikely that the plume will remain centered on the monitor for enough hours of the burn to allow a maximum a 24-hour concentration to be measured. Therefore, it is critical to identify a model that can adequately replicate expected plume concentrations to identify the conditions that might cause NAAQS violations, and to determine safe distances from a burn so that the state DEQ can make informed decisions protective of public health before deciding to permit burns. Furthermore, section 2.3.0 states that "crop burning only lasts from 30-90 minutes and raises monitor readings for an hour or two." This look exclusively to monitor data, and not the near-field data, shows a lack of understanding of the profound health effects of high concentrations of pollutants nearer to the field than monitors have measured in the past. In fact, EPA's own research conducted by Dr. Sally Liu of the NW EPA particulate research center shows PM 2.5 exposures up to 6,999 µg of PM 2.5 per hour for farmers who are igniting the fields.	Worker exposures are not relevant to this SIP revision.
48.	SAFE Robert Yuhnke	The SIP does not provide a demonstration of how the State will implement the burn approval process to ensure that burns will not cause violations. Conditions for Burn, Section 3.3 is a critical element of the SIP because it describes the conditions that must be satisfied before the State will authorize a burn. Some of these criteria are ambiguous, and others refer to an Operating Guide that does not yet exist. The SIP, p. 42, defers many details to the Guide. "The detailed criteria are not given here but will be described in the operational guide." SAFE believes that the SIP cannot be complete for the purpose of demonstrating that the program, when implemented, will ensure attainment of the NAAQS without a full description of these conditions, including those elements of the Conditions that will be addressed in the referenced Operating Guide.	There have been no violations of the National Ambient Air Quality Standards due to crop residue burning in Idaho. In order to ensure there are no future violations due to this activity, DEQ staff will consider a number of parameters and associated decision factors in order to make a sound decision for each individual field on whether to allow the burning of crop residue or not to allow burning. Generally, no single parameter is the basis for the burn/no-burn decision. Rather some combination of parameters combined will allow DEQ to ensure the best possible conditions for dispersion of smoke and therefore approve the burn request. It must be emphasized that air quality monitoring data may remain in the good range but meteorological forecasts or observed conditions may be such that burning cannot be allowed due to poor dispersion characteristics. **Air Quality**

		The adequacy of the SIP must be measured against EPA's requirements for an attainment demonstration. EPA requires by rule that a state's attainment SIP "must demonstrate that the measures, rules, and regulations contained in it are adequate to provide for the timely attainment and maintenance of the national standard that it implements." 40 C.P.R. §51.112(a). EPA's rules also require SIPs to satisfy the Act's requirements for "a program to provide for the enforcement of the measures described [in the SIP]," 42 U.S.C. §741O(a)(2)(C), and for "enforceable" measures, id. §7502(c)(6), by submitting "a control strategy...." 40 c.P.R. §51.III(a). EPA define the "control strategy" required by §51.111 to include measures that "achieve the aggregate reduction of emissions necessary for attainment." Id. §51.100(n). Each of these regulatory provisions requires that the control measures submitted in the SIP must be adequate to achieve the emissions reductions required for attainment.	In order to approve a burn, DEQ must determine that ambient air quality levels do not exceed 75% of the level of any national ambient air quality standards on any day and are not projected to exceed such level over the next 24 hours, and ambient air quality levels have not reached, and are not forecasted to reach and persist at, 80% of the one-hour action criteria for particulate matter under Section 556 of the Rules. The goal of the smoke management program is to avoid having ambient air quality levels approaching those listed above. Therefore, 1-hour and 24-hour trends from monitors will be evaluated prior to making a burn decision and also while burning is ongoing. DEQ intends to review ambient levels similar to those in the Nez Perce Operating Guide. For example, hourly PM-2.5 concentrations below 15ug/m^3, burning may be allowed if all other burn parameters discussed below support a burn decision. For hourly PM-2.5 concentrations of 15 µg/m^3 to 20 µg/m^3, greater emphasis will be placed on consideration of all other burn parameters listed below. Specific burns may be approved when hourly PM-2.5 concentrations are above 20 µg/m^3 and below the limits listed above only in very limited circumstances. The specific concentrations may be different in each Burn Management Area based on DEQ's technical analysis of the area. Air Quality will be evaluated for each Burn Management Area. These analyses may result in burning being allowed in some areas and not being allowed in others. These analyses will continue to be updated through burn reports, monitoring, and annual reports and incorporated in the dynamic Operating Guide. DEQ agreed to incorporate red card / yellow card process used by the State of Washington's Agricultural Smoke Program. The purpose of this process is to provide additional documentation of events when elevated smoke impacts from approved burns occur. The Operating Guide will state hourly air quality levels appropriate for Idaho for each Burn Management Area. If these levels are reached a requirement for additional analysis and documentation of the burn outcome is initiated. A yellow card will have a lower trigger level and must be completed if that level is reached as a result of burning and additional burning is planned. It must include an explanation as to why additional burning is not expected to result in a further, significant reduction of air quality. A red card will be required when significant impacts are detected and will include details regarding actual approved burning, review of monitoring data, a listing of other potential sources, a summary of dispersion and meteorology, special or unanticipated events or circumstances, and a summary explanation of the situation. **Meteorological Data**

			The goal is to assure good to excellent ventilation (smoke rises away from the ground) and good to excellent dispersion (smoke goes into the transport winds and moves out of the area). Aspects of the meteorological data that will be evaluated include: Ventilation index. The ventilation index is a calculation based on the surface wind speed and the mixing height. The ventilation index for the burn area should be ‘marginal’ to ‘excellent’ throughout the duration of the approved burn(s). • Burns should be grouped by areas of best ventilation. • Burning under poor ventilation should not be conducted. • Burning under marginal ventilation can be successfully completed if the other prescription criteria are met and should only be approved on a case-by-case or as-needed basis. • Ventilation is established both by forecasted characteristics, as well as observed in-the-field smoke behavior and cloud formation. Cloud cover should be “mostly sunny” to “partly cloudy.” Uplifting, billowy clouds (fair weather cumulus) show the most unstable conditions (best ventilation & dispersion). • Clear, bright blue skies are often indicative of high-pressure weather systems. Before burning under clear skies, all other prescription criteria should be met. • Burning under low-lying, solid cloud cover should be avoided if the mixing height is at or near the same elevation as the cloud layer. If the solid cloud cover is at a higher elevation, burning can be successfully accomplished if other prescription parameters are met. Surface wind speeds should be in the 3-8 mph range or at a speed sufficient to carry the fire. • Winds speeds at less than 3 mph can often make fire spread unpredictable. Wind that is too light and variable can create poor dispersion conditions. • When burning within 3 miles of an institution with a sensitive population, wind speeds should be no greater than 12 mph, and, generally, the wind speed should be within 3-8 mph, which is the optimum range. • Additionally, burning when surface winds are greater than 12 mph should be done with extreme caution. Too strong of surface winds can inhibit plume rise, pushing smoke along the surface.

			Additionally, strong surface winds can also make control of the fire difficult. <u>Surface wind direction</u> can vary, depending upon the location of the burn(s). • Burn to keep smoke away from sensitive receptors (e.g. schools, homes, population centers, hospitals, retirement centers, highways, airports, and valleys). When conditions are such that winds and poor dispersion would direct, or are predicted to direct (during the proposed burn period), smoke toward those receptors, burning should not be conducted. • To prevent risks associated with impaired visibility or other non health-related impacts, take caution if the surface wind direction is forecasted to shift at some point during the burn day. <u>Transport wind speed</u> should be 7 – 20 mph for best dispersion. • Be cautious of burning when transport wind speeds exceed 20 mph. Too strong transport winds may produce a curling effect causing smoke to return to the surface. <u>Transport wind direction</u> is dependent upon the location of the burn(s). • Burn to keep smoke away from institutions with sensitive populations (e.g. schools, homes, population centers, hospitals, retirement centers, highways, airports, and valleys). When conditions are such that winds and poor dispersion would direct smoke toward those receptors, burning should not be conducted. • Take caution if the transport wind direction is forecasted to shift at some point during the burn day. A shift in direction can result in an impact to institutions with sensitive populations and/or increase fire risk. <u>Mixing heights</u> should be at least 1,000 feet above ground level. • Mixing heights may vary throughout the airshed based on changes in elevation and other surface features, such as water. <u>Relative Humidity</u> (RH) should be considered relative to fire and fuel type, moisture of any potential fuels surrounding or adjacent to the burn, and ventilation conditions. • Lower RH values below 25% can be considered for crop residue burns. However, because lower RH values can make it difficult to control a fire, any potential surrounding fuels must be considered to avoid the risk of escaped fire. This case is especially true for forestry prescribed burns.

- For bluegrass residue burns, RH values over 30% tend to inhibit plume rise and smoke dispersal, so ventilation conditions should be especially considered.
- High RH values (above 60%) can inhibit smoke dispersal and a fire may leave unburned islands or may not burn hot enough to accomplish the desired result.
- The response to changes in relative humidity is much more rapid in fine dead fuel suspended above the ground because these fuels are not in contact with the damp lower layer and are more exposed to the sun and wind.

Radiation Inversions. Under optimum conditions, the burn window may be narrow due to radiation inversions.

- Burning should not be permitted before the inversion has mixed out unless transport conditions after breakup would not protect population centers. There are reasons in specific airsheds, for example near Grangeville, where the Seasonal Burn Coordinator, under close guidance of the Smoke Management Analyst, may develop burn practices that permit field ignition prior to inversion breakup to promote optimum transport after breakup and ensure protection of the population centers. Such practices will be carefully documented in the Operating Guide.
- A sufficient amount of time should be allowed at the end of the burn day for any residual smoke to leave the area before a radiation inversion returns.

Forecast Models

There are a number of forecast models and tools that are used regularly by smoke managers in the Northwest. Burn decisions should not be based on any one model. Rather, the output from a number of sources should be reviewed with a goal of determining where there is the most agreement. The models discussed below are those currently available to smoke managers and may change or be improved from year to year.

Washington State University has provided the use of a sonic detection and ranging (SODAR) system at the Reubens monitoring site. This data is typically available to AQ staff from mid-July through October of each year and can also be accessed for the wind profile of the lower atmosphere.

MM5 (http://www.atmos.washington.edu/mm5rt/)- MM5 produces 72-hour forecasts twice-daily using the mesoscale weather prediction model. MM5 can be used to evaluate ventilation index, transport and surface winds (925mb, 850mb, 700mb, 500mb and 10m), planetary boundary

			layer, mixing height depth, precipitation, and soundings.
			
			BlueSkyRAINS (http://www.blueskyrains.org/)- BlueSkyRAINS links computer models of fire, weather, smoke dispersion, and fuel consumption and emissions into a model. BlueSkyRAINS can be used to evaluate ventilation index, mixing height, wind speed and direction, smoke trajectories, proposed prescribed burn locations, and wildfires.
			
			ClearSky (http://www.clearsky.wsu.edu) – ClearSky is a modeling system that forecasts hourly average surface layer ambient concentrations of $PM_{2.5}$ expected to result from user-defined scenarios of agricultural field burning. It uses daily meteorological forecasts (MM5) and a dispersion model (CALPUFF) to estimate ambient concentrations from one or more potential agricultural field burns. If potential burn locations for the following day are known, a 'most probable scenario' should be entered into ClearSky.
			
			National Weather Service (http://nimbo.wrh.noaa.gov) – The National Weather Service provides local weather forecasts, fire weather forecasts, satellite imagery, air quality advisories, fuel moisture maps, soundings and access to many local weather stations.
			
			Specific Attributes of the Burn Management Areas
			Idaho has diverse terrain, topography, climate, soils and crops. To better address this diversity, DEQ has developed Burn Management Areas (BMA) that divide the state into more manageable parts. Within the BMAs, DEQ may develop specific prescriptions designed to maximize smoke dispersion and to minimize air quality impacts.
			
			Some examples of prescriptions that may apply to all, or part, of a BMA are:
			
			• Burning Near/Along Canyon Rims should be done when both transport and surface winds are blowing away from the canyon.
			    • Ensure adequate plume rise will occur. In some cases a test burn may be necessary. Smoke that travels over the canyon while the temperatures in the canyon are relatively cooler than those elsewhere, will drop.
			    • For fire safety reasons, burns should be conducted before surface wind speed increases (typically by 12:00PM). Avoid burning if 'whirlwinds' are visible.
			
			• Over larger bodies of water, the atmosphere will typically be cooler and more stable. This can cause 'lake-breezes' in the afternoon that will pull smoke downward - winds at the surface blow from the lake to shore, which causes air above the lake to sink downward. Even in

			the absence of a true lake-breeze, the interaction between lake-generated winds and prevailing winds is complex and can cause variable conditions that can change quickly. Knowledge of the expected prevailing wind direction and strength is important. It is also important to know the direction of transport winds aloft. They may transport smoke over the lake. Surface and transport winds can be from vastly different directions. A good guide would be to burn downwind of major lakes (so that the smoke never gets a chance to blow over the lake). • Favorable Winds. Certain areas have fairly predictable daily wind shifts. In such areas, burns should be timed to match favorable dispersion characteristics. **Existing Wildfires and Information from Other Burn Managers** Regional coordination of burn decisions and smoke management is important in order to avoid unacceptable cumulative smoke impacts within and across jurisdictions. The information sources discussed below are currently available to smoke managers but could change. • Communicate with local fire safety agencies such as the Idaho Department of Lands, United States Forest Service, Bureau of Land Management, and local and county fire dispatches about local conditions on an as needed basis. • Grangeville Interagency Dispatch Center http://www.fs.fed.us/r1/nezperce/gvc/index.htm - The Grangeville Interagency Dispatch Center operates out of the Nez Perce National Forest Supervisor's Office. It provides wildfire information, situation reports, fire weather forecasts, fire maps, area updates on air quality, and the latest news on the fire zone, among others. • National Interagency Fire Center http://www.nifc.gov – NIFC is a national support center for wildland firefighting and disaster response. Review this website for information on the National Fire News Wildland Fire Update, wildland fire statistics, and Incident Management Situation Reports. • United States Forest Service MODIS Active Fire Mapping Program http://activefiremaps.fs.fed.us – MODIS is a remote sensing application that illustrates fire location based on data provided by the National Interagency Fire Center. This website is useful for fire activity that has occurred in the last 24-hour period. • Montana/Idaho State Airshed Group http://www.smokemu.org – The Montana/Idaho State Airshed Group coordinates efforts to manage

			smoke during wildfire and prescribed burning seasons. A map of the group's approved burns for each day should be printed and attached to the checklist. If AQ staff is in disagreement with the approval of these burns, the Smoke Monitoring Unit should be contacted. (See also response to comment 49) **Visibility** Visibility conditions should be considered when deciding whether or not to approve burning. When deciding to allow burning on a given day, if visibility is less than 10 miles and is expected to remain so throughout that day, a no burn decision will be made. **Individual Fields/Institutions With Sensitive Populations** DEQ will consider the following factors in developing specific prescriptions and burn approvals. • Burn location is identified on the permit at the township/range/section level (one square mile). • Elevation and aspect are also considered. Due to microclimatic variations in wind speed, direction, lift and dispersion, burn location information is very important. • 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. • Proximity to Public Roadways. Proximity to public roadways. • Proximity to Airports. Proximity to airports • Proximity of Other Burns. The proximity of other burns and other potential emission sources within the area to be affected by the proposed burn. • Size of the burn includes the area (acres or feet) of the burn as well as the height of the burn if the burn is a pile. • Burning method refers to the lighting method such as match/lighter, propane torch, or diesel burners, as well as the pattern of lighting. Generally, the hotter the fire, the less smoke it produces, and the better the smoke is pushed upward for dispersion.

			- If a field is lit slowly section by section and/or is lit from the top of a slope downward, the burn can take longer, not burn as hot, and may produce more smoke than burning a field more effectively. - A typical, more effective burn begins with lighting a backfire along the downwind perimeter of a burn. A backfire moves slowly and with relatively low flames because it burns into the wind. When a backfired portion of the burn is safe, flank fires are generally lit beginning at the backfire along burn perimeters parallel with the wind. Flank fires have moderate flame heights and speed because they move perpendicular to the wind. When the back and flank portions of the fire are safe, a head fire is typically lit to quickly consume the remaining fuel. A head fire moves relatively fast with longer flames because it burns with the wind. Usually, fires that burn uphill act as head fires and those that burn downhill act as backfires, regardless of wind direction. • <u>Fuel type</u> affects smoke generation and dispersion. Generally, the more dense the fuel, the more smoke it produces when it burns. For example, fuel density can change with crop type and variety (e.g. generally, wheat stubble is less dense than bluegrass stubble, and certain wheat or bluegrass varieties can be more dense than others). • <u>Fuel loading/expected emissions</u>. Fuel loading is a function of fuel type, acreage of the burn, density of material remaining in the field, and burn type. Generally, the greater the fuel loading, the greater the expected emissions and the potential for smoke. • <u>Fuel moisture</u> is dependent upon fuel type and relative humidity. In general, fuel moisture should be as dry as possible throughout the residue layer to promote plume rise. - Fuel moisture influences smoke quantity and plume rise. In general, the greater the fuel moisture, the more smoke and poorer plume rise. - Fuel moisture should be initially assessed independently of RH. - Relative Humidity and temperature controls fuel moisture content up to about 32 percent. Liquid moisture such as rain or dew must contact a fuel for moisture content to rise above 32% and the increase depends upon the duration as well as the amount of precipitation. - The moisture content for fine or dead fuel, such as pine needles

			and dried grasses, responds rapidly to changes in relative humidity. • There is a lag time involved for fuel moisture content to reach equilibrium with the RH of the surrounding atmosphere. • Previous drying and wetting of the fuel will influence fuel moisture. **Safety** If there is a risk of smoke from an approved burn impacting a roadway, the burner must have flaggers present. **Other Relevant Factors** The rules allow DEQ to consider any other factors relevant to preventing exceedances of the air quality concentrations listed above.
49.	SAFE Robert Yuhnke	The ambiguities in the SIP omit important information that is relevant to determine whether the measures in the SIP will provide for attainment of the NAAQS. Ambiguities that must be eliminated or resolved by the SIP demonstration include a) The narrative, p. 42, describes the need to account for background smoke from other burns including wildfires and field burning in tribal areas (p. 50) and upwind states. Not mentioned, but also relevant here are prescribed burns on public lands and other burns, including, but not limited to, burns such as landfill burns that occur throughout the state. The SIP, p. 50, describes the fact that wildfires occurred concurrent with the burn season in 2005, and implied that the PM2.5 concentrations from wildfire smoke was significant. At p. 63, the SIP acknowledges that managers must be able to account for smoke from wildfire and upwind states in order to ensure compliance. The need to account for the cumulative impacts of smoke from interstate and instate tribal and public lands sources, as well as multiple proposed agricultural burns that require permission to ignite under the rule, is an important factor in determining whether a burn will cause or contribute to NAAQS violations, exceedances of the statutory limits or protections for sensitive populations in the rule. But the SIP documentation does not describe how these potential sources of smoke not under DEQ control will be identified and accounted for before a burn is approved. The SIP is inadequate to demonstrate that the NAAQS will be protected because it lacks any procedure for coordinating with upwind states, tribes or public land agencies regarding their burn decisions, and fails	SAFE's comments describe the need to account for background smoke from other burns including wildfires and field burning in tribal areas and upwind states. DEQ agrees and would include the need to account for smoke from prescribed fire for forest and rangeland activities as well. Smoke from these activities do contribute to background levels of $PM_{2.5}$ and in the case of wildfire can cause significant smoke impacts. These contributions will be considered in the daily burn call determinations and will impact the burn decision. If smoke impacts from these activities create pollution levels exceeding the 75% of any National Ambient Air Quality Standard or 80% of the 1-hour $PM_{2.5}$ trigger level defined in the rule no burning will be allowed in the impacted burn management area. Further, if contributions from these activities create high background levels that when combined with predicted impacts from proposed crop burning have the potential to exceed either the 24-hour or 1-hour action levels no burning will be allowed or acres approved will be reduced to ensure that air quality is protected in accordance with the rule. DEQ will use several methods to determine background smoke impacts. These will include but are not limited all real-time state operated air quality monitors (reference method and non-reference method), satellite imaginary for plume detection, modeling outputs, and monitors from upwind states, tribes, and interagency partners when appropriate. **It should be noted that non-reference method monitors will be used for burn call determinations.** In the Crop Residue Burning Agreement, DEQ has committed to enhancing its cooperation with other burners, specifically the tribes, Washington, other states and other burn programs. Cooperation among these groups has existed in the past and they were enhanced during the development of the Open Burning of Crop Residue State Implementation

		to establish any parameters for deciding when actual or expected smoke from upwind sources will consume the capacity of the atmosphere to accommodate additional smoke without causing NAAQS violations. b) The emissions inventories for pollutants that contribute to PM2.5 and ozone are presented as annual inventories, but for episodic sources that emit only occasionally, these annual inventories are entirely irrelevant to determining whether emissions on any given day will cause the 24-hour or 8-hour NAAQS to be exceeded. The relevant inventory for an attainment demonstration is the inventory for days when burns will occur. Since inventories of actual emissions cannot be known, some estimation must be made of likely daily inventories, and what the maximum permissible emissions for a burn day would be so that there is some benchmark against which the expected cumulative emissions (including interstate transport, prescribed burns on public lands and all proposed agricultural burns) for a day may be compared. But the SIP contains neither an estimation of the maximum permissible emissions that may be consistent with attainment under meteorological conditions known to be associated with exceedances, nor any procedure for determining what the maximum permissible loadings would be under the expected meteorological conditions of a proposed burn day. In the absence of either a limit on total daily loadings based on historical meteorology, or a procedure for 'determining such limits for the expected meteorology of a proposed burn day, there is no demonstration that the SIP will provide for attainment as required by law, and no basis for EPA to approve the SIP. c) Modeling analysis in the SIP averages plume concentrations across grid cells that do not account for actual plume concentrations. This may be appropriate for determining concentrations downwind at distances where the CALPUFF model is considered reliable, but not in the near-field environment.	Plan. DEQ is a member of the Montana/Idaho State Airshed Group which manages smoke impacts from prescribed fire on range and timberlands in Idaho and Montana. Members include Federal Land Managers, the Idaho Department of Lands and large timber companies. DEQ will continue to use this group as resource for determining smoke impacts from their prescribed fire activities. The Idaho Department of Lands and Federal Land Managers in this group work closely with DEQ on determining impacts from wildfire. DEQ will work with all of these groups to educate them on the Crop Residue Burning Program and to improve data sharing capabilities to better determine cumulative smoke impacts. Regarding comment c), the CALPUFF model uses discrete receptors, rather than grid cells. In addition the supplemental near-field analysis utilizes relative dispersion factors at discrete receptor distances as close as 100 meters.
50.	SAFE Robert Yuhnke	The new rules mandate protection for "sensitive receptors." Those are places with citizens who can't flee burns that go awry, and whose health is already at risk due to age or medical condition. They include hospitals, schools in session, and residential care facilities. The new proposed 'smoke management rule (IDAPA 58.01.01 Section 617-623) states that DEQ cannot approve a burn where a smoke plume will	See response to comment 46 and Appendix J. DEQ intends to pay particular attention to proposed burns near institutions with sensitive populations. DEQ has developed a statewide geographic information system (GIS) that depicts locations of sensitive populations. This system, along with applicant information, will assist in determining if a burn will be close to an institution with sensitive populations. Portable monitors and DEQ field staff will be deployed to areas within close range of such

		have any impact on these receptors. The State needs to explain how this provision of the rule will be implemented since there are neither enough monitors nor state personnel to measure impact on these protected zones, and another mechanism must be applied to ensure compliance. If the state does not explain how it will ensure compliance, then EPA has no basis for ensuring that compliance with the new rule, and hence the SIP and NAAQS will be assured.	institutions, before and during burns. Close range is generally defined as within three miles. This is not a hard and fast rule, however; it may be more or less, depending on the interplay of factors critically reviewed in making the burn call. DEQ also intends to communicate with such institutions and encourage them to review DEQ's Web site for updated burn information. DEQ also intends to review the post burn report and discuss, if necessary, with personal from such institutions, any issues that have arisen, to ensure no adverse impacts have occurred or will occur in the future.
51.	SAFE Robert Yuhnke	D) Future Monitoring. Section 2.5.2 describes seven continuous monitors capable of reporting real-time concentrations during burning operations. The SIP explains that these are not FRM monitors, but will be collocated with an FRM monitor to establish correlations. The section states that data from these monitors will not be used to compare with the NAAQS. During the negotiation, DEQ staff explained that these monitors would be portable and would be deployed and operated to measure PM2.5 concentrations in sensitive areas. During the discussion of how the rule provisions would be applied to protect institutions that serve sensitive populations, it was explained that data from these monitors would be used to shut down burns under conditions that threatened to exceed the statutory limit on PM2.5 (75% of NAAQS). The SIP does not explicitly provide for use of these monitor outputs to enforce the state's statutory standard, or describe the use of the monitor outputs for the purpose of enforcing the operating limitations defined in the rule. These uses of the data must be explicitly described in the SIP to ensure that there is no inference that because the data will not be used to determine federal NAAQS violations that it also may not be used to enforce the State's statutory and regulatory air quality limits and protections for sensitive populations.	The following text has been added to Section 2.5.2 Future Monitoring **Considerations for selecting locations of ambient air monitoring sites** Appendix D to Part 58 of the Clean Air Act lists the requirements for ambient air monitoring network design for state and local air monitoring stations (SLAMS). Although the monitors that will be used for assessment of the crop residue burning (CRB) program will be designated special purpose monitors (SPMs) the criteria for location of the monitors will be the same listed in Appendix D. Ambient air monitoring sites in DEQ's network are designed to meet specific at least one of six (6) monitoring objectives: 1. To determine the highest concentrations expected to occur in the area covered by the network. 2. To determine representative concentrations in areas of high population density. 3. To determine the impact on ambient pollution levels of significant sources or source categories. 4. To determine general background concentrations. 5. To determine the extent of Regional pollutant transport among populated areas; and in support of secondary standards. 6. To determine the welfare-related impacts in more rural and remote areas (such as visibility impairment and effects on vegetation). To clarify the nature of the link between general monitoring objectives and the physical location of a particular monitoring station, the concept of spatial scale of representativeness of a monitoring station is defined. The goal in siting monitoring stations is to correctly match the spatioal scale represented by the sample of monitored air with the spatial scale most appropriate for the monitoring objective of the station. Thus, spatial scale of representativeness is described in terms of the physical dimensions of the air parcel nearest to a monitoring station throughout which actual

			pollutant concentrations are reasonably similar. The scale of representativeness of most interest for the monitoring objectives defined above are as follows: • Microscale – defines the concentrations in air volumes associated with area dimensions ranging from several meters up to about 100 meters. • Middle Scale – defines the concentration typical of areas up to several city blicks in size with dimensions ranging from about 100 meters to about 0.5 kilometers. • Neighborhood Scale – defines concentrations within some extended area of the city that has relatively uniform land use with dimensions in the 0.5 to 4.0 kilometer range. • Urban Scale – defines the overall, citywide conditions with dimensions on the order of 4 to 50 kilometers. This scale would usually req2uire more than one site for definition. • Regional Scale – defines usually a rural area of reasonably homogenous geography and extends from tens to hundreds of kilometers. • National and Global Scales – these measurement scales represent concentrations characterizing the nation and the globe as a whole. Proper siting of a monitoring station requires precise specification of the monitoring objective which usually includes a desired spatial scale of representativeness. In some cases, the physical location of a station is determined from joint consideration of both basic monitoring objective and a desired spatial scale of representativeness. Classification of the station by its intended objective and spatial scale of representativeness is necessary and will aid in the interpretation of the monitoring data. The typical relationship between the six basic monitoring objectives and the scales of representativeness that are most appropriate for that objective are: 1. Highest concentration – Micro, middle, neighborhood (sometimes urban). 2. Population – Neighborhood, urban. 3. Source impact – Micro, middle, neighborhood. 4. General/background – Neighborhood, urban, regional. 5. Regional transport – Urban/regional.

			6. Welfare-relate impacts – Urban/regional. Based on the above criteria it is reasonable to state that neighborhood scale sites will be most appropriate for the CRB program impact assessment. Information such as emissions density, housing density, climatological data, geographic information, traffic counts and the results of modeling will be useful in designating ambient air monitoring networks. Due to the limitations on portability of the monitors and the infrastructure required to make them operational, it is expected that monitoring sites will remain at their designated location through the burn season. They can be moved between seasons, as may be the case as experience dictates. At this time, the proposed new monitoring sites include the following areas: Payette/Weiser, Rupert, Rexburg, Potlatch, Harpster, Cottonwood, and Caribou County. The continuous monitors provide real-time data that will ensure DEQ staff makes burn decisions that are in accordance with IDAPA 58.01.01.621.01.
52.	SAFE Robert Yuhnke	E.) Enforcement: Although DEQ has the authority to investigate violations and assess penalties, no clear and consistent policy has yet to be defined to address illegal agricultural burning. One incident described by a DEQ airshed coordinator (This was Melissa Gibbs of the Pocatello Office) detailed a wheat farmer in Southern Idaho who tilled a firebreak around his land, and lit it on fire. When the local sheriff investigated the burn, and DEQ investigated to confirm the circumstances of the burn, the farmer was given no penalty whatsoever, even though the evidence was clear and convincing. He stated that he only "intended" to burn his fenceline, a statement contradicted by the collection of evidence. The lack of meaningful enforcement calls into question the enforcement capability and intentions of the department. The DEQ is aware that illegal burning is taking place as of April, and has issued a press release to educate growers. However, much more needs to be done and included in the SIP to assure that compliance is enforced and meaningful, as well as consistent throughout the state. Rather than giving Southern Idaho growers a "pass" because the program is new and resistance to the burn program high, enforcement capability needs to be stepped up, staffed adequately (some air offices supervise numerous counties and don't have enough staff to perform enforcement tasks), and there needs to be a consistent enforcement scheme and penalties throughout the state.	The Idaho Environmental Protection and Health Act (EPHA - Idaho Code 39-108) establishes DEQ's statutory authority regarding investigations, inspections, determining violations, implementing enforcement actions, assessing penalties, and seeking injunctions. Penalties are assessed in accordance with the EPHA and the "Air Quality Administrative Penalty Policy" (circa December 31, 1999) and are "not to exceed ten thousand dollars ($10,000) per violation or one thousand dollars ($1,000) for each day of continuing violation, whichever is greater or ten thousand dollars ($10,000) for each separate air violation and day of continuing violation." To date, DEQ has initiated seventeen formal enforcement actions for apparent crop residue disposal violations and has assessed penalties consistent with the Washington Department of Ecology's Agricultural Burning program. Furthermore, DEQ has developed a Policy on concerning Crop Residue Disposal Enforcement Referrals (memorandum AQ-IP-C029 signed into effectiveness on March 15, 2007), that directs the regional office to "investigate and refer all crop residue disposal open burning violations to the state program office for the consideration of formal enforcement." This policy prescribes the required information needed from the regional office investigations to ensure that enforcement is meaningful as well as consistent throughout the state. This policy further outlines the criterion that determines the seriousness of the violations.

53.

SAFE

Robert Yuhnke

F.) We believe the state made a questionable estimate of Conservation Reserve Program ("CRP") lands, underestimating significantly the amount of acres in CRP designation. This is important because the Crop Residue disposal program allows for burning of CRP lands, and the state may have underestimated the acres which would influence emissions inventories and potential burn sources for future emissions. DEQ estimates only 200,000 acres of Conservation Reserve Program lands, but I found evidence it may be much higher, at 800,000 acres. That land can be burned, too and should be accurate. NRCS estimates can be found at (http://www.id.nrcs.usda.gov/technical/nri/sig find.html) have put CRP lands at about 800,000 acres in Idaho. (starting from 1997) At this link from the Farm Services Agency, http://content.fsa.usda.gov/crpstorpt/r1sumyr/id.htm we can see the total of contracts for a 10 year period in Idaho cover acres of 787,591.

Upon review, DEQ finds the commenter is correct; the number of acres in the CRP was underestimated. DEQ will revise the emission inventory using 800,000 acres. It should be noted, however, that regardless of the estimated acres of CRP land, a permit by rule and specific approval must be obtained for each burn in accordance with IDAPA 58.01.01.617 through 623. Therefore, Table 15 has been revised as highlighted:

Table 15. 2015 Total Estimated Annual Emissions (expressed as tons per year).

Crop	$PM_{2.5}$	CO	NO_x	VOCs	SO_x
Alfalfa Seed	48	209	8	39	1
Barley	1,249	14,365	312	920	6
Turf grasses	3,101	40,725	255	608	34
Mint	8	58	2	6	0.3
Oats	40	270	9	21	1
Wheat	2,336	27,358	609	1,077	128
CRP	1,338	10,032	396	942	53

And Table 33, page 266 will be changed to match the highlighted numbers below:

Table 33. Conservation Reserve Program Burning Emissions Estimate.

	2005 Reported Burning			2015 Projected Burning		
$PM_{2.5}$	Residue load	2.2	t/acre		2.2	t/acre
	Emission factor	15.2	lb/ton		15.2	lb/ton
	Acres harvested	4,633			800000	
	Fraction burned	1			0.1	
	Emissions	77.46	tons		1337.60	tons
CO	Residue load	2.2	t/acre		2.2	t/acre
	Emission factor	114	lb/ton		114	lb/ton
	Acres	4,63			800,	

	harvested	3			000	
	Fraction burned	1			0.1	
	Emissions	580.98	tons		10032.00	tons
NOx	Residue load	2.2	t/acre		2.2	t/acre
	Emission factor	4.5	lb/ton		4.5	lb/ton
	Acres harvested	4,633			800,000	
	Fraction burned	1			0.1	
	Emissions	22.93	tons		396.00	tons
VOCs	Residue load	2.2	t/acre		2.2	t/acre
	Emission factor	10.7	lb/ton		10.7	lb/ton
	Acres harvested	4,633			800,000	
	Fraction burned	1			0.1	
	Emissions	54.53	tons		941.60	tons
SOx	Residue load	2.2	t/acre		2.2	t/acre
	Emission factor	0.6	lb/ton		0.6	lb/ton
	Acres harvested	4,633			800,000	
	Fraction burned	1			0.1	
	Emissions	3.06	tons		52.80	tons

54.	SAFE Robert Yuhnke	G. The SIP is based on North Idaho data only. (SECTION 1.7, PAGE 27) No one knows how much burning, or where burning occurs in Southern. Idaho. The SIP relies on an inference that based on North Idaho numbers, South Idaho should not violate the new laws and rules. But this is an assumption that cannot be justified given the lack of data. Without further investigation, we do not believe this leap in assumptions is appropriate. As we have learned from smoke management programs in the	DEQ respectfully submits the following data to justify the original assumption: Figure 1, 2005 Estimated Annual $PM_{2.5}$ Emissions Due to Open Burning of Crop Residue

<table>
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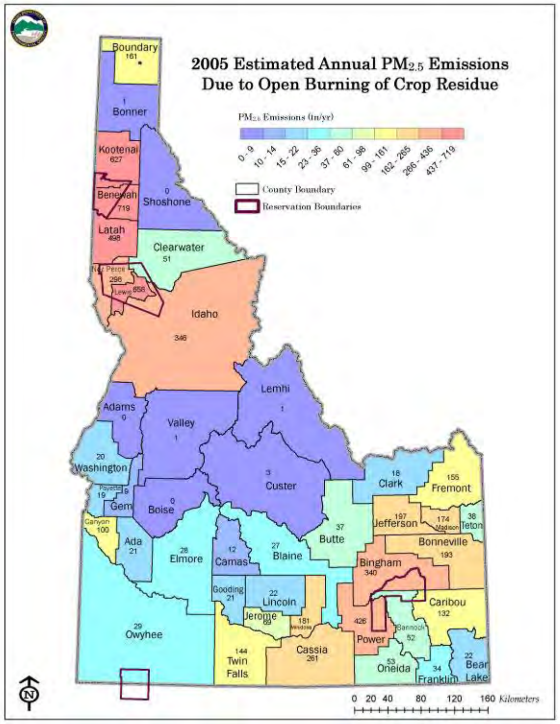
<td>past, understanding local conditions is important to ensure that the program will protect public health. The dearth of information on the amount, types, and execution of crop burns in Southern Idaho does not give the state adequate tools to inventory such burns nor make a reasonable plan to assure that the SIP will protect public health.</td>
<td>

This is a revised version of Figure 2, p. 46 of the SIP, with the counties color-coded to represent the 2005 estimated annual $PM_{2.5}$ emissions due to open burning of crop residue. The county values in tons per year are also displayed. Four northern counties (Kootenai, Benewah, Latah, Lewis) emitted the most tonnage in 2005. Bingham and Power counties in the southeast are the highest emitters in the southern tier. Overall, the counties south of Idaho county contribute 46% (2839 tn/yr) of the statewide emissions on 74% of the total land area. That leaves the northern tier of counties to contribute 54% (3359 tn/yr) of the annual emissions on one-quarter of the land area. The implication is that this greater amount of emissions concentrated across a smaller domain (coupled with the less favorable dispersion climatology and burning conditions) would be more likely to cause a NAAQS violation in the north than in the south.
The two following figures are submitted as evidence to indicate how much burning takes place, and where, in southern Idaho, since the ISDA crop residue burning database is incomplete for the southern counties. </td>
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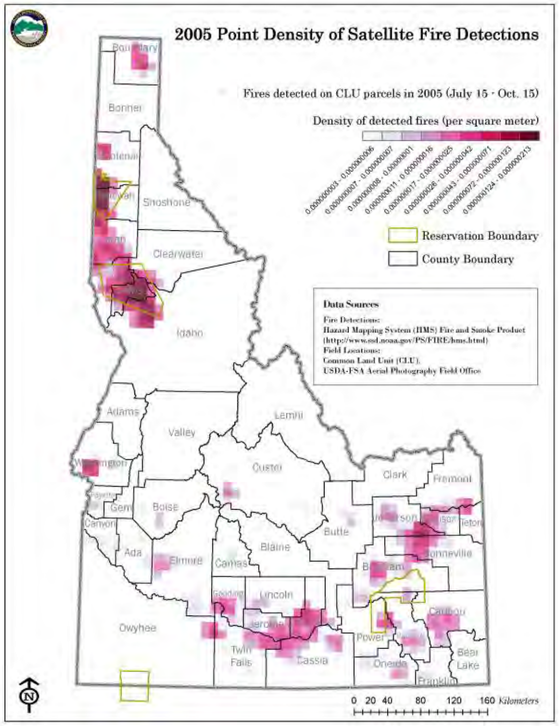
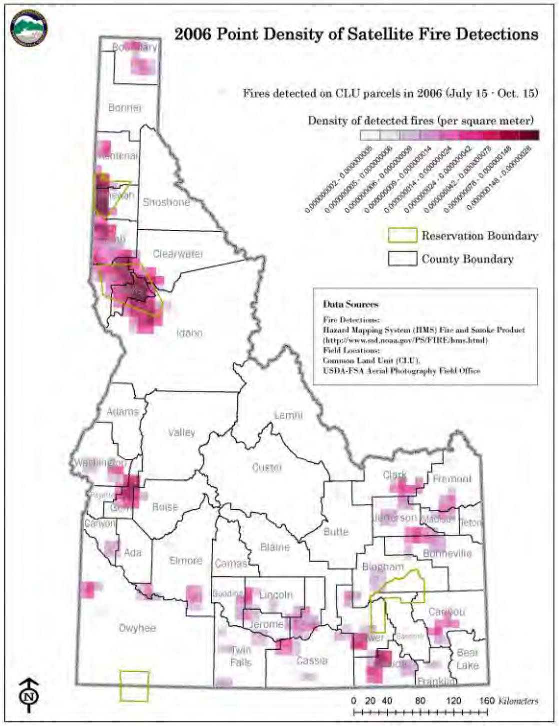
			

2005 Point Density of Satellite Fire Detections
Fires detected on CLU parcels in 2005 (July 15 - Oct. 15)
Density of detected fires (per square meter)
Reservation Boundary
County Boundary
Data Sources
Fire Detections:
Hazard Mapping System (HMS) Fire and Smoke Product
(http://www.ssd.noaa.gov/PS/FIRE/hms.html)
Field Locations:
Common Land Unit (CLU).
USDA-FSA Aerial Photography Field Office
Bonner
Shoshone
Clearwater
Idaho
Adams
Valley
Lemhi
Custer
Clark
Fremont
Boise
Gem
Canyon
Ada
Elmore
Camas
Blaine
Butte
Teton
Lincoln
Owyhee
Twin Falls
Cassia
Power
Oneida
Franklin
Bear Lake
0 20 40 80 120 160 Kilometers



Data were extracted for the 2005 and 2006 burn seasons (July 15 - October 15) from the NOAA Hazard Mapping System (HMS) Fire and Smoke Product (http://www.ssd.noaa.gov/PS/FIRE/hms.html). These data display the locations of fires detected by meteorological satellites (AVHRR, MODIS, DMSP/OLS) and integrated by fire detection algorithms. The fire detections were then intersected with USDA-FSA Common Land Unit (CLU) data in order to select only those fires that occurred on agricultural fields with potential to burn crop residue. This method discards wildland fires. A density per square kilometer was then calculated for all these fire detections. The results indicate the fires detected in northern Idaho are more numerous and have a greater density.

	Maximum Fire Detection Density (fires per square kilometer)	
	2005	2006
North Idaho	0.2.13	0.28
South Idaho	0.0796	0.14

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<tr><td></td><td></td><td></td></tr>
<tr><td></td><td colspan="2">Fire Detection Count</td></tr>
<tr><td></td><td>2005</td><td>2006</td></tr>
<tr><td>North Idaho</td><td>588 (59%)</td><td>612 (64%)</td></tr>
<tr><td>South Idaho</td><td>405 (41%)</td><td>343 (36%)</td></tr>
<tr><td>Total</td><td>993</td><td>955</td></tr>
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</td></tr>
<tr><td>55.</td><td>Ken Barber

Twin Falls</td><td>Field burning??!! I can't believe this practice is even being considered, has anyone looked at a calendar, its 2008, not 1908. As explained to me by DEQ's own; Stephen VanZant of the Twin Falls office, field burning has no agricultural value; it's just an easy way for a farmer to clear a field; which will be disked under anyway!

On April 17th I drove from Twin Falls to Boise, on the way there and back the state was up in smoke; ditch burning. I imagine from a view from space the entire state would look like it was on fire!! I had a sinus head ache for 2 days. So much for Global Warming. I think ditch burning is quite enough!

Smoke makes people sick; you know it as do millions of people. The American Lung Association explains it on their website. For field burning to be allowed would be a crime to our citizens, putting the young, the elderly and the sick at risk. Let's keep Idaho in the 21st century, NO FIELD BURNING!!</td><td>As noted in paragraph 2 of the Executive Summary:

This revision to Idaho's State Implementation Plan (SIP) is based upon an updated and improved open burning of crop residue (crop residue burning) Smoke Management Plan (SMP) that resulted from a landmark agreement between burners and those advocating enhanced protection of public health. This SIP revision will allow for the return of crop residue burning in Idaho by implementing a rigorous smoke management program focused on the protection of public health. This SIP revision does not apply to crop residue burning on the Indian Reservations in Idaho.

DEQ intends to implement this program carefully, by reviewing critically all factors before approving a burning, and monitoring many burns and reviewing burn reports to continually find ways to improve the program for all.</td></tr>
<tr><td>56.</td><td>Judy Call</td><td>I would hope that you are honestly concerned about the public health and not just the cheapest method of clearing fields. Too many of us suffer respiratory illness throughout the summer months just from the range fires that rage throughout the state. Would your new regulations only increase the possibility of more suffering? I am concerned about this because I hate being sick and there is really no place to go to escape. Thanks for listening.</td><td>See response to Comment 55.</td></tr>
<tr><td>57.</td><td>Linda Clovis, representing the Farmers of North Idaho</td><td>On behalf of the farmers of North Idaho, I respectfully submit this letter regarding support for the proposed revision to Idaho's air quality plan (State Implementation Plan (SIP)).</td><td>Thank you for your support; DEQ looks forward to working with the growers to ensure protection of public health and the environment while allowing crop residue burning under the conditions described herein.</td></tr>
<tr><td>58.</td><td>Panhandle Environmental Resource Coalition, Inc.

(P.E.R.C.)</td><td>On behalf of the farmers of North Idaho, I respectfully submit this letter regarding support for the proposed revision to Idaho's air quality plan (State Implementation Plan (SIP)). The work done this past year by the State of Idaho through negotiations of various entities (representatives of DEQ, Idaho State Department of Agriculture (ISDA), Safe Air for Everyone (SAFE), the Idaho Farm Bureau, grain and grass growers,</td><td>See response to Comment 57.</td></tr>
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	Linda Clovis	Tribes, and others) proves that a balance between public welfare and sustainability for our family farms can occur. The development to this statewide revision of terms is acceptable and sensible for all involved. We are pleased that all involved in negotiations have approved this plan which will allow farmers to practice field burning as a tool to eliminate crop residue. By adapting rules that have proven successful in North Idaho and other locations, all family farms will be protected for many years to come. Population growth has irrevocably changed Idaho, and farmers are willing implement the new SIP in order to support concerns. It should be noted that farmers do have support by their fellow citizens, and in particular, a large majority of local citizens support the grass farmers. A University of Idaho study on public perception of air quality/grass field burning discovered 85% stated overall air quality as "good" or "very good." 60% percent stated that if they were asked to vote on smoke management issues, they'd allow burning to occur. Only 10% stated they would want to put a total ban on burning. Sixty-three (63)% responded that the news media does not report all sides of the bluegrass burning issue fairly. As unpleasant as the smoke may look, studies have proven that 90% of the smoke is water vapor. We understand the new program is designed to be more protective of public health. We understand the concerns but also wish to acknowledge for public record that not a single peer-reviewed report has ever demonstrated that a causal connection between exposure to smoke or particulates from the burning of bluegrass and adverse public health effects exists. For example, not a single physician, including the Moon plaintiffs' doctors (recent lawsuit that the insurance companies made the farmers settle out of court) has ever identified the amount of particulates or concentration of exposure that any person was exposed to, at any time. Persons who were purportedly sick enough to file a class action lawsuit were not so ill to justify a visit to the emergency room or even to their physician. Of course, these persons were admittedly ill for a wide variety of other reasons, including years of smoking cigarettes and cigars. A 2004 Washington State University study showed no correlation between the burns and asthma problems. The summary released by WSU researchers states that 8 weeks of	

		exposure to smoke from field burns in 33 asthmatic adults showed few health effects. Stated the scientist: "We did a lot of particle analysis 25 years ago and most of it is within safe levels. Farmers breathe in more smoke than anybody and so far there haven't been any adverse effects on their health that we're aware of." It is good to know that those who developed the revision did identify that when field burning occurs in a responsible manner it does play an important role to reduce water pollution caused by water erosion, reduces seasonal wind-blown particulates, reduces each farmer's use of and reliance on fossil fuels, and reduces the need for chemical fertilization. Field burning as a tool also allows farmers to deal with excess residue while simultaneously returning essential nutrients and elements back to the soil. In North Idaho, growing Kentucky bluegrass is essential to protection of the aquifer, which serves as our drinking water source. Bluegrass farming also serves to prevent erosion and pollution. This reduction in erosion keeps our streams and lakes clean for fish, wildlife and recreation. For our part, we will continue to work with everyone to limit smoke impacts in the area and abide by the new SIP once it is implemented. Leading scientists from the University of Idaho continue to seek alternatives to field burning and we are supportive of their research, offering acres for test plots and attending research sessions. We will continue to do our part to reducing emissions and look forward to continuing our cooperative efforts with EPA, ISDA, Idaho reservations and the public-at-large in the future. We respectfully request that you support this new revision of the SIP. With Idaho DEQ's approval and the U.S. Environmental Protection Agency's approval, we fully support the allowance of field burning to resume in late-summer or early-fall. Once again, thank you for all the hard work that went into a suitable agreement and thank you for the opportunity to allow us to submit this letter.	
59.	Thad Davis	I moved to north central Idaho, rural Latah Co., nearly three years ago. I am disabled due to the respiratory disease COPD. The first time I saw a local pulmonologist I was told this area was not good for me due to the farming activity and air pollution it causes. (But I like it here and will not move.) My dad was a farmer and grew wheat and other crops in Kansas, so I do not have a huge issue with the activities	DEQ currently operates 38 monitors year-round and 3 fine particulate ($PM_{2.5}$) seasonal monitors for smoke management. DEQ has received funding from the legislature to install 7 additional monitors specifically for the agricultural smoke management program. These fine particulate monitors will be installed prior to resuming field burning. At this time, the proposed locations for the new monitors include: Payette/Weiser, Rexburg Rupert, Potlatch, Harpster, Cottonwood, and Caribou County.

		involved in growing field crops. (But I would never live directly next to farmland.) However, I believe any sort of field burning is poor farming practice -- in the long run it will diminish soil fertility, and following every burn, every year, all that soot and particulate matter is going to settle out somewhere nearby, more than likely in someone's breathing "space." I know what it's like to have to gasp for a lungful of air, something I wouldn't wish on anybody. Do the citizens of Idaho absolutely have to put up with this? What type of monitoring has the DEQ done and will do in the future? How can you assure that the most vulnerable population, children, other people like me, etc., will not be adversely affected by field burning? I hope that state officials who read this can adequately answer my concerns before field burning resumes.	The proposed program will notify the public of the designation of all burn days that includes the following information: location and number of acres permitted to burn and meteorological conditions and any real-time monitoring data. In addition, the proposed crop residue burning program has a requirement to ensure sensitive populations are not adversely impacted. IDAPA 58.01.01.621.01.f states that DEQ will 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. Institutions with sensitive populations include 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 DEQ.
60.	Don DeArmond DeArmond Ranch Co.	The issue of residue management with the option of burning is critical for my farming operation. The past two years has been very costly and has resulted in reduced yields. I would hope that this issue while not perfect, would be implemented as soon as possible. My main crops are blue grass & wheat, both need the option of burning as a good management tool.	See response to Comment 57.
61.	Lou Dersch Twin Falls	How can a fee offset any amount of air pollution, or compensate someone with respiratory health problems, or make things better for someone who can't see the mountains any more? The farmers' claims of all the benefits of burning are just plain wrong. Any plant pathologist will tell you that a field doesn't burn hot enough long enough to kill fungus spores. Burning does cause a transient spike in either potassium or phosphorus, I forgot which one. But nitrogen and the other (potassium or phosphorus) literally go up in smoke. Why else do fertilizer companies defend farmers' right to burn? I heard on the radio that most of the smoke you see is water vapor How much water is left in grain stubble that has been cooked in the Magic Valley's late summer conditions? However much there is, does anybody really believe that in this heat and low humidity, water vapor would be visible for more than a few seconds? I've seen smoke plumes that go to the horizon. Granted, there is higher Kentucky bluegrass seed production in a burned field. Maybe we should switch to another species??? Or consider zeriscaping??? My opinion is that all field burning, ditch burning, burning on farms and in town, and burn barrels should	The $2 per acre fee is collected to assist in the implementation of the crop burning program. DEQ intends to work closely with the farmers and the public to ensure protection of the public health and the environment.

		be permanently banned. Then the ban needs to be enforced with heavy fines. All those practices are outmoded holdouts from the past. Our air quality problems are not caused by La Nina or inversions or smog from LA or volcanic activity or anything else. People create the problems here and we can stop the problems here. Thank you for considering this.	
62.	Lou Dersch Twin Falls	Here's a follow-up to my previous comments to you about DEQ's new burning proposals. This was last week in the city limits of Twin Falls, and your nose would tell you that this was not a business burning a couple scrap pallets. The really galling thing about this is that the transfer station for the landfill is about 300 yards from the fire. Something like this should have a stiff fine, not a warning letter.	Thank you for this report. Please contact Steve Vandzant at 208-736-2190 of the DEQ Twin Falls Regional Office with any information regarding illegal burns in your area. Also, see response to Comment 55.
63.	Tim R. Eichner Grower-Grass Producer	My comment is mainly concerning the timetable for the burn season to begin. Information and news leads me to believe that the burn season may not begin until September. I urge you to please focus on a beginning burn season of JULY 15. I am a bromegrass grower and in the past 30 years normal burn time for us is July 20-Sept 10. If possible please complete the hearing and rules process quickly so the burn season can begin in JULY 1.	DEQ is committed to completing the thorough legal process as expeditiously as possible.
64.	James A. "Sandy" Emerson Coeur d'Alene	I strongly support the grass growing on the Rathdrum Prairie and surrounding areas to preserve open space and park-like fields in the North Idaho landscape, as it protects the aquifer and watersheds from increasing runoff and possible contamination and/or pollution and sedimentation due to over development in sensitive areas. The shortened burning season at the beginning of fall is a small price to pay for the ecological and environmental benefits received and enjoyed by the entire community. New growth and new residents should not be able to upset a long-standing practice seen as beneficial to the area in general. Thank you.	See response to Comment 57.
65.	Ron Frei Farmer & Rancher	Concerning the residue burning I hope every effort will be made to burn by the first of September. Any later could burn off new growth or prevent a clean burn. The shock stimulus to the grass crowns and disease control will be severely hampered.	See response to Comments 57 and 63.
66.	Mike Mihalka	The burn ban needs to remain in effect. It took many years to enact the ban, lets not go backwards. Why should an industry be able to destroy the quality of life, of some many Idahoans? When burning is in effect, regardless of location, it is almost impossible to avoid the soot, smell, negative respiratory and	See response to Comment 55.

		aesthetic effects. There is currently a global food crisis, due to the ethanol industry's use of corn/grain products. However, ethanol can be produced from the cellulose of crop residue as well. Instead of this resource going up in smoke and creating a negative environmental impact, we should be exploring making use of this wasted crop residue, by employing ethanol technology currently available. How many times have when seen an industry resist change, only to see new companies emerge within the industry and adapt successfully. Yes, the burn ban will effect farmers who resist change and refuse to take advantage of viable alternatives for the way they conduct business. Yes, it takes an initial monetary sacrifice, but the long term social and economic returns on the investment warrant it. We need to continue the burn ban and move forward - build a ethanol plant up north that can use the agricultural wastes and lets not worry about those unwilling to change at the expense of the public and the environment.	
67.	Betty Newell Ada County Resident	All people are affected by second hand smoke. We all know how dangerous it is to inhale second hand smoke. Most people with allergies and/or asthma are affected deeply by smoke of all kinds. Please help us rid our air of all sources of smoke. Ditch burning, field burning, brush burning, and wood burning. Our Health Depends on it.	See response to Comment 55.
68.	Lincoln Newell Resident	Carbon emissions are responsible for Global Warming. Alternatives are available. We would not allow anyone to dump garbage into our rivers. We should not allow anyone to dump garbage into our air!! Thank You	See response to Comment 55.
69.	Lincoln Newell Air Breather in Idaho	Carbon Emissions are responsible for Global Warming. With Global Warming a very serious and immediate issue for all of us here on Earth it is absolutely critical that we STOP BURNING!! Any burning causes large amounts of Carbon Emissions. All Burning of wood for heating our homes, agricultural burning of fields and ditch banks, and any other burning that Can Be Stopped needs to STOP!! We have alternatives other than burning that do not emit large	See response to Comment 55.

		amounts of carbon into the air.	
70.	Paul Stearns	Thank you for providing me the opportunity to write in support of the recently revised SIP dealing with field burning in Idaho. As a farmer in Idaho, I am very aware of the importance of maintaining field burning in this state. I am also aware of the contentious nature of this practice. My thanks go out to all who worked to achieve such a rare agreement. One that was supported by regulatory agencies, agricultural interests and the environmental and health interests in the state. The adoption of this new SIP will allow me to continue my farming activities~ contribute to the state's economy and still meet the needs of Idaho's other citizens.	See response to Comment 57.
71.	John and Barbara Schultz Worley	As farmers in north Idaho we would like to encourage the Idaho DEQ to approve the proposed plan for new crop residue burning program. This plan, agreed to by farmers and other clean-air advocates, allows us to deal with excess residue and returns essential nutrients and elements back into our soil. Burning is a very necessary tool for our operation and we thank you for supporting for this plan.	See response to Comment 57.
72.	Steve Walters Farmer	I am for allowing fields to be burned. If burning is not allowed the cost of getting rid of the residue is substantial.	See response to Comment 57.
73.	Melinda F. Wiebush Clearwater resident	Thank you for the opportunity to comment on the proposed revision to the State Implementation Plan to implement a new crop residue burning program in Idaho. I have two comments to make. First, we need to limit the cumulative effects of smoke generated by fire of all sorts. Secondly we need more and better data about where the smoke from field burning actually goes. In 2005 here in Idaho County we were burdened by smoke from the Blackerby Fire and China Ten Fire. One day we were under a smoke advisory from the wildfires and the next day field burning and controlled burning began. The cumulative number days of smoke was unhealthy, burdensome and depressing. I would like to see the allowable number of smoky days for public agencies, farmers and wildfires be combined. That is to say, only a limited number of days would be allowed to be smoky. The number of days ' of discretionary burning (field burning, controlled forest burns) by private and public agencies may have to be limited when we have had too many days of wildfire	Understanding the cumulative effects of smoke from all types of burning is critical to the protection of public health and the successful operation of the crop residue burning program. The open burning of crop residue program described in this document is designed to deal with this issue in a number of ways. In the Crop Residue Burning Agreement, DEQ has committed to enhancing its cooperation with other burners, specifically the tribes, Washington, other states and other burn programs. This is a key component for understanding and addressing cumulative smoke impacts. Cooperation among these groups has existed in the past and this cooperation was enhanced during the development of the Open Burning of Crop Residue State Implementation Plan. To understand the impacts from forest and rangeland burning DEQ participates as a member of the Montana/Idaho State Airshed Group. This group manages smoke impacts from prescribed fire on range and timberlands in Idaho and Montana. Members include Federal Land Managers, the Idaho Department of Lands, and large timber companies. DEQ will continue to use the Montana/Idaho group as resource for determining smoke impacts

		smoke. Second, my feeling is that we may not have enough data describing the behavior of smoke and how many people are effected by it. It has been my experience that the smoke from the field burning on the Camas Prairie in Idaho County does not disperse into the upper atmosphere but settles into the valley of the South Fork of the Clearwater River and other drainages east of Grangeville. There are times when I have had grass-shaped pieces of ash fall on my house and property in Clearwater and have had landmarks obscured by the smoke from the Camas Prairie which is approximately 10 miles east of me. I believe we need better data on smoke behavior and I invite you to put a monitoring station on my property. I realize my comments may not directly address the issues in SIP but SIP may not be addressing my issues which are too many days of smoke from too many ,sources and not enough data collection on smoke behavior and its effects on surrounding residents. Thank you for taking time to read this letter.	from their prescribed fire activities. Adequate air quality monitoring data is critical to for tracking smoke impacts. In addition to DEQ existing monitoring network, DEQ will be adding 7 new monitoring sites to better quantify smoke impacts. An air quality monitoring analysis was to identify locations for the new monitors to address data gaps. DEQ will also employ the use of satellite imagery, meteorological modeling, and air quality modeling tools to quantify smoke impacts. Through the cooperative efforts with other states and agencies mentioned above DEQ will also access to air quality monitoring data from other burn agencies. Also, DEQ will have portable monitors available to measure smoke impacts at institutions with sensitive populations if necessary. Understanding smoke behavior is complicated but the use of all these tools in combination ensures that adequate data is available to make good burn approval decisions. Wildfire impacts can cause long-term smoke impacts. The Idaho Department of Lands and Federal Land Managers work closely with DEQ on determining impacts from wildfire. Under the new program, DEQ burn managers will consider a number of parameters for burn approvals, smoke impacts from wildfire and the duration of those impacts will be considered when making burn calls. Finally, DEQ will work with all of burners mentioned here to educate them on the Crop Residue Burning Program and to improve data sharing capabilities to better determine cumulative smoke impacts and to reduce the duration and severity of smoke impacts. DEQ is aware of the problem when burning near valleys and canyons and hopes to more fully understand what conditions cause smoke to subside into the valleys and to reduce such occurrences in the future. We appreciate the offer to host a monitoring station on your property and are currently evaluating that area as a monitoring site.
74.	Idaho Conservation League Courtney E. Washburn	The Idaho Conservation League is supportive of the negotiation process that lead to a compromise between Safe Air for Everyone (SAFE), and grower representatives. We are supportive of the agreement points that were reached (Appendix A, page 8). We were supportive of House bill 557 (Appendix B, page 83) which passed the Idaho Legislature and was signed into law on March 7th, 2008. We also supported the rule docket number 58-0101-0801 (Appendix C, page 97) that became effective on April 2, 2008. We are supportive of the efforts to resume crop residue burning because additional protections provide assurance that the National Ambient Air Quality Standards (40 CFR part 50) would	Thank you for your support. DEQ intends to implement this program carefully, by critically reviewing all factors before approving a burn, monitoring many burns, and reviewing burn reports to continually find ways to improve the program for all.

		not be exceeded, and the public health would be protected. Our main interest is the protection of public health and air quality so if at anytime it is determined that the protections are not adequate we will advocate for the revision of this program. If it is found that crop residue burning cannot be done in away that is protective of public health and air quality then will advocate for the termination of crop residue burning The Idaho Conservation League is generally supportive of the Open Burning of Crop Residue State Implementation Plan (SIP) Revision but we have identified the following issues that require further clarification.	
75.	Idaho Conservation League Courtney E. Washburn	Enforcement We believe that the SIP Revision is lacking information on how that state intends to enforce the program and the standards within. Enforcement is an important component to ensure that if the NAAQS is violated then appropriate steps will be taken. We believe it is the states obligation to demonstrate how it will enforce the standards.	See response to Comment 52.
76.	Idaho Conservation League Courtney E. Washburn	Section 1.7. page 27 "Based on these emission estimates, the fact that southeast and southwest areas of the state, and the incompleteness of the crop residue burning database in other parts of the state, this statewide SIP revision assumes that if the NAAQS are not violated in the north, then they are not likely violated in other areas of the state, so detailed supplemental analysis for other areas is not necessary." We do not believe there is adequate information available to make the determination that supplemental analysis for other areas of the state is unnecessary. The incompleteness of the database and the unknowns associated with crop residue burning in other parts of the state leads us to believe that supplemental analysis is necessary to ensure the NAAQS are not violated. The lack of information for other areas of Idaho is further evidenced by the fact that all the models in the exhibits only show North Idaho. There seems to need for a modeled attainment demonstration and a need for atmospheric modeling to serve as a "guideline model" for simulating pollutants released from a burning field. These two pieces of information would lead to better information to base program compliance off of to ensure the protection of public health.	See response to Comment 54.

