APPENDIX R—RESPONSE TO SUBSTANTIVE PUBLIC COMMENTS ON THE ADDITIONAL AIR QUALITY IMPACT ASSESSMENT

On November 11, 2004, BLM issued a Notice of Intent to prepare a revised Resource Management Plan (RMP) and associated Environmental Impact Statement (EIS) for the Little Snake Field Area in northwest Colorado. These documents are prepared subject to requirements under the Federal Land Policy Management Act (FLPMA) and the National Environmental Policy Act (NEPA). A comprehensive description of this process, including numerous specific documents, has been provided on a public website (http://www.blm.gov/co/st/en/fo/lsfo/plans/rmp_revision.html).

Based on comments and suggestions solicited by BLM during our formal Scoping Process, BLM staff prepared and released the Draft Little Snake RMP/EIS on February 9, 2007, requesting comments from all interested parties by May 16, 2007. As described in the Draft EIS, the overall analysis focused on actions that would have direct, immediate, and prominent effects. With respect to air quality impacts, a qualitative comparison approach was used to calculate potential total air pollutant emissions from existing (producing) oil and gas wells, plus alternative additional wells, in the year 2026. The Draft RMP does not authorize oil and gas development, but it does identify areas that would be available for future oil and gas leasing. With the single exception of the Hiawatha Regional Energy Development Project, which is conducting its own separate quantitative air quality impact analysis (http://www.blm.gov/wy/st/en/info/NEPA/rsfodocs/hiawatha.html), none of the alternative additional wells addressed in the Draft Little Snake RMP/EIS have "reasonably foreseeable" source locations. Given the uncertainties with the number, nature, and specific location of potential sources and activities, this emission comparison approach is defensible and provided a sound basis for comparing alternatives. Based on the qualitative potential emission analysis, it was expected that each alternative analyzed would not exceed state or federal ambient air quality standards, and that potential impacts to the air quality values of visibility, atmospheric deposition, or ozone would be made at the project-specific level, once "reasonably foreseeable" source information became available.

During the public comment period, the EPA, in consultation with BLM, identified areas where additional air quality information would improve the existing analysis in the Draft EIS. As a result, a hypothetical air quality assessment using the CALPUFF-lite modeling system was prepared. The hypothetical air quality assessment is not a NEPA document, but a tool to inform the public and allow public comment on the data and conclusions. In order to assure the hypothetical air quality assessment would address EPA's concerns, an Air Quality Impact Assessment Protocol was prepared to ensure that the approach, input data, and computation methods were acceptable to both EPA and BLM before the analysis was initiated.

In order to prepare the hypothetical assessment based on atmospheric dispersion modeling, EPA Region 8 Management agreed to combine assumed oil and gas activity into distribution zones, based primarily on the major oil and gas formations in the planning area. This was the only possible approach where future development locations are generally unknown, and will not be known until future site-specific NEPA analyses are performed. EPA also agreed that the CALPUFF-lite modeling system be used to assess impacts, using a single meteorological database and discrete downwind receptors. The CALPUFF-lite modeling approach is meant to be a conservative screening approach. EPA further agreed to only consider emissions from drilling operations during the construction phase. Emissions associated with potential well pad, pipeline, and access road construction; flowback/flaring; vehicle travel during the drilling and completion phases; as well as construction and vehicle traffic were all assumed to be minimal, or could not be quantified.

Pollutant significance levels include applicable ambient air quality standards and Prevention of Significant Deterioration (PSD) increments. However, comparison to increments is for informational

purposes only and is not a regulatory PSD Increment Consumption Analysis. In addition, potential impacts to visibility, atmospheric deposition, and changes in specific lakes' chemistry were evaluated. Based on the hypothetical air quality assessment, it was expected that each alternative analyzed would not exceed state or federal ambient air quality standards, PSD increments, or exceed atmospheric deposition or lake chemistry levels of significance.

Changes in atmospheric light extinction relative to background conditions were used to evaluate potential visibility (regional haze) impacts. As described by Pitchford and Malm (1994), a "just noticeable change" in visibility corresponds to a 1.0 to 2.0 deciview (dv) visibility change (numerically equivalent to a 10 to 20 percent change in extinction) where sensitive scenic targets are assumed to occur throughout the view. BLM uses a 1.0 dv "just noticeable change" as a significance threshold; however, there are no applicable local, state, tribal, or federal regulatory visibility standards. The potential number of days per year that greater than a "just noticeable change" in visibility was predicted to occur between zero and two days annually in the mandatory federal PSD Class I Mount Zirkel Wilderness Area. The assessment also predicted a 1.0 dv "just noticeable change" would be exceeded at Dinosaur National Monument between zero and five days annually, although this area is not subject to the National Visibility Goal under the federal Clean Air Act. No days per year were predicted to reach a 1.0 dv "just noticeable change" in the mandatory federal PSD Class I Eagles Nest or Flat Tops wilderness areas.

Further, given the conservative nature of the CALPUFF-lite screening model, the hypothetical air quality assessment results confirm the Draft EIS conclusion that each alternative analyzed would not exceed state or federal ambient air quality standards, and that potential impacts to the air quality values of visibility, atmospheric deposition, or ozone would be made at the project-specific level, once "reasonably foreseeable" source information became available.

ERRATA: Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado.

- Page 17: Table 5-2 CALPUFF Estimated Air Quality Impacts (µg/m3): Footnote: " [a] – PSD Class II NO_2 and PM_{10} increments apply at DINO (see Table 5-1)" should read " [a] – The PSD Class I SO_2 increments are applicable in Dinosaur National Monument under Colorado law, but less stringent Class II NO_2 and SO_2 federal increments apply within Dinosaur National Monument."

- Page 13: Replace "Table 4-1. Analysis Background Ambient Air Quality Concentrations ($\mu g/m^3$)" with the following table:

Pollutant	Averaging Period	Measured Background Concentration
Carbon monoxide (CO)	1-hour	1,143
	8-hour	1,143
Nitrogen dioxide (NO_2)	Annual	13.2
Ozone (O_3)	8-hour	131
PM_{10}	24-hour	111
$PM_{2.5}$	24-hour	17.3
	Annual	7.5[1]
Sulfur dioxide (SO_2)	3-hour	182
	24-hour	10.4
	Annual	2.6

Note: 1 - Indicates less than 75% data for the year.
Source: Little Snake PRMP/FEIS (BLM 2009)

- Page 17: Replace "Table 5-2. CALPUFF Estimated Air Quality Impacts ($\mu g/m^3$)" with the following table:

Pollutant	Averaging Time	Maximum Direct Modeled Impacts				PSD Class I Increment	Background Concentration	Maximum Total Predicted Impact				NAAQS	CAAQS
		EANE	FLTO	MOZI	DINO[a]			EANE	FLTO	MOZI	DINO		
Alternatives A/B/C													
NO_2	Annual	0.0001	0.0011	0.0229	0.0275	2.5	13.2	13.2	13.2	13.2	13.2	100	100
PM_{10}	Annual	0.0020	0.0096	0.0723	0.0958	4	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	24-hour	0.0578	0.1713	0.4162	1.1395	8	111	111.1	111.2	111.4	112.1	150	150
$PM_{2.5}$[b]	Annual	0.0020	0.0096	0.0723	0.0958	N/A	7.5[c]	7.5	7.5	7.6	7.6	15	N/A
	24-hour	0.0578	0.1713	0.4162	1.1395	N/A	17.3	17.4	17.5	17.7	18.4	35	N/A
SO_2	Annual	0.0000	0.0001	0.0006	0.0007	2	2.6	2.6	2.6	2.6	2.6	80	N/A
	24-hour	0.0004	0.0011	0.0040	0.0090	5	10.4	10.4	10.4	10.4	10.4	365	N/A
	3-hour	0.0018	0.0037	0.0094	0.0240	25	182	182.0	182.0	182.0	182.0	1,300	700
Alternative D													
NO_2	Annual	0.0001	0.0009	0.0125	0.0307	2.5	13.2	13.2	13.2	13.2	13.2	100	100
PM_{10}	Annual	0.0015	0.0074	0.0522	0.0966	4	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	24-hour	0.0441	0.1285	0.2963	0.8736	8	111	111.0	111.1	111.3	111.9	150	150
$PM_{2.5}$[b]	Annual	0.0015	0.0074	0.0522	0.0966	N/A	7.5[c]	7.5	7.5	7.6	7.6	15	N/A
	24-hour	0.0441	0.1285	0.2963	0.8736	N/A	17.3	17.3	17.4	17.6	18.2	35	N/A
SO_2	Annual	0.0000	0.0000	0.0004	0.0007	2	2.6	2.6	2.6	2.6	2.6	80	N/A
	24-hour	0.0003	0.0008	0.0029	0.0069	5	10.4	10.4	10.4	10.4	10.4	365	N/A
	3-hour	0.0014	0.0028	0.0067	0.0182	25	182	182.0	182.0	182.0	182.0	1,300	700

Notes:
a - The PSD Class I SO_2 increments are applicable in Dinosaur National Monument under Colorado law, but less stringent Class II NO_2 and SO_2 federal increments apply within Dinosaur National Monument
b - $PM2_{.5}$ values are conservatively assumed to equal PM_{10} values
c - Indicates less than 75% data for the year

Abbreviations:
NO_2 – nitrogen dioxide
PM_{10} – Particulate matter less than 10 micrometers in effective diameter
$PM_{2.5}$ – Particulate matter less than 2.5 micrometers in effective diameter
SO_2 – sulfur dioxide
EANE – Eagles Nest Wilderness Area
MOZI – Mount Zirkel Wilderness Area
DINO[a] – Dinosaur National Monument
NAAQS – National Ambient Air Quality Standard
CAAQS – Colorado Ambient Air Quality Standard
FLTO – Flat Tops Wilderness Area
N/A – Not applicable

- Page 3-10, Air Quality Impact Assessment Technical Support Document: Replace "Table 3-7. Analysis background ambient air quality concentrations (µg/m3)" with the following table:

Pollutant	Averaging Period	Measured Background Concentration
Carbon monoxide (CO)	1-hour	1,143
	8-hour	1,143
Nitrogen dioxide (NO_2)	Annual	13.2
Ozone (O_3)	8-hour	131
PM_{10}	24-hour	111
$PM_{2.5}$	24-hour	17.3
	Annual	7.5[1]
Sulfur dioxide (SO_2)	3-hour	182
	24-hour	10.4
	Annual	2.6

Note: 1 - Indicates less than 75% data for the year.

Source: Little Snake PRMP/FEIS (BLM 2009)

- Page 3-16, Air Quality Impact Assessment Technical Support Document: Replace "Table 3-11. Comparison of maximum existing background concentrations (Table 3-5) plus maximum estimated impacts at any Class I area due to any RMP scenario with federal and state ambient air quality standards" with the following table:

Pollutant/ Averaging Time	Ambient Air Quality Standards (µg/m^3)				Estimated Impact (µg/m^3)
	National	Colorado	Total	Background[1]	Increment[2]
NO_2					
Annual	100	100	**13.2**	13.2	0.037
PM_{10}					
24-hour	150	150	**112**	111	1.140
Annual	N/A	N/A	**N/A**	N/A	0.127
$PM_{2.5}$					
24-hour	35	N/A	**18.4**	17.3	1.105
Annual	15	N/A	**7.6**[3]	7.5[3]	0.124
SO_2					
3-hour	1,300	700	**182**	182	0.024
24-hour	365	N/A	**10.4**	10.4	0.009
Annual	80	N/A	**2.6**	2.6	0.001

Notes:
1 - Maximum current background concentration in the Region (Table 3-5)
2 - Maximum Cumulative Emissions Plus Project (modeled) concentration at any Class I or Class II area for any of the modeling years
3 - Indicates less than 75% data for the year.
N/A – Not applicable

General Comments and Responses

Table R-1 contains general comments and responses (GCR) from common themes raised by several different commenters. Each GCR answers many public comments and are referred to in the unique response table by GCR number.

Table R-1. General Comments and Responses

GCR Number	Resource Category	Comment	Response
GCR#: 1	Air Quality	The Bureau of Land Management needs to improve the air quality assessment for the Little Snake Resource Area before submitting the final management plan. The new air quality assessment should assess not only how the proposed air pollution will affect the Little Snake region and its unique ecosystems, but also the impacts on neighboring lands and communities who could be adversely affected.	As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts. Given the uncertainties with the number, nature, and specific location of potential sources and activities, the Draft EISs qualitative analysis included estimates oxides of nitrogen (NOx) and volatile organic compound (VOC) emissions (precursors to anthropogenic ozone formation). The Draft EIS further stated potential impacts to ozone would be made at the project-specific level. For example, BLM is currently using the Comprehensive Air quality Model with extensions (CAMx) Eulerian (gridded) photochemical atmospheric dispersion model to predict local and regional ozone conditions from existing and reasonably foreseeable emission sources for the White River Field Office (WRFO) Oil and Gas RMP Amendment and EIS. This analysis will provide a comprehensive analysis of emission sources and impacts throughout Colorado.
GCR#: 2	Air Quality	The BLM's air quality model and assessment is narrowly focused and does not contain enough information to analyze the air quality impacts that could occur as a result of current and future oil and gas development in the region or to weigh the differences between different alternatives in the Little Snake proposed management plan.	The hypothetical air quality modeling analysis addressed in the report was intended to inform the public and allow public comment on the data and conclusions, and is not a NEPA document. The difference between alternatives continues to be demonstrated by the qualitative air quality emissions analysis found in the Draft EIS. BLM is confident the qualitative air pollutant emissions analyses presented in the Draft Little Snake Field Office RMP/EIS is appropriate and adequate. Therefore, the information presented in Chapters 3 and 4 of the Draft EIS has not been modified and remains appropriate as the basis for guiding subsequent management decisions.
GCR#: 3	Air Quality	The air quality analysis needs to use contemporary rather than historic data. The limited analysis of cumulative impacts is flawed in by using old rather than contemporary	As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant

GCR Number	Resource Category	Comment	Response
		baseline data.	dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts. In addition, the background air quality data used in the AAQIA were the same values as reported in the Draft EIS, although as stated "current and complete data on criteria air pollutant concentrations for the RMPPA [RMP Planning Area] are not available."
GCR#: 4	Air Quality	The BLM has not analyzed whether the reasonably foreseeable development will prevent significant deterioration (PSD) of air quality, as required by the Clean Air Act. The BLM's air quality assessment must include an analysis to determine how much of the incremental amount of air pollution allowed in clean air areas (i.e., PSD increment) has already been consumed in the affected area and how much additional increment consumption will occur due to the proposed development in the planning area. Without this analysis, the BLM is not ensuring that air quality will not deteriorate more than allowed under the CAA.	As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts.
GCR#: 5	Air Quality	The air quality analysis needs to include a more complete consideration of how proposed developments in the region will affect air quality. Transport affects and regional accumulations are not fully considered. It is important to consider how air quality in the Little Snake RMP will be affected by management decisions in neighboring areas.	As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts. In addition, future quantitative air pollutant dispersion modeling analysis would include cumulative far-field analyses once project-specific oil and gas developments are proposed.
GCR#: 6	Cumulative Impacts	Cumulative impacts to AQRVs from activities predicted to occur within the LSFO in addition to activities in nearby Field Offices were not evaluated in this assessment. A cumulative AQRV assessment should	As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas

GCR Number	Resource Category	Comment	Response
		be completed for Dinosaur National Monument.	developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts. In addition, future quantitative air pollutant dispersion modeling analysis would include cumulative far-field analyses once project-specific oil and gas developments are proposed. Given the uncertainties with the number, nature, and specific location of potential sources and activities, the Draft EISs qualitative analysis included estimates oxides of nitrogen (NOx) and volatile organic compound (VOC) emissions (precursors to anthropogenic ozone formation). The Draft EIS further stated potential impacts to ozone would be made at the project-specific level. For example, BLM is currently using the Comprehensive Air quality Model with extensions (CAMx) Eulerian (gridded) photochemical atmospheric dispersion model to predict local and regional ozone conditions from existing and reasonably foreseeable emission sources for the White River Field Office (WRFO) Oil and Gas RMP Amendment and EIS. This analysis will provide a comprehensive analysis of emission sources and impacts throughout Colorado.
GCR#: 7	Air Quality	Little attention is paid to ozone in the BLM analysis. There also was no prediction of VOC levels, which along with nitrates, is a precursor of ozone.	Given the uncertainties with the number, nature, and specific location of potential sources and activities, the Draft EISs qualitative analysis included estimates oxides of nitrogen (NOx) and volatile organic compound (VOC) emissions (precursors to anthropogenic ozone formation). The Draft EIS further stated potential impacts to ozone would be made at the project-specific level. For example, BLM is currently using the Comprehensive Air quality Model with extensions (CAMx) Eulerian (gridded) photochemical atmospheric dispersion model to predict local and regional ozone conditions from existing and reasonably foreseeable emission sources for the White River Field Office (WRFO) Oil and Gas RMP Amendment and EIS. This analysis will provide a comprehensive analysis of emission sources and impacts throughout Colorado.

