



U.S. Department of the Interior
Bureau of Land Management



Managing Air Quality on BLM Lands

Garfield County Energy Advisory Board Meeting

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U.S. DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT



BLM

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Air Resources

The BLM's Air Resource Management Program (Air Program), part of the Bureau's Soil, Water, and Air (SWA) program, coordinates and supports the BLM's efforts to manage air resources within its "multiple use" and "sustained yield" mission. This involves carrying out the Federal Land Policy and Management Act of 1976 (FLPMA) and ensuring that all activities that the BLM conducts or authorizes comply with the Clean Air Act and other air pollution laws and regulations.

Air Resources

- Soil, Water and Air Program
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Topics

- Assessment, Monitoring and Expertise
- Technical Guidance and Policy
- Laws & Regulations
- Partners
- Success Stories
- Contacts



Cattle grazing under the Big Sky in eastern Montana.

Why does the BLM manage air resources?

Across the National System of Public Lands, the BLM develops land use plans (known as resource management plans, or RMPs) and authorizes oil and natural gas development and production, solar and wind energy generation, solid mineral extraction, off-highway vehicle events, and countless other land uses. Through these uses, lands managed by the BLM strengthen economies and communities, increase energy security, create jobs, and provide recreational opportunities. Yet, many BLM-authorized land uses — as well as the BLM's own activities and wildland fires — have the potential to affect air resources on BLM lands and those nearby.

Particularly in the West, recent growth in population, urbanization, and demand for resources and recreation on BLM-managed lands have contributed to concerns about air resources where few existed in the past. It is increasingly important that the BLM understand regional air quality trends and address potential impacts of proposed land uses in the context of those trends.

Managing Air Quality

- Determine and disclose impacts
- Mitigate Impacts from BLM authorized activity
- Evaluate management with assessment and monitoring tools
- State Air Pollution Control Division of CDPHE regulates emissions through permitting process

Objectives of Air Resources Management Program

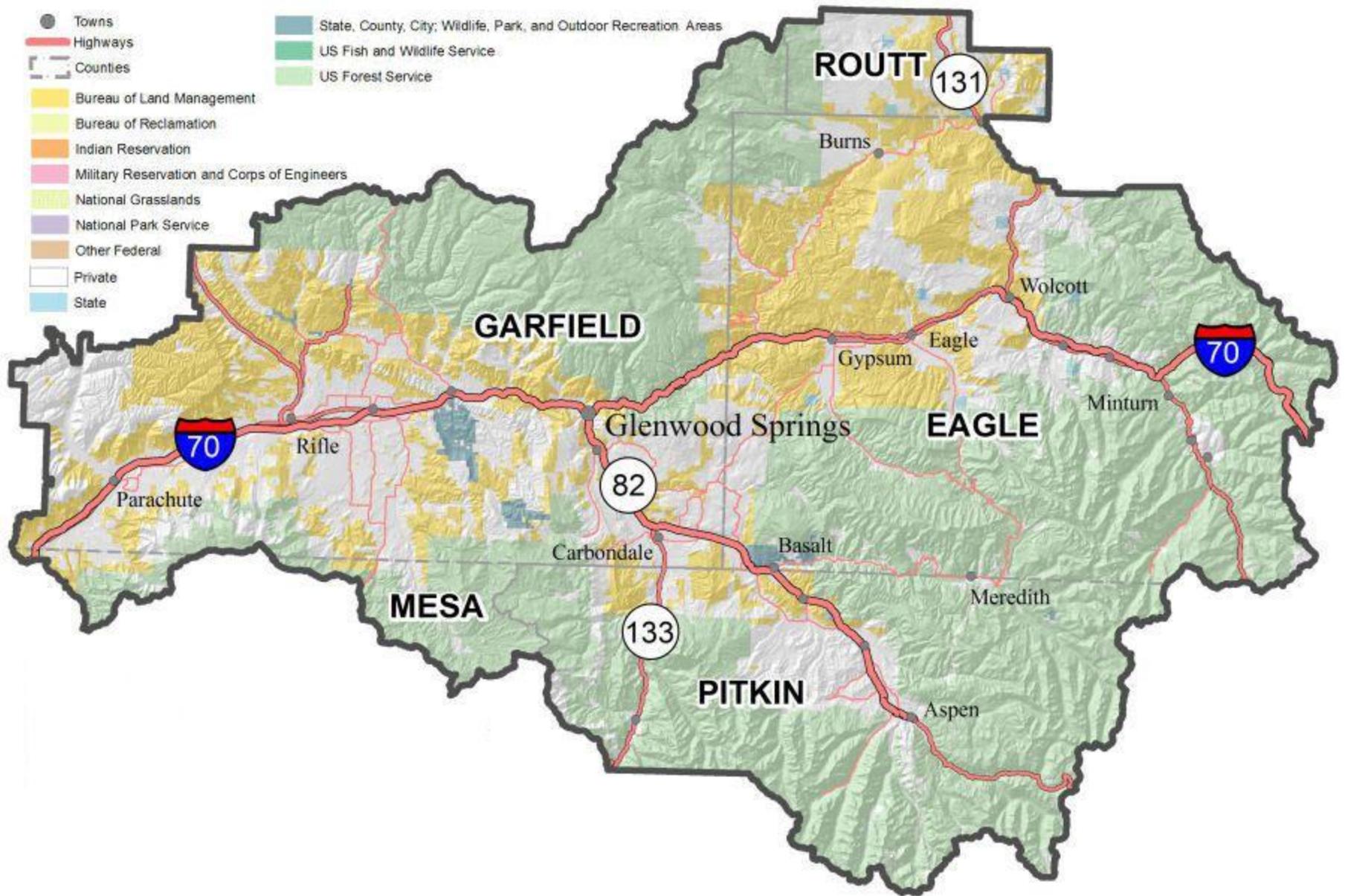
- Provide policy, guidance, training, and technical assistance for air resource considerations to inform BLM planning and management decisions.
- Inventory, model, evaluate air resources
- Evaluate potential impacts on and from BLM-authorized activities.
- Evaluate and recommend appropriate emission control and mitigation measures and techniques
- Develop and maintain records
- Understand the air quality status of BLM-administered lands