77.	Idaho Conservation League Courtney E. Washburn	Section 2.3, page 34 "Crop residue burns typically are only 30-90 minutes in duration and result in a brief and sharp peak," increasing PM2.5 levels for only an hour or two." We do not believe this statement reflects the total impact of crop residue burns because the information solely based on monitor readings. Near-field data is critical to understanding the health impacts particularly in regards to sensitive populations.	See response to Comment 45.
78.	Idaho Conservation League Courtney E. Washburn	Section 3.3, page 42 Conditions for burn is an essential component to the SIP because it contains the criteria that the state will use to authorize a burn. We found this section to be lacking in regards to detailed criteria. This section also makes a reference to an operational guide that either does not yet exist or was not included in the revision. The criteria must be included to fulfill the state's obligation to demonstrate compliance with NAAQS.	See response to Comment 48.
79.	Idaho Conservation League Courtney E. Washburn	Section 4.1.2, page 44 "There are approximately 200,000 acres in the CRP, mostly in southern Idaho. ISDA estimates that about ten percent of that acreage is burned annually." There are conflicting numbers in regards to CRP acres in Idaho. We would recommend validating the estimate and citing the source of the information stated in the report to clear up any confusion. We would also like to see what information ISDA used to estimate that number of acres burned annually since Southern Idaho was not registering the numbers of acres burned in the previous program.	See response to Comment 53. The proposed program will gather the data and information needed to better track this number.
80.	Idaho Conservation League Courtney E. Washburn	Section 5.3, page 59 "Some of the additional monitoring resources are proposed to be portable and will be deployed at sensitive receptor institutions located within the 3 mile buffer zone when practical." It is our understanding that under this SIP, crop residue burning needs to done in a manner to protect sensitive receptors so we are unclear what role a 3-mile buffer zone plays in this process.	See response to Comment 50.
81.	Idaho Conservation League Courtney E. Washburn	Section 5.5, page 60 "As necessary, in managing and evaluating Idaho's reasonable progress, DEQ may conduct analysis or modeling to better characterize the frequency of haze impacts at Class I areas statewide." We believe the DEQ should conduct analysis and/or	The proposed crop residue burning program will reduce impacts on visibility in Class I areas. IDAPA 58.01.01.600 states that one of the purposes of the open burning rules is to reduce emissions and minimize the impact of open burning to reduce the visibility impairment in mandatory Class I Federal Areas in accordance with the regional haze

		modeling to look at the haze impacts of crop residue burning. This should not be optional information gathering but required data to understand the impact to Class I areas in Idaho.	long-term strategy. Visibility impairment due to agricultural burning in Idaho is included in the Regional Haze SIP. Agriculture burning emissions are included in both the baseline year and future year emission projections. This proposed program will provide the data and information needed to address visibility impairment due to crop residue burning.
82.	Karen Burnett Moscow resident	Thank you for the opportunity to comment on the revised state implementation plan regarding field burning. I live in Moscow, Idaho, and I have respiratory and allergic reactions whenever there is smoke in the air. I'm concerned that although a good-faith effort seems to have been made within the governor's appointed committee, the fact that field burning is likely to continue still poses a hazard to my health. I'm not the only one affected. While children and the elderly are most at risk, there's a growing population of citizens like me who lose work time and a valuable quality of life due to allergic reactions. I appreciate that hospitals and nursing homes are being given additional consideration, but the public at large is also at risk. I've read the proposed revision and conclude that given the number of variables that DEQ must consider in deciding and monitoring when burning takes place, there is ample opportunity for our communities to be polluted by smoke at levels injurious to health. Weather is a dynamic system that is not entirely predictable. With so much variability, monitoring air quality could only be entirely accurate after the fact when people have already been subjected to the smoke. The document talks about using the CALPUFF model, but it also states: "There are currently no atmospheric models fully validated and approved by EPA as a 'guideline model' for stimulating pollutants released from a burning field." I, for one, feel there can be no compromise when it comes to a documented public health hazard. Those farmers who insist on their right to burn fields form a minority group that is being allowed to place economic profitability ahead of the common good. Determining public health policy by an appointed committee heavily weighted with economic interests doesn't seem sound or just. A public referendum would be a more accurate gauge of the public's desire to abate air pollution in our state.	As noted in paragraph 2 of the Executive Summary, "This SIP revision will allow for the return of crop residue burning in Idaho by implementing a rigorous smoke management program focused on the protection of public health." DEQ intends to implement this program carefully, by critically reviewing all factors before approving a burn, and monitoring many burns, and reviewing burn reports to continually find ways to improve the program for all. As part of the proposed program, DEQ will be installing seven new fine particulate monitors to help ensure the protection of public health. Several modeling tools have been developed, and continue to be improved, that DEQ will use to help review all the factors before approving a burn.

		For there reasons, and also because Idaho should be more sensitive to the larger issue of global warming, I encourage the EPA to continue the ban on field burning in the state of Idaho.	
83.	Kristin Matthews American Lung Association	To ensure protections for our public health, the American Lung Association of Idaho urges special consideration be given and adequate resources allocated for implementation of the new crop residue burning program to include the following: Adequate personnel resources added and trained for effective implementation, compliance, and enforcement. Adequate portable monitors available to be used by trained personnel to collect real-time and near field burn data. Priority should be given to data collection in Southern Idaho, near institutions with sensitive populations, and in areas at risk or in non-attainment. Clear guidelines and resources to monitor and measure the impact of approved burns to ensure protection for sensitive receptors, those Idahoans who cannot relocate during burn episodes. Compliance standards must be established. Clear enforcement guidelines with adequate personnel resources to monitor compliance, violations and fine collection. Data collection and analysis should be a critical part of the annual and ongoing review process of the program to ensure its effectiveness in protecting public health.	See response to Comments 55, 48, 43, 44, 50, 51, and 52.

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Appendix F: Monitoring

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Table 20 through Table 25 list all monitors in operation in 2006. These tables are taken from 2007 Idaho Department of Environmental Quality Annual Ambient Air Quality Monitoring Network Review (August 2, 2007):

http://www.deq.idaho.gov/air/data_reports/monitoring/07-08_aq_network_assessment_final.pdf

The air quality data summaries for 2004 – 2006 are taken from the following documents:

- 2004 Air Quality Monitoring Data Summary:

  http://www.deq.idaho.gov/air/data_reports/monitoring/04_aq_monitoring_report.pdf

- 2005 Air Quality Monitoring Data Summary:

  http://www.deq.idaho.gov/air/data_reports/monitoring/05_aq_monitoring_report.pdf

- 2006 Air Quality Monitoring Data Summary:

  http://www.deq.idaho.gov/air/data_reports/monitoring/06_aq_monitoring_report.pdf

Table 20. DEQ PM10 Monitoring Network.

Site	County AIRS ID Lat/Lon	UAR/ MSA/ CMSA	Sample Frequency	Monitor Objective	Monitor Designation
Sandpoint	Bonner 160170004 +48.270633/-116.567724		Continuous	Population exposure	TEOM (SLAMS*)
Pinehurst	Shoshone 160790017 +47.536389/-116.236667		Continuous	Population exposure	TEOM (SLAMS)
Nampa	Canyon 160270002 +43.580310/-116.562676		Continuous	Population exposure	TEOM (SPM)
Boise	Ada 160010009 +43.618889/-116.213611	Boise City	Continuous	Population exposure	TEOM (SLAMS)
Pocatello	Bannock 160050015 +42.876725/-112.460347	Pocatello	Continuous	Population exposure	TEOM (SLAMS)
Boise	Ada 160010011 +43.636111/-116.270278	Boise City	1:6	Highest Concentration	Hi-vol (SLAMS)
Pocatello	Bannock 160050015 +42.876725/-112.460347	Pocatello	1:3	Population exposure	Primary Hi-vol (SLAMS)
Pocatello	Bannock 160050015 +42.876725/-112.460347	Pocatello	1:12	Precision/ Quality Assurance	Collocated Hi-vol (SLAMS)

Table 21. DEQ Carbon Monoxide Monitoring Network

Site	County AIRS ID Lat/Lon	UAR/ MSA/ CMSA	Sample Frequency	Monitor Objective	Monitor Designation
Eastman	Ada 160010014 +43.616379/ -116.203817	MSA: Boise City	Continuous	Population Exposure	SLAMS

Table 22. DEQ SO2 Monitoring Network

Site	County AIRS ID Lat/Lon	UAR/ MSA/ CMSA	Sample Frequency	Monitor Objective	Monitor Designation
STP	Bannock 160050004 +42.916389/ -112.515833	UAR Pocatello	Continuous	Highest Concentration	SLAMS
5-Mile Soda Springs	Caribou 160290031 +42.695278/ -111.593889		Continuous	Source oriented	SPM*

Table 23. DEQ Ozone Monitoring Network

Site	County AIRS ID Lat/Lon	UAR/ MSA/ CMSA	Sample Frequency	Monitor Objective	Monitor Designation
Boise Whitney	Ada 160010030 +43.589464/ -116.223462	MSA Boise City	Continuous	Population Exposure	SLAMS
Lancaster	Kootenai 160550003 +47.788908/ -116.804539		Continuous	Population Exposure	SPM
Meridian St. Luke's	Ada 160010010 +43.607568/ -116.348434	Boise City	Continuous	Population Exposure	Proposed NCore
Boise ITD	Ada 160010019 +43.634585/ -116.233919	MSA Boise City	Continuous	Population Exposure/ Maximum Concentration	SPM

Table 24. DEQ NO2 Monitoring Network

Site	County AIRS ID Lat/Lon	UAR/ MSA/ CMSA	Sample Frequency	Monitor Objective	Monitor Designation
Lancaster	Kootenai 160550003 +47.788908/ -116.804539		Continuous	Population Exposure	SPM - O_3

Table 25. DEQ PM2.5 Monitoring Network

Site	County AIRS ID Lat/Lon	UAR/ MSA/ CMSA	Sample Frequency	Monitor Objective	Monitor Type	Monitor Designation
Meridian St. Luke's	Ada 160010010 +43.607568/ -116.348434	Boise City	1:3	Population Exposure	Speciation (STN)	SLAMS/ NCore
Meridian St. Luke's	Ada 160010010 +43.607568/ -116.348434	Boise City	1:6	Population Exposure	Manual FRM	SLAMS/ NCore
Meridian St. Luke's	Ada 160010010 +43.607568/ -116.348434	Boise City	Continuous	Population Exposure	TEOM	SLAMS/ NCore
Boise	Ada 160010011 +43.636111/ -116.270278	Boise City	1:3	Population Exposure	Sequential FRM	SLAMS
Boise	Ada 160010011 +43.636111/ -116.270278	Boise City	Continuous	Population Exposure	TEOM	SPM - AQI
Pocatello	Bannock 160050015 +42.876725/ -112.460347	Pocatel lo	Continuous	Population Exposure	TEOM	SPM – AQI
St. Maries	Benewah 160090010 +47.316667/ -116.570280		1:3	Population Exposure	Sequential FRM	SLAMS
St. Maries	Benewah 160090010 +47.316667/ -116.570280		Continuous	Population Exposure	TEOM	SPM – AQI
Sandpoin t	Bonner 160170005 +48.267500/ -116.572222		Continuous	Population Exposure	TEOM	SPM – AQI
Idaho Falls	Bonneville 160190013 +43.518267/ -112.020708	Idaho Falls	Continuous	Population Exposure	TEOM	SPM – AQI
Nampa	Canyon 160270004 +43.562401/ -116.563232		1:1	Population Exposure	Primary Sequential FRM	SLAMS
Nampa	Canyon 160270004 +43.562401/ -116.563232		1:12	Population Exposure	Precision Sequential FRM	SLAMS

Site	County AIRS ID Lat/Lon	UAR/ MSA/ CMSA	Sample Frequency	Monitor Objective	Monitor Type	Monitor Designation
Nampa	Canyon 160270004 +43.562401/ -116.563232		Continuous	Population Exposure	TEOM	SPM – AQI
Franklin	Franklin 160410001 +42.013333/ -111.809167		1:3	Population Exposure	Sequential FRM	SLAMS
Coeur d'Alene	Kootenai 160550006 +47.682315/ -116.765530		Continuous	Population Exposure	TEOM	SPM – AQI
Salmon	Lemhi 160590004 +45.170556/ -113.892222		1:3	Population Exposure	Sequential FRM	SLAMS
Salmon	Lemhi 160590004 +45.170556/ -113.892222		Continuous	Population Exposure	TEOM	SPM – AQI
Pinehurst	Shoshone 160790017 +47.536389/ -116.236667		1:3	Population Exposure	Sequential FRM	SLAMS
Pinehurst	Shoshone 160790017 +47.536389/ -116.236667		Continuous	Population Exposure	TEOM	SPM
Twin Falls	Twin Falls 160830010 +42.564097/ -114.446200		Continuous	Population Exposure	TEOM	SPM
Lewiston	Nez Perce 160690012 +46.404722/ -116.968889		Continuous	Population Exposure	TEOM	SPM
Grangeville	Idaho 160490002 +45.931389/ -116.115278		Continuous	Population Exposure	TEOM	SPM
Moscow	Latah 160570005 +46.721932/ -116.959180		Continuous	Population Exposure	TEOM	SPM

Air Quality Data Summaries for 2004 – 2006

Air Quality Index Reports

2004 Air Quality Data Summary Appendix

US EPA - AirData Air Quality Index Report
Friday, 21-Oct-2005 at 10:42:3 AM (USA Eastern time zone)
Geographic Area: Idaho
Year: 2004

		Number of Days AQI was:							Number of Days Main AQI Pollutant was:						
Data Year	# AQI data days	Good	Mod	Unhealthy Sensitive Groups	Un-healthy	Max AQI	90th % AQI	Median AQI	CO	NO2	O3	SO2	PM2.5	PM10	County
2004	366	318	47	1		107	53	37	25		191		101	49	Ada
2004	366	339	26		1	153	45	24				35	266	65	Bannock
2004	209	179	29	1		117	55	25					209		Benewah
2004	53	50	3			62	41	19						53	Bingham
2004	357	340	16	1		115	41	19					357		Boise
2004	366	346	18	2		110	44	24					330	36	Bonner
2004	310	301	7	2		137	28	13					310		Bonneville
2004	104	101	3			67	35	16					104		Boundary
2004	351	349	2			51	44	37			351				Butte
2004	366	322	39	5		118	52	35	39		140		139	48	Canyon
2004	366	355	11			70	34	6				297	69		Caribou
2004	276	275	1			51	45	35			215		61		Elmore
2004	16	16				38	37	28					16		Franklin
2004	37	31	6			69	55	36					37		Gem
2004	365	344	21			90	43	18					365		Idaho
2004	365	305	58	2		124	56	31					350	15	Kootenai
2004	355	352	3			57	32	13					355		Latah
2004	329	290	38	1		101	53	16					311	18	Lemhi
2004	366	357	9			61	36	17					366		Nez Perce
2004	364	352	11	1		119	26	4				244	40	80	Power
2004	360	256	98	6		118	72	31					337	23	Shoshone
2004	326	308	18			79	41	21					326		Twin Falls

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US EPA - AirData Air Quality Index Report
Friday, 21-Oct-2005 at 10:42:3 AM (USA Eastern time zone)
Geographic Area: Idaho
Year: 2005

Data Year	# AQI data days	Number of Days AQI was: Good	Mod	Unhealthy Sensitive Groups	Un-healthy	Max AQI	90th % AQI	Median AQI	Number of Days Main AQI Pollutant was: CO	NO2	O3	SO2	PM2.5	PM10	County
2005	365	307	57	1		103	56	34	17		147		136	65	Ada
2005	365	331	32	1	1	152	49	16				64	184	117	Bannock
2005	362	341	19	2		111	40	22					362		Benewah
2005	26	24	2			62	48	19						26	Bingham
2005	361	301	60			97	57	25					361		Boise
2005	364	328	36			72	49	22					304	60	Bonner
2005	349	347	2			70	22	16					349		Bonneville
2005	53	49	4			72	36	16					53		Boundary
2005	357	357				41	34	26			357				Butte
2005	365	302	56	7		138	59	35	19		109		203	34	Canyon
2005	362	359	3			56	21	3				362			Caribou
2005	154	152	2			51	47	40			154				Elmore
2005	314	261	36	13	4	162	68	18					314		Franklin
2005	283	242	38	3		122	54	26					283		Gem
2005	363	335	27		1	161	43	18					363		Idaho
2005	365	295	70			85	58	35			122		236	7	Kootenai
2005	353	352	1			63	24	12					353		Latah
2005	325	257	65	3		132	59	25					325		Lemhi
2005	365	362	3			72	29	15					365		Nez Perce
2005	363	317	42	2	2	161	52	30					304	59	Power
2005	356	245	103	7	1	171	75	29					313	43	Shoshone
2005	326	307	18	1		101	40	21					326		Twin Falls
2005	328	296	30	2		116	50	23					328		Valley

US EPA - AirData Air Quality Index Report
Monday: 21-May-2007 at 11:4:58 AM (USA Eastern time zone)
Geographic Area: Idaho
Pollutant: See http://www.epa.gov/airnow/aqibroch/
Year: 2006

Data Year	County	# AQI data days	Number of Days AQI was:				Max AQI	90th % AQI	Median AQI	Number of Days Main AQI Pollutant was:					
			Good	Mod	Unhealthy Sensitive Groups	Un-healthy				CO	NO2	O3	SO2	PM2.5	PM10
2006	Ada	365	290	71	4		138	62	28	25		113		130	97
2006	Bannock	365	358	7			66	31	17				87	101	177
2006	Benewah	124	108	15	1		115	55	24					124	
2006	Boise	46	26	17	2	1	160	93	44					46	
2006	Bonner	359	345	14			78	36	19					232	127
2006	Bonneville	224	222	2			57	27	17					224	
2006	Butte	365	365				40	29	22			365			
2006	Canyon	359	307	50	2		108	56	30	2		74		177	106
2006	Caribou	272	272				49	4	1				272		
2006	Franklin	291	271	20			100	42	16					291	
2006	Gem	9	9				50	50	24					9	
2006	Idaho	233	214	17	2		132	46	17					233	
2006	Kootenai	272	248	24			91	49	32			112		156	4
2006	Latah	250	235	13	2		123	35	13					250	
2006	Lemhi	208	180	25	1	2	171	57	25					208	
2006	Nez Perce	244	221	21	2		107	46	18					244	
2006	Power	230	218	11	1		146	35	15						230
2006	Shoshone	350	300	49	1		113	57	24					270	80
2006	Twin Falls	227	222	5			70	39	22					227	
2006	Valley	65	40	22	3		147	78	34					65	

Pollutant Summaries – Carbon Monoxide

US EPA - AirData Monitor Values Report - Criteria Air Pollutants
Friday, 21-Oct-2005 at 10:20:38 AM (USA Eastern time zone)
Geographic Area: Idaho
Pollutant: Carbon Monoxide
Year: 2004

Data Year	1-Hour CO # Obs	1-Hour CO 1st Max	1-Hour CO 2nd Max	1-Hour CO # Exceed	8-Hour CO 1st Max	8-Hour CO 2nd Max	8-Hour CO # Exceed	Monitor #	Site ID	Site Address	City	County
2004	8765	4.1	3.9	0	2.6	2.4	0	1	160010014	Eastman Bldg/166 N. 9th St	Boise	Ada
2004	8402	6.8	5.7	0	3.4	3.3	0	1	160270006	101 1st. Street	Nampa	Canyon

* US EPA - AirData Monitor Values Report - Criteria Air Pollutants
* Thursday, 31-Aug-2006 at 10:29:49 AM (USA Eastern time zone)
* Geographic Area: Idaho
* Pollutant: Carbon Monoxide
* Year: 2005

Data Year	1-Hour CO # Obs	1-Hour CO 1st Max	1-Hour CO 2nd Max	1-Hour CO # Exceed	8-Hour CO 1st Max	8-Hour CO 2nd Max	8-Hour CO # Exceed	Monitor #	Site ID	Site Address	City	County
2005	8635	5.3	4.6	0	2.5	2.2	0	1	160010014	Eastman Bldg/166 N. 9th St	Boise	Ada
2005	8731	5.7	5.1	0	2.9	2.9	0	1	160270006	101 1st. Street	Nampa	Canyon

* US EPA - AirData Monitor Values Report - Criteria Air Pollutants
* Tuesday, 22-May-2007 at 5:48:23 PM (USA Eastern time zone)
* Geographic Area: Idaho
* Pollutant: Carbon Monoxide
* Year: 2006

Data Year	County	1-Hour CO # Obs	1-Hour CO 1st Max	1-Hour CO 2nd Max	1-Hour CO # Exceed	8-Hour CO 1st Max	8-Hour CO 2nd Max	8-Hour CO # Exceed	Monitor #	Site ID	Site Address	City
2006	Ada Co	8068	4.8	3.5	0	2.1	2.1	0	1	160010014	Eastman Bldg/166 N. 9th St	Boise

AQS maximum values reports – Carbon Monoxide

UNITES STATES ENVIRONMENTAL PROTECTION AGENCY

User ID: MYV

MAXIMUM VALUES REPORT

Report Request ID: 520014 Report Code: AMP440 Mar. 31, 2008

GEOGRAPHIC SELECTIONS

Tribal	State	County	Site	Parameter	POC	City	AQCR	UAR	MSA	CMSA	EPA Region	Method	Duration	Begin Date	End Date
	16			42101										2004	2006

SELECTED OPTIONS

Option Type	Option Value
EVENTS PROCESSING	REPORT ALL EVENT RECORDS
MERGE PDF FILES	YES

SORT ORDER

Order	Column
1	PARAMETER_CODE
2	STATE_CODE
3	DURATION_CODE
4	DATES
5	COUNTY_CODE
6	SITE_ID
7	POC
8	EDT_ID

SCR GROUP SELECTIONS

Idaho

Selection Criteria Page 1

EXCEPTIONAL DATA TYPES

EDT	DESCRIPTION
0	NO EVENTS
1	EVENTS EXCLUDED
2	EVENTS INCLUDED
3	EXCEPTIONAL EVENTS EXCLUDED
4	NATURAL EVENTS EXCLUDED
5	EVENTS WITH CONCURRENCE EXCLUDED
6	EXCEPTIONAL EVENTS WITH CONCURRENCE EXCLUDED
7	NATURAL EVENTS WITH CONCURRENCE EXCLUDED

UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

Carbon monoxide (42101)

State: Idaho
Duration: 1 HOUR
Year: 2004

Primary: 35.5
Secondary: 35.5
Unit: Parts per million

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-001-0014	1	Ada	054	4.1	3.9	3.8	3.8	3.7	8765	0	0
		Boise (corporate name Boise City)		10/05:08	10/25:09	01/09:09	10/25:10	12/15:10			
				3.5	3.4	3.4	3.4	3.2			
				01/09:22	01/09:18	08/27:11	12/08:17	01/09:08			

Carbon monoxide (42101)

State: Idaho
Duration: 1 HOUR
Year: 2004

Primary: 35.5
Secondary: 35.5
Unit: Parts per million

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0006	1	Canyon	054	6.8	5.7	5.5	5.4	5.0	8402	0	0
		Nampa		12/08:17	12/28:08	12/14:18	10/06:20	09/27:20			
				5.0	5.0	4.9	4.7	4.6			
				11/10:18	12/27:18	12/14:17	05/27:15	10/04:20			

Carbon monoxide (42101)

State: Idaho
Duration: 1 HOUR
Year: 2005

Primary: 35.5
Secondary: 35.5
Unit: Parts per million

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-001-0014	1	Ada	054	5.3	4.6	3.9	3.5	3.5	8635	0	0
		Boise (corporate name Boise City)		07/02:20	07/02:19	12/19:17	10/14:07	12/14:08			
				3.4	3.4	3.3	3.3	3.2			
				02/03:08	07/02:18	01/13:08	07/02:21	01/10:09			

Page 2 of 5

UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

Carbon monoxide (42101)

State: Idaho
Duration: 1 HOUR
Year: 2005

Primary: 35.5
Secondary: 35.5
Unit: Parts per million

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0006	1	Canyon	054		5.7	5.1	4.9	4.8	4.7	8731	0	0
		Nampa			01/13:19	12/22:12	03/08:07	12/14:17	11/11:17			
					4.7	4.6	4.5	4.5	4.5			
					11/21:17	02/22:20	02/01:07	02/25:21	10/13:19			

Carbon monoxide (42101)

State: Idaho
Duration: 1 HOUR
Year: 2006

Primary: 35.5
Secondary: 35.5
Unit: Parts per million

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-001-0014	1	Ada	054		4.8	3.5	3.5	3.4	2.9	8068	0	0
		Boise (corporate name Boise City)			10/04:08	01/26:17	10/13:08	12/08:17	12/18:09			
					2.8	2.8	2.7	2.7	2.7			
					07/01:19	12/08:23	02/11:22	09/12:07	10/13:07			

Carbon monoxide (42101)

State: Idaho
Duration: 1 HOUR
Year: 2006

Primary: 35.5
Secondary: 35.5
Unit: Parts per million

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0006	1	Canyon	054		3.6	3.6	2.6	2.4	2.4	391	0	0
		Nampa			01/06:17	01/11:17	01/08:20	01/06:16	01/08:19			
					2.3	2.2	2.1	2.1	2.1			
					01/06:15	01/07:12	01/03:18	01/06:18	01/11:16			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

Carbon monoxide (42101)

State: Idaho
Duration: 8-HR RUN AVG END HOUR
Year: 2004

Primary: 9.5
Secondary: 9.5
Unit: Parts per million

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-001-0014	1	Ada	054		2.6	2.4				8779	0	0
		Boise (corporate name Boise City)			01/09:23	01/08:23						

Carbon monoxide (42101)

State: Idaho
Duration: 8-HR RUN AVG END HOUR
Year: 2004

Primary: 9.5
Secondary: 9.5
Unit: Parts per million

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0006	1	Canyon	054		3.4	3.3				8414	0	0
		Nampa			12/14:21	11/05:00						

Carbon monoxide (42101)

State: Idaho
Duration: 8-HR RUN AVG END HOUR
Year: 2005

Primary: 9.5
Secondary: 9.5
Unit: Parts per million

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-001-0014	1	Ada	054		2.5	2.2				8648	0	0
		Boise (corporate name Boise City)			07/03:01	12/14:11						

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

Carbon monoxide (42101)

State: Idaho
Duration: 8-HR RUN AVG END HOUR
Year: 2005

Primary: 9.5
Secondary: 9.5
Unit: Parts per million

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0006	1	Canyon	054		2.9	2.9				8749	0	0
		Nampa			01/03:19	01/13:20						

Carbon monoxide (42101)

State: Idaho
Duration: 8-HR RUN AVG END HOUR
Year: 2006

Primary: 9.5
Secondary: 9.5
Unit: Parts per million

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-001-0014	1	Ada	054		2.1	2.1				8080	0	0
		Boise (corporate name Boise City)			01/26:18	12/08:23						

Carbon monoxide (42101)

State: Idaho
Duration: 8-HR RUN AVG END HOUR
Year: 2006

Primary: 9.5
Secondary: 9.5
Unit: Parts per million

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0006	1	Canyon	054		2.2	2.0				389	0	0
		Nampa			01/06:19	01/11:18						

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Pollutant Summaries – Nitrogen Dioxide

US EPA - AirData Monitor Values Report - Criteria Air Pollutants
Friday, 21-Oct-2005 at 11:3:56 AM (USA Eastern time zone)
Geographic Area: Idaho
Pollutant: Nitrogen Dioxide
Year: 2004

Data	1-Hour NO2			Annual NO2		Monitor				
Year	# Obs	1st Max	2nd Max	Mean	# Exceed	#	Site ID	Site Address	City	County
2004	1420	0.048	0.036	0.009	0	1	160390002	Adjacent To 472 South Canyon Creek Road	Mountain Home	Elmore Co
2004	8329	0.285	0.241	0.008	0	1	160770011	S Of Hwy 30 And E Of Weaver Rd		Power Co

* US EPA - AirData Monitor Values Report - Criteria Air Pollutants
* Thursday, 31-Aug-2006 at 10:39:57 AM (USA Eastern time zone)
* Geographic Area: Idaho
* Pollutant: Nitrogen Dioxide
* Year: 2005

Data Year	1-Hour NO2 # Obs	1-Hour NO2 1st Max	1-Hour NO2 2nd Max	Annual NO2 Mean	Annual NO2 # Exceed	Monitor #	Site ID	Site Address	City	County
2005	8240	0.044	0.043	0.007	0	1	160550003	North Of Lancaster Road - Near Hayden, I		Kootenai
2005	1176	0.071	0.052	0.007	0	1	160770011	S Of Hwy 30 And E Of Weaver Rd		Power

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

Data Year	County	1-Hour NO2 # Obs	1-Hour NO2 1st Max	1-Hour NO2 2nd Max	Annual NO2 Mean	Annual NO2 # Exceed	Monitor #	Site ID	Site Address	City
2006	Kootenai	8417	0.038	0.037	0.006	0	1	160550003	North Of Lancaster Road - Near Hayden, I	

AQS maximum value reports – Nitrogen Dioxide

UNITES STATES ENVIRONMENTAL PROTECTION AGENCY

User ID: MYV

MAXIMUM VALUES REPORT

Report Request ID: 520019 Report Code: AMP440 Mar. 31, 2008

GEOGRAPHIC SELECTIONS

Tribal	State	County	Site	Parameter	POC	City	AQCR	UAR	MSA	CMSA	EPA Region	Method	Duration	Begin Date	End Date
	16			42602										2004	2006

SELECTED OPTIONS

Option Type	Option Value
EVENTS PROCESSING	REPORT ALL EVENT RECORDS
MERGE PDF FILES	YES

SORT ORDER

Order	Column
1	PARAMETER_CODE
2	STATE_CODE
3	DURATION_CODE
4	DATES
5	COUNTY_CODE
6	SITE_ID
7	POC
8	EDT_ID

SCR GROUP SELECTIONS

Idaho

Selection Criteria Page 1

EXCEPTIONAL DATA TYPES

EDT	DESCRIPTION
0	NO EVENTS
1	EVENTS EXCLUDED
2	EVENTS INCLUDED
3	EXCEPTIONAL EVENTS EXCLUDED
4	NATURAL EVENTS EXCLUDED
5	EVENTS WITH CONCURRENCE EXCLUDED
6	EXCEPTIONAL EVENTS WITH CONCURRENCE EXCLUDED
7	NATURAL EVENTS WITH CONCURRENCE EXCLUDED

UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

Nitrogen dioxide (42602)

State: Idaho
Duration: 1 HOUR
Year: 2004

Primary:
Secondary:
Unit: Parts per million

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
				Maximum Values							
16-039-0002	1	Elmore	074	.048	.036	.035	.035	.034	1420		0
		Mountain Home		01/13:09	01/13:18	01/13:08	01/26:07	01/13:07			
				.034	.034	.033	.033	.031			
				01/14:09	01/14:18	01/13:19	01/26:08	01/10:20			

Nitrogen dioxide (42602)

State: Idaho
Duration: 1 HOUR
Year: 2005

Primary:
Secondary:
Unit: Parts per million

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
				Maximum Values							
16-055-0003	1	Kootenai	082	.044	.043	.042	.042	.041	8240		0
		Not in a city		12/09:16	02/18:19	02/10:17	12/09:17	02/07:19			
				.041	.040	.038	.038	.037			
				02/24:18	02/03:17	02/25:18	12/09:15	02/16:18			

Nitrogen dioxide (42602)

State: Idaho
Duration: 1 HOUR
Year: 2006

Primary:
Secondary:
Unit: Parts per million

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
				Maximum Values							
16-055-0003	1	Kootenai	082	.038	.037	.035	.034	.034	8417		0
		Not in a city		10/12:17	10/11:17	02/20:19	02/09:18	02/20:20			
				.034	.033	.032	.032	.032			
				12/01:19	02/15:21	02/20:21	09/27:18	09/28:18			

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US EPA - AirData Monitor Values Report - Criteria Air Pollutants
Friday, 21-Oct-2005 at 11:5:45 AM (USA Eastern time zone)
Geographic Area: Idaho
Pollutant: Ozone
Year: 2004

Data Year	8-Hour Ozone 1st Max	2nd Max	3rd Max	4th Max	Days >Std	Required Days	# Days	% Days	Monitor Number	Site ID	Site Address	City	County
2004	0.076	0.075	0.075	0.074	0	214	209	98	1	160010030	Whitney Elementary School	Boise	Ada
2004	0.065	0.065	0.064	0.063	0	214	211	99	1	160230101	Craters Of The Moon National Mon, Idaho		Butte
2004	0.069	0.064	0.063	0.063	0	214	207	97	1	160270007	5 South 3rd Avenue West		Canyon
2004	0.064	0.064	0.063	0.062	0	214	214	100	1	160390010	251 W. Tilli Road		Elmore

Pollutant Summaries – Ozone

* US EPA - AirData Monitor Values Report - Criteria Air Pollutants
* Thursday, 31-Aug-2006 at 10:44:42 AM (USA Eastern time zone)
* Geographic Area: Idaho
* Pollutant: Ozone
* Year: 2005

Data Year	8-Hour Ozone 1st Max	2nd Max	3rd Max	4th Max	Days >Std	Required Days	# Days	% Days	Monitor Number	Site ID	Site Address	City	County
2005	0.084	0.08	0.078	0.075	0	153	152	99	1	160010030	Whitney Elementary School	Boise	Ada
2005	0.052	0.049	0.048	0.048	0	153	152	99	1	160230101	Craters Of The Moon National Mon, Idaho		Butte
2005	0.082	0.071	0.068	0.066	0	153	152	99	1	160270007	5 South 3rd Avenue West		Canyon
2005	0.065	0.065	0.064	0.064	0	153	152	99	1	160390010	251 W. Tilli Road		Elmore
2005	0.072	0.069	0.066	0.066	0	153	150	98	1	160550003	North Of Lancaster Road - Near Hayden, I		Kootenai

* US EPA - AirData Monitor Values Report - Criteria Air Pollutants
* Monday, 21-May-2007 at 4:17:6 PM (USA Eastern time zone)
* Geographic Area: Idaho
* Pollutant: Ozone
* Year: 2006

Data Year	County	8-Hour Ozone 1st Max	2nd Max	3rd Max	4th Max	Days >Std	Required Days	# Days	% Days	Monitor Number	Site ID	Site Address	City
2006	Ada	0.078	0.076	0.074	0.074	0	143	120	84	1	160010019	3311 W. State Street, Boise	Boise
2006	Ada	0.090	0.088	0.083	0.082	2	153	134	88	1	160010030	Whitney Elementary School	Boise
2006	Butte	0.051	0.047	0.046	0.046	0	153	149	97	1	160230101	Craters Of The Moon National Mon, Idaho	
2006	Canyon	0.075	0.074	0.072	0.071	0	117	93	79	1	160270007	5 South 3rd Avenue West	
2006	Kootenai	0.075	0.07	0.068	0.068	0	153	120	78	1	160550003	North Of Lancaster Road - Near Hayden, I	

AQS maximum values reports - Ozone

UNITES STATES ENVIRONMENTAL PROTECTION AGENCY

User ID: MYV

MAXIMUM VALUES REPORT

Report Request ID: 520021 Report Code: AMP440 Mar. 31, 2008

GEOGRAPHIC SELECTIONS

Tribal	State	County	Site	Parameter	POC	City	AQCR	UAR	MSA	CMSA	EPA Region	Method	Duration	Begin Date	End Date
	16			44201										2004	2006

SELECTED OPTIONS

Option Type	Option Value
EVENTS PROCESSING	REPORT ALL EVENT RECORDS
MERGE PDF FILES	YES

SORT ORDER

Order	Column
1	PARAMETER_CODE
2	STATE_CODE
3	DURATION_CODE
4	DATES
5	COUNTY_CODE
6	SITE_ID
7	POC
8	EDT_ID

SCR GROUP SELECTIONS

Idaho

Selection Criteria Page 1

EXCEPTIONAL DATA TYPES

EDT	DESCRIPTION
0	NO EVENTS
1	EVENTS EXCLUDED
2	EVENTS INCLUDED
3	EXCEPTIONAL EVENTS EXCLUDED
4	NATURAL EVENTS EXCLUDED
5	EVENTS WITH CONCURRENCE EXCLUDED
6	EXCEPTIONAL EVENTS WITH CONCURRENCE EXCLUDED
7	NATURAL EVENTS WITH CONCURRENCE EXCLUDED

UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

Ozone (44201)

State: Idaho
Duration: 1 HOUR
Year: 2004

Primary: .125
Secondary: .125
Unit: Parts per million

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-001-0030	1	Ada	087		.096	.090	.089	.088	.086	5011	0	0
		Boise (corporate name Boise City)			07/14:14	07/31:15	07/12:17	07/16:15	08/04:16			
					.082	.082	.080	.080	.079			
					06/23:15	06/26:15	08/12:15	08/18:17	07/15:14			

Ozone (44201)

State: Idaho
Duration: 1 HOUR
Year: 2004

Primary: .125
Secondary: .125
Unit: Parts per million

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0007	1	Canyon	087		.078	.075	.075	.072	.072	4767	0	0
		Not in a city			08/13:14	06/23:14	08/01:14	07/14:13	07/17:14			
					.069	.069	.068	.067	.067			
					06/03:14	07/31:14	07/01:15	07/23:14	07/26:14			

Ozone (44201)

State: Idaho
Duration: 1 HOUR
Year: 2004

Primary: .125
Secondary: .125
Unit: Parts per million

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-039-0010	1	Elmore	087		.072	.070	.069	.068	.068	5102	0	0
		Not in a city			07/15:16	08/09:17	06/27:17	07/16:17	07/27:16			
					.067	.067	.067	.067	.066			
					04/11:17	04/25:15	04/30:15	05/18:14	08/13:18			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

Ozone (44201)

State: Idaho
Duration: 1 HOUR
Year: 2005

Primary: .125
Secondary: .125
Unit: Parts per million

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-001-0030	1	Ada	087	.111	.099	.096	.092	.087	3650	0	0
		Boise (corporate name Boise City)		07/15:16	07/12:14	08/06:15	08/21:15	08/08:12			
				.082	.082	.082	.081	.080			
				07/23:14	07/27:16	08/01:12	08/20:14	08/09:14			

Ozone (44201)

State: Idaho
Duration: 1 HOUR
Year: 2005

Primary: .125
Secondary: .125
Unit: Parts per million

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0007	1	Canyon	087	.097	.081	.078	.078	.078	3513	0	0
		Not in a city		07/15:15	07/21:13	07/23:15	08/08:10	08/20:14			
				.075	.075	.074	.073	.073			
				08/06:16	08/28:14	09/07:15	08/05:12	09/08:15			

Ozone (44201)

State: Idaho
Duration: 1 HOUR
Year: 2005

Primary: .125
Secondary: .125
Unit: Parts per million

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-039-0010	1	Elmore	087	.078	.073	.072	.070	.070	3638	0	0
		Not in a city		09/07:18	08/06:19	07/23:13	07/27:19	08/08:17			
				.070	.069	.069	.067	.067			
				08/26:16	06/24:17	08/09:17	06/22:13	07/29:13			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

Ozone (44201)

State: Idaho
Duration: 1 HOUR
Year: 2005

Primary: .125
Secondary: .125
Unit: Parts per million

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-055-0003	1	Kootenai	087	.086	.075	.074	.073	.070	3590	0	0
		Not in a city		07/21:16	08/04:17	08/06:13	08/05:14	08/16:12			
				.068	.068	.067	.067	.067			
				08/15:15	08/27:12	07/27:16	08/08:13	08/09:13			

Ozone (44201)

State: Idaho
Duration: 1 HOUR
Year: 2006

Primary: .125
Secondary: .125
Unit: Parts per million

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-001-0019	1	Ada	087	.100	.093	.091	.085	.085	2953	0	0
		Boise (corporate name Boise City)		07/21:13	07/22:12	09/12:15	06/26:14	08/04:14			
				.083	.083	.083	.080	.080			
				07/08:13	07/11:13	08/06:13	06/24:12	07/14:14			

Ozone (44201)

State: Idaho
Duration: 1 HOUR
Year: 2006

Primary: .125
Secondary: .125
Unit: Parts per million

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-001-0030	1	Ada	087	.109	.104	.101	.097	.096	3239	0	0
		Boise (corporate name Boise City)		09/12:16	07/21:13	08/14:16	07/22:13	08/23:15			
				.093	.091	.090	.089	.089			
				09/06:15	08/04:13	08/06:13	06/24:12	07/17:12			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

Ozone (44201)

State: Idaho
Duration: 1 HOUR
Year: 2006

Primary: .125
Secondary: .125
Unit: Parts per million

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0007	1	Canyon	087	.089	.082	.080	.078	.078	2322	0	0
		Not in a city		07/22:13	08/05:14	08/14:14	07/21:13	07/25:13			
				.076	.075	.074	.073	.073			
				05/16:15	08/23:14	07/24:12	05/17:15	08/04:13			

Ozone (44201)

State: Idaho
Duration: 1 HOUR
Year: 2006

Primary: .125
Secondary: .125
Unit: Parts per million

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-055-0003	1	Kootenai	087	.086	.077	.075	.074	.074	3025	0	0
		Not in a city		09/07:16	08/03:17	08/04:16	08/07:17	09/06:16			
				.073	.072	.071	.071	.071			
				08/06:16	05/13:16	05/18:13	07/08:17	09/02:16			

Ozone (44201)

State: Idaho
Duration: 8-HR RUN AVG BEGIN HOUR
Year: 2004

Primary: .085
Secondary: .085
Unit: Parts per million

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-001-0030	1	Ada	087	.076	.075	.075	.074	.072	5020	0	0
		Boise (corporate name Boise City)		08/04:12	07/12:13	07/16:11	07/31:12	07/14:11			
				.070	.069	.069	.068	.068			
				06/26:11	06/23:09	08/12:12	06/21:12	07/23:12			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

Ozone (44201)

State: Idaho
Duration: 8-HR RUN AVG BEGIN HOUR
Year: 2004

Primary: .085
Secondary: .085
Unit: Parts per million

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0007	1	Canyon	087	.069	.064	.063	.063	.062	4957	0	0
		Not in a city		08/01:11	06/23:11	07/26:11	07/31:10	06/21:11			
				.062	.062	.062	.061	.060			
				07/01:11	07/17:10	08/13:12	08/04:11	07/25:11			

Ozone (44201)

State: Idaho
Duration: 8-HR RUN AVG BEGIN HOUR
Year: 2004

Primary: .085
Secondary: .085
Unit: Parts per million

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-039-0010	1	Elmore	087	.064	.064	.063	.062	.061	5110	0	0
		Not in a city		04/11:10	04/30:11	04/25:11	05/02:11	07/31:12			
				.060	.060	.060	.060	.060			
				04/10:10	04/13:13	04/17:11	05/01:11	06/04:10			

Ozone (44201)

State: Idaho
Duration: 8-HR RUN AVG BEGIN HOUR
Year: 2005

Primary: .085
Secondary: .085
Unit: Parts per million

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-001-0030	1	Ada	087	.084	.080	.078	.075	.075	3661	0	0
		Boise (corporate name Boise City)		07/15:11	08/06:11	08/21:10	07/12:11	07/27:10			
				.074	.069	.069	.067	.067			
				07/23:11	07/31:10	08/20:10	08/08:10	08/09:10			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

Ozone (44201)

State: Idaho
Duration: 8-HR RUN AVG BEGIN HOUR
Year: 2005

Primary: .085
Secondary: .085
Unit: Parts per million

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0007	1	Canyon	087	.082	.071	.068	.066	.064	3658	0	0
		Not in a city		07/15:11	07/23:11	08/06:11	07/27:11	07/21:10			
				.064	.063	.063	.063	.062			
				08/21:11	08/05:11	08/08:10	08/20:11	07/30:10			

Ozone (44201)

State: Idaho
Duration: 8-HR RUN AVG BEGIN HOUR
Year: 2005

Primary: .085
Secondary: .085
Unit: Parts per million

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-039-0010	1	Elmore	087	.065	.065	.064	.064	.063	3642	0	0
		Not in a city		07/23:10	08/06:12	06/24:12	09/07:12	08/08:10			
				.063	.062	.062	.062	.061			
				08/27:10	06/25:13	07/27:12	08/05:11	06/22:11			

Ozone (44201)

State: Idaho
Duration: 8-HR RUN AVG BEGIN HOUR
Year: 2005

Primary: .085
Secondary: .085
Unit: Parts per million

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-055-0003	1	Kootenai	087	.072	.069	.066	.066	.063	3626	0	0
		Not in a city		07/21:11	08/04:11	08/05:10	08/06:09	08/27:10			
				.061	.061	.060	.059	.059			
				07/27:10	08/15:11	08/16:10	08/08:09	08/20:11			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

Ozone (44201)

State: Idaho
Duration: 8-HR RUN AVG BEGIN HOUR
Year: 2006

Primary: .085
Secondary: .085
Unit: Parts per million

Maximum Values

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-001-0019	1	Ada	087		.078	.076	.074	.074	.074	2945	0	0
		Boise (corporate name Boise City)			07/22:10	07/21:10	08/04:11	08/05:11	08/06:10			
					.073	.072	.071	.070	.069			
					06/26:10	07/11:11	07/03:11	07/14:11	09/12:11			

Ozone (44201)

State: Idaho
Duration: 8-HR RUN AVG BEGIN HOUR
Year: 2006

Primary: .085
Secondary: .085
Unit: Parts per million

Maximum Values

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-001-0030	1	Ada	087		.090	.088	.083	.082	.081	3238	2	0
		Boise (corporate name Boise City)			08/14:11	09/12:10	07/21:10	07/22:11	08/06:11			
					.079	.078	.076	.076	.075			
					08/05:11	08/04:11	08/19:11	08/23:10	06/26:10			

Ozone (44201)

State: Idaho
Duration: 8-HR RUN AVG BEGIN HOUR
Year: 2006

Primary: .085
Secondary: .085
Unit: Parts per million

Maximum Values

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0007	1	Canyon	087		.075	.074	.072	.071	.069	2317	0	0
		Not in a city			08/05:10	07/22:10	07/21:10	08/14:11	07/25:11			
					.068	.068	.067	.064	.064			
					05/16:12	08/04:11	07/24:10	08/06:11	08/13:11			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

Ozone (44201)

State: Idaho
Duration: 8-HR RUN AVG BEGIN HOUR
Year: 2006

Primary: .085
Secondary: .085
Unit: Parts per million

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-055-0003	1	Kootenai	087	.075	.068	.068	.068	.067	3016	0	0
		Not in a city		09/07:11	05/13:10	08/03:11	08/07:11	08/20:10			
				.066	.065	.064	.064	.063			
				09/06:11	08/06:11	05/14:10	06/27:10	08/22:10			

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Pollutant Summaries – PM_{10}

2004 Air Quality Data Summary Appendix

US EPA - AirData Monitor Values Report - Criteria Air Pollutants
Friday, 21-Oct-2005 at 11:16:1 AM (USA Eastern time zone)
Geographic Area: Idaho
Pollutant: Particulate (10 micrometers)
Year: 2004

	24-Hour PM10							
Data Year	# Obs	1st Max	2nd Max	Monitor Number	Site ID	Site Address	City	County
2004	334	70	57	3	160010009	Fire Station #5/16th & Front	Boise	Ada Co
2004	59	59	55	1	160010011	Mtn View School/3500 Carbarton Lane	Boise	Ada Co
2004	110	62	56	1	160050015	G&G/Corner Of Garret & Gould	Pocatello	Bannock Co
2004	320	58	54	2	160050015	G&G/Corner Of Garret & Gould	Pocatello	Bannock Co
2004	53	78	68	1	160110002	Ross Fork Rd And Interstate 15		Bingham Co
2004	344	79	68	1	160170004	310 South Division Street	Sandpoint	Bonner Co
2004	282	74	67	2	160270002	Nampa Fire Stn/923 1st St	Nampa	Canyon Co
2004	363	102	81	3	160550006	Lakes Middle School/930 N 15th St	Coeur D'Alene	Kootenai Co
2004	59	51	47	1	160590004	N. Charles St.	Salmon	Lemhi Co
2004	108	74	69	1	160770011	S Of Hwy 30 And E Of Weaver Rd		Power Co
2004	56	56	53	2	160770011	S Of Hwy 30 And E Of Weaver Rd		Power Co
2004	348	78	68	3	160790017	Pinehurst/Pinehurst School, Pinehurst		Shoshone Co

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* US EPA - AirData Monitor Values Report - Criteria Air Pollutants
* Wednesday, 30-Aug-2006 at 3:39:5 PM (USA Eastern time zone)
* Geographic Area: Idaho
* Pollutant: Particulate (size < 10 micrometers)
* Year: 2005

	24-Hour PM10												
Data Year	# Obs	1st Max	2nd Max	3rd Max (24-Hr PM10)	4th Max (24-Hr PM10)	# Exceed-Actual (24 Hr PM10)	Annual Mean (PM10)	Annual # Exceed (PM10)	Mon #	Site ID	Site Address	City	County
2005	357	89	88	63	55	0	22	0	3	160010009	Fire Station #5/16th & Front	Boise	Ada
2005	56	71	45	41	34	0	22	0	1	160010011	Mtn View School/3500 Carbarton Lane	Boise	Ada
2005	113	68	58	55	50	0	21	0	1	160050015	G&G/Corner Of Garret & Gould	Pocatello	Bannock
2005	319	113	58	53	51	0	14	0	2	160050015	G&G/Corner Of Garret & Gould	Pocatello	Bannock
2005	26	78	57	52	49	0	25	0	1	160110002	Ross Fork Rd And Interstate 15		Bingham
2005	339	78	71	70	67	0	19	0	1	160170004	310 South Division Street	Sandpoint	Bonner
2005	352	172	94	82	72	1	25	0	2	160270002	Nampa Fire Stn/923 1st St	Nampa	Canyon
2005	358	77	69	55	54	0	18	0	3	160550006	Lakes Middle School/930 N 15th St	Coeur D'Alene	Kootenai
2005	114	66	58	51	47	0	19	0	1	160770011	S Of Hwy 30 And E Of Weaver Rd		Power
2005	57	52	47	47	40	0	21	0	2	160770011	S Of Hwy 30 And E Of Weaver Rd		Power
2005	329	182	134	117	104	1	27	0	3	160770011	S Of Hwy 30 And E Of Weaver Rd		Power
2005	318	94	85	75	65	0	22	0	3	160790017	Pinehurst/Pinehurst School, Pinehurst		Shoshone

2006 Air Quality Data Summary Appendix

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

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

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AQS maximum values reports – PM_{10}

UNITES STATES ENVIRONMENTAL PROTECTION AGENCY

User ID: MYV

MAXIMUM VALUES REPORT

Report Request ID: 520022 Report Code: AMP440 Mar. 31, 2008

GEOGRAPHIC SELECTIONS

Tribal	State	County	Site	Parameter	POC	City	AQCR	UAR	MSA	CMSA	EPA Region	Method	Duration	Begin Date	End Date
	16			81102										2004	2006

SELECTED OPTIONS

Option Type	Option Value
EVENTS PROCESSING	REPORT ALL EVENT RECORDS
MERGE PDF FILES	YES

SORT ORDER

Order	Column
1	PARAMETER_CODE
2	STATE_CODE
3	DURATION_CODE
4	DATES
5	COUNTY_CODE
6	SITE_ID
7	POC
8	EDT_ID

SCR GROUP SELECTIONS

Idaho

Selection Criteria Page 1

EXCEPTIONAL DATA TYPES

EDT	DESCRIPTION
0	NO EVENTS
1	EVENTS EXCLUDED
2	EVENTS INCLUDED
3	EXCEPTIONAL EVENTS EXCLUDED
4	NATURAL EVENTS EXCLUDED
5	EVENTS WITH CONCURRENCE EXCLUDED
6	EXCEPTIONAL EVENTS WITH CONCURRENCE EXCLUDED
7	NATURAL EVENTS WITH CONCURRENCE EXCLUDED

UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 1 HOUR
Year: 2004

Primary:
Secondary:
Unit: Micrograms/cubic meter (25 C)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-001-0009	3	Ada	079	520	357	283	244	225	8106		0
		Boise (corporate name Boise City)		06/24:18	04/27:23	07/04:22	06/26:18	07/04:23			
				207	176	170	169	165			
				04/15:05	04/13:17	05/07:20	09/06:22	02/18:05			

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 1 HOUR
Year: 2004

Primary:
Secondary:
Unit: Micrograms/cubic meter (25 C)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-005-0015	3	Bannock	079	476	435	395	345	314	7804		0
		Pocatello		06/08:07	06/03:18	07/31:16	07/03:16	06/09:15			
				249	231	221	204	192			
				08/22:16	02/24:10	09/18:13	08/01:15	06/08:00			

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 1 HOUR
Year: 2004

Primary:
Secondary:
Unit: Micrograms/cubic meter (25 C)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-017-0004	1	Bonner	079	729	431	266	239	229	8326		0
		Sandpoint		08/02:19	03/18:15	03/10:07	09/01:20	10/22:12			
				214	214	204	191	190			
				03/12:07	03/17:07	03/11:15	03/11:16	03/11:17			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 1 HOUR
Year: 2004

Primary:
Secondary:
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name City Name	Methods	1st Max 6th Max	2nd Max 7th Max	3rd Max 8th Max	4th Max 9th Max	5th Max 10th Max	Num Obs	Num Exc	EDT ID
16-027-0002	2	Canyon	079	492	417	389	314	253	6840		0
		Nampa		04/15:05	04/27:22	04/27:23	06/18:16	04/13:17			
				225	204	191	185	175			
				07/19:18	03/27:12	05/04:21	04/28:17	07/30:06			

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 1 HOUR
Year: 2004

Primary:
Secondary:
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name City Name	Methods	1st Max 6th Max	2nd Max 7th Max	3rd Max 8th Max	4th Max 9th Max	5th Max 10th Max	Num Obs	Num Exc	EDT ID
16-055-0006	3	Kootenai	079	1127	324	310	285	257	8667		0
		Coeur d'Alene		08/02:18	03/18:16	09/01:18	09/01:20	03/18:17			
				247	225	221	220	219			
				09/01:13	08/02:21	03/18:15	09/01:19	08/02:20			

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 1 HOUR
Year: 2004

Primary:
Secondary:
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name City Name	Methods	1st Max 6th Max	2nd Max 7th Max	3rd Max 8th Max	4th Max 9th Max	5th Max 10th Max	Num Obs	Num Exc	EDT ID
16-079-0017	3	Shoshone	079	818	442	280	205	205	8354		0
		Pinehurst (Pine Creek)		08/02:18	08/02:19	03/21:18	03/18:18	11/07:18			
				197	186	174	172	166			
				09/01:14	03/29:18	03/18:17	03/18:16	03/29:19			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 1 HOUR
Year: 2005

Primary:
Secondary:
Unit: Micrograms/cubic meter (25 C)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-001-0009	3	Ada	079	861	528	347	313	274	8382		0
		Boise (corporate name Boise City)		11/21:22	03/16:19	03/16:20	08/16:15	03/16:21			
				256	253	248	247	243			
				03/17:00	07/04:23	06/25:17	08/16:14	11/21:21			

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 1 HOUR
Year: 2005

Primary:
Secondary:
Unit: Micrograms/cubic meter (25 C)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-005-0015	3	Bannock	079	283	248	229	225	210	7632		0
		Pocatello		06/22:17	01/15:08	01/15:10	01/15:11	01/15:09			
				202	201	199	188	173			
				06/22:16	01/15:07	03/12:12	01/15:05	09/09:11			

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 1 HOUR
Year: 2005

Primary:
Secondary:
Unit: Micrograms/cubic meter (25 C)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-017-0004	1	Bonner	079	591	430	374	281	270	8150		0
		Sandpoint		02/10:16	06/21:22	06/21:21	02/08:07	06/21:23			
				266	247	234	215	200			
				06/22:00	02/09:07	03/08:18	02/11:15	02/09:17			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 1 HOUR
Year: 2005

Primary:
Secondary:
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0002	2	Canyon	079		725	622	580	537	534	8386		1
		Nampa			06/25:17	03/16:19	09/09:16	07/04:22	09/23:16			
					445	423	415	408	408			
					08/22:18	08/16:15	07/16:18	03/16:23	08/16:16			

Maximum Values

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0002	2	Canyon	079		1011	725	696	622	580	8395		2
		Nampa			03/12:11	06/25:17	03/12:16	03/16:19	09/09:16			
					537	534	445	428	423			
					07/04:22	09/23:16	08/22:18	03/12:15	08/16:15			

Maximum Values

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0002	2	Canyon	079		1011	725	696	622	580	8395		3
		Nampa			03/12:11	06/25:17	03/12:16	03/16:19	09/09:16			
					537	534	445	428	423			
					07/04:22	09/23:16	08/22:18	03/12:15	08/16:15			

Maximum Values

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0002	2	Canyon	079		725	622	580	537	534	8386		4
		Nampa			06/25:17	03/16:19	09/09:16	07/04:22	09/23:16			
					445	423	415	408	408			
					08/22:18	08/16:15	07/16:18	03/16:23	08/16:16			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 1 HOUR
Year: 2005

Primary:
Secondary:
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0002	2	Canyon	079		1011	725	696	622	580	8395		5
		Nampa			03/12:11	06/25:17	03/12:16	03/16:19	09/09:16			
					537	534	445	428	423			
					07/04:22	09/23:16	08/22:18	03/12:15	08/16:15			

Maximum Values

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0002	2	Canyon	079		1011	725	696	622	580	8395		6
		Nampa			03/12:11	06/25:17	03/12:16	03/16:19	09/09:16			
					537	534	445	428	423			
					07/04:22	09/23:16	08/22:18	03/12:15	08/16:15			

Maximum Values

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0002	2	Canyon	079		1011	725	696	622	580	8395		7
		Nampa			03/12:11	06/25:17	03/12:16	03/16:19	09/09:16			
					537	534	445	428	423			
					07/04:22	09/23:16	08/22:18	03/12:15	08/16:15			

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 1 HOUR
Year: 2005

Primary:
Secondary:
Unit: Micrograms/cubic meter (25 C)

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 1 HOUR
Year: 2005

Primary:
Secondary:
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-055-0006	3	Kootenai	079	431	286	225	223	214	8593		0
		Coeur d'Alene		03/16:12	03/16:18	07/04:21	09/09:11	07/04:22			
				212	201	188	184	182			
				06/21:20	09/09:10	06/21:22	06/21:23	03/16:17			

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 1 HOUR
Year: 2005

Primary:
Secondary:
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-079-0017	3	Shoshone	079	474	417	383	251	246	7607		0
		Pinehurst (Pine Creek)		06/21:20	06/21:21	04/24:20	06/21:22	09/22:18			
				213	197	190	186	186			
				08/19:19	06/21:23	03/16:13	01/18:11	02/03:16			

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 1 HOUR
Year: 2006

Primary:
Secondary:
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-001-0009	3	Ada	079	352	263	229	227	188	7666		0
		Boise (corporate name Boise City)		06/28:20	07/11:19	07/23:19	07/23:20	03/25:13			
				175	165	163	161	159			
				08/08:20	08/08:18	04/29:21	08/23:15	09/15:16			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 1 HOUR
Year: 2006

Primary:
Secondary:
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
				Maximum Values							
16-005-0015	3	Bannock	079	636	380	302	213	193	7772		0
		Pocatello		08/03:18	03/25:11	07/19:21	03/03:21	03/25:12			
				189	171	158	155	150			
				02/28:09	08/11:01	09/06:18	02/28:10	06/30:17			

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 1 HOUR
Year: 2006

Primary:
Secondary:
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
				Maximum Values							
16-017-0004	1	Bonner	079	274	267	221	170	167	8477		0
		Sandpoint		08/29:18	05/18:23	02/16:21	02/16:22	04/24:06			
				156	150	149	146	142			
				04/24:08	03/16:16	02/16:20	04/24:09	03/20:17			

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 1 HOUR
Year: 2006

Primary:
Secondary:
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
				Maximum Values							
16-027-0002	2	Canyon	079	692	593	449	407	314	7693		0
		Nampa		09/05:23	08/08:19	06/29:14	03/25:14	10/24:20			
				313	300	290	290	290			
				09/06:21	08/15:18	06/28:19	09/14:01	10/29:20			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 1 HOUR
Year: 2006

Primary:
Secondary:
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-055-0006	3	Kootenai	079	360	173	164	150	145	3858		0
		Coeur d'Alene		05/18:21	01/05:15	01/05:17	02/08:19	05/18:22			
				144	137	131	109	102			
				01/05:16	02/08:18	01/05:18	02/24:17	03/13:22			

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 1 HOUR
Year: 2006

Primary:
Secondary:
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-079-0017	3	Shoshone	079	300	176	147	143	137	8279		0
		Pinehurst (Pine Creek)		04/20:19	03/25:01	07/04:21	05/18:17	08/29:16			
				133	129	127	124	120			
				08/07:18	02/10:18	02/25:20	03/29:20	04/20:20			

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 24 HOURS
Year: 2004

Primary: 155
Secondary: 155
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-001-0011	1	Ada	063	59	55	45	44	43	59	0	0
		Boise (corporate name Boise City)		01/10:00	04/27:00	01/16:00	12/05:00	03/22:00			
				39	36	36	34	30			
				08/13:00	11/05:00	11/23:00	08/01:00	07/14:00			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 24 HOURS
Year: 2004

Primary: 155
Secondary: 155
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-005-0015	1	Bannock	063	62	56	56	53	51	110	0	0
		Pocatello		06/08:00	01/13:00	11/08:00	12/17:00	01/19:00			
				45	43	40	39	38			
				02/24:00	09/18:00	07/29:00	03/31:00	02/15:00			

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 24 HOURS
Year: 2004

Primary: 155
Secondary: 155
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-059-0004	1	Lemhi	063	51	47	42	40	40	59	0	0
		Salmon		01/16:00	01/10:00	02/03:00	09/30:00	12/29:00			
				36	36	35	35	31			
				02/15:00	11/23:00	11/17:00	12/17:00	03/12:00			

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 24 HOURS
Year: 2005

Primary: 155
Secondary: 155
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-001-0011	1	Ada	063	71	45	41	34	34	56	0	0
		Boise (corporate name Boise City)		12/12:00	09/07:00	02/03:00	12/18:00	12/24:00			
				33	33	33	33	32			
				07/03:00	07/15:00	08/08:00	08/26:00	02/27:00			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 24 HOURS
Year: 2005

Primary: 155
Secondary: 155
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-005-0015	1	Bannock	063		68	58	55	50	43	113	0	0
		Pocatello			02/03:00	12/09:00	01/19:00	08/29:00	02/24:00			
					40	38	38	37	35			
					01/16:00	02/09:00	12/12:00	06/21:00	12/18:00			

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 24 HOURS
Year: 2006

Primary: 155
Secondary: 155
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-001-0011	1	Ada	063		56	56	45	43	43	49	0	0
		Boise (corporate name Boise City)			06/28:00	08/15:00	09/02:00	09/08:00	12/07:00			
					42	40	37	37	36			
					07/28:00	08/21:00	04/29:00	07/22:00	12/19:00			

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 24 HOURS
Year: 2006

Primary: 155
Secondary: 155
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-005-0015	1	Bannock	063		62	53	52	48	44	116	0	0
		Pocatello			11/22:00	09/06:00	07/04:00	08/21:00	04/19:00			
					42	40	38	38	37			
					09/14:00	12/07:00	02/07:00	06/07:00	05/17:00			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 24 HOURS
Year: 2006

Primary: 155
Secondary: 155
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-005-0015	2	Bannock	063		45	35	35	29	22	16	0	0
		Pocatello			09/14:00	12/19:00	12/31:00	09/08:00	11/01:00			
					18	15	15	13	12			
					10/14:00	09/26:00	10/08:00	11/07:00	11/25:00			

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2004

Primary: 155
Secondary: 155
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-001-0009	3	Ada	079		70	57	53	51	48	334	0	0
		Boise (corporate name Boise City)			02/18:23	04/13:23	04/27:23	06/24:23	12/27:23			
					47	46	46	45	44			
					03/25:23	03/18:23	12/14:23	12/28:23	03/08:23			

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2004

Primary: 155
Secondary: 155
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-005-0015	3	Bannock	079		58	54	51	50	47	320	0	0
		Pocatello			11/08:23	05/05:23	06/08:23	09/18:23	12/17:23			
					45	44	42	40	39			
					02/24:23	04/02:23	01/16:23	03/08:23	02/13:23			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2004

Primary: 155
Secondary: 155
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-017-0004	1	Bonner	079	79	68	67	61	56	344	0	0
		Sandpoint		03/11:23	08/02:23	09/01:23	07/27:23	03/10:23			
				53	53	50	46	46			
				03/02:23	03/18:23	04/06:23	03/23:23	03/30:23			

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2004

Primary: 155
Secondary: 155
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0002	2	Canyon	079	74	67	67	67	66	282	0	0
		Nampa		08/13:23	03/22:23	04/27:23	08/12:23	07/30:23			
				66	65	65	63	60			
				07/31:23	07/28:23	08/10:23	08/14:23	07/14:23			

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2004

Primary: 155
Secondary: 155
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-055-0006	3	Kootenai	079	102	81	59	55	52	363	0	0
		Coeur d'Alene		08/02:23	09/01:23	03/18:23	02/23:23	10/28:23			
				49	46	46	43	43			
				10/27:23	02/03:23	02/13:23	07/27:23	11/07:23			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2004

Primary: 155
Secondary: 155
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-079-0017	3	Shoshone	079	78	68	51	50	50	348	0	0
		Pinehurst (Pine Creek)		08/02:23	11/07:23	10/28:23	02/13:23	02/23:23			
				50	49	45	45	44			
				11/10:23	10/29:23	03/18:23	09/29:23	02/22:23			

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2005

Primary: 155
Secondary: 155
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-001-0009	3	Ada	079	89	88	63	55	55	357	0	0
		Boise (corporate name Boise City)		11/21:23	03/16:23	08/16:23	03/09:23	03/11:23			
				52	50	48	48	48			
				11/22:23	03/12:23	02/03:23	09/08:23	09/09:23			

