Desert Rock Energy Co., PSD Appeal 08-03
Conservation Petitioners' Exhibits

EXHIBIT 30

ONE HUNDRED TENTH CONGRESS

Congress of the United States

House of Representatives

COMMITTEE ON OVERSIGHT AND GOVERNMENT REFORM

2157 RAYBURN HOUSE OFFICE BUILDING

WASHINGTON, DC 20515–6143

MAJORITY (202) 225–5051
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www.oversight.house.gov

February 14, 2008

The Honorable James M. Andrew
Administrator
Rural Development Utilities Programs
United States Department of Agriculture
1400 Independence Avenue, SW
Washington, DC 20250-0747

Dear Administrator Andrew:

I am writing to request information regarding how the Rural Development Utilities Programs/Rural Utilities Service (RUS) is addressing the financial risks associated with the construction of new coal-fired power plants without emissions controls for greenhouse gases, when RUS provides taxpayer-subsidized loans and loan guarantees for such plants. I am concerned that financing these huge new sources of greenhouse gas emissions puts taxpayer dollars at risk, as well as undermines the United States government's efforts to address global climate change by reducing greenhouse gas emissions.

RUS makes direct loans and provides loan guarantees to rural electric cooperatives and others to develop electricity generation and transmission capacity. RUS issued several billion dollars of new loans for generation and transmission in 2006 and 2007, and is authorized to provide $7 billion of such loans in FY 2008.[1] According to the Congressional Research Service, RUS currently has approximately $36 billion in outstanding loans and another roughly $400 million in loan guarantees for the electricity sector.[2] Some substantial portion of this total has financed coal-fired power plants.[3] RUS has the responsibility to ensure that there is a solid

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[1] *See* National Rural Electric Cooperative Association, Generation Update Rural Utilities Service Presentation by John Holt, Sr. Manager Generation and Fuels (Aug. 28, 2006) (powerpoint presentation); E-mail communication from Tadlock Cowan, Congressional Research Service, to Committee staff (Feb. 8, 2008).

[2] Telephone communication from Tadlock Cowan, Congressional Research Service, to Committee staff (Feb. 7, 2008).

[3] *See Federal Loans for Coal Plants Clash With Carbon Cuts*, Washington Post (May 14, 2007).

financial basis for these loans and loan guarantees and taxpayer dollars are not put at unnecessary risk.[4]

Private sector investment banks, among others, have become increasingly concerned about the financial risks of investments in new coal-fired power plants that are built without emissions controls for greenhouse gases. Such plants will produce hundreds of millions or even a billion tons of carbon dioxide emissions over their lifetimes, ranking them among the largest individual sources of greenhouse gas emissions in the U.S. economy.[5] There is an increasingly widely held expectation that the federal government will adopt legislation or regulation to cap greenhouse gas emissions from power plants within the next few years. If a carbon cap is adopted during a plant's lifetime, a coal-fired power plant with uncontrolled carbon dioxide emissions would likely face substantially higher operating costs. Such a plant would probably either have to buy emissions allowances equal to its emissions or install costly retrofit control technology, assuming that such technology is commercially available and economically viable.

Just last week, three leading financial institutions announced that they have adopted climate change guidelines to guide their investments in the power sector and address the financial risks associated with the uncertainties regarding climate change regulatory policy.[6] Citigroup, JP Morgan Chase, and Morgan Stanley adopted "Carbon Principles" and an "Enhanced Diligence" framework "to help lenders better understand and evaluate the potential carbon risks associated with coal plant investments."[7] Under this framework, before providing financing for a coal-fired power plant, these investment banks will apply conservative assumptions regarding future regulation, examine opportunities to use carbon capture technologies, and assess the plant's ability to recover future costs through rate increases, as well

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[4] *See* Rural Electrification Act of 1936, 7 U.S.C. §904.

[5] *See, e.g.*, Desert Rock, Carbon Dioxide Facts (2007) (online at www.desertrockenergy project.com/carbon_facts.htm) (website) (emissions estimates for the proposed Desert Rock coal-fired power plant); U.S. EPA, *Detailed Comments on the Scoping Notice for the Draft Environmental Impact Statement (DEIS) for the White Pine Energy Station Project, White Pine County, Nevada*, 14 (June 22, 2007) (emissions estimates for the proposed White Pine coal-fired power plant).

[6] Citigroup Inc., *Leading Wall Street Banks Establish the Carbon Principles* (Feb. 4, 2008) (press release).

[7] *Id.* Citi, JP Morgan Chase, Morgan Stanley, *The Carbon Principles* (undated); Citi, JP Morgan Chase, Morgan Stanley, *The Carbon Principles: Fossil Fuel Generation Financing Enhanced Environmental Diligence Process* (undated).

as consider energy efficiency and renewable energy alternatives to the proposed project.[8] This will allow the investors to factor the financial risks of future climate change control costs into their initial assessment of the projects' financial viability.

Specifically, the banks will "use conservative base assumptions in financial models of the proposed plant, including a mandatory declining cap with zero allocation of allowances or other similarly financially conservative regulatory scenarios."[9] The banks will examine the "carbon capture capability of the technology, including economic evaluation of carbon capture installation or retrofit," as well as the potential for geologic storage of the carbon dioxide.[10] They will also evaluate whether the plant owner would be able to raise its rates sufficiently to cover the cost of buying emissions allowances to the extent necessary.[11]

Private sector investment banks and many electric power providers are recognizing that significant regulatory carbon controls are highly likely to be imposed in the near future, and they are accounting for those costs in their financial calculations. I am concerned, however, that RUS may not be applying similar safeguards when it loans out taxpayer dollars. Encouraging new uncontrolled coal-fired power plants to be built without adequately accounting for future carbon control costs raises the risks of both loan defaults and large and unanticipated rate increases for rate-payers. Obviously, recouping carbon-related costs through large rate increases would harm economic development, which is the central purpose of the RUS program, while extensive defaults would threaten RUS's ability to continue providing these loans.

In addition to these broader issues, I have particular concerns regarding RUS's role in the development of the Sunflower Electric Power Corporation's proposed new coal-fired power plant units at Holcomb Station. The Department of Justice recognizes that Sunflower is "a financially troubled borrower," which owes the federal government roughly $200 million in loans for an existing plant at Holcomb Station.[12] Sunflower and its partners are now proposing

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[8] Citi, JP Morgan Chase, Morgan Stanley, *The Carbon Principles: Fossil Fuel Generation Financing Enhanced Environmental Diligence Process*, 7-9 (undated). *See also Wall Street Shows Skepticism Over Coal*, Wall Street Journal (Feb. 4, 2008).

[9] Citi, JP Morgan Chase, Morgan Stanley, *The Carbon Principles: Fossil Fuel Generation Financing Enhanced Environmental Diligence Process*, 7, 9 (undated).

[10] *Id.* at 8-9.

[11] *Id.* at 7, 9. *See also Wall Street Shows Skepticism Over Coal*, Wall Street Journal (Feb. 4, 2008).

