

**Title of Task:** Air Quality Planning and Assessment Protocol (12/20/1999)

**Task Team Leader:** Ann Acheson

**Team Members:**

<u>Name</u>	<u>Discipline</u>	<u>Unit</u>
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**Product Description:** An air quality planning and assessment protocol document which describes how to define air quality issues, the appropriate standards and guidelines which should be considered, where to find air quality information to describe the affected environment, and what is needed to adequately consider the consequences to air quality and air quality related values.

**Date Product Delivered:** December 1999

**Product Importance:** The 1977 & 1990 Clean Air Act Amendments mandate that federal land manager's have an affirmative responsibility to protect air quality related values. Federal land managers are also required to manage lands to protect air quality and minimize air pollution impacts when possible. Air pollution is a growing concern with the public as population near rural areas in R1 continues to increase. The Environmental Protection Agency has promulgated more stringent air quality standards for PM 2.5 and regional haze to protect human health and visibility.

**How Product will be used in:**

**Landscape Assessments:** The protocol can be used to help identify air quality issues associated with long range interstate transport of pollutants.

**Forest Plan Revisions:** The protocol can be used to highlight air pollution areas of concern and understand what is occurring on adjacent lands.

**Production of Goods and Services:** The protocol and the tools described within it will enable land managers and the public to more readily understand air quality trade-offs and areas of concern.

**Scale in Which the Product is Used:** Product can be used at the landscape level, Forest level or project planning level

**Relationship to Broader Scale Assessments:** Tools generated for this protocol are based on work from the Columbia River Basin, Greater Yellowstone Area, and other air quality dispersion analysis.

**External Involvement:** Pacific Northwest Research Station has been heavily involved in developing some of the tools. The Intermountain Fire Sciences Lab will also be a partner. Regions 4 and 6 should also be involved.

***Recommendation of Application of Product:*** This protocol and its ensuing information will allow managers to consider air quality along with other resources to identify "hot-spots" and help guide management decisions. The guidance will help us better meet our stewardship and legislative responsibilities to protect air quality and air quality related values.

### ***Accuracy and/or Precision***

### ***Detailed Description of Product:***

#### Forest Plan Revision

A much more complete addressing of air quality issues is anticipated in the upcoming Region 1 Forest plan revisions. The major Forest plan revision air quality emphasis areas include:

#### Define Air Quality Issues

Several air quality issues should be evaluated as part of the NEPA process for Forest plan revisions including:

1. What are the current air quality conditions within the Forest and are state and national air quality standards being met? If non-compliance areas occur on the Forest what are the sources?
2. Will the management activities proposed by the Forest plan meet air quality standards and visibility requirements (wildfire, broadcast burning, pile burning, road dust, etc.) Will proposed management activities impact State designated non-attainment areas?
3. How will the Forest, through participation in the air regulatory process, insure that permitted activities and potential emission increases from outside the Forest meet air quality standards and protect air quality and AQRV's in Class I areas.

#### Standards and Guidelines

Subsequent forest plan implementation and NEPA efforts will use the Forest Plan standards and guidelines for air quality direction. Air quality standards and guidelines which could be used include:

- 1) Forest management and permitted activities will comply with National and State ambient air quality standards, regional haze visibility requirements, Class 1 and Class II Prevention of Significant Deterioration increments, conformity analysis requirements, and other state and national air quality standards and coordination requirements (such as the Montana Smoke Management Memorandum of Agreement (1988)).

- 2) Activities which pose potential to substantially change air quality conditions (such as broadcast burning, oil and gas leasing, and ski area development) should include an air quality issue in NEPA analysis and include effects disclosure and comparison to air quality standards using accepted analysis methods.
- 3) AQRV's will be identified in Class I areas and the AQRV inventory and monitoring plans integrated into Wilderness Implementation plans. Monitoring of AQRV's will be conducted to determine condition, trend, and sensitivity for AQRV's particularly subject to air pollution.
- 4) AQRV's will be protected through coordination with the State air regulatory agencies in the Prevention of Significant Deterioration permitting process, and other permitting activities. This requirement applies primarily to upwind industrial developments with the potential to adversely impact Class 1 AQRV's.
- 5) Forest and rangeland resources will be protected from significant adverse effects of air pollutants and atmospheric deposition by cooperation with air regulatory authorities.

### Affected Environment

Considerable information is now available concerning air quality conditions in and around Region 1 Forests which can be summarized or referenced. Much of this information is summarized in the Region 1 ARM Program document (4/97). Information which can be incorporated includes a description of the Forest Service air quality responsibilities, air quality standards, regional haze visibility requirements, emission sources, Class I/AQRV responsibilities, existing air quality conditions and trends, Wilderness AQRV's and sensitivity, general Forest climate (wind, inversions, topographic air flow patterns), air quality data in and around the Forest, NADP deposition data, anticipated changes in permitted emissions, and anticipated changes in off Forest sources. GIS maps can be made showing emission sources/distances/prevaling winds, a pollutant potential overlay for the Forest, and an overlay of sensitive lakes, class I visibility air pollutants. Some sources of this information include:

- Columbia River Basin Air Quality Assessment (11/95)
- Regional Pollution Potential (4/98)
- Air Quality Climate of Columbia River Basin (8/98)
- Region 1 Air Resource Management Plan (4/97)
- Cabinet Mountains Wilderness AQRV Plan (6/93)
- Selway Bitterroot Wilderness AQRV Plan (7/94)
- Anaconda Pintlar Wilderness AQRV Plan (3/95)
- Mission Mountains AQRV Plan (6/96)
- Scapegoat Wilderness AQRV Plan (4/97)
- Wilderness Area data from USFS National Air Quality web site
- Lake Chemistry data from USFS NRIS Air web site
- NADP data from NREL Web Site
- EPA AIRS data base web site for emission sources
- Screening Procedure to Evaluate Effects of Air Pollution in Region 1 Wilderness Areas (draft, 1997)

- Region 1 Air Quality Guidance for Oil and Gas Leasing (5/94)
- AQRV lichen and lake monitoring reports
- Visibility Summary for Region 1 (4/91)
- Montana Air Quality Summary for 1995
- Desk Reference for NEPA Air Quality Analysis (1995)
- Greater Yellowstone Area Air Quality Assessment Document (5/99)
- EA's and EIS's on Forests which describe air quality conditions

### Environmental Consequences

Specific air quality environmental consequences of Forest Service activity or permitted emissions will be disclosed in project NEPA documents such as for broadcast burns, timber sales, mining, and oil and gas development. However a general discussion of air quality effects of Forest Plan alternatives should be included in the environmental consequences section.

Specific air quality environmental consequences will be disclosed in project NEPA documents such as broadcast burns, timber sales, mining, and oil and gas development. However a general discussion of air quality effects of Forest Plan alternatives should be included in the environmental consequences section. This should include a summary of the number of acres by decade of broadcast burns, amount of timber sale activity and associated slash burning, and other emissions. A general disclosure of wildfire activity and associated emissions should be discussed.

Suggested methodology would be to estimate emissions for a few typical broadcast burns and timber sale activities using standard accepted methods (CONSUME, EPM emission factors etc.) then evaluate the dispersion and concentration of emissions with models (FOFEM, SCREEN2, NFSPUFF etc.) and compare to National Ambient Air Quality Standards. This would be particularly appropriate for projects generating smoke upwind of cities and/or non-attainment areas. Air quality methods and models will improve through the period of implementation of the Forest plan revisions, particularly as air quality models become more integrated with GIS technology. The emissions and consequences of the representative activities evaluated then could form the basis for estimating emissions for the entire Forest. A narrative explanation of the results with explanation of assumptions will be needed since the forestwide emissions estimates are speculative. The main thrust of the analysis would be to evaluate if typical projects pose potential to violate National Ambient Air Quality Standards. Wildfire emissions could be disclosed semi-quantitatively by typical types and amounts of emissions concentrations times the estimated range of wildfire acres. Mining and oil and gas related emissions could be disclosed for existing permitted mines with an explanation of the procedures used to evaluate and constrain emissions for future proposed mines.

### Monitoring

The monitoring sections of the Forest plan should include all of the proposed air quality monitoring activities. Much of the air quality monitoring will be associated with Class I Wilderness AQRV plan implementation such as visibility, lake chemistry, snow chemistry, and lichen modeling. AQRV monitoring plans should be incorporated into Wilderness Implementation Plans.

### *Air Quality NEPA Analysis*

NEPA documents should include air quality as an issue when air quality issues and concerns are likely to be significant such as:

- The project is highly controversial with intense public scrutiny and/or air quality raised as an issue in scoping .
- The project has potential for emissions impact to a Class I area or other environmentally sensitive areas.
- The project could add emissions to a designated non-attainment area.
- Public health or safety could be affected by emissions.

A Desk Reference for NEPA Air Quality Analysis (CH2MHill, 1995) which was developed for the Forest Service, contains specific air quality NEPA guidance and procedures for evaluating emissions from Forest Service activities. The desk reference summarizes models which can be used NEPA analysis as well as aerometric monitoring. Smoke Modeling should follow procedures in in An Introduction to Smoke Emissions and Dispersion Modeling (R1 USFS and CH2Mill, 1996 and 1998). The Air Quality Analysis for Oil and Gas Leasing, USFS R1, 1994 contains a description of methodology appropriate for NEPA analysis of oil and gas drilling and production. The NEPA Guidance for Air Quality Analysis of Ski Area Construction or Expansion, USFS R1, 1998 contains a description of methodology appropriate for NEPA analysis of oil and gas drilling and production.

When an air quality issue is included in a NEPA document the disclosure can include:

#### Affected Environment:

- Description of air quality background conditions
- Description of wind dispersion patterns in the area including inversion potential
- Identification of downwind sensitive areas (environmental and municipal)
- A summary of regulatory emission requirements

#### Environmental Consequences:

- An estimate of emission levels by alternative
- A dispersion model analysis for impacts under various atmospheric conditions. Potential models include FOFEM, SASEM, SCREEN2, COMPLEX1, and NFSPUFF.
- A comparison of dispersion model results to National Ambient Air Quality Standards
- An analysis of potential effects on AQRV's when a Class I area is involved is appropriate. This can include dispersion modeling and comparison to Prevention of Significant Deterioration increments, VISCREEN modeling for visibility, and MAGIC modeling for lake chemical changes.