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2005

Primary: 155
Secondary: 155
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-005-0015	3	Bannock	079	113	58	53	51	48	319	0	0
		Pocatello		01/15:23	02/03:23	10/26:23	02/10:23	12/09:23			
				47	46	46	44	43			
				06/22:23	02/02:23	03/12:23	01/20:23	02/23:23			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2005

Primary: 155
Secondary: 155
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-017-0004	1	Bonner	079		78	71	70	67	67	339	0	0
		Sandpoint			02/10:23	02/08:23	02/09:23	02/11:23	06/21:23			
					63	61	60	59	58			
					02/07:23	09/09:23	02/22:23	03/23:23	02/23:23			

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2005

Primary: 155
Secondary: 155
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0002	2	Canyon	079		94	82	72	70	64	351	0	1
		Nampa			03/16:23	08/16:23	09/23:23	09/09:23	08/22:23			
					63	62	61	60	56			
					08/29:23	07/04:23	11/23:23	09/08:23	07/22:23			

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0002	2	Canyon	079		172	94	82	72	70	352	1	2
		Nampa			03/12:23	03/16:23	08/16:23	09/23:23	09/09:23			
					64	63	62	61	60			
					08/22:23	08/29:23	07/04:23	11/23:23	09/08:23			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2005

Primary: 155
Secondary: 155
Unit: Micrograms/cubic meter (25 C)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0002	2	Canyon	079	172	94	82	72	70	352	1	3
		Nampa		03/12:23	03/16:23	08/16:23	09/23:23	09/09:23			
				64	63	62	61	60			
				08/22:23	08/29:23	07/04:23	11/23:23	09/08:23			

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0002	2	Canyon	079	94	82	72	70	64	351	0	4
		Nampa		03/16:23	08/16:23	09/23:23	09/09:23	08/22:23			
				63	62	61	60	56			
				08/29:23	07/04:23	11/23:23	09/08:23	07/22:23			

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0002	2	Canyon	079	172	94	82	72	70	352	1	5
		Nampa		03/12:23	03/16:23	08/16:23	09/23:23	09/09:23			
				64	63	62	61	60			
				08/22:23	08/29:23	07/04:23	11/23:23	09/08:23			

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0002	2	Canyon	079	172	94	82	72	70	352	1	6
		Nampa		03/12:23	03/16:23	08/16:23	09/23:23	09/09:23			
				64	63	62	61	60			
				08/22:23	08/29:23	07/04:23	11/23:23	09/08:23			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2005

Primary: 155
Secondary: 155
Unit: Micrograms/cubic meter (25 C)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0002	2	Canyon	079	172	94	82	72	70	352	1	7
		Nampa		03/12:23	03/16:23	08/16:23	09/23:23	09/09:23			
				64	63	62	61	60			
				08/22:23	08/29:23	07/04:23	11/23:23	09/08:23			

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2005

Primary: 155
Secondary: 155
Unit: Micrograms/cubic meter (25 C)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-055-0006	3	Kootenai	079	77	69	55	54	51	358	0	0
		Coeur d'Alene		03/16:23	09/09:23	08/29:23	06/21:23	02/11:23			
				49	49	47	46	46			
				02/03:23	08/17:23	02/10:23	01/26:23	02/02:23			

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2005

Primary: 155
Secondary: 155
Unit: Micrograms/cubic meter (25 C)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-079-0017	3	Shoshone	079	94	85	75	65	65	318	0	0
		Pinehurst (Pine Creek)		01/18:23	02/03:23	06/21:23	02/02:23	12/22:23			
				60	55	55	55	55			
				02/07:23	01/19:23	01/20:23	01/21:23	02/04:23			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2006

Primary: 155
Secondary: 155
Unit: Micrograms/cubic meter (25 C)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-001-0009	3	Ada	079	97	89	69	69	61	308	0	0
		Boise (corporate name Boise City)		09/06:23	09/07:23	08/23:23	09/12:23	09/05:23			
				56	56	55	53	52			
				07/23:23	08/08:23	06/28:23	08/15:23	09/02:23			

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2006

Primary: 155
Secondary: 155
Unit: Micrograms/cubic meter (25 C)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-005-0015	3	Bannock	079	47	45	44	43	36	315	0	0
		Pocatello		12/30:23	03/03:23	08/03:23	11/22:23	02/28:23			
				36	35	35	35	34			
				09/07:23	07/19:23	08/30:23	09/06:23	04/23:23			

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2006

Primary: 155
Secondary: 155
Unit: Micrograms/cubic meter (25 C)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-017-0004	1	Bonner	079	68	62	52	52	52	351	0	0
		Sandpoint		02/16:23	05/19:23	02/07:23	04/24:23	09/07:23			
				47	47	46	45	45			
				03/23:23	09/08:23	05/18:23	03/20:23	08/22:23			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2006

Primary: 155
Secondary: 155
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0002	2	Canyon	079	106	96	87	83	73	311	0	0
		Nampa		09/06:23	09/05:23	09/07:23	09/12:23	08/08:23			
				72	68	64	63	62			
				08/21:23	08/23:23	09/08:23	09/11:23	08/15:23			

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2006

Primary: 155
Secondary: 155
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-055-0006	3	Kootenai	079	55	47	40	39	39	155	0	0
		Coeur d'Alene		01/05:23	05/18:23	02/08:23	03/16:23	05/19:23			
				38	38	38	33	33			
				02/07:23	02/10:23	02/11:23	03/20:23	03/23:23			

PM10 Total 0-10um STP (81102)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2006

Primary: 155
Secondary: 155
Unit: Micrograms/cubic meter (25 C)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-079-0017	3	Shoshone	079	52	52	47	44	43	343	0	0
		Pinehurst (Pine Creek)		02/10:23	08/29:23	02/11:23	03/23:23	02/12:23			
				42	42	42	41	41			
				03/16:23	03/22:23	11/01:23	02/25:23	09/13:23			

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Pollutant Summaries – $PM_{2.5}$

2004 Air Quality Data Summary Appendix

US EPA - AirData Monitor Values Report - Criteria Air Pollutants
Friday, 21-Oct-2005 at 11:11:30 AM (USA Eastern time zone)
Geographic Area: Idaho
Pollutant: Particulate (2.5 micrometers)
Year: 2004

	24-Hour PM2.5													
Data Year	# Obs	1st Max	2nd Max	3rd Max	4th Max	98th Pct	# Ex-ceed	Annual Mean	Annual # Exceed	Monitor Number	Site ID	Site Address	City	County
2004	54	43	36	33	24	36	0	9	0	1	160010011	Mtn View School/3500 Carbarton Lane	Boise	Ada
2004	25	43	37	19	16	43	0	9.2	0	1	160010021	Bradley Street	Garden City	Ada
2004	60	55	33	32	23	33	0	8.7	0	1	160050015	G&G/Corner Of Garret & Gould	Pocatello	Bannock
2004	55	56	32	32	24	32	0	8.7	0	2	160050015	G&G/Corner Of Garret & Gould	Pocatello	Bannock
2004	51	70	32	27	20	32	0	8.3	0	1	160050018	Highway 30 - Inkom, Idaho		Bannock
2004	122	37	28	25	24	25	0	9.3	0	1	160090010	9th And Center		Benewah
2004	40	49	32	24	18	49	0	7.9	0	1	160090011	850 A Street, Plummer		Benewah
2004	29	12	12	9	9	12	0	6.1	0	1	160170005	1601 Ontario	Sandpoint	Bonner
2004	29	59	42	22	22	59	0	10.1	0	1	160190011	Hickory And Sycamore St, Idaho Falls	Idaho Falls	Bonneville
2004	37	55	18	17	12	55	0	6.5	0	1	160190013	North Holms And Pop Kroll	Idaho Falls	Bonneville
2004	104	24	21	21	14	21	0	6	0	1	160210002	County Road 38a	Bonners Ferry	Boundary
2004	122	49	44	44	40	44	0	9.1	0	1	160270004	Northwest Nazarine College (Nnc)	Nampa	Canyon
2004	57	40	40	27	25	40	0	9	0	2	160270004	Northwest Nazarine College (Nnc)	Nampa	Canyon
2004	29	45	41	30	20	45	0	9.6	0	1	160270005	1100 Willow St Caldwell, Id 83605	Caldwell	Canyon
2004	16	15	12	11	10	15	0	5.9	0	1	160290003	Soda Springs/Soda Springs High School	Soda Springs	Caribou
2004	16	12	12	11	10	12	0	7.4	0	1	160410001	Franklin - Water Treatment Facility At E	Franklin	Franklin
2004	23	27	26	20	19	27	0	11.3	0	1	160490003	Intersection Of Apple And Pine, Kamiah		Idaho
2004	50	41	38	27	24	41	0	9.7	0	1	160590004	N. Charles St.	Salmon	Lemhi
2004	56	49	39	33	27	39	0	9.4	0	1	160770011	S Of Hwy 30 And E Of Weaver Rd		Power
2004	54	50	33	28	25	33	0	9.3	0	2	160770011	S Of Hwy 30 And E Of Weaver Rd		Power
2004	120	49	37	36	35	36	0	12	0	1	160790017	Pinehurst/Pinehurst School, Pinehurst		Shoshone

A-3

(Kamiah (Idaho County) data provided by monitor owned and operated by the Nez Perce Tribe)

* US EPA - AirData Monitor Values Report - Criteria Air Pollutants
* Wednesday, 30-Aug-2006 at 1:45:43 PM (USA Eastern time zone)
* Geographic Area: Idaho
* Pollutant: Particulate (size < 2.5 micrometers)
* Year: 2005

Data Year	24-Hour PM2.5							Annual Mean	Annual # Exceed	Monitor Number	Site ID	Site Address	City	County
	# Obs	1st Max	2nd Max	3rd Max	4th Max	98th Pct	# Ex-ceed							
2005	56	30	26	25	24	26	0	8.6	0	1	160010011	Mtn View School/3500 Carbarton Lane	Boise (Corpo	Ada
2005	52	39	34	29	24	34	0	9.5	0	2	160050015	G&G/Corner Of Garret & Gould	Pocatello	Bannock
2005	60	35	30	25	25	30	0	8.2	0	1	160050015	G&G/Corner Of Garret & Gould	Pocatello	Bannock
2005	51	24	23	19	18	23	0	7.2	0	1	160050018	Highway 30 - Inkom, Idaho		Bannock
2005	118	46	41	34	32	34	0	9.5	0	1	160090010	9th And Center		Benewah
2005	66	21	19	17	14	19	0	6.6	0	1	160090011	850 A Street, Plummer		Benewah
2005	53	26	20	18	17	20	0	6.2	0	1	160210002	County Road 38a	Bonners Ferr	Boundary
2005	55	51	34	25	25	34	0	9.9	0	2	160270004	Northwest Nazarine College (Nnc)	Nampa	Canyon
2005	118	52	47	36	33	36	0	9.2	0	1	160270004	Northwest Nazarine College (Nnc)	Nampa	Canyon
2005	54	56	44	24	23	44	0	9.3	0	1	160270008	Off Of Sinclair Avenue - At The Wastewat	Parma	Canyon
2005	306	84	83	76	63	56	0	10	0	1	160410001	Franklin - Water Treatment Facility At E	Franklin	Franklin
2005	57	75	46	44	29	46	0	10.2	0	1	160410002	Preston Jr. High - 450 E. Valley View Dr	Preston	Franklin
2005	60	49	33	28	25	33	0	9.5	0	1	160450001	2195 Schiller Road - Emmett, Idaho	Emmett	Gem
2005	44	28	23	21	21	28	0	9.6	0	2	160490003	Intersection Of Apple And Pine, Kamiah		Idaho
2005	51	24	22	21	18	22	0	9	0	1	160490003	Intersection Of Apple And Pine, Kamiah		Idaho
2005	25	41	28	25	23	41	0	9	0	2	160770011	S Of Hwy 30 And E Of Weaver Rd		Power
2005	24	41	26	25	23	41	0	9.2	0	1	160770011	S Of Hwy 30 And E Of Weaver Rd		Power
2005	120	57	47	46	38	46	0	12.7	0	1	160790017	Pinehurst/Pinehurst School, Pinehurst		Shoshone

(Kamiah (Idaho County) data provided by monitor owned and operated by the Nez Perce Tribe)

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

		24-Hour PM2.5												
Data Year	County	# Obs	1st Max	2nd Max	3rd Max	4th Max	98th Pct	# Ex-ceed	Annual Mean	Annual # Exceed	Monitor Number	Site ID	Site Address	City
2006	Ada	15	35	17	15	14	35	0	9.1	0	1	160010010	520 S. Eagle Road, Meridian	Meridian
2006	Ada	49	29	24	22	22	29	0	8	0	1	160010011	Mtn View School/3500 Carbarton La	Boise
2006	Bannock	10	9	9	7	3	9	0	4.1	0	2	160050015	G&G/Corner Of Garret & Gould	Pocatello
2006	Bannock	59	23	21	20	17	21	0	6.4	0	1	160050015	G&G/Corner Of Garret & Gould	Pocatello
2006	Bannock	24	14	8	6	6	14	0	4	0	1	160050018	Highway 30 - Inkom, Idaho	
2006	Benewah	52	48	33	24	23	33	0	9.7	0	1	160090010	9th And Center	
2006	Benewah	52	26	17	15	15	17	0	7	0	1	160090011	850 A Street, Plummer	
2006	Canyon	29	28	21	16	14	28	0	9.1	0	2	160270004	Northwest Nazarine College (Nnc)	Nampa
2006	Canyon	105	27	24	22	21	22	0	7.6	0	1	160270004	Northwest Nazarine College (Nnc)	Nampa
2006	Franklin	284	40	35	31	29	27	0	6.2	0	1	160410001	Franklin - Water Treatment Facility	Franklin
2006	Franklin	48	15	14	11	9	15	0	5.1	0	1	160410002	Preston Jr. High - 450 E. Valley Vie	Preston
2006	Idaho	55	26	25	25	25	25	0	9.5	0	2	160490003	Intersection Of Apple And Pine, Kamiah	
2006	Idaho	57	37	26	25	25	26	0	10	0	1	160490003	Intersection Of Apple And Pine, Kamiah	
2006	Shoshone	115	47	34	34	30	34	0	11.5	0	1	160790017	Pinehurst/Pinehurst School, Pinehu	Pinehurst

(Kamiah (Idaho County) data provided by monitor owned and operated by the Nez Perce Tribe)

AQS MAXIMUM VALUES REPORTS – $PM_{2.5}$ primarily FRMs

UNITES STATES ENVIRONMENTAL PROTECTION AGENCY

User ID: MYV

MAXIMUM VALUES REPORT

Report Request ID: 520013 Report Code: AMP440 Mar. 31, 2008

GEOGRAPHIC SELECTIONS

Tribal State	County	Site	Parameter	POC	City	AQCR	UAR	MSA	CMSA	EPA Region	Method	Duration	Begin Date	End Date
16			88101										2004	2006

SELECTED OPTIONS

Option Type	Option Value
EVENTS PROCESSING	REPORT ALL EVENT RECORDS
MERGE PDF FILES	YES

SORT ORDER

Order	Column
1	PARAMETER_CODE
2	STATE_CODE
3	DURATION_CODE
4	DATES
5	COUNTY_CODE
6	SITE_ID
7	POC
8	EDT_ID

SCR GROUP SELECTIONS

Idaho

Selection Criteria Page 1

EXCEPTIONAL DATA TYPES

EDT	DESCRIPTION
0	NO EVENTS
1	EVENTS EXCLUDED
2	EVENTS INCLUDED
3	EXCEPTIONAL EVENTS EXCLUDED
4	NATURAL EVENTS EXCLUDED
5	EVENTS WITH CONCURRENCE EXCLUDED
6	EXCEPTIONAL EVENTS WITH CONCURRENCE EXCLUDED
7	NATURAL EVENTS WITH CONCURRENCE EXCLUDED

UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 1 HOUR
Year: 2004

Primary:
Secondary:
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-001-0011	3	Ada	713	237.4	89.0	58.4	47.3	46.5	1529		0
		Boise (corporate name Boise City)		02/11:10	02/11:11	02/11:12	01/10:11	01/10:18			
				45.1	44.0	43.3	42.5	42.5			
				03/10:08	01/11:01	01/01:01	01/10:20	01/11:03			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 1 HOUR
Year: 2004

Primary:
Secondary:
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-005-0015	4	Bannock	712 713	143.6	112.3	97.3	90.7	73.5	7114		0
		Pocatello		01/16:13	01/09:09	01/24:03	01/09:10	11/12:13			
				63.1	59.8	58.5	58.1	56.4			
				12/23:11	11/12:12	01/24:02	01/16:12	01/09:08			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 1 HOUR
Year: 2004

Primary:
Secondary:
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-015-0001	3	Boise	712	40.3	35.7	35.2	35.1	34.8	1547		0
		Not in a city		01/10:11	01/03:10	01/10:12	01/29:05	01/31:19			
				33.9	32.9	31.7	30.5	30.5			
				01/11:10	02/16:19	01/29:07	01/04:09	02/15:21			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 1 HOUR
Year: 2004

Primary:
Secondary:
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-015-0002	3	Boise	712 713	59.0	57.8	57.4	51.6	49.7	7832		0
		Not in a city		07/04:22	04/13:20	03/15:04	03/23:02	07/04:21			
				47.9	39.9	38.1	37.9	37.9			
				03/22:23	03/14:20	03/23:00	03/14:22	07/17:19			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 1 HOUR
Year: 2004

Primary:
Secondary:
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-019-0013	3	Bonneville	712 713	116.5	82.0	58.8	48.6	45.3	6952		0
		Idaho Falls		05/10:17	03/21:18	04/15:11	03/21:17	08/01:16			
				42.3	41.0	40.3	38.8	38.5			
				04/15:13	07/13:15	05/10:16	04/15:10	04/15:14			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 1 HOUR
Year: 2004

Primary:
Secondary:
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0004	3	Canyon	712 713	86.3	76.0	73.1	64.0	63.5	8556		0
		Nampa		01/11:20	08/01:17	01/11:21	08/11:20	01/11:11			
				60.8	58.3	58.1	58.1	57.8			
				07/24:16	01/11:02	01/10:09	01/16:10	07/25:14			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 1 HOUR
Year: 2004

Primary:
Secondary:
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0007	3	Canyon	712	62.4	50.8	48.3	48.1	48.0	8702		0
		Not in a city		07/03:21	12/27:19	11/09:11	11/09:10	04/29:07			
				47.2	46.0	45.6	45.0	44.6			
				10/27:11	11/07:14	11/09:12	07/03:22	08/29:20			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 1 HOUR
Year: 2004

Primary:
Secondary:
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-029-0003	3	Caribou	712 713	53.5	47.1	43.3	38.3	37.5	2359		0
		Soda Springs		03/23:17	03/23:19	01/15:05	07/05:21	05/10:18			
				36.0	33.7	33.5	33.2	33.0			
				01/17:11	03/22:16	01/06:01	03/19:17	03/24:16			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 1 HOUR
Year: 2004

Primary:
Secondary:
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-039-0002	3	Elmore	713	40.8	30.9	30.7	30.5	29.3	1444		0
		Mountain Home		01/20:21	01/26:00	01/20:20	01/14:09	01/15:22			
				28.6	28.5	26.6	26.0	25.7			
				01/20:22	01/16:07	01/15:20	01/14:08	01/15:21			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
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Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 1 HOUR
Year: 2004

Primary:
Secondary:
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-045-0001	3	Gem	713	79.1	52.2	51.1	49.3	47.2	893		0
		Emmett		12/21:00	11/21:17	12/21:03	12/21:01	12/21:02			
				45.0	43.7	43.2	42.4	42.2			
				12/17:16	11/21:21	12/20:17	12/11:10	12/20:22			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 1 HOUR
Year: 2004

Primary:
Secondary:
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-049-0002	3	Idaho	713	41.7	40.3	35.6	35.6	34.3	1345		0
		Grangeville		02/16:08	01/20:01	01/01:05	01/09:09	01/18:08			
				32.0	32.0	31.4	29.5	29.1			
				01/08:20	01/19:21	01/22:08	02/02:08	01/05:09			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 1 HOUR
Year: 2004

Primary:
Secondary:
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-055-0014	3	Kootenai	713	70.1	62.6	53.6	53.0	51.9	1445		0
		Post Falls		01/04:21	03/02:22	02/23:21	02/29:22	02/20:00			
				50.9	49.4	46.6	45.9	45.5			
				01/26:00	02/21:20	01/25:23	03/02:00	03/04:22			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 1 HOUR
Year: 2004

Primary:
Secondary:
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-057-0005	3	Latah	712	73.5	63.5	61.5	56.0	55.8	8579		0
		Moscow		04/27:16	09/27:17	04/27:17	09/27:19	09/27:18			
				55.3	49.0	48.2	46.4	45.1			
				08/02:14	08/02:16	09/27:20	09/24:18	08/02:13			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 1 HOUR
Year: 2004

Primary:
Secondary:
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-059-0004	3	Lemhi	712 713	55.4	54.3	53.8	53.7	53.3	7784		0
		Salmon		12/15:00	01/16:05	01/16:03	01/16:04	02/15:22			
				52.5	52.2	51.8	51.5	51.3			
				01/09:10	11/14:22	01/20:10	12/19:19	01/09:07			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 1 HOUR
Year: 2004

Primary:
Secondary:
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-069-0012	3	Nez Perce	712	54.5	48.1	41.4	37.7	32.9	8498		0
		Lewiston		08/02:16	12/28:15	12/28:14	08/05:10	12/22:11			
				32.0	30.4	30.3	30.3	29.6			
				12/16:14	12/29:09	08/14:17	10/29:13	08/22:01			

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AIR QUALITY SUBSYSTEM
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Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 1 HOUR
Year: 2004

Primary:
Secondary:
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-079-0017	3	Shoshone	713	92.3	83.3	83.1	81.2	81.0	1293		0
		Pinehurst (Pine Creek)		01/18:23	01/09:00	01/08:23	01/15:22	02/02:00			
				79.3	76.3	75.4	75.3	74.5			
				01/28:01	01/09:01	01/10:15	01/09:02	01/19:02			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 1 HOUR
Year: 2004

Primary:
Secondary:
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-083-0010	3	Twin Falls	712 713	151.2	137.2	95.9	92.5	89.3	8082		0
		Twin Falls		03/21:19	04/05:18	03/21:21	03/21:20	03/22:06			
				87.4	86.8	81.6	73.8	73.3			
				01/15:06	03/21:18	04/05:17	04/05:20	04/05:19			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 1 HOUR
Year: 2004

Primary:
Secondary:
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-085-0001	3	Valley	712 713	95.9	95.3	85.3	83.2	78.2	7730		0
		Not in a city		11/12:04	11/12:03	11/13:10	11/12:07	07/17:18			
				78.2	73.1	57.9	56.2	54.4			
				11/13:11	11/12:02	11/12:05	01/13:12	12/03:11			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 1 HOUR
Year: 2005

Primary:
Secondary:
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-005-0015	4	Bannock	712 713	185.5	149.4	144.7	144.4	140.3	6974		0
		Pocatello		01/15:08	12/10:11	01/15:12	06/30:12	06/30:13			
				138.0	125.6	116.9	109.6	109.1			
				11/21:17	01/15:04	12/09:12	01/15:13	01/15:03			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 1 HOUR
Year: 2005

Primary:
Secondary:
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-015-0002	3	Boise	712 713	76.2	67.9	65.8	62.7	59.4	8574		0
		Not in a city		03/09:22	11/09:21	03/11:03	03/09:23	03/10:08			
				56.1	53.5	52.1	51.9	47.0			
				03/11:08	11/09:22	11/09:18	03/11:01	03/10:19			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 1 HOUR
Year: 2005

Primary:
Secondary:
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-019-0013	3	Bonneville	712 713	118.3	99.3	63.9	41.4	35.7	8271		0
		Idaho Falls		07/16:09	07/16:08	09/09:22	09/17:00	07/16:10			
				34.4	31.8	29.6	28.2	26.4			
				09/08:10	09/09:23	09/17:01	07/16:07	07/22:17			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 1 HOUR
Year: 2005

Primary:
Secondary:
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0004	3	Canyon	712 713	263.6	152.6	123.2	105.7	83.8	7108		0
		Nampa		07/04:22	07/04:23	09/10:07	07/05:00	03/11:20			
				79.7	79.2	73.3	71.8	69.6			
				03/11:21	09/08:07	08/04:20	09/11:08	09/11:07			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 1 HOUR
Year: 2005

Primary:
Secondary:
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0007	3	Canyon	712	708.5	384.9	291.2	233.9	226.8	8602		0
		Not in a city		03/21:18	07/04:22	07/04:23	05/24:13	03/21:19			
				192.0	184.0	176.9	151.8	100.7			
				05/24:10	05/24:14	07/04:21	05/24:16	05/24:15			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 1 HOUR
Year: 2005

Primary:
Secondary:
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-045-0001	3	Gem	712 713	235.7	234.9	224.7	208.7	202.3	6742		0
		Emmett		03/11:20	03/08:19	03/11:19	07/04:21	03/07:19			
				188.2	170.7	146.7	122.8	116.7			
				03/10:19	03/09:19	03/07:21	03/11:21	03/09:20			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 1 HOUR
Year: 2005

Primary:
Secondary:
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-057-0005	3	Latah	712 713	60.1	59.1	53.6	50.3	49.6	8541		0
		Moscow		08/09:08	09/08:12	08/09:06	02/01:18	08/09:09			
				47.8	47.7	42.9	40.8	38.7			
				08/09:10	02/21:07	09/09:13	08/08:10	06/21:20			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 1 HOUR
Year: 2005

Primary:
Secondary:
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-059-0004	3	Lemhi	712 713	162.7	156.9	134.5	126.2	118.8	7905		0
		Salmon		09/09:14	08/29:18	08/29:19	09/09:13	09/03:22			
				115.7	114.9	111.2	107.7	107.4			
				09/03:21	09/09:15	09/03:23	09/04:00	09/03:20			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 1 HOUR
Year: 2005

Primary:
Secondary:
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-069-0012	3	Nez Perce	712	58.5	54.9	50.4	43.6	41.8	8118		0
		Lewiston		02/23:08	08/12:18	09/18:08	08/08:11	08/08:12			
				39.6	38.6	38.0	37.3	36.2			
				10/12:08	08/09:14	12/05:10	02/23:09	02/02:11			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 1 HOUR
Year: 2005

Primary:
Secondary:
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-083-0010	3	Twin Falls	712 713	138.7	125.4	105.6	88.7	77.6	7888		0
		Twin Falls		12/17:01	12/17:02	01/14:06	09/09:19	11/23:19			
				69.0	66.2	65.9	65.3	65.1			
				10/06:19	11/19:18	11/23:18	11/19:19	10/07:20			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 1 HOUR
Year: 2005

Primary:
Secondary:
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-085-0001	3	Valley	712 713	222.5	168.2	160.1	131.4	127.3	7511		0
		Not in a city		10/31:14	10/31:15	11/30:20	10/31:13	11/30:22			
				120.0	113.2	96.0	89.7	88.8			
				10/31:12	10/31:16	11/30:23	03/11:20	10/31:17			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 1 HOUR
Year: 2005

Primary:
Secondary:
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-085-0002	3	Valley	713	58.4	56.9	50.7	45.2	44.9	567		0
		McCall		12/06:19	12/24:23	12/12:01	12/12:00	12/24:22			
				44.3	41.5	41.5	40.2	39.4			
				12/12:21	12/11:22	12/17:19	12/24:21	12/06:18			

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AIR QUALITY SUBSYSTEM
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Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-001-0011	1	Ada	118		43.4	35.5	33.4	24.4	24.3	54	0	0
		Boise (corporate name Boise City)			01/10:00	01/16:00	12/05:00	11/23:00	11/17:00			
					22.5	22.2	17.1	16.7	14.8			
					11/05:00	02/15:00	12/17:00	11/11:00	02/21:00			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-001-0021	1	Ada	118		43.2	36.6	18.9	16.2	14.6	25	0	0
		Garden City			01/10:00	01/16:00	02/15:00	02/21:00	03/22:00			
					10.3	8.5	8.4	8.4	8.2			
					02/03:00	04/27:00	03/10:00	05/15:00	02/09:00			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-005-0015	1	Bannock	118		54.9	32.5	32.3	23.1	23.1	60	0	0
		Pocatello			01/16:00	01/10:00	02/15:00	12/05:00	12/17:00			
					19.9	18.7	16.5	12.9	12.9			
					02/21:00	11/17:00	01/22:00	02/03:00	03/10:00			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-005-0015	2	Bannock	118	55.5	32.3	32.2	23.9	22.9	55	0	0
		Pocatello		01/16:00	01/10:00	02/15:00	12/05:00	12/17:00			
				18.7	17.9	17.2	13.9	12.7			
				02/21:00	11/17:00	01/22:00	02/03:00	03/10:00			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-005-0018	1	Bannock	117	69.7	32.3	27.1	20.3	16.0	51	1	0
		Not in a city		01/16:00	12/05:00	01/10:00	01/22:00	03/10:00			
				13.6	13.6	12.9	11.6	10.0			
				02/03:00	11/17:00	12/17:00	02/09:00	12/11:00			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-009-0010	1	Benewah	118	37.2	28.4	24.8	23.5	22.5	122	0	0
		Not in a city		10/27:00	11/11:00	01/07:00	09/30:00	12/02:00			
				22.2	20.4	18.4	18.1	18.0			
				11/08:00	12/26:00	11/20:00	10/03:00	11/23:00			

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Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-015-0002	1	Boise	117	11.1	5.0	4.2			3	0	0
		Not in a city		01/28:00	01/22:00	01/04:00					

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-017-0005	1	Bonner	118	11.6	11.5	8.7	8.7	8.5	29	0	0
		Sandpoint		01/10:00	03/22:00	05/15:00	06/26:00	02/15:00			
				8.0	7.8	7.7	7.6	7.6			
				01/16:00	04/09:00	02/21:00	01/04:00	03/28:00			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-019-0011	1	Bonneville	118	59.0	41.7	21.8	21.5	20.9	29	0	0
		Idaho Falls		01/16:00	01/19:00	01/13:00	01/14:00	01/22:00			
				20.2	20.0	16.5	15.4	13.8			
				02/12:00	02/15:00	02/18:00	02/24:00	02/06:00			

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AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-019-0013	1	Bonneville	117		54.7	18.1	17.3	12.1	11.2	37	0	0
		Idaho Falls			01/16:00	01/22:00	02/15:00	01/10:00	02/09:00			
					10.9	10.6	9.9	7.6	7.0			
					02/03:00	03/22:00	11/29:00	08/13:00	01/28:00			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0004	1	Canyon	117		48.5	44.0	43.8	40.0	39.5	122	0	0
		Nampa			01/13:00	11/08:00	01/19:00	01/16:00	01/10:00			
					31.5	25.4	25.3	25.2	22.7			
					12/02:00	11/11:00	12/05:00	11/23:00	02/15:00			

Maximum Values

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0004	2	Canyon	117		40.0	39.8	26.5	25.3	25.2	57	0	0
		Nampa			01/10:00	01/16:00	11/11:00	12/05:00	11/23:00			
					22.7	22.5	22.4	20.8	20.7			
					02/15:00	03/22:00	11/17:00	11/05:00	12/17:00			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0005	1	Canyon	117	44.8	41.1	30.0	20.4	11.3	29	0	0
		Caldwell		01/16:00	01/10:00	02/15:00	03/22:00	02/03:00			
				11.1	9.7	8.4	6.9	6.8			
				02/21:00	01/28:00	04/27:00	01/04:00	04/03:00			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-029-0003	1	Caribou	117	14.9	12.3	10.8	9.6	6.4	16	0	0
		Soda Springs		01/22:00	01/16:00	02/21:00	02/15:00	06/08:00			
				5.9	5.8	4.9	4.5	4.5			
				04/15:00	06/02:00	06/26:00	02/09:00	06/20:00			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-041-0001	1	Franklin	118	11.7	11.5	11.4	10.4	9.6	16	0	0
		Franklin		12/12:00	12/26:00	12/27:00	12/11:00	12/14:00			
				9.4	9.3	9.2	7.8	7.4			
				12/25:00	12/10:00	12/29:00	12/13:00	12/07:00			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-045-0001	1	Gem	117	24.9	22.3	17.1	14.9	10.7	7	0	0
		Emmett		11/23:00	12/05:00	12/17:00	12/11:00	12/29:00			
				10.0	8.4						
				11/29:00	12/23:00						

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-049-0002	1	Idaho	117	12.8	4.5				2	0	0
		Grangeville		01/06:00	01/10:00						

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-059-0004	1	Lemhi	117	40.5	37.8	26.7	24.2	23.0	50	0	0
		Salmon		01/16:00	01/10:00	12/29:00	11/23:00	02/03:00			
				21.7	21.5	20.7	20.7	18.9			
				11/17:00	09/30:00	12/05:00	12/17:00	01/22:00			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
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Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-069-0012	1	Nez Perce	117	6.1					1	0	0
		Lewiston		01/04:00							

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-079-0017	1	Shoshone	118	48.9	37.0	35.7	35.0	32.6	120	0	0
		Pinehurst (Pine Creek)		01/28:00	11/08:00	01/10:00	01/19:00	12/26:00			
				31.2	31.0	27.5	27.5	27.3			
				10/27:00	12/29:00	01/16:00	12/02:00	11/29:00			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2005

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-001-0011	1	Ada	118	30.1	26.4	25.3	23.8	20.9	56	0	0
		Boise (corporate name Boise City)		12/24:00	02/03:00	11/18:00	01/16:00	01/28:00			
				19.9	17.7	17.5	15.9	13.5			
				01/04:00	11/24:00	07/03:00	02/27:00	12/06:00			

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AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2005

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-005-0015	1	Bannock	118	35.0	29.8	25.1	24.6	24.4	60	0	0
		Pocatello		01/16:00	02/03:00	01/10:00	12/18:00	01/22:00			
				24.3	19.3	17.2	15.5	14.0			
				12/12:00	11/24:00	02/09:00	02/27:00	01/28:00			

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-005-0015	2	Bannock	118	39.2	33.5	29.4	23.6	23.6	52	0	0
		Pocatello		02/03:00	01/16:00	08/26:00	08/14:00	12/12:00			
				23.1	20.7	20.4	18.0	15.7			
				01/10:00	09/01:00	09/07:00	02/09:00	02/27:00			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2005

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-005-0018	1	Bannock	117	24.4	23.2	19.1	18.2	16.9	51	0	0
		Not in a city		02/03:00	01/10:00	01/22:00	01/28:00	02/27:00			
				15.5	15.3	15.2	14.7	10.1			
				02/09:00	12/12:00	11/24:00	12/18:00	03/05:00			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2005

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2005

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-009-0010	1	Benewah	118	45.5	40.5	34.3	32.3	29.1	118	0	0
		Not in a city		12/18:00	12/15:00	01/04:00	10/31:00	10/28:00			
				28.7	25.0	24.9	21.0	18.5			
				10/25:00	12/03:00	12/12:00	01/28:00	11/09:00			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2005

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-019-0013	1	Bonneville	117	25.1	14.7	13.1	10.2	5.4	6	0	0
		Idaho Falls		01/28:00	01/16:00	01/22:00	02/03:00	01/10:00			
				5.3							
				01/04:00							

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2005

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0004	1	Canyon	117	51.6	47.1	36.3	32.8	32.2	118	0	0
		Nampa		12/12:00	11/21:00	01/19:00	01/28:00	01/25:00			
				26.4	24.2	23.7	23.5	22.2			
				10/25:00	01/16:00	12/09:00	02/24:00	12/18:00			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2005

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0004	2	Canyon	117	50.9	34.1	25.0	24.9	22.2	55	0	0
		Nampa		12/12:00	01/28:00	10/25:00	01/16:00	02/03:00			
				22.1	21.5	17.0	16.4	15.1			
				12/18:00	12/24:00	03/05:00	01/22:00	01/10:00			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2005

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0008	1	Canyon	117	56.2	43.6	23.6	23.4	22.7	54	0	0
		Parma		09/19:00	12/12:00	11/18:00	02/03:00	02/27:00			
				18.8	16.2	14.8	13.6	12.8			
				12/18:00	11/24:00	12/24:00	09/07:00	03/05:00			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2005

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-041-0001	1	Franklin	118	83.7	82.6	76.3	63.0	62.8	306	3	0
		Franklin		03/02:00	01/17:00	01/18:00	02/05:00	01/16:00			
				58.7	55.9	50.4	49.5	45.2			
				02/18:00	02/04:00	01/19:00	03/10:00	02/11:00			

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AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2005

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-041-0002	1	Franklin	118	74.9	46.3	43.7	29.1	24.0	57	1	0
		Preston		03/03:00	03/10:00	03/08:00	03/09:00	03/11:00			
				22.5	20.2	19.8	18.2	17.5			
				12/12:00	11/24:00	03/02:00	02/23:00	02/01:00			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2005

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-045-0001	1	Gem	117	49.0	32.6	28.2	25.3	23.0	60	0	0
		Emmett		12/12:00	01/28:00	02/03:00	02/27:00	11/18:00			
				22.1	20.9	19.9	18.7	17.6			
				01/16:00	12/18:00	12/24:00	10/25:00	11/24:00			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2005

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-059-0004	1	Lemhi	117	39.5	23.9	21.7	21.4	17.7	9	0	0
		Salmon		01/28:00	01/10:00	01/16:00	01/04:00	01/22:00			
				5.9	5.0	3.4	3.1				
				05/13:00	05/22:00	05/04:00	05/16:00				

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2005

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-079-0017	1	Shoshone	118	57.2	47.3	45.7	37.7	35.1	120	0	0
		Pinehurst (Pine Creek)		01/19:00	12/21:00	12/15:00	12/24:00	02/03:00			
				34.2	33.6	33.1	29.6	29.4			
				12/09:00	11/09:00	02/09:00	01/22:00	10/31:00			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2006

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-001-0010	1	Ada	117	34.5	17.0	14.9	14.1	12.7	15	0	0
		Meridian		12/07:00	10/14:00	12/01:00	12/31:00	11/01:00			
				10.0	8.5	7.0	4.1	4.0			
				10/02:00	09/26:00	10/08:00	12/25:00	10/20:00			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2006

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-001-0011	1	Ada	118	28.5	23.6	21.7	21.5	18.4	49	0	0
		Boise (corporate name Boise City)		09/08:00	09/02:00	10/26:00	12/19:00	11/01:00			
				15.5	12.5	12.1	10.4	9.5			
				07/28:00	03/12:00	12/31:00	07/22:00	10/02:00			

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AIR QUALITY SUBSYSTEM
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Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2006

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-005-0015	1	Bannock	118	23.1	20.6	19.7	16.7	14.4	59	0	0
		Pocatello		12/31:00	07/04:00	12/07:00	12/19:00	09/08:00			
				11.6	10.0	9.7	9.3	8.9			
				01/23:00	09/02:00	07/22:00	08/15:00	01/05:00			

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-005-0015	2	Bannock	118	8.9	8.7	6.8	3.1	2.9	10	0	0
		Pocatello		01/05:00	03/12:00	02/16:00	02/01:00	02/28:00			
				2.4	2.4	2.1	2.0	1.9			
				01/17:00	02/22:00	01/29:00	01/11:00	03/07:00			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2006

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-005-0018	1	Bannock	117	13.5	8.4	6.3	6.2	5.6	24	0	0
		Not in a city		01/23:00	03/12:00	04/29:00	02/16:00	06/28:00			
				5.4	4.9	4.4	4.2	4.1			
				01/17:00	03/18:00	03/24:00	02/10:00	04/23:00			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2006

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2006

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-009-0010	1	Benewah	118	47.8	32.9	23.8	22.9	17.7	52	1	0
		Not in a city		11/01:00	10/26:00	02/10:00	09/08:00	03/12:00			
				16.9	16.9	16.2	12.8	12.7			
				08/21:00	12/07:00	12/19:00	05/05:00	10/14:00			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2006

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0004	1	Canyon	117 118	26.7	24.1	22.4	20.7	20.2	105	0	0
		Nampa		09/08:00	09/05:00	12/04:00	10/14:00	12/01:00			
				19.8	19.2	19.1	18.8	18.3			
				12/22:00	12/19:00	11/01:00	12/31:00	01/26:00			

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0004	2	Canyon	117 118	27.9	20.6	15.6	14.2	9.6	29	0	0
		Nampa		09/08:00	10/14:00	01/23:00	09/02:00	02/22:00			
				9.4	9.4	8.9	8.5	8.5			
				05/05:00	10/02:00	09/26:00	03/12:00	05/17:00			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2006

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2006

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0008	1	Canyon	117	6.5	1.8				2	0	0
		Parma		01/05:00	01/11:00						

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2006

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-041-0001	1	Franklin	118	40.2	35.4	31.3	29.0	27.2	284	2	0
		Franklin		01/26:00	01/25:00	12/22:00	02/09:00	02/21:00			
				27.1	24.0	22.1	20.4	20.0			
				02/20:00	02/08:00	12/21:00	02/19:00	02/13:00			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2006

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-041-0002	1	Franklin	118	14.7	13.9	11.2	9.2	8.6	48	0	0
		Preston		01/23:00	09/08:00	07/28:00	07/22:00	10/14:00			
				8.5	8.4	7.7	7.6	7.3			
				07/16:00	09/14:00	02/16:00	04/29:00	09/02:00			

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AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2006

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-045-0001	1	Gem	117		14.2	3.5				2	0	0
		Emmett			01/05:00	01/11:00						

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24 HOURS
Year: 2006

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-079-0017	1	Shoshone	118		46.8	34.2	33.5	29.7	28.2	115	0	0
		Pinehurst (Pine Creek)			11/01:00	12/22:00	10/26:00	11/19:00	11/04:00			
					27.0	26.8	24.8	24.2	23.9			
					10/23:00	12/04:00	02/10:00	01/23:00	09/05:00			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-001-0011	3	Ada	713		30.1	26.8	20.3	16.5	15.2	60	0	0
		Boise (corporate name Boise City)			01/10:23	01/11:23	01/13:23	02/14:23	01/20:23			
					14.6	14.2	13.5	12.9	12.2			
					01/12:23	01/14:23	02/15:23	01/19:23	03/13:23			

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Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-005-0015	4	Bannock	713 712	30.8	26.7	24.2	22.8	21.8	282	0	0
		Pocatello		01/16:23	01/24:23	01/09:23	11/08:23	01/10:23			
				21.7	21.7	21.5	21.3	20.2			
				01/19:23	12/17:23	11/12:23	01/13:23	02/14:23			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-015-0001	3	Boise	712	13.0	12.8	12.5	11.7	11.5	69	0	0
		Not in a city		02/17:23	01/28:23	02/15:23	01/31:23	01/08:23			
				11.4	11.3	10.9	10.6	10.1			
				01/07:23	01/10:23	02/16:23	02/18:23	01/11:23			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-015-0002	3	Boise	712 713	14.9	12.9	12.5	11.6	11.4	319	0	0
		Not in a city		08/14:23	07/29:23	07/28:23	04/13:23	03/23:23			
				11.3	11.0	10.8	10.7	10.3			
				11/24:23	12/09:23	03/15:23	07/30:23	10/27:23			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-019-0013	3	Bonneville	713 712	17.5	12.9	12.4	11.9	11.5	295	0	0
		Idaho Falls		07/17:23	04/15:23	03/21:23	05/05:23	07/28:23			
				11.4	11.4	11.3	9.1	8.9			
				04/27:23	05/10:23	07/29:23	02/13:23	04/14:23			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0004	3	Canyon	712 713	36.6	22.6	22.5	21.2	21.0	360	1	0
		Nampa		01/11:23	01/13:23	11/08:23	03/22:23	01/12:23			
				19.3	19.1	18.4	18.2	16.9			
				01/19:23	01/10:23	08/01:23	03/21:23	07/14:23			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0007	3	Canyon	712	20.4	19.7	18.5	18.3	17.5	364	0	0
		Not in a city		01/11:23	07/28:23	11/08:23	11/09:23	11/05:23			
				17.2	17.0	16.9	16.3	16.2			
				11/06:23	07/29:23	11/07:23	07/30:23	01/14:23			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-029-0003	3	Caribou	713 712	13.0	12.6	12.3	11.8	11.0	77	0	0
		Soda Springs		01/23:23	01/18:23	02/13:23	01/19:23	03/08:23			
				10.8	10.5	10.3	9.5	9.5			
				03/23:23	01/16:23	01/22:23	02/24:23	03/22:23			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-039-0002	3	Elmore	713	15.6	14.4	13.6	12.4	10.3	61	0	0
		Mountain Home		01/15:23	01/20:23	01/12:23	01/13:23	01/16:23			
				9.8	9.5	9.4	7.8	7.7			
				01/19:23	01/14:23	01/18:23	02/14:23	02/13:23			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-045-0001	3	Gem	713	24.0	23.1	18.3	17.6	16.3	36	0	0
		Emmett		11/23:23	11/21:23	12/05:23	12/21:23	11/22:23			
				15.2	15.1	14.8	13.9	13.7			
				12/27:23	12/11:23	12/26:23	12/25:23	11/18:23			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-049-0002	3	Idaho	713	12.8	8.2	7.8	7.7	7.6	57	0	0
		Grangeville		01/05:23	01/18:23	02/02:23	01/06:23	01/16:23			
				7.2	7.2	7.0	6.7	6.0			
				01/19:23	02/27:23	01/11:23	01/17:23	01/12:23			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-055-0014	3	Kootenai	713	21.6	18.8	16.9	15.8	15.3	62	0	0
		Post Falls		01/10:23	03/02:23	02/14:23	02/21:23	01/15:23			
				15.2	14.5	14.3	14.1	13.8			
				02/20:23	02/09:23	01/04:23	02/13:23	01/05:23			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-057-0005	3	Latah	712	18.3	16.0	15.7	15.4	15.0	355	0	0
		Moscow		09/27:23	09/29:23	08/02:23	04/27:23	08/16:23			
				14.6	14.6	14.6	14.4	14.1			
				07/28:23	07/29:23	10/28:23	07/27:23	07/30:23			

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Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho | Duration: 24-HR BLK AVG | Year: 2004 | Primary: 35 | Secondary: 35 | Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-059-0004	3	Lemhi / Salmon	713 712	37.4	26.6	25.4	23.7	23.2	321	0	0
				01/09:23	01/16:23	01/01:23	01/15:23	01/19:23			
				22.8	21.1	21.0	20.1	19.8			
				01/08:23	01/24:23	01/20:23	02/15:23	01/23:23			

PM2.5 - Local Conditions (88101)

State: Idaho | Duration: 24-HR BLK AVG | Year: 2004 | Primary: 35 | Secondary: 35 | Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-069-0012	3	Nez Perce / Lewiston	712	19.3	16.5	16.4	16.1	16.1	357	0	0
				10/29:23	07/28:23	07/27:23	10/15:23	12/28:23			
				15.6	15.2	15.1	14.1	13.9			
				07/30:23	10/28:23	07/29:23	11/10:23	10/04:23			

PM2.5 - Local Conditions (88101)

State: Idaho | Duration: 24-HR BLK AVG | Year: 2004 | Primary: 35 | Secondary: 35 | Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-079-0017	3	Shoshone / Pinehurst (Pine Creek)	713	47.4	40.2	38.4	34.9	33.3	48	3	0
				01/28:23	01/29:23	01/08:23	01/09:23	01/19:23			
				33.2	30.4	30.3	30.1	26.4			
				01/10:23	02/14:23	01/16:23	02/23:23	01/05:23			

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AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-083-0010	3	Twin Falls	712 713	29.9	27.9	27.6	25.6	24.1	326	0	0
		Twin Falls		04/05:23	02/14:23	03/22:23	01/15:23	02/11:23			
				22.8	21.8	20.9	20.1	20.0			
				02/15:23	03/09:23	01/16:23	01/24:23	01/12:23			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2004

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-085-0001	3	Valley	713 712	34.0	16.7	16.5	16.5	14.9	310	0	0
		Not in a city		11/12:23	11/11:23	11/13:23	11/18:23	12/03:23			
				14.6	14.3	14.3	14.0	13.8			
				12/02:23	11/17:23	12/14:23	12/17:23	12/28:23			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2005

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-005-0015	4	Bannock	713 712	66.5	44.2	40.3	32.0	31.0	267	3	0
		Pocatello		01/15:23	12/09:23	12/10:23	12/11:23	02/03:23			
				29.7	26.6	25.7	24.1	23.3			
				01/20:23	12/17:23	02/02:23	12/18:23	01/19:23			

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AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2005

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-015-0002	3	Boise	712 713	28.1	22.2	22.0	20.4	17.6	360	0	0
		Not in a city		03/10:23	03/11:23	11/10:23	11/09:23	08/13:23			
				16.1	14.5	14.1	12.7	12.3			
				03/09:23	12/10:23	11/16:23	12/13:23	11/11:23			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2005

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-019-0013	3	Bonneville	712 713	20.5	10.6	9.5	9.2	9.0	348	0	0
		Idaho Falls		07/16:23	09/09:23	08/30:23	06/25:23	07/08:23			
				8.9	8.8	8.7	8.4	8.3			
				07/07:23	08/24:23	06/21:23	07/22:23	01/27:23			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2005

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0004	3	Canyon	713 712	28.3	24.0	23.9	23.2	23.0	281	0	0
		Nampa		12/14:23	11/10:23	07/04:23	07/05:23	12/26:23			
				22.1	21.5	20.8	19.0	19.0			
				03/11:23	12/20:23	12/16:23	03/08:23	03/09:23			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2005

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-027-0007	3	Canyon	712	59.4	43.2	42.6	23.5	22.8	355	0	0
		Not in a city		05/24:23	07/04:23	03/21:23	11/24:23	07/05:23			
				20.8	20.8	20.1	18.7	18.7			
				11/11:23	12/11:23	11/21:23	11/10:23	11/20:23			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2005

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-045-0001	3	Gem	712 713	51.1	40.9	29.1	27.2	27.2	270	0	0
		Emmett		03/11:23	03/10:23	12/12:23	02/27:23	11/21:23			
				26.4	26.4	25.0	23.6	22.8			
				03/06:23	11/20:23	01/17:23	03/05:23	02/26:23			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2005

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-057-0005	3	Latah	713 712	21.6	14.7	13.6	13.4	13.4	353	0	0
		Moscow		08/09:23	08/08:23	08/15:23	08/16:23	10/25:23			
				11.8	11.6	11.3	11.2	11.0			
				09/09:23	08/28:23	08/06:23	06/21:23	08/05:23			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2005

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-059-0004	3	Lemhi	713 712	56.2	51.3	46.0	38.1	37.0	325	0	0
		Salmon		09/04:23	09/09:23	08/11:23	08/28:23	12/22:23			
				34.5	33.6	32.9	32.8	32.8			
				09/06:23	09/03:23	12/14:23	08/12:23	08/27:23			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2005

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-069-0012	3	Nez Perce	712	19.6	16.2	14.9	14.8	14.8	331	0	0
		Lewiston		10/25:23	12/13:23	12/12:23	08/08:23	08/09:23			
				14.7	14.1	14.1	13.9	13.8			
				10/24:23	01/28:23	01/29:23	02/20:23	02/02:23			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2005

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-083-0010	3	Twin Falls	712 713	40.7	38.4	32.2	25.2	24.9	326	0	0
		Twin Falls		12/17:23	12/12:23	12/11:23	12/16:23	11/23:23			
				22.3	22.0	19.5	19.4	19.2			
				12/09:23	11/22:23	11/21:23	11/17:23	11/24:23			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2005

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-085-0001	3	Valley	713 712	48.0	41.7	36.4	26.2	25.2	306	0	0
		Not in a city		10/31:23	08/12:23	08/11:23	11/10:23	11/30:23			
				21.3	21.0	20.8	20.7	19.4			
				08/13:23	01/24:23	08/10:23	08/15:23	11/09:23			

PM2.5 - Local Conditions (88101)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2005

Primary: 35
Secondary: 35
Unit: Micrograms/cubic meter (LC)

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-085-0002	3	Valley	713	25.1	24.6	19.4	18.5	15.6	22	0	0
		McCall		12/12:23	12/11:23	12/10:23	12/24:23	12/16:23			
				15.4	15.3	14.8	14.8	14.4			
				12/25:23	12/19:23	12/08:23	12/09:23	12/15:23			

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Pollutant Summaries – Sulfur Dioxide

US EPA - AirData Monitor Values Report - Criteria Air Pollutants
Friday, 21-Oct-2005 at 11:7:46 AM (USA Eastern time zone)
Geographic Area: Idaho
Pollutant: Sulfur Dioxide
Year: 2004

	1-Hr SO2	Annual SO2						
Data Year	# Obs	Mean	# Exceed	Monitor Number	Site ID	Site Address	City	County
2004	8758	0.004	0	2	160050004	Stp/Batiste & Chubbuck Rd	Pocatello	Bannock Co
2004	8753	0.007	0	1	160290031	5 Mile Road	Soda Springs	Caribou Co
2004	8675	0.002	0	1	160770011	S Of Hwy 30 And E Of Weaver Rd		Power Co

* US EPA - AirData Monitor Values Report - Criteria Air Pollutants
* Thursday, 31-Aug-2006 at 10:51:45 AM (USA Eastern time zone)
* Geographic Area: Idaho
* Pollutant: Sulfur Dioxide
* Year: 2005

Data Year	1-Hr SO2 # Obs	1st Max (1-hour	2nd Max (1-hour	Annual SO2 Mean	# Exceed	Monitor Number	Site ID	Site Address	City	County
2005	8712	0.101	0.075	0.004	0	2	160050004	Stp/Batiste & Chubbuck Rd	Pocatello	Bannock
2005	8662	0.13	0.117	0.005	0	1	160290031	5 Mile Road	Soda Springs	Caribou
2005	2125	0.022	0.016	0.001	0	1	160770011	S Of Hwy 30 And E Of Weaver Rd		Power

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

		1-Hr SO2			3-Hr SO2		24-Hr SO2			Annual SO2					
Data Year	County	# Obs	1st Max	2nd Max	1st Max	2nd Max	1st Max	2nd Max	# Exceed	Mean	# Exceed	Mon #	Site ID	Site Address	City
2006	Bannock	8606	0.09	0.079	0.064	0.061	0.027	0.024	0	0.005	0	2	160050004	Stp/Batiste & Chubbuck Rd	Pocatello
2006	Caribou	6567	0.115	0.114	0.107	0.09	0.033	0.024	0	0.002	0	1	160290031	5 Mile Road	Soda Springs

UNITES STATES ENVIRONMENTAL PROTECTION AGENCY

User ID: MYV

MAXIMUM VALUES REPORT

Report Request ID: 520016 Report Code: AMP440 Mar. 31, 2008

GEOGRAPHIC SELECTIONS

Tribal	State	County	Site	Parameter	POC	City	AQCR	UAR	MSA	CMSA	EPA Region	Method	Duration	Begin Date	End Date
	16			42401										2004	2006

SELECTED OPTIONS

Option Type	Option Value
EVENTS PROCESSING	REPORT ALL EVENT RECORDS
MERGE PDF FILES	YES

SORT ORDER

Order	Column
1	PARAMETER_CODE
2	STATE_CODE
3	DURATION_CODE
4	DATES
5	COUNTY_CODE
6	SITE_ID
7	POC
8	EDT_ID

SCR GROUP SELECTIONS

Idaho

Selection Criteria Page 1

AQS maximum values reports – Sulfur Dioxide

EXCEPTIONAL DATA TYPES

EDT	DESCRIPTION
0	NO EVENTS
1	EVENTS EXCLUDED
2	EVENTS INCLUDED
3	EXCEPTIONAL EVENTS EXCLUDED
4	NATURAL EVENTS EXCLUDED
5	EVENTS WITH CONCURRENCE EXCLUDED
6	EXCEPTIONAL EVENTS WITH CONCURRENCE EXCLUDED
7	NATURAL EVENTS WITH CONCURRENCE EXCLUDED

UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

Sulfur dioxide (42401)

State: Idaho
Duration: 1 HOUR
Year: 2004

Primary:
Secondary:
Unit: Parts per million

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-005-0004	2	Bannock	060		.081	.068	.066	.063	.054	8758		0
		Pocatello			04/28:03	04/25:00	03/17:23	03/19:04	03/17:22			
					.053	.052	.052	.051	.051			
					07/04:21	07/28:01	10/15:17	03/15:23	04/26:20			

Sulfur dioxide (42401)

State: Idaho
Duration: 1 HOUR
Year: 2004

Primary:
Secondary:
Unit: Parts per million

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-029-0031	1	Caribou	060		.209	.204	.203	.202	.190	8753		0
		Soda Springs			07/24:07	07/24:08	08/12:08	04/03:14	05/10:09			
					.177	.175	.174	.173	.172			
					03/30:10	07/24:09	03/30:11	01/07:05	07/14:08			

Sulfur dioxide (42401)

State: Idaho
Duration: 1 HOUR
Year: 2005

Primary:
Secondary:
Unit: Parts per million

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-005-0004	2	Bannock	060		.101	.075	.072	.071	.070	8712		0
		Pocatello			08/27:09	04/17:22	12/05:18	04/18:01	07/16:23			
					.069	.069	.067	.064	.063			
					11/12:00	12/05:19	07/14:02	11/11:21	04/17:23			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

Sulfur dioxide (42401)

State: Idaho
Duration: 1 HOUR
Year: 2005

Primary:
Secondary:
Unit: Parts per million

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-029-0031	1	Caribou	060		.130	.117	.111	.106	.104	8662		0
		Soda Springs			04/23:10	04/23:09	04/13:10	04/13:09	04/07:12			
					.102	.102	.101	.101	.097			
					04/13:11	04/23:11	04/07:11	04/07:13	05/16:11			

Sulfur dioxide (42401)

State: Idaho
Duration: 1 HOUR
Year: 2006

Primary:
Secondary:
Unit: Parts per million

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-005-0004	2	Bannock	060		.090	.079	.077	.075	.073	8606		0
		Pocatello			09/28:09	08/17:04	08/25:05	08/17:05	08/09:05			
					.071	.070	.069	.066	.065			
					02/22:23	04/10:00	02/23:02	04/09:23	02/03:00			

Sulfur dioxide (42401)

State: Idaho
Duration: 1 HOUR
Year: 2006

Primary:
Secondary:
Unit: Parts per million

Site ID	POC	County Name / City Name		Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-029-0031	1	Caribou	060		.115	.114	.106	.104	.104	6232		0
		Soda Springs			04/03:13	04/03:12	03/25:08	03/25:09	03/25:11			
					.094	.073	.069	.063	.062			
					04/03:14	03/28:08	04/03:11	03/27:13	03/25:10			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

Sulfur dioxide (42401)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2004

Primary: .145
Secondary:
Unit: Parts per million

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-005-0004	2	Bannock	060	.023	.021	.020	.018	.016	366	0	0
		Pocatello		03/16:23	03/17:23	07/08:23	10/15:23	04/25:23			
				.016	.015	.015	.015	.015			
				04/28:23	03/15:23	04/24:23	09/02:23	10/14:23			

Sulfur dioxide (42401)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2004

Primary: .145
Secondary:
Unit: Parts per million

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-029-0031	1	Caribou	060	.077	.067	.067	.055	.047	366	0	0
		Soda Springs		07/24:23	02/23:23	04/03:23	02/24:23	12/13:23			
				.042	.040	.038	.037	.036			
				09/28:23	06/28:23	03/30:23	05/10:23	06/18:23			

Sulfur dioxide (42401)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2005

Primary: .145
Secondary:
Unit: Parts per million

Maximum Values

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-005-0004	2	Bannock	060	.026	.023	.021	.020	.019	365	0	0
		Pocatello		11/12:23	11/11:23	12/05:23	07/16:23	01/13:23			
				.019	.017	.015	.015	.014			
				11/05:23	11/04:23	11/02:23	11/03:23	01/12:23			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

Sulfur dioxide (42401)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2005

Primary: .145
Secondary:
Unit: Parts per million

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-029-0031	1	Caribou	060	.047	.043	.041	.032	.026	362	0	0
		Soda Springs		04/07:23	04/13:23	04/23:23	06/22:23	06/14:23			
				.022	.021	.020	.019	.018			
				06/17:23	01/03:23	04/12:23	06/21:23	05/16:23			

Sulfur dioxide (42401)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2006

Primary: .145
Secondary:
Unit: Parts per million

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-005-0004	2	Bannock	060	.027	.024	.024	.023	.021	359	0	0
		Pocatello		10/19:23	08/17:23	12/15:23	02/23:23	10/16:23			
				.020	.020	.019	.019	.019			
				02/02:23	03/30:23	02/01:23	05/23:23	11/28:23			

Sulfur dioxide (42401)

State: Idaho
Duration: 24-HR BLK AVG
Year: 2006

Primary: .145
Secondary:
Unit: Parts per million

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-029-0031	1	Caribou	060	.033	.024	.022	.019	.012	258	0	0
		Soda Springs		04/03:23	03/25:23	03/28:23	03/27:23	03/06:23			
				.010	.008	.007	.006	.006			
				03/31:23	02/18:23	03/05:23	03/17:23	09/02:23			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

Sulfur dioxide (42401)

State: Idaho
Duration: 3-HR BLK AVG
Year: 2004

Primary:
Secondary: .55
Unit: Parts per million

Maximum Values

Site ID	POC	County Name City Name	Methods	1st Max 6th Max	2nd Max 7th Max	3rd Max 8th Max	4th Max 9th Max	5th Max 10th Max	Num Obs	Num Exc	EDT ID
16-005-0004	2	Bannock	060	.053	.048	.046	.045	.045	2905	0	0
		Pocatello		03/17:23	08/08:02	04/25:02	03/15:23	03/19:05			
				.044	.043	.041	.039	.039			
				04/28:05	03/16:05	03/17:02	03/16:02	05/03:23			

Sulfur dioxide (42401)

State: Idaho
Duration: 3-HR BLK AVG
Year: 2004

Primary:
Secondary: .55
Unit: Parts per million

Maximum Values

Site ID	POC	County Name City Name	Methods	1st Max 6th Max	2nd Max 7th Max	3rd Max 8th Max	4th Max 9th Max	5th Max 10th Max	Num Obs	Num Exc	EDT ID
16-029-0031	1	Caribou	060	.194	.163	.161	.158	.144	2906	0	0
		Soda Springs		07/24:08	04/03:14	07/24:05	03/30:11	07/14:11			
				.142	.138	.136	.122	.119			
				05/10:11	09/28:08	07/24:02	08/14:11	02/24:08			

Sulfur dioxide (42401)

State: Idaho
Duration: 3-HR BLK AVG
Year: 2005

Primary:
Secondary: .55
Unit: Parts per million

Maximum Values

Site ID	POC	County Name City Name	Methods	1st Max 6th Max	2nd Max 7th Max	3rd Max 8th Max	4th Max 9th Max	5th Max 10th Max	Num Obs	Num Exc	EDT ID
16-005-0004	2	Bannock	060	.066	.059	.058	.054	.054	2884	0	0
		Pocatello		12/05:20	04/17:23	07/16:23	04/18:02	07/14:02			
				.054	.054	.047	.047	.043			
				11/11:23	11/12:02	06/29:02	07/25:05	11/11:17			

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UNITED STATES ENVIRONMENTAL PROCTECTION AGENCY
AIR QUALITY SUBSYSTEM
MAXIMUM VALUES REPORT

Mar. 31, 2008

Sulfur dioxide (42401)

State: Idaho
Duration: 3-HR BLK AVG
Year: 2005

Primary:
Secondary: .55
Unit: Parts per million

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-029-0031	1	Caribou	060	.116	.106	.098	.081	.077	2870	0	0
		Soda Springs		04/23:11	04/13:11	04/07:14	06/14:11	06/17:02			
				.075	.073	.072	.070	.066			
				04/23:08	04/07:11	06/17:05	06/14:14	04/07:08			

Sulfur dioxide (42401)

State: Idaho
Duration: 3-HR BLK AVG
Year: 2006

Primary:
Secondary: .55
Unit: Parts per million

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-005-0004	2	Bannock	060	.064	.061	.058	.057	.056	2850	0	0
		Pocatello		08/17:05	02/23:02	08/09:05	02/02:23	02/02:20			
				.053	.052	.049	.049	.048			
				08/11:05	02/22:23	04/10:02	10/19:02	02/01:17			

Sulfur dioxide (42401)