[12] Defendants' Motion to Dismiss, 3 and attachment 4, part J, 3 (Jan. 31, 2007) *Sierra Club v. U.S. Dept. of Agriculture, Rural Utilities Service; Edward T. Shafer and James Andrew*, D.D.C. (No. 07-1860). After the initial loan was provided in 1980, Sunflower was unable to pay

to take on billions of dollars in additional private sector debt to construct a huge new $3.6 billion coal-fired power plant at Holcomb, comprised of two new units.[13] The expanded plant is projected to release 11 million tons of carbon dioxide annually, which would amount to over 500 million tons of carbon dioxide over its lifetime.[14]

According to the terms of the original loan, Sunflower is not allowed to take on new debt without RUS's permission.[15] This condition is intended to allow RUS to protect the government's interest in having the original loan repaid.[16] RUS granted Sunflower permission to take on this much larger additional debt in July 2007.[17] Prior to granting its permission, RUS presumably analyzed the increased risk of default on the loans it holds. I am concerned, however, that RUS may not have accounted for the risk of substantial additional costs associated with the new plant's massive greenhouse gas emissions. If RUS failed to take this into account, it has put both taxpayer funds and Kansas ratepayers in jeopardy. If this plant is built, Kansas ratepayers may be stuck with billions of dollars in stranded assets and sky-rocketing costs for power.

To help the Committee evaluate RUS's actions in this area, please provide the following information:

1. Identify the total amount of RUS's outstanding loans and loan guarantees for electric power. Please provide separate figures with respect to: (a) loans; and (b) loan guarantees for this response and each of the following questions that requests information about loans and loan guarantees.

2. Identify RUS's total amount of outstanding loans and loan guarantees for coal-fired power plants with uncontrolled greenhouse gas emissions.

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its debt to the government and had to have its loan restructured in 1987. The loan was restructured again in 2002. *Id.*

[13] *See Sunflower Pushes to Expand Coal Plants*, Associated Press (Feb. 4, 2008) (http://news.moneycentral.msn.com/category/topicarticle.aspx?feed=AP&Date=20080204&ID=8117719&topic=TOPIC_ECONOMIC_INDICATORS&isub=3).

[14] Kansas Department of Health and Environment, KDHE Denies Sunflower Electric Air Quality Permit (Oct. 18, 2007) (online at www.kdheks.gov/news/web_archives/2007/10182007a.htm) (press release).

[15] *Supra* note 10 at 3.

[16] *Id.*

[17] *Supra* note 10 at 7 (citing RUS Consent Letter) (July 26, 2007).

3. Identify the number and amount of new loans and loan guarantees that RUS provided each year for electric power, starting in 2001.

4. Identify the number and amount of new loans and loan guarantees that RUS provided each year, starting in 2001, for coal-fired power plants with uncontrolled greenhouse gas emissions. Identify each specific coal-fired power plant that received such a loan, the size of each plant, when the plant began operation or will begin operation, and the estimated quantity of annual greenhouse gas emissions from each plant.

5. Identify the amount of new loans and loan guarantees that RUS projects it will provide each year for electric power over the next 10 years (or for whatever period for which RUS has made such projections).

6. Identify the amount of new loans and loan guarantees that RUS projects it will provide each year for coal-fired power plants with uncontrolled greenhouse gas emissions over the next 10 years (or for whatever period for which RUS has made such projections).

7. Identify each specific coal-fired power plant project for which RUS is currently considering providing financial support. For each plant, please include the name, location, size, total cost, projected schedule for construction and beginning operation, quantity of loans or loan guarantees requested, status of RUS's consideration of the loan request, whether the plant will include technology to control greenhouse gas emissions, and its projected quantity of annual and lifetime greenhouse gas emissions.

8. Explain whether prior to providing a loan or loan guarantee for the construction of a new coal-fired power plant without greenhouse gas emission controls, RUS routinely analyzes the financial risks associated with the potential for regulation of greenhouse gas emissions.
   a. If RUS routinely conducts such an analysis, describe the analysis. Include details on the following:
      I. The assumptions RUS makes about the likelihood, timing and stringency of such regulation;
      II. The assumptions RUS makes about the quantity of emission allowances, if any, that the government might provide to each plant free of charge; and
      III. The assumptions RUS makes about the price per ton of carbon.
   b. If RUS does not routinely conduct such analysis, explain why not. Please state whether you will commit to conduct such analysis for all loans and loan guarantees that have not yet been finalized. If you will not make such a commitment, please explain why not.

9. Indicate whether RUS analyzed the financial risks associated with the potential for regulation of greenhouse gas emissions with respect to the proposed new Sunflower plant.
   a. If RUS conducted such analysis, please provide that analysis.
   b. If RUS did not conduct such analysis, I request that you do so now to provide a better understanding of the security of the government's outstanding loans to Sunflower. Please provide that analysis to the Committee when it is completed.

10. Indicate whether RUS analyzed the possible electricity rate impacts for Sunflower's customers associated with the potential for regulation of greenhouse gas emissions with respect to the proposed new Sunflower plant.
   a. If RUS conducted such analysis, please provide that analysis.
   b. If RUS did not conduct such analysis, I request that you do so now to provide a better understanding of the rate impacts of Sunflower's proposal to invest in new coal plants. Please provide that analysis to the Committee when it is completed.

11. State whether RUS has considered or analyzed the potential effects of providing financing for new coal-fired power plants with uncontrolled greenhouse gas emissions on the Administration's overall climate policies, efforts, and goals.
   a. If RUS has considered such effects, please explain the results of such consideration and analysis.
   b. If RUS has not considered such effects, please explain why not.

Please provide the requested information by February 28, 2008. If you have any questions concerning this request, please have your staff contact Alexandra Teitz of the Committee staff at (202) 225-4407. Thank you for your assistance in this matter.

Sincerely,

Henry A. Waxman
Chairman

Jim Cooper
Member of Congress

cc: Tom Davis
Ranking Minority Member

Desert Rock Energy Co., PSD Appeal 08-03
Conservation Petitioners' Exhibits

EXHIBIT 31

United States Court of Appeals

FOR THE DISTRICT OF COLUMBIA CIRCUIT

No. 05-1097 **September Term, 2006**

Filed On:

State of New Jersey, et al.,
Petitioners

v.

Environmental Protection Agency,
Respondent

Utility Air Regulatory Group, et al.,
Intervenors

Consolidated with 05-1104, 05-1116, 05-1118, 05-1158, 05-1159, 05-1160, 05-1162, 05-1163, 05-1164, 05-1167, 05-1174, 05-1175, 05-1176, 05-1183, 05-1189, 05-1263, 05-1264, 05-1267, 05-1270, 05-1271, 05-1275, 05-1277, 05-1280, 06-1211, 06-1220, 06-1231, 06-1287, 06-1291, 06-1293, 06-1294

BEFORE: Brown and Kavanaugh, Circuit Judges

ORDER

Upon consideration of respondent's proposed briefing format and schedule; the motion to sever certain issues in No. 05-1275 and hold new docket in abeyance, the response thereto, and the reply; Tribal petitioners' request for separate brief; the motion to declare No. 05-1097 et al. complex; and petitioners' joint notice and request regarding briefing schedule, it is

ORDERED that the motion to sever certain issues and hold new docket in abeyance be granted. Accordingly, issue 1, as set forth in the Utility Air Regulatory Group's statement of issues filed in No. 05-1275, is severed from that case and transferred to new docket No. 06-1394, captioned Utility Air Regulatory Group, Petitioner v. United States Environmental Protection Agency, Respondent.