Individual Comments and Responses

Table R-2 contains the individual comments and responses, sorted by resource category. Some of the responses use the above GCRs. Where this occurs a reference is included as to which GCR responds to the comment.

Table R-2. Individual Comments and Responses

Category	Commenter	Comment	Response
Air Quality	Air Pollution Control Div., State of CO	Page 5, Section 3.1: Neither the Draft Little Snake EIS nor the Additional Air Quality Information to support the Draft EIS directly addresses potential ozone impacts. The Air Division needs to understand the impact that the proposed RMP, in conjunction with all existing and reasonably foreseeable regional emission sources, will have on local and regional ozone conditions. In support of this effort, the Division would encourage BLM participation in the State initiated expansion of the criteria pollutant and meteorological monitoring network in this region (specifically ozone and NOx) in order to obtain a better assessment of current conditions and also to lay the foundation for future photochemical grid modeling studies that may be necessary to assess impacts from full-field development proposals.	Given the uncertainties with the number, nature, and specific location of potential sources and activities, the Draft EISs qualitative analysis included estimates oxides of nitrogen (NOx) and volatile organic compound (VOC) emissions (precursors to anthropogenic ozone formation). The Draft EIS further stated potential impacts to ozone would be made at the project-specific level. For example, BLM is currently using the Comprehensive Air quality Model with extensions (CAMx) Eulerian (gridded) photochemical atmospheric dispersion model to predict local and regional ozone conditions from existing and reasonably foreseeable emission sources for the White River Field Office Oil and Gas RMP Amendment and EIS. In addition, BLM would like to discuss future participation in the APCD's expanded criteria pollutant and meteorological monitoring network.
Air Quality	Air Pollution Control Div., State of CO	Page 7, Section 3.2.3: The use of discrete receptors in the CALPUFF-Lite application is not acceptable. Receptor rings should be used with Calpuff-Lite is consistent with IWAQM Phase 2 guidance. Given that the wind fields will not vary spatially as in a more refined analysis, the use of receptor rings may partially account for the fact that actual transport directions may not be well represented by the meteorology. The methods employed for this Calpuff-Lite application make it impossible for the APCD to meaningfully or in a credible way comment upon the air quality impacts pursuant to the DEIS. Until the Calpuff-Lite model is a re-run using acceptable protocols, the APCD finds the air quality analysis to be inadequate for assessment of impacts.	BLM recognizes EPA's guidance to state and local air quality regulatory agencies through the "Interagency Workgroup on Air Quality Modeling (IWAQM) Phase 2 Summary Report and Recommendations for Modeling Long-Range Transport Impacts" in order to estimate potential impacts to air quality-related values within PSD Class I areas under the federal Clean Air Act. Although BLM administers some of these PSD Class I areas, BLM was not invited to participate in the IWAQM process. However, BLM worked closely with EPA management and staff to support use of the CALPUFF-lite modeling system to assess impacts in the hypothetical air quality assessment, using a single meteorological database and discrete downwind receptors.

Category	Commenter	Comment	Response
Air Quality	Air Pollution Control Div., State of CO	Page 13, Section 4.2: CDPHE-APCD accepts only peer reviewed and accepted methods for visibility impact evaluations. Therefore, the BLM methods applied in the analysis are invalid for the State's evaluation of Visibility Impairment in Colorado's Class I areas.	BLM recognizes APCD's authority to establish its own procedures when evaluating potential visibility impacts under the federal Clean Air Act and State of Colorado regulations. However, under FLPMA and NEPA, BLM is responsible for identifying the procedures and potential significance thresholds for its own air quality impact analyses. For the hypothetical air quality assessment, BLM utilized the same methods for evaluating potential visibility impacts as described in the Federal Land Managers' Air Quality Related Values Work Group (FLAG) Phase 1 Report (December 2000). The FLAG Guidance was prepared to develop a more consistent approach to evaluate air quality-related values' impacts during review of PSD air quality permit applications under EPA's New Source Review program. For visibility (regional haze) impacts, the FLAG Phase I guidance identifies greater than a 0.5 deciview change a potential significant adverse impact for a single air pollutant emission source, and greater than a 1.0 deciview change a potential significant adverse impact for cumulative air pollutant emission sources. In the FLAG Phase I Report, the hourly relative humidity function, or f(RH), is limited to 18.1 for conditions at or above 98 percent. Since reconstructed extinction estimates are not reliable above 90 percent relative humidity in the Intermountain West, BLM limited hourly f(RH) values to 4.7 at or above 90 percent in the hypothetical air quality assessment.
Air Quality	Air Pollution Control Div., State of CO	Page 17, Section 3.4.3: BLM cannot establish a significant adverse impact threshold for Colorado's Class I Areas. Visibility impacts that exceed 5% change in extinction at Colorado's Class I areas are unacceptable. The RMP, considered alone, leads to visibility degradation of 0.5 deciview or greater at Flat Tops Wilderness for all Alternatives and 1.0 deciview or greater at Mount Zirkel Wilderness for all Alternatives. Therefore, CDPHE believes that mitigation should be evaluated and committed to in the EIS prior to selection of a viable Alternative.	BLM recognizes APCD's authority to establish its own procedures when evaluating potential visibility impacts under the federal Clean Air Act and State of Colorado regulations. However, under FLPMA and NEPA, BLM is responsible for identifying the procedures and potential significance thresholds for its own air quality impact analyses. As described in the peer reviewed and accepted scientific paper "Development and Applications of a Standard Visual Index" (M.L. Pitchford and W.C. Malm; Atmospheric Environment 28:55, 1049-1054, Elsevier Science, 1994), a "just noticeable change" in visibility corresponds to a 1.0 to 2.0 dv visibility change where sensitive scenic targets are assumed to occur throughout the view. BLM used a 1.0 dv "just noticeable change" as a significance threshold; however, there are no applicable local, state, tribal, or federal regulatory visibility standards. Although the number of days predicted to exceed 1.0 dv is reported in the assessment document, a comparison of direct project impacts to the 0.5 dv level is available in the Technical Support Document.
Air Quality	Allan Reishus, Dr. Benzi Kluger, Bruce C. Paton,	Little attention is paid to ozone in the BLM analysis. There also was no prediction of VOC levels. VOC, along with nitrates, is a precursor of	See General Comment Response #7

Category	Commenter	Comment	Response
	Roberta M. Richardson, Sharon Brodbelt, Laurie Hammel, John L. Lightburn, Dr. Ronald Douglas Harden, Coco, Mary Pritchard, John W. Steele, Joy Om	ozone.	
Air Quality	Cheryl Garside	The BLM's analysis does show, however, enough impact to air quality from proposed oil and gas development to warrant a more in-depth analysis, which I hope takes into consideration air & weather changes that could occur due to global warming.	As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts. Global Climate Change considerations have been incorporated into Chapter 3 – Affected Environment and Chapter 4 – Environmental Consequences of the FEIS.
Air Quality	Environmental Protection Agency	Results of the air quality modeling: The Air Quality Impact Assessment found that none of the four action alternatives would result in exceedences of air quality standards. It did find, however, that there were predicted changes to visibility. Alternatives A, Band C (C is the preferred alternative) show between 1 and 4 days of additional visibility impairment at Mount Zirkel Wilderness (a Class I area) and between 3 and 5 days of impairment at Dinosaur National Monument (a Class II area). The Air Quality Impact Assessment, however, is using lower numbers for additional visibility impairment conclusions. This is because two methods were used: BLM's FLAG Spreadsheet Screening Method, which predicted the higher numbers, and BLM's Refined FLAG spreadsheet method. These methods differ from Calpuff Method 6, which EPA,	Changes in atmospheric light extinction relative to background conditions were used to evaluate potential visibility (regional haze) impacts. As described by Pitchford and Malm (1994), a "just noticeable change" in visibility corresponds to a 1.0 to 2.0 deciview (dv) visibility change (numerically equivalent to a 10 to 20 percent change in extinction) where sensitive scenic targets are assumed to occur throughout the view. BLM uses a 1.0 dv "just noticeable change" as a significance threshold; however, there are no applicable local, state, tribal, or federal regulatory visibility standards. The potential number of days per year that greater than a "just noticeable change" in visibility was predicted to occur between zero and two days annually in the mandatory federal PSD Class I Mount Zirkel Wilderness Area. The assessment also predicted a 1.0 dv "just noticeable change" would be exceeded at Dinosaur National Monument between zero and five days annually, although this area is not subject to the National Visibility Goal under the federal Clean Air Act. No days per year were predicted to reach a 1.0 dv "just noticeable change" in the mandatory federal PSD Class I Eagles Nest or Flat Tops wilderness areas. Future quantitative

Category	Commenter	Comment	Response
		the States, and Federal Land Managers use in the regional haze program and that EPA prefers for use in NEPA air quality assessments. The BLM screening methodology is very similar to Method 6, and EPA believes that this methodology provides a more accurate and reliable method for estimating the plan's visibility impacts than the "BLM refined" method. Thus we recommend using the higher numbers generated by the screening methodology when considering the need for any mitigation measures. Table 5-5 should include the results of the BLM screening methodology, which BLM has developed, from Table 3-16 in the technical support document. In future Air Quality Analysis EPA prefers standard CALPUFF Method 6 be applied for predicting number of days of visibility impairment.	visibility impact analyses would be conducted once project-specific oil and gas developments are proposed. In addition, prior to conducting the hypothetical air quality impact assessment, BLM and EPA Region 8 agreed that potential visibility impacts would be estimated by comparing predicted atmospheric extinction (derived from modeled speciated aerosols and observed daily f(RH) values) to observed data collected by the IMPROVE visibility program. The visibility methodology would use an established approach utilized by BLM on previous studies, including a preliminary evaluation using the Seasonal FLAG Screening Analysis Spreadsheet Method, and if necessary, the Daily FLAG Refined Analysis Spreadsheet Method to further refine the screening analysis results.
Air Quality	Environmental Protection Agency	In section 5.5 of the analysis, the text indicates that cumulative Class I visibility impacts from this project and other sources in the region will be lower than in the recent past owing to significant S02 and NOx emission reductions that have occurred at the Craig and Hayden Power Plants. While this is true in the regional haze program, future progress is judged based on 2000-2004 visibility monitoring data and most of the controls on these plants were installed before the end of this period. Thus, the reductions may not be fully creditable for State regional haze SIP planning purposes. Moreover, the national visibility goal is to reach natural background conditions by 2064, and the future predicted contributions 10 visibility impairment from this plan could affect Colorado's ability to meet that goal at Mount Zirkel and other nearby Class I areas.	Changes in atmospheric light extinction relative to background conditions were used to evaluate potential visibility (regional haze) impacts. As described by Pitchford and Malm (1994), a “just noticeable change” in visibility corresponds to a 1.0 to 2.0 deciview (dv) visibility change (numerically equivalent to a 10 to 20 percent change in extinction) where sensitive scenic targets are assumed to occur throughout the view. BLM uses a 1.0 dv “just noticeable change” as a significance threshold; however, there are no applicable local, state, tribal, or federal regulatory visibility standards. The potential number of days per year that greater than a “just noticeable change” in visibility was predicted to occur between zero and two days annually in the mandatory federal PSD Class I Mount Zirkel Wilderness Area. The assessment also predicted a 1.0 dv “just noticeable change” would be exceeded at Dinosaur National Monument between zero and five days annually, although this area is not subject to the National Visibility Goal under the federal Clean Air Act. No days per year were predicted to reach a 1.0 dv “just noticeable change” in the mandatory federal PSD Class I Eagles Nest or Flat Tops wilderness areas. Future quantitative visibility impact analyses would be conducted once project-specific oil and gas developments are proposed. In addition, the Refined Visibility Impact Analysis is based on historic measured visibility conditions, which reflect both increases and decreases in actual emissions.
Air Quality	Environmental Protection Agency	The DEIS contains a general statement that BLM would minimize, within its scope of authority, any emissions that could add to atmospheric	As stated in Section 5.6 of the AAQIA, “This hypothetical air quality assessment analyses the possible effects of oil and gas development portrayed in the RFD Scenario for the Little Snake RMP. This is not a