Authority

- Federal Land Policy and Management Act (FLMPA) of 1976
 - “multiple use” and “sustained yield”
 - maintain inventory of all public lands, resource and other values
 - “provide for compliance with applicable pollution control laws, including State and Federal air, water, noise, or other pollution standards or implementation plans”
 - manage the public lands “in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, **air and atmospheric**, water resource, and archaeological values

BLM multi-use lands in Garfield County

- Recreation, travel management, grazing, forestry, fish and wildlife habitat, energy development, etc.
- Oil and gas in Garfield County
 - 10,337 total producing wells
 - 2,254 of those BLM



Other Related Laws and Orders:

- **Clean Air Act 1955** established National Ambient Air Quality Standards (NAAQS)
- **Air Pollution Control Division** of CDHPE - CAAQS
- **National Environmental Policy Act 1969 (NEPA)**
 - Analyze potential environmental and human impact of Federal actions
 - Disclose impacts to the public
- **Secretarial Order 3226** of 2001 “Evaluating Climate Change Impacts in Management Planning”

Environmental Review (EIS/EA)

- Potential impacts on air quality
- Air quality related values (AQRVs)
- Greenhouse gas emissions
- Evaluate and recommend mitigation measures
- Ensure leases or permits include stipulations and conditions of approval (COAs).