State: Idaho
Duration: 3-HR BLK AVG
Year: 2006

Primary:
Secondary: .55
Unit: Parts per million

Site ID	POC	County Name / City Name	Methods	1st Max / 6th Max	2nd Max / 7th Max	3rd Max / 8th Max	4th Max / 9th Max	5th Max / 10th Max	Num Obs	Num Exc	EDT ID
16-029-0031	1	Caribou	060	.107	.090	.052	.044	.044	2067	0	0
		Soda Springs		04/03:14	03/25:11	03/27:14	03/25:08	03/28:14			
				.044	.042	.035	.032	.030			
				04/03:11	03/28:08	03/28:02	04/03:02	03/06:14			

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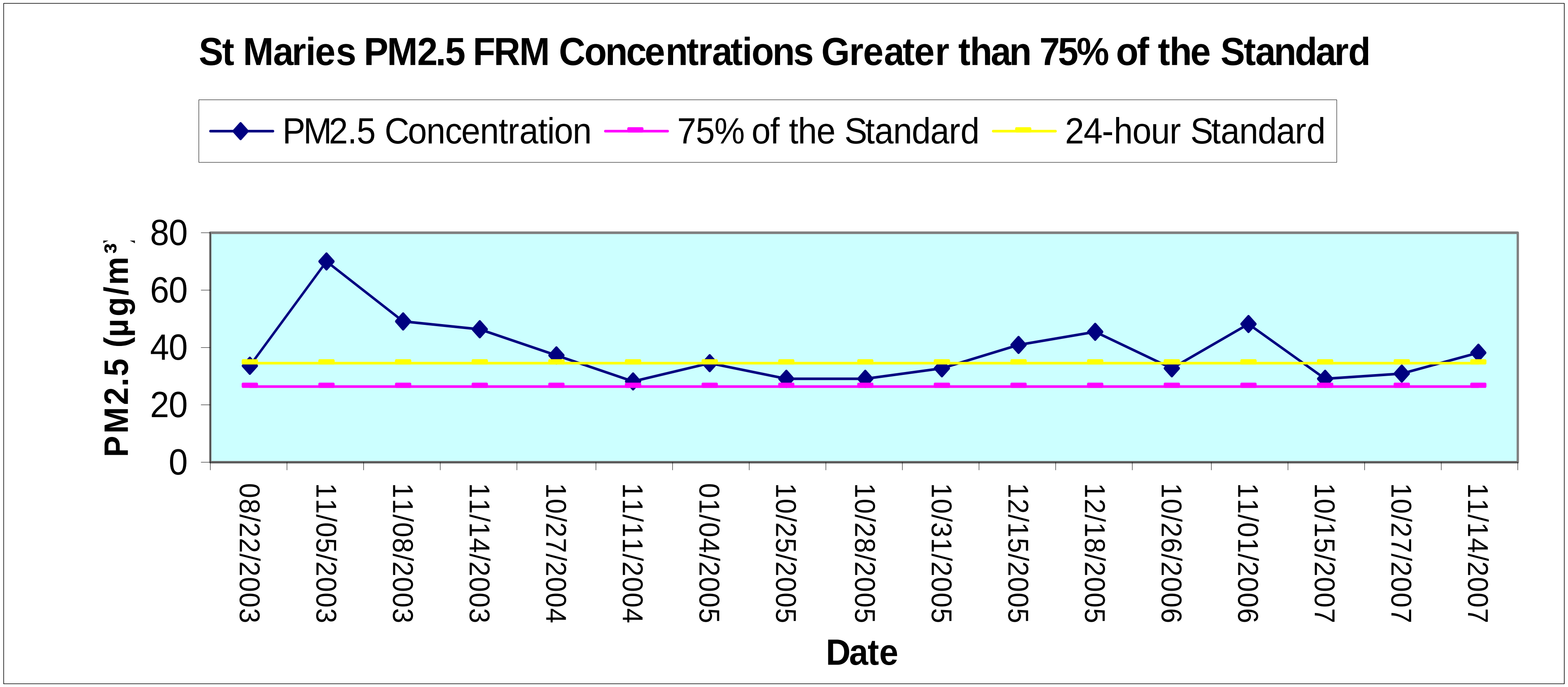

Figure 12. Applying the "75% of the NAAQS" criterion to historical $PM_{2.5}$ FRM data–St. Maries

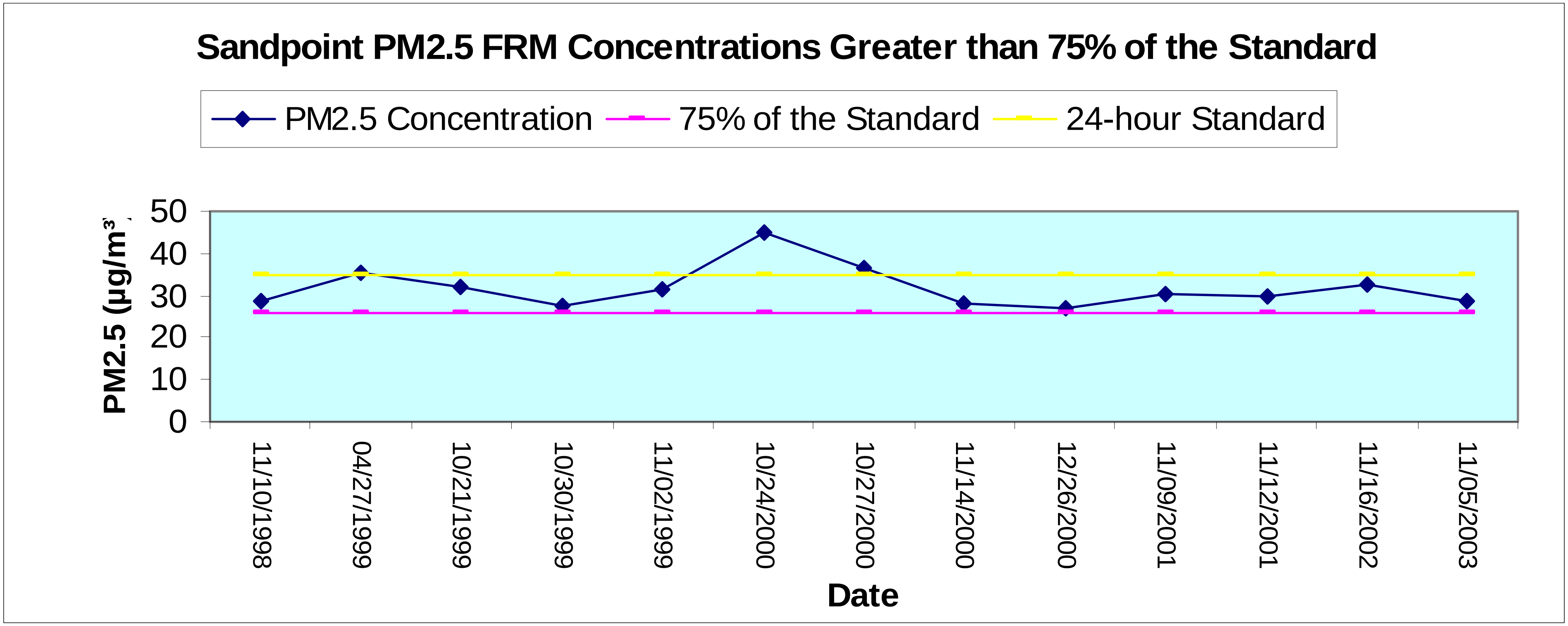

Figure 13. Applying the "75% of the NAAQS" criterion to historical $PM_{2.5}$ FRM data—Sandpoint

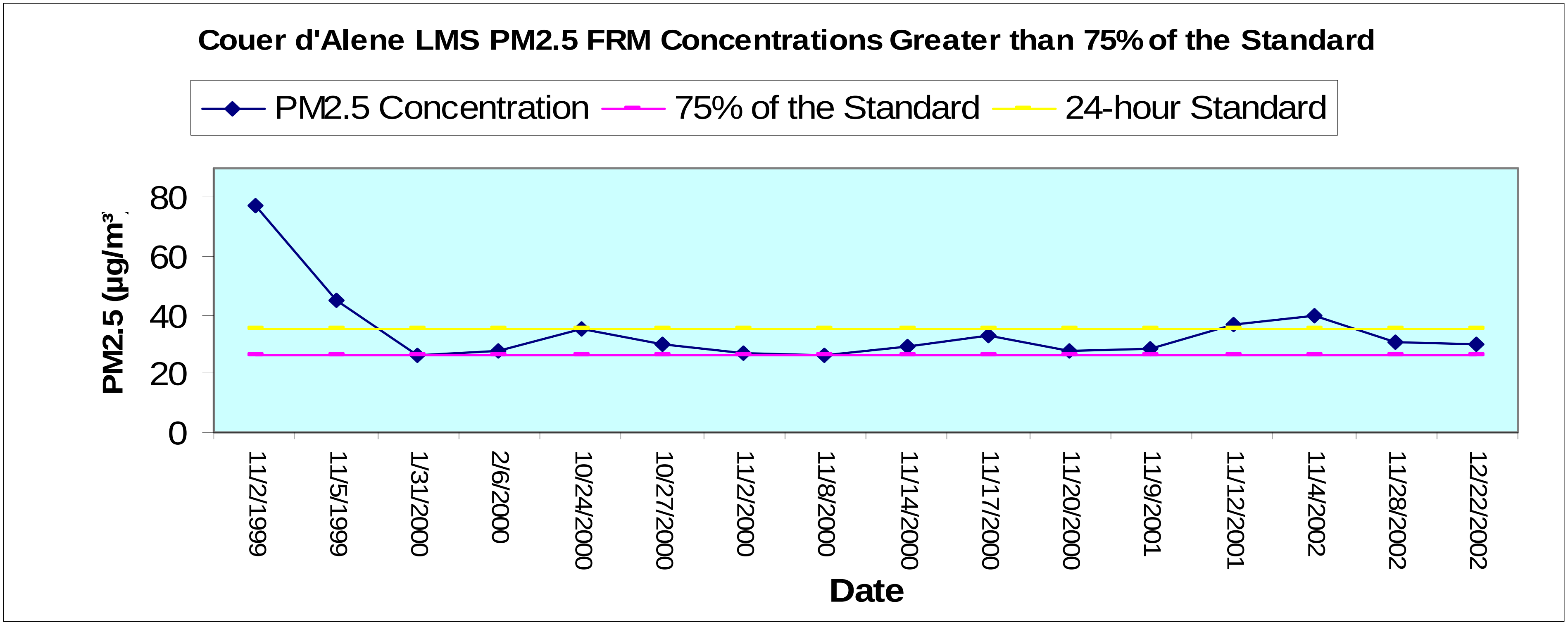

Figure 14. Applying the "75% of the NAAQS" criterion to historical $PM_{2.5}$ FRM data—Couer d'Alene

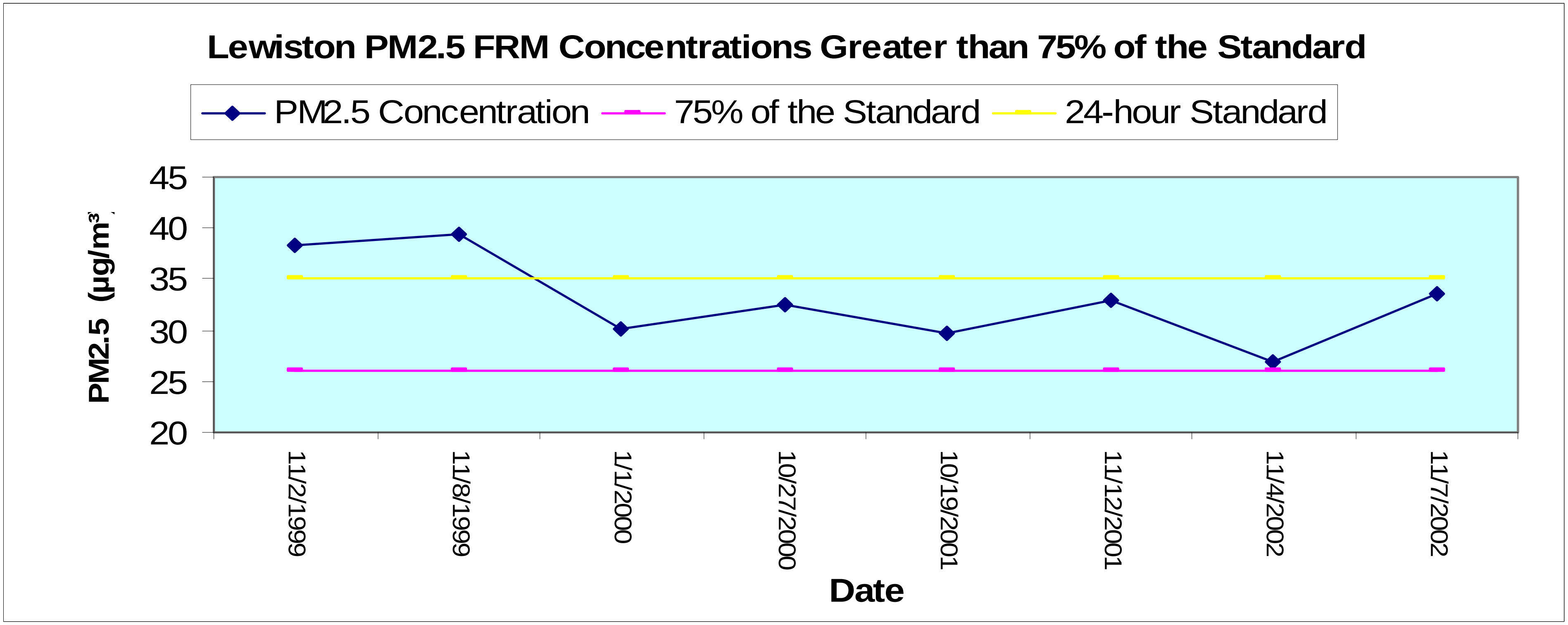

Figure 15. Applying the "75% of the NAAQS" criterion to historical $PM_{2.5}$ FRM data—Lewiston

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Appendix G: Emissions Inventory

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The general equation used to estimate emissions of pollutants from the open burning of crop residue is:

$$Q\,(\text{tons/year}) = \frac{EF\,(\text{lb/ton}) * RL\,(\text{ton/acre}) * AH * FB}{2000\ \text{lb/ton}}$$

Where: Q is the emission rate in tons per year of a pollutant from a specific crop

EF is the emission factor in pounds per ton of residue,

RL is the residue load of the field (plant matter remaining after harvest) in tons per acre,

AH is the acres harvested, and

FB is the fraction of harvested acres that are burned.

The following sections address how DEQ selected values for each of the variables in this equation in order to calculate estimated emissions of particulate matter with an aerodynamic diameter less that or equal to a nominal two and one half micrometers ($PM_{2.5}$), carbon monoxide (CO), oxides of nitrogen (NO_x), volatile organic compounds (VOCs), and oxides of sulfur (SO_x). Once appropriate values were selected, they were incorporated in a spreadsheet and used to calculate estimated total emissions from crop residue burning for each crop by county and for the entire state. Because of the limitations in the various data sources for the 2005 inventory, on-Reservation acreages were not extracted from the totals; estimated emissions for the off-Reservation areas this SIP applies to are therefore less than the totals shown in this appendix.

$PM_{2.5}$

This section describes the emission factor selection process for $PM_{2.5}$.

Crop Residue Burned

The first step was to establish which crop residues are regularly burned. Based on DEQ and ISDA records, it was determined that wheat, barley, oats, turf grass grown for seed, mint, and alfalfa grown for seed are Idaho crops with significant levels of residue burning.

Emission Factors and Residue Load

An emission factor is a representative value that attempts to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant. These factors are usually expressed as the weight of pollutant divided by a unit weight, volume, distance, or duration of the activity emitting the pollutant. Such factors facilitate estimation of emissions from various sources of air pollution. In most cases, these factors are simply averages of all available data of acceptable quality and are generally assumed to be representative of long-term averages for the activity of interest.

DEQ researched possible emission factors for each of the crops of concern in Idaho. EPA’s AP-42 (***Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources***) emission factors and fuel-loading factors for open burning of agricultural materials are not appropriate for use in this inventory because they are for PM_{30} rather than $PM_{2.5}$. Table 26 lists the results of the initial search for emission factors and associated residue loads.

Table 26. $PM_{2.5}$ Emission Calculation Factors

Source	Alfalfa (seed)	Barley	Turf grass (seed)	Mint	Oats	Wheat
AP-42 (emissions as PM30)	EF: 45 lb/ton RL: 0.8 ton/acre FB: ------	22 lb/ton 1.7 ton/acre ------	16 lb/ton (grasses) ------	21 lb/ton (field crop unspecified) 2 ton/acre (") ------	44 lb/ton 1.6 ton/acre ------	22 lb/ton 1.9 ton/acre ------
Johnson/Golob (Bluegrass only)	EF: RL: FB:		30 lb/ton (high RL) 58 lb/ton (low RL) 4.0 ton/acre (high) 1.8 ton/acre (low) ------			
Air Sciences (Cereal grains)	EF: RL: FB: ------	5.7 lb/t (low RL) 9.1 lb/t (high RL) 2.9 – 4.9 t/acre (low – high) ------				5.7 lb/t (low RL) 9.1 lb/t (high RL) 2.9 – 4.9 t/acre (low – high) ------
ERG	EF: ------ RL: 0.8 ton/acre FB: 0.43 (west. avg)	------ 1.7 ton/acre 0.135 (0.08 west. avg)	------ 2.0 ton/acre (field crop unspecified) 1.0	------ 0.05 ton/acre (IDEQ) ------	------ 1.6 ton/acre ------	------ 1.9 ton/acre (4.0 high – 1.5 low) 0.127 (0.052 west avg)
DEQ NEI (fraction burned varies by region based on U of I IPM survey)	EF: 45 lb/ton RL: 0.8 ton/acre FB: 0.03 – 0.17	22 lb/ton 1.7 ton/acre 0.03 – 0.17	16 lb/ton 1.7 ton/acre 0.03 – 0.17	21 lb/ton 2 ton/acre 0.03 – 0.17	44 lb/ton 1.6 ton/acre 0.03 – 0.17	22 lb/ton 1.9 ton/acre 0.03 – 0.17
EPA SIT (GHG calculation tool with default for fraction of fields burned)	FB: 0.03	0.03	0.03	0.03	0.03	0.03
CARB	EF: 27.2 lb/ton RL: 0.8 ton/acre FB: ------	13.8 lb/ton 1.7 ton/acre ------	15.2 lb/ton 2.2 t/a (grass, weed) 3.2 t/a (grassland) ------	15.9 lb/ton (other field crops) 2.2 ton/acre (") ------	19.7 lb/ton 1.6 ton/acre ------	10.1 lb/ton 1.9 ton/acre ------

EF – emission factor in pounds per ton of residue
RL – field residue load in tons per acre
FB – fraction of harvested fields that are burned

Wheat and Barley

Barley and wheat emission factors were extracted from an analysis of emissions from burning cereal grain crop residue in Eastern Washington (Air Sciences Inc., “Final Report: Cereal-Grain Residue Open-Field Burning Emissions Study”, July 2003). The investigators measured $PM_{2.5}$ emissions from fields at different times of the year (Spring and Fall) and using various ignition methods. Results from the study included emissions data for fields with high and low residue loads, so factors for both situations are listed in the table.

Oats

The AP-42 emissions factors for burning oat residue indicate that one would expect about twice the emissions from an acre of oats as from an acre of wheat or barley. For this reason, the California Air Resources Board factors for $PM_{2.5}$ emissions and residue load were chosen for use in estimating emissions from burning oat residue.

Turf Grass Seed

The turf grass factors came from another Air Sciences analysis ("Quantifying Post-Harvest Emissions From Bluegrass Seed Production Field Burning", W.J. Johnson and C.T. Golob, March 2004) of crop residue burning in northern Idaho and eastern Washington. As with the cereal residue study, data for high and low residue loads were provided.

Alfalfa Seed

The California Air Resources Board (CARB) factors for $PM_{2.5}$ emissions and residue load were chosen for alfalfa seed.

Mint

The CARB factors for $PM_{2.5}$ emissions and residue load were chosen for mint. These emission factors are an average and used as a default for crops not otherwise listed.

Acres Harvested

DEQ chose to use acres harvested rather than acres planted in calculating estimated emissions from crop residue burning. First, data for some of the crops was only available as acres harvested. Second, crop residue implies that some part of the crop was removed.

Cereal Grains

Crop data from the United States Department of Agriculture National Agricultural Statistics Service (USDA NASS) was used to determine the number of acres of oats, wheat, and barley harvested in each county. For wheat and barley, the number of bushels per acre was used to separate high and low residue load. This was accomplished by splitting the production range in half and assigning the fields from each county to high (75 bushels or more per acre) or low residue load emission factors.

Turf Grass Seed

Acres harvested were assumed to be equal to acres burned since it is general practice to burn each field after harvest to maximize seed production in the following year. DEQ used ISDA and Nez Perce Tribe records for crop residue burning to determine the number of acres burned in 2005. According to DEQ air managers, it is not common practice for turf grass seed growers to remove residue from their fields prior to burning. Therefore, the high residue load factors were used to calculate emissions from burning turf grass residue.

Alfalfa Seed

USDA NASS had data for total acres harvested, but did not include county-level information. Therefore, this information was combined with the relative distribution of alfalfa seed production in each county that was used in the 2005 National Emission Inventory (NEI) to estimate acres harvested at the county level:

County	Acres used in NEI calculations	Acres adjusted to match NASS acres harvested
Boundary	126	109
Canyon	14,040	12,054
Gem	360	309
Jerome	779	669
Owhyee	2,286	1,963
Payette	882	757
Twin Falls	72	62
Washington	90	77
total	**18,635**	**16,000**

Mint

USDA NASS had data for total acres harvested, but did not include county-level information. Therefore, this information was combined with the relative distribution of mint production in each county that was used in the 2005 NEI to estimate acres harvested at the county level:

County	Acres used in NEI calculations	Acres adjusted to match NASS acres harvested
Ada	4,859	3,985
Butte	287	235
Canyon	9,610	7,880
Custer	578	474
Owhyee	578	474
Payette	1,788	1,466
Washington	101	83
total	**17,801**	**14,600**

Burn Fraction

The fraction of fields burned in a year is another variable that was considered in calculating the estimated emissions from crop residue burning in Idaho. There is a relatively high level of uncertainty in this variable due to the lack of records of acres burned by crop type.

Cereal Grain

ISDA records for open burning of crop residue in northern Idaho are considered to be reasonably accurate and complete. However, cereal grains (barley, oats, and wheat) are lumped together so it is not possible to determine the fraction of fields burned for each type of grain. Therefore, a burn fraction of cereal grains was determined for Boundary, Kootenai, Benewah, Latah, Clearwater, Nez Perce, Lewis, and Idaho counties by dividing the actual acres burned by the acres of cereal grain harvested in each county. In addition, an average burn fraction was calculated by dividing the total acres burned by the total acres harvested in those eight counties:

County	Acres Harvested	Acres Burned	Fraction Burned
Benewah	37,200	12,971	0.35
Boundary	22,700	5,776	0.25
Clearwater	12,000	1,975	0.165
Idaho	90,700	6,819	0.075
Kootenai	14,900	1,121	0.075
Latah	105,400	2,529	0.024
Lewis	96,900	14,075	0.145
Nez Perce	108,800	2901	0.03
Total	488,600	48,147	0.1

These calculated burn fractions were used for the appropriate counties and for the entire state with the exception of the counties in southeast Idaho. A University of Idaho Integrated Pest Management survey of wheat farmers in Idaho indicated that at least 17 percent of fields in this part of Idaho are burned. Therefore, a burn fraction of 0.17 was applied to cereal crops in the southeast region of the state.

Turf Grass Seed

The fraction burned for this crop is considered to be 1.0 since it is general practice to burn each field after harvest to maximize seed production in the following year.

Alfalfa seed

The fraction of fields burned for alfalfa seed was estimated by dividing the number of acres burned in 1996 listed in "Non-Burning Management Alternatives on Agricultural Lands in the Western United States Volume I: Agricultural Crop Production and Residue Burning in the Western United States" (Eastern Research Group, Inc., May 15, 2002) by the number of acres harvested in 1996 from the NASS Web site:

$$FB_{alfseed} = 8{,}377/33{,}500 = 0.25$$

Mint

The fraction of fields burned for mint was estimated by dividing the number of acres burned in 1996 listed in "Non-Burning Management Alternatives on Agricultural Lands in the Western United States Volume I: Agricultural Crop Production and Residue Burning in the Western United States" (Eastern Research Group, Inc., May 15, 2002) by the number of acres harvested in 1996 from the NASS Web site:

$$FB_{mint} = 703/23{,}400 = 0.03$$

CO, NO_x, VOCs, and SO_x

Emission factors for CO, NO_x, VOCs, and SO_x were selected using the same process as that described above. Emission factors and associated residue load factors for these four pollutants and the six crops described above are listed in Table 27. The color of the values in the table relates to the source of the factors. It should be noted that the Johnson and Golob bluegrass and the Air Sciences cereal grain studies only measured $PM_{2.5}$ and CO emissions. For the pollutants not addressed by those studies, the residue load values were adjusted so that the EF and RL came from the same source. This was done so that the integrity of the measurements and assumptions made in the initial development of the emission factors was maintained.

Table 27. Emission Factors for CO, NO_x, VOCs, and SO_x.

	CO		NOx		VOCs		SO_x	
	EF (lb/ton)	RL (ton/acre)	EF (lb/ton)	RL	EF (lb/ton)	RL	EF (lb/ton)	RL
Alfalfa seed	119	0.8	4.5	0.8	21.7	0.8	0.6	0.8
Barley	77 (low RL) 101 (high RL)	2.9 4.9	5.1	1.7	5.1	1.7	0.1	1.7
Turf grass seed	394 (high RL)	4.0	4.5	2.2	10.7	2.2	0.6	2.2
Mint	114	2.2	4.5	2.2	10.7	2.2	0.6	2.2
Oats	136	1.6	4.5	1.6	10.3	1.6	0.6	1.6
Wheat	77 (low RL) 101 (high RL)	2.9 4.9	4.3	1.9	7.6	1.9	0.9	1.9

California Air Resources Board
Johnson/Golob
Air Sciences

Conservation Reserve Program (CRP)

DEQ used CARB emission factors for range improvement for the Conservation Reserve Program. 2005 emissions were calculated only for reported acres burned. The estimated acres burned in 2015 are based on a 10 percent increase in the current estimate of 200,000 CRP acres statewide and a burn fraction of 10 percent.

Results

The input values and estimated emissions from crop residue and CRP burning in 2005 are presented in the following tables.

Table 28. 2005 Crop Residue Burning $PM_{2.5}$ Emission Estimate.

County				Alfalfa Seed		Barley		KBG Seed		Mint		Oats		Wheat	
Ada	Region	3													
	Residue load		0	t/acre	4.9	t/acre	0	t/acre	2.2	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		0	lb/ton	9.1	lb/ton	0	lb/ton	15.9	lb/ton	19.7	lb/ton	9.1	lb/ton	
	Acres harvested		0		1,800		0		3,985		300		6,500		
	Fraction burned		0		0.1		0		0.03		0.1		0.1		
	Emissions $PM_{2.5}$		0.00	tons	4.01	tons	0.00	tons	2.09	tons	0.47	tons	14.49	tons	21
Adams	Region	3													
	Residue load		0	t/acre	0	t/acre	0	t/acre	0	t/acre	0	t/acre	0	t/acre	
	Emission factor		0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	
	Acres harvested		0		0		0		0		0		0		
	Fraction burned		0		0		0		0		0		0		
	Emissions $PM_{2.5}$		0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.00	tons	0
Bannock	Region	5													
	Residue load		0	t/acre	2.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	2.9	t/acre	
	Emission factor		0	lb/ton	5.7	lb/ton	0	lb/ton	0	lb/ton	19.7	lb/ton	5.7	lb/ton	
	Acres harvested		0		5,600		0		0		500		30,300		
	Fraction burned		0		0.17		0		0		0.17		0.17		
	Emissions $PM_{2.5}$		0.00	tons	7.87	tons	0.00	tons	0.00	tons	1.34	tons	$4_{2.5}7$	tons	52
Bear Lake	Region	5													
	Residue load		0	t/acre	2.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	2.9	t/acre	
	Emission factor		0	lb/ton	5.7	lb/ton	0	lb/ton	0	lb/ton	19.7	lb/ton	5.7	lb/ton	
	Acres harvested		0		4,400		0		0		1,500		8,100		
	Fraction burned		0		0.17		0		0		0.17		0.17		
	Emissions $PM_{2.5}$		0.00	tons	6.18	tons	0.00	tons	0.00	tons	4.02	tons	11.38	tons	22
Benewah	Region	1													
	Residue load		0	t/acre	2.9	t/acre	4	t/acre	0	t/acre	1.6	t/acre	2.9	t/acre	
	Emission factor		0	lb/ton	5.7	lb/ton	30	lb/ton	0	lb/ton	19.7	lb/ton	5.7	lb/ton	
	Acres harvested		0		2,400		10171		0		600		34,200		

County				Alfalfa Seed		Barley		KBG Seed		Mint		Oats		Wheat	
	Fraction burned		0		0.35		1		0		0.35		0.35		
	Emissions $PM_{2.5}$		0.00	tons	6.94	tons	610.26	tons	0.00	tons	3.31	tons	98.93	tons	719
Bingham	Region	5													
	Residue load		0	t/acre	4.9	t/acre	4	t/acre	0	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		0	lb/ton	9.1	lb/ton	30	lb/ton	0	lb/ton	19.7	lb/ton	9.1	lb/ton	
	Acres harvested		0		24,300		210		0		600		122,200		
	Fraction burned		0		0.1		1		0		0.1		0.1		
	Emissions $PM_{2.5}$		0.00	tons	54.18	tons	12.60	tons	0.00	tons	0.95	tons	272.44	tons	340
Blaine	Region	4													
	Residue load		0	t/acre	4.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	0	t/acre	
	Emission factor		0	lb/ton	9.1	lb/ton	0	lb/ton	0	lb/ton	19.7	lb/ton	0	lb/ton	
	Acres harvested		0		12,000		0		0		300		0		
	Fraction burned		0		0.1		0		0		0.1		0		
	Emissions $PM_{2.5}$		0.00	tons	26.75	tons	0.00	tons	0.00	tons	0.47	tons	0.00	tons	27
Boise	Region	3													
	Residue load		0	t/acre	0	t/acre	0	t/acre	0	t/acre	0	t/acre	0	t/acre	
	Emission factor		0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	
	Acres harvested		0		0		0		0		0		0		
	Fraction burned		0		0		0		0		0		0		
	Emissions $PM_{2.5}$		0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.00	tons	0
Bonner	Region	1													
	Residue load		0	t/acre	0	t/acre	0	t/acre	0	t/acre	1.6	t/acre	0	t/acre	
	Emission factor		0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	19.7	lb/ton	0	lb/ton	
	Acres harvested		0		0		0		0		400		0		
	Fraction burned		0		0		0		0		0.1		0		
	Emissions $PM_{2.5}$		0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.63	tons	0.00	tons	0.6
Bonneville	Region	6													
	Residue load		0	t/acre	4.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	2.9	t/acre	
	Emission factor		0	lb/ton	9.1	lb/ton	0	lb/ton	0	lb/ton	19.7	lb/ton	5.7	lb/ton	

County				Alfalfa Seed		Barley		KBG Seed		Mint		Oats		Wheat	
	Acres harvested		0		69,000		0		0		200		46,500		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions $PM_{2.5}$		0.00	tons	153.84	tons	0.00	tons	0.00	tons	0.32	tons	38.43	tons	193
Boundary	Region	1													
	Residue load		0.8	t/acre	4.9	t/acre	4	t/acre	0	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		27.2	lb/ton	9.1	lb/ton	30	lb/ton	0	lb/ton	19.7	lb/ton	9.1	lb/ton	
	Acres harvested		109		2,500		576		0		400		19,800		
	Fraction burned		0.25		0.25		1		0		0.25		0.25		
	Emissions $PM_{2.5}$		0.30	tons	13.93	tons	34.56	tons	0.00	tons	1.58	tons	110.36	tons	161
Butte	Region	6													
	Residue load		0	t/acre	4.9	t/acre	0	t/acre	2.2	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		0	lb/ton	9.1	lb/ton	0	lb/ton	15.9	lb/ton	19.7	lb/ton	9.1	lb/ton	
	Acres harvested		0		10,600		0		235		600		5,500		
	Fraction burned		0		0.1		0		0.03		0.1		0.1		
	Emissions $PM_{2.5}$		0.00	tons	23.63	tons	0.00	tons	0.12	tons	0.95	tons	12.26	tons	37
Camas	Region	4													
	Residue load		0	t/acre	2.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	0	t/acre	
	Emission factor		0	lb/ton	5.7	lb/ton	0	lb/ton	0	lb/ton	19.7	lb/ton	0	lb/ton	
	Acres harvested		0		14,200		0		0		400		0		
	Fraction burned		0		0.1		0		0		0.1		0		
	Emissions $PM_{2.5}$		0.00	tons	11.74	tons	0.00	tons	0.00	tons	0.63	tons	0.00	tons	12
Canyon	Region	3													
	Residue load		0.8	t/acre	4.9	t/acre	0	t/acre	2.2	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		27.2	lb/ton	9.1	lb/ton	0	lb/ton	15.9	lb/ton	19.7	lb/ton	9.1	lb/ton	
	Acres harvested		12,054		2,400		0		7,880		1000		25,000		
	Fraction burned		0.25		0.1		0		0.03		0.1		0.1		
	Emissions $PM_{2.5}$		32.79	tons	5.35	tons	0.00	tons	4.13	tons	1.58	tons	55.74	tons	100
Caribue	Region	5													
	Residue load		0	t/acre	2.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	2.9	t/acre	

County				Alfalfa Seed		Barley		KBG Seed		Mint		Oats		Wheat	
	Emission factor		0	lb/ton	5.7	lb/ton	0	lb/ton	0	lb/ton	19.7	lb/ton	5.7	lb/ton	
	Acres harvested		0		57,800		0		0		700		36,200		
	Fraction burned		0		0.17		0		0		0.017		0.17		
	Emissions $PM_{2.5}$		0.00	tons	81.21	tons	0.00	tons	0.00	tons	0.19	tons	50.86	tons	132
Cassia	Region	4													
	Residue load		0	t/acre	4.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		0	lb/ton	9.1	lb/ton	0	lb/ton	0	lb/ton	19.7	lb/ton	9.1	lb/ton	
	Acres harvested		0		31,200		0		0		500		85,700		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions $PM_{2.5}$		0.00	tons	69.56	tons	0.00	tons	0.00	tons	0.79	tons	191.07	tons	261
Clark	Region	6													
	Residue load		0	t/acre	4.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		0	lb/ton	9.1	lb/ton	0	lb/ton	0	lb/ton	19.7	lb/ton	9.1	lb/ton	
	Acres harvested		0		3,300		0		0		300		4,500		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions $PM_{2.5}$		0.00	tons	7.36	tons	0.00	tons	0.00	tons	0.47	tons	10.03	tons	18
Clearwater	Region	2													
	Residue load		0	t/acre	2.9	t/acre	4	t/acre	0	t/acre	1.6	t/acre	2.9	t/acre	
	Emission factor		0	lb/ton	5.7	lb/ton	30	lb/ton	0	lb/ton	19.7	lb/ton	5.7	lb/ton	
	Acres harvested		0		1,800		575		0		300		9,900		
	Fraction burned		0		0.165		1		0		0.165		0.165		
	Emissions $PM_{2.5}$		0.00	tons	2.45	tons	34.50	tons	0.00	tons	0.78	tons	13.50	tons	51
Custer	Region	6													
	Residue load		0	t/acre	4.9	t/acre	0	t/acre	2.2	t/acre	1.6	t/acre	0	t/acre	
	Emission factor		0	lb/ton	9.1	lb/ton	0	lb/ton	15.9	lb/ton	19.7	lb/ton	0	lb/ton	
	Acres harvested		0		1,300		0		474		200		0		
	Fraction burned		0		0.1		0		0.03		0.1		0		
	Emissions $PM_{2.5}$		0.00	tons	2.90	tons	0.00	tons	0.25	tons	0.32	tons	0.00	tons	3
Elmore	Region	3													

County				Alfalfa Seed		Barley		KBG Seed		Mint		Oats		Wheat	
	Residue load		0	t/acre	2.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		0	lb/ton	5.7	lb/ton	0	lb/ton	0	lb/ton	19.7	lb/ton	9.1	lb/ton	
	Acres harvested		0		500		0		0		100		12,400		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions $PM_{2.5}$		0.00	tons	0.41	tons	0.00	tons	0.00	tons	0.16	tons	27.65	tons	28
Franklin	Region	5													
	Residue load		0	t/acre	2.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	2.9	t/acre	
	Emission factor		0	lb/ton	5.7	lb/ton	0	lb/ton	0	lb/ton	19.7	lb/ton	5.7	lb/ton	
	Acres harvested		0		4,600		0		0		400		18,700		
	Fraction burned		0		0.17		0		0		0.17		0.17		
	Emissions $PM_{2.5}$		0.00	tons	6.46	tons	0.00	tons	0.00	tons	1.07	tons	26.27	tons	34
Fremont	Region	6													
	Residue load		0	t/acre	4.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	2.9	t/acre	
	Emission factor		0	lb/ton	9.1	lb/ton	0	lb/ton	0	lb/ton	19.7	lb/ton	5.7	lb/ton	
	Acres harvested		0		56,500		0		0		500		33,700		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions $PM_{2.5}$		0.00	tons	125.97	tons	0.00	tons	0.00	tons	0.79	tons	27.85	tons	155
Gem	Region	3													
	Residue load		0.8	t/acre	4.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		27.2	lb/ton	9.1	lb/ton	0	lb/ton	0	lb/ton	19.7	lb/ton	9.1	lb/ton	
	Acres harvested		309		1,100		0		0		400		2,400		
	Fraction burned		0.25		0.1		0		0		0.1		0.1		
	Emissions $PM_{2.5}$		0.84	tons	2.45	tons	0.00	tons	0.00	tons	0.63	tons	5.35	tons	9
Gooding	Region	4													
	Residue load		0	t/acre	4.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		0	lb/ton	9.1	lb/ton	0	lb/ton	0	lb/ton	19.7	lb/ton	9.1	lb/ton	
	Acres harvested		0		2,100		0		0		300		7,300		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions $PM_{2.5}$		0.00	tons	4.68	tons	0.00	tons	0.00	tons	0.47	tons	16.28	tons	21

County				Alfalfa Seed		Barley		KBG Seed		Mint		Oats		Wheat	
Idaho	Region	2													
	Residue load		0	t/acre	2.9	t/acre	4	t/acre	0	t/acre	1.6	t/acre	2.9	t/acre	
	Emission factor		0	lb/ton	5.7	lb/ton	30	lb/ton	0	lb/ton	19.7	lb/ton	5.7	lb/ton	
	Acres harvested		0		9,600		4822		0		1,400		79,700		
	Fraction burned		0		0.075		1		0		0.075		0.075		
	Emissions $PM_{2.5}$		0.00	tons	5.95	tons	289.32	tons	0.00	tons	1.65	tons	49.40	tons	346
Jefferson	Region	6													
	Residue load		0	t/acre	4.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		0	lb/ton	9.1	lb/ton	0	lb/ton	0	lb/ton	19.7	lb/ton	9.1	lb/ton	
	Acres harvested		0		56,700		0		0		500		31,300		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions $PM_{2.5}$		0.00	tons	126.41	tons	0.00	tons	0.00	tons	0.79	tons	69.78	tons	197
Jerome	Region	4													
	Residue load		0.8	t/acre	4.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		27.2	lb/ton	9.1	lb/ton	0	lb/ton	0	lb/ton	19.7	lb/ton	9.1	lb/ton	
	Acres harvested		669		17,200		0		0		100		12,700		
	Fraction burned		0.25		0.1		0		0		0.1		0.1		
	Emissions $PM_{2.5}$		1.82	tons	38.35	tons	0.00	tons	0.00	tons	0.16	tons	28.31	tons	69
Kootenai	Region	1													
	Residue load		0	t/acre	4.9	t/acre	4	t/acre	0	t/acre	1.6	t/acre	2.9	t/acre	
	Emission factor		0	lb/ton	9.1	lb/ton	30	lb/ton	0	lb/ton	19.7	lb/ton	5.7	lb/ton	
	Acres harvested		0		1,000		10271		0		500		13,400		
	Fraction burned		0		0.075		1		0		0.075		0.075		
	Emissions $PM_{2.5}$		0.00	tons	1.67	tons	616.26	tons	0.00	tons	0.59	tons	8.31	tons	627
Latah	Region	2													
	Residue load		0	t/acre	2.9	t/acre	4	t/acre	0	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		0	lb/ton	5.7	lb/ton	30	lb/ton	0	lb/ton	19.7	lb/ton	9.1	lb/ton	
	Acres harvested		0		9,700		7417		0		700		95,000		
	Fraction burned		0		0.024		1		0		0.024		0.024		

County				Alfalfa Seed		Barley		KBG Seed		Mint		Oats		Wheat	
	Emissions $PM_{2.5}$		0.00	tons	1.92	tons	445.02	tons	0.00	tons	0.26	tons	50.83	tons	498
Lemhi	Region	6													
	Residue load		0	t/acre	2.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	0	t/acre	
	Emission factor		0	lb/ton	5.7	lb/ton	0	lb/ton	0	lb/ton	19.7	lb/ton	0	lb/ton	
	Acres harvested		0		800		0		0		100		0		
	Fraction burned		0		0.1		0		0		0.1		0		
	Emissions $PM_{2.5}$		0.00	tons	0.66	tons	0.00	tons	0.00	tons	0.16	tons	0.00	tons	0.8
Lewis	Region	2													
	Residue load		0	t/acre	2.9	t/acre	4	t/acre	0	t/acre	1.6	t/acre	2.9	t/acre	
	Emission factor		0	lb/ton	5.7	lb/ton	30	lb/ton	0	lb/ton	19.7	lb/ton	5.7	lb/ton	
	Acres harvested		0		13,800		9001		0		1,400		81,700		
	Fraction burned		0		0.145		1		0		0.145		0.145		
	Emissions $PM_{2.5}$		0.00	tons	16.54	tons	540.06	tons	0.00	tons	3.20	tons	97.91	tons	658
Lincoln	Region	4													
	Residue load		0	t/acre	4.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		0	lb/ton	9.1	lb/ton	0	lb/ton	0	lb/ton	19.7	lb/ton	9.1	lb/ton	
	Acres harvested		0		2,500		0		0		600		7,000		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions $PM_{2.5}$		0.00	tons	5.57	tons	0.00	tons	0.00	tons	0.95	tons	15.61	tons	22
Madison	Region	6													
	Residue load		0	t/acre	4.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		0	lb/ton	9.1	lb/ton	0	lb/ton	0	lb/ton	19.7	lb/ton	9.1	lb/ton	
	Acres harvested		0		43,700		0		0		200		34,100		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions $PM_{2.5}$		0.00	tons	97.43	tons	0.00	tons	0.00	tons	0.32	tons	76.03	tons	174
Minidoka	Region	4													
	Residue load		0	t/acre	4.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		0	lb/ton	9.1	lb/ton	0	lb/ton	0	lb/ton	19.7	lb/ton	9.1	lb/ton	
	Acres harvested		0		45,700		0		0		400		35,200		

County				Alfalfa Seed		Barley		KBG Seed		Mint		Oats		Wheat	
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions $PM_{2.5}$		0.00	tons	101.89	tons	0.00	tons	0.00	tons	0.63	tons	78.48	tons	181
Nez Perce	Region	2													
	Residue load		0	t/acre	2.9	t/acre	4	t/acre	0	t/acre	1.6	t/acre	2.9	t/acre	
	Emission factor		0	lb/ton	5.7	lb/ton	30	lb/ton	0	lb/ton	19.7	lb/ton	5.7	lb/ton	
	Acres harvested		0		13,200		4516		0		300		95,300		
	Fraction burned		0		0.03		1		0		0.03		0.03		
	Emissions $PM_{2.5}$		0.00	tons	3.27	tons	270.96	tons	0.00	tons	0.14	tons	23.63	tons	298
Oneida	Region	5													
	Residue load		0	t/acre	2.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	2.9	t/acre	
	Emission factor		0	lb/ton	5.7	lb/ton	0	lb/ton	0	lb/ton	19.7	lb/ton	5.7	lb/ton	
	Acres harvested		0		3,500		0		0		500		33,000		
	Fraction burned		0		0.17		0		0		0.17		0.17		
	Emissions $PM_{2.5}$		0.00	tons	4.92	tons	0.00	tons	0.00	tons	1.34	tons	46.37	tons	53
Owhyee	Region	3													
	Residue load		0.8	t/acre	4.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		27.2	lb/ton	9.1	lb/ton	0	lb/ton	0	lb/ton	19.7	lb/ton	9.1	lb/ton	
	Acres harvested		1963		1,700		0		0		700		8,200		
	Fraction burned		0.25		0.1		0		0		0.1		0.1		
	Emissions $PM_{2.5}$		5.34	tons	3.79	tons	0.00	tons	0.00	tons	1.10	tons	18.28	tons	29
Payette	Region	3													
	Residue load		0.8	t/acre	4.9	t/acre	0	t/acre	2.2	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		27.2	lb/ton	9.1	lb/ton	0	lb/ton	15.9	lb/ton	19.7	lb/ton	9.1	lb/ton	
	Acres harvested		757		600		0		1466		100		6,700		
	Fraction burned		0.25		0.1		0		0.03		0.1		0.1		
	Emissions $PM_{2.5}$		2.06	tons	1.34	tons	0.00	tons	0.77	tons	0.16	tons	14.94	tons	19
Power	Region	5													
	Residue load		0	t/acre	4.9	t/acre	0	t/acre	0	t/acre	0	t/acre	4.9	t/acre	
	Emission factor		0	lb/ton	9.1	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	9.1	lb/ton	

County				Alfalfa Seed		Barley		KBG Seed		Mint		Oats		Wheat	
	Acres harvested		0		6,400		0		0		0		106,000		
	Fraction burned		0		0.17		0		0		0		0.17		
	Emissions $PM_{2.5}$		0.00	tons	24.26	tons	0.00	tons	0.00	tons	0.00	tons	401.76	tons	426
Shoshone	Region	1													
	Residue load		0	t/acre	0	t/acre	0	t/acre	0	t/acre	0	t/acre	0	t/acre	
	Emission factor		0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	
	Acres harvested		0		0		0		0		0		0		
	Fraction burned		0		0		0		0		0		0		
	Emissions $PM_{2.5}$		0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.00	tons	0
Teton	Region	6													
	Residue load		0	t/acre	2.9	t/acre	0	t/acre	0	t/acre	0	t/acre	2.9	t/acre	
	Emission factor		0	lb/ton	5.7	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	5.7	lb/ton	
	Acres harvested		0		40,500		0		0		0		6,000		
	Fraction burned		0		0.1		0		0		0		0.1		
	Emissions $PM_{2.5}$		0.00	tons	33.47	tons	0.00	tons	0.00	tons	0.00	tons	4.96	tons	38
Twin Falls	Region	4													
	Residue load		0.8	t/acre	4.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		27.2	lb/ton	9.1	lb/ton	0	lb/ton	0	lb/ton	19.7	lb/ton	9.1	lb/ton	
	Acres harvested		62		21,200		0		0		400		43,200		
	Fraction burned		0.25		0.1		0		0		0.1		0.1		
	Emissions $PM_{2.5}$		0.17	tons	47.27	tons	0.00	tons	0.00	tons	0.63	tons	96.31	tons	144
Valley	Region	3													
	Residue load		0	t/acre	0	t/acre	0	t/acre	0	t/acre	1.6	t/acre	0	t/acre	
	Emission factor		0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	19.7	lb/ton	0	lb/ton	
	Acres harvested		0		0		0		0		800		0		
	Fraction burned		0		0		0		0		0.1		0		
	Emissions $PM_{2.5}$		0.00	tons	0.00	tons	0.00	tons	0.00	tons	1.26	tons	0.00	tons	1
Washington	Region	3													
	Residue load		0.8	t/acre	2.9	t/acre	0	t/acre	2.2	t/acre	1.6	t/acre	4.9	t/acre	

County				Alfalfa Seed		Barley		KBG Seed		Mint		Oats		Wheat	
	Emission factor		27.2	lb/ton	5.7	lb/ton	0	lb/ton	15.9	lb/ton	19.7	lb/ton	9.1	lb/ton	
	Acres harvested		77		2,700		0		83		200		7,700		
	Fraction burned		0.25		0.1		0		0.03		0.1		0.1		
	Emissions $PM_{2.5}$		0.21	tons	2.23	tons	0.00	tons	0.04	tons	0.32	tons	17.17	tons	20
Total	Acres harvested		16,000		600,000		47,350		14,600		20,000		1,200,000		
	Emissions $PM_{2.5}$		43.52		1134.83		2853.54		7.41		35.55		2123.55		
notes:															
The acres harvested for barley, oats, and wheat where taken from NASS quick stats data pulls by crops and county.															
The acres for mint on the NASS Web site where at the state level only. The county level estimates are based on 90% of the crop in Ada and Canyon															
counties and the other 10% split between Payette, Gem, Elmore, Gooding, Twin Falls, and Kootenai counties.															
The acres for alfalfa seed were derived from the proportion of the total acres reported in the NEI for each county and the NASS report of the total acres															
harvested.															

Table 29. 2005 Crop Residue Burning Carbon Monoxide (CO) Emission Estimate.

			Alfalfa Seed		Barley		KBG Seed		Mint		Oats		Wheat		
Ada	Region	3													
	Residue load		0	t/acre	4.9	t/acre	0	t/acre	2.2	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		0	lb/ton	101	lb/ton	0	lb/ton	114	lb/ton	136	lb/ton	101	lb/ton	
	Acres harvested		0		1,800		0		3,985		300		6,500		
	Fraction burned		0		0.1		0		0.03		0.1		0.1		
	Emissions CO		0.00	tons	44.54	tons	0.00	tons	14.99	tons	3.26	tons	160.84	tons	224
Adams	Region	3													
	Residue load		0	t/acre	0	t/acre	0	t/acre	0	t/acre	0	t/acre	0	t/acre	
	Emission factor		0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	
	Acres harvested		0		0		0		0		0		0		
	Fraction burned		0		0		0		0		0		0		
	Emissions CO		0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.00	tons	0
Bannock	Region	5													
	Residue load		0	t/acre	2.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	2.9	t/acre	
	Emission factor		0	lb/ton	77	lb/ton	0	lb/ton	0	lb/ton	136	lb/ton	77	lb/ton	
	Acres harvested		0		5,600		0		0		500		30,300		
	Fraction burned		0		0.17		0		0		0.17		0.17		
	Emissions CO		0.00	tons	106.29	tons	0.00	tons	0.00	tons	9.25	tons	575.11	tons	691
Bear Lake	Region	5													
	Residue load		0	t/acre	2.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	2.9	t/acre	
	Emission factor		0	lb/ton	77	lb/ton	0	lb/ton	0	lb/ton	136	lb/ton	77	lb/ton	
	Acres harvested		0		4,400		0		0		1,500		8,100		
	Fraction burned		0		0.17		0		0		0.17		0.17		
	Emissions CO		0.00	tons	83.51	tons	0.00	tons	0.00	tons	27.74	tons	153.74	tons	265
Benewah	Region	1													
	Residue load		0	t/acre	2.9	t/acre	4	t/acre	0	t/acre	1.6	t/acre	2.9	t/acre	
	Emission factor		0	lb/ton	77	lb/ton	394	lb/ton	0	lb/ton	136	lb/ton	77	lb/ton	
	Acres harvested		0		2,400		10171		0		600		34,200		
	Fraction burned		0		0.35		1		0		0.35		0.35		
	Emissions CO		0.00	tons	93.79	tons	8014.75	tons	0.00	tons	22.85	tons	1336.45	tons	9468
Bingham	Region	5													
	Residue load		0	t/acre	4.9	t/acre	4	t/acre	0	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		0	lb/ton	101	lb/ton	394	lb/ton	0	lb/ton	136	lb/ton	101	lb/ton	

			Alfalfa Seed		Barley		KBG Seed		Mint		Oats		Wheat		
	Acres harvested		0		24,300		210		0		600		122,200		
	Fraction burned		0		0.1		1		0		0.1		0.1		
	Emissions CO		0.00	tons	601.30	tons	165.48	tons	0.00	tons	6.53	tons	3023.84	tons	3797
Blaine	Region	4													
	Residue load		0	t/acre	4.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	0	t/acre	
	Emission factor		0	lb/ton	101	lb/ton	0	lb/ton	0	lb/ton	136	lb/ton	0	lb/ton	
	Acres harvested		0		12,000		0		0		300		0		
	Fraction burned		0		0.1		0		0		0.1		0		
	Emissions CO		0.00	tons	296.94	tons	0.00	tons	0.00	tons	3.26	tons	0.00	tons	300
Boise	Region	3													
	Residue load		0	t/acre	0	t/acre	0	t/acre	0	t/acre	0	t/acre	0	t/acre	
	Emission factor		0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	
	Acres harvested		0		0		0		0		0		0		
	Fraction burned		0		0		0		0		0		0		
	Emissions CO		0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.00	tons	0
Bonner	Region	1													
	Residue load		0	t/acre	0	t/acre	0	t/acre	0	t/acre	1.6	t/acre	0	t/acre	
	Emission factor		0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	136	lb/ton	0	lb/ton	
	Acres harvested		0		0		0		0		400		0		
	Fraction burned		0		0		0		0		0.1		0		
	Emissions CO		0.00	tons	0.00	tons	0.00	tons	0.00	tons	4.35	tons	0.00	tons	4.4
Bonneville	Region	6													
	Residue load		0	t/acre	4.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	2.9	t/acre	
	Emission factor		0	lb/ton	101	lb/ton	0	lb/ton	0	lb/ton	136	lb/ton	77	lb/ton	
	Acres harvested		0		69,000		0		0		200		46,500		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions CO		0.00	tons	1707.41	tons	0.00	tons	0.00	tons	2.18	tons	519.17	tons	2229
Boundary	Region	1													
	Residue load		0.8	t/acre	4.9	t/acre	4	t/acre	0	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		119	lb/ton	101	lb/ton	394	lb/ton	0	lb/ton	136	lb/ton	101	lb/ton	
	Acres harvested		109		2,500		576		0		400		19,800		
	Fraction burned		0.25		0.25		1		0		0.25		0.25		
	Emissions CO		1.30	tons	154.66	tons	453.89	tons	0.00	tons	10.88	tons	1224.88	tons	1846

			Alfalfa Seed		Barley		KBG Seed		Mint		Oats		Wheat		
Butte	Region	6													
	Residue load		0	t/acre	4.9	t/acre	0	t/acre	2.2	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		0	lb/ton	101	lb/ton	0	lb/ton	114	lb/ton	136	lb/ton	101	lb/ton	
	Acres harvested		0		10,600		0		235		600		5,500		
	Fraction burned		0		0.1		0		0.03		0.1		0.1		
	Emissions CO		0.00	tons	262.30	tons	0.00	tons	0.88	tons	6.53	tons	136.10	tons	406
Camas	Region	4													
	Residue load		0	t/acre	2.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	0	t/acre	
	Emission factor		0	lb/ton	77	lb/ton	0	lb/ton	0	lb/ton	136	lb/ton	0	lb/ton	
	Acres harvested		0		14,200		0		0		400		0		
	Fraction burned		0		0.1		0		0		0.1		0		
	Emissions CO		0.00	tons	158.54	tons	0.00	tons	0.00	tons	4.35	tons	0.00	tons	163
Canyon	Region	3													
	Residue load		0.8	t/acre	4.9	t/acre	0	t/acre	2.2	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		119	lb/ton	101	lb/ton	0	lb/ton	114	lb/ton	136	lb/ton	101	lb/ton	
	Acres harvested		12,054		2,400		0		7,880		1000		25,000		
	Fraction burned		0.25		0.1		0		0.03		0.1		0.1		
	Emissions CO		143.44	tons	59.39	tons	0.00	tons	29.64	tons	10.88	tons	618.63	tons	862
Caribue	Region	5													
	Residue load		0	t/acre	2.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	2.9	t/acre	
	Emission factor		0	lb/ton	77	lb/ton	0	lb/ton	0	lb/ton	136	lb/ton	77	lb/ton	
	Acres harvested		0		57,800		0		0		700		36,200		
	Fraction burned		0		0.17		0		0		0.017		0.17		
	Emissions CO		0.00	tons	1097.07	tons	0.00	tons	0.00	tons	1.29	tons	687.09	tons	1785
Cassia	Region	4													
	Residue load		0	t/acre	4.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		0	lb/ton	101	lb/ton	0	lb/ton	0	lb/ton	136	lb/ton	101	lb/ton	
	Acres harvested		0		31,200		0		0		500		85,700		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions CO		0.00	tons	772.04	tons	0.00	tons	0.00	tons	5.44	tons	2120.65	tons	2898
Clark	Region	6													
	Residue load		0	t/acre	4.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		0	lb/ton	101	lb/ton	0	lb/ton	0	lb/ton	136	lb/ton	101	lb/ton	
	Acres harvested		0		3,300		0		0		300		4,500		

				Alfalfa Seed		Barley		KBG Seed		Mint		Oats		Wheat	
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions CO		0.00	tons	81.66	tons	0.00	tons	0.00	tons	3.26	tons	111.35	tons	196
Clearwater	Region	2													
	Residue load		0	t/acre	2.9	t/acre	4	t/acre	0	t/acre	1.6	t/acre	2.9	t/acre	
	Emission factor		0	lb/ton	77	lb/ton	394	lb/ton	0	lb/ton	136	lb/ton	77	lb/ton	
	Acres harvested		0		1,800		575		0		300		9,900		
	Fraction burned		0		0.165		1		0		0.165		0.165		
	Emissions CO		0.00	tons	33.16	tons	453.10	tons	0.00	tons	5.39	tons	182.38	tons	674
Custer	Region	6													
	Residue load		0	t/acre	4.9	t/acre	0	t/acre	2.2	t/acre	1.6	t/acre	0	t/acre	
	Emission factor		0	lb/ton	101	lb/ton	0	lb/ton	114	lb/ton	136	lb/ton	0	lb/ton	
	Acres harvested		0		1,300		0		474		200		0		
	Fraction burned		0		0.1		0		0.03		0.1		0		
	Emissions CO		0.00	tons	32.17	tons	0.00	tons	1.78	tons	2.18	tons	0.00	tons	36
Elmore	Region	3													
	Residue load		0	t/acre	2.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		0	lb/ton	77	lb/ton	0	lb/ton	0	lb/ton	136	lb/ton	101	lb/ton	
	Acres harvested		0		500		0		0		100		12,400		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions CO		0.00	tons	5.58	tons	0.00	tons	0.00	tons	1.09	tons	306.84	tons	314
Franklin	Region	5													
	Residue load		0	t/acre	2.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	2.9	t/acre	
	Emission factor		0	lb/ton	77	lb/ton	0	lb/ton	0	lb/ton	136	lb/ton	77	lb/ton	
	Acres harvested		0		4,600		0		0		400		18,700		
	Fraction burned		0		0.17		0		0		0.17		0.17		
	Emissions CO		0.00	tons	87.31	tons	0.00	tons	0.00	tons	7.40	tons	354.94	tons	450
Fremont	Region	6													
	Residue load		0	t/acre	4.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	2.9	t/acre	
	Emission factor		0	lb/ton	101	lb/ton	0	lb/ton	0	lb/ton	136	lb/ton	77	lb/ton	
	Acres harvested		0		56,500		0		0		500		33,700		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions CO		0.00	tons	1398.09	tons	0.00	tons	0.00	tons	5.44	tons	376.26	tons	1780
Gem	Region	3													
	Residue load		0.8	t/acre	4.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	4.9	t/acre	

			Alfalfa Seed		Barley		KBG Seed		Mint		Oats		Wheat		
	Emission factor		119	lb/ton	101	lb/ton	0	lb/ton	0	lb/ton	136	lb/ton	101	lb/ton	
	Acres harvested		309		1,100		0		0		400		2,400		
	Fraction burned		0.25		0.1		0		0		0.1		0.1		
	Emissions CO		3.68	tons	27.22	tons	0.00	tons	0.00	tons	4.35	tons	59.39	tons	95
Gooding	Region	4													
	Residue load		0	t/acre	4.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		0	lb/ton	101	lb/ton	0	lb/ton	0	lb/ton	136	lb/ton	101	lb/ton	
	Acres harvested		0		2,100		0		0		300		7,300		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions CO		0.00	tons	51.96	tons	0.00	tons	0.00	tons	3.26	tons	180.64	tons	236
Idaho	Region	2													
	Residue load		0	t/acre	2.9	t/acre	4	t/acre	0	t/acre	1.6	t/acre	2.9	t/acre	
	Emission factor		0	lb/ton	77	lb/ton	394	lb/ton	0	lb/ton	136	lb/ton	77	lb/ton	
	Acres harvested		0		9,600		4822		0		1,400		79,700		
	Fraction burned		0		0.075		1		0		0.075		0.075		
	Emissions CO		0.00	tons	80.39	tons	3799.74	tons	0.00	tons	11.42	tons	667.39	tons	4559
Jefferson	Region	6													
	Residue load		0	t/acre	4.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		0	lb/ton	101	lb/ton	0	lb/ton	0	lb/ton	136	lb/ton	101	lb/ton	
	Acres harvested		0		56,700		0		0		500		31,300		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions CO		0.00	tons	1403.04	tons	0.00	tons	0.00	tons	5.44	tons	774.52	tons	2183
Jerome	Region	4													
	Residue load		0.8	t/acre	4.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		119	lb/ton	101	lb/ton	0	lb/ton	0	lb/ton	136	lb/ton	101	lb/ton	
	Acres harvested		669		17,200		0		0		100		12,700		
	Fraction burned		0.25		0.1		0		0		0.1		0.1		
	Emissions CO		7.96	tons	425.61	tons	0.00	tons	0.00	tons	1.09	tons	314.26	tons	749
Kootenai	Region	1													
	Residue load		0	t/acre	4.9	t/acre	4	t/acre	0	t/acre	1.6	t/acre	2.9	t/acre	
	Emission factor		0	lb/ton	101	lb/ton	394	lb/ton	0	lb/ton	136	lb/ton	77	lb/ton	
	Acres harvested		0		1,000		10271		0		500		13,400		
	Fraction burned		0		0.075		1		0		0.075		0.075		
	Emissions CO		0.00	tons	18.56	tons	8093.55	tons	0.00	tons	4.08	tons	112.21	tons	8228

			Alfalfa Seed		Barley		KBG Seed		Mint		Oats		Wheat		
Latah	Region	2													
	Residue load		0	t/acre	2.9	t/acre	4	t/acre	0	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		0	lb/ton	77	lb/ton	394	lb/ton	0	lb/ton	136	lb/ton	101	lb/ton	
	Acres harvested		0		9,700		7417		0		700		95,000		
	Fraction burned		0		0.024		1		0		0.024		0.024		
	Emissions CO		0.00	tons	25.99	tons	5844.60	tons	0.00	tons	1.83	tons	564.19	tons	6437
Lemhi	Region	6													
	Residue load		0	t/acre	2.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	0	t/acre	
	Emission factor		0	lb/ton	77	lb/ton	0	lb/ton	0	lb/ton	136	lb/ton	0	lb/ton	
	Acres harvested		0		800		0		0		100		0		
	Fraction burned		0		0.1		0		0		0.1		0		
	Emissions CO		0.00	tons	8.93	tons	0.00	tons	0.00	tons	1.09	tons	0.00	tons	10.0
Lewis	Region	2													
	Residue load		0	t/acre	2.9	t/acre	4	t/acre	0	t/acre	1.6	t/acre	2.9	t/acre	
	Emission factor		0	lb/ton	77	lb/ton	394	lb/ton	0	lb/ton	136	lb/ton	77	lb/ton	
	Acres harvested		0		13,800		9001		0		1,400		81,700		
	Fraction burned		0		0.145		1		0		0.145		0.145		
	Emissions CO		0.00	tons	223.41	tons	7092.79	tons	0.00	tons	22.09	tons	1322.66	tons	8661
Lincoln	Region	4													
	Residue load		0	t/acre	4.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		0	lb/ton	101	lb/ton	0	lb/ton	0	lb/ton	136	lb/ton	101	lb/ton	
	Acres harvested		0		2,500		0		0		600		7,000		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions CO		0.00	tons	61.86	tons	0.00	tons	0.00	tons	6.53	tons	173.22	tons	242
Madison	Region	6													
	Residue load		0	t/acre	4.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		0	lb/ton	101	lb/ton	0	lb/ton	0	lb/ton	136	lb/ton	101	lb/ton	
	Acres harvested		0		43,700		0		0		200		34,100		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions CO		0.00	tons	1081.36	tons	0.00	tons	0.00	tons	2.18	tons	843.80	tons	1927
Minidoka	Region	4													
	Residue load		0	t/acre	4.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		0	lb/ton	101	lb/ton	0	lb/ton	0	lb/ton	136	lb/ton	101	lb/ton	
	Acres harvested		0		45,700		0		0		400		35,200		

				Alfalfa Seed		Barley		KBG Seed		Mint		Oats		Wheat	
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions CO		0.00	tons	1130.85	tons	0.00	tons	0.00	tons	4.35	tons	871.02	tons	2006
Nez Perce	Region	2													
	Residue load		0	t/acre	2.9	t/acre	4	t/acre	0	t/acre	1.6	t/acre	2.9	t/acre	
	Emission factor		0	lb/ton	77	lb/ton	394	lb/ton	0	lb/ton	136	lb/ton	77	lb/ton	
	Acres harvested		0		13,200		4516		0		300		95,300		
	Fraction burned		0		0.03		1		0		0.03		0.03		
	Emissions CO		0.00	tons	44.21	tons	3558.61	tons	0.00	tons	0.98	tons	319.21	tons	3923
Oneida	Region	5													
	Residue load		0	t/acre	2.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	2.9	t/acre	
	Emission factor		0	lb/ton	77	lb/ton	0	lb/ton	0	lb/ton	136	lb/ton	77	lb/ton	
	Acres harvested		0		3,500		0		0		500		33,000		
	Fraction burned		0		0.17		0		0		0.17		0.17		
	Emissions CO		0.00	tons	66.43	tons	0.00	tons	0.00	tons	9.25	tons	626.36	tons	702
Owhyee	Region	3													
	Residue load		0.8	t/acre	4.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		119	lb/ton	101	lb/ton	0	lb/ton	0	lb/ton	136	lb/ton	101	lb/ton	
	Acres harvested		1963		1,700		0		0		700		8,200		
	Fraction burned		0.25		0.1		0		0		0.1		0.1		
	Emissions CO		23.36	tons	42.07	tons	0.00	tons	0.00	tons	7.62	tons	202.91	tons	276
Payette	Region	3													
	Residue load		0.8	t/acre	4.9	t/acre	0	t/acre	2.2	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		119	lb/ton	101	lb/ton	0	lb/ton	114	lb/ton	136	lb/ton	101	lb/ton	
	Acres harvested		757		600		0		1466		100		6,700		
	Fraction burned		0.25		0.1		0		0.03		0.1		0.1		
	Emissions CO		9.01	tons	14.85	tons	0.00	tons	5.52	tons	1.09	tons	165.79	tons	196
Power	Region	5													
	Residue load		0	t/acre	4.9	t/acre	0	t/acre	0	t/acre	0	t/acre	4.9	t/acre	
	Emission factor		0	lb/ton	101	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	101	lb/ton	
	Acres harvested		0		6,400		0		0		0		106,000		
	Fraction burned		0		0.17		0		0		0		0.17		
	Emissions CO		0.00	tons	269.23	tons	0.00	tons	0.00	tons	0.00	tons	4459.05	tons	4728
Shoshone	Region	1													
	Residue load		0	t/acre	0	t/acre	0	t/acre	0	t/acre	0	t/acre	0	t/acre	

			Alfalfa Seed		Barley		KBG Seed		Mint		Oats		Wheat		
	Emission factor		0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	
	Acres harvested		0		0		0		0		0		0		
	Fraction burned		0		0		0		0		0		0		
	Emissions CO		0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.00	tons	0
Teton	Region	6													
	Residue load		0	t/acre	2.9	t/acre	0	t/acre	0	t/acre	0	t/acre	2.9	t/acre	
	Emission factor		0	lb/ton	77	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	77	lb/ton	
	Acres harvested		0		40,500		0		0		0		6,000		
	Fraction burned		0		0.1		0		0		0		0.1		
	Emissions CO		0.00	tons	452.18	tons	0.00	tons	0.00	tons	0.00	tons	66.99	tons	519
Twin Falls	Region	4													
	Residue load		0.8	t/acre	4.9	t/acre	0	t/acre	0	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		119	lb/ton	101	lb/ton	0	lb/ton	0	lb/ton	136	lb/ton	101	lb/ton	
	Acres harvested		62		21,200		0		0		400		43,200		
	Fraction burned		0.25		0.1		0		0		0.1		0.1		
	Emissions CO		0.74	tons	524.59	tons	0.00	tons	0.00	tons	4.35	tons	1068.98	tons	1599
Valley	Region	3													
	Residue load		0	t/acre	0	t/acre	0	t/acre	0	t/acre	1.6	t/acre	0	t/acre	
	Emission factor		0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	136	lb/ton	0	lb/ton	
	Acres harvested		0		0		0		0		800		0		
	Fraction burned		0		0		0		0		0.1		0		
	Emissions CO		0.00	tons	0.00	tons	0.00	tons	0.00	tons	8.70	tons	0.00	tons	9
Washington	Region	3													
	Residue load		0.8	t/acre	2.9	t/acre	0	t/acre	2.2	t/acre	1.6	t/acre	4.9	t/acre	
	Emission factor		119	lb/ton	77	lb/ton	0	lb/ton	114	lb/ton	136	lb/ton	101	lb/ton	
	Acres harvested		77		2,700		0		83		200		7,700		
	Fraction burned		0.25		0.1		0		0.03		0.1		0.1		
	Emissions CO		0.92	tons	30.15	tons	0.00	tons	0.31	tons	2.18	tons	190.54	tons	224
Total	Acres harvested		16,000		600,000		47,350		14,600		20,000		1,200,000		
	Emissions CO		190.40		13058.65		37476.49		53.13		245.42		24871.38		

notes:

Alfalfa Seed	Barley	KBG Seed	Mint	Oats	Wheat

The acres harvested for barley, oats, and wheat where taken from NASS quick stats data pulls by crops and county.