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		deposition, cause violations of air quality standards, or degrade visibility, and consider on a case by case basis requirements such as flareless well completions. EPA recommends that the RMP more clearly set forth, at this stage, a commitment to implementing the mitigation strategy presented in Section 5.6 of the Additional Air Quality Impact Assessment document for all oil and gas activity within the RMPPA.	field development EIS and the projected development is not based on reasonably foreseeable project proposals (with the exception of the Hiawatha Regional Energy Development Project). Therefore, without being able to take into account site specific project proposals, it is not appropriate to require mitigation at the land use plan level."
Air Quality	Form Letter #1	The resulting report does not go far enough to comply with BLMs own needs. The model and resulting analysis does not provide sufficient data to allow the BLM to distinguish impacts between proposed planning alternatives. Nor does the model address fundamental community concerns such as the potential for ozone, seasonal and comprehensive understanding of cumulative effects. The report does consider the affects to air near the wells or in the back yards of those living nearby. The analysis does show enough impact to air quality to warrant a more in-depth analysis.	The hypothetical air quality modeling analysis addressed in the report was intended to inform the public and allow public comment on the data and conclusions, and is not a NEPA document. The difference between alternatives continues to be demonstrated by the qualitative air quality emissions analysis found in the Draft EIS. BLM is confident the qualitative air pollutant emissions analyses presented in the Draft Little Snake Field Office RMP/EIS is appropriate and adequate. Therefore, the information presented in Chapters 3 and 4 of the Draft EIS has not been modified and remains appropriate as the basis for guiding subsequent management decisions. As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts. Given the uncertainties with the number, nature, and specific location of potential sources and activities, the Draft EISs qualitative analysis included estimates oxides of nitrogen (NOx) and volatile organic compound (VOC) emissions (precursors to anthropogenic ozone formation). The Draft EIS further stated potential impacts to ozone would be made at the project-specific level. For example, BLM is currently using the Comprehensive Air quality Model with extensions (CAMx) Eulerian (gridded) photochemical atmospheric dispersion model to predict local and regional ozone conditions from existing and reasonably foreseeable emission sources for the White River Field Office (WRFO) Oil and Gas RMP Amendment and EIS. This analysis will provide a comprehensive analysis of emission sources and impacts throughout Colorado.
Air Quality	Form Letter #1	I request the following changes be implemented in	See General Comment Response #1

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		the final draft report: 1. Additional modeling, to distinguish affects between proposed alternatives, near-field, ozone, seasonal and comprehensive cumulative effects.	
Air Quality	Form Letter #1	I request the following changes be implemented in the final draft report: 2. Re-analysis: The model assumes phased development over a period of 20 years, yet the alternatives DO NOT assume such phased development and in fact, BLM expects rapid development. This means that the current analysis does NOT account for the type of development expected in the proposed alternatives.	As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts.
Air Quality	Form Letter #1	I request the following changes be implemented in the final draft report: Re-analysis using appropriate meteorological data. The analysis does not fully account for affects resulting from meteorological conditions within the RMP nor does it account for winter meteorological conditions such as wide spread temperature inversion that occurs throughout the Mountain West. We request that the model incorporate winter climate data as well as data collected closer to the RMP (Storm Peak Labs, Craig and Hayden Airports, and/or Dinosaur National Monument).	As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts. In addition, the meteorological data used in the AAQIA were provided by EPA Region 8 personnel.
Air Quality	Form Letter #1	I request the following changes be implemented in the final draft report: Re-Analysis using contemporary rather than historic data. The limited analysis of cumulative impacts is flawed in by using old rather than contemporary baseline data. The result is a report that shows an expected regional increase in sulphur dioxide emission, but claims a net decrease by using data from a time before scrubbers were installed on Hayden and Craig power plants.	See General Comment Response #3
Air Quality	Form Letter #1	I request the following changes be implemented in the final draft report: More complete consideration of how proposed developments in the region will affect air quality. Transport affects and regional accumulations are not fully considered. Air	See General Comment Response #5

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		crosses, BLM management, regional and state boundaries. It is important to integrate our understanding of how air quality in the Little Snake RMP will be affected by management decisions in the White River, Hiawatha and Moaxa Arch areas.	
Air Quality	Form Letter #1	I request the following changes be implemented in the final draft report: Incorporation of additional modeling, analysis and considerations into the final RMP document.	As stated in the “Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado” (AAQIA), “This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed.” It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts. In addition, the World Health Organization defines an HIA as “a combination of procedures or methods by which a policy, program or project may be judged as to the effects it may have on the health of a population.” While the hypothetical air quality impact assessment does not follow any formal HIA protocol, it does establish that predicted impacts would not exceed any Colorado or national primary ambient air quality standard. As the air quality standards are established under the Clean Air Act to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly, it can be concluded that the health of the population would be protected with an adequate margin of safety.
Air Quality	Form Letter #2	I urge you to carry out an improved analysis before submitting your final management plan. The new air quality assessment should assess not only how the proposed air pollution will affect the Little Snake region and its unique ecosystems, but also the impacts on neighboring lands and communities who could be adversely affected. Specifically, the revised assessment should address the near-field, ozone, seasonal and comprehensive cumulative effects of the pollution coming from current and future drilling, and meet all of the requirements under existing law.	See General Comment Response #1
Air Quality	Form Letter #2	The BLM's model and assessment is too narrowly focused and doesn't contain enough information to adequately analyze the air quality impacts that could occur as a result of current and future oil	See General Comment Response #2

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		and gas development in the region or to weigh the differences between different alternatives in the Little Snake proposed management plan.	
Air Quality	Form Letter #3	The model and resulting analysis needs to: include data that allow the BLM to distinguish impacts between proposed planning alternatives;	See General Comment Response #2
Air Quality	Form Letter #3	The model and resulting analysis needs to: look at how the cumulative impacts of other proposed developments will affect air quality in the region;	See General Comment Response #1
Air Quality	Form Letter #3	The model and resulting analysis needs to: be based on the rapid development envisioned in the BLM's preferred alternative;	As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts.
Air Quality	Form Letter #3	The model and resulting analysis needs to: use appropriate meteorological data;	As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts. In addition, the meteorological data used in the AAQIA were provided by EPA Region 8 personnel.
Air Quality	Form Letter #3	The model and resulting analysis needs to: use contemporary data rather than historic data.	See General Comment Response #3
Air Quality	Form Letter #3	The BLM needs to ensure that northwest Colorado's air quality and the pristine views from Dinosaur National Monument and the Mount Zirkel Wilderness will remain clean and free from haze in the future. This will require additional modeling and a more complete analysis.	Changes in atmospheric light extinction relative to background conditions were used to evaluate potential visibility (regional haze) impacts. As described by Pitchford and Malm (1994), a "just noticeable change" in visibility corresponds to a 1.0 to 2.0 deciview (dv) visibility change (numerically equivalent to a 10 to 20 percent change in extinction) where sensitive scenic targets are assumed to occur throughout the view. BLM uses a 1.0 dv "just noticeable change" as a

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			significance threshold; however, there are no applicable local, state, tribal, or federal regulatory visibility standards. The potential number of days per year that greater than a "just noticeable change" in visibility was predicted to occur between zero and two days annually in the mandatory federal PSD Class I Mount Zirkel Wilderness Area. The assessment also predicted a 1.0 dv "just noticeable change" would be exceeded at Dinosaur National Monument between zero and five days annually, although this area is not subject to the National Visibility Goal under the federal Clean Air Act. No days per year were predicted to reach a 1.0 dv "just noticeable change" in the mandatory federal PSD Class I Eagles Nest or Flat Tops wilderness areas. Future quantitative visibility impact analyses would be conducted once project-specific oil and gas developments are proposed.
Air Quality	Gary Smith	The analysis also should include a health risk assessment.	In addition, the World Health Organization defines an HIA as "a combination of procedures or methods by which a policy, program or project may be judged as to the effects it may have on the health of a population." While the hypothetical air quality impact assessment does not follow any formal HIA protocol, it does establish that predicted impacts would not exceed any Colorado or national primary ambient air quality standard. As the air quality standards are established under the Clean Air Act to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly, it can be concluded that the health of the population would be protected with an adequate margin of safety.
Air Quality	J. Capozzelli	The BLM's model and assessment it to narrowly focused and does not contain enough information to adequately analyze the air quality impacts that could occur as a result of current and future oil and gas development in the region or to weigh the differences between different alternatives in the Little Snake proposed management plan.	See General Comment Response #2
Air Quality	J. Capozzelli	The revised assessment should address the near-field, ozone, seasonal and comprehensive cumulative effects of the pollution coming from current and future drilling, and meet all of the requirements under existing law.	See General Comment Response #1
Air Quality	Megan Williams and Cindy Copeland	The Additional Air Quality Assessment and therefore the draft RMP/EIS do not satisfy the BLM's obligations under NEPA and FLPMA to disclose whether the proposed development will cause CAA violations, and to consider mitigation	The hypothetical air quality modeling analysis addressed in the report was intended to inform the public and allow public comment on the data and conclusions, and is not a NEPA document. The difference between alternatives continues to be demonstrated by the qualitative air quality emissions analysis found in the Draft EIS. BLM is confident

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		under NEPA, and to adopt mitigation under FLPMA, to prevent such violations.	the qualitative air pollutant emissions analyses presented in the Draft Little Snake Field Office RMP/EIS is appropriate and adequate. Therefore, the information presented in Chapters 3 and 4 of the Draft EIS has not been modified and remains appropriate as the basis for guiding subsequent management decisions. As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts.
Air Quality	Megan Williams and Cindy Copeland	Unfortunately, the BLM has failed to accomplish this in the Additional Air Quality Impact Assessment. The emissions inventory for the Additional Air Quality Assessment under-predicts potential emissions from this project, the modeling does not fully evaluate impacts and does not fully disclose the maximum potential impacts, and background concentrations understate current air quality in the area meaning that the adverse air quality impacts would likely be much worse in reality.	See General Comment Response #1
Air Quality	Megan Williams and Cindy Copeland	The Additional Air Quality Assessment (AQTSD Table 3-7) lists the background ozone levels as being 68 ug/m3, which would translate to 35 ppb. The BLM must describe the basis for this concentration in the document. According to the Little Snake RMP/DEIS the data are from Mesa Verde for the year 2004.6 These data are not only old, but also Mesa Verde, in Southern Colorado, is some distance from the Little Snake area, in Northwest Colorado. The BLM must update the background concentration for ozone to reflect monitored values in the area. Data from ozone monitors near the region indicate that background levels are much higher. The 4th highest maximum 8-hour ozone concentration at the Vernal monitor in 2007 was 68 ppb. Dinosaur National Monument	The ozone value provided in Table 3-7 of the AQTSD is intended to reflect monthly average background concentrations for use in the CALPUFF-lite model, and is not intended to reflect the highest maximum 8-hour concentrations for comparison to the health-based standards. The Guide to CALPUFF-lite modeling recommends using monthly estimates of background ozone concentrations for the conversion of SO2 and NO/NO2 to sulfates and nitrates, respectively. BLM is aware of the maximum 8-hour ozone concentrations that have been monitored in the region. As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once

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		and Colorado National Monument recorded 4th highest maximum 8-hour average concentrations of 63 ppb and 67 ppb, respectively, in 2007. All of these recent monitored values are much higher than the 35 ppb used in the Additional Air Quality Assessment and all are at levels considered by the Clean Air Scientific Advisory Committee (CASAC) to cause health impacts.7 This leaves virtually no room for growth in emissions that contribute to harmful levels of ozone pollution - namely, nitrogen oxides (NOx) and volatile organic compounds (VOCs).	project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts. In addition, the background air quality data used in the AAQIA were the same values as reported in the Draft EIS, although as stated "current and complete data on criteria air pollutant concentrations for the RMPPA are not available." Given the uncertainties with the number, nature, and specific location of potential sources and activities, the Draft EISs qualitative analysis included estimates oxides of nitrogen (NOx) and volatile organic compound (VOC) emissions (precursors to anthropogenic ozone formation). The Draft EIS further stated potential impacts to ozone would be made at the project-specific level. For example, BLM is currently using the Comprehensive Air quality Model with extensions (CAMx) Eulerian (gridded) photochemical atmospheric dispersion model to predict local and regional ozone conditions from existing and reasonably foreseeable emission sources for the White River Field Office (WRFO) Oil and Gas RMP Amendment and EIS. This analysis will provide a comprehensive analysis of emission sources and impacts throughout Colorado.
Air Quality	Megan Williams and Cindy Copeland	Since a portion of the projected increases in these ozone precursors will occur in the Little Snake area, the BLM must include an ozone analysis in the Additional Air Quality Assessment in order to ensure that these increased emissions will not cause ozone pollution to reach dangerous levels.	See General Comment Response #7
Air Quality	Megan Williams and Cindy Copeland	At the very least, the BLM must demonstrate that this project will not contribute to violations of the revised ozone NAAQS.	See General Comment Response #7
Air Quality	Megan Williams and Cindy Copeland	Specifically, a near-field modeling analysis of localized maximum ambient air impacts should be performed to assess whether the activities allowed under the draft RMP/EIS alternatives would comply with the NAAQS and the PSD Class II increments. The inputs for this analysis should include all of the air pollution source categories allowed under the alternatives of the RMP. The maximum emission rates from sources over the averaging times of the standard for which compliance is being assessed should be modeled. The modeling analysis should be based on at least one year of quality-assured, on-site, representative meteorological data or, if no on-site	As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts. In addition, the meteorological data used in the AAQIA were provided by EPA Region 8 personnel.