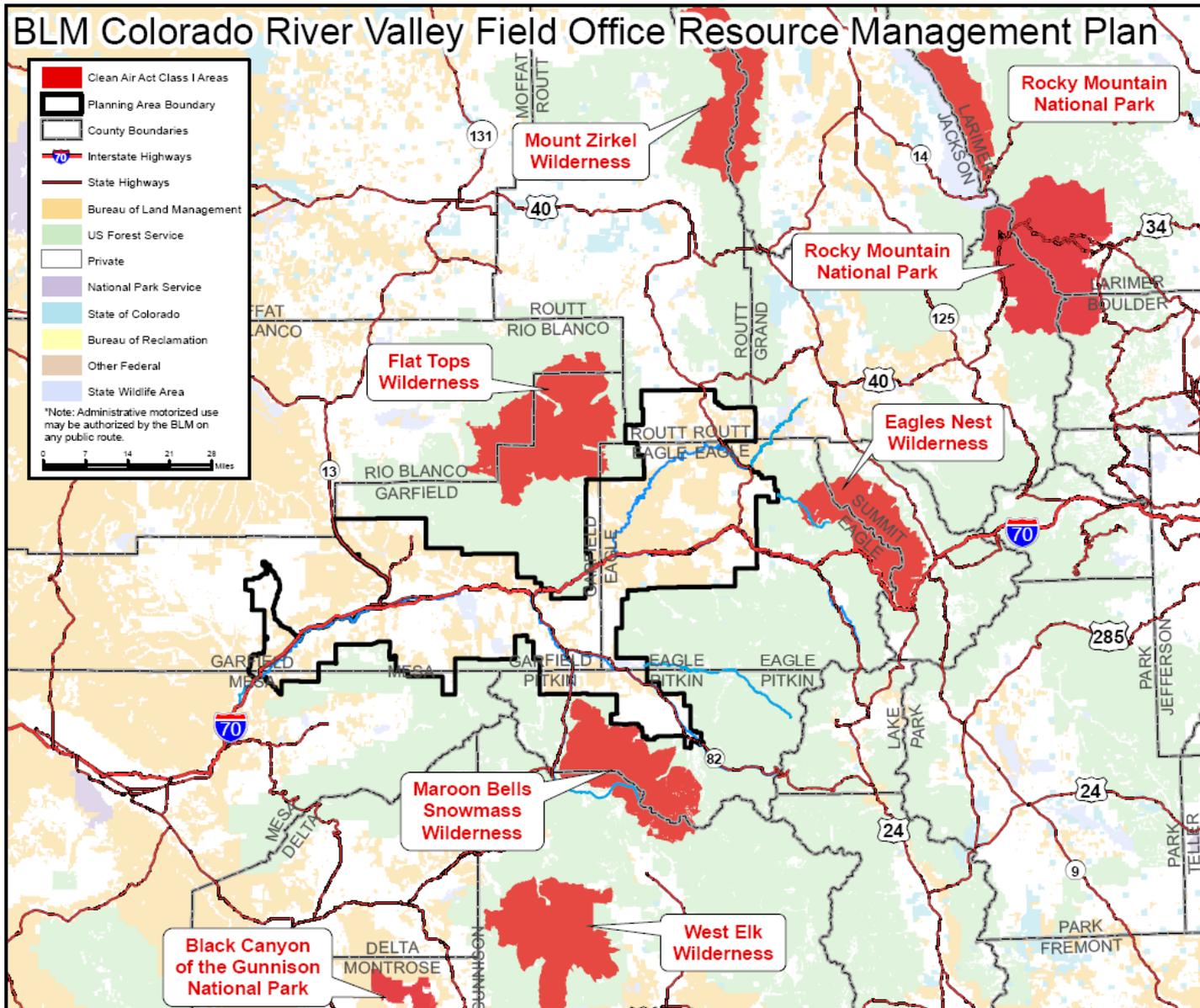
Adverse Impacts – Air Quality

- Measured by the concentration of air pollutants
- 6 Criteria Pollutants
 - ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide, lead
 - National and State Ambient Air Quality Standards (NAAQS/CAAQS)
- Hazardous air pollutants (HAPs) cause cancer or other adverse health impacts
 - Risk based

Air Quality Related Values (AQRV)

- Protect ecological, geologic, historic and cultural characteristics
- Prevention of Significant Deterioration (PSD) thresholds
- Visibility (light extinction)
- Nitrogen and Sulfur Deposition
- Lake Acidification –change in acid neutralizing capacity (ANC)