The acres for mint on the NASS Web site where at the state level only. The county level acres were derived from the proportion of the total acres reported in the NEI for each county.

The acres for alfalfa seed were derived from the proportion of the total acres reported in the NEI for each county and the NASS report of the total acres harvested.

Table 30. 2005 Crop Residue Burning Oxides of Nitrogen (NO_x) Emission Estimate

					Alfalfa Seed		Barley		KBG Seed		Mint		Oats	Wheat	
Ada	Region	3													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	2.2	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	5.1	lb/ton	0	lb/ton	4.5	lb/ton	4.5	lb/ton	4.3	lb/ton	
	Acres harvested		0		1,800		0		3,985		300		6,500		
	Fraction burned		0		0.1		0		0.03		0.1		0.1		
	Emissions NO_x		0.00	tons	0.78	tons	0.00	tons	0.59	tons	0.11	tons	2.66	tons	4
Adams	Region	3													
	Residue load		0	t/acre	0	t/acre	0	t/acre	0	t/acre	0	t/acre	0	t/acre	
	Emission factor		0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	
	Acres harvested		0		0		0		0		0		0		
	Fraction burned		0		0		0		0		0		0		
	Emissions NO_x		0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.00	tons	0
Bannock	Region	5													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	5.1	lb/ton	0	lb/ton	0	lb/ton	4.5	lb/ton	4.3	lb/ton	
	Acres harvested		0		5,600		0		0		500		30,300		
	Fraction burned		0		0.17		0		0		0.17		0.17		
	Emissions NO_x		0.00	tons	4.13	tons	0.00	tons	0.00	tons	0.31	tons	21.04	tons	25
Bear Lake	Region	5													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	5.1	lb/ton	0	lb/ton	0	lb/ton	4.5	lb/ton	4.3	lb/ton	
	Acres harvested		0		4,400		0		0		1,500		8,100		
	Fraction burned		0		0.17		0		0		0.17		0.17		
	Emissions NOx		0.00	tons	3.24	tons	0.00	tons	0.00	tons	0.92	tons	5.63	tons	10
Benewah	Region	1													
	Residue load		0	t/acre	1.7	t/acre	2.2	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	5.1	lb/ton	4.5	lb/ton	0	lb/to	4.5	lb/to	4.3	lb/ton	

					Alfalfa Seed		Barley		KBG Seed		Mint		Oats	Wheat	
										n		n			
	Acres harvested		0		2,400		10171		0		600		34,200		
	Fraction burned		0		0.35		1		0		0.35		0.35		
	Emissions NOx		0.00	tons	3.64	tons	50.35	tons	0.00	tons	0.76	tons	48.90	tons	104
Bingham	Region	5													
	Residue load		0	t/acre	1.7	t/acre	2.2	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	5.1	lb/ton	4.5	lb/ton	0	lb/ton	4.5	lb/ton	4.3	lb/ton	
	Acres harvested		0		24,300		210		0		600		122,200		
	Fraction burned		0		0.1		1		0		0.1		0.1		
	Emissions NOx		0.00	tons	10.53	tons	1.04	tons	0.00	tons	0.22	tons	49.92	tons	62
Blaine	Region	4													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	0	t/acre	
	Emission factor		0	lb/ton	5.1	lb/ton	0	lb/ton	0	lb/ton	4.5	lb/ton	0	lb/ton	
	Acres harvested		0		12,000		0		0		300		0		
	Fraction burned		0		0.1		0		0		0.1		0		
	Emissions NOx		0.00	tons	5.20	tons	0.00	tons	0.00	tons	0.11	tons	0.00	tons	5
Boise	Region	3													
	Residue load		0	t/acre	0	t/acre	0	t/acre	0	t/acre	0	t/acre	0	t/acre	
	Emission factor		0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	
	Acres harvested		0		0		0		0		0		0		
	Fraction burned		0		0		0		0		0		0		
	Emissions NOx		0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.00	tons	0
Bonner	Region	1													
	Residue load		0	t/acre	0	t/acre	0	t/acre	0	t/acre	1.6	t/acre	0	t/acre	
	Emission factor		0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	4.5	lb/ton	0	lb/ton	
	Acres harvested		0		0		0		0		400		0		
	Fraction burned		0		0		0		0		0.1		0		
	Emissions NOx		0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.14	tons	0.00	tons	0.1

					Alfalfa Seed		Barley		KBG Seed		Mint		Oats	Wheat	
Bonneville	Region	6													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	5.1	lb/ton	0	lb/ton	0	lb/ton	4.5	lb/ton	4.3	lb/ton	
	Acres harvested		0		69,000		0		0		200		46,500		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions NOx		0.00	tons	29.91	tons	0.00	tons	0.00	tons	0.07	tons	19.00	tons	49
Boundary	Region	1													
	Residue load		0.8	t/acre	1.7	t/acre	2.2	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		4.5	lb/ton	5.1	lb/ton	4.5	lb/ton	0	lb/ton	4.5	lb/ton	4.3	lb/ton	
	Acres harvested		109		2,500		576		0		400		19,800		
	Fraction burned		0.25		0.25		1		0		0.25		0.25		
	Emissions NOx		0.05	tons	2.71	tons	2.85	tons	0.00	tons	0.36	tons	20.22	tons	26
Butte	Region	6													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	2.2	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	5.1	lb/ton	0	lb/ton	4.5	lb/ton	4.5	lb/ton	4.3	lb/ton	
	Acres harvested		0		10,600		0		235		600		5,500		
	Fraction burned		0		0.1		0		0.03		0.1		0.1		
	Emissions NOx		0.00	tons	4.60	tons	0.00	tons	0.03	tons	0.22	tons	2.25	tons	7
Camas	Region	4													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	0	t/acre	
	Emission factor		0	lb/ton	5.1	lb/ton	0	lb/ton	0	lb/ton	4.5	lb/ton	0	lb/ton	
	Acres harvested		0		14,200		0		0		400		0		
	Fraction burned		0		0.1		0		0		0.1		0		
	Emissions NOx		0.00	tons	6.16	tons	0.00	tons	0.00	tons	0.14	tons	0.00	tons	6
Canyon	Region	3													
	Residue load		0.8	t/acre	1.7	t/acre	0	t/acre	2.2	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		4.5	lb/ton	5.1	lb/ton	0	lb/ton	4.5	lb/ton	4.5	lb/ton	4.3	lb/ton	
	Acres harvested		12,054		2,400		0		7,880		1000		25,000		

					Alfalfa Seed		Barley		KBG Seed		Mint		Oats	Wheat	
	Fraction burned		0.25		0.1		0		0.03		0.1		0.1		
	Emissions NOx		5.42	tons	1.04	tons	0.00	tons	1.17	tons	0.36	tons	10.21	tons	18
Caribue	Region	5													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acr e	1.6	t/acr e	1.9	t/acre	
	Emission factor		0	lb/ton	5.1	lb/ton	0	lb/ton	0	lb/to n	4.5	lb/to n	4.3	lb/ton	
	Acres harvested		0		57,800		0		0		700		36,200		
	Fraction burned		0		0.17		0		0		0.017		0.17		
	Emissions NOx		0.00	tons	42.60	tons	0.00	tons	0.00	tons	0.04	tons	25.14	tons	68
Cassia	Region	4													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acr e	1.6	t/acr e	1.9	t/acre	
	Emission factor		0	lb/ton	5.1	lb/ton	0	lb/ton	0	lb/to n	4.5	lb/to n	4.3	lb/ton	
	Acres harvested		0		31,200		0		0		500		85,700		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions NOx		0.00	tons	13.53	tons	0.00	tons	0.00	tons	0.18	tons	35.01	tons	49
Clark	Region	6													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acr e	1.6	t/acr e	1.9	t/acre	
	Emission factor		0	lb/ton	5.1	lb/ton	0	lb/ton	0	lb/to n	4.5	lb/to n	4.3	lb/ton	
	Acres harvested		0		3,300		0		0		300		4,500		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions NOx		0.00	tons	1.43	tons	0.00	tons	0.00	tons	0.11	tons	1.84	tons	3
Clearwater	Region	2													
	Residue load		0	t/acre	1.7	t/acre	2.2	t/acre	0	t/acr e	1.6	t/acr e	1.9	t/acre	
	Emission factor		0	lb/ton	5.1	lb/ton	4.5	lb/ton	0	lb/to n	4.5	lb/to n	4.3	lb/ton	
	Acres harvested		0		1,800		575		0		300		9,900		
	Fraction burned		0		0.165		1		0		0.165		0.165		
	Emissions NOx		0.00	tons	1.29	tons	2.85	tons	0.00	tons	0.18	tons	6.67	tons	11
Custer	Region	6													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	2.2	t/acr e	1.6	t/acr e	0	t/acre	
	Emission factor		0	lb/ton	5.1	lb/ton	0	lb/ton	4.5	lb/to	4.5	lb/to	0	lb/ton	

					Alfalfa Seed		Barley		KBG Seed	n	Mint	n	Oats	Wheat	
	Acres harvested		0		1,300		0		474		200		0		
	Fraction burned		0		0.1		0		0.03		0.1		0		
	Emissions NOx		0.00	tons	0.56	tons	0.00	tons	0.07	tons	0.07	tons	0.00	tons	1
Elmore	Region	3													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	5.1	lb/ton	0	lb/ton	0	lb/ton	4.5	lb/ton	4.3	lb/ton	
	Acres harvested		0		500		0		0		100		12,400		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions NOx		0.00	tons	0.22	tons	0.00	tons	0.00	tons	0.04	tons	5.07	tons	5
Franklin	Region	5													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	5.1	lb/ton	0	lb/ton	0	lb/ton	4.5	lb/ton	4.3	lb/ton	
	Acres harvested		0		4,600		0		0		400		18,700		
	Fraction burned		0		0.17		0		0		0.17		0.17		
	Emissions NOx		0.00	tons	3.39	tons	0.00	tons	0.00	tons	0.24	tons	12.99	tons	17
Fremont	Region	6													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	5.1	lb/ton	0	lb/ton	0	lb/ton	4.5	lb/ton	4.3	lb/ton	
	Acres harvested		0		56,500		0		0		500		33,700		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions NOx		0.00	tons	24.49	tons	0.00	tons	0.00	tons	0.18	tons	13.77	tons	38
Gem	Region	3													
	Residue load		0.8	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		4.5	lb/ton	5.1	lb/ton	0	lb/ton	0	lb/ton	4.5	lb/ton	4.3	lb/ton	
	Acres harvested		309		1,100		0		0		400		2,400		
	Fraction burned		0.25		0.1		0		0		0.1		0.1		
	Emissions NOx		0.14	tons	0.48	tons	0.00	tons	0.00	tons	0.14	tons	0.98	tons	2
Gooding	Region	4													

					Alfalfa Seed		Barley		KBG Seed		Mint		Oats	Wheat	
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	5.1	lb/ton	0	lb/ton	0	lb/ton	4.5	lb/ton	4.3	lb/ton	
	Acres harvested		0		2,100		0		0		300		7,300		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions NOx		0.00	tons	0.91	tons	0.00	tons	0.00	tons	0.11	tons	2.98	tons	4
Idaho	Region	2													
	Residue load		0	t/acre	1.7	t/acre	2.2	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	5.1	lb/ton	4.5	lb/ton	0	lb/ton	4.5	lb/ton	4.3	lb/ton	
	Acres harvested		0		9,600		4822		0		1,400		79,700		
	Fraction burned		0		0.075		1		0		0.075		0.075		
	Emissions NOx		0.00	tons	3.12	tons	23.87	tons	0.00	tons	0.38	tons	24.42	tons	52
Jefferson	Region	6													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	5.1	lb/ton	0	lb/ton	0	lb/ton	4.5	lb/ton	4.3	lb/ton	
	Acres harvested		0		56,700		0		0		500		31,300		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions NOx		0.00	tons	24.58	tons	0.00	tons	0.00	tons	0.18	tons	12.79	tons	38
Jerome	Region	4													
	Residue load		0.8	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		4.5	lb/ton	5.1	lb/ton	0	lb/ton	0	lb/ton	4.5	lb/ton	4.3	lb/ton	
	Acres harvested		669		17,200		0		0		100		12,700		
	Fraction burned		0.25		0.1		0		0		0.1		0.1		
	Emissions NOx		0.30	tons	7.46	tons	0.00	tons	0.00	tons	0.04	tons	5.19	tons	13
Kootenai	Region	1													
	Residue load		0	t/acre	1.7	t/acre	2.2	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	5.1	lb/ton	4.5	lb/ton	0	lb/ton	4.5	lb/ton	4.3	lb/ton	
	Acres harvested		0		1,000		10271		0		500		13,400		
	Fraction burned		0		0.075		1		0		0.075		0.075		

					Alfalfa Seed		Barley		KBG Seed		Mint		Oats	Wheat	
	Emissions NOx		0.00	tons	0.33	tons	50.84	tons	0.00	tons	0.14	tons	4.11	tons	55
Latah	Region	2													
	Residue load		0	t/acre	1.7	t/acre	2.2	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	5.1	lb/ton	4.5	lb/ton	0	lb/ton	4.5	lb/ton	4.3	lb/ton	
	Acres harvested		0		9,700		7417		0		700		95,000		
	Fraction burned		0		0.024		1		0		0.024		0.024		
	Emissions NOx		0.00	tons	1.01	tons	36.71	tons	0.00	tons	0.06	tons	9.31	tons	47
Lemhi	Region	6													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	0	t/acre	
	Emission factor		0	lb/ton	5.1	lb/ton	0	lb/ton	0	lb/ton	4.5	lb/ton	0	lb/ton	
	Acres harvested		0		800		0		0		100		0		
	Fraction burned		0		0.1		0		0		0.1		0		
	Emissions NOx		0.00	tons	0.35	tons	0.00	tons	0.00	tons	0.04	tons	0.00	tons	0.4
Lewis	Region	2													
	Residue load		0	t/acre	1.7	t/acre	2.2	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	5.1	lb/ton	4.5	lb/ton	0	lb/ton	4.5	lb/ton	4.3	lb/ton	
	Acres harvested		0		13,800		9001		0		1,400		81,700		
	Fraction burned		0		0.145		1		0		0.145		0.145		
	Emissions NOx		0.00	tons	8.67	tons	44.55	tons	0.00	tons	0.73	tons	48.39	tons	102
Lincoln	Region	4													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	5.1	lb/ton	0	lb/ton	0	lb/ton	4.5	lb/ton	4.3	lb/ton	
	Acres harvested		0		2,500		0		0		600		7,000		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions NOx		0.00	tons	1.08	tons	0.00	tons	0.00	tons	0.22	tons	2.86	tons	4
Madison	Region	6													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	5.1	lb/ton	0	lb/ton	0	lb/ton	4.5	lb/ton	4.3	lb/ton	

					Alfalfa Seed		Barley		KBG Seed		Mint		Oats	Wheat	
	Acres harvested		0		43,700		0		0		200		34,100		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions NOx		0.00	tons	18.94	tons	0.00	tons	0.00	tons	0.07	tons	13.93	tons	33
Minidoka	Region	4													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	5.1	lb/ton	0	lb/ton	0	lb/ton	4.5	lb/ton	4.3	lb/ton	
	Acres harvested		0		45,700		0		0		400		35,200		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions NOx		0.00	tons	19.81	tons	0.00	tons	0.00	tons	0.14	tons	14.38	tons	34
Nez Perce	Region	2													
	Residue load		0	t/acre	1.7	t/acre	2.2	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	5.1	lb/ton	4.5	lb/ton	0	lb/ton	4.5	lb/ton	4.3	lb/ton	
	Acres harvested		0		13,200		4516		0		300		95,300		
	Fraction burned		0		0.03		1		0		0.03		0.03		
	Emissions NOx		0.00	tons	1.72	tons	22.35	tons	0.00	tons	0.03	tons	11.68	tons	36
Oneida	Region	5													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	5.1	lb/ton	0	lb/ton	0	lb/ton	4.5	lb/ton	4.3	lb/ton	
	Acres harvested		0		3,500		0		0		500		33,000		
	Fraction burned		0		0.17		0		0		0.17		0.17		
	Emissions NOx		0.00	tons	2.58	tons	0.00	tons	0.00	tons	0.31	tons	22.92	tons	26
Owhyee	Region	3													
	Residue load		0.8	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		4.5	lb/ton	5.1	lb/ton	0	lb/ton	0	lb/ton	4.5	lb/ton	4.3	lb/ton	
	Acres harvested		1963		1,700		0		0		700		8,200		
	Fraction burned		0.25		0.1		0		0		0.1		0.1		
	Emissions NOx		0.88	tons	0.74	tons	0.00	tons	0.00	tons	0.25	tons	3.35	tons	5
Payette	Region	3													
	Residue load		0.8	t/acre	1.7	t/acre	0	t/acre	2.2	t/acr	1.6	t/acr	1.9	t/acre	

					Alfalfa Seed		Barley		KBG Seed		Mint		Oats	Wheat	
										e		e			
	Emission factor		4.5	lb/ton	5.1	lb/ton	0	lb/ton	4.5	lb/ton	4.5	lb/ton	4.3	lb/ton	
	Acres harvested		757		600		0		1466		100		6,700		
	Fraction burned		0.25		0.1		0		0.03		0.1		0.1		
	Emissions NOx		0.34	tons	0.26	tons	0.00	tons	0.22	tons	0.04	tons	2.74	tons	4
Power	Region	5													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	0	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	5.1	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	4.3	lb/ton	
	Acres harvested		0		6,400		0		0		0		106,000		
	Fraction burned		0		0.17		0		0		0		0.17		
	Emissions NOx		0.00	tons	4.72	tons	0.00	tons	0.00	tons	0.00	tons	73.61	tons	78
Shoshone	Region	1													
	Residue load		0	t/acre	0	t/acre	0	t/acre	0	t/acre	0	t/acre	0	t/acre	
	Emission factor		0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	
	Acres harvested		0		0		0		0		0		0		
	Fraction burned		0		0		0		0		0		0		
	Emissions NOx		0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.00	tons	0
Teton	Region	6													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	0	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	5.1	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	4.3	lb/ton	
	Acres harvested		0		40,500		0		0		0		6,000		
	Fraction burned		0		0.1		0		0		0		0.1		
	Emissions NOx		0.00	tons	17.56	tons	0.00	tons	0.00	tons	0.00	tons	2.45	tons	20
Twin Falls	Region	4													
	Residue load		0.8	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		4.5	lb/ton	5.1	lb/ton	0	lb/ton	0	lb/ton	4.5	lb/ton	4.3	lb/ton	
	Acres harvested		62		21,200		0		0		400		43,200		
	Fraction burned		0.25		0.1		0		0		0.1		0.1		

					Alfalfa Seed		Barley		KBG Seed		Mint		Oats	Wheat	
	Emissions NOx		0.03	tons	9.19	tons	0.00	tons	0.00	tons	0.14	tons	17.65	tons	27
Valley	Region	3													
	Residue load		0	t/acre	0	t/acre	0	t/acre	0	t/acre	1.6	t/acre	0	t/acre	
	Emission factor		0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	4.5	lb/ton	0	lb/ton	
	Acres harvested		0		0		0		0		800		0		
	Fraction burned		0		0		0		0		0.1		0		
	Emissions NOx		0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.29	tons	0.00	tons	0
Washington	Region	3													
	Residue load		0.8	t/acre	1.7	t/acre	0	t/acre	2.2	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		4.5	lb/ton	5.1	lb/ton	0	lb/ton	4.5	lb/ton	4.5	lb/ton	4.3	lb/ton	
	Acres harvested		77		2,700		0		83		200		4		
	Fraction burned		0.25		0.1		0		0.03		0.1		0.1		
	Emissions NOx		0.03	tons	1.17	tons	0.00	tons	0.01	tons	0.07	tons	0.00	tons	1
Total	Acres harvested		16,000		600,000		47,350		14,600		20,000		1,200,000		
	Emissions NOx		7.20		284.11		235.42		2.10		8.12		554.02		

notes:

The acres harvested for barley, oats, and wheat where taken from NASS quick stats data pulls by crops and county.

The acres for mint on the NASS Web site where at the state level only. The county level acres were derived from the proportion of the total acres reported in the NEI for each county.

The acres for alfalfa seed were derived from the proportion of the total acres reported in the NEI for each county and the NASS report of the total acres harvested.

Table 31. 2005 Crop Residue Burning Volatile Organic Compounds (VOC) Emission Estimate.

				Alfalfa Seed		Barley		KBG Seed		Mint		Oats		Wheat	
Ada	Region	3													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	2.2	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	15	lb/ton	0	lb/ton	10.7	lb/ton	10.3	lb/ton	7.6	lb/ton	
	Acres harvested		0		1,800		0		3,985		300		6,500		
	Fraction burned		0		0.1		0		0.03		0.1		0.1		
	Emissions VOC		0.00	tons	2.30	tons	0.00	tons	1.41	tons	0.25	tons	4.69	tons	9
Adams	Region	3													
	Residue load		0	t/acre	0	t/acre	0	t/acre	0	t/acre	0	t/acre	0	t/acre	
	Emission factor		0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	
	Acres harvested		0		0		0		0		0		0		
	Fraction burned		0		0		0		0		0		0		
	Emissions VOC		0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.00	tons	0
Bannock	Region	5													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	15	lb/ton	0	lb/ton	0	lb/ton	10.3	lb/ton	7.6	lb/ton	
	Acres harvested		0		5,600		0		0		500		30,300		
	Fraction burned		0		0.17		0		0		0.17		0.17		
	Emissions VOC		0.00	tons	12.14	tons	0.00	tons	0.00	tons	0.70	tons	37.19	tons	50
Bear Lake	Region	5													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	15	lb/ton	0	lb/ton	0	lb/ton	10.3	lb/ton	7.6	lb/ton	
	Acres harvested		0		4,400		0		0		1,500		8,100		
	Fraction burned		0		0.17		0		0		0.17		0.17		
	Emissions VOC		0.00	tons	9.54	tons	0.00	tons	0.00	tons	2.10	tons	9.94	tons	22
Benewah	Region	1													
	Residue load		0	t/acre	1.7	t/acre	2.2	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	15	lb/ton	10.7	lb/ton	0	lb/ton	10.3	lb/ton	7.6	lb/ton	
	Acres harvested		0		2,400		10171		0		600		34,200		
	Fraction burned		0		0.35		1		0		0.35		0.35		
	Emissions VOC		0.00	tons	10.71	tons	119.71	tons	0.00	tons	1.73	tons	86.42	tons	219

					Alfalfa Seed		**Barley**		**KBG Seed**		**Mint**		**Oats**	**Wheat**	
Bingham	Region	5													
	Residue load		0	t/acre	1.7	t/acre	2.2	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	15	lb/ton	10.7	lb/ton	0	lb/ton	10.3	lb/ton	7.6	lb/ton	
	Acres harvested		0		24,300		210		0		600		122,200		
	Fraction burned		0		0.1		1		0		0.1		0.1		
	Emissions VOC		0.00	tons	30.98	tons	2.47	tons	0.00	tons	0.49	tons	88.23	tons	122
Blaine	Region	4													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	0	t/acre	
	Emission factor		0	lb/ton	15	lb/ton	0	lb/ton	0	lb/ton	10.3	lb/ton	0	lb/ton	
	Acres harvested		0		12,000		0		0		300		0		
	Fraction burned		0		0.1		0		0		0.1		0		
	Emissions VOC		0.00	tons	15.30	tons	0.00	tons	0.00	tons	0.25	tons	0.00	tons	16
Boise	Region	3													
	Residue load		0	t/acre	0	t/acre	0	t/acre	0	t/acre	0	t/acre	0	t/acre	
	Emission factor		0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	
	Acres harvested		0		0		0		0		0		0		
	Fraction burned		0		0		0		0		0		0		
	Emissions VOC		0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.00	tons	0
Bonner	Region	1													
	Residue load		0	t/acre	0	t/acre	0	t/acre	0	t/acre	1.6	t/acre	0	t/acre	
	Emission factor		0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	10.3	lb/ton	0	lb/ton	
	Acres harvested		0		0		0		0		400		0		
	Fraction burned		0		0		0		0		0.1		0		
	Emissions VOC		0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.33	tons	0.00	tons	0.3
Bonneville	Region	6													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	15	lb/ton	0	lb/ton	0	lb/ton	10.3	lb/ton	7.6	lb/ton	
	Acres harvested		0		69,000		0		0		200		46,500		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions VOC		0.00	tons	87.98	tons	0.00	tons	0.00	tons	0.16	tons	33.57	tons	122

					Alfalfa Seed		Barley		KBG Seed		Mint		Oats	Wheat	
Boundary	Region	1													
	Residue load		0.8	t/acre	1.7	t/acre	2.2	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		21.7	lb/ton	15	lb/ton	10.7	lb/ton	0	lb/ton	10.3	lb/ton	7.6	lb/ton	
	Acres harvested		109		2,500		576		0		400		19,800		
	Fraction burned		0.25		0.25		1		0		0.25		0.25		
	Emissions VOC		0.24	tons	7.97	tons	6.78	tons	0.00	tons	0.82	tons	35.74	tons	52
Butte	Region	6													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	2.2	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	15	lb/ton	0	lb/ton	10.7	lb/ton	10.3	lb/ton	7.6	lb/ton	
	Acres harvested		0		10,600		0		235		600		5,500		
	Fraction burned		0		0.1		0		0.03		0.1		0.1		
	Emissions VOC		0.00	tons	13.52	tons	0.00	tons	0.08	tons	0.49	tons	3.97	tons	18
Camas	Region	4													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	0	t/acre	
	Emission factor		0	lb/ton	15	lb/ton	0	lb/ton	0	lb/ton	10.3	lb/ton	0	lb/ton	
	Acres harvested		0		14,200		0		0		400		0		
	Fraction burned		0		0.1		0		0		0.1		0		
	Emissions VOC		0.00	tons	18.11	tons	0.00	tons	0.00	tons	0.33	tons	0.00	tons	18
Canyon	Region	3													
	Residue load		0.8	t/acre	1.7	t/acre	0	t/acre	2.2	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		21.7	lb/ton	15	lb/ton	0	lb/ton	10.7	lb/ton	10.3	lb/ton	7.6	lb/ton	
	Acres harvested		12,054		2,400		0		7,880		1000		25,000		
	Fraction burned		0.25		0.1		0		0.03		0.1		0.1		
	Emissions VOC		26.16	tons	3.06	tons	0.00	tons	2.78	tons	0.82	tons	18.05	tons	51
Caribue	Region	5													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	15	lb/ton	0	lb/ton	0	lb/ton	10.3	lb/ton	7.6	lb/ton	
	Acres harvested		0		57,800		0		0		700		36,200		
	Fraction burned		0		0.17		0		0		0.017		0.17		
	Emissions VOC		0.00	tons	125.28	tons	0.00	tons	0.00	tons	0.10	tons	44.43	tons	170
Cassia	Region	4													

					Alfalfa Seed		Barley		KBG Seed		Mint		Oats	Wheat	
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	15	lb/ton	0	lb/ton	0	lb/ton	10.3	lb/ton	7.6	lb/ton	
	Acres harvested		0		31,200		0		0		500		85,700		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions VOC		0.00	tons	39.78	tons	0.00	tons	0.00	tons	0.41	tons	61.88	tons	102
Clark	Region	6													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	15	lb/ton	0	lb/ton	0	lb/ton	10.3	lb/ton	7.6	lb/ton	
	Acres harvested		0		3,300		0		0		300		4,500		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions VOC		0.00	tons	4.21	tons	0.00	tons	0.00	tons	0.25	tons	3.25	tons	8
Clearwater	Region	2													
	Residue load		0	t/acre	1.7	t/acre	2.2	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	15	lb/ton	10.7	lb/ton	0	lb/ton	10.3	lb/ton	7.6	lb/ton	
	Acres harvested		0		1,800		575		0		300		9,900		
	Fraction burned		0		0.165		1		0		0.165		0.165		
	Emissions VOC		0.00	tons	3.79	tons	6.77	tons	0.00	tons	0.41	tons	11.79	tons	23
Custer	Region	6													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	2.2	t/acre	1.6	t/acre	0	t/acre	
	Emission factor		0	lb/ton	15	lb/ton	0	lb/ton	10.7	lb/ton	10.3	lb/ton	0	lb/ton	
	Acres harvested		0		1,300		0		474		200		0		
	Fraction burned		0		0.1		0		0.03		0.1		0		
	Emissions VOC		0.00	tons	1.66	tons	0.00	tons	0.17	tons	0.16	tons	0.00	tons	2
Elmore	Region	3													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	15	lb/ton	0	lb/ton	0	lb/ton	10.3	lb/ton	7.6	lb/ton	
	Acres harvested		0		500		0		0		100		12,400		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions VOC		0.00	tons	0.64	tons	0.00	tons	0.00	tons	0.08	tons	8.95	tons	10
Franklin	Region	5													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	

					Alfalfa Seed		Barley		KBG Seed		Mint		Oats	Wheat	
	Emission factor		0	lb/ton	15	lb/ton	0	lb/ton	0	lb/ton	10.3	lb/ton	7.6	lb/ton	
	Acres harvested		0		4,600		0		0		400		18,700		
	Fraction burned		0		0.17		0		0		0.17		0.17		
	Emissions VOC		0.00	tons	9.97	tons	0.00	tons	0.00	tons	0.56	tons	22.95	tons	33
Fremont	Region	6													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	15	lb/ton	0	lb/ton	0	lb/ton	10.3	lb/ton	7.6	lb/ton	
	Acres harvested		0		56,500		0		0		500		33,700		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions VOC		0.00	tons	72.04	tons	0.00	tons	0.00	tons	0.41	tons	24.33	tons	97
Gem	Region	3													
	Residue load		0.8	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		21.7	lb/ton	15	lb/ton	0	lb/ton	0	lb/ton	10.3	lb/ton	7.6	lb/ton	
	Acres harvested		309		1,100		0		0		400		2,400		
	Fraction burned		0.25		0.1		0		0		0.1		0.1		
	Emissions VOC		0.67	tons	1.40	tons	0.00	tons	0.00	tons	0.33	tons	1.73	tons	4
Gooding	Region	4													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	15	lb/ton	0	lb/ton	0	lb/ton	10.3	lb/ton	7.6	lb/ton	
	Acres harvested		0		2,100		0		0		300		7,300		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions VOC		0.00	tons	2.68	tons	0.00	tons	0.00	tons	0.25	tons	5.27	tons	8
Idaho	Region	2													
	Residue load		0	t/acre	1.7	t/acre	2.2	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	15	lb/ton	10.7	lb/ton	0	lb/ton	10.3	lb/ton	7.6	lb/ton	
	Acres harvested		0		9,600		4822		0		1,400		79,700		
	Fraction burned		0		0.075		1		0		0.075		0.075		
	Emissions VOC		0.00	tons	9.18	tons	56.75	tons	0.00	tons	0.87	tons	43.16	tons	110
Jefferson	Region	6													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	15	lb/ton	0	lb/ton	0	lb/ton	10.3	lb/ton	7.6	lb/ton	

					Alfalfa Seed		Barley		KBG Seed		Mint		Oats	Wheat	
	Acres harvested		0		56,700		0		0		500		31,300		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions VOC		0.00	tons	72.29	tons	0.00	tons	0.00	tons	0.41	tons	22.60	tons	95
Jerome	Region	4													
	Residue load		0.8	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		21.7	lb/ton	15	lb/ton	0	lb/ton	0	lb/ton	10.3	lb/ton	7.6	lb/ton	
	Acres harvested		669		17,200		0		0		100		12,700		
	Fraction burned		0.25		0.1		0		0		0.1		0.1		
	Emissions VOC		1.45	tons	21.93	tons	0.00	tons	0.00	tons	0.08	tons	9.17	tons	33
Kootenai	Region	1													
	Residue load		0	t/acre	1.7	t/acre	2.2	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	15	lb/ton	10.7	lb/ton	0	lb/ton	10.3	lb/ton	7.6	lb/ton	
	Acres harvested		0		1,000		10271		0		500		13,400		
	Fraction burned		0		0.075		1		0		0.075		0.075		
	Emissions VOC		0.00	tons	0.96	tons	120.89	tons	0.00	tons	0.31	tons	7.26	tons	129
Latah	Region	2													
	Residue load		0	t/acre	1.7	t/acre	2.2	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	15	lb/ton	10.7	lb/ton	0	lb/ton	10.3	lb/ton	7.6	lb/ton	
	Acres harvested		0		9,700		7417		0		700		95,000		
	Fraction burned		0		0.024		1		0		0.024		0.024		
	Emissions VOC		0.00	tons	2.97	tons	87.30	tons	0.00	tons	0.14	tons	16.46	tons	107
Lemhi	Region	6													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	0	t/acre	
	Emission factor		0	lb/ton	15	lb/ton	0	lb/ton	0	lb/ton	10.3	lb/ton	0	lb/ton	
	Acres harvested		0		800		0		0		100		0		
	Fraction burned		0		0.1		0		0		0.1		0		
	Emissions VOC		0.00	tons	1.02	tons	0.00	tons	0.00	tons	0.08	tons	0.00	tons	1.1
Lewis	Region	2													
	Residue load		0	t/acre	1.7	t/acre	2.2	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	15	lb/ton	10.7	lb/ton	0	lb/ton	10.3	lb/ton	7.6	lb/ton	
	Acres harvested		0		13,800		9001		0		1,400		81,700		

					Alfalfa Seed		Barley		KBG Seed		Mint		Oats	Wheat	
	Fraction burned		0		0.145		1		0		0.145		0.145		
	Emissions VOC		0.00	tons	25.51	tons	105.94	tons	0.00	tons	1.67	tons	85.53	tons	219
Lincoln	Region	4													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	15	lb/ton	0	lb/ton	0	lb/ton	10.3	lb/ton	7.6	lb/ton	
	Acres harvested		0		2,500		0		0		600		7,000		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions VOC		0.00	tons	3.19	tons	0.00	tons	0.00	tons	0.49	tons	5.05	tons	9
Madison	Region	6													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	15	lb/ton	0	lb/ton	0	lb/ton	10.3	lb/ton	7.6	lb/ton	
	Acres harvested		0		43,700		0		0		200		34,100		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions VOC		0.00	tons	55.72	tons	0.00	tons	0.00	tons	0.16	tons	24.62	tons	81
Minidoka	Region	4													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	15	lb/ton	0	lb/ton	0	lb/ton	10.3	lb/ton	7.6	lb/ton	
	Acres harvested		0		45,700		0		0		400		35,200		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions VOC		0.00	tons	58.27	tons	0.00	tons	0.00	tons	0.33	tons	25.41	tons	84
Nez Perce	Region	2													
	Residue load		0	t/acre	1.7	t/acre	2.2	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	15	lb/ton	10.7	lb/ton	0	lb/ton	10.3	lb/ton	7.6	lb/ton	
	Acres harvested		0		13,200		4516		0		300		95,300		
	Fraction burned		0		0.03		1		0		0.03		0.03		
	Emissions VOC		0.00	tons	5.05	tons	53.15	tons	0.00	tons	0.07	tons	20.64	tons	79
Oneida	Region	5													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	15	lb/ton	0	lb/ton	0	lb/ton	10.3	lb/ton	7.6	lb/ton	
	Acres harvested		0		3,500		0		0		500		33,000		
	Fraction burned		0		0.17		0		0		0.17		0.17		

				Alfalfa Seed		Barley		KBG Seed		Mint		Oats		Wheat	
	Emissions VOC		0.00	tons	7.59	tons	0.00	tons	0.00	tons	0.70	tons	40.50	tons	49
Owhyee	Region	3													
	Residue load		0.8	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		21.7	lb/ton	15	lb/ton	0	lb/ton	0	lb/ton	10.3	lb/ton	7.6	lb/ton	
	Acres harvested		1963		1,700		0		0		700		8,200		
	Fraction burned		0.25		0.1		0		0		0.1		0.1		
	Emissions VOC		4.26	tons	2.17	tons	0.00	tons	0.00	tons	0.58	tons	5.92	tons	13
Payette	Region	3													
	Residue load		0.8	t/acre	1.7	t/acre	0	t/acre	2.2	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		21.7	lb/ton	15	lb/ton	0	lb/ton	10.7	lb/ton	10.3	lb/ton	7.6	lb/ton	
	Acres harvested		757		600		0		1466		100		6,700		
	Fraction burned		0.25		0.1		0		0.03		0.1		0.1		
	Emissions VOC		1.64	tons	0.77	tons	0.00	tons	0.52	tons	0.08	tons	4.84	tons	8
Power	Region	5													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	0	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	15	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	7.6	lb/ton	
	Acres harvested		0		6,400		0		0		0		106,000		
	Fraction burned		0		0.17		0		0		0		0.17		
	Emissions VOC		0.00	tons	13.87	tons	0.00	tons	0.00	tons	0.00	tons	130.10	tons	144
Shoshone	Region	1													
	Residue load		0	t/acre	0	t/acre	0	t/acre	0	t/acre	0	t/acre	0	t/acre	
	Emission factor		0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	
	Acres harvested		0		0		0		0		0		0		
	Fraction burned		0		0		0		0		0		0		
	Emissions VOC		0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.00	tons	0
Teton	Region	6													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	0	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	15	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	7.6	lb/ton	
	Acres harvested		0		40,500		0		0		0		6,000		
	Fraction burned		0		0.1		0		0		0		0.1		
	Emissions VOC		0.00	tons	51.64	tons	0.00	tons	0.00	tons	0.00	tons	4.33	tons	56

				Alfalfa Seed		Barley		KBG Seed		Mint		Oats		Wheat	
Twin Falls	Region	4													
	Residue load		0.8	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		21.7	lb/ton	15	lb/ton	0	lb/ton	0	lb/ton	10.3	lb/ton	7.6	lb/ton	
	Acres harvested		62		21,200		0		0		400		43,200		
	Fraction burned		0.25		0.1		0		0		0.1		0.1		
	Emissions VOC		0.13	tons	27.03	tons	0.00	tons	0.00	tons	0.33	tons	31.19	tons	59
Valley	Region	3													
	Residue load		0	t/acre	0	t/acre	0	t/acre	0	t/acre	1.6	t/acre	0	t/acre	
	Emission factor		0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	10.3	lb/ton	0	lb/ton	
	Acres harvested		0		0		0		0		800		0		
	Fraction burned		0		0		0		0		0.1		0		
	Emissions VOC		0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.66	tons	0.00	tons	1
Washington	Region	3													
	Residue load		0.8	t/acre	1.7	t/acre	0	t/acre	2.2	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		21.7	lb/ton	15	lb/ton	0	lb/ton	10.7	lb/ton	10.3	lb/ton	7.6	lb/ton	
	Acres harvested		77		2,700		0		83		200		8		
	Fraction burned		0.25		0.1		0		0.03		0.1		0.1		
	Emissions VOC		0.17	tons	3.44	tons	0.00	tons	0.03	tons	0.16	tons	0.01	tons	4
Total	Acres harvested		16,000		600,000		47,350		14,600		20,000		1,200,000		
	Emissions VOC		34.72		835.61		559.77		4.99		18.59		979.20		
notes:															
The acres harvested for barley, oats, and wheat where taken from NASS quick stats data pulls by crops and county.															
The acres for mint on the NASS Web site where at the state level only. The county level acres were derived from the proportion of the total acres reported in the															
NEI for each county.															
The acres for alfalfa seed were derived from the proportion of the total acres reported in the NEI for each county and the NASS report of the total acres															
harvested.															

Table 32. 2005 Crop Residue Burning Oxides of Sulfur (SOx) Emission Estimate.

					Alfalfa Seed		Barley		KBG Seed		Mint		Oats	Wheat	
Ada	Region	3													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	2.2	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	0.1	lb/ton	0	lb/ton	0.6	lb/ton	0.6	lb/ton	0.9	lb/ton	
	Acres harvested		0		1,800		0		3,985		300		6,500		
	Fraction burned		0		0.1		0		0.03		0.1		0.1		
	Emissions SOx		0.00	tons	0.02	tons	0.00	tons	0.08	tons	0.01	tons	0.56	tons	1
Adams	Region	3													
	Residue load		0	t/acre	0	t/acre	0	t/acre	0	t/acre	0	t/acre	0	t/acre	
	Emission factor		0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	
	Acres harvested		0		0		0		0		0		0		
	Fraction burned		0		0		0		0		0		0		
	Emissions SOx		0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.00	tons	0
Bannock	Region	5													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	0.1	lb/ton	0	lb/ton	0	lb/ton	0.6	lb/ton	0.9	lb/ton	
	Acres harvested		0		5,600		0		0		500		30,300		
	Fraction burned		0		0.17		0		0		0.17		0.17		
	Emissions SOx		0.00	tons	0.08	tons	0.00	tons	0.00	tons	0.04	tons	4.40	tons	5
Bear Lake	Region	5													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	0.1	lb/ton	0	lb/ton	0	lb/ton	0.6	lb/ton	0.9	lb/ton	
	Acres harvested		0		4,400		0		0		1,500		8,100		
	Fraction burned		0		0.17		0		0		0.17		0.17		
	Emissions SOx		0.00	tons	0.06	tons	0.00	tons	0.00	tons	0.12	tons	1.18	tons	1
Benewah	Region	1													
	Residue load		0	t/acre	1.7	t/acre	2.2	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	0.1	lb/ton	0.6	lb/ton	0	lb/ton	0.6	lb/ton	0.9	lb/ton	

					Alfalfa Seed		Barley		KBG Seed		Mint		Oats	Wheat	
	Acres harvested		0		2,400		10171		0		600		34,200		
	Fraction burned		0		0.35		1		0		0.35		0.35		
	Emissions SOx		0.00	tons	0.07	tons	6.71	tons	0.00	tons	0.10	tons	10.23	tons	17
Bingham	Region	5													
	Residue load		0	t/acre	1.7	t/acre	2.2	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	0.1	lb/ton	0.6	lb/ton	0	lb/ton	0.6	lb/ton	0.9	lb/ton	
	Acres harvested		0		24,300		210		0		600		122,200		
	Fraction burned		0		0.1		1		0		0.1		0.1		
	Emissions SOx		0.00	tons	0.21	tons	0.14	tons	0.00	tons	0.03	tons	10.45	tons	11
Blaine	Region	4													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	0	t/acre	
	Emission factor		0	lb/ton	0.1	lb/ton	0	lb/ton	0	lb/ton	0.6	lb/ton	0	lb/ton	
	Acres harvested		0		12,000		0		0		300		0		
	Fraction burned		0		0.1		0		0		0.1		0		
	Emissions SOx		0.00	tons	0.10	tons	0.00	tons	0.00	tons	0.01	tons	0.00	tons	0
Boise	Region	3													
	Residue load		0	t/acre	0	t/acre	0	t/acre	0	t/acre	0	t/acre	0	t/acre	
	Emission factor		0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	
	Acres harvested		0		0		0		0		0		0		
	Fraction burned		0		0		0		0		0		0		
	Emissions SOx		0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.00	tons	0
Bonner	Region	1													
	Residue load		0	t/acre	0	t/acre	0	t/acre	0	t/acre	1.6	t/acre	0	t/acre	
	Emission factor		0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0.6	lb/ton	0	lb/ton	
	Acres harvested		0		0		0		0		400		0		
	Fraction burned		0		0		0		0		0.1		0		
	Emissions SOx		0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.02	tons	0.00	tons	0.0

				Alfalfa Seed		Barley		KBG Seed		Mint		Oats		Wheat	
Bonneville	Region	6													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	0.1	lb/ton	0	lb/ton	0	lb/ton	0.6	lb/ton	0.9	lb/ton	
	Acres harvested		0		69,000		0		0		200		46,500		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions SOx		0.00	tons	0.59	tons	0.00	tons	0.00	tons	0.01	tons	3.98	tons	5
Boundary	Region	1													
	Residue load		0.8	t/acre	1.7	t/acre	2.2	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0.6	lb/ton	0.1	lb/ton	0.6	lb/ton	0	lb/ton	0.6	lb/ton	0.9	lb/ton	
	Acres harvested		109		2,500		576		0		400		19,800		
	Fraction burned		0.25		0.25		1		0		0.25		0.25		
	Emissions SOx		0.01	tons	0.05	tons	0.38	tons	0.00	tons	0.05	tons	4.23	tons	5
Butte	Region	6													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	2.2	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	0.1	lb/ton	0	lb/ton	0.6	lb/ton	0.6	lb/ton	0.9	lb/ton	
	Acres harvested		0		10,600		0		235		600		5,500		
	Fraction burned		0		0.1		0		0.03		0.1		0.1		
	Emissions SOx		0.00	tons	0.09	tons	0.00	tons	0.00	tons	0.03	tons	0.47	tons	1
Camas	Region	4													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	0	t/acre	
	Emission factor		0	lb/ton	0.1	lb/ton	0	lb/ton	0	lb/ton	0.6	lb/ton	0	lb/ton	
	Acres harvested		0		14,200		0		0		400		0		
	Fraction burned		0		0.1		0		0		0.1		0		
	Emissions SOx		0.00	tons	0.12	tons	0.00	tons	0.00	tons	0.02	tons	0.00	tons	0
Canyon	Region	3													
	Residue load		0.8	t/acre	1.7	t/acre	0	t/acre	2.2	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0.6	lb/ton	0.1	lb/ton	0	lb/ton	0.6	lb/ton	0.6	lb/ton	0.9	lb/ton	
	Acres		12,054		2,400		0		7,880		1000		25,000		

				Alfalfa Seed		Barley		KBG Seed		Mint		Oats		Wheat	
	harvested														
	Fraction burned		0.25		0.1		0		0.03		0.1		0.1		
	Emissions SOx		0.72	tons	0.02	tons	0.00	tons	0.16	tons	0.05	tons	2.14	tons	3
Caribue	Region	5													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	0.1	lb/ton	0	lb/ton	0	lb/ton	0.6	lb/ton	0.9	lb/ton	
	Acres harvested		0		57,800		0		0		700		36,200		
	Fraction burned		0		0.17		0		0		0.017		0.17		
	Emissions SOx		0.00	tons	0.84	tons	0.00	tons	0.00	tons	0.01	tons	5.26	tons	6
Cassia	Region	4													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	0.1	lb/ton	0	lb/ton	0	lb/ton	0.6	lb/ton	0.9	lb/ton	
	Acres harvested		0		31,200		0		0		500		85,700		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions SOx		0.00	tons	0.27	tons	0.00	tons	0.00	tons	0.02	tons	7.33	tons	8
Clark	Region	6													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	0.1	lb/ton	0	lb/ton	0	lb/ton	0.6	lb/ton	0.9	lb/ton	
	Acres harvested		0		3,300		0		0		300		4,500		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions SOx		0.00	tons	0.03	tons	0.00	tons	0.00	tons	0.01	tons	0.38	tons	0
Clearwater	Region	2													
	Residue load		0	t/acre	1.7	t/acre	2.2	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	0.1	lb/ton	0.6	lb/ton	0	lb/ton	0.6	lb/ton	0.9	lb/ton	
	Acres harvested		0		1,800		575		0		300		9,900		
	Fraction burned		0		0.165		1		0		0.165		0.165		
	Emissions SOx		0.00	tons	0.03	tons	0.38	tons	0.00	tons	0.02	tons	1.40	tons	2
Custer	Region	6													

				Alfalfa Seed		Barley		KBG Seed		Mint		Oats		Wheat	
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	2.2	t/acre	1.6	t/acre	0	t/acre	
	Emission factor		0	lb/ton	0.1	lb/ton	0	lb/ton	0.6	lb/ton	0.6	lb/ton	0	lb/ton	
	Acres harvested		0		1,300		0		474		200		0		
	Fraction burned		0		0.1		0		0.03		0.1		0		
	Emissions SOx		0.00	tons	0.01	tons	0.00	tons	0.01	tons	0.01	tons	0.00	tons	0
Elmore	Region	3													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	0.1	lb/ton	0	lb/ton	0	lb/ton	0.6	lb/ton	0.9	lb/ton	
	Acres harvested		0		500		0		0		100		12,400		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions SOx		0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.00	tons	1.06	tons	1
Franklin	Region	5													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	0.1	lb/ton	0	lb/ton	0	lb/ton	0.6	lb/ton	0.9	lb/ton	
	Acres harvested		0		4,600		0		0		400		18,700		
	Fraction burned		0		0.17		0		0		0.17		0.17		
	Emissions SOx		0.00	tons	0.07	tons	0.00	tons	0.00	tons	0.03	tons	2.72	tons	3
Fremont	Region	6													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	0.1	lb/ton	0	lb/ton	0	lb/ton	0.6	lb/ton	0.9	lb/ton	
	Acres harvested		0		56,500		0		0		500		33,700		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions SOx		0.00	tons	0.48	tons	0.00	tons	0.00	tons	0.02	tons	2.88	tons	3
Gem	Region	3													
	Residue load		0.8	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0.6	lb/ton	0.1	lb/ton	0	lb/ton	0	lb/ton	0.6	lb/ton	0.9	lb/ton	
	Acres harvested		309		1,100		0		0		400		2,400		

				Alfalfa Seed		Barley		KBG Seed		Mint		Oats		Wheat	
	Fraction burned		0.25		0.1		0		0		0.1		0.1		
	Emissions SOx		0.02	tons	0.01	tons	0.00	tons	0.00	tons	0.02	tons	0.21	tons	0
Gooding	Region	4													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	0.1	lb/ton	0	lb/ton	0	lb/ton	0.6	lb/ton	0.9	lb/ton	
	Acres harvested		0		2,100		0		0		300		7,300		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions SOx		0.00	tons	0.02	tons	0.00	tons	0.00	tons	0.01	tons	0.62	tons	1
Idaho	Region	2													
	Residue load		0	t/acre	1.7	t/acre	2.2	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	0.1	lb/ton	0.6	lb/ton	0	lb/ton	0.6	lb/ton	0.9	lb/ton	
	Acres harvested		0		9,600		4822		0		1,400		79,700		
	Fraction burned		0		0.075		1		0		0.075		0.075		
	Emissions SOx		0.00	tons	0.06	tons	3.18	tons	0.00	tons	0.05	tons	5.11	tons	8
Jefferson	Region	6													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	0.1	lb/ton	0	lb/ton	0	lb/ton	0.6	lb/ton	0.9	lb/ton	
	Acres harvested		0		56,700		0		0		500		31,300		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions SOx		0.00	tons	0.48	tons	0.00	tons	0.00	tons	0.02	tons	2.68	tons	3
Jerome	Region	4													
	Residue load		0.8	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0.6	lb/ton	0.1	lb/ton	0	lb/ton	0	lb/ton	0.6	lb/ton	0.9	lb/ton	
	Acres harvested		669		17,200		0		0		100		12,700		
	Fraction burned		0.25		0.1		0		0		0.1		0.1		
	Emissions SOx		0.04	tons	0.15	tons	0.00	tons	0.00	tons	0.00	tons	1.09	tons	1
Kootenai	Region	1													
	Residue load		0	t/acre	1.7	t/acre	2.2	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	

					Alfalfa Seed		Barley		KBG Seed		Mint		Oats	Wheat	
	Emission factor		0	lb/ton	0.1	lb/ton	0.6	lb/ton	0	lb/ton	0.6	lb/ton	0.9	lb/ton	
	Acres harvested		0		1,000		10271		0		500		13,400		
	Fraction burned		0		0.075		1		0		0.075		0.075		
	Emissions SOx		0.00	tons	0.01	tons	6.78	tons	0.00	tons	0.02	tons	0.86	tons	8
Latah	Region	2													
	Residue load		0	t/acre	1.7	t/acre	2.2	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	0.1	lb/ton	0.6	lb/ton	0	lb/ton	0.6	lb/ton	0.9	lb/ton	
	Acres harvested		0		9,700		7417		0		700		95,000		
	Fraction burned		0		0.024		1		0		0.024		0.024		
	Emissions SOx		0.00	tons	0.02	tons	4.90	tons	0.00	tons	0.01	tons	1.95	tons	7
Lemhi	Region	6													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	0	t/acre	
	Emission factor		0	lb/ton	0.1	lb/ton	0	lb/ton	0	lb/ton	0.6	lb/ton	0	lb/ton	
	Acres harvested		0		800		0		0		100		0		
	Fraction burned		0		0.1		0		0		0.1		0		
	Emissions SOx		0.00	tons	0.01	tons	0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.0
Lewis	Region	2													
	Residue load		0	t/acre	1.7	t/acre	2.2	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	0.1	lb/ton	0.6	lb/ton	0	lb/ton	0.6	lb/ton	0.9	lb/ton	
	Acres harvested		0		13,800		9001		0		1,400		81,700		
	Fraction burned		0		0.145		1		0		0.145		0.145		
	Emissions SOx		0.00	tons	0.17	tons	5.94	tons	0.00	tons	0.10	tons	10.13	tons	16
Lincoln	Region	4													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	0.1	lb/ton	0	lb/ton	0	lb/ton	0.6	lb/ton	0.9	lb/ton	
	Acres harvested		0		2,500		0		0		600		7,000		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions SOx		0.00	tons	0.02	tons	0.00	tons	0.00	tons	0.03	tons	0.60	tons	1

					Alfalfa Seed		Barley		KBG Seed		Mint		Oats	Wheat	
Madison	Region	6													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	0.1	lb/ton	0	lb/ton	0	lb/ton	0.6	lb/ton	0.9	lb/ton	
	Acres harvested		0		43,700		0		0		200		34,100		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions SOx		0.00	tons	0.37	tons	0.00	tons	0.00	tons	0.01	tons	2.92	tons	3
Minidoka	Region	4													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	0.1	lb/ton	0	lb/ton	0	lb/ton	0.6	lb/ton	0.9	lb/ton	
	Acres harvested		0		45,700		0		0		400		35,200		
	Fraction burned		0		0.1		0		0		0.1		0.1		
	Emissions SOx		0.00	tons	0.39	tons	0.00	tons	0.00	tons	0.02	tons	3.01	tons	3
Nez Perce	Region	2													
	Residue load		0	t/acre	1.7	t/acre	2.2	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	0.1	lb/ton	0.6	lb/ton	0	lb/ton	0.6	lb/ton	0.9	lb/ton	
	Acres harvested		0		13,200		4516		0		300		95,300		
	Fraction burned		0		0.03		1		0		0.03		0.03		
	Emissions SOx		0.00	tons	0.03	tons	2.98	tons	0.00	tons	0.00	tons	2.44	tons	5
Oneida	Region	5													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	0.1	lb/ton	0	lb/ton	0	lb/ton	0.6	lb/ton	0.9	lb/ton	
	Acres harvested		0		3,500		0		0		500		33,000		
	Fraction burned		0		0.17		0		0		0.17		0.17		
	Emissions SOx		0.00	tons	0.05	tons	0.00	tons	0.00	tons	0.04	tons	4.80	tons	5
Owhyee	Region	3													
	Residue load		0.8	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0.6	lb/ton	0.1	lb/ton	0	lb/ton	0	lb/ton	0.6	lb/ton	0.9	lb/ton	
	Acres		1963		1,700		0		0		700		8,200		

				Alfalfa Seed		Barley		KBG Seed		Mint		Oats		Wheat	
	harvested														
	Fraction burned		0.25		0.1		0		0		0.1		0.1		
	Emissions SOx		0.12	tons	0.01	tons	0.00	tons	0.00	tons	0.03	tons	0.70	tons	1
Payette	Region	3													
	Residue load		0.8	t/acre	1.7	t/acre	0	t/acre	2.2	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0.6	lb/ton	0.1	lb/ton	0	lb/ton	0.6	lb/ton	0.6	lb/ton	0.9	lb/ton	
	Acres harvested		757		600		0		1466		100		6,700		
	Fraction burned		0.25		0.1		0		0.03		0.1		0.1		
	Emissions SOx		0.05	tons	0.01	tons	0.00	tons	0.03	tons	0.00	tons	0.57	tons	1
Power	Region	5													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	0	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	0.1	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0.9	lb/ton	
	Acres harvested		0		6,400		0		0		0		106,000		
	Fraction burned		0		0.17		0		0		0		0.17		
	Emissions SOx		0.00	tons	0.09	tons	0.00	tons	0.00	tons	0.00	tons	15.41	tons	15
Shoshone	Region	1													
	Residue load		0	t/acre	0	t/acre	0	t/acre	0	t/acre	0	t/acre	0	t/acre	
	Emission factor		0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	
	Acres harvested		0		0		0		0		0		0		
	Fraction burned		0		0		0		0		0		0		
	Emissions SOx		0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.00	tons	0
Teton	Region	6													
	Residue load		0	t/acre	1.7	t/acre	0	t/acre	0	t/acre	0	t/acre	1.9	t/acre	
	Emission factor		0	lb/ton	0.1	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0.9	lb/ton	
	Acres harvested		0		40,500		0		0		0		6,000		
	Fraction burned		0		0.1		0		0		0		0.1		
	Emissions SOx		0.00	tons	0.34	tons	0.00	tons	0.00	tons	0.00	tons	0.51	tons	1
Twin Falls	Region	4													

					Alfalfa Seed		Barley		KBG Seed		Mint		Oats	Wheat	
	Residue load		0.8	t/acre	1.7	t/acre	0	t/acre	0	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0.6	lb/ton	0.1	lb/ton	0	lb/ton	0	lb/ton	0.6	lb/ton	0.9	lb/ton	
	Acres harvested		62		21,200		0		0		400		43,200		
	Fraction burned		0.25		0.1		0		0		0.1		0.1		
	Emissions SOx		0.00	tons	0.18	tons	0.00	tons	0.00	tons	0.02	tons	3.69	tons	4
Valley	Region	3													
	Residue load		0	t/acre	0	t/acre	0	t/acre	0	t/acre	1.6	t/acre	0	t/acre	
	Emission factor		0	lb/ton	0	lb/ton	0	lb/ton	0	lb/ton	0.6	lb/ton	0	lb/ton	
	Acres harvested		0		0		0		0		800		0		
	Fraction burned		0		0		0		0		0.1		0		
	Emissions SOx		0.00	tons	0.00	tons	0.00	tons	0.00	tons	0.04	tons	0.00	tons	0
Washington	Region	3													
	Residue load		0.8	t/acre	1.7	t/acre	0	t/acre	2.2	t/acre	1.6	t/acre	1.9	t/acre	
	Emission factor		0.6	lb/ton	0.1	lb/ton	0	lb/ton	0.6	lb/ton	0.6	lb/ton	0.9	lb/ton	
	Acres harvested		77		2,700		0		83		200		1		
	Fraction burned		0.25		0.1		0		0.03		0.1		0.1		
	Emissions SOx		0.00	tons	0.02	tons	0.00	tons	0.00	tons	0.01	tons	0.00	tons	0
Total	Acres harvested		16,000		600,000		47,350		14,600		20,000		1,200,000		
	Emissions SOx		0.96		5.57		31.39		0.28		1.08		115.96		
notes:															
The acres harvested for barley, oats, and wheat where taken from NASS quick stats data pulls by crops and county.															
The acres for mint on the NASS Web site where at the state level only. The county level acres were derived from the proportion of the total acres reported in the															
NEI for each county.															