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		data is available, five years of meteorological data from the closest meteorological station representative of the area.	
Air Quality	Megan Williams and Cindy Copeland	The BLM has not analyzed whether the reasonably foreseeable development will prevent significant deterioration (PSD) of air quality, as required by the Clean Air Act. The BLM's air quality assessment must include an analysis to determine how much of the incremental amount of air pollution allowed in clean air areas (i.e., PSD increment) has already been consumed in the affected area and how much additional increment consumption will occur due to the proposed development in the planning area. Without this analysis, the BLM is not ensuring that air quality will not deteriorate more than allowed under the CAA.	See General Comment Response #4
Air Quality	Megan Williams and Cindy Copeland	In fact, increment consumption in the area due to the proposed oil shale research, development and demonstration sites is a concern. The near-field modeling performed for the draft EGL Resources Inc. oil shale research, development and demonstration (RD&D) environmental assessment (EA) showed that the project alone would directly cause violations of the 24-hour average Class II PM10 and SO2 increments. For the final EA the BLM revised the emissions inventory and modeling such that there are no longer predicted violations of these PSD increments. However, the modeling done for the final RD&D EAs still shows that the EGL project consumes nearly all of the 24-hour Class II PM10 and SO2 increment and that the Chevron RD&D site also consumes nearly all of the available Class II 24-hour PM10 increment.	See General Comment Response #4
Air Quality	Megan Williams and Cindy Copeland	In addition to oil and gas activities the BLM must inventory (and include in the Additional Air Quality Assessment) all pollutants from all other air pollution sources in the area as well as all sources expected to impact the same areas impacted by emissions from the Little Snake planning area. These sources include any state-permitted	As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling

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		sources in Colorado and surrounding states, any Colorado Oil and Gas Conservation Commission permitted oil and gas wells, the oil shale research, development and demonstration sites in northwest Colorado as well as all reasonably foreseeable development (RFD) sources (e.g., other NEPA projects, proposed power plants, etc.).	analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts. In addition, future quantitative air pollutant dispersion modeling analysis would include cumulative far-field analyses once project-specific oil and gas developments are proposed. Given the uncertainties with the number, nature, and specific location of potential sources and activities, the Draft EISs qualitative analysis included estimates oxides of nitrogen (NOx) and volatile organic compound (VOC) emissions (precursors to anthropogenic ozone formation). The Draft EIS further stated potential impacts to ozone would be made at the project-specific level. For example, BLM is currently using the Comprehensive Air quality Model with extensions (CAMx) Eulerian (gridded) photochemical atmospheric dispersion model to predict local and regional ozone conditions from existing and reasonably foreseeable emission sources for the White River Field Office (WRFO) Oil and Gas RMP Amendment and EIS. This analysis will provide a comprehensive analysis of emission sources and impacts throughout Colorado.
Air Quality	Megan Williams and Cindy Copeland	There are currently no PM2.5 monitors operating within the planning area. Recent PM2.5 data are available from Vernal, Utah, just over the state-line from the Little Snake planning area. The Vernal monitor was operated by the Utah Department of Air Quality from December 2006 through mid-December 2007 and recorded several very high values of PM2.5 during that time, including six exceedances of the 24-hour PM2.5 NAAQS.25 With a similarly large amount of oil and gas development going on in both areas it is critical that the BLM use a background concentration that is reflective of the nearby oil and gas sources.	The background air quality data used in the AAQIA were the same values as reported in the Draft EIS, although as stated "current and complete data on criteria air pollutant concentrations for the RMPPA are not available." In addition, the CDPHE-APCD has monitored PM2.5 at Steamboat Springs, Colorado, since 1999. Also, there is no scientific evidence that the ambient air quality conditions within the Planning Area (characterized by minimal oil and gas development) should be represented by samples collected in the highly developed Uinta Basin oil and gas field.
Air Quality	Megan Williams and Cindy Copeland	Unless the BLM can provide justification for why the Vernal data are not the most representative of background concentrations in the planning area, the BLM must consider its use in its Additional Air Quality Assessment.	The background air quality data used in the AAQIA were the same values as reported in the Draft EIS, although as stated "current and complete data on criteria air pollutant concentrations for the RMPPA are not available." In addition, there is no scientific evidence that the ambient air quality conditions within the Planning Area (characterized by minimal oil and gas development) should be represented by samples collected in the highly developed Uinta Basin oil and gas field.
Air Quality	Megan Williams and Cindy Copeland	Since exceedances of the short-term PM2.5 NAAQS have already been observed in the neighboring Uinta basin in Utah it is imperative that the BLM consider the impacts from similar	As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact

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		new sources of PM2.5 emissions to the Little Snake planning area. Major sources of fine particles include products of combustion (e.g., from compressor engines and drill rig engines used during oil and gas development) as well as travel on unpaved roads and fugitive dust from construction activities during well development.	assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts. In addition, there is no scientific evidence that the ambient air quality conditions within the Planning Area (characterized by minimal oil and gas development) should be represented by samples collected in the highly developed Uinta Basin oil and gas field.
Air Quality	Megan Williams and Cindy Copeland	Under federal requirements, the BLM must not authorize the Little Snake project if it will cause or contribute to adverse impacts on visibility in any Class I area. The BLM has obligations under the Clean Air Act to prevent future impairment of visibility. 40 C.F.R. § 1502.24, 42 U.S.C. 7491(a)(1). Unfortunately this Additional Air Quality Assessment fails to provide an adequate mitigation scenario that would remedy the additional adverse visibility impacts predicted for several protected areas.	Changes in atmospheric light extinction relative to background conditions were used to evaluate potential visibility (regional haze) impacts. As described by Pitchford and Malm (1994), a "just noticeable change" in visibility corresponds to a 1.0 to 2.0 deciview (dv) visibility change (numerically equivalent to a 10 to 20 percent change in extinction) where sensitive scenic targets are assumed to occur throughout the view. BLM uses a 1.0 dv "just noticeable change" as a significance threshold; however, there are no applicable local, state, tribal, or federal regulatory visibility standards. The potential number of days per year that greater than a "just noticeable change" in visibility was predicted to occur between zero and two days annually in the mandatory federal PSD Class I Mount Zirkel Wilderness Area. The assessment also predicted a 1.0 dv "just noticeable change" would be exceeded at Dinosaur National Monument between zero and five days annually, although this area is not subject to the National Visibility Goal under the federal Clean Air Act. No days per year were predicted to reach a 1.0 dv "just noticeable change" in the mandatory federal PSD Class I Eagles Nest or Flat Tops wilderness areas. Future quantitative visibility impact analyses would be conducted once project-specific oil and gas developments are proposed. In addition, BLM will identify mitigation measures once project-specific oil and gas developments are proposed.
Air Quality	Megan Williams and Cindy Copeland	Even the BLM's "refined" analysis shows visibility impairment greater than 1.0 dv and 0.5 dv (see Table 3-17 in Air Quality TSD). There is very little information in the Additional Air Quality Assessment on what method was used to "refine" the visibility analysis but based on the brief description in the modeling protocol (e.g., page 14 of the protocol indicates that the refined analysis is based on representative hourly average relative humidity measurements) it is likely that the refined	Changes in atmospheric light extinction relative to background conditions were used to evaluate potential visibility (regional haze) impacts. As described by Pitchford and Malm (1994), a "just noticeable change" in visibility corresponds to a 1.0 to 2.0 deciview (dv) visibility change (numerically equivalent to a 10 to 20 percent change in extinction) where sensitive scenic targets are assumed to occur throughout the view. BLM uses a 1.0 dv "just noticeable change" as a significance threshold; however, there are no applicable local, state, tribal, or federal regulatory visibility standards. The potential number of days per year that greater than a "just noticeable change" in visibility

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		analysis under-predicts visibility impacts. The BLM must describe how its "Daily Refined Analysis" differs from standard methods for assessing visibility impacts. This document should provide a better explanation of how the refined analysis was conducted, including the years and location of the background data used. Since this refined analysis differs from that which other FLMs routinely use, an explanation of how this modeling follows acceptable modeling protocols should also be included.	was predicted to occur between zero and two days annually in the mandatory federal PSD Class I Mount Zirkel Wilderness Area. The assessment also predicted a 1.0 dv "just noticeable change" would be exceeded at Dinosaur National Monument between zero and five days annually, although this area is not subject to the National Visibility Goal under the federal Clean Air Act. No days per year were predicted to reach a 1.0 dv "just noticeable change" in the mandatory federal PSD Class I Eagles Nest or Flat Tops wilderness areas. Future quantitative visibility impact analyses would be conducted once project-specific oil and gas developments are proposed. In addition, prior to conducting the hypothetical air quality impact assessment, BLM and EPA Region 8 agreed that potential visibility impacts would be estimated by comparing predicted atmospheric extinction (derived from modeled speciated aerosols and observed daily f(RH) values) to observed data collected by the IMPROVE visibility program. The visibility methodology would use an established approach utilized by BLM on previous studies, including a preliminary evaluation using the Seasonal FLAG Screening Analysis Spreadsheet Method, and if necessary, the Daily FLAG Refined Analysis Spreadsheet Method to further refine the screening analysis results.
Air Quality	Megan Williams and Cindy Copeland	The Forest Service and the National Park Service (NPS) both use a 0.5 dv change as their threshold for identifying visibility impairment. Because the Class I areas considered in the Little Snake RMP are either under Forest Service or NPS control, the BLM must fully acknowledge and discuss the significance of impacts using the impact threshold of 0.5 dv, even if the BLM does not adhere to this standard for its own lands. The BLM's continued refusal to fully acknowledge and address impacts at the 0.5 dv level fundamentally fails to meet the basic intent of NEPA, as described in sections 101 and 102(1) (42 U.S.C. § 4331) by stating it is the "continuing responsibility of the Federal Government to use all practicable means" to "assure for all Americans safe, healthful, productive, and esthetically . . . pleasing surroundings."	Changes in atmospheric light extinction relative to background conditions were used to evaluate potential visibility (regional haze) impacts. As described by Pitchford and Malm (1994), a "just noticeable change" in visibility corresponds to a 1.0 to 2.0 deciview (dv) visibility change (numerically equivalent to a 10 to 20 percent change in extinction) where sensitive scenic targets are assumed to occur throughout the view. BLM uses a 1.0 dv "just noticeable change" as a significance threshold; however, there are no applicable local, state, tribal, or federal regulatory visibility standards. The potential number of days per year that greater than a "just noticeable change" in visibility was predicted to occur between zero and two days annually in the mandatory federal PSD Class I Mount Zirkel Wilderness Area. The assessment also predicted a 1.0 dv "just noticeable change" would be exceeded at Dinosaur National Monument between zero and five days annually, although this area is not subject to the National Visibility Goal under the federal Clean Air Act. No days per year were predicted to reach a 1.0 dv "just noticeable change" in the mandatory federal PSD Class I Eagles Nest or Flat Tops wilderness areas. Future quantitative visibility impact analyses would be conducted once project-specific oil and gas developments are proposed. In addition, prior to conducting the hypothetical air quality impact assessment, BLM and EPA Region 8 agreed that potential visibility impacts would be estimated by comparing predicted atmospheric extinction (derived from modeled

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			speciated aerosols and observed daily f(RH) values) to observed data collected by the IMPROVE visibility program. The visibility methodology would use an established approach utilized by BLM on previous studies, including a preliminary evaluation using the Seasonal FLAG Screening Analysis Spreadsheet Method, and if necessary, the Daily FLAG Refined Analysis Spreadsheet Method to further refine the screening analysis results. In addition, prior to conducting the hypothetical air quality impact assessment, BLM and EPA Region 8 agreed a "1.0 deciview "just noticeable change" threshold value will be compared to results modeled at PSD Class I and sensitive Class II areas."
Air Quality	Megan Williams and Cindy Copeland	The BLM's own modeling, as described in the previous section, shows numerous adverse air quality impacts. However, the model inputs and the way in which the BLM performed the modeling analyses are not adequate to fully assess the potential impacts from the planned development on an area already heavily impacted by industrial growth. The result of the deficiencies in the modeling is that the adverse air quality impacts from the Little Snake planning area development would likely be even worse than disclosed in the Additional Air Quality Assessment. The areas of greatest concern are discussed in more detail below.	See General Comment Response #4
Air Quality	Megan Williams and Cindy Copeland	The PM2.5 modeling conducted by the BLM for the additional air quality assessment only considered primary PM2.5 (directly emitted from combustion point sources and from fugitive sources). Emissions of NOx, VOCs, SO2 and ammonia can form, after emitted into the atmosphere, into PM2.5 and this could potentially be a significant component of ambient PM2.5 concentrations. Estimates of PM2.5 formation from these precursors should also be included in the BLM's modeling analyses.	As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts. In addition, the hypothetical modeling analysis addressed both primary (direct emissions) and secondary (formed in the atmosphere) particulate matter.
Air Quality	Megan Williams and Cindy Copeland	It is unclear from the Additional Air Quality Assessment report if the modeling assumes complex or flat terrain. The model would likely show higher ambient concentrations if the complex	Prior to conducting the hypothetical air quality impact assessment, BLM and EPA Region 8 agreed to use the CALPUFF-lite model as a conservative screening approach (as described in Guide for Applying the EPA Class I Screening Methodology with the CALPUFF Modeling

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		terrain of the area was taken into account, which is precisely the reason why the BLM should attempt to estimate the locations of air pollutant sources using the topography of the planning area, including the Vermillion Basin, and the expected areas of development.	System). However, based on flat-terrain and a single location meteorological data base, as well as the complexity of three-dimension wind fields, the CALPUFF-lite screening approach may not always be conservative compared to the refined CALMET/CALPUFF modeling approach.
Air Quality	Megan Williams and Cindy Copeland	The BLM's emissions estimates are based on a number of assumptions on emissions controls that must be made enforceable if they are to be the basis for the BLM's final decision. As part of the Additional Air Quality Assessment the BLM must assess the direct, indirect and cumulative air quality impacts of all emissions sources affecting the planning area (i.e., model all relevant emissions to determine air quality concentrations throughout the affected area). If the emissions characterization from these sources is based on assumed controls then those controls must be established as specific enforceable mitigation measures in the draft RMP/EIS.	The turnover in engines is based on EPA's assumptions as provided in technical documents supporting the NONROAD model. The turnover of engines will occur as older engines are scrapped. According to EPA's assumptions, the median life of a large diesel engine is 7000 hours at full load. All engines manufactured after 2011 must meet EPA's Tier 4 emission standards. Therefore, it is valid to assume that all engines will meet Tier 4 emission standards by 2016. Regardless, the year of maximum emissions as determined by the level of activity, is 2027. All Tier 1 through 3 engines will have been retired by 2027. As stated in Section 5.6 of the AAQIA, "This hypothetical air quality assessment analyses the possible effects of oil and gas development portrayed in the RFD Scenario for the Little Snake RMP. This is not a field development EIS and the projected development is not based on reasonably foreseeable project proposals (with the exception of the Hiawatha Regional Energy Development Project). Therefore, without being able to take into account site specific project proposals, it is not appropriate to require mitigation at the land use plan level."
Air Quality	Megan Williams and Cindy Copeland	The emission inventories assume certain conversion factors for particulate matter that likely result in an underestimate of PM emissions from construction activities. The BLM calculates fugitive dust emissions from construction using an emission factor for total suspended particulate matter (TSP) from Heavy Construction Operations of 1.2 tons per acre-month (EPA, AP-42, Vol 1, Sec 13.2.3, 1995) and then assumes 26% of the TSP emissions are PM10 emissions and 15% of the PM10 emissions are PM2.5 emissions. See, for example, Table A.1.1.2 on p. A-2 of the AQTSD. In fact, the 26% PM10 fraction may result in an underestimate of both PM10 and PM2.5 emissions, especially from road construction, which is a significant part of the construction process for oil and gas development. Road construction generally involves extensive earthmoving and heavy construction vehicle travel	Prior to conducting the hypothetical air quality impact assessment, BLM and EPA Region 8 agreed "Emissions associated with potential well pad, pipeline, and access road construction; flow-back/flaring; vehicle travel during the drilling and completion phases; as well as construction and vehicle traffic would be either minimal, or cannot be quantified at this time."