AQRV - Class I Areas

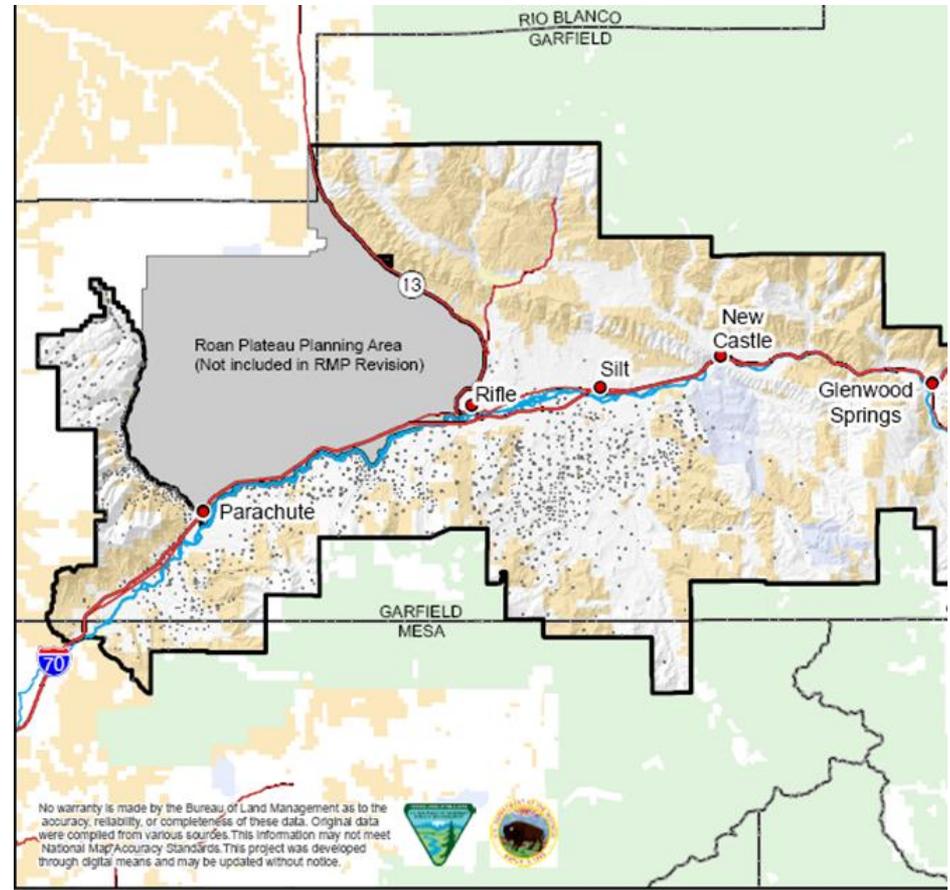


Assessment Tools

- Emissions Inventories – emission sources and measuring amount of pollutants emitted
 - Criteria Pollutants
 - HAPS
 - GHG
- Air Quality Modeling

Assessment Tools - Models

- Models capable of large-scale regional assessments in areas with dense oil and gas development
- Methods for spatially distributed small sources



Oil and Gas Well Pad Locations

Models

- AERMOD: steady-state plume model
 - Used for near-field impacts (~30 miles)
 - weeks to months to run
- CALPUFF: non-steady state puff dispersion
 - Far-field transport and dispersion ~(200 miles)
 - 2-6 months to run
- CAMx : photochemical grid models
 - Regional impacts from a multitude of sources
 - Full chemistry, including ozone
 - Use massive meteorological and emissions data sets
 - 6 -18 months to run
 - Cumulative impacts tool



Current CRVFO Model

- Air Resources Technical Support Document
- ARTSD posted online
- http://www.blm.gov/style/medialib/blm/co/field_offices/crvfo/rmp_vol_1_chapter4.Par.53741.File.dat/Revised_CRVFO_ARTSD_08-31-2012_with_Appendices.pdf
- Background air quality data from monitors
- Foreseeable development scenarios for oil and gas
- Range of air quality mitigations and technology
- Cumulative emissions inventories