				Alfalfa Seed	Barley	KBG Seed	Mint	Oats	Wheat
The acres for alfalfa seed were derived from the proportion of the total acres reported in the NEI for each county and the NASS report of the total acres									
harvested.									

Table 33. Conservation Reserve Program Burning Emissions Estimate.

		2005 Reported Burning			2015 Projected Burning	
$PM_{2.5}$	Residue load	2.2	t/acre		2.2	t/acre
	Emission factor	15.2	lb/ton		15.2	lb/ton
	Acres harvested	4,633			800,000	
	Fraction burned	1			0.1	
	Emissions	77.46	tons		1337.60	tons
CO	Residue load	2.2	t/acre		2.2	t/acre
	Emission factor	114	lb/ton		114	lb/ton
	Acres harvested	4,633			800,000	
	Fraction burned	1			0.1	
	Emissions	580.98	tons		10,032.00	tons
NOx	Residue load	2.2	t/acre		2.2	t/acre
	Emission factor	4.5	lb/ton		4.5	lb/ton
	Acres harvested	4,633			800,000	
	Fraction burned	1			0.1	
	Emissions	22.93	tons		396.00	tons
VOCs	Residue load	2.2	t/acre		2.2	t/acre
	Emission factor	10.7	lb/ton		10.7	lb/ton
	Acres harvested	4,633			800,000	
	Fraction burned	1			0.1	
	Emissions	54.53	tons		941.60	tons
SOx	Residue load	2.2	t/acre		2.2	t/acre
	Emission factor	0.6	lb/ton		0.6	lb/ton
	Acres harvested	4,633			800000	
	Fraction burned	1			0.1	
	Emissions	3.06	tons		52.80	tons

Appendix H: Supplemental Dispersion Modeling

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Introduction

Idaho's SIP revision for crop residue burning demonstrates, in Section 2 *Air Quality*, that there are no violations of the National Ambient Air Quality Standards (NAAQS) for $PM_{2.5}$ because of crop residue burning activity. In addition, a supplemental analysis of $PM_{2.5}$ continuous monitoring data from DEQ TEOMS and nephelometers (Section 5, Table Table 16) indicates that $PM_{2.5}$ increases associated with Idaho and on-Reservation crop residue burning have never exceeded 75% of the 35 µg/m^3 $PM_{2.5}$ NAAQS. Peak 24-hour contributions due to Idaho crop residue burning activity alone are less than 5 µg/m^3.

Although it has been demonstrated that no NAAQS violations have been caused by any Idaho crop residue burning and that the monitored impacts are small, DEQ believes it is important to better characterize the extent of Idaho crop residue burning impacts throughout the northern crop residue burning region. Since it is difficult to isolate the effects of Idaho crop residue burning activity, the subject of this SIP revision, a supplemental modeling analysis was conducted, using a non-regulatory modeling approach to add to the weight of evidence that Idaho crop residue burning impacts are small and do not threaten nor significantly contribute to a violation of the NAAQS for $PM_{2.5}$ even at nearby nonattainment areas and unmonitored areas in the region.

One important caveat must be made. The use of the CALPUFF model for modeling of buoyant area and line sources, such as fires, is not approved by EPA for any regulatory modeling purposes and this supplemental, weight-of-evidence analysis should not be construed as a modeled attainment demonstration nor should this application set precedence for that purpose in future SIPs. Nevertheless, DEQ believes that, in spite of its lack of status as an EPA guideline model appropriate for this purpose, it does have value in characterizing the magnitudes and relative spatial extent of air quality impacts due to Idaho managed crop residue burning activity in unmonitored areas and in nonattainment areas in the region.

Objectives of Modeling

Specific objectives of the crop residue burning modeling effort included the following:

- Add to the weight of evidence that the Idaho crop residue burning program is not in violation of the NAAQS for $PM_{2.5}$.
- Elucidate the relative spatial extent of Idaho-managed crop residue burning impacts and develop tools to assist in locating additional air quality monitors to optimize the program in the future.
- Improve DEQ understanding of conditions leading to crop residue burning impacts and providing technical input for the development Idaho's new *Smoke Management Program* (SMP) Operating Guide.
- Determine contribution of Idaho crop residue burning activity to air quality levels within the nonattainment areas (or recommended areas) of Sandpoint and Pinehurst, Idaho and Libby, Thompson Falls, and Missoula, Montana.
- Determine whether particulate matter (and its precursors) may reach Class I areas. This may affect Idaho's approach toward its regional haze reasonable progress goals.

Overview of Modeling Approach

Challenges

Because the atmosphere is ruled by turbulence (chaos) and wind directions are very uncertain at any specific time, even the best atmospheric dispersion models applied to stationary sources with constant emissions and uniform buoyancy characteristics do very poorly when attempting to predict pollutant concentrations *at a specific location, at a specific time*. To make matters worse, the crop residue burning fields modeled in this effort have highly variable emission rates and plume buoyancy, imprecise locations and very short burn durations at mostly unknown burn times between program limits of 10 AM and 4 PM. Finally, the entire program is operated to miss the populated areas where most of the monitors are located. Thus, it is not currently possible to simulate specific smoke plume events at specific monitor locations with a high degree of accuracy or reliability.

Fortunately, that type of precise, historical re-creation of impacts is not necessary and is not the purpose of this exercise. Rather, the goals of this effort, sufficient to meet the objectives identified above, are to replicate with *adequate* accuracy:

- The approximate magnitude of short-term (24-hour) $PM_{2.5}$ impacts that may occur anywhere in an airshed, and
- The approximate spatial extent of long-term seasonal mean $PM_{2.5}$ concentrations.

Summary of Modeling Methods

The CALPUFF model, widely used for simulating smoke transport and dispersion from crop residue burning (ClearSky) and from wildfires (BlueSky/RAINS) was used to simulate all 1250 crop residue burning burns in the ISDA and Nez Perce Tribe burn databases for the northern counties from Idaho County north to Canada. (On-Reservation burns were included for model verification purposes only.) Meteorological inputs from University of Washington’s 12 km MM5 outputs, archived by a contractor, were used to provide initial wind fields for the CALMET wind field processor. CALMET simulations were conducted at a 1-kilometer grid resolution incorporating wind field observation “nudging” with airport meteorological data from seven airports in the region.

The resulting wind fields were evaluated using independent meteorological data sets from DEQ automated meteorological stations at Grangeville, Moscow, Rathdrum and Sandpoint. The meteorological evaluation indicated that stations at Moscow and Rathdrum, located in open terrain near “nudging” observation stations performed very well, while stations located further away and near localized terrain did not perform as well. However, when daytime winds were isolated from night time drainage flows, the wind parameters at all stations performed well, with the exception of Grangeville.

Using the meteorological inputs from CALMET, CALPUFF model was then exercised to simulate the entire 2005 crop residue burning burn database including all Reservation burns. This simulation, referred to as “base case with Reservations” was necessary to compare model results to monitoring data since the monitoring data includes all crop residue burning sources and all other sources. Since the burn database contained very few burn ignition times, and located fields only to within the Township-Range-Section, location is only accurate to within half a mile and start times were randomly assigned according to a temporal frequency distribution based on 189 of the 1250 sources.

Burning crop residue burning fields and their emissions were simulated using the emission factors and source release parameters utilized in the ClearSky CALPUFF application which has been evaluated and used by crop residue burning burn managers since 2003 (WSU 2004, 2005).

To support evaluation of the CALPUFF model performance, the database of all continuous monitoring stations in the regions was used, including both TEOMS and nephelometers operated by DEQ and the Kootenai and Nez Perce Tribes. This database was reviewed to identify all daytime hourly “peaks” above about 15 $\mu g/m^3$ that occurred on burn days. Background levels before and after each peak were subtracted and the hourly concentrations were reported as 24-hour average contributions without background. This approach removes all background sources of all kinds so that the $PM_{2.5}$ impacts are directly relatable to the CALPUFF results and extensive non-crop residue burning emissions inventories are not necessary.

The model performance indicated that the highest short-term plume impacts are replicated reasonably well except for impacts in the near-field region where good performance was not expected, and a late afternoon plume impact case in which the smoke was trapped in a valley by the nighttime inversion. The long-term seasonal mean values in each airshed were also in reasonable agreement, but only for the major impact areas where numerous sources had influence. Sparse airsheds with few burns and airsheds whose monitors are near the upwind side of the airshed exhibit lower impact levels and resulted in poor model performance. Due to the importance in understanding the areas of greatest impact, DEQ believes this represents adequate performance.

Supplementary Model Setup

A discussion of the modeling software used during the development of this SIP revision supplemental analysis is provided in the following, including a brief narrative regarding model selection, the period of historical data to be used in the modeling, the choice of modeling domains and the resolutions for those domains, and a discussion of the parameter settings chosen for modeling analysis.

Model Selection

The modeling software used during development of this SIP revision supplemental analysis was CALPUFF[1], a Lagrangian puff dispersion model recommended by EPA for long-range transport and for dispersion modeling in complex or mountainous terrain. Although the CALPUFF model has neither been validated nor approved by EPA for regulatory analyses of fire sources such as burning fields, there are precedents for its use with this type of source:

- In the past several years, two other software models, BlueSky/RAINS (developed by the U.S. Forest Service) and ClearSky (developed by Washington State University) used the CALPUFF modeling system to forecast wildfire and crop residue burning impacts.
- ClearSky, in particular, deals with the same fire sources (crop residue burning) with which this SIP revision deals. ClearSky has undergone periodic evaluation, including adjustment of buoyancy parameters to reflect the results of an crop residue burning plume rise study (WSU 2004).

Based on these applications of the CALPUFF model for prognostic or forecasting purposes, we believe it provides the best available method and should produce acceptable results in a retrospective or diagnostic mode for analyzing smoke dispersion from crop residue burning, and that it is adequate for a weight-of-evidence contribution to monitoring-based determination that the NAAQS are not violated as a result of crop residue burning. Therefore, the CALPUFF modeling system was selected for this study.

It should be mentioned that there is an inherent region of uncertainty implicit to CALPUFF results ranging from the source edge to 5 or 7 kilometers from a buoyant source—a distance designated as *near-field*. For this reason, near-field impacts must be characterized separately and no effort will be made to evaluate near-field impacts with CALPUFF. In spite of this uncertainty, however, DEQ believes that CALPUFF remains the preferred tool for modeling smoke from crop residue burning. In addition to the inherent near-field uncertainty, related to the mathematical treatment of buoyant plumes, historical burn locations are not known with any more accuracy than to within the Township/Range/Section. To simplify programming, all fields in the same section were therefore conservatively located at the center of the

[1] CALPUFF, along with the associated CALMET and CALPOST programs, is maintained and distributed by the Atmospheric Studies Group of TRC Companies, Inc.

section. Because of the inherent inaccuracy in the results for the near-field region and the uncertainty in burn location, modeling results will generally not be used in the near-field region.

Selection of Historical Period to Analyze

The historical period selected for modeling was the 2005 fall burn season, from July 15 through October 15, which covers the period when most of the fields were burned. There were a few burns in early July and late October and there is a smaller spring crop residue burning burn season, however this period was selected as a base case burn season because it resulted in the most burned acres in the last three years of the program and was also the only season with all of the key ingredients for this type of analysis:

- A robust burn database (earlier years were incomplete, and 2006 had fewer burns)
- Available $PM_{2.5}$ and meteorological monitoring
- Available meteorological model outputs from the meso-scale meteorological model (MM5)

Specification of Modeling Domain

To best simulate wind flows in complex terrain, a 1-km grid resolution was used. To reduce the model run time, two domains (Figure 16) were established to cover the north Idaho region and parts of Washington, Montana, and Canada:

- A southern domain, referred to as the Lewiston (LEW)domain, extending from northern Kootenai County south to Whitebird, Idaho
- A northern domain, referred to as the Coeur d'Alene (CDA) domain, extending from Benewah County north to just past Creston, British Columbia

Defining these two domains allowed us to run, simultaneously, the southern and northern airsheds on separate computer nodes, cutting the processing time in half.

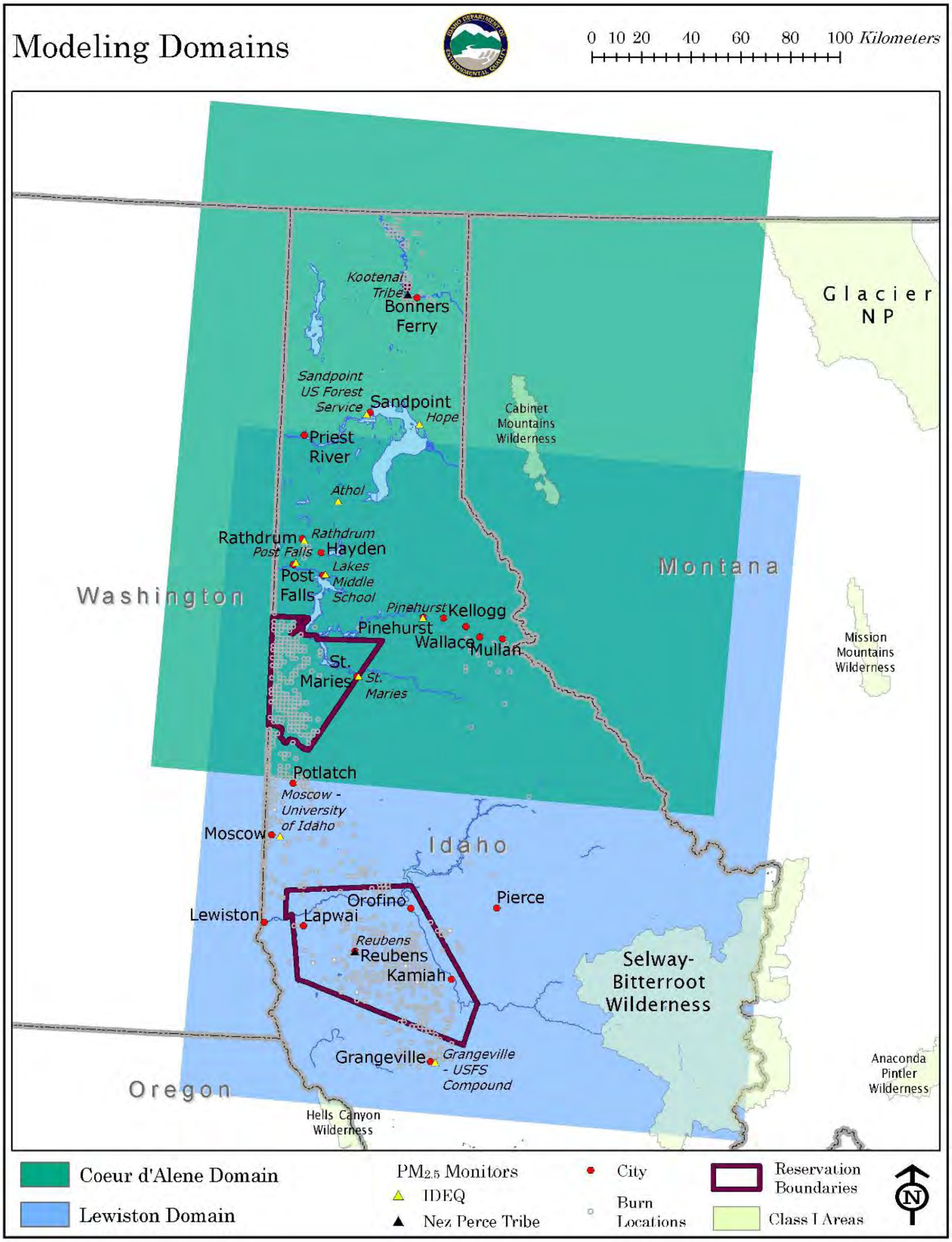

Figure 16 Coverage of the CDA and LEW modeling domains used for the SIP revision analyses.

A Lambert Conformal Conic (LCC) coordinate system was used, with parameters selected to match the coordinate system used by the University of Washington MM5 meteorology input files we used. Table 34 and Table 35 show the details of the LCC projection and the domain definitions, respectively.

Table 34 Lambert Conformal Conic projection of modeling domains.

Parallel Latitude 1 (degree)	**30**
Parallel Latitude 2 (degree)	60
Longitude of Projection center (degree)	49N
Latitude of Projection center (degree)	121W
False Easting (km)	0
False Northing (km)	0

Table 35 Domain definition.

Domain Name	**CDA_1km**	**LEW_1km**
X Direction of Domain Origin (km)	246	268
Y Direction of Domain Origin (km)	-214	-339
Grid Spacing (km)	1	1
Number of Column	220	220
Number of Row	260	260

Terrain data were used in the CALMET system to guide the channeling of winds in canyons and valleys and in the CALPUFF system to simulate plume-terrain interactions. These data were prepared from a finished 3-arc-second *Shuttle Radar Topography Mission* dataset (SRTM3, ~90m), using the tools included in the CALPUFF modeling system. The USGS 1-degree *Digital Elevation Model* (DEM) dataset (~90m) was used if SRTM3 data were missing.

Land-use data, required to define surface roughness and solar reflection, were prepared from the United State Geological Survey (USGS) National Land Cover Dataset 1992 (NLCD 92), using the tools included in the CALPUFF modeling system. This dataset is based on LANDSAT 5 data from the early-mid 1990s, with a horizontal resolution of 30 meters (m). These data are more recent and of higher resolution than the USGS Land Use and Land Cover (LULC) dataset. (Because Canada is not covered by NLCD 92, USGS Global (Lambert Azimuthal) data for North America were used for the Canadian portion of the model.)

For the vertical domain, a 10-layer vertical structure, extending up to 4,000 meters (as shown in Table 36) was used.

Table 36 Vertical Domain Structure

Layer	**Top of Layer (meters)**	**Middle point of Layer (meters)**
1	20	10
2	40	30
3	65	52.5
4	120	92.5
5	200	160
6	400	300
7	700	550
8	1,200	950
9	2,200	1,700
10	4,000	3,100

Modeling System Components

The CALPUFF modeling system has three major components:

- CALMET, the meteorological preprocessor
- CALPUFF, the dispersion-modeling component
- CALPOST, the post processor of CALPUFF model outputs

The specific CALPUFF programs used in this study, and their respective version numbers, are presented in Table 37.

Table 37 CALPUFF Modeling System

CALPUFF Modeling System		
Program	Version	Level
CALMET	6.211	060414
CALPUFF	6.112	060412
CALPOST	6.131	060410

GIS Methods: Post-Processing of Model Results

Model results output from CALPUFF were processed in an ESRI ArcGIS Geographic Information System. The files were received in a .DAT format and processed using ModelBuilder tools to create 1 km gridded data for each model domain, projected in Lambert Conformal Conic with the North American Datum 1983. The resulting north and south domain grids were mosaicked together to create one grid. Each mosaic (for season mean, season peak, or 24-hour average concentration) was then symbolized to best show the smoke plumes. Model Results are shown graphically and discussed in Section 5.

In the following sections, the CALMET and CALPUFF components, and the parameters associated with their use in this analysis, are discussed in greater detail.

CALMET Meteorological Modeling

CALMET was used to combine the MM5 meteorological model outputs, surface observations, terrain elevation, and land use data into the format required by CALPUFF. In addition to specifying the three-dimensional wind field, CALMET also estimated the boundary layer parameters used to characterize diffusion and deposition by the dispersion model. For this modeling, CALMET default options were used, except as noted in Table 38.

Table 38 Non-default CALMET options used for modeling.

CALMET Variable	Selected Value
NOOBS	1
NPSTA	-1
BIAS	-1, -1, -1, -1, -1, 0, 0, 0, 1, 1
IPROG	14
RMAX1	36
RAMX2	36
TERRAD	8
R1	12
R2	15
NSMTH	1, 2, 2, 3, 3, 4, 4, 4, 4, 4
ITWPROG	2
IRHPROG	1
ITPROG	2
SIGMAP	12

Additional details on CALMET parameter settings include the following:

- The 12-kilometer (km) MM5 winds were used to initialize the three-dimensional wind field predictions by setting IPROG=14.
- The CALMET diagnostic wind module was used with local terrain, local land use data, and local observed wind speed and wind direction to adjust the MM5 12-km wind fields to 1-km mesh size grids. The pressure-based vertical level MM5 fields were reduced and layer-averaged, resulting in ten vertical levels, ranging from the surface up to 4,000 meters.
- Surface observations from within the study domains were used to provide the local observed wind speed and wind direction, hourly cloud cover, and ceiling height data. Local observed wind speed and wind direction were used in the preparation of wind fields to “nudge” them toward what was actually measured. Several key options, such as BIAS, R1, R2, RMAX1, and RMAX2, were adjusted to get the best agreement between the CALMET model and the observed wind fields.
- The source of surface meteorological data for nudging was the UCAR ds472.0 dataset. Stations selected from the archive are shown in Figure 17 and listed in Table 35. Only those stations with greater than 90% data recovery rates for ceiling height were used.
- The Idaho DEQ meteorology station network (4 stations in the domain-covered region), was used for independent performance evaluation of the CALMET model outputs. The DEQ meteorology stations are shown in Figure 17 and listed in Table 40.

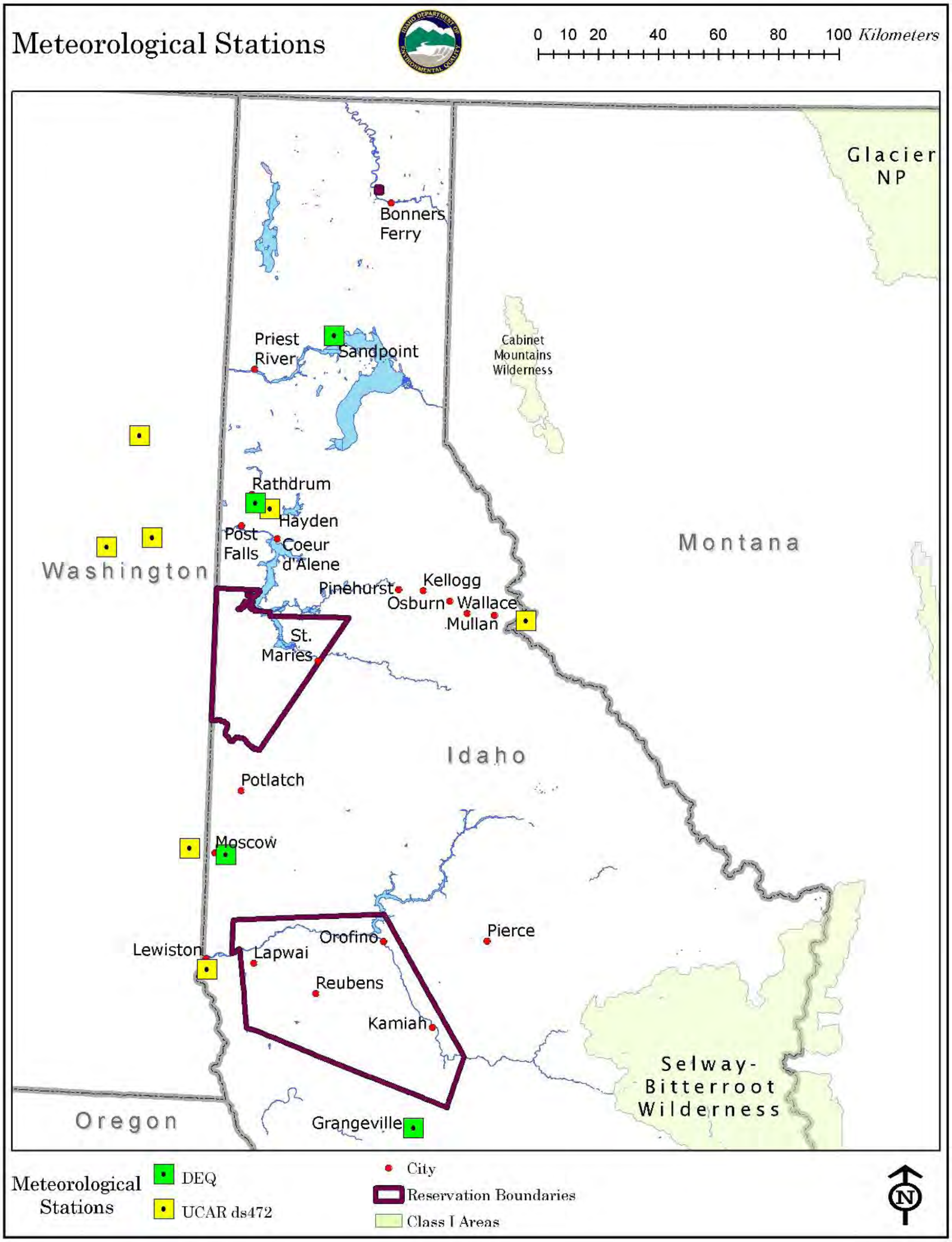

Figure 17 Meteorological Stations

Table 39 UCAR ds472.0 meteorology stations used.

Site	ID	Latitude ◦N	Longitude ◦W	Elevation (m)	Description
KCOE	24136	47.767	116.817	2158	COEUR DALENE AWOS
KDEW	97	47.97	117.41	2205	DEER_PARK
KGEG	727850	47.633	117.533	2365	SPOKANE ASOS
KLWS	727830	46.383	117.017	1437	LEWISTON ASOS
KMLP	135	47.454	115.67	6000	MULLAN PASS_VOR
KPUW	94129	46.744	117.114	2551	PULLMAN-MOSCOW RGNL
KSFF	94176	47.667	117.333	1952	SPOKANE/FELTS

Table 40 Idaho DEQ meteorology stations used.

Site Name	Site ID	Latitude	Longitude	Description
Grangeville	2	45.9286	-116.1062	Grangeville - USFS Compound
Sandpoint	3	48.2918	-116.55656	Sandpoint U of I Research Station
Moscow	5	46.7282	-116.95458	Moscow - University of Idaho
Rathdrum Prairie	13	47.7827	-116.8819	Rathdrum Prairie - Near Highway 41

- Because, with MM5-based wind fields, it is not necessary to smooth the winds to the extent indicated by the CALMET defaults, the number of passes in the smoothing procedure was reduced.
- The relative humidity data was extracted from the MM5 simulations by setting IRHPROG=1.
- MM5 lapse rates and air-sea temperature differences over water were used by setting ITWPROG=2
- MM5 surface and up air temperature was used by setting ITPROG=2
- MM5 precipitation data was used by setting NPSTA=-1. SIGMAP was set to 12, which is the MM5 mesh size, because a larger default radius of interpolation results in “bull-eyes” of precipitation due to the CALMET weighting scheme applied to MM5 precipitation predictions.

CALPUFF Parameter Settings

CALPUFF, a Lagrangian puff dispersion model, is the heart of the CALPUFF modeling system. In this study, CALPUFF default options were used, except where noted in Table 41.

Table 41 Non Default CALPUFF Options

CALPUFF Variable	Selected Value
NSECDT	1800
MSLUG	1
MCHEM	0

Additional notes on CALPUFF parameter settings include the following:

- To increase the model output accuracy in the near-field, the half-hour modeling time step, instead of the one-hour time step, was used. In addition, the near-field puff was modeled as elongated slugs by setting MSLUG=1.
- Because just one species of $PM_{2.5}$ was modeled, the chemical mechanism was not modeled, by setting MCHEM=1.
- 1-kilometer grid receptors were generated by CALPUFF.

Emission Inputs

The ISDA database is believed to be complete for northern Idaho; however, a relatively low compliance rate was achieved in other parts of the state. Kootenai Reservation and Coeur d'Alene Reservation burn information was expected to be very complete in the database. Nez Perce Reservation burn information was provided by the Nez Perce Tribe and added to the ISDA database.

A computer program was developed to (a) read the crop type, date, field size, and location information for about 1,250 fields burned during the fall of 2005, and (b), from this information, generate CALPUFF external source files with CALPUFF-ready field-burn source configurations for the actual days and locations of each burn. The source configurations utilized the same emission factors and buoyant line and area source configurations used in the ClearSky model, which has received several limited evaluations, and which burn managers frequently use in their decision-making process. The emission factors and references used in the emissions generator are summarized in Table 42.

Table 42 $PM_{2.5}$ emission factors used for modeling.

Wheat Stubble Emission Factor, $PM_{2.5}$ (lb/tn fuel):	7.2	(WSU, 2003)
Kentucky Bluegrass Emission Factor, $PM_{2.5}$ (lb/tn fuel):	66	(WSU 2003)
Forest and Forage Fields, $PM_{2.5}$ (lb/tn fuel)	16.95	(WRAP 2002)
Other Miscellaneous Crops, $PM_{2.5}$ (lb/tn fuel)	16.95	(WRAP 2002)

CALPUFF source configuration parameters from ClearSky (WSU 2004) used in this application are summarized as follows:

- **Residue Loading**. 2.8 tons/acre was used.
- **Burn Front Velocity**. 636 meter/hour (assuming 100 acre/hour field burn rate for square field).
- **Fraction in Flaming Portion of Fire**. 80% (treated as buoyant line source).
- **Fraction in Smoldering Portion of Fire**. 20% (treated as buoyant area source).
- **Buoyant Area Source Parameters in CALPUFF**. See Table 43.

Table 43 Buoyant area source parameters in CALPUFF.

Effective Ht. of Emissions (m):	0.5
Temperature (K):	324
Effective Rise Velocity (m/s):	1.4
Initial Vertical Spread (m):	100

- **Buoyant Line Source Parameters in CALPUFF**. See Table 44.

Table 44 Buoyant line source parameters in CALPUFF.

Effective Height of Line (m):	0.5
Average Line Width (m):	5
Effective Rise Velocity (m/s):	2.2
Temperature (K):	361

Burn locations are not specified in the database with any more accuracy than to within the Township/Range/Section, and the shape of the field is unknown. So, to simplify programming, all fields in the same section were conservatively located at the center of the section, which was assumed square.

Because the time when the field starts to burn was unknown for most burns, the start-burn time was randomized based on the distribution of historical burn start times (Figure 18), unless we knew for sure when the fields were burned. The distribution of historical burn start times was based on 189 burn records for which the start times were known.

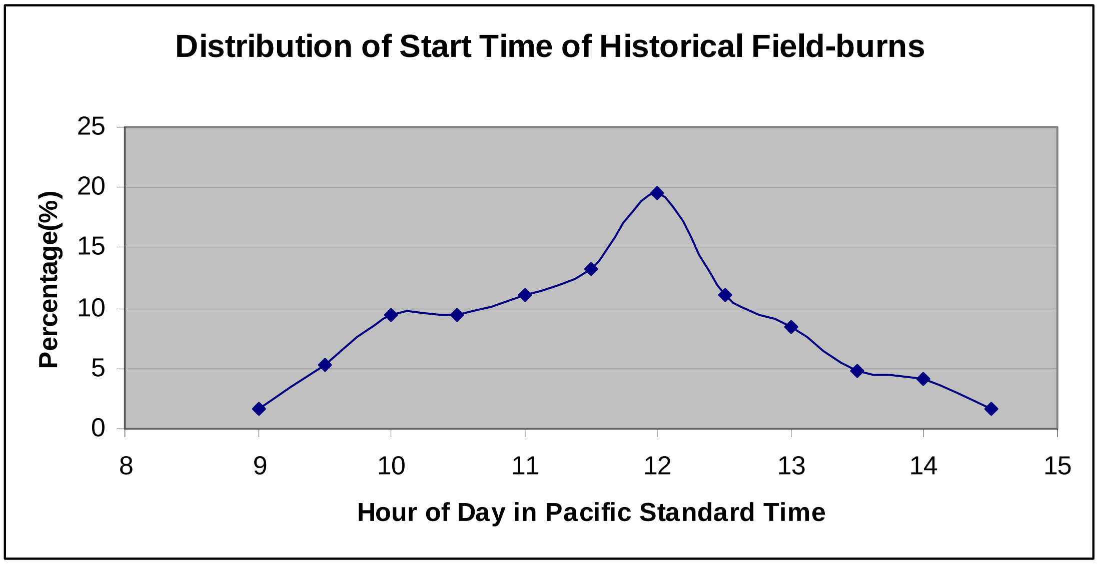

Figure 18. Distribution of Start Time of Historical Field-burns. (The burn season occurs while on Pacific Daylight Time [PDT], but the model has to run in Pacific Standard Time [PST]; 9 AM to 2:30 PM PST represents 10 AM to 3:30 PM PDT.)

Meteorological Modeling Evaluation

In July 2006, Geomatrix produced 2003-2005 CALMET datasets, along with CALMET-ready MM5 outputs, covering the Pacific-Northwest region for *Best Available Retrofit Technology* (BART) analyses under a Washington, Oregon, and Idaho joint contract. They used three calendar years of hourly MM5 output data, from January 2003 through December 2005, which had been computed on a 12-km mesh size with 38 vertical sigma levels produced by University Washington. This dataset was evaluated by Geomatrix and the quality was judged to be reasonably good (Geomatrix, 2006a). The 2005 CALMET-ready 12-km MM5 outputs produced by Geomatrix were used as meteorological model inputs for this study.

CALMET was run in 1-km resolution to generate meteorological data for CALPUFF use. In general, the CALMET performance was similar to that provided by the original MM5 data, but it provided more refined wind fields for complex terrain when run with a finer grid size.

An initial CALMET simulation was conducted without observations “nudging”, however poor performance was immediately recognized and an all subsequent work was done with observations nudging.

Although the analysis focused on northern Idaho, for which we have better burning data, crop residue burning is also practiced in southern Idaho, where the plain is relatively open and the ventilation conditions are generally better than in the more complex terrain of northern Idaho. However, because it is believed that the impacts due to crop residue burning in south Idaho are less than those in the north, and because there was limited time, information and resources available to perform the analysis, northern Idaho was the focus of this project.

Observation Data Set

Data from four DEQ observation stations were used for model evaluation. These stations are located at Rathdrum, Moscow, Grangeville, and Sandpoint. The evaluated data were recorded from July 15, 2005 through September 30, 2005, which was the recorded season with the most concentrated burnings.

The parameters extracted from the data sets were wind speed in meters per second (m/s), wind direction in degrees (degree) and temperature in degrees Kelvin (K). Wind speed and wind direction are most critical for ventilation and dispersion, and temperature is critical for both plume rise and the mixing height estimate.

UW MM5 Data

The UW 12 km MM5 output was used to run CALMET. The MM5 data were evaluated by Geomatrix. DEQ did not re-evaluate the data set.

CALMET

CALMET was run, at 1-km resolution, with the option of nudging, using surface observations from several meteorological stations in the area, to improve the wind field.

Data from the CALMET grid cell where each observation station was located were extracted by using the PRTMET post-processor for performance evaluation. It has been found that the wind field is improved by using the nudging option for relatively open areas, such as Rathdrum and Moscow, but this option had little effect on areas with complex terrain, such as Grangeville and Sandpoint.

Calm Winds

The DEQ stations included in the analysis all reported wind speed as low as 0.1 m/s. In the Geomatrix report, data for wind speeds less than 3 knots (1.54 m/s) were considered calm and were not used in statistical analyses due to the uncertainty in the wind direction as well as wind speed itself at these speeds. We did not remove these data in the general statistics evaluation; apparently, these data points do not significantly affect the statistical results, but winds lower than 1 m/s were treated as calm in the wind rose plots.

Tables and Plots

All plots were made from modeled output and observations over the period from July 15, 2005 through September 30, 2005. All data use Pacific Standard Time (PST) as the time reference. The tables presented in the following show the standard statistics for the parameters of concern.

Various plots are presented, including the following:

- Histograms of wind speed, wind direction, and temperature.
- Wind rose plots, which show the frequency of wind speed by wind direction. Two sets of wind rose plots are included: one for the full data set and a subset for the period from local time 9:00 AM to 6:00 PM, in which the actual crop residue burnings were made (most burnings occurred between 11:00 AM and 3:00 PM). The model performance is generally better during daytime, when winds are stronger.
- Quantile-quantile ("Q-Q") plots of wind speed, temperature. These plots are produced by first re-ordering the data, from the lowest to the highest value, then pairing them by rank and plotting the pairs. They are useful when comparing the distributions without regard to timing (not paired in time). They can show if there is a general tendency to over-predict or under-predict at certain ranges.

- Plots of time-paired wind speed and wind direction for some selected days for detailed analysis (in the discussion section). These days are selected mainly because of higher observed $PM_{2.5}$ impact.
- Plots for mean diurnal trend. These plots show average hourly values for all model predictions and observations and are useful for analyzing diurnal patterns and to identify modeling problems for specific periods. Plots for diurnal cycles of mean values of wind speed, wind direction, and temperature were developed. Data were not trimmed in our analysis, so the results were not as robust as shown in the evaluation by Geomatrix, in which the outlying 10% of the highest and lowest values were trimmed.

Analysis by Observation Site

Analysis findings by observation site—Rathdrum, Moscow, Grangeville, and Sandpoint—include the following.

Rathdrum

The site is near the population center of northern Idaho and only about 4 km from the Coeur d'Alene airport, observed data from which was used for nudging. The location is relatively open and flat. The Q-Q plot (Figure 19) shows that the modeled wind speeds were within a reasonable range, as shown also in Table 45 and Table 46. The wind roses shown in Figure 20 through Figure 13 were plotted for different times during the day and different speed ranges for calm wind. Better agreement in the wind roses of Figure 24 and Figure 25 (low winds < $_{2.5}$m/s were considered as calm without direction) indicated that the greatest uncertainties in wind prediction occur with low winds, especially during night, when the wind structure is complicated.

Temperature predictions were also in an acceptable range, with an AME of 3.0 °C, which is 1 °C greater than the benchmark made by the Western Regional Air Partnership (WRAP). Overall, due to the relatively open and flat conditions, the model had better performance for this location. The model prediction for the wind speed is good for the daytime, but poor for early morning and night.

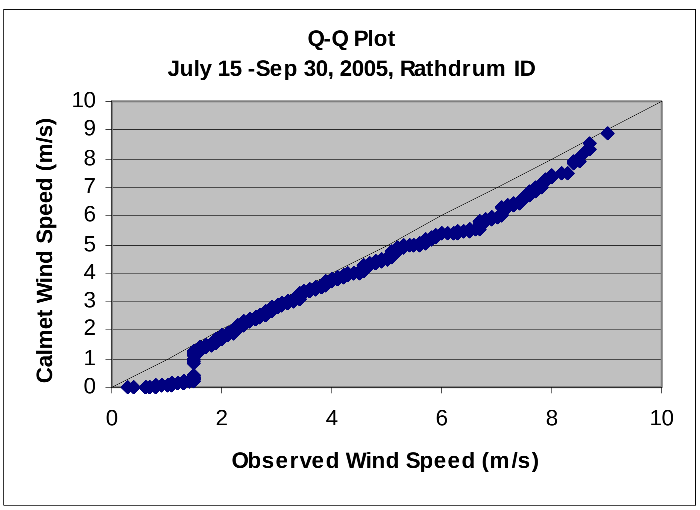

Figure 19. Q-Q plot of wind speed. CALMET generally predicted the wind speed well, with slight under-predicting in the high end.

Table 45. Statistics of CALMET output and observations.

CALMET WS			**Obs_WS (m/s)**	
Mean	2.8		Mean	3.2
Standard Error	0.0		Standard Error	0.0
Median	2.5		Median	2.8
Mode	1.9		Mode	2.2
Standard Deviation	1.7		Standard Deviation	1.7
Sample Variance	2.8		Sample Variance	2.8
Kurtosis	3.4		Kurtosis	2.1
Skewness	0.9		Skewness	1.2
Range	17.0		Range	13.6
Minimum	0.0		Minimum	0.3
Maximum	17.0		Maximum	13.9
Sum	5166.5		Sum	5924.2
Count	1872		Count	1872
Cal_T(°C)			Obs_T(°C)	
Mean	18.2		Mean	17.7
Standard Error	0.1		Standard Error	0.2
Median	17.6		Median	16.8
Mode	16.0		Mode	12.9
Standard Deviation	6.1		Standard Deviation	7.2
Sample Variance	37.8		Sample Variance	51.8
Kurtosis	-0.7		Kurtosis	-0.6
Skewness	0.2		Skewness	0.3
Range	28.0		Range	34.1
Minimum	4.3		Minimum	0.7
Maximum	32.2		Maximum	34.8
Sum	34032.8		Sum	33030.6
Count	1872		Count	1865.0

Table 46. CALMET performance. (AME = Absolute Mean Error)

Wind Speed mean error (m/s)	-0.4
Wind Speed AMR (m/s)	1.2
AME Wind Direction (°)	35.5
Temperature mean error (°C)	0.5
Temperature AMR (°C)	3.0

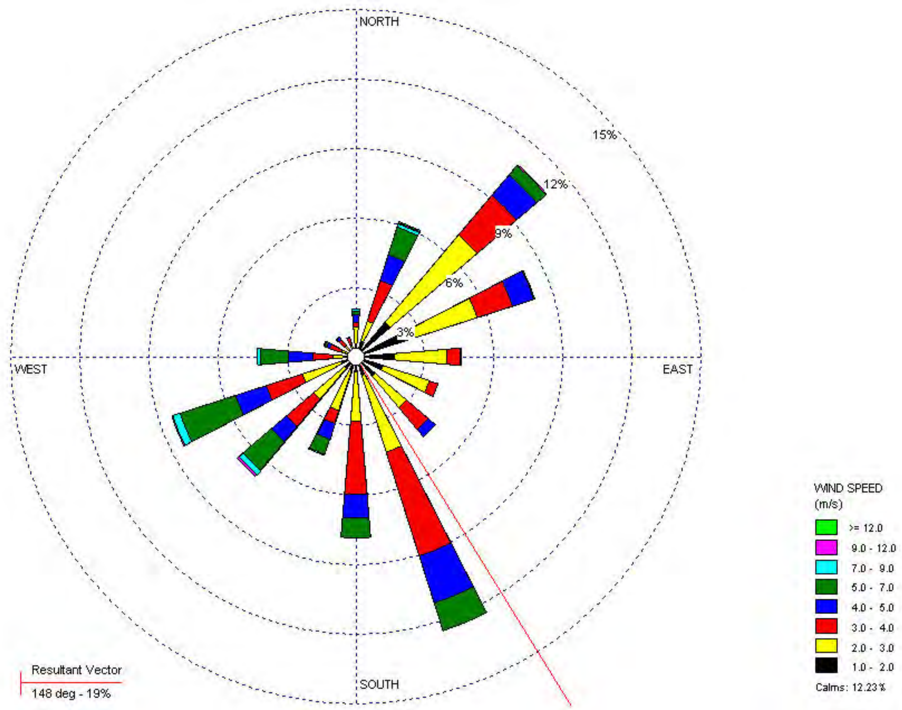

Figure 20. CALMET wind rose for Rathdrum, ID, July 15 –September 30, 2005.

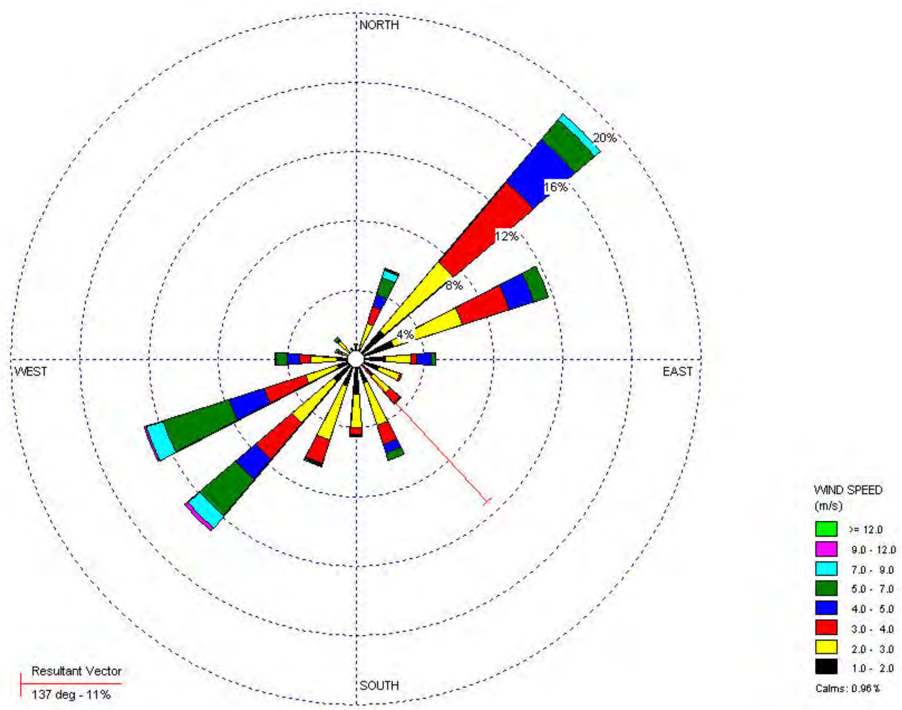

Figure 21. Wind rose for observations at Rathdrum. July 15 - September 30, 2005.

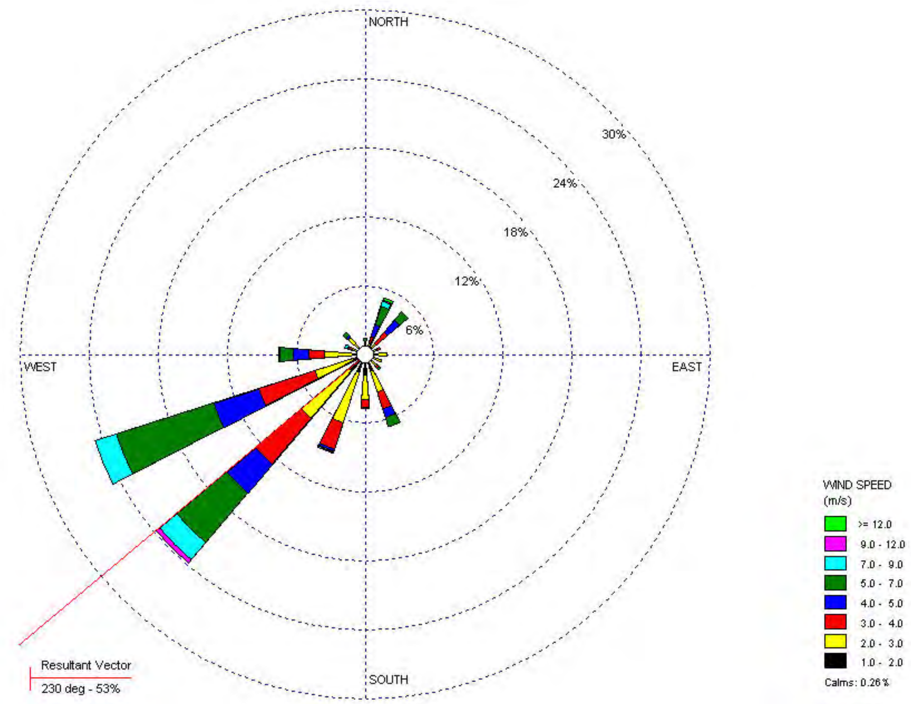

Figure 22. Observation wind rose for the daytime from 9:00 to 18:00 at Rathdrum.

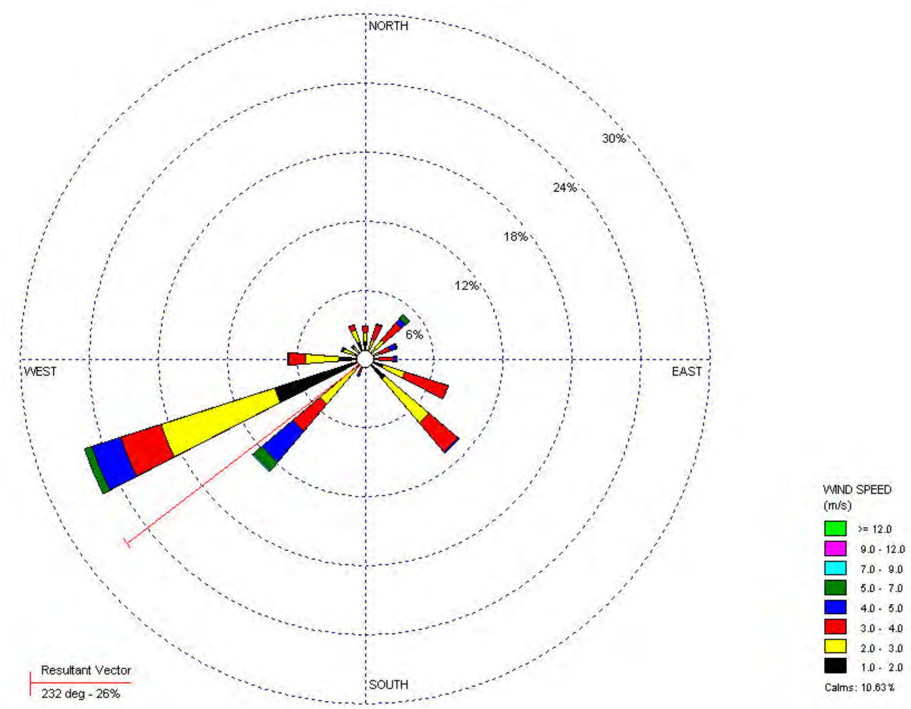

Figure 23. CALMET wind rose for the daytime from 9:00 to 18:00 at Rathdrum.

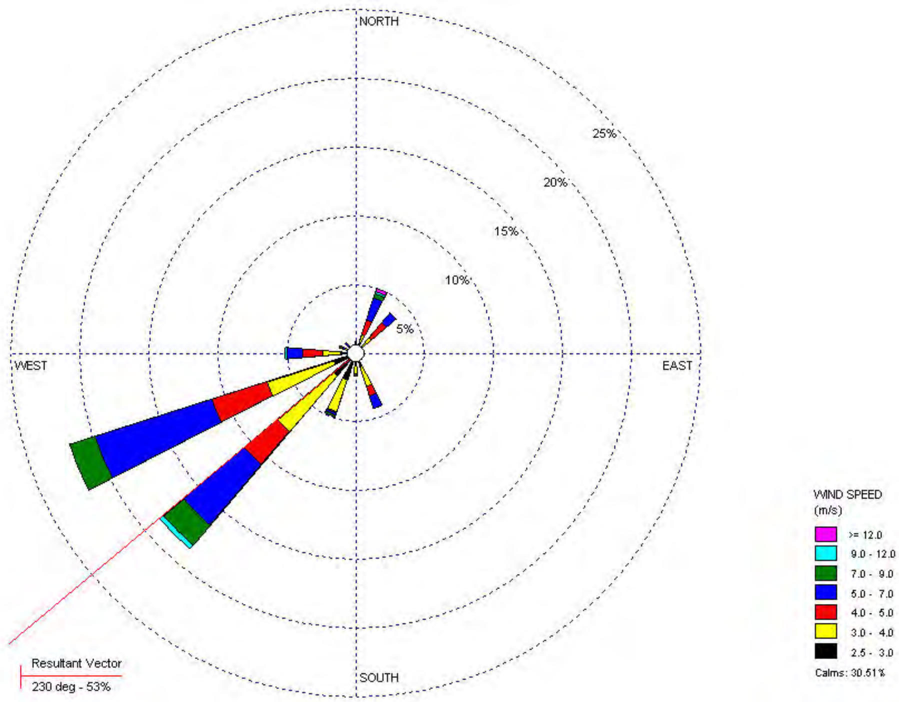

Figure 24. Observation wind rose without low wind (winds <2.5 m/s were considered as calm). For daytime (9:00 to 18:00) July 15 to September 30, 2005, Rathdrum, ID.

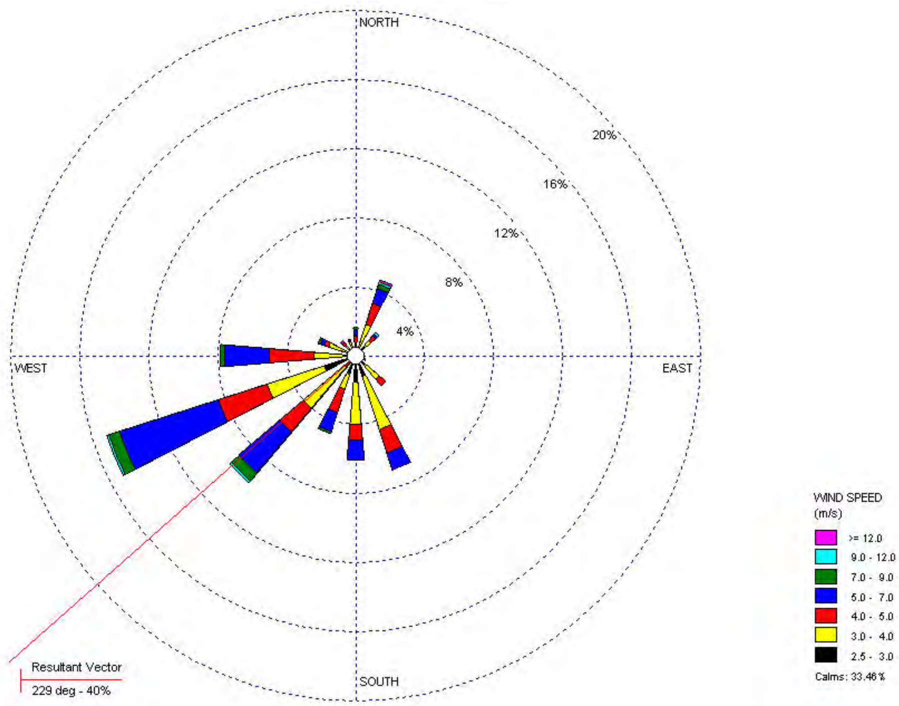

Figure 25. CALMET wind rose without low wind ((winds <2.5 m/s were considered as calm). For daytime (9:00 to 18:00) July 15 to September 30, 2005, Rathdrum, ID.

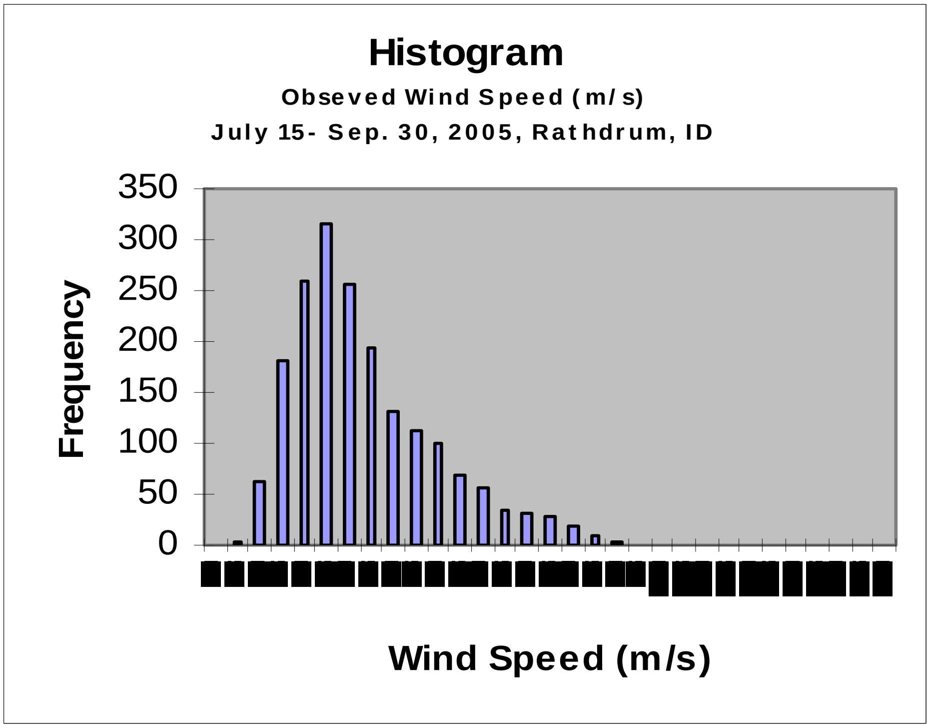

Figure 26. Histogram for observed wind speed.

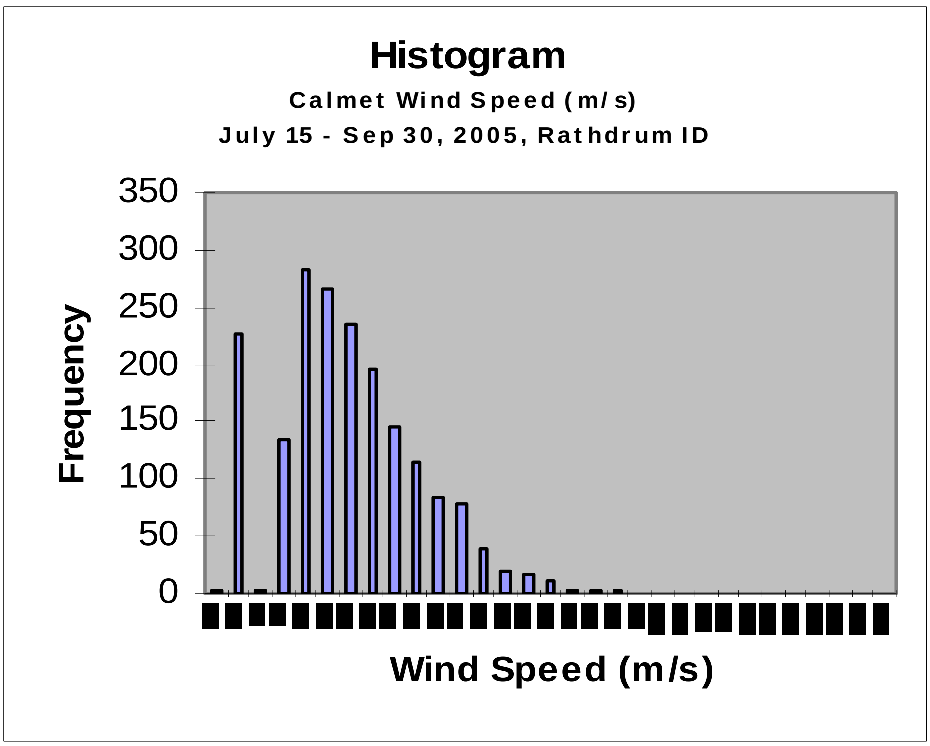

Figure 27. Histogram for CALMET wind speed. The model results match the observations at median wind speeds, but underestimate the high wind speed and predicted more calm conditions.

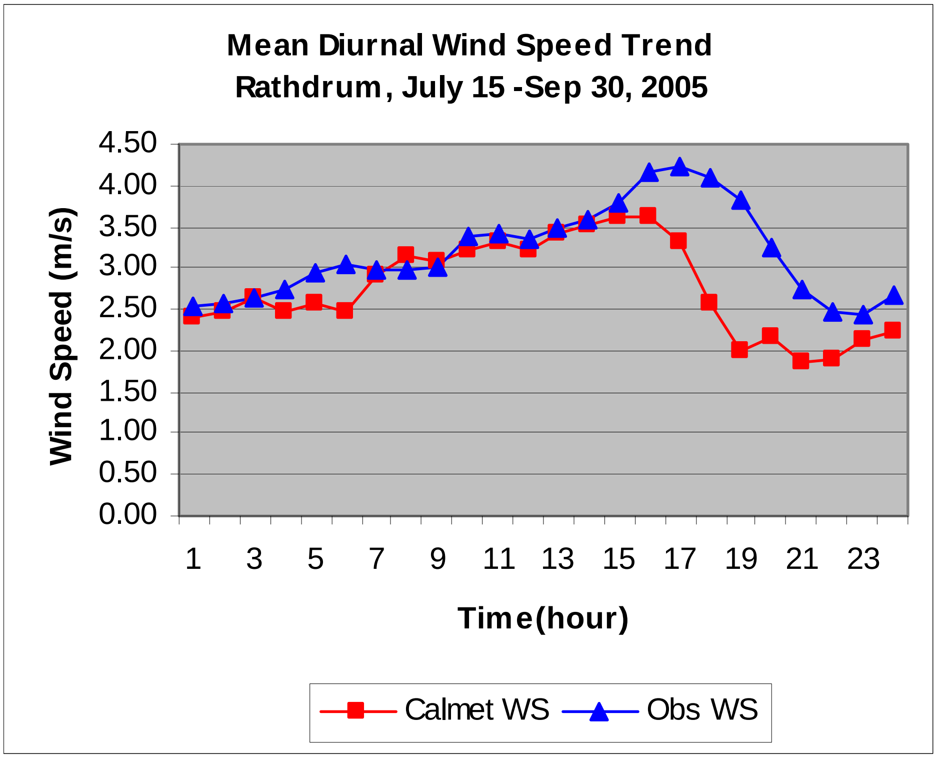

Figure 28. Mean diurnal trend of wind speed. The model underpredicted the winds during the evening hours, but performs very well during the 10AM – 4 PM period when burning occurs.

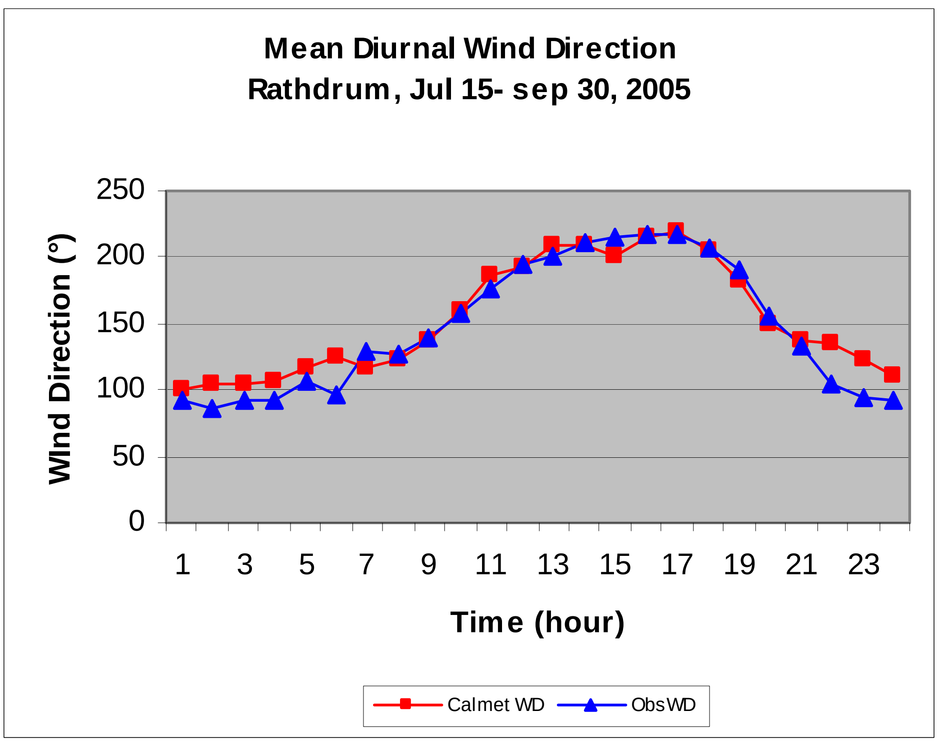

Figure 29. Mean diurnal wind direction. The model performance is very good during the mid-day hours when burning occurs.