No. 05-1097 **September Term, 2006**

Petitioner Utility Air Regulatory Group ("UARG") is directed to file a status report within ninety (90) days of the date of this order and every ninety (90) days thereafter. The parties in No. 06-1394 are directed to file motions to govern further proceedings within 30 days of the conclusion of negotiations between UARG and the Environmental Protection Agency ("EPA"). It is

FURTHER ORDERED that these consolidated cases be designated "complex." See D.C. Circuit Handbook of Practice and Internal Procedures 8, 23-24 (2006). The parties are directed to include the designation "complex" on the cover of all further submissions in these consolidated cases. It is

FURTHER ORDERED that the following briefing format and schedule apply:

- Joint Brief for state and local government petitioners
  (not to exceed 10,500 words).....January 12, 2007

- Joint Brief for environmental petitioners
  (not to exceed 10,500 words).....January 12, 2007

- Joint Brief for tribal petitioners
  (not to exceed 10,000 words).....January 12, 2007

- Brief for industry petitioner ARIPPA
  (not to exceed 1,500 words).....January 12, 2007

- Joint Brief for industry petitioners
  American Coal for Balanced Mercury Regulation,
  Alabama Coal Association, Coal Operators and
  Associates of Kentucky, Maryland Coal Associates,
  Ohio Coal Associates, Pennsylvania Coal Associates,
  Virginia Coal Association, and West Virginia Coal
  Association (collectively "ACBMR") and United
  Mine Workers
  (not to exceed 3,000 words).....January 12, 2007

- Brief for industry petitioner Southern
  Montana Electric Generation & Transmission
  Cooperative, Inc.
  (not to exceed 2,500 words).....January 12, 2007

No. 05-1097 **September Term, 2006**

- Brief for industry petitioner
  Alaska Industrial Development and
  Export Authority
  (not to exceed 2,500 words).....January 12, 2007

- Brief for industry petitioner UARG
  (not to exceed 2,500 words).....January 12, 2007

- Briefs for petitioner-intervenors
  (combined total of three briefs not
  to exceed 8,750 words, allocated
  as petitioner-intervenors see fit).....January 26, 2007

- Brief for EPA
  (not to exceed 43,000 words).....May 4, 2007

- Joint Brief for state respondent-intervenors
  and Joint Brief for industry respondent-intervenors
  (not to exceed a combined total of 8,750 words
  allocated as these parties see fit).....May 18, 2007

- Joint Brief for certain industry
  respondent-intervenors
  (not to exceed 1,875 words).....May 18, 2007

- Brief for amicus Washington Legal Foundation
  (not to exceed 5,000 words).....May 18, 2007

- Joint Reply Brief for state and local
  government petitioners
  (not to exceed 5,250 words).....June 15, 2007

- Joint Reply Brief for environmental petitioners
  (not to exceed 5,250 words).....June 15, 2007

- Joint Reply Brief for tribal petitioners
  (not to exceed 5,000 words).....June 15, 2007

- Reply Brief for industry petitioner ARIPPA
  (not to exceed 750 words).....June 15, 2007

- Joint Reply Brief for industry petitioners ACBMR and United Mine Workers (not to exceed 1,500 words).....June 15, 2007

- Reply Brief for industry petitioner Southern Montana Electric Generation & Transmission Cooperative, Inc. (not to exceed 1,250 words).....June 15, 2007

- Reply Brief for industry petitioner Alaska Industrial Development and Export Authority (not to exceed 1,250 words).....June 15, 2007

- Reply Brief for industry petitioner UARG (not to exceed 1,250 words).....June 15, 2007

- Deferred Appendix .....June 29, 2007

- Final Briefs .....July 13, 2007

Intervenors are directed to "avoid repetition of facts or legal arguments" made in other briefs, "and focus on points not made or adequately elaborated upon" in those briefs. D.C. Cir. Rule 28(f)(2).

The court reminds the parties that

> a petitioner whose standing is not self-evident should establish its standing by the submission of its arguments and any affidavits or other evidence appurtenant thereto at the first appropriate point in the review proceeding. In some cases that will be in response to a motion to dismiss for want of standing; in cases in which no such motion has been made, it will be with the petitioner's opening brief – and not ... in reply to the brief of the respondent agency. In either procedural context the petitioner may carry its burden of production by citing any record evidence relevant to its claim of standing and, if necessary, appending to its filing additional affidavits or other evidence sufficient to support its claim. In

its opening brief, the petitioner should also include in the "Jurisdictional Statement" a concise recitation of the basis upon which it claims standing.

Sierra Club v. EPA, 292 F.3d 895, 900-01 (D.C. Cir. 2002). See also D.C. Cir. Rule 28(a)(7).

The parties will be notified by separate order of the composition of the merits panel and the oral argument date. Parties are strongly encouraged to hand deliver their briefs to the Clerk's office on the date due. Filing by mail might delay the processing of the brief. Additionally, counsel are reminded that if filing by mail, they must use a class of mail that is at least as expeditious as first-class mail. See Fed. R. App. P. 25(a).

Per Curiam

BK

Desert Rock Energy Co., PSD Appeal 08-03
Conservation Petitioners' Exhibits

EXHIBIT 32

United States Court of Appeals

FOR THE DISTRICT OF COLUMBIA CIRCUIT

No. 05-1097 **September Term, 2007**

Filed On: November 26, 2007

[1082303]
State of New Jersey, et al.,
Petitioners

v.

Environmental Protection Agency,
Respondent

Consolidated with 05-1104, 05-1116, 05-1118, 05-1158, 05-1159, 05-1160, 05-1162, 05-1163, 05-1164, 05-1167, 05-1174, 05-1175, 05-1176, 05-1183, 05-1189, 05-1263, 05-1267, 05-1270, 05-1271, 05-1275, 05-1277, 06-1211, 06-1220, 06-1231, 06-1287, 06-1291, 06-1293, 06-1294,

ORDER

It is **ORDERED**, on the court's own motion, that the following times are allotted for the oral argument of these cases scheduled for Thursday, December 6, 2007, at 9:30 a.m. in Courtroom 22 in the Courthouse Annex:

State and Environmental Petitioners	--	20 minutes
Respondent EPA	--	15 minutes
Industry Intervenors	--	05 minutes

The court will hear oral argument only on the Clean Air Act section 112 delisting issue.

The panel considering these cases will consist of Circuit Judges Rogers, Tatel and Brown. The enclosed Form 72 must be completed and returned to the Clerk's office by December 3, 2007.

Per Curiam

FOR THE COURT:
Mark J. Langer, Clerk

BY:

Cheri Carter
Deputy Clerk

Desert Rock Energy Co., PSD Appeal 08-03
Conservation Petitioners' Exhibits

EXHIBIT 33

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JAN 28 1993

OFFICE OF
AIR AND RADIATION

MEMORANDUM

SUBJECT: Automatic or Blanket Exemptions for Excess Emissions During Startup, and Shutdowns Under PSD

FROM: John B. Rasnic, Director
Stationary Source Compliance Division
Office of Air Quality Planning and Standards

TO: Linda M. Murphy, Director
Air, Pesticides and Toxics Management Division
Region 1

This is in response to your memorandum dated June 15, 1992, asking that we advise Region I on whether you are correct in telling States and applicants that Prevention of Significant Deterioration (PSD) permits cannot contain automatic exemptions which allow excess emissions during startup and shutdown. You also requested that the Stationary Source Compliance Division (SSCD) issue a memo which outlines the Environmental Protection Agency's (EPA's) policy on excess emissions during startup and shutdown (especially as it pertains to Best Available Control Technology determinations) and on automatic exemptions that are granted in PSD permits. I understand that my staff has discussed this issue and the response with your staff by phone. However, we regret the delay in providing a written response.