**Table 2-2. Projected Facilities and Gas Production for CRVFO BLM and Non-
BLM Sources**

Mineral Estate Ownership	Number of Facilities or Production Capacity			
	Alt. A	Alt. B	Alt. C	Alt. D
Wells				
BLM (Project)	2,664	2,206	2,206	4,198
BLM (Non-Project, Roan Plateau)	1,570	1,570	1,570	1,570
Non-BLM Federal, State, and Private	7,838	7,189	7,189	9,896
Number of Wells	12,072	10,965	10,965	15,664
Compressor Stations				
BLM (Project)	2	1	1	0
BLM (Non-Project, Roan Plateau)	1	1	1	1
Non-BLM Federal, State, and Private	4	4	4	6
Number of Compressor Stations	7	6	6	9
Gas Processing Plants *				
BLM (Project)	0	0	0	0
BLM (Non-Project, Roan Plateau)	0	0	0	0
Non-BLM Federal, State, and Private	0	0	0	0
Number of Gas Plants	0	0	0	0
Maximum Gas Production (in MMscfd)				
BLM (Project)	266	221	221	420
BLM (Non-Project, Roan Plateau)	157	157	157	157
Non-BLM Federal, State, and Private	784	719	719	989
Total Gas Production (MMscfd)	1,207	1,097	1,097	1,566

* Gas processing of CRVFO produced gas is expected to occur in gas processing plants located in the WRFO.



Mitigation Options

- Dust suppression watering or apply dust suppression agent
- Use of gravel, chip seal or asphalt
- Drill rig and hydraulic fracturing pump engines reduced emissions technology
- Green completions
- Prohibit venting of natural gas
- 90% control on glycol dehydrator
- 95% control on condensate/ produced water tanks
- Increased use of pipelines to transfer fluids
- Compressor engine emission reduction technology or electrification

Applying Modeling Results

- Model is decision making tool for implementation (project) level NEPA
- Development tracking
- Review of background air quality data
- Review of mitigations and advancements in technology
 - Example – natural gas drill rig engine

Evaluating Air Quality Data

Annual Data Summary Reports

- Prepared each year since 2008
- Publicly available on Garfield County Air Quality Management Website
- <http://www.garfield-county.com/air-quality>

The screenshot shows the Garfield County Air Quality Management website. The header includes 'GARFIELD COUNTY' and 'colorado'. Below the header is a navigation menu with links for 'management plans', 'monitoring reports', 'emissions', and 'education'. The main content area is divided into sections: 'pages' with a list of links, 'what's new' with recent updates, and 'Air quality index' with a table of current and forecast data. The 'Air quality index' table shows 'Current Air Quality Index (AQI)' as 'Moderate' and 'Forecast - Front Range Air Quality' as 'Moderate'.

Current Air Quality Index (AQI)	Forecast - Front Range Air Quality
Moderate	Moderate
Good	Good
Unhealthy for Sensitive Groups	Unhealthy for Sensitive Groups
Unhealthy	Unhealthy
Very Unhealthy	Very Unhealthy
Hazardous	Hazardous

- Review air quality monitoring data
- Analyze for trends and regulatory exceedances
- Compare to modeling assumptions and results

Action Thresholds

- Exceedances of NAAQS or CAAQS.
- Concentrations of hazardous air pollutants or other toxic air pollutants above designated thresholds.
- An increase in cancer risk of more than 1 additional person in 1 to 100 million
- Changes in nitrogen or sulfur deposition exceeding the Level of Concern.
- Changes in lake acid neutralizing capacity above the Limit of Acceptable Change.
- Visibility impacts exceeding 1.0 deciview (dv) change at Class I area

Future of Air Resources

- Adaptive management
- Interagency MOU
- Regional models
- Garfield County air quality study

Adaptive management

- Review of air quality data
- Tracking development and emissions inventories
- Required and optional air quality mitigation
- Documenting advancements in technology
- Comparison to modeling inputs and results

2011 Memorandum of Understanding



USFS



BLM, FWS, NPS



EPA

**MEMORANDUM OF UNDERSTANDING
AMONG THE
U.S. DEPARTMENT OF AGRICULTURE,
U.S. DEPARTMENT OF THE INTERIOR,
AND
U.S. ENVIRONMENTAL PROTECTION AGENCY,
REGARDING AIR QUALITY ANALYSES AND MITIGATION
FOR FEDERAL OIL AND GAS DECISIONS THROUGH
THE NATIONAL ENVIRONMENTAL POLICY ACT PROCESS**