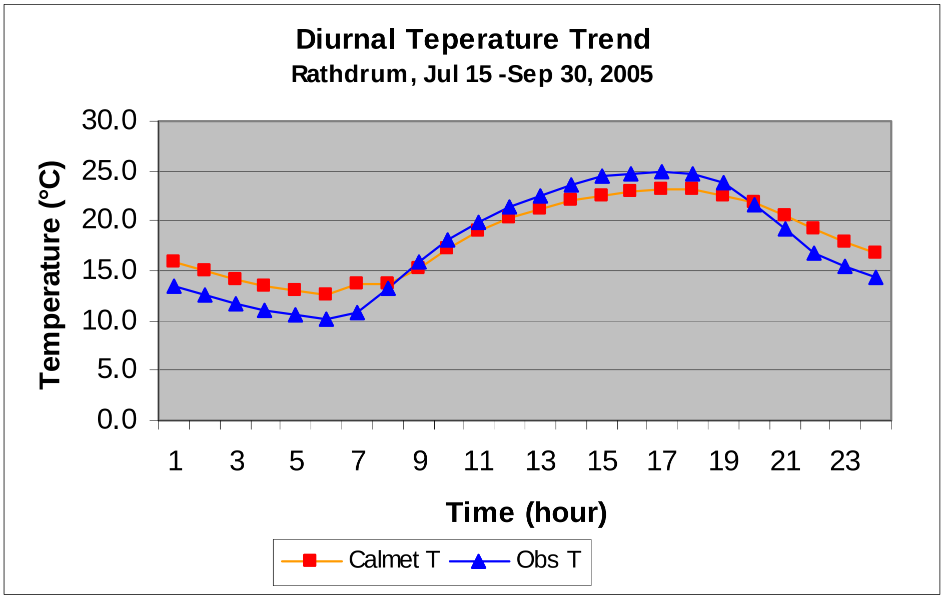

Figure 30. Diurnal temperature at Rathdrum.

Moscow

The Moscow area is relatively open but hilly, and the model performed reasonably well for this site due to the open terrain and to its proximity to the Pullman observation site used for nudging. The bias of the model predictions for wind speed is small, but the bias for the wind direction is larger than at Rathdrum. The wind roses show good agreement except for the more frequent northeast light winds in the observations. This discrepancy is due to the drainage, during the evening hours, from the mountains in the northeast, which the model could not address adequately. Daytime wind roses showed better agreement.

The model predicted wind speed well for the daytime, but poorly for early morning. The wind direction has a bias between 0 and 50 degrees during the day, larger for early morning. The temperature prediction is reasonable for the daytime, but there is a relatively large bias for early morning.

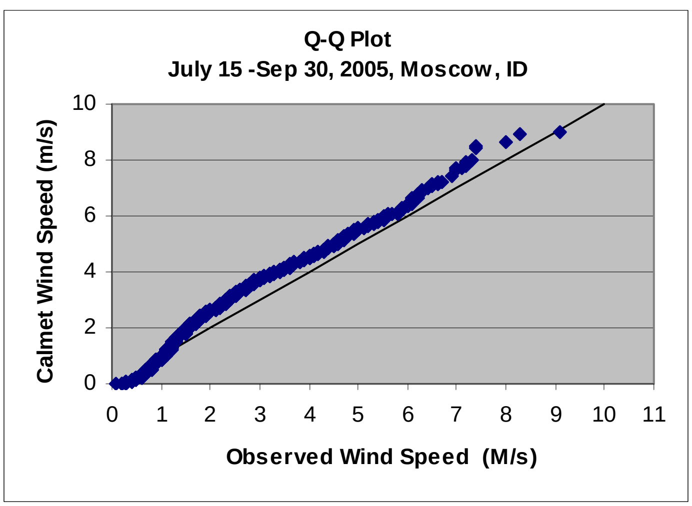

Figure 31. Q-Q plot for the wind speed. The model generally performed well.

Table 47. Statistics for the observed and modeled data.

CAL_WS (m/s)			**Obs_WS(m/s)**	
Mean	2.6		Mean	2.2
Standard Error	0.0		Standard Error	0.0
Median	2.3		Median	1.8
Mode	0.7		Mode	1.3
Standard Deviation	1.6		Standard Deviation	1.4
Sample Variance	2.6		Sample Variance	2.0
Kurtosis	0.2		Kurtosis	1.2
Skewness	0.7		Skewness	1.2
Range	9.0		Range	9.0
Minimum	0.0		Minimum	0.1
Maximum	9.0		Maximum	9.1
Sum	4838.0		Sum	4156.3
Count	1872.0		Count	1872.0
Cal_T(°C)			Obs_T(°)	
Mean	18.3		Mean	17.0
Standard Error	0.1		Standard Error	0.2
Median	17.7		Median	15.9
Mode	16.0		Mode	14.5
Standard Deviation	6.0		Standard Deviation	8.4
Sample Variance	35.6		Sample Variance	71.0
Kurtosis	-0.7		Kurtosis	-0.8
Skewness	0.2		Skewness	0.3
Range	29.6		Range	40.7
Minimum	4.0		Minimum	-4.0
Maximum	33.6		Maximum	36.7
Sum	34235.2		Sum	31766.9
Count	1872.0		Count	1870.0

Table 48. Statistical errors of the model results.

WS mean error	0.4
WS AMR	0.9
AME WD	53.2
mean T error	1.3
T AMR	3.5

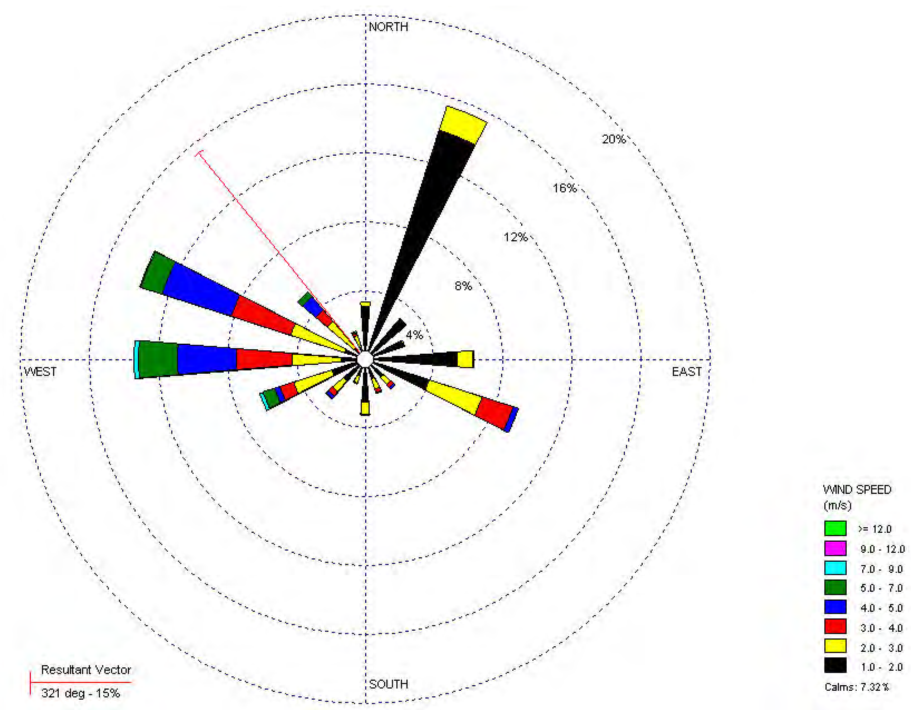

Figure 32. Wind rose of observed winds at Moscow.

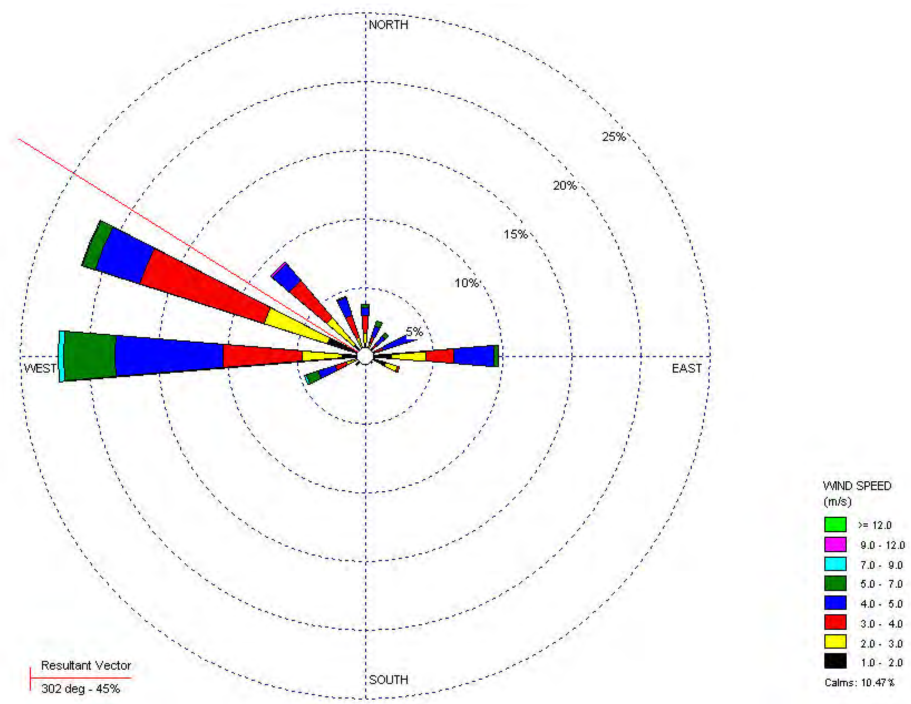

Figure 33. Wind rose of the CALMET model predicted winds for Moscow.

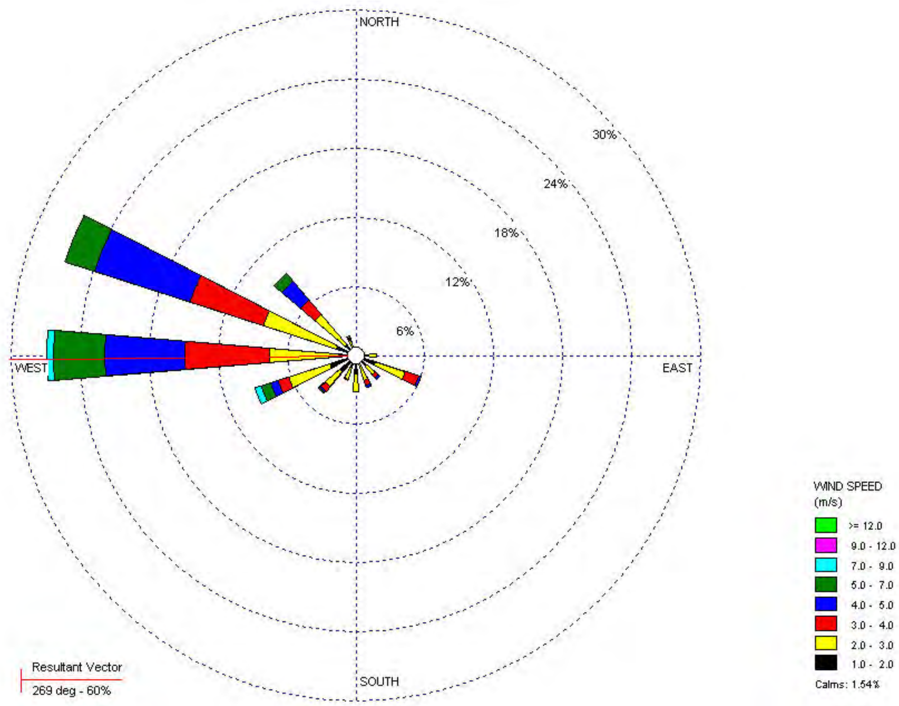

Figure 34. Observation wind rose for the daytime 9:00 to 18:00 at Moscow.

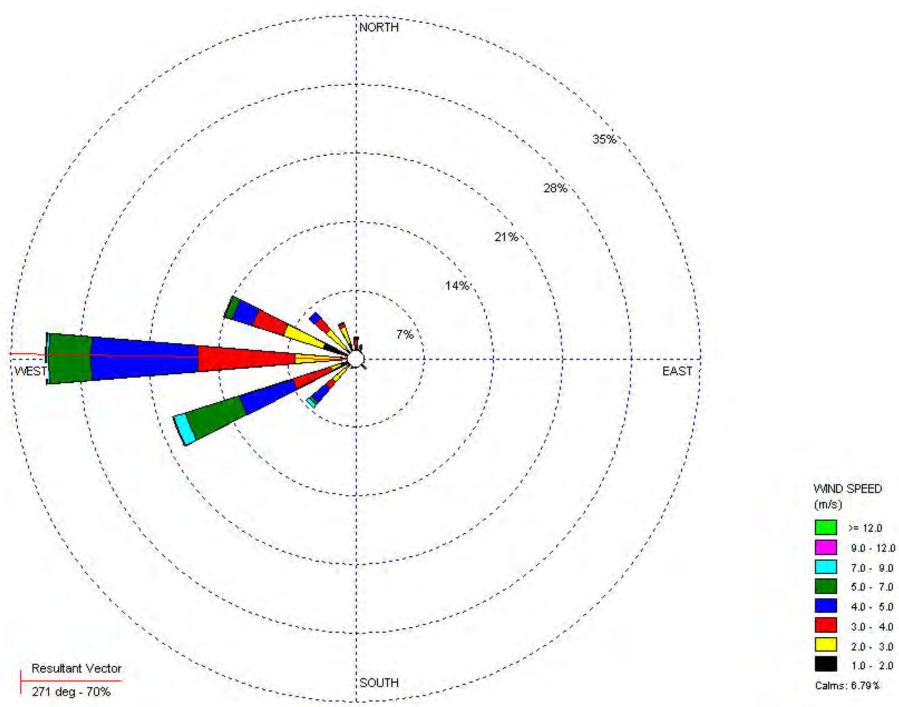

Figure 35. CALMET wind rose for the daytime from 9:00 to 18:00 at Moscow.

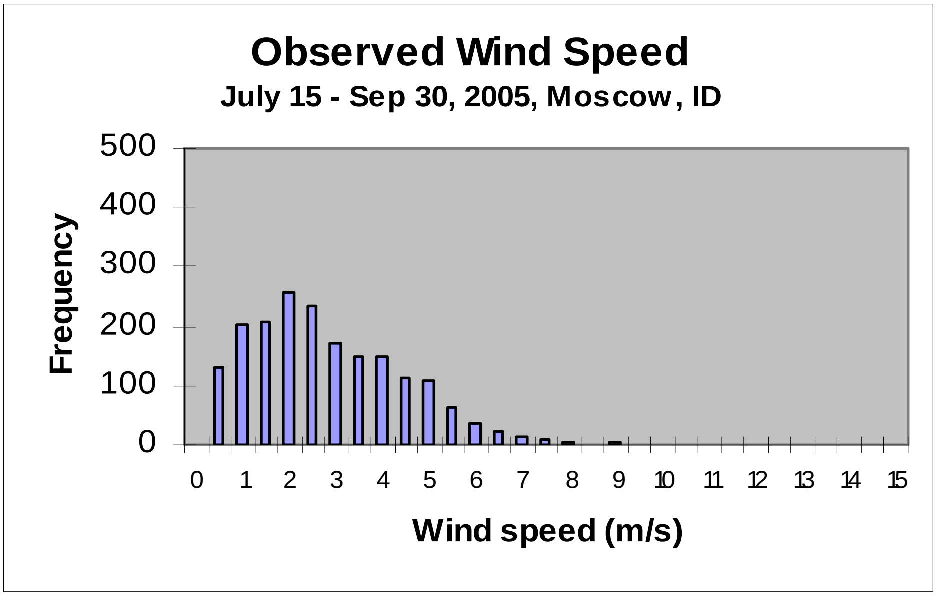

Figure 36. Histogram for observed wind speed.

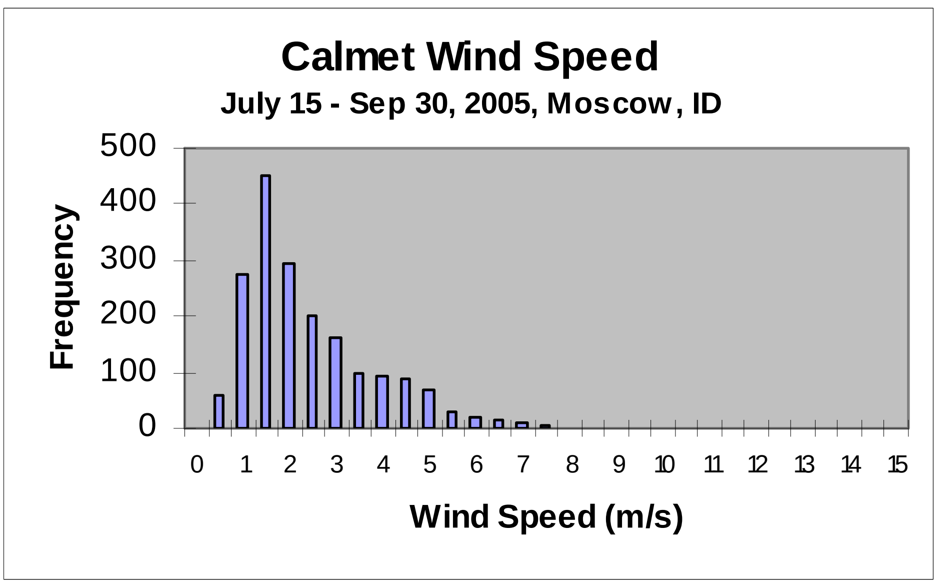

Figure 37. Wind speed histogram for CALMET output. The model predicted more light winds.

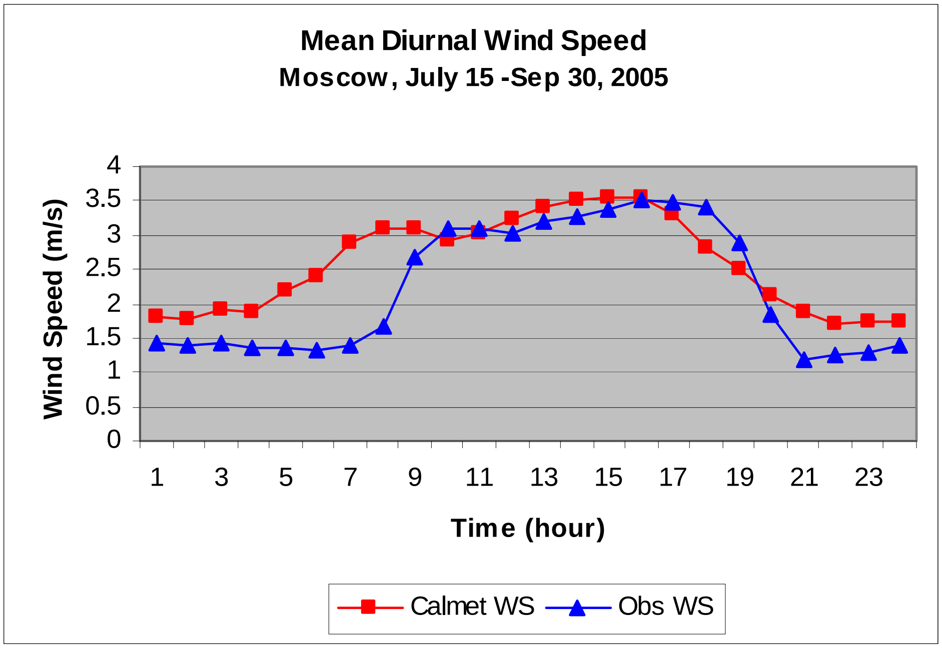

Figure 38. Diurnal wind speed. Model performed well for daytime, but had a larger bias in early morning.

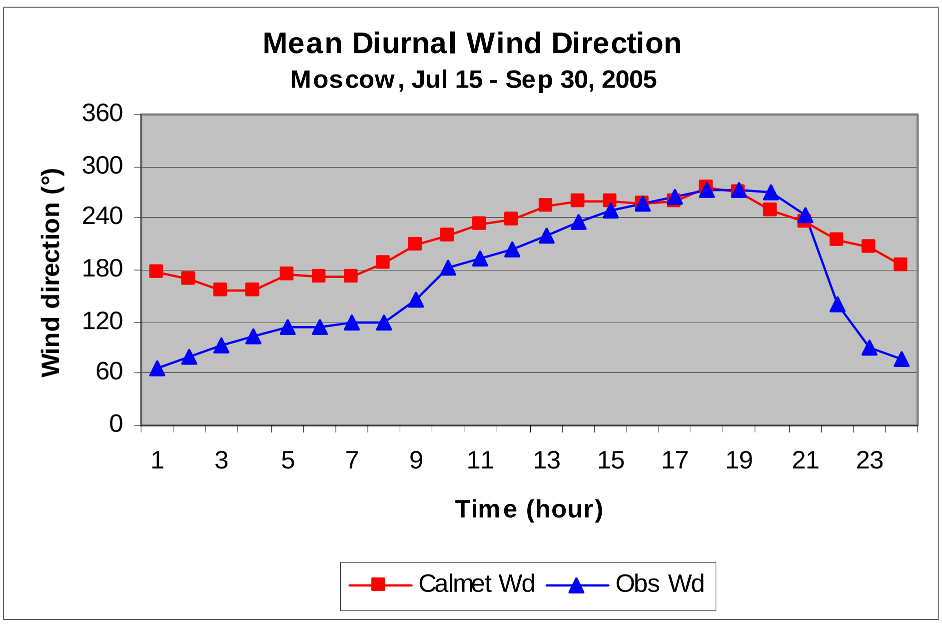

Figure 39. Diurnal wind direction. Model predicted general pattern but has larger bias around midnight.

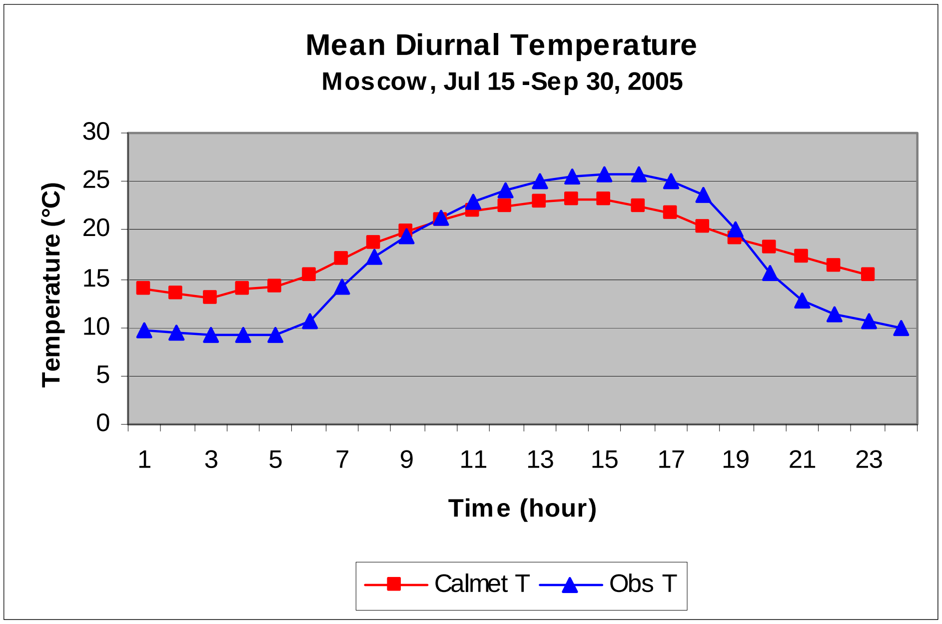

Figure 40. Diurnal temperature. The model underestimates during day and overestimates at night.

Grangeville

This site is located in an area with more complex terrain. Table 50 shows errors of model output that are within the WRAP benchmark, but the wind roses and diurnal plots show inconsistencies between observations and model predictions. The wind speed predicted by the model agrees with observation well for the daytime, but significant discrepancies for the wind direction between model and measured data are observed.

The temperature predictions are similar to those for Moscow: it performs reasonably well for daytime, but relatively large bias is apparent in early morning and night.

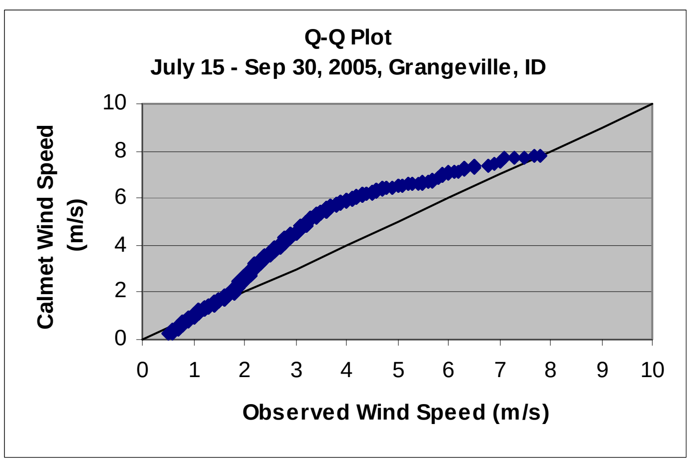

Figure 41. Q-Q plot for the wind speed. The model generally over-estimates wind speeds, especially between 3-7 m/s.

Table 49. Statistics of the observed and modeled data.

Cal_WS			**Obs_WS(m/s)**	
Mean	3.3		Mean	2.4
Standard Error	0.0		Standard Error	0.0
Median	3.2		Median	2.2
Mode	1.4		Mode	2.0
Standard Deviation	1.7		Standard Deviation	1.1
Sample Variance	2.9		Sample Variance	1.3
Kurtosis	-0.6		Kurtosis	2.6
Skewness	0.4		Skewness	1.3
Range	8.4		Range	7.7
Minimum	0.2		Minimum	0.4
Maximum	8.7		Maximum	8.1
Sum	6195.4		Sum	4519.8
Count	1872.0		Count	1866.0
Cal_T(°C)			Obs_T(°)	
Mean	18.3		Mean	18.2
Standard Error	0.1		Standard Error	0.2
Median	17.9		Median	18.0
Mode	24.0		Mode	18.3
Standard Deviation	6.2		Standard Deviation	6.9
Sample Variance	38.8		Sample Variance	48.2
Kurtosis	-0.6		Kurtosis	-0.6
Skewness	0.2		Skewness	0.1
Range	30.1		Range	33.8
Minimum	3.3		Minimum	1.6
Maximum	33.4		Maximum	35.4
Sum	34213.1		Sum	33887.2
Count	1872.0		Count	1867.0

Table 50. Statistical errors of the model results.

WS mean error	0.9
WS AMR	1.6
AME WD	62.2
mean T error	0.2
T AMR	1.7

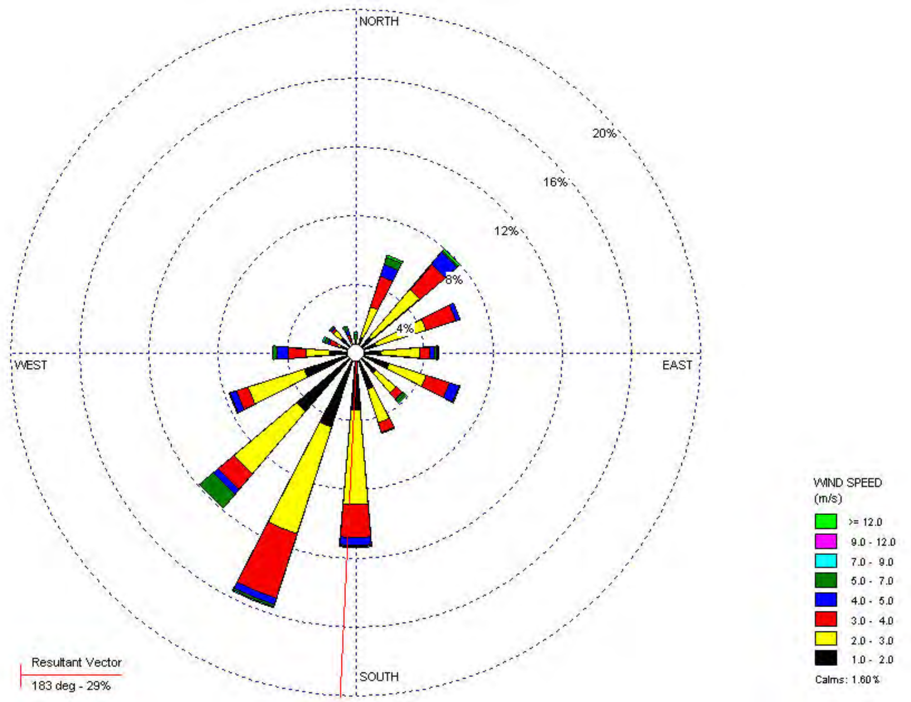

Figure 42. Wind rose for observed winds at Grangeville. July 15 to September 30, 2005.

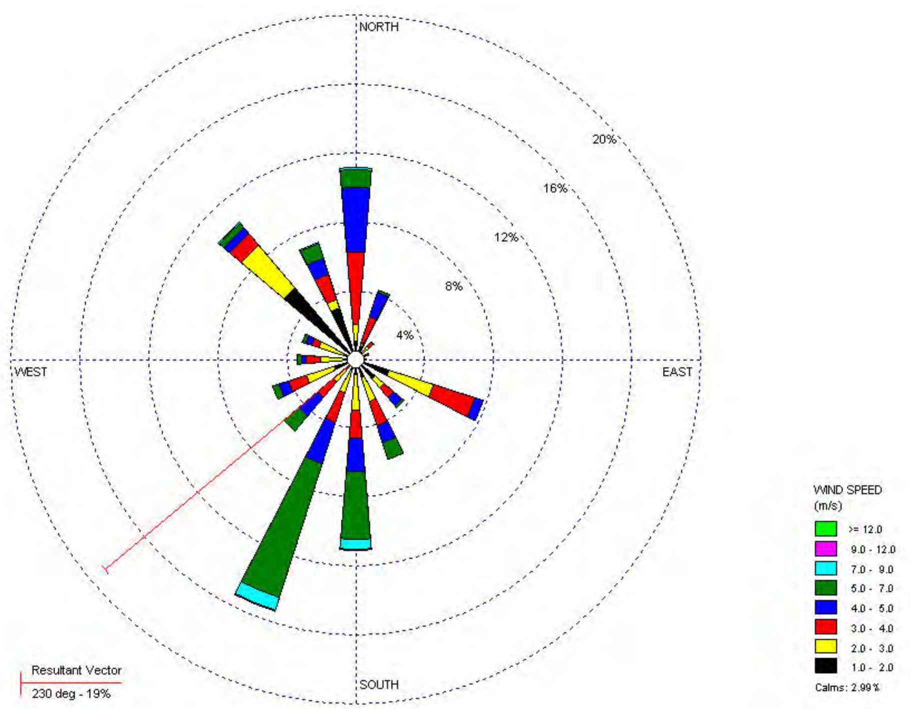

Figure 43. Wind rose for the modeled winds for Grangeville. July 15 to September 30, 2005.

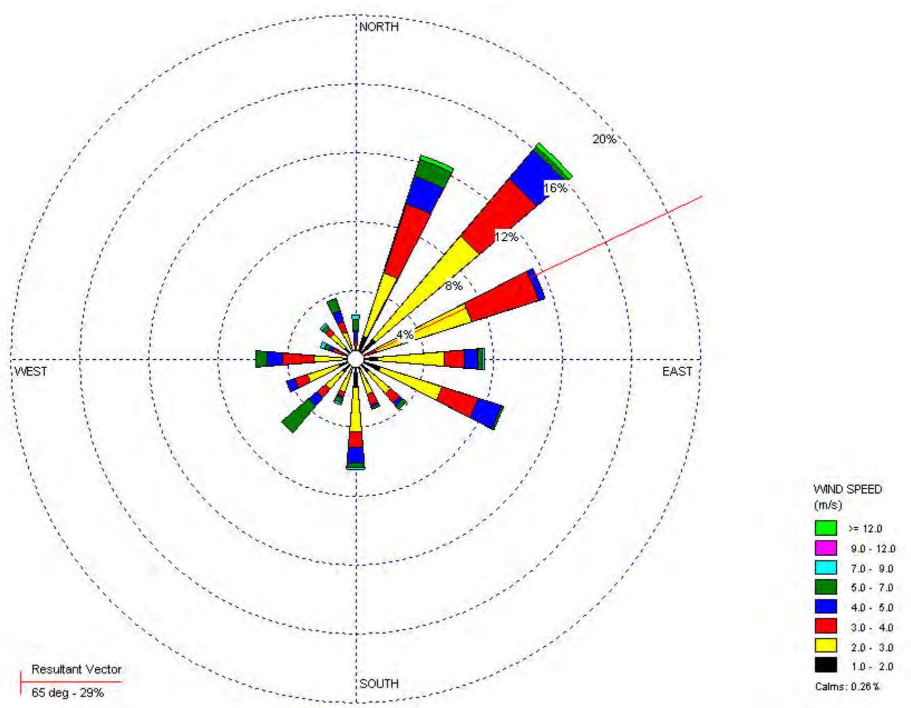

Figure 44. Observed wind rose for the daytime from 9:00 to 18:00 at Grangeville. July 15 to September 30, 2005.

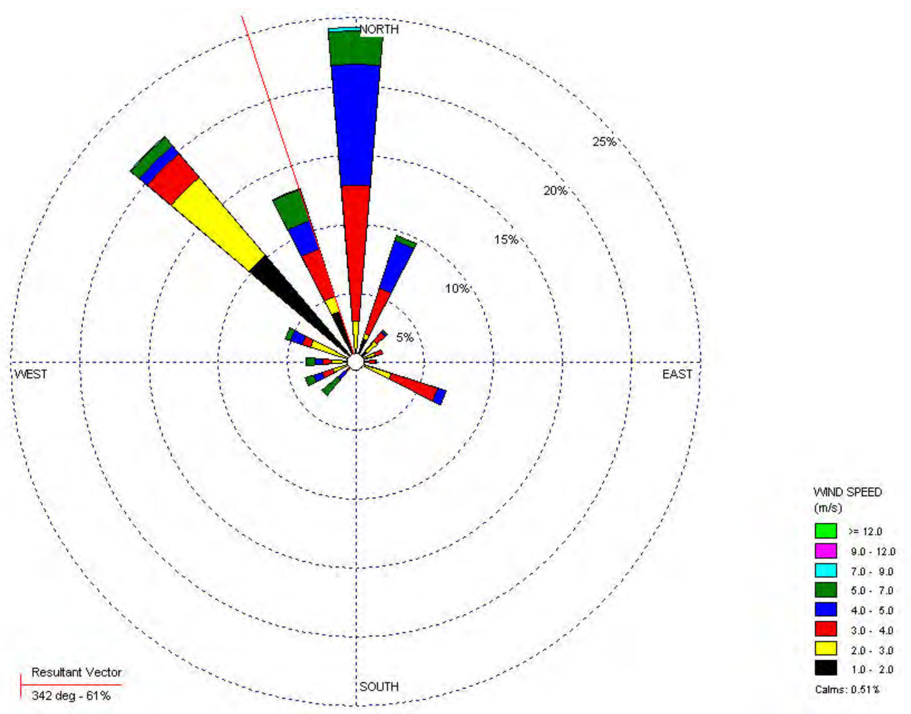

Figure 45. CALMET wind rose for the daytime from 9:00 to 18:00 at Grangeville. July 15 to September 30, 2005.

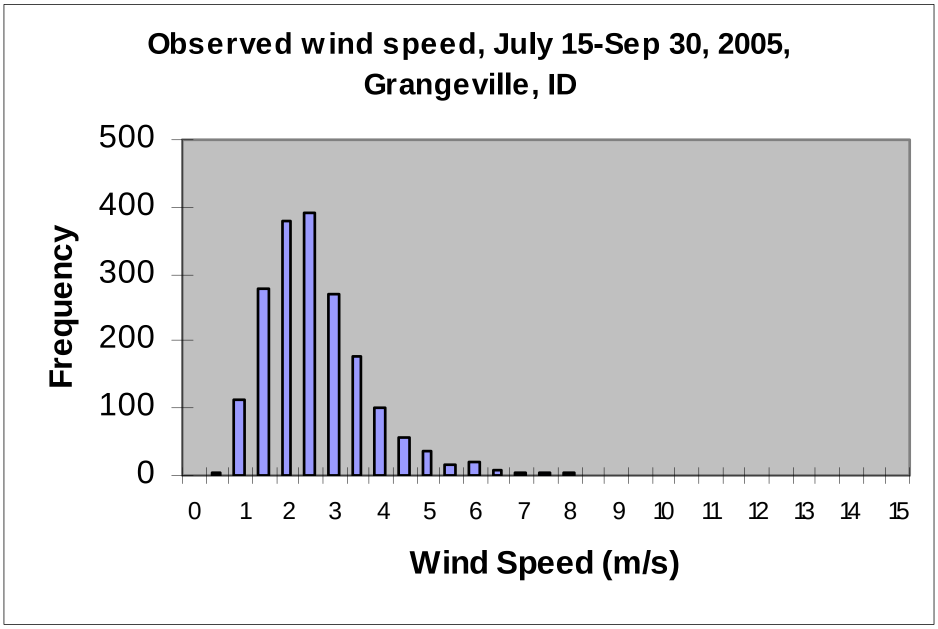

Figure 46. Wind speed histogram for observed data.

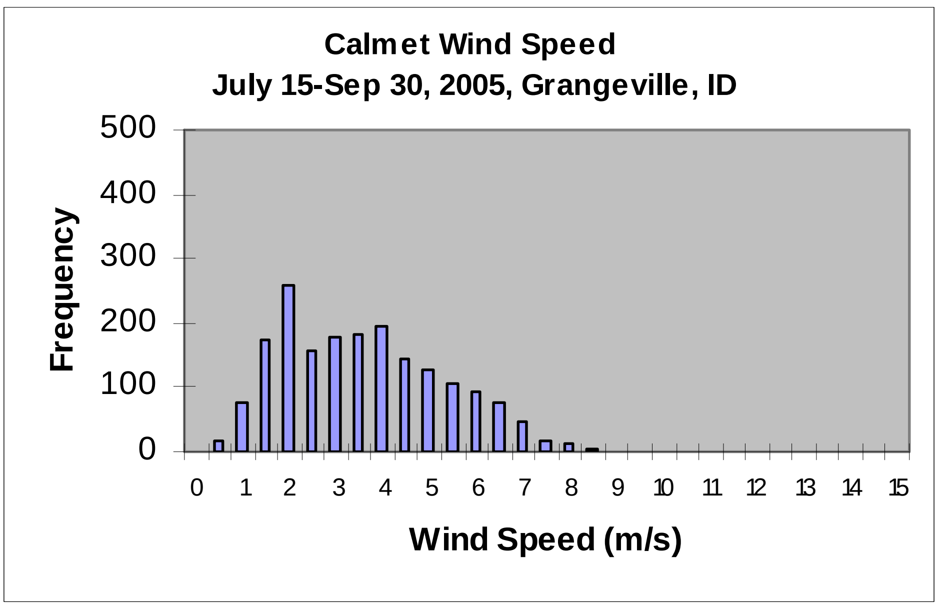

Figure 47. Wind speed histogram for the modeled data. The model predicted more high winds than observed.

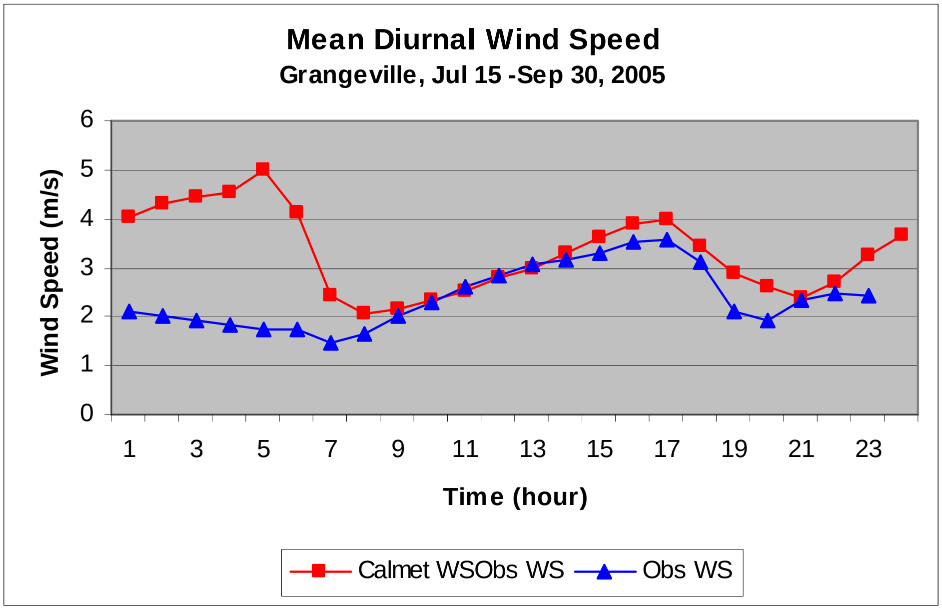

Figure 48. Diurnal wind speed at Grangeville. Very larger bias occur at night but the model agrees well during daytime burn period.

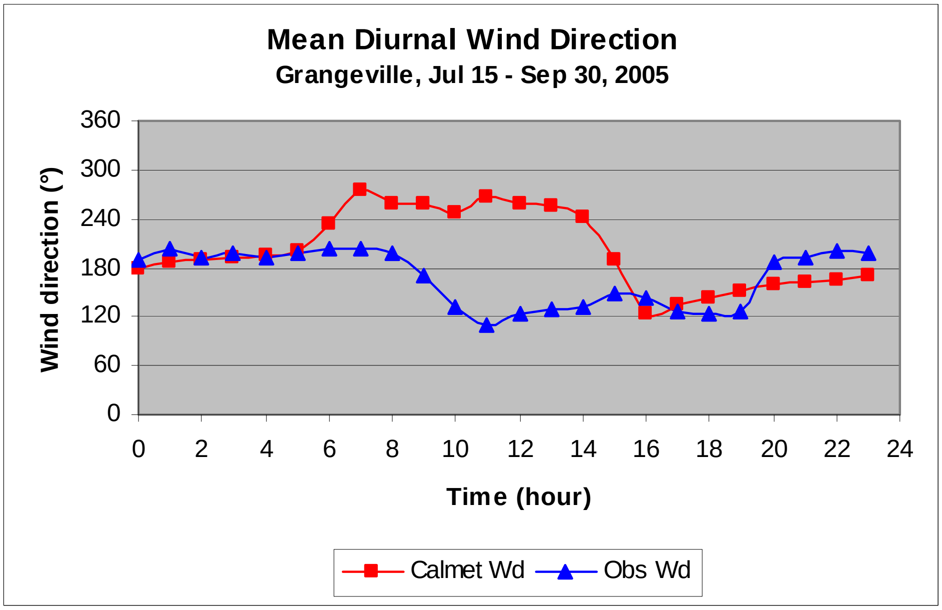

Figure 49. Diurnal wind direction at Grangeville. A strong wind direction bias occur during the mid-day burn period.

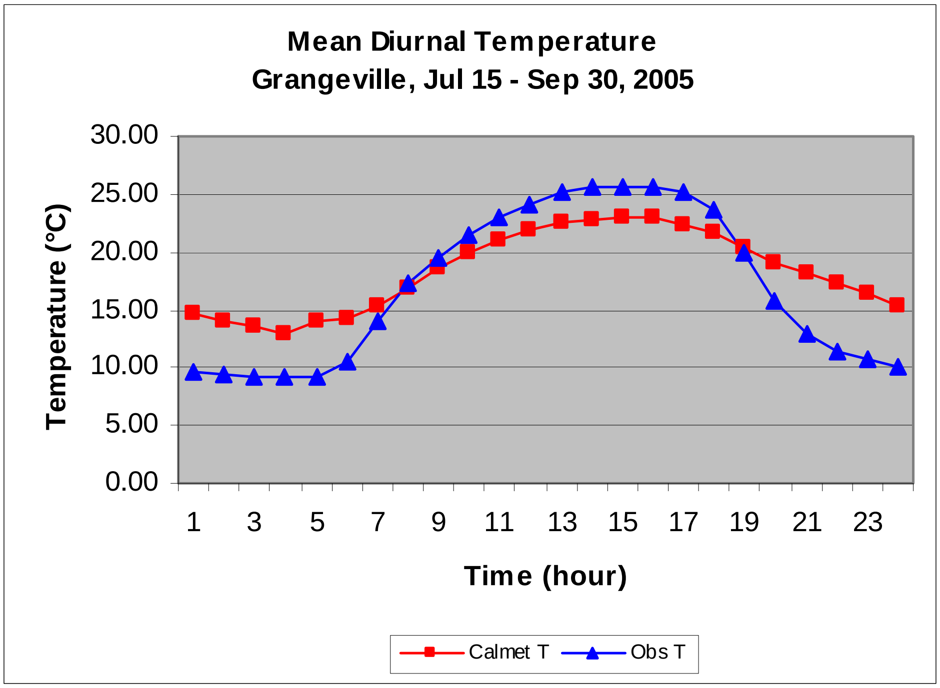

Figure 50. Diurnal temperature at Grangeville.

Sandpoint

Sandpoint is located near lake Pend Oreille, with mountains to the north. Due to these complex terrain conditions, the statistical error is larger than the WRAP benchmark. The wind speed prediction is more accurate during the hours between 9:00 and 15:00; the wind direction prediction has a consistent bias of 40-50 degrees. The model consistently predicted more southeast winds during daytime, while observations showed winds that are more southerly. The statistics showed a slightly larger bias for temperature prediction; the prediction for the diurnal temperature trend is good.

Table 51. Statistics for the observed and modeled data.

CalmetWS			ObsWS(m/s)	
Mean	2.35		Mean	1.53
Standard Error	0.03		Standard Error	0.02
Median	2.34		Median	1.20
Mode	3.52		Mode	0.70
Standard Deviation	1.36		Standard Deviation	1.07
Sample Variance	1.84		Sample Variance	1.15
Kurtosis	-0.11		Kurtosis	4.12
Skewness	0.35		Skewness	1.66
Range	8.79		Range	8.30
Minimum	0.00		Minimum	0.10
Maximum	8.79		Maximum	8.40
Sum	4406.72		Sum	2854.90
Count	1872.00		Count	1870.00
Cal T(°C)			Obs T(°C)	

CalmetWS			ObsWS(m/s)	
Mean	17.31		Mean	16.54
Standard Error	0.14		Standard Error	0.16
Median	16.65		Median	16.20
Mode	23.78		Mode	11.20
Standard Deviation	6.12		Standard Deviation	7.03
Sample Variance	37.44		Sample Variance	49.47
Kurtosis	-0.70		Kurtosis	-0.60
Skewness	0.24		Skewness	0.21
Range	27.11		Range	34.10
Minimum	4.39		Minimum	-0.30
Maximum	31.50		Maximum	33.80
Sum	32400.15		Sum	30931.20
Count	1872.00		Count	1870.00

Table 52. Statistical errors for the modeled data.

WS mean error	0.8
WS AMR	1.4
AME WD	65.8
mean T error	0.8
T AMR	2.7

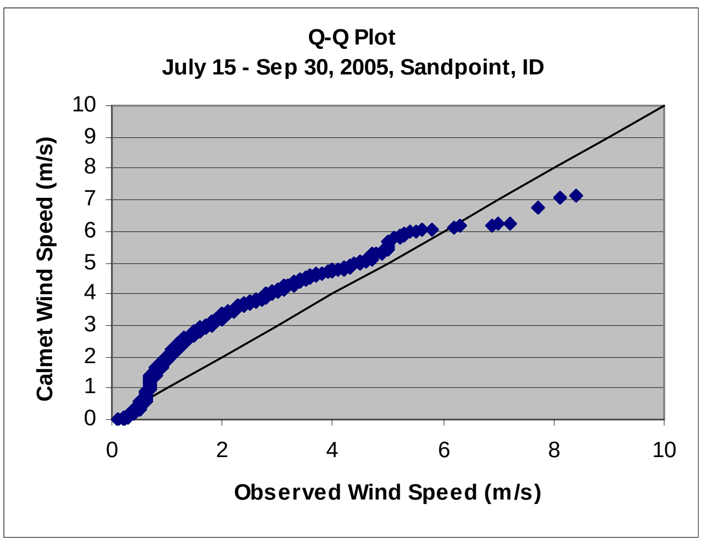

Figure 51. Q-Q plot for wind speed at Sandpoint. The model tends to over-predict the wind speeds.

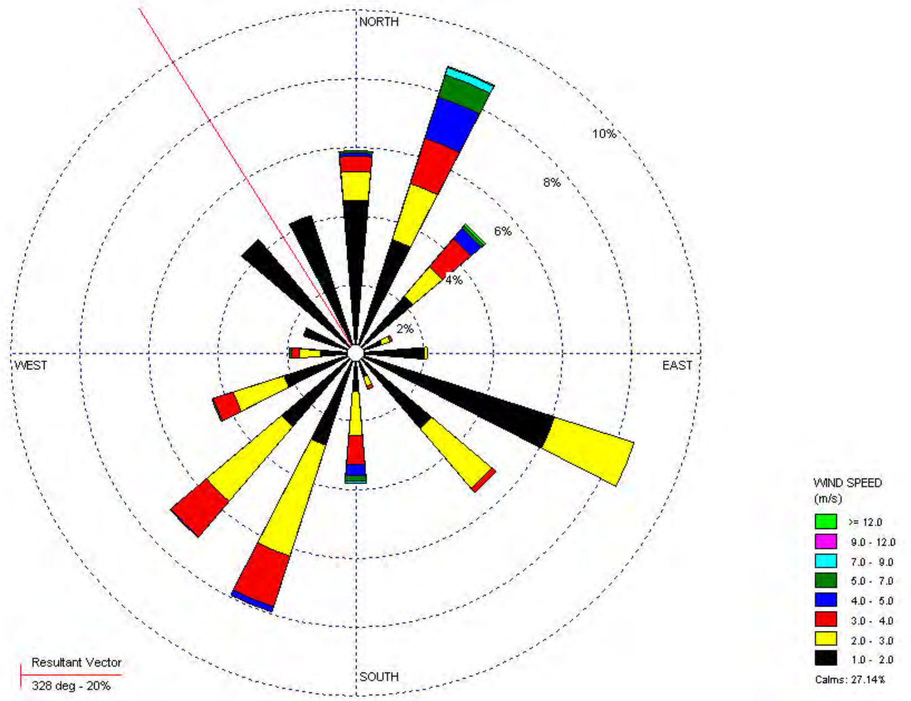

Figure 52. Observation wind rose for July 15 to September, 2005 at Sandpoint. Light, localized drainage and lake-shore winds occur from NW and ESE respectively.

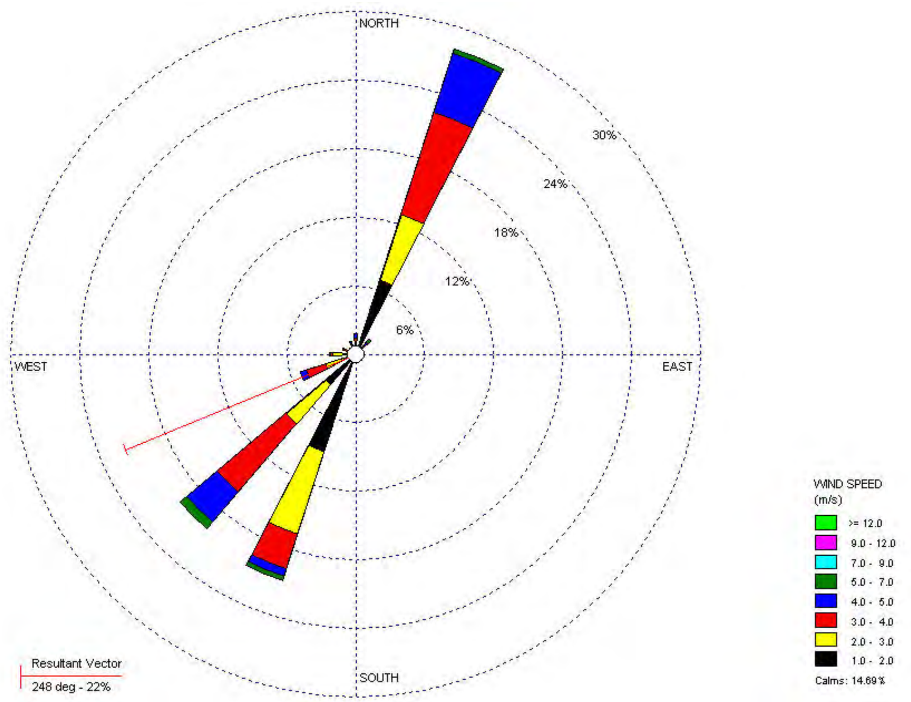

Figure 53. CALMET wind rose for July 15 to September, 2005 at Sandpoint. Light localized drainage and lake-breeze winds are not reflected in CALMET wind fields.

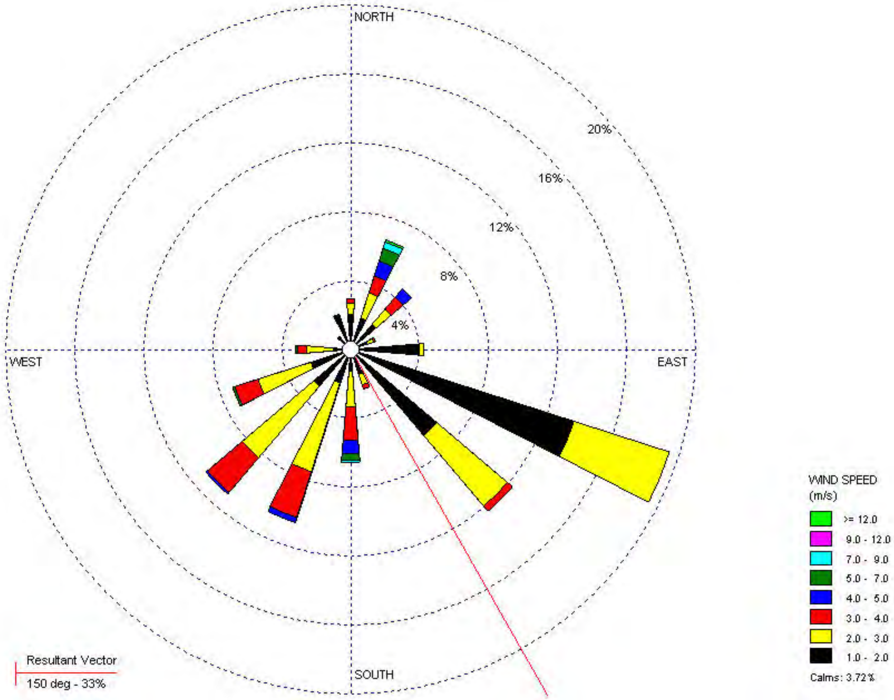

Figure 54. Observation wind rose for daytime (9:00 to 18:00), July 15 to September 2005 at Sandpoint. Night drainage winds do not occur but light lake–breeze flow is evident.

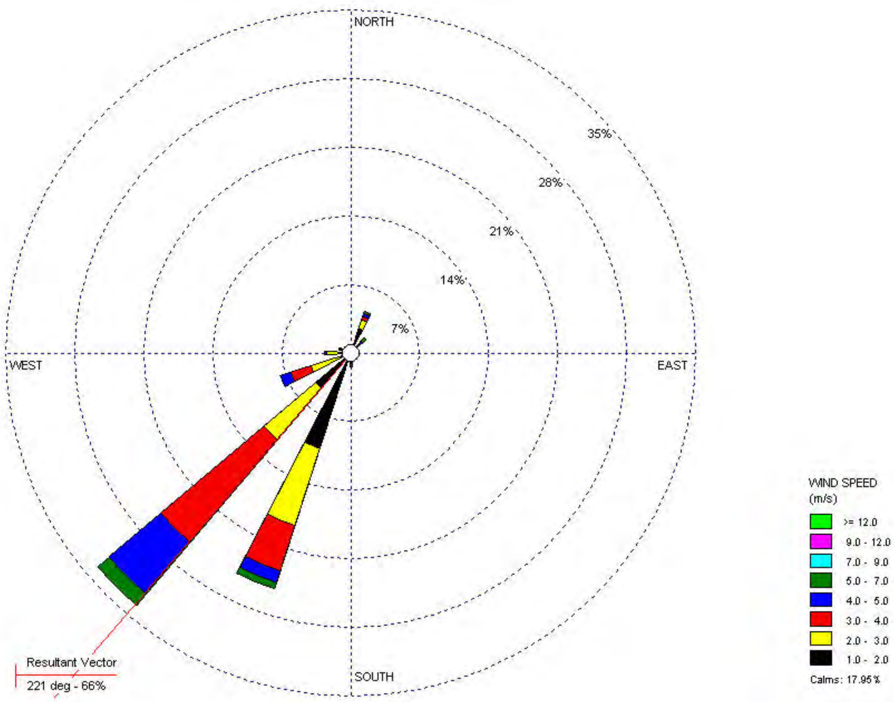

Figure 55. CALMET wind rose for daytime (9:00 to 18:00) July 15 to September, 2005 at Sandpoint. Localized lake breeze winds are not reflected by the CALMET wind fields.

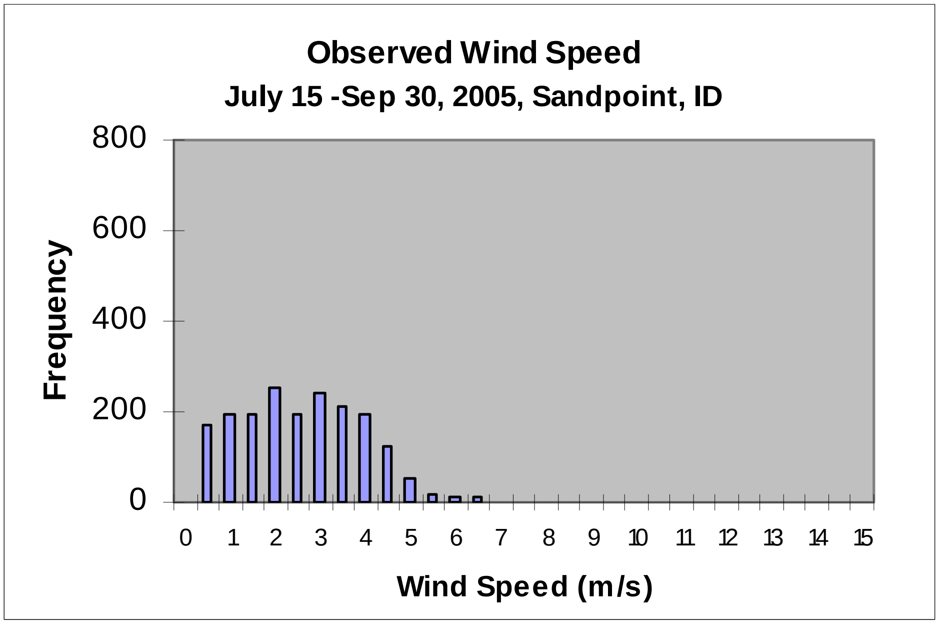

Figure 56. Wind speed histogram for observed at Sandpoint.

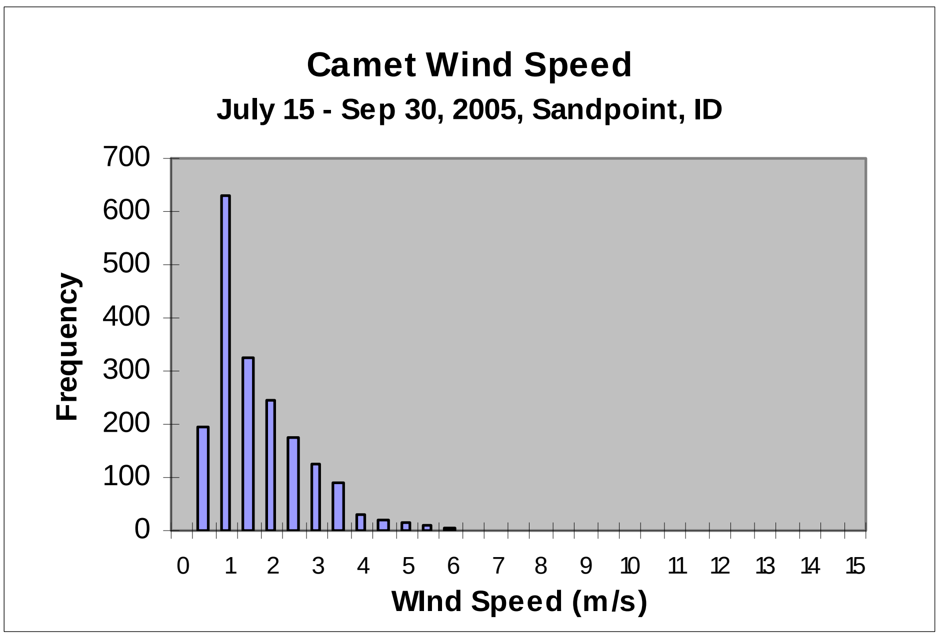

Figure 57. Wind speed histogram for the model output for Sandpoint.

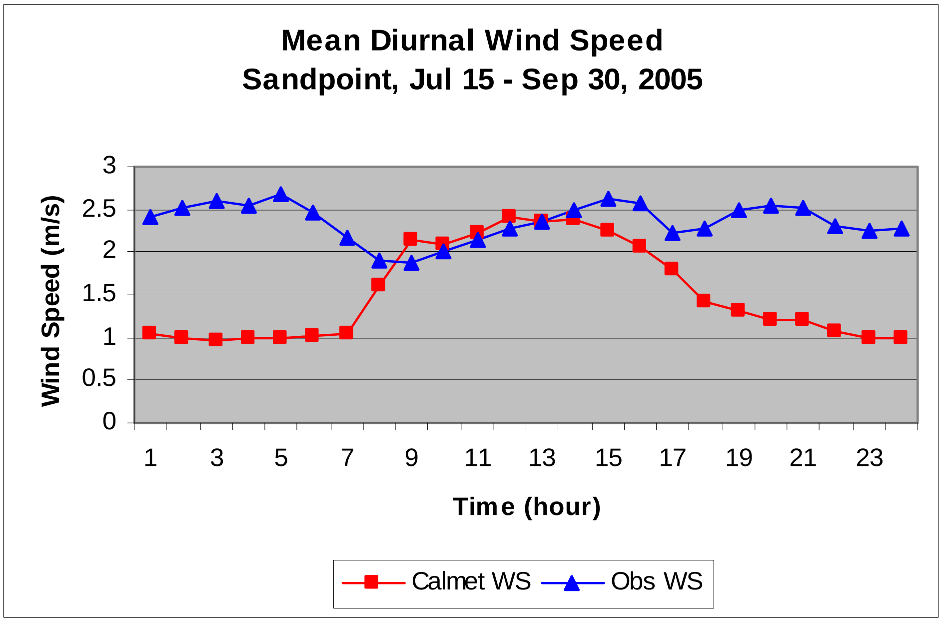

Figure 58. Diurnal wind speed at Sandpoint. The model does well for the daytime, but performs poorly at night due to the lake breeze and drain.

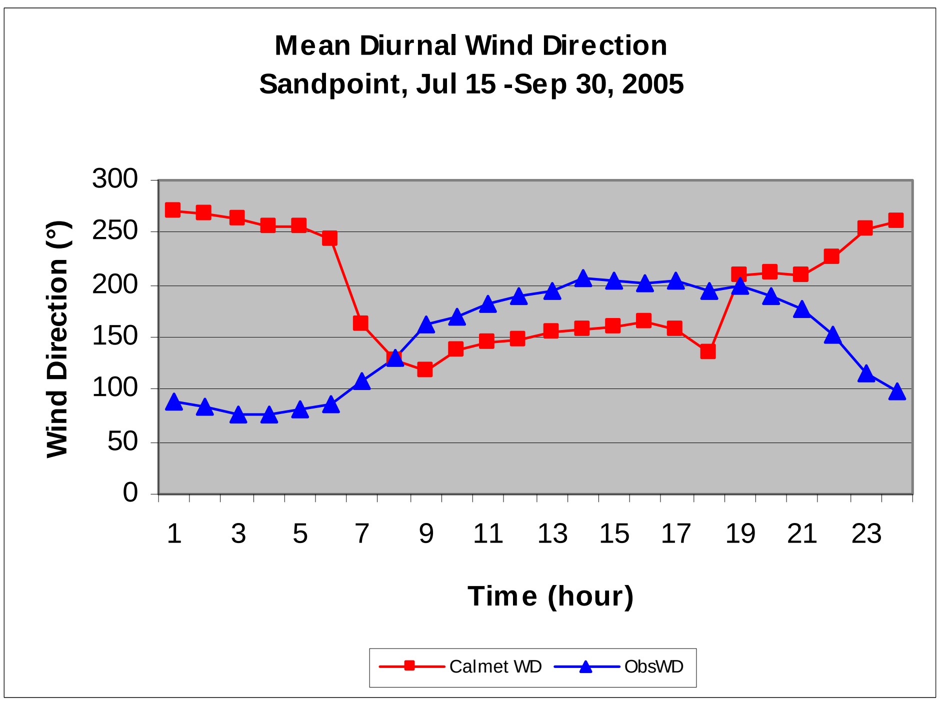

Figure 59. Diurnal wind direction at Sandpoint. Large bias both for day and night. The bias during daytime is consistently about 40-50 degrees (east).