The two memoranda you mention, entitled "Policy on Excess Emissions During Startup, Shutdown, Maintenance, and malfunction" from Kathleen M. Bennett (dated February 15, 1983 and September 28, 1982), address automatic exemptions under the State Implementation Plan (SIP). The memoranda state that the rationale for establishing these emissions as violations, as opposed to granting automatic exemptions, is that SIPs are ambient-based standards and any emissions above the allowable may cause or contribute to violations of the national ambient air quality standards. This rationale applies to the PSD program not only because PSD is ambient-based but also because generally, the PSD program is part of the SIP. Even in States where the PSD program is not SIP approved, the emissions limits are established to protect increments and the national ambient air quality standards (NAAQS).

Another 1977 memorandum, entitled "Contingency Plan for FGD Systems During Downtime as a Function of PSD" from Edward E. Reich, states that PSD and SIP regulations require the establishment of emission limitations which will be sufficient to ensure nondegradation of air quality and attainment and maintenance of the NAAQS. This memorandum specifically refers to the April 27, 1977 Federal Register notice (42 FR 21472) that is also mentioned in the EPA policy attached to the Bennett memoranda.

Although we concur with Region I that PSD permits cannot contain automatic exemptions which allow excess emissions during startup and shutdown, we do not believe that EPA's policy concerning this issue under PSD is somewhat vague. The exemptions granted under some New Source Performance Standards (NSPS) are not applicable to this issue under PSD. The NSPS are technology based standards that are not directly required for meeting ambient standards.

Likewise, we do not concur at this time with the approach as outlined in the footnote. You suggest setting a specific emission rate that would apply during startup and/or shutdown that is demonstrated to not cause a violation of any short-term increments or standards. While this may protect the ambient standards, this cannot be easily determined if, as is suggested, the emission rate would reflect a longer averaging time. Further, as the 1982 memoranda states, without clear definition and limitations, these automatic exemptions or even secondary limits could effectively shield excess emissions arising from poor operation and maintenance or design, thus precluding attainment.

However, the States retain enforcement discretion, as discussed in the memoranda, to address the occurrence of excess emissions. The attachments to the memoranda provide that infrequent periods of excess emissions during startup and shutdown need not be treated as violations where the source adequately shows that the excess could not have been prevented through careful planning and design and that bypassing of control equipment was unavoidable to prevent loss of life, personal injury, or severe property damage. Startup and shutdown of process equipment are part of the normal operation of a source and should be accounted for in the planning, design and implementation of operating procedures for the process and control equipment. Accordingly, it is reasonable to expect that careful and prudent planning and design will eliminate violations of emission limitations during such periods. If excess emissions occur during routine startup and shutdown due to a malfunction, then those instances should be treated as other malfunctions which are subject to the malfunction provisions of the policy (attached).

If you have any questions regarding this matter, please contact Clara Poffenberger at 703 308-8709.

Attachments

Desert Rock Energy Co., PSD Appeal 08-03
Conservation Petitioners' Exhibits

EXHIBIT 34

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

JUL 28 2006

Ms. Abigail Dillen
209 South Willson Avenue
Bozeman, Montana 59715

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

Dear Ms. Dillen:

This letter is in response to your inquiry regarding applicability of the Scheffe Point Source Screening Tables.

I developed the screening tables in 1988 as a screening test to estimate the contribution to ambient ozone associated with increased non-methane organic carbon (NMOC) emissions arising from new or modified point sources. The tables never achieved a level of EPA certification associated with EPA guideline models and consequently were not endorsed by the Agency. After publication (non peer reviewed literature) of the tables in1989, the American Petroleum Institute enlisted renowned atmospheric modeling experts, Drs. John Seinfeld and Panos Georgopoulous of the California Institute of Technology, to review the technique. Based on their input and our own analysis, the EPA decided at that time that the tables did not adhere to an adequate level of scientific credibility to be recommended for their intended purpose.

Ozone science has advanced markedly since 1988 with substantial improvements in the characterization of emissions, meteorological, and atmospheric chemistry processes, paralleling an equivalent improvement in computational processing capability, all of which constitute the principal features of a modeling framework. As a result, the Scheffe method, which was deemed "not adequate" in 1989, would be even less adequate today.

Please do not hesitate to contact me (919-477-7955) regarding any further questions.

Sincerely,

Richard D. Scheffe, PhD
Senior Science Advisor
OAQPS, EPA

cc: Richard Long, Region 8
Tom Curran
Valerie Broadwell

Desert Rock Energy Co., PSD Appeal 08-03
Conservation Petitioners' Exhibits

EXHIBIT 35

Single Source Ozone/PM2.5 Impacts in Regional Scale Modeling & Alternate Methods

Presentation to R/S/L Workshop

By Erik Snyder & Bret Anderson

May 18, 2005

History

- PSD permitting applications with over 100 tpy of VOCs need to conduct impact analysis for ozone.
- Impact analysis guidance typically on a case-by-case basis by EPA Regional offices.
- Scheffe Tables generated in 1988 based on Reactive Plume Model – II model outputs for screening analysis.

History (Cont.)

- 1988- late 1990s: Some Regions (Including Region 6) recommend using Scheffe Tables during time period of early 1990s to late 1990s. As science shifts that NOx is the pollutant to control, Scheffe tables based on VOC limited chemistry become inappropriate to use for most areas.
- 1999 – current: Multiple methods used, but many areas starting to experiment with using other methods including regional scale ozone modeling.
- This is one approach that has some promise, but do others exist?

The Third rail of PSD ozone impacts

- **Outstanding issue, no clear guidance on what level is significant for impacts on 1-hr ozone or 8-hr ozone for single point sources. Only 1-hr and 8-hr guidance is for state-on–state impact (NOx SIP call and CAIR).... Inappropriate for single source level.**
- **1984 EPA correspondence (Joseph Cannon, AA of Air and Radiation with law firm in Dallas) addressing PSD question for a proposed plant in Texas. Letter from law firm summarizing meetings in Durham and D.C. with EPA indicated EPA was considering 0.3 ppb, but no definite "significance level" was decided and Cannon's response was to confirm the balance of the law firm's understanding on this issue. This seems to confirm that EPA was considering using 0.3 ppb, but had not made a determination on this issue.**

Issues ?

- GAQM - 5 years of met data (or 3 years MM5 data) are used for impact analysis. Episode days from regional modeling is a much more limited dataset (Often only 5-15 days available). This is a very limited subset of days that generate ozone for many areas. Are winds during the episode appropriate for determining worst case impacts?
- NOx is a ozone pre-cursor. Need guidance on how to conduct the required PSD ozone impact analysis.

Questions??

- Is regional (4km grid) photochemical modeling sensitive enough for single point analysis? Will photochemical modeling result in false positive (modeling shows source impacts when none would be expected) or false negative results (modeling doesn't show source impacts when some impacts are expected).
- Due to limitations of # of days modeled (compared to 5 years of data) – a positive test should indicate potential impact while a negative test should not be construed to indicate the source will have no impact.

Technical Analysis Questions

- Do you just look at change in daily peaks? Changes in all grid cells, or only the subset above a certain level that could impact attainment status? What ozone metrics should be evaluated? What level of detail should the analysis be conducted 1.0 ppb or 0.1 ppb, or something else.

Technical Analysis Questions (Cont.)