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		resulting in higher emissions than for other construction activities. More commonly, PM10 calculations are estimated assuming 35% of TSP emissions fall in the PM10 size range for road construction emissions (as opposed to 26%).38 The use of a higher emission factor would result in higher PM10 and PM2.5 emissions (since PM2.5 emissions are calculated as a percentage of PM10 emissions) from construction-related fugitive dust.	
Air Quality	Megan Williams and Cindy Copeland	It does not appear that the BLM modeled PM2.5 emissions from drill rigs. None of the emissions tables in the inventory or any of the narrative on the inventory development mention PM2.5 emissions from this source. Fine diesel PM from all combustion sources must be accounted for in the BLM's analyses.	Prior to conducting the hypothetical air quality impact assessment, BLM and EPA Region 8 agreed to consider emissions from drilling operations that would occur during construction activities (including PM2.5 emissions). Drilling engine emissions would be calculated using EPA's AP-42 or other appropriate engineering estimates. Future required emission controls would be assumed to phase into operation at 20 percent per calendar year (for example, it is assumed that all engines will be Tier II in 2010, but only 20 percent of engines will be Tier IV in 2011).
Air Quality	Megan Williams and Cindy Copeland	The BLM assumed a surface material silt content for unpaved roads of 5.1% based on an assumed value from EPA's AP-42 emission factors for Unpaved Roads (AP-42 Section 13.2.2, Table 13.2.2-1, November 2006). The silt content value of 5.1% appears to be the mean value listed in AP-42 for a plant road at a Western surface coal mine. This value may, in fact, greatly underestimate soil silt content for the Little Snake planning area – particularly if the roads constructed for oil and gas development are graded roads with no imported gravel. A cursory review of surface layer soil silt content data for the resident soils in the Little Snake planning area shows values as low as 9% and as high as 49%.	Prior to conducting the hypothetical air quality impact assessment, BLM and EPA Region 8 agreed "Emissions associated with potential well pad, pipeline, and access road construction; flow-back/flaring; vehicle travel during the drilling and completion phases; as well as construction and vehicle traffic would be either minimal, or cannot be quantified at this time."
Air Quality	Megan Williams and Cindy Copeland	Furthermore, the inventories are based on one drill rig with an average number of operating days, per well, of 25. See, for example, Table A1.1.8 on p. A-8 of the AQTSD. These data appear to be a gross underestimate of the kinds of drilling duration times currently occurring in the field.40 The drill rig inventories for the draft RMP/EIS are based on the number and type of drill rigs proposed for each year of development, power	The hypothetical air quality impact analysis assumed up to 152 wells would be drilled annually at an average of 25 days per well (a total of 3,800 drilling days per year).

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		requirements (hp) and drilling activity duration (e.g., estimates for the number of drilling days per well and the number of hours per day of drill rig operation). Assuming the 25 days per well drill duration time is adequate, one rig operating at this rate would only be able to drill a maximum of 15 wells per year. In order to achieve the 152 wells per year in the peak emission year, there would need to be at least 10 rigs operating, not 1.	
Air Quality	Megan Williams and Cindy Copeland	EPA's National Air Toxics Assessment (NATA) shows elevated levels of formaldehyde in portions of the Little Snake area in modeling for the year 1996.42 Since oil and gas operations have grown significantly since that time, one could assume that the situation has only worsened. Under NEPA, the BLM must disclose the cumulative impacts of the proposed project. However, it appears that HAP impacts were not fully analyzed for this Additional Air Quality Assessment. In fact, HAPs are not addressed in the air quality assessment at all, except for a mere mention in two footnotes on the emissions inventory, where the document states, "Hazardous Air Pollutants (HAPs) assumed to be 10% of VOCs and formaldehyde added for gas compression emissions."43 BLM has an obligation under NEPA to fully consider the cumulative impacts of every relevant environmental concern. BLM should quantify emissions from 1,3-butadiene, secondary formaldehyde and diesel exhaust. 1,3 butadiene is recognized as a known human carcinogen44 and is a product of the combustion of gasoline and diesel oil, among other things.	As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts. In addition, future quantitative air pollutant dispersion modeling analysis would include a hazardous air pollutant impact analyses once project-specific oil and gas developments are proposed.
Air Quality	Megan Williams and Cindy Copeland	The BLM's Additional Air Quality Assessment does not seriously explore the impact of emissions of methane from the allowed development or potential mitigation methods to reduce the associated impacts. The BLM has failed to seriously investigate the alternatives available to avoid or minimize these impacts from development as required by 40 CFR 1502.1, 40 CFR 1502.14 and 40 CFR 1502.16. At a minimum,	As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results

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		the BLM should consider and adopt the mitigation strategies identified by EPA for minimizing methane emissions from oil and gas development.	of a hypothetical analysis represent future site-specific impacts. In addition, future quantitative air pollutant dispersion modeling analysis would include a so-called greenhouse gas emissions analyses once project-specific oil and gas developments are proposed.
Air Quality	Michele Shimizu	Please carry out an improved analysis on the Bureau of Land Management's additional air quality assessment for the Little Snake Resource Area before submitting your final management plan. The new air quality assessment should assess not only how the proposed air pollution will affect the Little Snake region and its unique ecosystems, but also the impacts on neighboring lands and communities who could be adversely affected. Please meet all of the requirements under the existing law.	See General Comment Response #1
Air Quality	National Park Service	The Additional Air Quality Impact Assessment document does not report the full range of visibility impacts predicted to occur at Dinosaur National Monument; it only reports the range of days with impairment greater than 1 deciview (dv) for any given year. The Technical Support document, which includes all of the modeling results for all alternatives, shows that a total of 11 days in five modeled years are predicted to result in a greater than 1.0 dv change in visibility at Dinosaur National Monument under Alternatives A, B and C. For these same Alternatives, a total of 46 days in five modeled years are predicted to result in a greater than 0.5 dv change in visibility at Dinosaur National Monument. Under Alternative D the predicted visibility impacts drop to 6 and 33 total days over five modeled years for the 1.0 and 0.5 dv change thresholds, respectively.	Changes in atmospheric light extinction relative to background conditions were used to evaluate potential visibility (regional haze) impacts. As described by Pitchford and Malm (1994), a “just noticeable change” in visibility corresponds to a 1.0 to 2.0 deciview (dv) visibility change (numerically equivalent to a 10 to 20 percent change in extinction) where sensitive scenic targets are assumed to occur throughout the view. BLM uses a 1.0 dv “just noticeable change” as a significance threshold; however, there are no applicable local, state, tribal, or federal regulatory visibility standards. The potential number of days per year that greater than a “just noticeable change” in visibility was predicted to occur between zero and two days annually in the mandatory federal PSD Class I Mount Zirkel Wilderness Area. The assessment also predicted a 1.0 dv “just noticeable change” would be exceeded at Dinosaur National Monument between zero and five days annually, although this area is not subject to the National Visibility Goal under the federal Clean Air Act. No days per year were predicted to reach a 1.0 dv “just noticeable change” in the mandatory federal PSD Class I Eagles Nest or Flat Tops wilderness areas. Future quantitative visibility impact analyses would be conducted once project-specific oil and gas developments are proposed. In addition, for the hypothetical air quality assessment, BLM utilized the same methods for evaluating potential visibility impacts as described in the Federal Land Managers' Air Quality Related Values Work Group (FLAG) Phase I Report (December 2000). The FLAG Guidance was prepared to develop a more consistent approach to evaluate air quality-related values’ impacts during review of PSD air quality permit applications under EPA’s New Source Review program. For visibility (regional haze)

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			impacts, the FLAG Phase I guidance identifies greater than a 0.5 deciview change a potential significant adverse impact for a single air pollutant emission source, and greater than a 1.0 deciview change a potential significant adverse impact for cumulative air pollutant emission sources. BLM calculates the maximum daily concentration of visibility impacting air pollutants located anywhere within the sensitive area boundary for the entire annual modeling period. Those values are then converted into their equivalent daily visibility impacts, and compared to equivalent daily measured background visibility conditions. Finally, the range (minimum to maximum) of days per year exceeding a 1.0 deciview "just noticeable change" are reported for the entire for the entire period of monitoring record, which varies by location.
Air Quality	National Park Service	Further, the analysis indicates that these predicted visibility changes were calculated using current conditions rather than estimated natural background values. We recommend that predicted visibility effects be calculated using natural background values. If the visibility analyses were completed using these recommendations, it is anticipated that predicted impacts would be even higher than what is reported in the Additional Air Quality Analysis and associated technical support document. This lends further weight to our previously stated concern that potential oil and gas development of this scale could significantly affect visibility at Dinosaur National Monument under all alternatives.	NEPA requires a description of potential impacts to the existing environment, as identified in the existing environment portion of an EIS (Chapter 3). Therefore potential impacts of a proposed action and alternatives are assessed based on the current observed conditions, not an assumed "natural" state of a given environment or component of the environment. Also, see response to the last comment from form letter 3 regarding haze and visibility.
Air Quality	National Park Service	The modeling results also show that the NPS western Deposition Analysis Threshold (DAT) for nitrogen (0.005 kg/ha/yr) is exceeded at Dinosaur National Monument under all alternatives. While exceedance of the DAT does not immediately imply an adverse effect, it does warrant the need for further investigation, including any potential effects to sensitive lichens or aquatic ecosystems that may be present.	As described in the AAQIA, total deposition impacts from hypothetical emission sources plus background values were compared to significance threshold levels of 5 kilograms (kg)/hectares (ha)/year for sulfur and 3 kg/ha/year for nitrogen. These thresholds were determined from a national scientific study conducted by the USFS specifically for that purpose. Based on the modeled maximum direct atmospheric deposition values, plus the assumed background deposition rates, none of the alternatives are predicted to exceed significance thresholds. In addition, where sensitive lake chemistry data were available, potential changes in Acid Neutralizing Capacity were predicted and compared to significance threshold (also developed by the Forest Service). Again, no significant lake chemistry impacts were predicted to occur.

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Air Quality	National Park Service	Please note, under Colorado air quality regulations, the Class I increment levels for sulfur dioxide apply to Dinosaur National Monument. The modeling results in the Additional Air Quality Impact Assessment indicate that the Class I increments could be exceeded for this pollutant. We believe this warrants further assessment and should be addressed in the air quality analysis.	Although this State of Colorado designation was correctly identified in Sections 3.0, 5.0, and 5.1.2 of the AAQIA, as well as in Table 5-1, it was not made clear in footnote a of Table 5-2. That error has been corrected in the Errata listed at the beginning of this Appendix to the Final EIS. However, the Maximum Direct Modeled Impacts do not exceed any applicable increment value. As stated in Section 4.1 of the AAQIA, "However, comparison to PSD increments is intended to indicate potential significance and is not intended to represent a regulatory PSD Increment Consumption Analysis."
Air Quality	National Park Service	The Additional Air Quality Assessment did not evaluate the effects of ozone. Ozone is of increasing concern in the Mountain West with two areas of oil and gas development going into nonattainment for the recently revised standard this year. We recommend that BLM fully document its decision to not evaluate ozone concentrations through photochemical modeling, and in particular the cumulative effects of the drilling and production activities in the LSFO area when added to other nearby development.	See General Comment Response #7
Air Quality	Rebecca Goff	The scope of the assessment is too limited. BLM didn't look at the impacts that places like the Uinta Basin or Piceance might have on our air quality, let alone what 1100 wells in Hiawatha might do. Nor did BLM consider the implications of the wells in our back yard and those proposed for the Little Snake Resource Area. We deserve the best modeling and monitoring that BLM can provide, not just a narrow model that looks at what a few wells in Great Divide might do to visibility in the Zirkels. 3. We need a more comprehensive understanding of what the future impacts might be.	As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts. In addition, the World Health Organization defines an HIA as "a combination of procedures or methods by which a policy, program or project may be judged as to the effects it may have on the health of a population." While the hypothetical air quality impact assessment does not follow any formal HIA protocol, it does establish that predicted impacts would not exceed any Colorado or national primary ambient air quality standard. As the air quality standards are established under the Clean Air Act to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly, it can be concluded that the health of the population would be protected with an adequate margin of safety. In addition, future quantitative air pollutant dispersion modeling analysis would include cumulative far-field

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			analyses once project-specific oil and gas developments are proposed.
Air Quality	Rick Hammel, David Morris, Ann Wagner, Jane and Larry Yazzie, Wes McStay, Mark McStay, John and Mickey Allen, Judy Griffith, Deanna McLain, Kirk Cunningham	It is our view the model used was the simplest available model that could have been used to fulfill EPA's request for additional information. We are disappointed that the BLM chose to go with the least comprehensive model available. We believe that there are better models that the BLM should have considered employing prior to completing the air quality analysis. At the very least, we strongly feel that the complete CALPuFF model should have been utilized.	Prior to conducting the hypothetical air quality impact assessment, BLM and EPA Region 8 agreed to use the CALPUFF-lite model as a conservative screening approach (as described in Guide for Applying the EPA Class I Screening Methodology with the CALPUFF Modeling System). However, based on flat-terrain and a single location meteorological data base, as well as the complexity of three-dimension wind fields, the CALPUFF-lite screening approach may not always be conservative compared to the refined CALMET/CALPUFF modeling approach.
Air Quality	Rick Hammel, David Morris, Ann Wagner, Jane and Larry Yazzie, Wes McStay, Mark McStay, John and Mickey Allen, Judy Griffith, Deanna McLain, Kirk Cunningham	The modeling domain has been needlessly limited by utilizing political boundaries such as the Colorado/Wyoming/state line. Political boundaries are completely arbitrary when it comes to air quality, weather patterns, cumulative impacts and connected actions. The modeling domain should be expanded in all directions geographically in order to properly take into account expected increases in development, especially substantial anticipated development proposed for Colorado's Piceance Basin and the Uinta basin in Utah and South Western Wyoming.	See General Comment Response #5
Air Quality	Rick Hammel, David Morris, Ann Wagner, Jane and Larry Yazzie, Wes McStay, Mark McStay, John and Mickey Allen, Judy Griffith, Deanna McLain, Kirk Cunningham	The data used within the report appears to be outdated and flawed. The most egregious example is BLM's use of pre-scrubber data for the coal-fired power plants in the Yampa Valley that is data on air quality taken or estimated before scrubbers were added to the area coal fired power plants. This data is utilized within the report to claim that future oil and gas development proposed in the LSFO will not have a negative effect on air quality. BLM spokespeople have even utilized this data to make the statement that air quality will improve over the life of the plan, is not only misleading but also deceitful. First, the data used is older than the 10-year threshold recommended for use by the EPA. Secondly, the assessment admits that visibility will decrease in certain class 1 and class 2 areas, but that this results in a net increase. This is clearly flawed. Two increases cannot result in a	As stated in the “Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado” (AAQIA), “This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed.” It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts. In addition, future quantitative air pollutant dispersion modeling analysis would include cumulative far-field analyses once project-specific oil and gas developments are proposed. Changes in atmospheric light extinction relative to background conditions were used to evaluate potential visibility (regional haze) impacts. As described by Pitchford and Malm (1994), a “just noticeable change” in visibility corresponds to a 1.0 to 2.0 deciview (dv) visibility change (numerically equivalent to a 10 to 20 percent change in extinction) where sensitive scenic targets