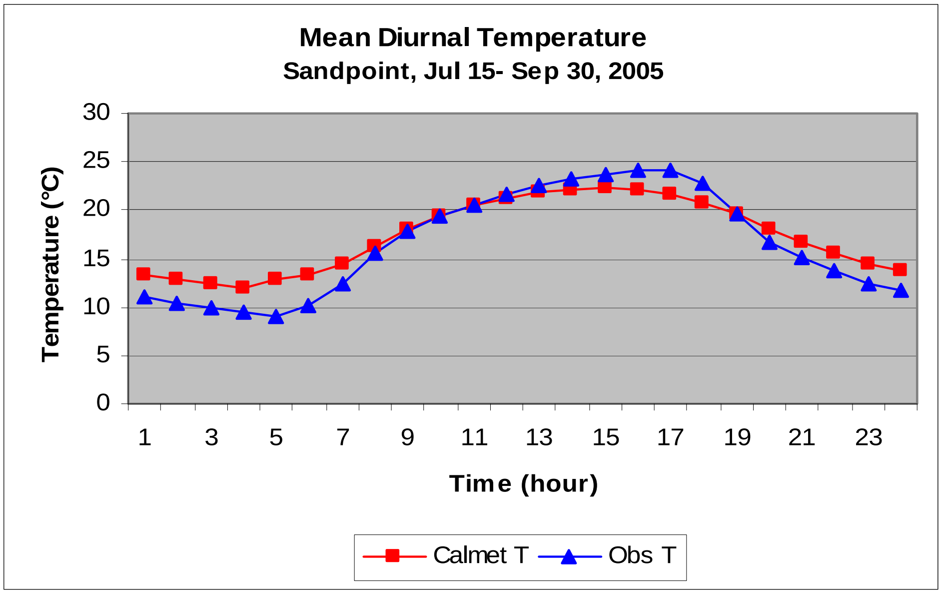

Figure 60. Diurnal temperature at Sandpoint. Daytime temperatures are in good agreement.

Summary

The WRAP 2002 MM5 report (WRAP, 2005) gives statistical benchmarks for evaluating meteorological model performance, as shown in Table 52.

Table 53. WRAP 2002 MM5 report statistical benchmarks for model performance.

	Wind speed (m/s)	Temperature (K)
RMSE	< 2	
Mean Bias	≤± 0.5	≤± 0.5
Gross Error		≤± 2

These benchmarks were suggested by Emery and Tai (2001) and are not necessary intended to give a passing or falling grade to any particular meteorological model applications, but rather to put its results into the proper context. The key to the benchmarks is to understand how poor or good the results are relative to the universe of other model applications run for various areas of the U.S.

Compared to the benchmarks above, the model did reasonably well in overall. However, there is a special requirement in this project: we need to look more closely for time-paired evaluation.

For wind speed and direction, MM5-CALMET provides good predictions for open,-flat areas, such as Rathdrum and Moscow. Larger biases are observed for areas with complex terrain, such as Grangeville and Sandpoint. The model does better for the daytime. Wind speed and direction at the three stations (except Grangeville) change with time with similar pattern during daytime. This feature is useful in the forecasting and decision-making. Even when there is relatively larger bias in the model output, the general pattern is predictable. The wind fields in Grangeville are more complicated, while the model did well for wind speed during the daytime, the wind direction is very biased. This result should be fully noted in the future forecasting.

The temperature predictions are reasonably good. The small bias should not affect the estimate for the plume rise, but attention should be paid when the maximum day temperature is used for mixing height calculation.

In addition to the CALMET evaluation described above, it should be noted here that the original MM5 surface wind direction prediction has consistent positive bias up to 20-30 degrees (Figure 61), and could be more significant in absolute error for given locations and times (60 to 70 degrees). However, the upper wind field predictions agree with the observations much better. The bias of surface wind prediction only affects the pollution predictions near the source, but the effect on distant areas, such as Class I areas, would be insignificant.

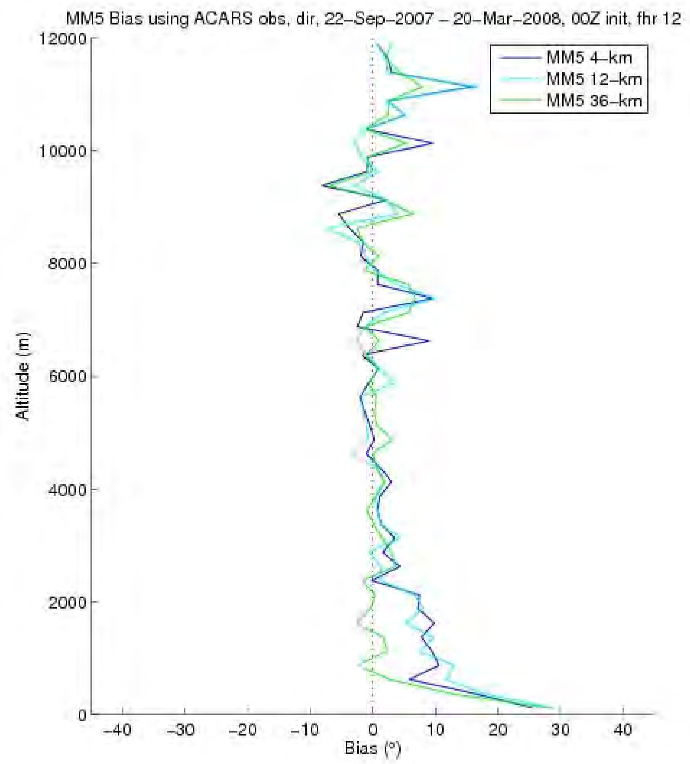

Figure 61. The bias of wind direction in MM5 decreases with height.

The CALMET-forecasted diurnal trend of wind speed and wind directions shown in the above sections were the results obtained by nudging with the observation data. These results were improved only for the locations near the observation station used, e.g., at Rathdrum, located near the Coeur d'Alene Airport observing station, the predicted diurnal pattern matched observations well, but at Grangeville, located in complex terrain not near an observation nudging station, the match was poor. In most cases, the available forecasted data were not nudged for specific locations, however it is important to note, and this bias has to be considered when making burn decisions.

Figure 61 and Figure 62 show the results of CALMET run for Rathdrum on August 16, 2005, with and without nudging. The actual wind shifted direction from southeast to southwest at about 13:00, but the CALMET winds shifted direction at about 11:00. There was also bias in wind speed. This time difference may be important if the burning started before or after the shifting time. Caution should be used when making burning decisions in such situations.

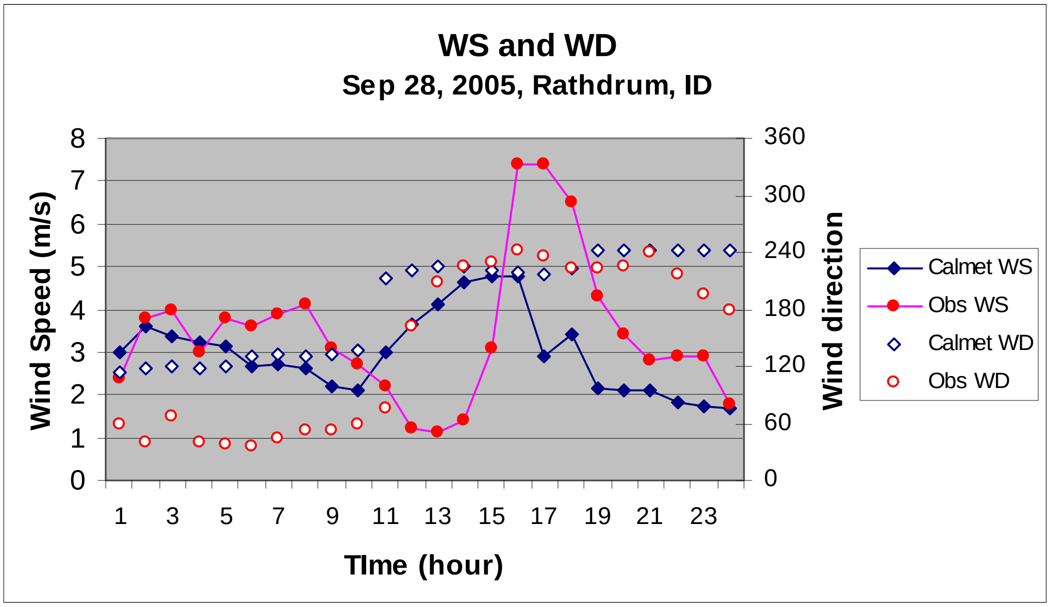

Figure 62. Diurnal trend of wind speed and wind direction at Rathdrum, August 16, 2005. The CALMET run was not nudged with the observation.

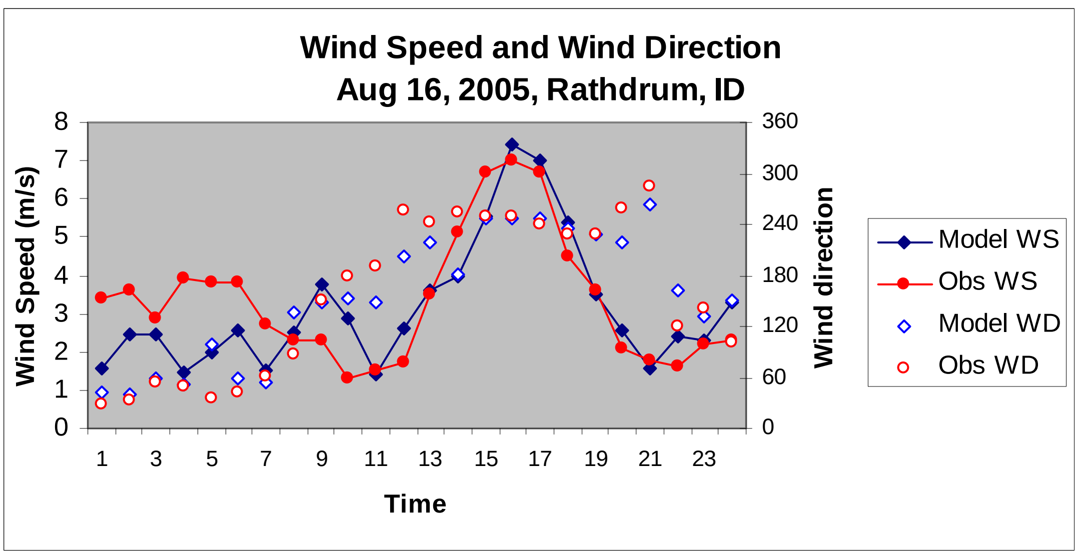

Figure 63. Diurnal trend of wind speed and wind direction at Rathdrum. The CALMET run was nudged with the observation. The forecast matched observations better.

CALPUFF Model Performance Evaluation

As described earlier, the goals of the model evaluation are limited and are intended to meet limited objectives. The goals of this effort, sufficient to meet the project objectives are to replicate with *adequate* accuracy:

- the approximate magnitude of short-term (24-hour) $PM_{2.5}$ impacts that may occur anywhere in an airshed, and
- the approximate spatial extent of long-term seasonal mean $PM_{2.5}$ concentrations.

The previous section summarized the results of the meteorological performance evaluation conducted on the CALMET wind fields used as inputs to CALPUFF. This section will summarize the CALPUFF model performance evaluation.

Continuous Ambient Monitoring Data

To support the model performance evaluation it was necessary to obtain an ambient monitoring database for comparison. Since only crop residue burning sources are included in the model, it is critical that crop residue burning impact be isolated in the ambient data. Fortunately, the characteristics of these impacts when recorded by a continuous instrument are generally conducive to isolation of the crop residue burning component from the background $PM_{2.5}$ concentrations generated from all other sources in the region.

Continuous Monitoring Database

Continuous monitoring data were obtained for 12 sites in the crop residue burning region from Grangeville in Idaho County to Bonners Ferry in Boundary County. The sites and their operating organizations are shown in Table 54.

Table 54. Continuous PM2.5 Monitors used in Model Evaluation.

TEOMS	Nephelometers
Coeur d'Alene (DEQ) (Lakes Middle School or LMS)	Athol (DEQ)
Grangeville (DEQ)	Bonners Ferry (Kootenai Tribe)
Kamiah (Nez Perce Tribe)	Hope (DEQ)
Lapwai (Nez Perce Tribe)	Rathdrum (DEQ)
Lewiston (DEQ)	
Moscow (DEQ)	
Pinehurst (DEQ)	
Reubens (Nez Perce Tribe)	
Sandpoint (DEQ)	

The TEOM instruments are described in Section 2 *Air Quality*. The nephelometers are light-scattering based instruments which operate by detection of light that is backscattered, preferentially from fine particles such as $PM_{2.5}$. Thus nephelometers don't measure $PM_{2.5}$ mass directly but they are typically collocated with a Federal Reference Method and a correlation is prepared to relate the nephelometer "bscat" signal to an equivalent $PM_{2.5}$ concentration. The TEOMs have a small bias resulting from ammonium nitrate volatilization, however in the summer and fall this is a small bias and is not further corrected.

Identification and Quantification of Crop Residue Burning Impacts

All continuous monitoring data sets were graphically examined for midday peaks that rise above background levels on days in which burning occurred in the same airshed. Any peak that rises at least 15 µg/m3 above background between the hours of 10 AM and 6 PM on a burn day was initially screen for and the $PM_{2.5}$ contribution quantified. Typical background levels for the area of the Rathdrum airshed are shown in Figure 64. Regional average background represented by these sites is approximately 6.5 µg/m3.

The influence of daily rush hour peaks at Post Falls, near the Interstate are clearly seen, as are the night time and mid-morning increases in residential wood combustions in Pinehurst. Influences such as these are very routine and easy to exclude as non-crop residue burning impacts. Fortunately the daytime burn hours of 10:00 to 15:00 are typically low in concentration this makes it easy to identify crop residue burning influences on burn days.

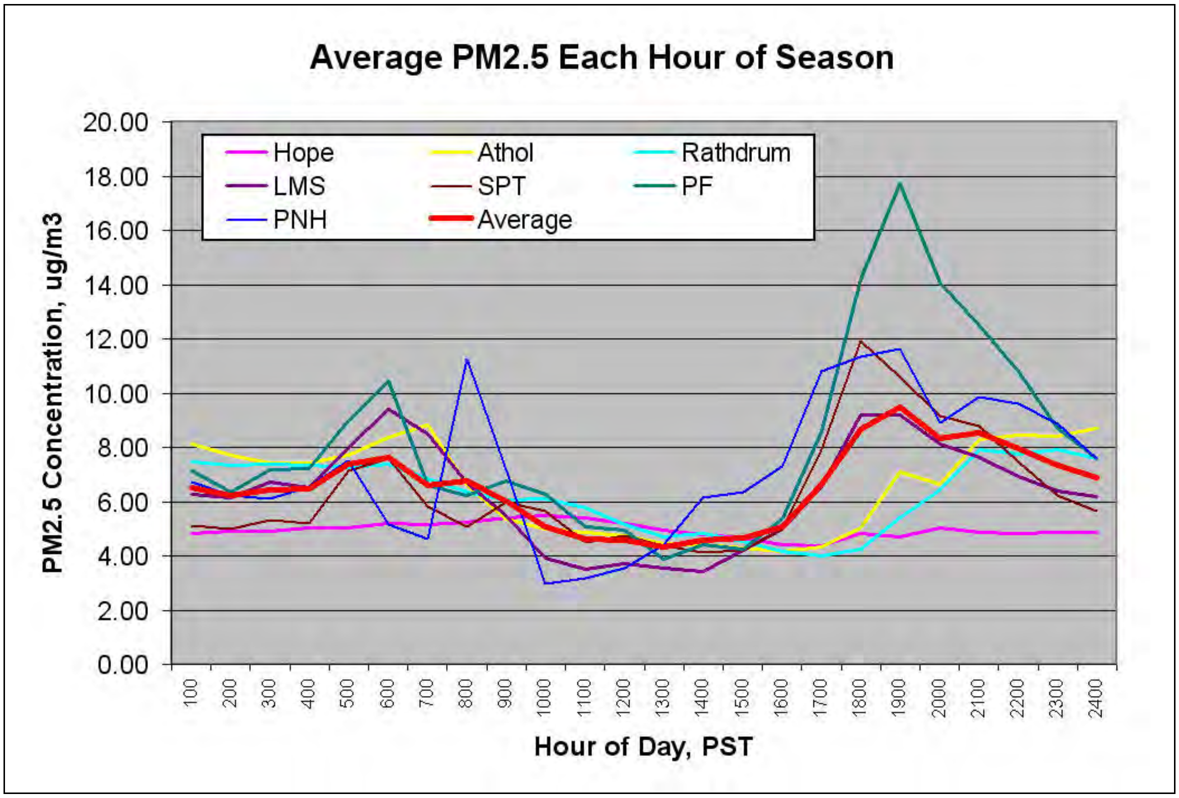

Figure 64. Average PM2.5 diurnal concentrations in Rathdrum Airshed

Typical crop residue burning impact peaks resulting from burns in the Rathdrum airshed on August 16, 2005 are shown in Figure 65. It is clear that smoke from a burning field or fields reached the Rathdrum nephelometer around noon, reaching a peak of 82 µg/m3, Athol around 1 PM reaching a peak concentration of 64.1 µg/m3 and finally at 3 PM reached Hope with a peak hourly concentration of 32.5 µg/m3. The dotted lines approximate the expected background levels in the absence of the crop residue burning impacts and the average background level for each peak is subtracted to isolate only crop residue burning impacts. Finally, all background-subtracted hourly concentrations making up the “crop residue burning impact” at each monitor are summed and divided by 24 to produce 24-hour contributions due to crop residue burning. Background subtracted 24-hour contributions for the peaks shown below are 3.7 µg/m3 at Rathdrum, 3.5 µg/m3 at Athol and 1.8 µg/m3 at Hope. The complete database of 24-hour crop residue burning impacts are shown in Appendix I and a summary of results is shown Section 2 of the SIP Revision document.

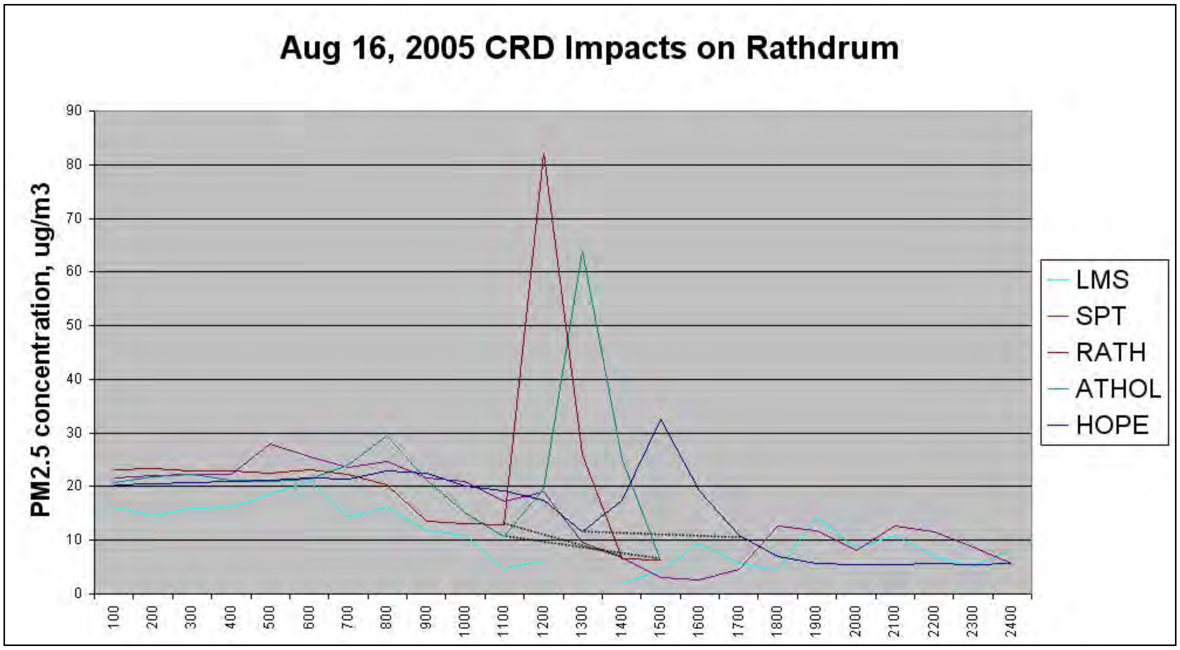

Figure 65. Typical crop residue burning impact peaks with assumed background marked for "removal"

Model Performance in Estimating Maximum 24-hour PM2.5 Concentrations

The initial simulation CALPUFF after the meteorological evaluation included all burns in the combined ISDA/Nez Perce database, including both State managed burns and on-Reservation burns. This simulation combined State and on-Reservation burns to evaluate model performance since it is not possible to separate impacts in the monitoring database. The initial simulation is referred to as "Base Case with Reservations." An example of a single day of 24-hour impact concentrations is shown for August 16, 2005 in Figure 66. This is the same day depicted above. The $PM_{2.5}$ concentrations in the plume leaving the Rathdrum area on August 16 indicate plume maximum concentrations at the approximate distance of Athol and Hope are 2.8 – 3.4 µg/m3 and 2 – 2.7 µg/m3 respectively however, those directions are biased in the clockwise direction so that they partly miss the sites at Athol and Hope where the actual concentrations were 3.5 and 1.8 µg/m3 respectively. This example is provided to demonstrate that since the MM5 windfields have up to 60 – 70^{o} uncertainty in the short term, we cannot expect them to always "hit" the monitor with any better accuracy, and the point to be made is that this evaluation recognizes that limitations and is focused on the simpler question, *Does the distribution of maximum 24-hour concentrations produced by the model compare with the distribution of maximum concentrations observed at the monitoring stations?*

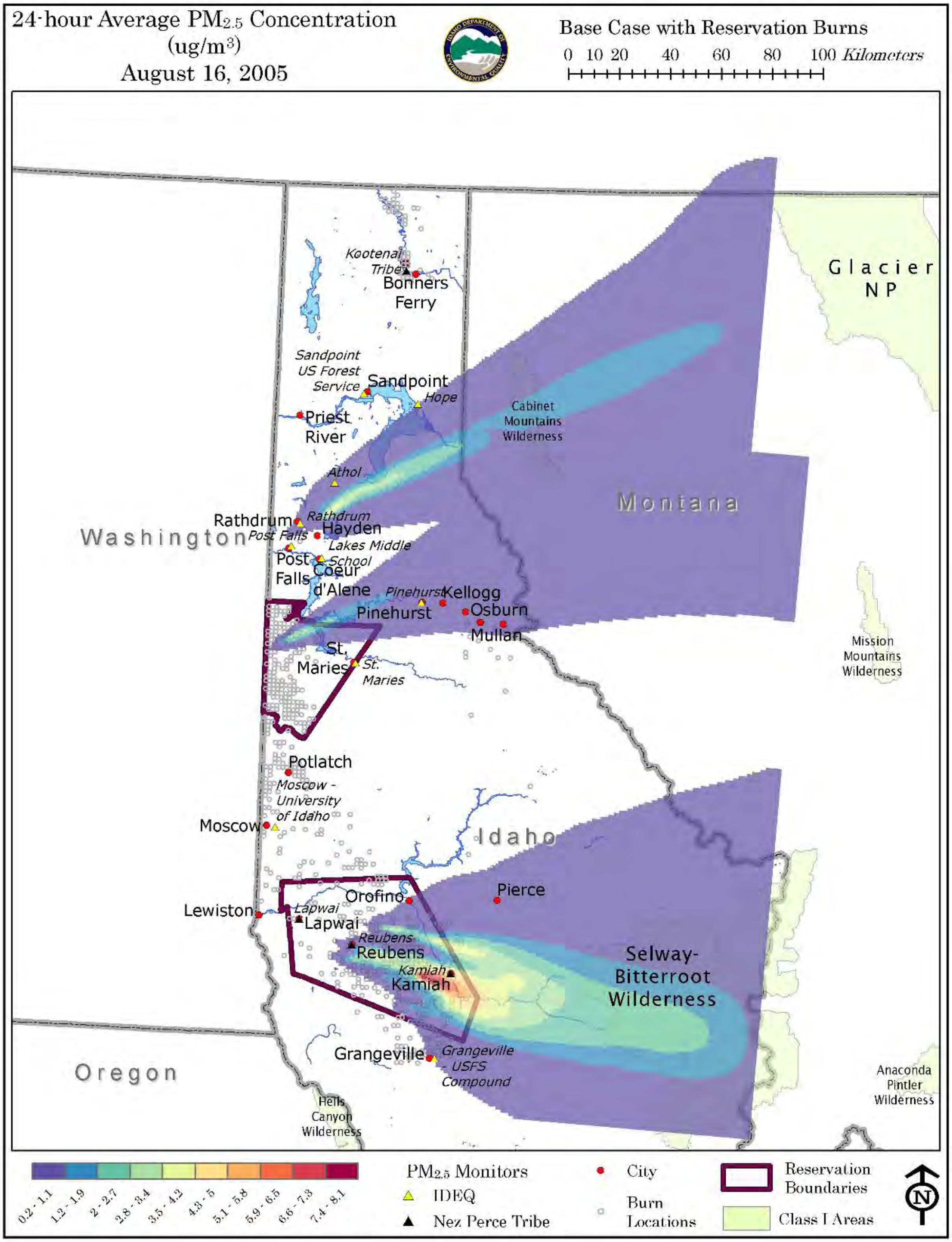

Figure 66. August16-Rathdrum Peaks.

The modeling outputs were searched for each monitoring site on each burn day to find the maximum 24-hour concentrations that occurred within a 70^{o} and +/- 3mile distance from the monitoring site to allow for day to day uncertainty in wind direction originating from the MM5 simulations. After determination of modeled impacts, the resulting impact events were analyzed to verify a) that they were crop residue burning impacts rather than wildfire impacts or some other source and b) that they did not represent fields burned closer than approximately 5 km from the monitor. Wildfires were identified as the sources of $PM_{2.5}$ impacts on August 22 and September 6 at Grangeville and on August 25 thru 28, August 31, and September 1, 2, 6, 7 and 8 in Kamiah due to a fire complex near Hells Canyon. Crop residue burning impacts that occurred within the near-field region and are not expected to be replicated by the model are indicated in Appendix I and near-field characterization is discussed in Section 5 of the SIP revision document.

The remaining 24-hour crop residue burning impacts are displayed on a QQ Chart shown in Figure 67, unpaired in space and time. There is significant negative bias at the lower concentrations where some of the observed peaks are likely the result of non-crop residue burning sources that are not in the dataset because they are getting close to the level of “noise”. Smoke from other sources, such as Eastern Washington may also contribute to these monitored values at the low end of the distribution. The middle range of concentrations appears to be unbiased, but a slight positive bias appears at the higher concentrations. Finally, the highest monitored peak corresponding to crop residue burning activity, (9.7 $\mu g/m^3$) appears at the far right, well below the expected y=x curve. This crop residue burning impact occurred in Pinehurst on Sept 8 when a large acreage was burned on the Coeur d’Alene Reservation and in Eastern Washington. This $PM_{2.5}$ impact apparently resulted from late afternoon burns which resulted in a sharp increase in $PM_{2.5}$ concentrations at Pinehurst in the early evening, but based in interpretation of the TEOM trace, rather than passing through quickly as normally occurs earlier in the day, the smoke became trapped in the basin in which Pinehurst sits, by the lack of convection that results when the sun sets. If it had passed before sunset , and concentrations had dropped, it appears from the trace that the concentrations would have been about 7 µg/m3 more in line with the model, however the trapped smoke decayed very slowly not reaching baseline levels until after midnight. This trapped smoke resulted in unusually high average concentrations all evening resulting in a very real impact not “seen” by the model. The new Operating Guide should guard against late afternoon burns, which tend to produce smoke that becomes trapped in valleys.

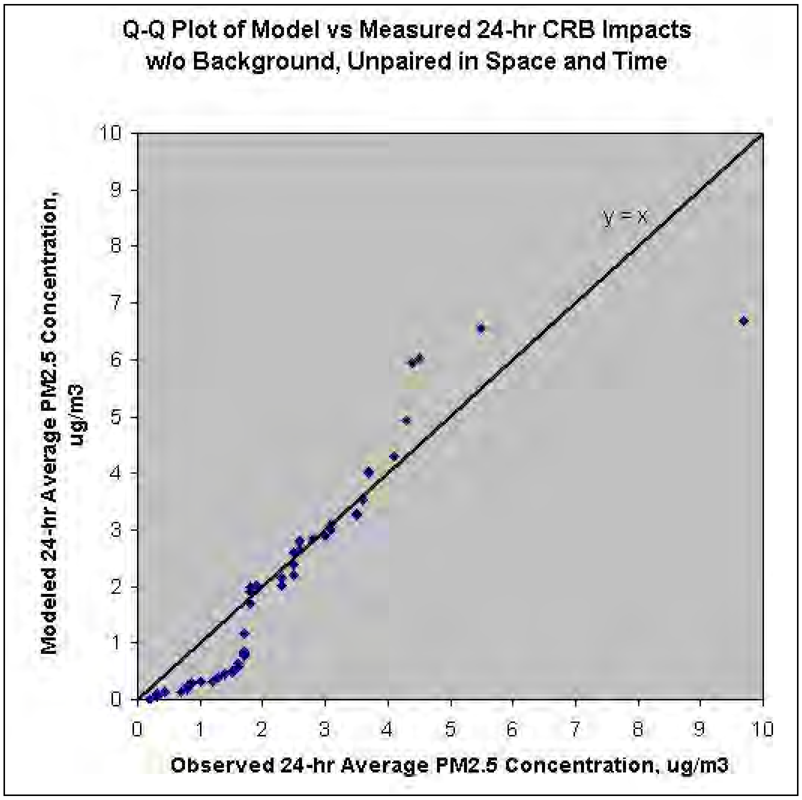

Figure 67. QQ-Plot of 24-hour crop residue burning Impacts Model vs Observations.

The previous evaluation of daily 24-hour average concentrations during the 2005 burn season indicates that except for one unusual event, the highest impacts are of similar magnitude in comparison to the monitoring results.

Model Performance in Estimating Seasonal Mean Patterns

The CALPUFF model described above is expected to perform somewhat better when predicting long-term average concentrations because hour-to-hour and day-to-day wind direction variability tends to "average out" (consistent wind direction bias outside the nudging radius of influence remains however, up to 20% in magnitude.) A scatter-plot of seasonal mean values is shown in Figure 68 showing data for all sites. The influence of a frequent near-field Boundary County impacts that are not "seen" by the model is shown by the point in the lower right corner. These impacts are characterized separately (Section 5) and will be removed from the remainder of the evaluation graphics to address impacts the model was expected to address. Figure 69 shows the seasonal mean values with the Boundary County seasonal mean removed. This scatter plot shows a much better correlation with some under prediction. The under prediction bias is more evident in a Q-Q plot of seasonal mean concentrations, shown in Figure 70. The degree of bias will be explored through statistical evaluation of these data.

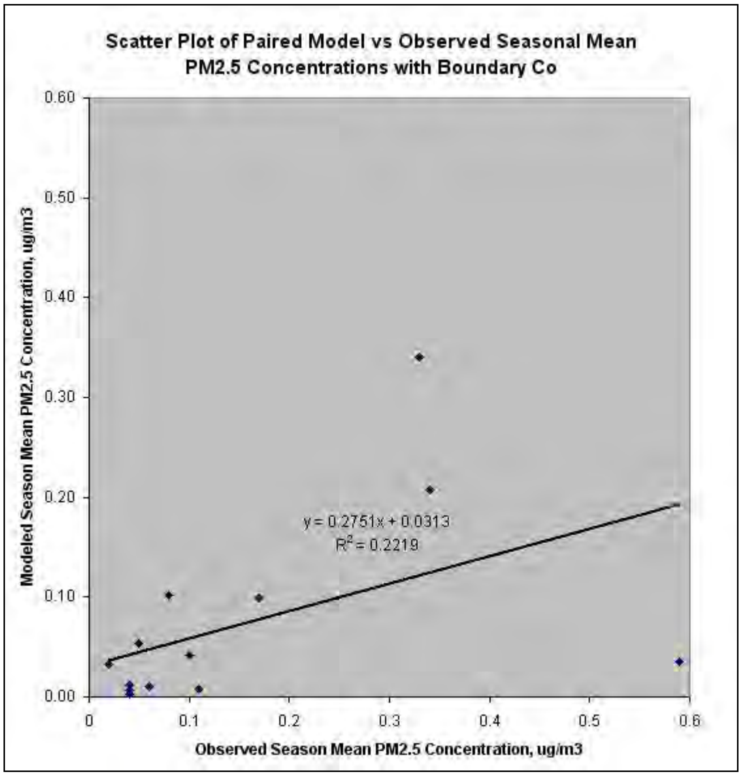

Figure 68. Scatter Plot showing paired Seasonal Mean Crop Residue Burning Contributions- All Monitors.

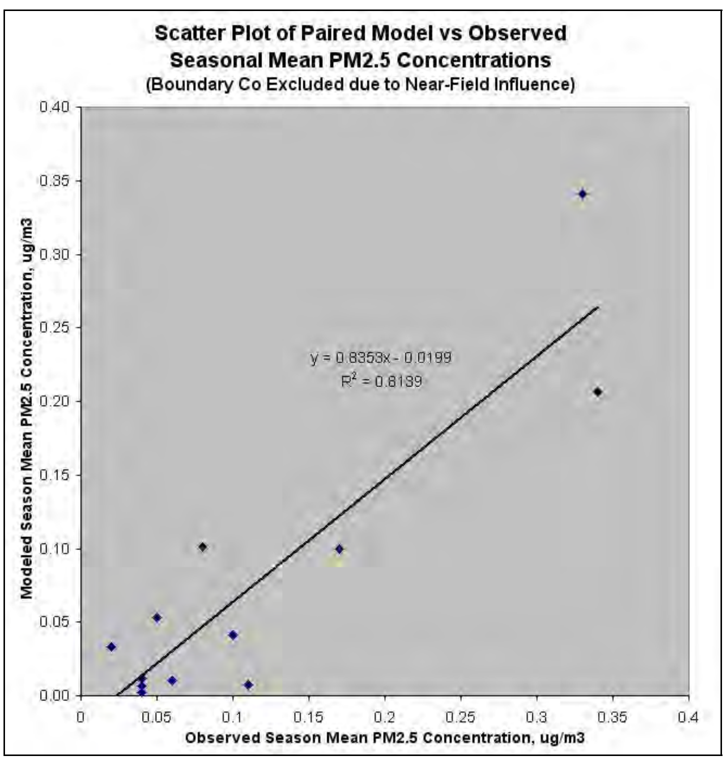

Figure 69. Scatter Plot showing paired Seasonal Mean Crop Residue Burning Contributions - Boundary County Excluded

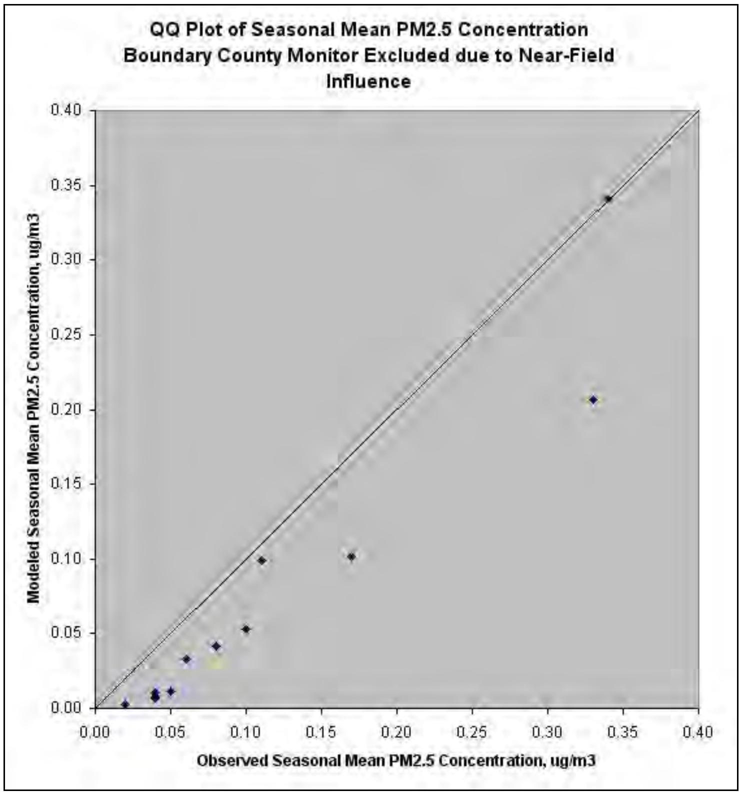

Figure 70 Q-Q Plot showing unpaired Seasonal Mean Concentrations – Boundary Co. Excluded

Model performance can be quantified using statistical metrics recommended by EPA (2007) and shown in Figure 71, where C_m indicates the model estimated value and C_o represents the observed concentration at the monitor:

- Mean Bias (MB) is the average difference between the modeled and observed values and may be a positive or negative value.
- Mean Error (ME) represents the average magnitude of the error or difference between modeled and observed values, regardless of whether it is an over- or under-prediction.
- Normalized Mean Bias (NMB) is used to normalize the bias as a percentage of the observed values to facilitate a range of concentrations and avoids over-inflating the observed range of values when very small concentrations are present.
- Normalized Mean Error (NME) normalizes the average error as a percentage of the observed values to facilitate a range of concentrations and to avoid over-inflating the observed range of values when very small concentrations are present.
- Mean Fractional Bias (MFB) equally weights the positive and negative bias estimates and can serve as a substitute for normalized bias when a minimum threshold is not used.
- Mean Fractional Error (MFE) is similar to the fractional bias except absolute value of the difference is used so the error is always positive. It is used as a substitute when normalized error becomes large as a result of not using a minimum threshold.

Model Performance Evaluation	
Performance Metric	Equation
Mean Bias (µg/m³)	$MB = \frac{1}{N}\sum_{i=1}^{N}(C_m - C_o)$
Mean Error (µg/m³)	$ME = \frac{1}{N}\sum_{i=1}^{N}\lvert C_m - C_o \rvert$
Normalized Mean Bias (%NMB) Normalized Mean Error (%NME)	$NMB = \frac{\sum_{i=1}^{N}(C_m - C_o)}{\sum_{i=1}^{N} C_o}$ $NME = \frac{\sum_{i=1}^{N}\lvert C_m - C_o \rvert}{\sum_{i=1}^{N} C_o}$
Mean Fractional Bias (%MFB) Mean Fractional Error (%MFE)	$MFB = \frac{1}{N}\sum_{i=1}^{N}\frac{(C_m - C_o)}{\left(\frac{C_o + C_m}{2}\right)}$ $MFE = \frac{1}{N}\sum_{i=1}^{N}\frac{\lvert C_m - C_o \rvert}{\left(\frac{C_o + C_m}{2}\right)}$

Figure 71 Model Performance Metrics

Performance metrics for the seasonal mean modeled $PM_{2.5}$ concentrations are shown in Table 55. Metrics were computed once for all stations and a second time with all stations except the Boundary County monitor, which is heavily dominated by near-field impacts, which are characterized separately using monitoring data (Section 5). Thus, the results without that datum are most representative of the modeling results overall and best represents model performance in all areas but the near-field region where it was not intended to be applied. The maximum error is an 0.13 µg/m^3 under-prediction at Pinehurst however this is less than one percent of the annual $PM_{2.5}$ NAAQS of 15 µg/m^3 so it is clear that model predictions are adequate to address the long-term NAAQS. Overall, the mean bias under-predicts by 0.039 µg/m^3. The aggregate bias and error values are significant however, they are not outside the bounds of some regulatory modeling performance evaluations as indicated in the EPA modeling guidance (EPA 2007). The under-prediction bias (-33.8% NMB and -70.6% MFB) suggests that seasonal mean modeled estimates should be higher, but even when this level of bias is accounted for, there is clearly no threat to the annual NAAQS and the relative spatial distribution of modeled seasonal means retains its value in understanding where most of the impacts occur and in locating additional monitoring resources.

Table 55. Performance Metrics for Seasonal Mean PM2.5 Concentration.

Performance Metric	Seasonal Mean All Stations	Seasonal Mean w/o Boundary Monitor
Mean Bias (MB)	-0.078 $\mu g/m^3$	-0.039 $\mu g/m^3$
Mean Error (ME)	0.086 $\mu g/m^3$	0.047 $\mu g/m^3$
Normalized Mean Bias (NMB)	-51.8%	-33.8%
Normalized Mean Error (NME)	56.7%	40.7%
Mean Fractional Bias (MFB)	-78.9%	-70.6%
Mean Fractional Error (MFE)	91.4%	84.2%

Results and Discussion

Model results are shown graphically in Section 5 and will not be duplicated here.

In spite of the under-prediction bias shown above, the results of this modeling are valuable in showing the relative spatial extent of Idaho crop residue burning impacts, and the relative contribution of the burns on Idaho lands at unmonitored areas and nonattainment areas. Graphical results for the seasonal 24-hour peak concentrations and the seasonal mean concentrations are shown in Section 5 both for the *Base Case with Reservations* and for the *Base Case without Reservations*. This SIP revision is concerned with the Idaho-managed burns reflected in the latter scenario, and DEQ believes these results provide an useful weight-of-evidence analysis of their spatial extent and of the magnitude of potential crop residue burning impacts due to Idaho crop residue burning activity.

One of the questions that may be raised is “Are there unmonitored areas with much greater concentrations than those reflected in the 2005 monitoring database?” There are two answers to this question:

First, near-field impacts are not properly simulated and no attempt was made (or ever intended) to use this modeling approach for that purpose). However, the near-field can typically be an area with the greatest impact once or twice a year. Near-field impacts observed in the 2005 monitoring database are characterized in Section 5. None of them reflect a 24-hour contribution over 75% of the NAAQS for $PM_{2.5}$ although higher levels are expected closer to the field. Since each field is burned only once per year, it does not appear that there is a likelihood that the 35 $\mu g/m^3$ NAAQS for $PM_{2.5}$ would be exceeded 8 days in one year (the 98th percentile day.) A supplemental analysis of potential near-field impacts is provided in Appendix J.

Secondly, to examine this question in the mid- and far- field regions where CALPUFF results may be used, the maximum seasonal *model-estimated* mean value for each airshed was displayed along with the maximum *monitored* seasonal mean crop residue burning contribution in each airshed. The resulting chart Figure 72, indicates that the maximum seasonal mean that occurs in the airsheds with the greatest density of crop residue burning is around 0.34 $\mu g/m^3$ and there is reasonably good agreement between the monitoring and modeling results at these high seasonal averaged concentration levels. The Sandpoint seasonal mean is under-predicted due to wind direction bias in the original MM5 outputs that steers winds eastward very consistently. The Clearwater-Palouse airshed seasonal mean concentration appears to be over-predicted but this is because much of the crop residue burning activity in that area occurs to the north and east of Moscow and the maximum seasonal mean impact for that airshed is not near the monitor. Finally, as discussed earlier, the Boundary seasonal mean monitored value is highest due to near-field events not properly simulated by the model in its current form. (These near-field levels are characterized in Section 5 using all available monitoring data. Neither the highest 24-hour impacts nor the seasonal means concentrations in the near-field region appear to threaten the NAAQS.) In conclusion, we believe the highest impact areas are represented reasonably well by monitoring in the Coeur d’Alene-Pinehurst airshed and Clearwater-Camas airshed, however the maximum impact area for the Clearwater-Palouse airshed area may not be well represented by the monitoring network, although it does represent the center of population. Refer to Section 5 for graphical tools for potential use in locating additional monitoring resources.

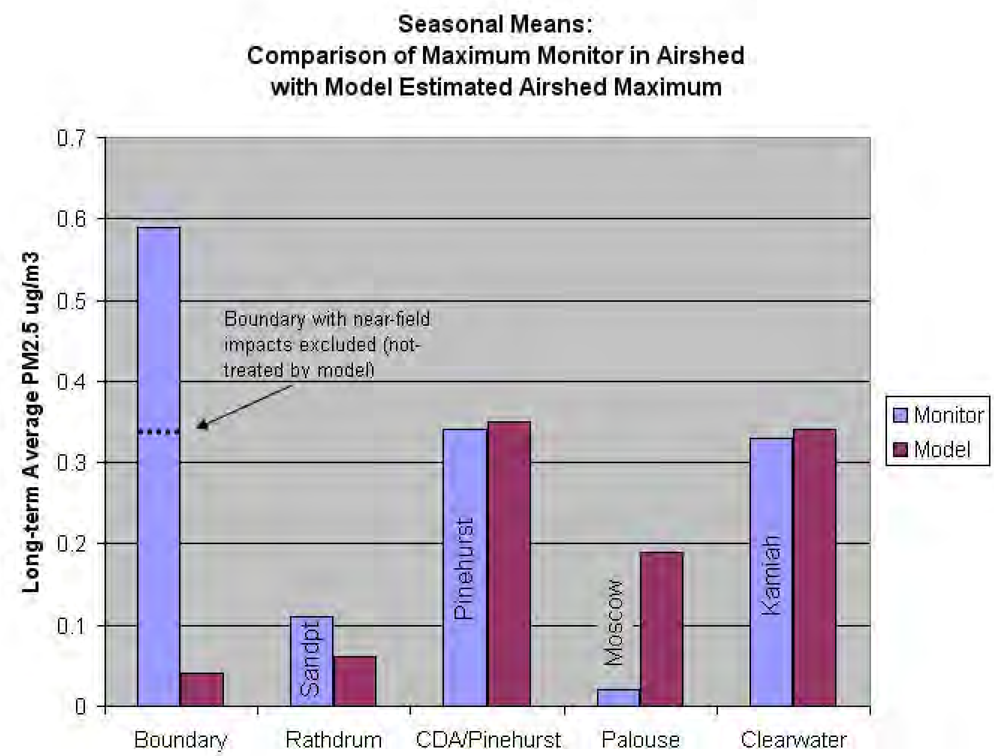

Figure 72. Comparison of Maximum Airshed-wide Seasonal Means.

Appendix I: Identified Crop Residue Burning Impacts Computed as 24-hour, Background-Subtracted Concentrations

24-hr Monitored Contributions (µg/m3) with Background Subtracted (TEOMS or Nephs)													
Burn Day	Boundary (a)	Rathdrum (a)	Athol	Sandpt	LMS/CDA	Hope	Pinehurst	Moscow	Kamiah	Lapwai	Reubens	Clearwater-Lewiston	Clearwater-Grangeville
15-Jul-05	1.1												
19-Jul-05											3.1		
28-Jul-05													0.84
29-Jul-05									2.6				1.4
30-Jul-05	2.2												
1-Aug-05									2.5				
2-Aug-05									1.6				
3-Aug-05											2.5		
9-Aug-05									3.1	4			3.7
16-Aug-05		3.7	3.5			1.8			2.6		1.7		4.4
22-Aug-05				2.3	0.86	0.3			4.1				
24-Aug-05									2.3				
26-Aug-05			1.5	4.3		1.7							2.6
30-Aug-05							1.8						
31-Aug-05							5.1						
2-Sep-05	6.3			0.2			3.5						2.8
6-Sep-05									1.9				
8-Sep-05	6.7				1.7		9.7	2.3	2.3				
13-Sep-05									0.3				
14-Sep-05					0.3		4.5		1.3				
15-Sep-05	10.8								1.9				
16-Sep-05	4.3												
19-Sep-05					1.5		0.7		0.3				
20-Sep-05					0.43		1.6		1.7				
22-Sep-05	17.2			3.7	0.8		1.7						
23-Sep-05	5.7												
26-Sep-05					0.3		1						
28-Sep-05					3		1.8		0.8				
29-Sep-05									1.2				
14-Oct-05	0.3											5.5	
Season Avg Contrib:	0.59(c)	0.04	0.05	0.11	0.10	0.04	0.34	0.02	0.33	0.04	0.08	0.06	0.17
Est. Annual Avg Contrib (b):	0.15	0.01	0.01	0.03	0.02	0.01	0.09	0.01	0.08	0.01	0.02	0.02	0.04
Season Max 24-hrContrib:	17.20	3.70	3.50	4.30	3.00	1.80	9.70	2.30	4.10	4.00	3.10	5.50	4.40
Number of Impacts:	9	1	2	4	8	3	10	1	16	1	3	1	6

Burn Day	Boundary (a)	Rathdrum (a)	Athol	Sandpt	LMS/CDA	Hope	Pinehurst	Moscow	Kamiah	Lapwai	Reubens	Clearwater-Lewiston	Clearwater-Grangeville
24-hr Monitored Contributions Excluded due to Documented Wild Fire Impacts													
Aug 9, 10, 11-14													X
Aug 26, 27, 28, 31									X				
Sept 1,2,6,7,8									X				
Notes: (a) Concentrations in heavier boxes are near-field monitored values not addressed in CALPUFF modeling. (b) *Est. Annual Avg Contrib* is 1/2 seasonal mean, conservatively assuming burn season is 1/2 of annual burn period. (c) Without near-field impacts Boundary Seasonal Avg for comparison to model is 0.33 µg/m^3.													

Appendix J: Supplemental Weight-of-Evidence Near-field Analysis

Section 5.3 of this SIP discusses the absence of models capable of realistically simulating smoke impacts in the near-field region, within approximately 5-7 km from a burning field. In the absence of suitable modeling technology for this region, all available near-field observations are summarized in Section 5.3, Table 18, for 2005, the period of analysis in this SIP. One extreme near-field observation is also included from another year to better characterize conditions.

In an effort to expand the near-field characterization to consider all available data, even beyond the current 16 continuous monitors deployed in the region, two independent studies (non-State and non-Tribal) have been identified which report short-term $PM_{2.5}$ concentration measurements near or within burning fields. These studies are not included in the main body of the SIP because the methods employed have not been intercompared with the Federal Reference Methods and their quality assurance procedures are not fully known. Nevertheless, they were included in this analysis, along with the Table 18 near-field data, in an attempt to supplement the sparse the near-field concentration data. The data for both studies is provided in Table 56, along with wind speed data obtained independently from regional airports. In total 3 sets of data are examined together in Figure 73:

1. WSU Data. A study published by Ranil Dhammapala (2006) with Washington State University reports $PM_{2.5}$ concentrations measured on low volume filter samples collected at the downwind edge of burning fields. Upwind and downwind tests were conducted at 8 wheat and 2 Kentucky Bluegrass fields in the Eastern Washington and Northern Idaho region. The background-subtracted $PM_{2.5}$ at the downwind edge of each burning field are shown (as open blue diamonds) in Figure 1 at x=0 (since all measurements were at the edge of the field). The observations range from 190 to 4120 µg/m^3. The mean concentration is 1407 µg/m^3 and the 95% Confidence Interval is 389 – 2425 µg/m^3 as shown by the solid blue diamond and blue error bars at x=0).

2. **UW Data**. A worker exposure study by L.-J. Sally Liu, et. al. with the University of Washington Department of Environmental and Occupational Health Sciences (2004) reports $PM_{2.5}$ data at 10 different burning fields (in addition to gases and organic compounds). This study utilizes both a Harvard Personal Impactor ($HPEM_{2.5}$) to collect samples over the duration of the burn and a pDR real-time instrument which provides one minute averages. Quality assurance information is not currently available. Time activity diaries establish the amount of time each worker is in the field, but provides no indication how much of that time is on the upwind versus downwind side of the smoke producing areas. As a result, the study results may capture peak, in-plume, one-minute averages, but the longer term ($HPEM_{2.5}$) averages are not well suited for the purposes of plume dispersion information--this study was simply designed for another purpose. Nevertheless, if we make the assumption that the amounts of time upwind and downwind of the localized smoke sources are reasonably balanced, the data can be incorporated into the graph in Figure 1 (as open purple squares at -500m on the x-axis. The point at x= -500m is approximately half way between two corners of a hypothetical square field 125 acres in size. This location was assumed to allow comparison to the other data.) The integrated $PM_{2.5}$ observations from the impactor (HPEM2.5) are assumed to represent total $PM_{2.5}$ concentrations without background subtraction (since total $PM_{2.5}$ levels are what is important for exposure studies). The observed $PM_{2.5}$ concentrations ranged from 68 to 3665 µg/m^3. The mean concentration is 1117 µg/m^3 and the 95% Confidence Interval is 376 – 1858 µg/m^3 (as shown by the solid purple square and purple error bars at x= -500).

3. **Near-Field Data.** The near-field data presented in Section 5.3, Table 18 are also shown in Figure 1 as solid orange circles to allow a comprehensive comparison. It should be noted, as shown in Table 18, that none of the near-field concentrations reach 50% of the level of the 24-hour NAAQS for $PM_{2.5}$ (the highest is 17.2 µg/m^3), thus, there is little likelihood that the 35 µg/m^3 standard can be reached 8 times at a single location (required for a NAAQS violation).

Dispersion Model Estimates

While proper plume modeling with realistic plume rise is not feasible with the state of the science today, some simplified treatment of the portion of smoke that remains at ground level may be useful. This analysis assumes that the concentrations observed in the ground-level monitoring studies described above may characterize the non-buoyant, ground-level smoke reasonably well and that it may disperse normally from the sources regardless of the behavior of the buoyant portion of the plume that typically rises off the ground and transports much further before impacting the ground.

In an effort to form a comprehensive picture of near-field concentrations simple Gaussian area source modeling was conducted with the SCREEN3 model for the sole purpose of demonstrating the approximate relative rate of dispersion for any of the smoke that persists at ground level during a burn. (The SCREEN3 model is also not approved by EPA for modeling sources in this manner and it should be considered only as an approximation to rates of dispersion that may occur.) Dispersion factors were obtained by simulating a non-buoyant area source plume, with unit emissions, for a 125 acre field under a variety of conditions selected to bracket the daytime dispersive conditions. Thus dispersion factors were derived from the SCREEN3 modeling for convective or “Best” conditions (A stability, 1 mps); for windy, neutral or “Worst” conditions (D stability, 8 mps) and for “Typical” conditions at the regional average 10-meter wind speed of 3.6 mps (B stability). By normalizing each of these dispersion curves to the mean edge-of-field concentration in the WSU study (1407 µg/m^3), the dispersive conditions may be bracketed. These three dispersion curves, each normalized to match 1407 µg/m^3 at x=0 are shown as solid blue, red and yellow curves for Best, Worst and Typical conditions, respectively.

Discussion

The three data sets and relative dispersion estimates depicted in Figure 1 provide a relatively consistent characterization of the short term (~ 1hr) concentrations that may occur in the near-field. The relative pattern in modeled dispersion curves show an increase from the center (x = -500) to the downwind edge of an area source (x= 0). The mean value for Liu’s worker study (1117 µg/m^3) and the mean value for the WSU study (1407 µg/m^3) also reflect this behavior (increasing to the downwind edge then decreasing beyond it.) This is consistent with the expected behavior because the maximum theoretical concentration for any ground-level, non-buoyant, area source is always along the downwind edge. The near-field data ranging from 600 m to 6200 meters downwind are also bracketed by the relative dispersion curves constructed by combining the WSU mean concentration and the “Worst” case dispersion curve.

Both the UW and the WSU data sets contain extreme values that fall well outside the 95% Confidence Intervals. This doesn’t necessarily mean those data are suspect or did not occur, it simply suggests that if they are valid, a) they do not occur very often, and b) it is important to understand what may have caused them so that steps can be taken to prevent them from occurring in the future.

Wind speeds were obtained in the same airshed regions for each study day to explore possible reasons for the two high events. For the UW study, most work was conducted during somewhat elevated winds so there is not a clear trend that is observable by inspection.

The highest edge-of-field concentration in the WSU study (4120 µg/m^3) occurred on 4/23/2005 when the wind averaged 14 miles per hour for the day time burning hours and ranged up to 17 miles per hour. A second sample on the same day is the lowest observed concentration so, again, there is not a clear trend, however even if the two samples on 4/23/2005 are averaged, the concentration will still be the highest in the data set (2155 µg/m^3). Thus, this analysis suggests that winds in the range 14 – 17 miles per hour should be avoided. This finding is supported by the Nez Perce operating guide which requires that no new burns be ignited if the winds are consistently above 15 miles per hour. DEQ intends to incorporate the same limit into its Operating Guide.

The extreme concentration that occurred in the near-field during the WSU study is well outside the 95% Confidence Intervals for that study and is not expected to occur typically. Nevertheless, wind speed limitations in DEQ's operating guide will be set at some speed at or below 15 miles per hour and it will be re-evaluated in an open process each year to assure that such high near-field levels do not occur. By limiting the wind speed, DEQ feels that the likelihood of experiencing another extreme event is very low. In view of this planned restriction, one additional SCREEN3 model run was made to address a conservative (though not extreme) rate of dispersion when the edge-of-field concentration is at 1858 $\mu g/m^3$, the 95% upper confidence limit for the data set. This result is shown as a dotted green line in Figure 73. This curve is intended to characterize the highest concentrations that are likely to occur in the future over the near-field region.

Likelihood of Violating the NAAQS

The likelihood of violating the NAAQS is a function of how far from a burning field the 24-hour concentration may be over 35 $\mu g/m^3$, and the probability that the areas within the 35 $\mu g/m^3$ impact area will be impacted at that level 8 times in one year. If the 24-hour background concentrations is 10 $\mu g/m^3$ (the regional seasonal average is less than 7 $\mu g/m^3$) then a 500 $\mu g/m^3$ CRB contribution over a one hour period added to that background will result in a 24 concentration of 35 $\mu g/m^3$ during a single field burn. Thus, to examine the NAAQS attainment question, we must determine how far away from a field the 500 $\mu g/m^3$ one-hour concentration is likely to occur.

The greatest distance from a 125-acre field burn at which 500 $\mu g/m^3$ may occur for one hour, is at approximately 700 meters from the edge of the field (dotted green line in Figure 1). This may be expected to occur less than 5% of the time since conservative meteorology is used with the 95% upper confidence level. Since the 125 acre field is larger than 700 m on a side, simple geometry suggests that even with many tightly packed fields and perfectly coordinated and unrealistic wind directions, the 24-hour concentration could not possibly exceed 35 $\mu g/m^3$ eight times. Since the $PM_{2.5}$ NAAQS requires 8 exceedances of this concentration level to trigger a violation, it is clear that the standard cannot be violated in the near-field. Further, since concentrations decrease rapidly with distance, there is even less likelihood of violating the NAAQS further away.

Protection of the NAAQS will further be assured by the application of the additional criteria and procedures described in the Response to Comments. These include, but are not limited to, the application of statutory triggers for making burn decisions, proscriptions on burning when wind direction would transport smoke toward institutions with sensitive populations, and a prohibition on burning within three miles of institutions with sensitive populations when wind speeds exceed 12 mph (see Responses to Comments #48).

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References

Dhammapala (2006). Ranil Dhammapala, Evaluating Emission Factors of $PM_{2.5}$, Selected PAHs and Phenols from Wheat and Kentucky Bluegrass Stubble Burning in Eastern Washington and Northern Idaho, A dissertation submitted in partial fullfillment of the requirements for the Degrees of PhD in Civil Engineering. Washington State University, August, 2006.

Liu (2004), L.-J. Liu, T. Ting, C. Simpson, T. Gould, and D. Hardie, *Assessment of Farmer's Exposure to Smoke from Agricultural Burning*, Presented to Ag Burning Task Force Meeting, Spokane, 6/10/2004.

Table 56. Supplementary Near-Field Data

WSU Study (Dhammapala, 2006)								
Location/ID	**Date**	**Avg WS (mph)**	**Max WS (mph)**	**Avg Gust (mph)**	**Type**	**Downwind PM2.5 Conc, mg/m3**	**Upwind PM2.5 Conc, mg/m3**	**Conc Diff PM2.5, µg/m3**
Nez Perce Co	8/20/04	4.6	9		KBG	1.03	0.06	970
Nez Perce Co	9/8/04	6.8	14	18	KBG	1.95	0.06	1890
Dayton, Wa	9/29/04	6	12	14	Wheat	1.31	0.04	1270
Dayton, Wa	3/18/05	8.2	14	17.7	Wheat	1.52	0.05	1470
Colfax, Wa	3/22/05	11.5	15		Wheat	0.8	0.09	710
Palouse, Wa	4/23/05	14	17		Wheat	4.25	0.13	4120
Palouse, Wa	4/23/05	14	17		Wheat	0.32	0.13	190
Connell, Wa	8/2/05	5.3	6	12.6	Wheat	0.71	0.07	640
							Average:	1407.5
Uof W Worker Study (Liu et al, 2004)								
ID	**Date**	**Avg WS (mph)**	**Max WS (mph)**					**HPEM2.5 Conc, µg/m3**
W01-02	10/15/03	14	18					325
W01-02	10/22/03	8.8	12					3665
W02	10/14/03	10.4	14					68
W03	10/15/03	14	18					1378
W04	10/20/03	9.2	10					628
W05	10/21/03	8.8	13					1157
W06	10/21/03	8.8	13					653
W07	10/22/03	8.8	12					1807
W08	10/22/03	8.8	12					1034
W09	10/22/03	8.8	12					453
							Average:	1116.8

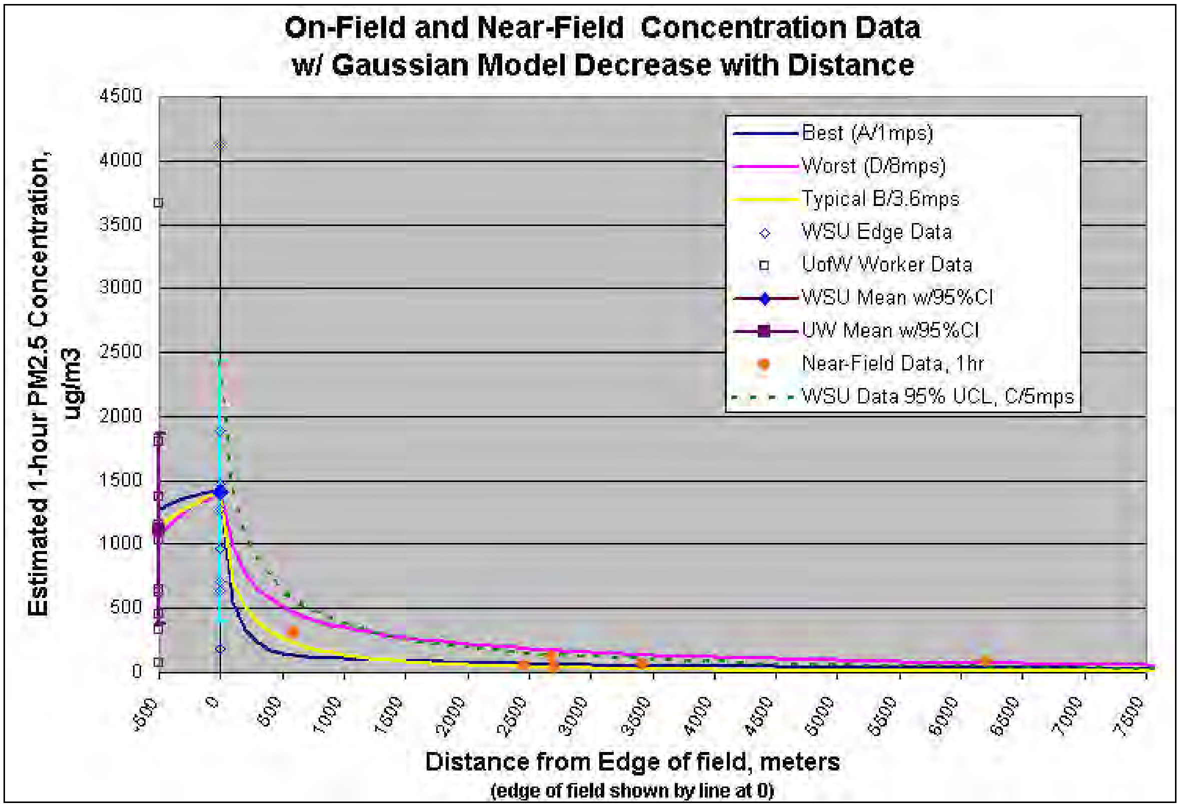

Figure 73 On-field and near-field $PM_{2.5}$ concentration characterization.

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