- Since limited days to evaluate impacts - Missouri suggested moving the proposed source to an upwind location of maximum area (keep same distance from non-urban/urban maximum ozone core). Need to be sensitive to change in background emissions and also if it is appropriate to put the source upwind if it is traditionally in the area downwind of local ozone maxima.
- SOME REAL CONCERN that this is not an accurate reflection of the problem and would not be defendable if challenged… this is a limitation of days available and other methods should likely be evaluated other than Regional photochemical grid modeling.

Areas that have done point source impact regional modeling

- Oklahoma – For a number of natural gas fired turbine EGUs, other large point sources using DFW modeling.
- Missouri DNR – Multiple sources (mostly cement kilns) using old 1995-96 OTAG modeling episodes
- San Antonio – For multiple facilities as they were developing their Early Action Compact 8-hr ozone demonstration (8-day episode)
- Dallas-Fort Worth – Evaluated impacts from single county (Ellis) to aid in determining if the county should be included in 8-hr nonattainment area.
- Dallas-Fort Worth – Evaluated impacts from groups of power plants in Oklahoma, Arkansas, Louisiana, and also looked at individual Louisiana power plants and their impacts on areas in Texas for 3 episodes (two 8-day episodes in 1999 and a 15 day Episode in 2000)

Modeling Tools Available

- Tools available in regional photochemical modeling to aid in evaluation
  - Source apportionment techniques: APCA, APCA2, OSAT, PSAT, DDM, etc.

    (Utilizes an accounting procedure for generation and destruction of ozone based on the source of pre-cursors).

  - Zero-out modeling - Analyses were conducted in which specific point source(s) emissions were removed from the model in separate sensitivity runs and compared with runs with the source(s) included.

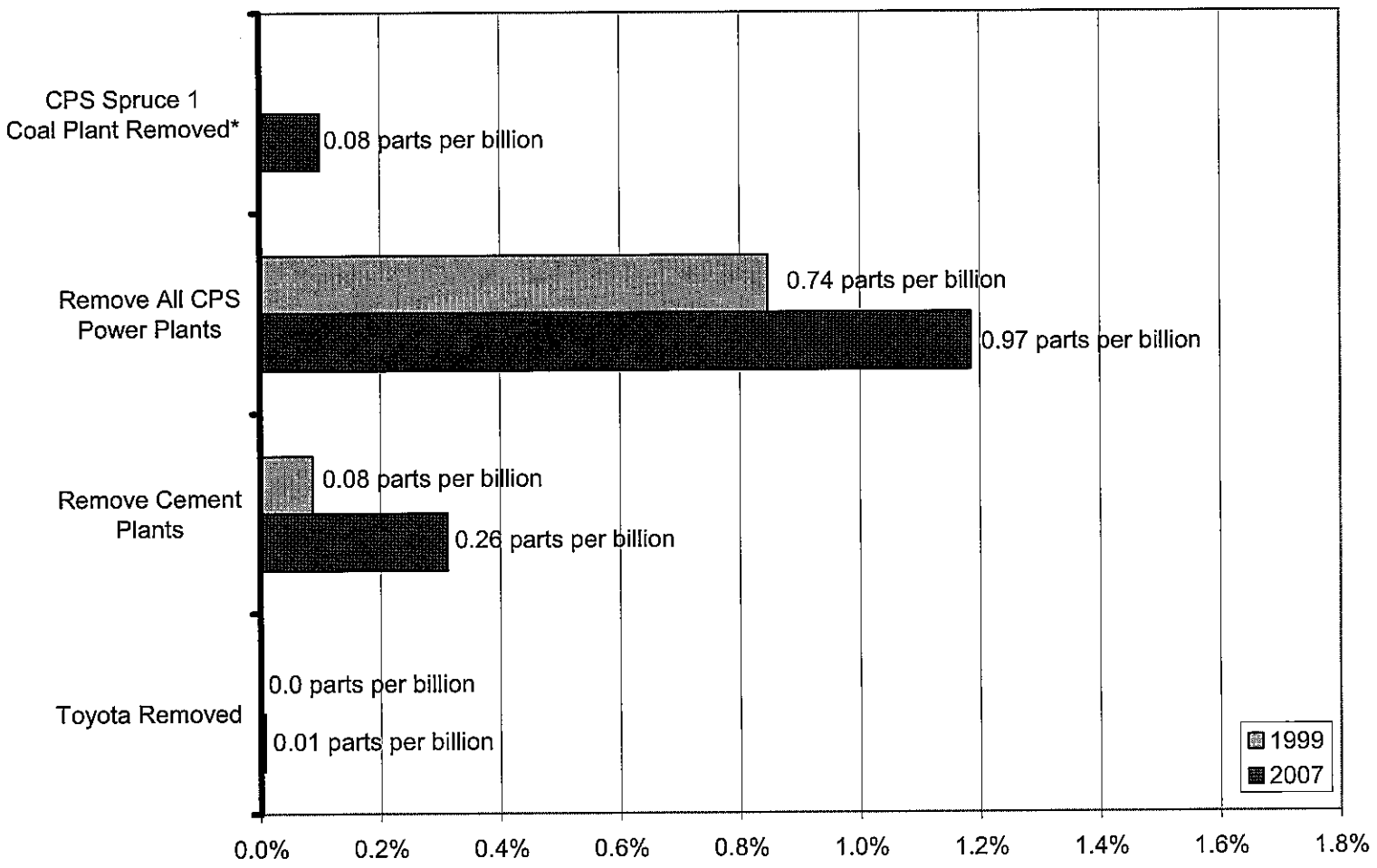
San Antonio Modeling

Evaluation of several groups of facilities including a new Toyota manufacturing facility, the retirement of one existing Coal fire power plant, removal of a group of power plants, removal of a group of cement plants. These impacts were based on San Antonio area Early Action Compact modeling for

8-day episode (September 13-20, 1999)