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		net decrease. The flaw has to do with the incorrect use of out-of-date baseline data or indicates a serious failure of the application of the CALPuff Lite Mode. The report must be change so that either current or 2006 baseline data is used in the model. WPA standards require baseline data be no more than 10 years old. Moreover, data after 2006 should account for modernization of the area coal-fired-power plants.	are assumed to occur throughout the view. BLM uses a 1.0 dv "just noticeable change" as a significance threshold; however, there are no applicable local, state, tribal, or federal regulatory visibility standards. The potential number of days per year that greater than a "just noticeable change" in visibility was predicted to occur between zero and two days annually in the mandatory federal PSD Class I Mount Zirkel Wilderness Area. The assessment also predicted a 1.0 dv "just noticeable change" would be exceeded at Dinosaur National Monument between zero and five days annually, although this area is not subject to the National Visibility Goal under the federal Clean Air Act. No days per year were predicted to reach a 1.0 dv "just noticeable change" in the mandatory federal PSD Class I Eagles Nest or Flat Tops wilderness areas. Future quantitative visibility impact analyses would be conducted once project-specific oil and gas developments are proposed. In addition, prior to conducting the hypothetical air quality impact assessment, BLM and EPA Region 8 agreed that potential visibility impacts would be estimated by comparing predicted atmospheric extinction (derived from modeled speciated aerosols and observed daily f(RH) values) to observed data collected by the IMPROVE visibility program. The visibility methodology would use an established approach utilized by BLM on previous studies, including a preliminary evaluation using the Seasonal FLAG Screening Analysis Spreadsheet Method, and if necessary, the Daily FLAG Refined Analysis Spreadsheet Method to further refine the screening analysis results.
Air Quality	Rick Hammel, David Morris, Ann Wagner, Jane and Larry Yazzie, Wes McStay, Mark McStay, John and Mickey Allen, Judy Griffith, Deanna McLain, Kirk Cunningham	In addition to old data, BLM has employed data from only one meteorological station. This presents two problems with the meteorological data. First, the data was taken from Rock Springs, a city that lies well over 100 miles from Craig, CO, the population center for the LSFO and over 50 miles from the LSFO's northernmost boundary. Rock Springs, WY, does not fully represent meteorological conditions of the LSFO, especially the Class 1 and Class 2 areas, which are high elevation and mountainous parts of the air shed. Second, relying upon one source of meteorological data is inadequate in forming a complete picture. For these reasons and because additional meteorological data is available from many sources in Northwest Colorado, including Storm Peak Labs, on of the USA's top atmospheric research stations, LSFO must obtain	Prior to conducting the hypothetical air quality impact assessment, BLM and EPA Region 8 agreed to use the CALPUFF-lite model as a conservative screening approach (as described in Guide for Applying the EPA Class I Screening Methodology with the CALPUFF Modeling System). However, based on flat-terrain and a single location meteorological data base, as well as the complexity of three-dimension wind fields, the CALPUFF-lite screening approach may not always be conservative compared to the refined CALMET/CALPUFF modeling approach. BLM recognizes EPA's guidance to state and local air quality regulatory agencies through the "Interagency Workgroup on Air Quality Modeling (IWAQM) Phase 2 Summary Report and Recommendations for Modeling Long-Range Transport Impacts" in order to estimate potential impacts to air quality-related values within PSD Class I areas under the federal Clean Air Act. Although BLM administers some of these PSD Class I areas, we were not invited to participate in the IWAQM process. However, BLM worked closely with EPA management and staff to support use of the CALPUFF-lite modeling system to assess impacts in the hypothetical air quality assessment,

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		and incorporate additional meteorological data when they remodel potential air quality impacts.	using a single meteorological database and discrete downwind receptors.
Air Quality	Rick Hammel, David Morris, Ann Wagner, Jane and Larry Yazzie, Wes McStay, Mark McStay, John and Mickey Allen, Judy Griffith, Deanna McLain, Kirk Cunningham	Furthermore, the measure used (ug/m3) does not compare to EPA standards so must converted to ppm. Several charts, for example table 1-4 on page 13 and table 5-2 on page 17, show a concentration of 119. This is astronomically high and when converted to ppm results in 11.9 ppm, a figure far higher than acceptable EPA regulations. We suspect that the number is either incorrect (plus or minus a decimal point) or that the instrument/model has malfunctioned. Due to so many flaws in the data and the inability of this report to provide clear, accurate distinctions between the RMP alternatives, we must request that these flaws be corrected and the public be provided the opportunity to comment on the corrected data.	The background air quality concentrations presented in the AAQIA were taken directly from the Little Snake Draft RMP/EIS (Page 3-12). Particulate matter ambient concentrations, modeled predictions, and applicable ambient air quality standards are all reported in the same physical units: micrograms per cubic meter (or µg/m3). Although the background air quality concentrations have been updated, with data references provided, for the final AAQIA Errata and Little Snake PRMP/FEIS, the revised values did not change the AAQIA conclusions demonstrating hypothetical impacts were below applicable PSD increments, as well as national and Colorado ambient air quality standards. The revised background air quality concentrations did not affect the AAQIA visibility analysis because independent visibility-related background data were used.
Air Quality	Rick Hammel, David Morris, Ann Wagner, Jane and Larry Yazzie, Wes McStay, Mark McStay, John and Mickey Allen, Judy Griffith, Deanna McLain, Kirk Cunningham	The protocol stipulates the modeling of certain gases; however, the analysis presented in the results fails to provide a report of how theses gases would be affected by projected development. Given the proliferation of ozone warnings coming out of rural Wyoming this past year, we are particularly concerned that the report lacked comprehensive information about NOX, VOX, methane or other ozone precursors and how these might contribute to the ozone profile for the area.	See General Comment Response #7
Air Quality	Rick Hammel, David Morris, Ann Wagner, Jane and Larry Yazzie, Wes McStay, Mark McStay, John and Mickey Allen, Judy Griffith, Deanna McLain, Kirk Cunningham	The report does not address connected actions such as additional infrastructure or transport of pollution from areas of intense development to areas free from development. The report claims that connected actions were ignored because these ancillary facilities and transportation figures are difficult to calculate prior to actual development. That may be so, but that it is difficult does not mean it should not be done. BLM can utilize existing development, the LSFO Reasonable Foreseeable Development Scenario, and similar oil and gas developments in adjacent areas to the LSFO to develop an empirically based	Prior to conducting the hypothetical air quality impact assessment, BLM and EPA Region 8 agreed “Emissions associated with potential well pad, pipeline, and access road construction; flow-back/flaring; vehicle travel during the drilling and completion phases; as well as construction and vehicle traffic would be either minimal, or cannot be quantified at this time.”

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		estimate of the impacts of ancillary facilities and mobile sources.	
Air Quality	Rick Hammel, David Morris, Ann Wagner, Jane and Larry Yazzie, Wes McStay, Mark McStay, John and Mickey Allen, Judy Griffith, Deanna McLain, Kirk Cunningham	We were disappointed to discover that despite these characteristics being listed in the protocol, the report does NOT address predictions on expected increases in methane, NOX or VOX or ozone. Therefore, we cannot determine if the proposed alternatives will comply with National Ambient Air Quality Standards and what contribution development will have on adding to the global warming problem.	As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts. Global Climate Change considerations have been incorporated into Chapter 3 – Affected Environment and Chapter 4 – Environmental Consequences of the FEIS.
Air Quality	Rick Hammel, David Morris, Ann Wagner, Jane and Larry Yazzie, Wes McStay, Mark McStay, John and Mickey Allen, Judy Griffith, Deanna McLain, Kirk Cunningham	We are concerned that the report fails to distinguish between the proposed alternatives in the RMP and the associated impacts that each alternative may have on air quality. We believe this is further proof of the insufficiencies in the models discussed earlier in this letter. We reiterate our call for improved modeling to enable differences between the alternatives to be fully considered when finalizing the RMP. We also believe that more in-depth analysis will allow BLM to mandate appropriate mitigation measures when and where development occurs.	See General Comment Response #2
Air Quality	The Wilderness Society, Colorado Mountain Club, Western Resource Advocates, Rocky Mountain Recreation Initiative, Wilderness Workshop, Center for Native Ecosystems, Colorado Environmental	We also agree that the BLM should re-conduct the analysis using a more comprehensive model and use a 20% best visibility condition measurement for visual impacts.	Changes in atmospheric light extinction relative to background conditions were used to evaluate potential visibility (regional haze) impacts. As described by Pitchford and Malm (1994), a "just noticeable change" in visibility corresponds to a 1.0 to 2.0 deciview (dv) visibility change (numerically equivalent to a 10 to 20 percent change in extinction) where sensitive scenic targets are assumed to occur throughout the view. BLM uses a 1.0 dv "just noticeable change" as a significance threshold; however, there are no applicable local, state, tribal, or federal regulatory visibility standards. The potential number of days per year that greater than a "just noticeable change" in visibility was predicted to occur between zero and two days annually in the mandatory federal PSD Class I Mount Zirkel Wilderness Area. The assessment also predicted a 1.0 dv "just noticeable change" would be exceeded at Dinosaur National Monument between zero and five days annually, although this area is not subject to the National Visibility Goal

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	Coalition, Natural Resources Defense Council, Sierra Club, Rocky Mountain Chapter, WildEarth Guardians		under the federal Clean Air Act. No days per year were predicted to reach a 1.0 dv "just noticeable change" in the mandatory federal PSD Class I Eagles Nest or Flat Tops wilderness areas. Future quantitative visibility impact analyses would be conducted once project-specific oil and gas developments are proposed.
Air Quality	The Wilderness Society, Colorado Mountain Club, Western Resource Advocates, Rocky Mountain Recreation Initiative, Wilderness Workshop, Center for Native Ecosystems, Colorado Environmental Coalition, Natural Resources Defense Council, Sierra Club, Rocky Mountain Chapter, WildEarth Guardians	The assessment fails to take into consideration key information regarding the impacts of oil and gas development to concentrations of ozone in the region.	Given the uncertainties with the number, nature, and specific location of potential sources and activities, the Draft EISs qualitative analysis included estimates oxides of nitrogen (NOx) and volatile organic compound (VOC) emissions (precursors to anthropogenic ozone formation). The Draft EIS further stated potential impacts to ozone would be made at the project-specific level. For example, BLM is currently using the Comprehensive Air quality Model with extensions (CAMx) Eulerian (gridded) photochemical atmospheric dispersion model to predict local and regional ozone conditions from existing and reasonably foreseeable emission sources for the White River Field Office (WRFO) Oil and Gas RMP Amendment and EIS. This analysis will provide a comprehensive analysis of emission sources and impacts throughout Colorado. In addition, the WRAP ozone modeling results that are referenced are known to show a very high bias for overestimating ozone. In the modeling, this is due to artificial vertical mixing of stratospheric ozone down to lower elevations. In addition, the referenced modeling results are absolute 8-hour maximum values, while EPA modeling guidance requires application of the relative response factor methodology to address modeling bias. Therefore, the referenced modeling results do not indicate ozone violations in the region.
Air Quality	The Wilderness Society, Colorado Mountain Club, Western Resource Advocates, Rocky Mountain Recreation Initiative, Wilderness Workshop, Center	We are also concerned that the analysis fails to address the issue of wintertime ozone NAAQS exceedances, which have been experienced in parts of the Rocky Mountain West. Indeed, in Sublette County, Wyoming in February of 2008, ozone concentrations exceeded 0.10 ppm and the Wyoming Department of Environmental Quality has indicated that the region is in violation of the ozone NAAQS. One reason cited for the exceptionally high wintertime ozone concentrations has been the fact that some areas	See General Comment Response #7

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	for Native Ecosystems, Colorado Environmental Coalition, Natural Resources Defense Council, Sierra Club, Rocky Mountain Chapter, WildEarth Guardians	are more prone to temperature inversions, which can trap harmful pollutants for long periods of time. The Colorado Air Pollution Control Division has assessed to what degree parts of Colorado may be susceptible to such inversions, and therefore susceptible to high ozone concentrations.	
Air Quality	The Wilderness Society, Colorado Mountain Club, Western Resource Advocates, Rocky Mountain Recreation Initiative, Wilderness Workshop, Center for Native Ecosystems, Colorado Environmental Coalition, Natural Resources Defense Council, Sierra Club, Rocky Mountain Chapter, WildEarth Guardians	We request the LSFO include a comprehensive Health Impact Assessment (HIA) of the potential effects on human health from oil and gas development, both from development authorized in the RMP and cumulatively with other expected development in the regions, as part of the LSFO RMP revision, and specifically as part of this AAQIA. The BLM has already issued a Draft EIS for oil and gas development in Alaska that included a section on public health impacts and discussion of mitigation measures for these impacts. It is unclear to us why this process is not being replicated in other BLM EIS processes. BLM should include a full, comprehensive Health Impact Assessment in the Little Snake RMP revision and/or as part of this AAQIA.	As stated in the “Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado” (AAQIA), “This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed.” It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts. In addition, the World Health Organization defines an HIA as “a combination of procedures or methods by which a policy, program or project may be judged as to the effects it may have on the health of a population.” While the hypothetical air quality impact assessment does not follow any formal HIA protocol, it does establish that predicted impacts would not exceed any Colorado or national primary ambient air quality standard. As the air quality standards are established under the Clean Air Act to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly, it can be concluded that the health of the population would be protected with an adequate margin of safety.
Air Quality	The Wilderness Society, Colorado Mountain Club, Western Resource Advocates, Rocky Mountain	BLM should use a more comprehensive model that accurately assesses probable impacts to all lands with wilderness characteristics, and BLM must employ avoidance and/or mitigation strategies to reduce these impacts.	Prior to conducting the hypothetical air quality impact assessment, BLM and EPA Region 8 agreed to use the CALPUFF-lite model as a conservative screening approach (as described in Guide for Applying the EPA Class I Screening Methodology with the CALPUFF Modeling System). However, based on flat-terrain and a single location meteorological data base, as well as the complexity of three-dimension wind fields, the CALPUFF-lite screening approach may not always be

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	Recreation Initiative, Wilderness Workshop, Center for Native Ecosystems, Colorado Environmental Coalition, Natural Resources Defense Council, Sierra Club, Rocky Mountain Chapter, WildEarth Guardians		conservative compared to the refined CALMET/CALPUFF modeling approach. It is inappropriate to suggest that hypothetical analysis assumptions should be made requiring mitigation measures in the Records of Decision of either the Little Snake RMP or "in all permits." Future quantitative air pollutant dispersion modeling analysis must be performed based on actual oil and gas proposals, demonstrating adverse air quality impacts are likely, as well as an evaluation of potential mitigation measures needed to reduce those predicted impacts, before any "requirements" are considered to be included in any Record of Decision.
Air Quality	The Wilderness Society, Colorado Mountain Club, Western Resource Advocates, Rocky Mountain Recreation Initiative, Wilderness Workshop, Center for Native Ecosystems, Colorado Environmental Coalition, Natural Resources Defense Council, Sierra Club, Rocky Mountain Chapter, WildEarth Guardians	The Air Impact Analysis should look not only at the contribution of oil and gas development to climate change, but also the impacts to air quality in light of other ongoing effects to be expected from climate change.	As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts. Global Climate Change considerations have been incorporated into Chapter 3 – Affected Environment and Chapter 4 – Environmental Consequences of the FEIS.
Air Quality	The Wilderness Society, Colorado Mountain Club,	BLM should include mitigation practices in the Air Quality Assessment. Phased development would be an appropriate and effective strategy for	As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco