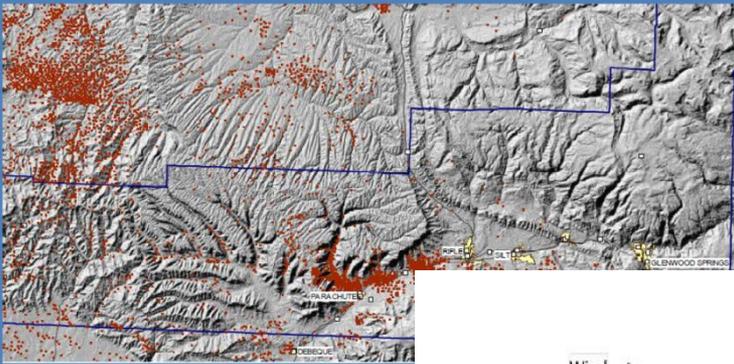
- applies to on-shore federal oil and gas planning, leasing, or field development decisions that are being evaluated under NEPA
- Common process for analyzing and addressing adverse air quality and air quality related values (AQRV) impacts

<http://www.epa.gov/compliance/resources/policies/nepa/air-quality-analyses-mou-2011.pdf>

Garfield County Air Quality study

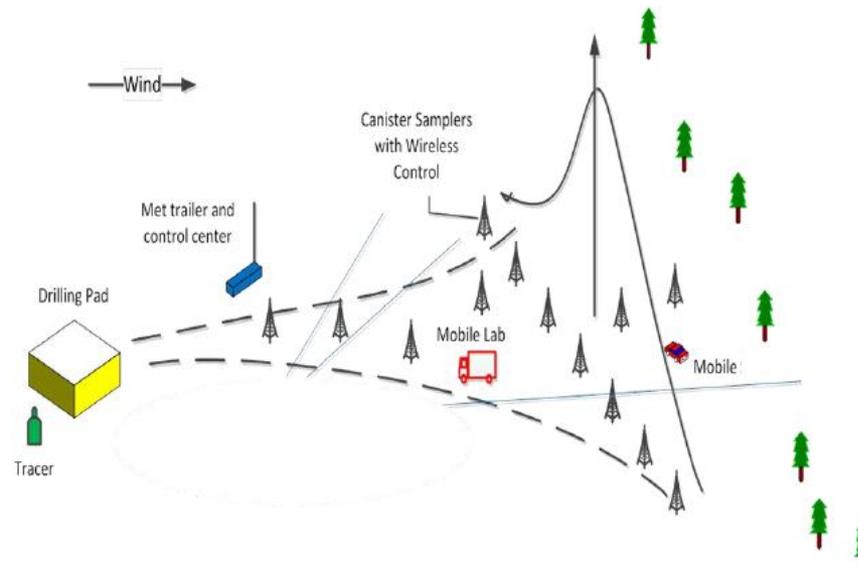
Garfield County Gas Emissions Study

Jeffrey L. Collett, Jr.
Atmospheric Science Department
Colorado State University



Importance to BLM

- Validate models used for assessment
- New information about the emissions during separate phases of



Regional Modeling

- Western Governors' Association – Western Regional Air Partnership (WRAP)
- the Western Colorado Air Resources Management Modeling Study: West CARMSS
 - Regional oil and gas development
 - Inter-agency cooperation
 - Cumulative impacts analysis

Questions?

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<http://www.blm.gov/co/st/en/fo/crvfo.html>

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Colorado River Valley Field Office

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Welcome to the Colorado River Valley Field Office (formerly the Glenwood Springs Field Office) of the Bureau of Land Management, located in Silt, Colorado.

Storm King Trail (Map)
Storm King Monument (Map)

What's New

- Fire Prevention Order # CRV-13-02
- Fire Restriction News Release
- Cedar Springs Vegetation Treatment
- Roan Plateau SEIS Scoping Information
- Thompson Divide Drilling Proposal Information
- Grazing Allotment Renewal Information
- Sutey Ranch Land Exchange Information

White-Nose Syndrome: Visit for information how to curb the spread of White-Nose Syndrome in the United States. Please help the BLM protect the bats.

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Program and Project Information

- Fire and Fuels
- Grazing
- Land Use Planning
- Lands and Realty
- Maps
- NEPA
- Northwest Resource Advisory Council
- Oil and Gas
- Recreation
- Resource Management Plan Revisions
- Roan Plateau (Roan Plateau Visitors Guide & Map)
- Solid Minerals Information & Sales
- Weed Management