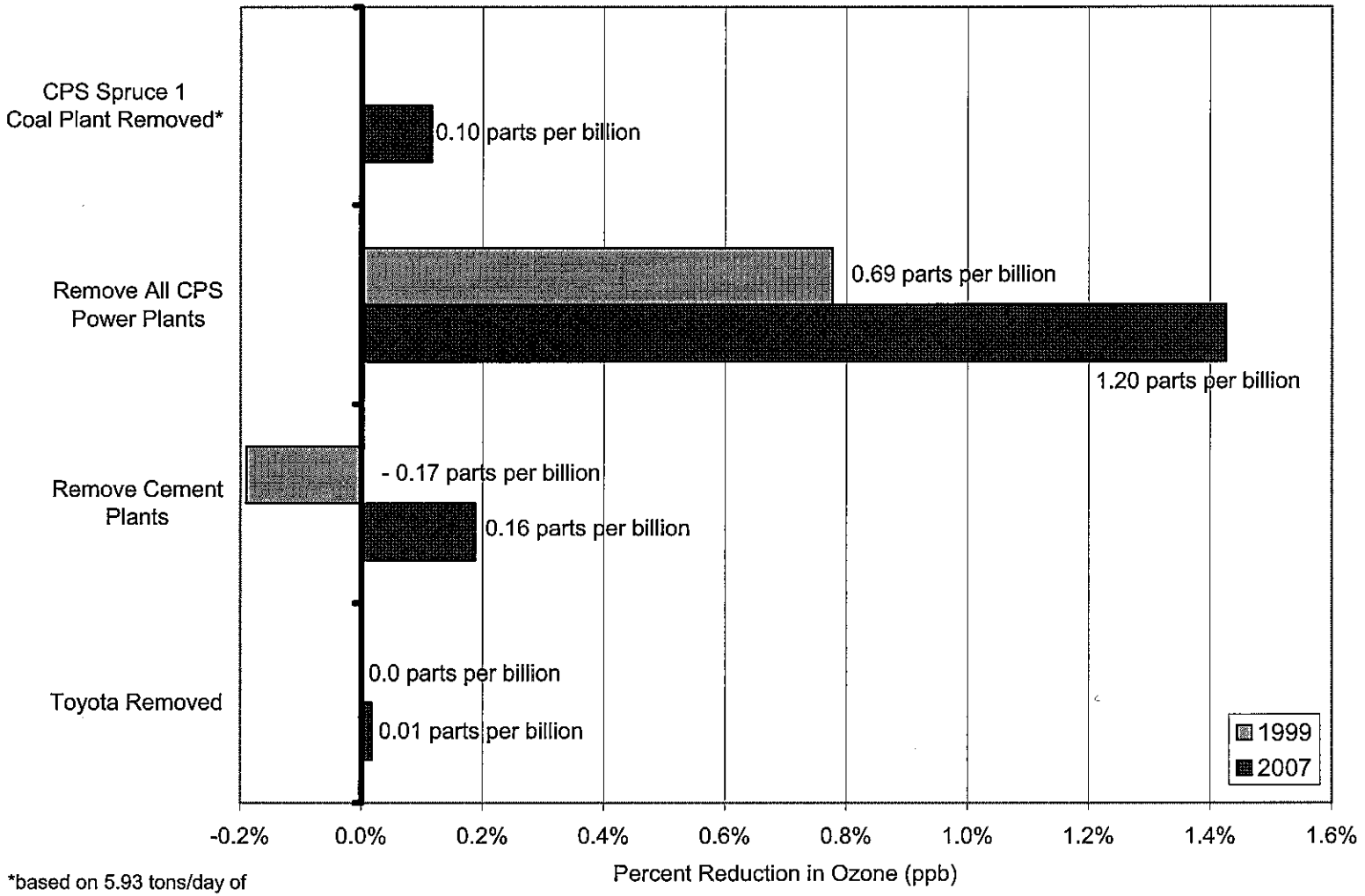
Removal of CPS 750 MW coal fired power plant emission rate of 5.93 tpd of NOx (2164 tpy of NOx)
Building of Toyota Plant results in approximately 0.34 tpd of NOx (125 tpy NOx) emissions and approximately 5 tpd VOC (1825 tpy) in 2007. These values were doubled for the 2012 runs.

Predicted Reductions in Ozone Concentrations at CAMS 58 after Removing Various Point Source Emissions within the SAER– Comparison between 1999 (orange) and 2007 (blue).



*based on 5.93 tons/day of NOx in 2007 only

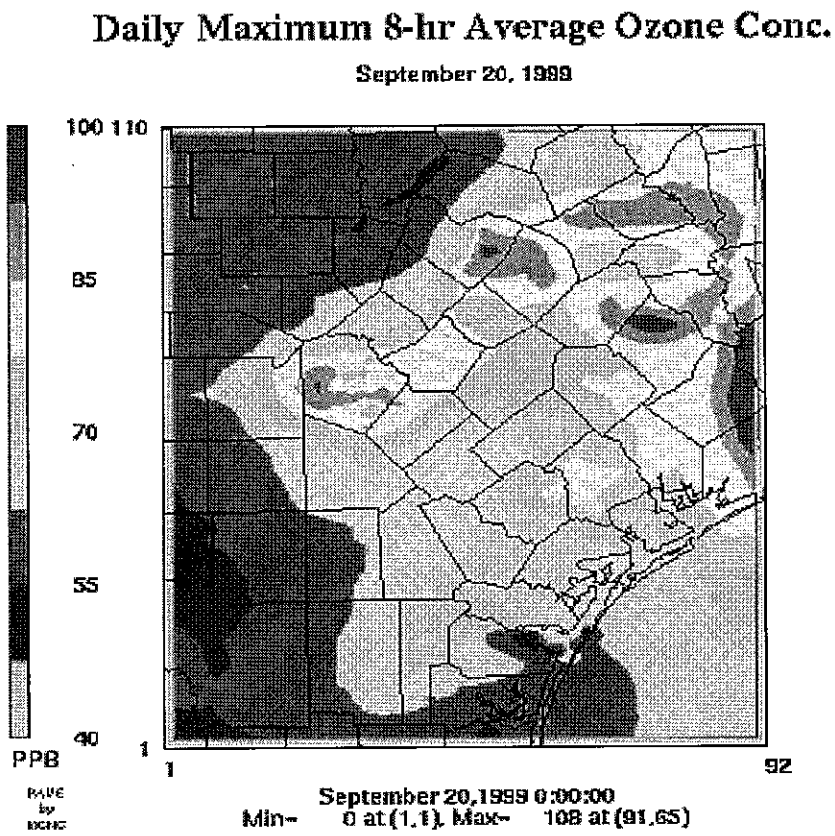
Predicted Reductions in Ozone Concentrations at CAMS 23 after Removing Various Point Source Emissions within the SAER– Comparison between 1999 (orange) and 2007 (blue).



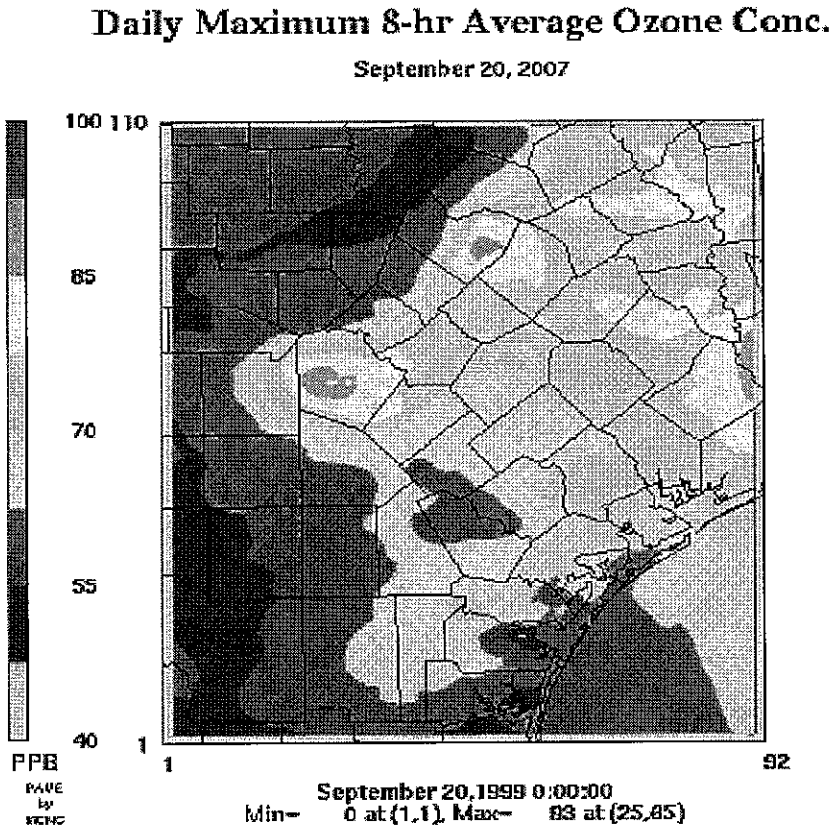
*based on 5.93 tons/day of NOx in 2007 only

Figure G-12. Comparison of 1999 and 2007 Predicted Daily Maximum 8-hour Ozone Concentrations in the 4-km Subdomain on Monday, September 20th.