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	Western Resource Advocates, Rocky Mountain Recreation Initiative, Wilderness Workshop, Center for Native Ecosystems, Colorado Environmental Coalition, Natural Resources Defense Council, Sierra Club, Rocky Mountain Chapter, WildEarth Guardians	mitigating impacts to air quality. In addition, we recommend BLM mandate "green completion" methods as a mitigation strategy. These methods decrease the amount of oil and gas vapors released by a well. Not only do these measures benefit the environment and human health, but they can increase profits for oil and gas companies as well by maximizing the amount of the resource that is recovered and salable.	Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts. It is inappropriate to suggest that hypothetical analysis assumptions should be made requiring mitigation measures in the Records of Decision of either the Little Snake RMP or "in all permits." Future quantitative air pollutant dispersion modeling analysis must be performed based on actual oil and gas proposals, demonstrating adverse air quality impacts are likely, as well as an evaluation of potential mitigation measures needed to reduce those predicted impacts, before any "requirements" are considered to be included in any Record of Decision. Moreover, the turnover in engines is based on EPA's own assumptions as provided in technical documents supporting the NONROAD model. The turnover of engines will occur as older engines are scrapped. According to EPA's assumptions, the median life of a large diesel engine is 7000 hours at full load. All engines manufactured after 2011 must meet EPA's Tier 4 emission standards. Therefore, it is valid to assume that all engines will meet Tier 4 emission standards by 2016. Regardless, the year of maximum emissions as determined by the level of activity, is 2027. All Tier 1 through 3 engines will have been retired by 2027.
Air Quality	The Wilderness Society, Colorado Mountain Club, Western Resource Advocates, Rocky Mountain Recreation Initiative, Wilderness Workshop, Center for Native Ecosystems, Colorado Environmental Coalition, Natural Resources Defense Council, Sierra Club,	In order to evaluate the broad range of impacts encompassed by a NEPA analysis, it is critical that BLM adequately and accurately describe the environment that will be affected by the proposed action under consideration – the "affected environment." 40 C.F.R. § 1502.15. The baseline assumed by BLM inaccurately describes the affected environment; contemporary data must be utilized.	See General Comment Response #3

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	Rocky Mountain Chapter, WildEarth Guardians		
Air Quality	The Wilderness Society, Colorado Mountain Club, Western Resource Advocates, Rocky Mountain Recreation Initiative, Wilderness Workshop, Center for Native Ecosystems, Colorado Environmental Coalition, Natural Resources Defense Council, Sierra Club, Rocky Mountain Chapter, WildEarth Guardians	The data provided by the Air Quality Assessment do not differentiate among the effects of the proposed alternatives. Therefore, it does not provide BLM with any guidance as to which alternative will best protect air quality while managing for other resources. This makes the assessment seem like a mere formality, as it does not permit meaningful decisions to be based on the outcome. Either the model is inadequate in evaluating the potential impacts of the alternatives or, if there is no difference among the alternatives, then the agency must discuss how this could be and how the alternatives can still represent a reasonable range of oil and gas development scenarios.	See General Comment Response #2
Cumulative Impacts	Environmental Protection Agency	Cumulative Impacts: The Air Quality Impact Assessment uses a partial cumulative impact assessment approach, in that it included projected oil and gas wells within the borders of the Little Snake Field Office on land owned by the State, the Federal government and private entities, but it did not assess the impacts from development outside the Field Office borders, such as the White River, Kremmling, Glenwood Springs, Vernal, and Rawlins Field Offices, and the Oil Shale and Tar Sands Programmatic EIS. We suggest that the impacts of other surrounding areas be addressed at some point, perhaps in the White River Field Office air quality analysis, most immediately. We also recommend that the Final EIS note that such	As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts. In addition, future quantitative air pollutant dispersion modeling analysis would include cumulative far-field analyses once project-specific oil and gas developments are proposed.

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		analysis is not included due to timing issues, and that the actual impacts may be greater than described in the Final EIS.	
Cumulative Impacts	Megan Williams and Cindy Copeland	The reasonably foreseeable development projects inventory should include all sources recently permitted or which have recently submitted complete PSD permit applications but which are not yet operating, that will have an impact on the same areas impacted by the Little Snake planning area. For example, several PSD permit applications have been submitted, and some permits have been issued, for coal-fired power plants to be located in areas that could impact the same area impacted by sources in the planning area.	See General Comment Response #6
Cumulative Impacts	Megan Williams and Cindy Copeland	The regional inventory must also include any emissions from NEPA projects in Colorado and in other states that could be impacting the same areas impacted by development in the Little Snake planning area. There are a large number of resource management plans being revised in northwestern Colorado and eastern and northeastern Utah all at the same time (e.g., the Roan Plateau and White River planning areas in Colorado and the Monticello, Richfield, Moab, Price and Vernal planning areas in Utah). The BLM must make sure that the projected growth in all of these planning areas, as a whole, will not have significant impacts on air quality in the region.	See General Comment Response #6
Cumulative Impacts	Megan Williams and Cindy Copeland	The BLM must also include sources from the Hiawatha Regional Energy Development Project (Little Snake and Rock Springs Field Offices) in Colorado and Wyoming and the Moxa Arch (Kemmerer Field Office) and Continental Divide-Creston (Rawlins Field Office) oil and gas development project EISs in southwest Wyoming as well as the ExxonMobile/Piceance (White River Field Office) development, Northern San Juan Basin coal bed methane (San Juan National Forest) and oil shale RD&D test site projects in Colorado. In Utah, the recently finalized Greater	See General Comment Response #6

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		Deadman Bench Oil and Gas Producing Region (GDBR) EIS and Chapita Wells-Stagecoach Area Natural Gas Development EIS sources – both in the neighboring Vernal planning area – are proposed to add over 2,000 new wells to the area.23 The remaining development in any NEPA-approved projects in the area must be included in the RFD inventory. The cumulative impacts from these projects along with all other projects in the area must be fully considered before the BLM makes final long-term planning decisions for the Little Snake planning area	
Cumulative Impacts	Megan Williams and Cindy Copeland	The BLM, in its so-called cumulative impacts analysis, left out key Class I areas in Colorado and surrounding states that could be impacted by development in the planning area. These Class I areas include the Maroon Bells-Snowmass Wilderness Area, West Elk Wilderness Area, Black Canyon of the Gunnison Wilderness Area and possibly even Rocky Mountain National Park and the Rawah Wilderness Area (both, east of the Continental Divide) in Colorado; Arches and Canyonlands National Parks in Utah; as well as Fitzpatrick Wilderness Area and the Bridger Wilderness Area in Wyoming. In choosing not to formulate a more comprehensive and reasonable assessment of cumulative impacts in all potentially affected areas, the BLM is failing to meet its obligation under NEPA to provide "full and fair discussion of the significant environmental impacts" (40 CFR § 1502.1) and to ensure the scientific integrity of analyses in environmental impact statements. 40 CFR §1502.24.	As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts. In addition, future quantitative air pollutant dispersion modeling analysis would include cumulative far-field analyses once project-specific oil and gas developments are proposed. Given the uncertainties with the number, nature, and specific location of potential sources and activities, the Draft EISs qualitative analysis included estimates oxides of nitrogen (NOx) and volatile organic compound (VOC) emissions (precursors to anthropogenic ozone formation). The Draft EIS further stated potential impacts to ozone would be made at the project-specific level. For example, BLM is currently using the Comprehensive Air quality Model with extensions (CAMx) Eulerian (gridded) photochemical atmospheric dispersion model to predict local and regional ozone conditions from existing and reasonably foreseeable emission sources for the White River Field Office (WRFO) Oil and Gas RMP Amendment and EIS. This analysis will provide a comprehensive analysis of emission sources and impacts throughout Colorado. In addition, future quantitative air pollutant dispersion modeling analysis would identify the appropriate sensitive receptors to include in cumulative far-field analyses once project-specific oil and gas developments are proposed.
Cumulative Impacts	Megan Williams and Cindy	Potentially high background levels of particulate matter in the area may mean that even if the	As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and

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	Copeland	activities analyzed in the additional air quality assessment will result in only minor increases in particulate matter (PM) concentrations, the aggregate level of pollution that could result might have significant detrimental effects on human health in the planning area. Background PM concentrations should have been more thoroughly addressed in the Additional Air Quality Assessment.	Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts. In addition, the background air quality data used in the AAQIA were the same values as reported in the Draft EIS, although as stated "current and complete data on criteria air pollutant concentrations for the RMPPA are not available."
Cumulative Impacts	National Park Service	Regardless of the modeling approach utilized, we are concerned about the potential impacts to air quality and Air Quality Related Values that could occur in nearby Dinosaur National Monument as a result of potential oil and gas development on Bureau of Land Management (BLM) lands within the Little Snake Field Office (LSFO) boundary. The potential for oil and gas development within the LSFO boundary is of particular concern to us due to the proximity of Dinosaur NM, which is adjacent to the LSFO, and the modeled air quality impacts identified in the Additional Air Quality Impact Assessment. As such, we believe the Air Quality Related Values (AQRVs), particularly visibility, in this NPS Unit could be significantly affected by air pollution from oil and gas activities within the LSFO boundary.	As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts. Changes in atmospheric light extinction relative to background conditions were used to evaluate potential visibility (regional haze) impacts. As described by Pitchford and Malm (1994), a "just noticeable change" in visibility corresponds to a 1.0 to 2.0 deciview (dv) visibility change (numerically equivalent to a 10 to 20 percent change in extinction) where sensitive scenic targets are assumed to occur throughout the view. BLM uses a 1.0 dv "just noticeable change" as a significance threshold; however, there are no applicable local, state, tribal, or federal regulatory visibility standards. The potential number of days per year that greater than a "just noticeable change" in visibility was predicted to occur between zero and two days annually in the mandatory federal PSD Class I Mount Zirkel Wilderness Area. The assessment also predicted a 1.0 dv "just noticeable change" would be exceeded at Dinosaur National Monument between zero and five days annually, although this area is not subject to the National Visibility Goal under the federal Clean Air Act. No days per year were predicted to reach a 1.0 dv "just noticeable change" in the mandatory federal PSD Class I Eagles Nest or Flat Tops wilderness areas. Future quantitative visibility impact analyses would be conducted once project-specific oil and gas developments are proposed.

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Cumulative Impacts	National Park Service	Finally, cumulative impacts to AQRVs from activities predicted to occur within the LSFO in addition to activities in nearby Field Offices were not evaluated in this assessment. We are concerned with the lack of a cumulative effects analysis, and believe that a cumulative AQRV assessment should be completed for Dinosaur National Monument.	See General Comment Response #6
Cumulative Impacts	The Wilderness Society, Colorado Mountain Club, Western Resource Advocates, Rocky Mountain Recreation Initiative, Wilderness Workshop, Center for Native Ecosystems, Colorado Environmental Coalition, Natural Resources Defense Council, Sierra Club, Rocky Mountain Chapter, WildEarth Guardians	BLM must address cumulative impacts and other foreseeable connected activities within the same general area. There are a host of activities that fit the NEPA classifications of these types of activities and would affect air quality in the planning area, such as regional oil and gas projects, which require a broader assessment of the cumulative impacts to air quality in this Air Quality Assessment.	As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts. In addition, future quantitative air pollutant dispersion modeling analysis would include cumulative far-field analyses once project-specific oil and gas developments are proposed.
Energy and Minerals	Rick Hammel, David Morris, Ann Wagner, Jane and Larry Yazzie, Wes McStay, Mark McStay, John and Mickey Allen, Judy Griffith, Deanna McLain, Kirk Cunningham	Approaches to limit harmful air pollution from oil and gas operations are easy to implement and can even reduce costs for companies. There are clear, simple, cost-effective mitigation procedures. Mitigation should start with the insistence that all work is done using "green completions" methods. These methods include better compressors, reduced operating times on compressors, airtight holding tanks and settling ponds, and gas capture and redirection such as the type used in "low-bled" systems.	As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts. It is inappropriate to suggest that hypothetical analysis assumptions should

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			be made requiring mitigation measures in the Records of Decision of either the Little Snake RMP or "in all permits." Future quantitative air pollutant dispersion modeling analysis must be performed based on actual oil and gas proposals, demonstrating adverse air quality impacts are likely, as well as an evaluation of potential mitigation measures needed to reduce those predicted impacts, before any "requirements" are considered to be included in any Record of Decision. Moreover, the turnover in engines is based on EPA's own assumptions as provided in technical documents supporting the NONROAD model. The turnover of engines will occur as older engines are scrapped. According to EPA's assumptions, the median life of a large diesel engine is 7000 hours at full load. All engines manufactured after 2011 must meet EPA's Tier 4 emission standards. Therefore, it is valid to assume that all engines will meet Tier 4 emission standards by 2016. Regardless, the year of maximum emissions as determined by the level of activity, is 2027. All Tier 1 through 3 engines will have been retired by 2027.
Fish and Wildlife Habitat	The Wilderness Society, Colorado Mountain Club, Western Resource Advocates, Rocky Mountain Recreation Initiative, Wilderness Workshop, Center for Native Ecosystems, Colorado Environmental Coalition, Natural Resources Defense Council, Sierra Club, Rocky Mountain Chapter, WildEarth Guardians	Although the Draft LSFO RMP acknowledged the important wildlife populations in the planning area and considers various management strategies to protect habitat and related recreational activities, such as hunting, the Air Quality Analysis does not assess critical habitat, including aquatic habitat, or species that may be adversely affected by impacts to air quality.	As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts.
General/Miscellaneous	Allan Reishus, Dr. Benzi Kluger, Bruce C. Paton,	We are writing to request that a Health Impact Assessment (HIA) be performed prior to issuing any final plan as well as an assessment of the	As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco

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	Roberta M. Richardson, Sharon Brodbelt, Laurie Hammel, John L. Lightburn, Dr. Ronald Douglas Harden, Coco, Mary Pritchard, John W. Steele, Joy Om	economic impacts that degraded air quality may have on local communities.	Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts. In addition, the World Health Organization defines an HIA as "a combination of procedures or methods by which a policy, program or project may be judged as to the effects it may have on the health of a population." While the hypothetical air quality impact assessment does not follow any formal HIA protocol, it does establish that predicted impacts would not exceed any Colorado or National primary ambient air quality standard. As the air quality standards are established under the Clean Air Act to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly, it can be concluded that the health of the population would be protected with an adequate margin of safety.
General/Miscellaneous	Environmental Protection Agency	Mitigation: The assumptions used in the modeling for engines should be required as a condition of permits. The assumptions were that the first year, all Tier 2 engines would be used, and that over the next few years, 20% of engines would be Tier 4 engines, and by 2015, all engines would be Tier 4. Note that even with this assumption of all Tier 4 engines, the plan is showing air quality impacts. Please assure that these assumptions become requirements, embodied in the ROD and in all permits. The list of examples of Best Management Practices (BMPs) included in the Additional Information document (page 21) should be included in the ROD as well, so that at the APD or field development proposal stage, operators are on notice that these BMPs, or a subset thereof, will be required.	As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts. It is inappropriate to suggest that hypothetical analysis assumptions should be made requiring mitigation measures in the Records of Decision of either the Little Snake RMP or "in all permits." Future quantitative air pollutant dispersion modeling analysis must be performed based on actual oil and gas proposals, demonstrating adverse air quality impacts are likely, as well as an evaluation of potential mitigation measures needed to reduce those predicted impacts before any "requirements" are considered to be included in any Record of Decision. Moreover, the turnover in engines is based on EPA's own assumptions as provided in technical documents supporting the NONROAD model. The turnover of engines will occur as older engines are scrapped. According to EPA's assumptions, the median life of a large diesel engine is 7000 hours at full load. All engines manufactured after 2011 must meet EPA's Tier 4 emission standards. Therefore, it is valid to assume that all engines will meet Tier 4 emission standards by 2016. Regardless, the year of

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			maximum emissions as determined by the level of activity, is 2027. All Tier 1 through 3 engines will have been retired by 2027.
General/Miscellaneous	Rick Hammel, David Morris, Ann Wagner, Jane and Larry Yazzie, Wes McStay, Mark McStay, John and Mickey Allen, Judy Griffith, Deanna McLain, Kirk Cunningham	We also strongly support the requests made by other groups, and we call on the BLM to include a full, comprehensive Health Impact Assessment in the revisions to cover sites and zones where oil and gas operations will have significant impact in Colorado, the Rocky Mountain region, or elsewhere.	As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts.
Policy (NEPA)	Air Pollution Control Div., State of CO	Page 2, Section 1.1 Last paragraph: This section states that "other interested parties had the opportunity to review the Protocol and provide in put before the study was initiated." To the best of our knowledge, CDPHE was never contacted to review or provide comment on the Air Quality modeling protocol.	That is correct. The Protocol was developed cooperatively between BLM and EPA management and staff.
Policy (NEPA)	The Wilderness Society, Colorado Mountain Club, Western Resource Advocates, Rocky Mountain Recreation Initiative, Wilderness Workshop, Center for Native Ecosystems, Colorado Environmental Coalition, Natural Resources Defense Council, Sierra Club, Rocky Mountain Chapter, WildEarth	BLM concedes that it is analyzing air quality impacts and that this analysis is due to the Environmental Protection Agency (EPA) having identified a need for improvement to the analysis already set out in the Draft EIS. However, the agency then claims that this document is "not a NEPA document." This conclusion cannot be supported. The Air Quality Assessment is subject to NEPA. BLM should properly identify the AAQIA as a Supplemental EIS and adhere to all NEPA requirements, including opportunities for and response to public comments.	The hypothetical air quality modeling analysis addressed in the report was intended to inform the public and allow public comment on the data and conclusions, and is not a NEPA document. The difference between alternatives continues to be demonstrated by the qualitative air quality emissions analysis found in the Draft EIS. BLM is confident the qualitative air pollutant emissions analyses presented in the Draft Little Snake Field Office RMP/EIS is appropriate and adequate to evaluate alternatives. Therefore, the information presented in Chapters 3 and 4 of the Draft EIS has not been modified and remains appropriate as the basis for guiding subsequent management decisions. In addition, the Dear Reader letter which accompanied the Additional Air Quality Impact Assessment To Support the Little Snake Draft Resource Management Plan and Environmental Impact Statement (RMP/ EIS), Moffat and Routt Counties, CO, BLM clearly stated "The document was prepared by BLM as a result of comments received on the Draft RMP/EIS from the U.S. Environmental Protection Agency (EPA). This hypothetical air quality assessment provides additional information and analysis using the CALPUFF-lite modeling system. This is not a NEPA document, but a tool to inform the public and allow public comment on the data and conclusions." It went on to state, "Comments that are substantive and in relation to the material contained in the Additional Air Quality Assessment will be responded to

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	Guardians		in the Final EIS if received within the 45 days after the Notice of Availability (NOA) is published in the Federal Register… Comments that we receive on the Additional Air Quality Impact Assessment will be fully evaluated and considered in the development of the Proposed RMP and Final EIS." Both a Notice of Intent (72 FR 71944) and a Notice of Availability (73 FR 60321) identified a 45 day period during which comments that were substantive and in relation to the Additional Air Quality Impact Assessment would be responded to in the Final EIS.
Policy (NEPA)	The Wilderness Society, Colorado Mountain Club, Western Resource Advocates, Rocky Mountain Recreation Initiative, Wilderness Workshop, Center for Native Ecosystems, Colorado Environmental Coalition, Natural Resources Defense Council, Sierra Club, Rocky Mountain Chapter, WildEarth Guardians	Preparation of this Air Quality Assessment is intended to supplement the discussion of environmental impacts in the EIS. In order to meet NEPA's goals for public participation, which highlight the need to disclose both data and analyses to the public in order to permit the "public scrutiny" that is considered "essential to implementing NEPA" (40 C.F.R. § 1500.1(b)), the BLM must treat the supplemental analysis and subsequent comments as part of this NEPA process.	The hypothetical air quality modeling analysis addressed in the report was intended to inform the public and allow public comment on the data and conclusions, and is not a NEPA document. The difference between alternatives continues to be demonstrated by the qualitative air quality emissions analysis found in the Draft EIS. BLM is confident the qualitative air pollutant emissions analyses presented in the Draft Little Snake Field Office RMP/EIS is appropriate and adequate to evaluate alternatives. Therefore, the information presented in Chapters 3 and 4 of the Draft EIS has not been modified and remains appropriate as the basis for guiding subsequent management decisions. In addition, the Dear Reader letter which accompanied the Additional Air Quality Impact Assessment To Support the Little Snake Draft Resource Management Plan and Environmental Impact Statement (RMP/ EIS), Moffat and Routt Counties, CO, BLM clearly stated "The document was prepared by BLM as a result of comments received on the Draft RMP/EIS from the U.S. Environmental Protection Agency (EPA). This hypothetical air quality assessment provides additional information and analysis using the CALPUFF-lite modeling system. This is not a NEPA document, but a tool to inform the public and allow public comment on the data and conclusions." It went on to state, "Comments that are substantive and in relation to the material contained in the Additional Air Quality Assessment will be responded to in the Final EIS if received within the 45 days after the Notice of Availability (NOA) is published in the Federal Register… Comments that we receive on the Additional Air Quality Impact Assessment will be fully evaluated and considered in the development of the Proposed RMP and Final EIS." Both a Notice of Intent (72 FR 71944) and a Notice of Availability (73 FR 60321) identified a 45 day period during which comments that were substantive and in relation to the Additional Air Quality Impact Assessment would be responded to in the Final EIS.
Social and Economic Conditions	Allan Reishus, Dr. Benzi Kluger, Bruce C. Paton, Roberta M.	Economists believe that substantial economic costs are likely to occur if air quality in the areas surrounding BLM lands continues to deteriorate as the result of proposed actions and developments	As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact

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	Richardson, Sharon Brodbelt, Laurie Hammel, John L. Lightburn, Dr. Ronald Douglas Harden, Coco, Mary Pritchard, John W. Steele, Joy Om	such as increased oil and gas exploration and production. There are tools readily available to assist the BLM in conducting a thorough analysis of the health-related costs of increased ozone exposures for citizens living near and visitors to BLM lands, so that these costs can be given due consideration in land management decisions.	assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts. In addition, since predicted impacts would not exceed any Colorado or national secondary ambient air quality standard, the public welfare (including effects on soils, water, crops, vegetation, visibility and climate, damage to and deterioration of property, as well as effects on economic values and on personal comfort and well-being) would be protected.
Social and Economic Conditions	The Wilderness Society, Colorado Mountain Club, Western Resource Advocates, Rocky Mountain Recreation Initiative, Wilderness Workshop, Center for Native Ecosystems, Colorado Environmental Coalition, Natural Resources Defense Council, Sierra Club, Rocky Mountain Chapter, WildEarth Guardians	Economic impacts associated with air quality should be analyzed. Deterioration of air quality is shown to have substantial economic costs, and good air quality provides many economic benefits. Attached please find a fact sheet (incorporated into these comments by reference), prepared by The Wilderness Society entitled, "Assessing Costs Associated with Impacts to Air Quality." BLM should review the attached economic analysis in its entirety and make necessary changes in the RMP based on these additional data.	As stated in the "Additional Air Quality Impact Assessment to Support the Little Snake Field Office Draft Resource Management Plan and Environmental Impact Statement, Moffat, Routt, and Rio Blanco Counties, Colorado" (AAQIA), "This hypothetical air quality impact assessment for the Little Snake Draft RMP/EIS was conducted to provide additional air quality assessment for the Draft EIS and to demonstrate how future quantitative air pollutant dispersion modeling analysis could be performed once project-specific oil and gas developments are proposed." It is inappropriate to assume the results of a hypothetical analysis represent future site-specific impacts. In addition, since predicted impacts would not exceed any Colorado or national secondary ambient air quality standard, the public welfare (including effects on soils, water, crops, vegetation, visibility and climate, damage to and deterioration of property, as well as effects on economic values and on personal comfort and well-being) would be protected.
Special Status Species	Rick Hammel, David Morris, Ann Wagner, Jane and Larry Yazzie, Wes McStay, Mark McStay, John and Mickey	We are also concerned about the implications of any further lake acidification on Boreal Toads. These toads are historically sensitive species and have already been threatened by acidification. We fear further acidification as indication in this report would do serious damage to years of stewardship and may drive this species towards endangered	As described in the AAQIA, total deposition impacts from hypothetical emission sources plus background values were compared to significance threshold levels of 5 kilograms (kg)/hectares (ha)/year for sulfur and 3 kg/ha/year for nitrogen. These thresholds were determined from a national scientific study conducted by the USFS specifically for that purpose. Based on the modeled maximum direct atmospheric deposition values, plus the assumed background deposition rates,

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	Allen, Judy Griffith, Deanna McLain, Kirk Cunningham	status.	none of the alternatives are predicted to exceed significance thresholds. In addition, where sensitive lake chemistry data were available, potential changes in Acid Neutralizing Capacity were predicted and compared to significance threshold (also developed by the Forest Service). Again, no significant lake chemistry impacts were predicted to occur. Although the specific cause for reduced populations of Boreal Toads is unknown, the Interagency Boreal Toad Recovery Team and Technical Advisory Group did not identify changes in sensitive lake chemistry (ANC) as a reason for decline.
Water Resources	Friends of Northwest Colorado	We are concerned about the projected increase in lake deposition outlined in the report. We are also concerned about the use of USFS standards---acknowledged by other agencies as outdated and insufficient---erroneously indicates that development in the LSFO will have limited affect on lake acidification resulting from predicted depositions. Rocky Mountain National Park revised its limit to 1.5kg/ha/yr for depositions and we ask that this standard or the current standard, be applied. We feel that the application of an appropriate, modern standard will display a more complete picture of impacts.	As described in the AAQIA, total deposition impacts from hypothetical emission sources plus background values were compared to significance threshold levels of 5 kilograms (kg)/hectares (ha)/year for sulfur and 3 kg/ha/year for nitrogen. These thresholds were determined from a national scientific study conducted by the USFS specifically for that purpose. Based on the modeled maximum direct atmospheric deposition values, plus the assumed background deposition rates, none of the alternatives are predicted to exceed significance thresholds. In addition, where sensitive lake chemistry data were available, potential changes in Acid Neutralizing Capacity were predicted and compared to significance threshold (also developed by the Forest Service). Again, no significant lake chemistry impacts were predicted to occur. Prior to conducting the hypothetical air quality impact assessment, BLM and EPA Region 8 agreed "Estimated total deposition fluxes of S and N from source impacts at sensitive areas will be compared with threshold values for terrestrial ecosystems presented by the USFS in its screening procedure to evaluate effects of air pollution in wilderness areas (Fox et al. 1989). These threshold values are 5 and 3 kg/ha/yr for total S and N deposition fluxes, respectively." Fox (1989) is the most defensible peer reviewed scientific analysis method applicable to the Planning Area. Dr. Jill Baron has identified a wet nitrogen "critical load" of 1.5 kg/ha/yr within Rocky Mountain National Park. Further research may identify other thresholds for total nitrogen deposition in other locations of the western US.
Water Resources	Friends of Northwest Colorado	The report does not properly address additional impacts of decreased air quality to other water sources. Specifically, we are also concerned about possible impacts to water sources closer to development such as stock ponds, creeks, streams, municipal water supplies and possible secondary ground water contamination. These deficiencies should be corrected in the final report.	Prior to conducting the hypothetical air quality impact assessment, BLM and EPA Region 8 agreed to address potential chemistry impacts to at 12 sensitive high elevation lakes. Although no impacts to "stock ponds, creeks, streams, municipal water supplies and possible secondary ground water contamination" were identified, it is very likely these water bodies would be less sensitive to potential impacts than the specific lakes included in the analysis.
Water	Friends of	The report notes that lakes in the Class 1 and	Prior to conducting the hypothetical air quality impact assessment, BLM

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Resources	Northwest Colorado	Class 2 air shed are expected to be impacted but does not address the likely affects on open water sources closer to the development predicted within the various alternatives in the Draft RMP. It is a logical assumption that the open water sources will also see impacts, perhaps even more significant to those of Class 1 & 2.	and EPA Region 8 agreed to address potential chemistry impacts to at 12 sensitive high elevation lakes. Although no impacts to "stock ponds, creeks, streams, municipal water supplies and possible secondary ground water contamination" were identified, it is very likely these water bodies would be less sensitive to potential impacts than the specific lakes included in the analysis.
Water Resources	The Wilderness Society, Colorado Mountain Club, Western Resource Advocates, Rocky Mountain Recreation Initiative, Wilderness Workshop, Center for Native Ecosystems, Colorado Environmental Coalition, Natural Resources Defense Council, Sierra Club, Rocky Mountain Chapter, WildEarth Guardians	The Air Quality Analysis also fails to examine potential impacts to streams, water supplies, or groundwater. It also fails to examine impact to lakes outside of Class I areas.	Prior to conducting the hypothetical air quality impact assessment, BLM and EPA Region 8 agreed to address potential chemistry impacts to at 12 sensitive high elevation lakes. Although no impacts to "stock ponds, creeks, streams, municipal water supplies and possible secondary ground water contamination" were identified, it is very likely these water bodies would be less sensitive to potential impacts than the specific lakes included in the analysis.