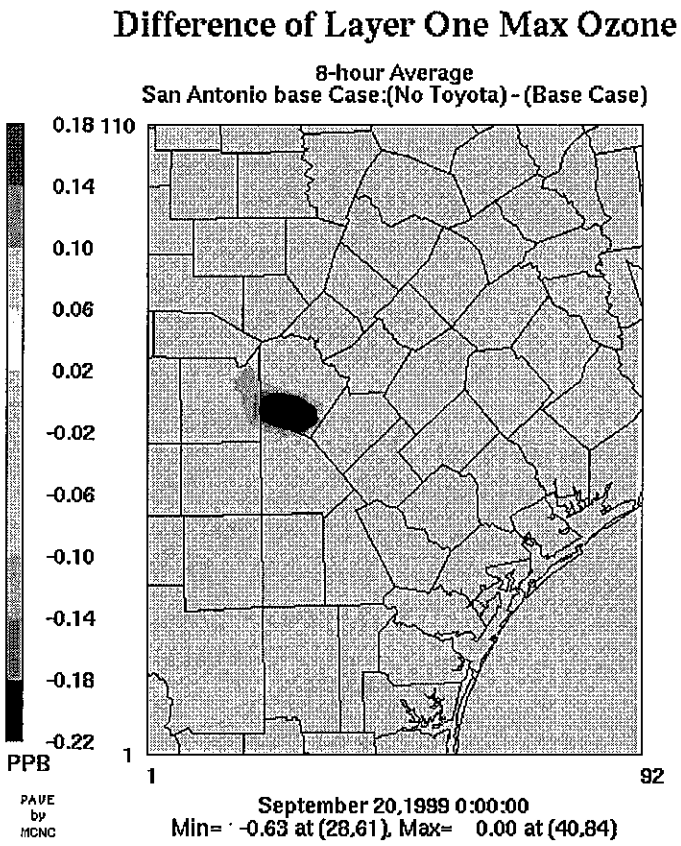
1999

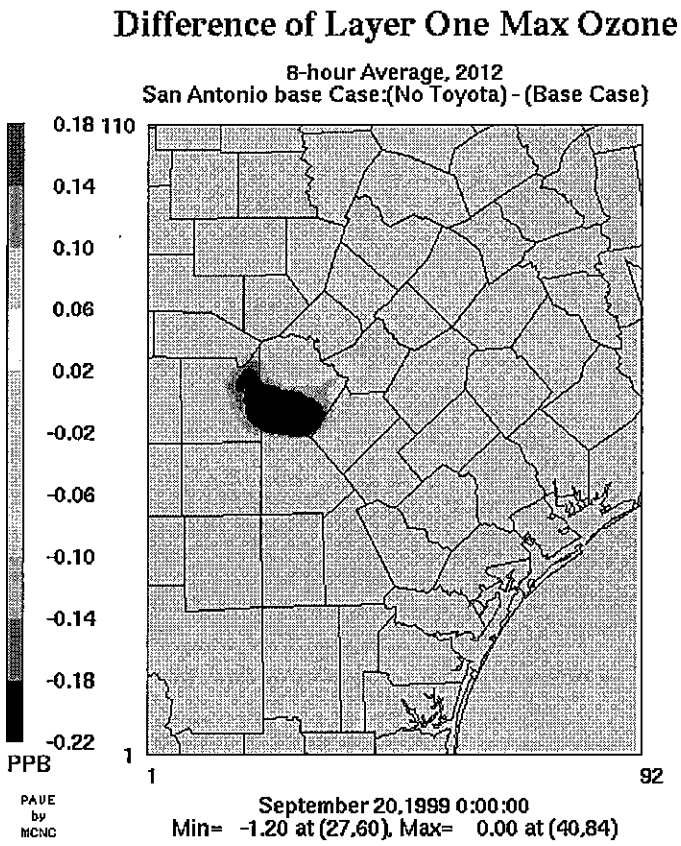


2007

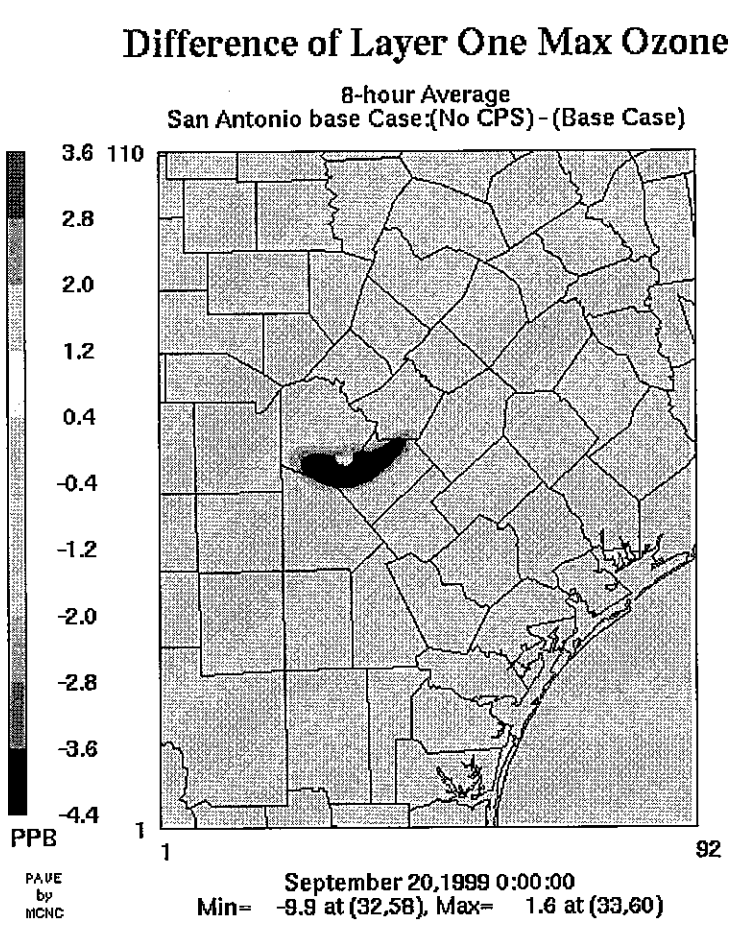


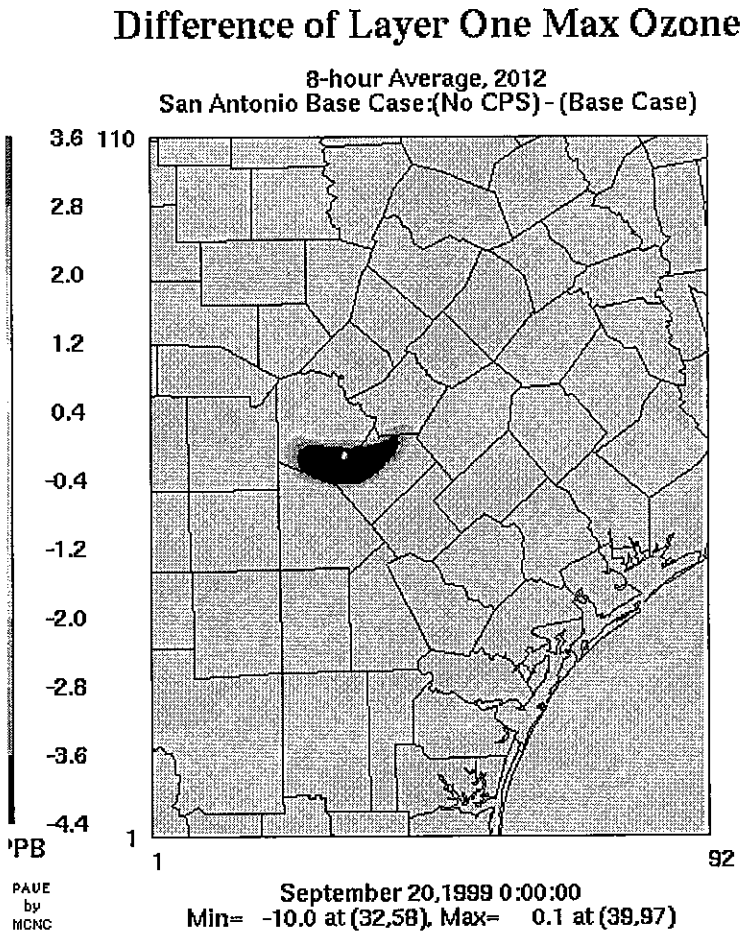
Toyota's 2007 & 2012 Impacts





CPS 750 MW unit 2007 & 2012 impacts





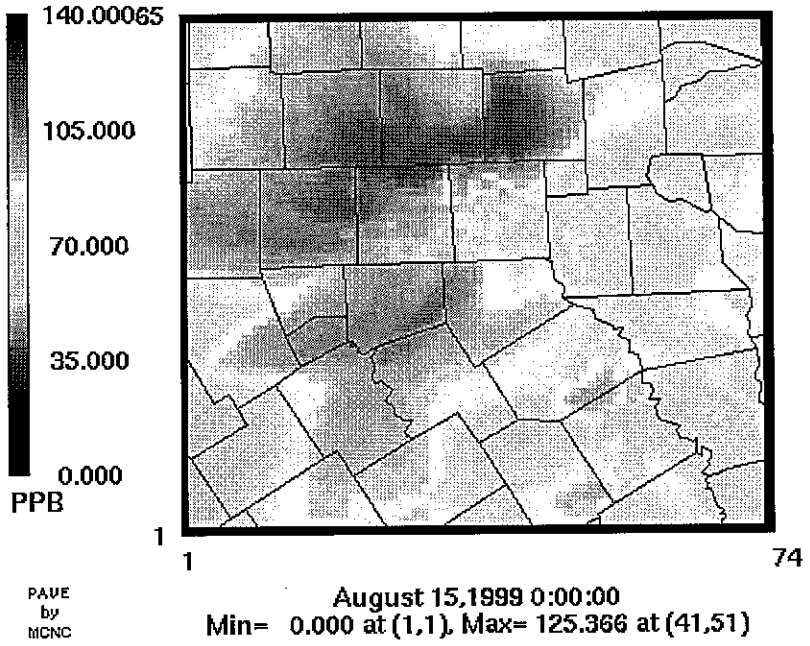
Houston Area Research Council
H27 Report

Evaluation Ellis county impacts on DFW area ozone levels using 1st round of DFW basecase modeling for 8-day episode (August 15-22, 1999)

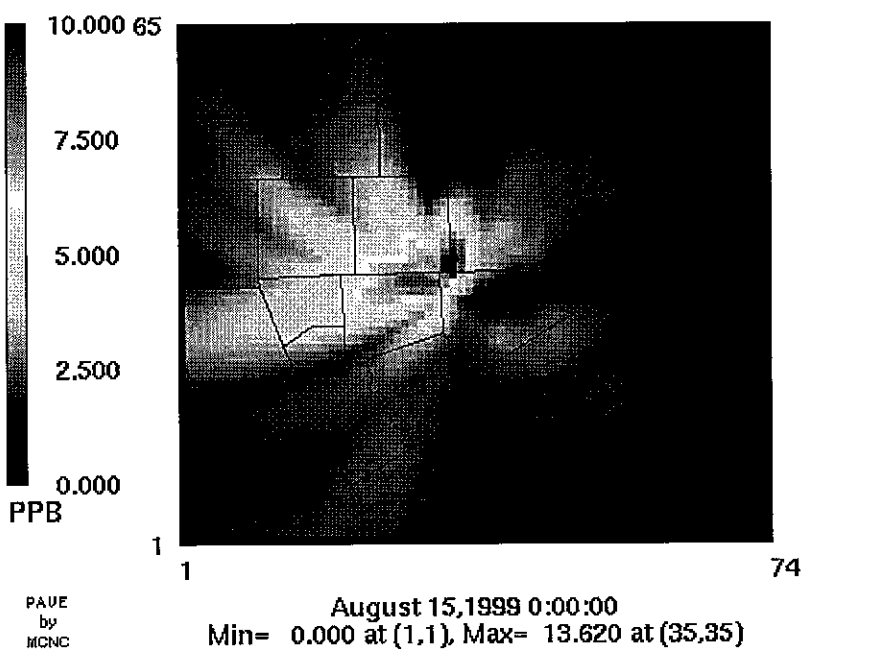
Northwest corner of Ellis has eight cement kilns and a secondary steel foundry with approximately 11,000 tpy of NOx emissions. Population in NW corner is less than 50,000.

Episode Max 8-Hour O3
with Ellis Co. Source Contributions
13 – 22 August 1999

Episode Max 8hr O3

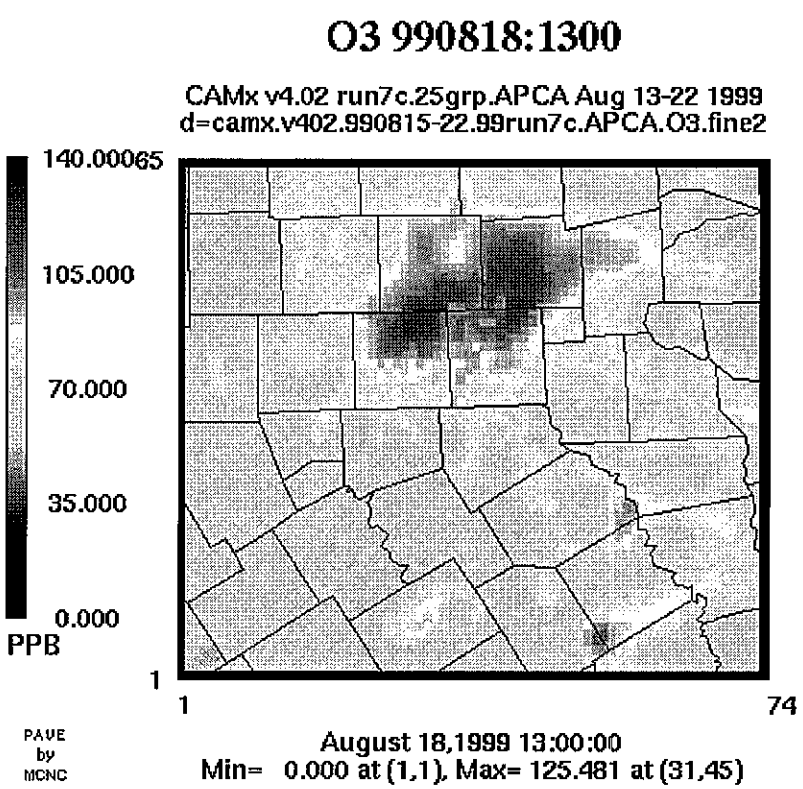


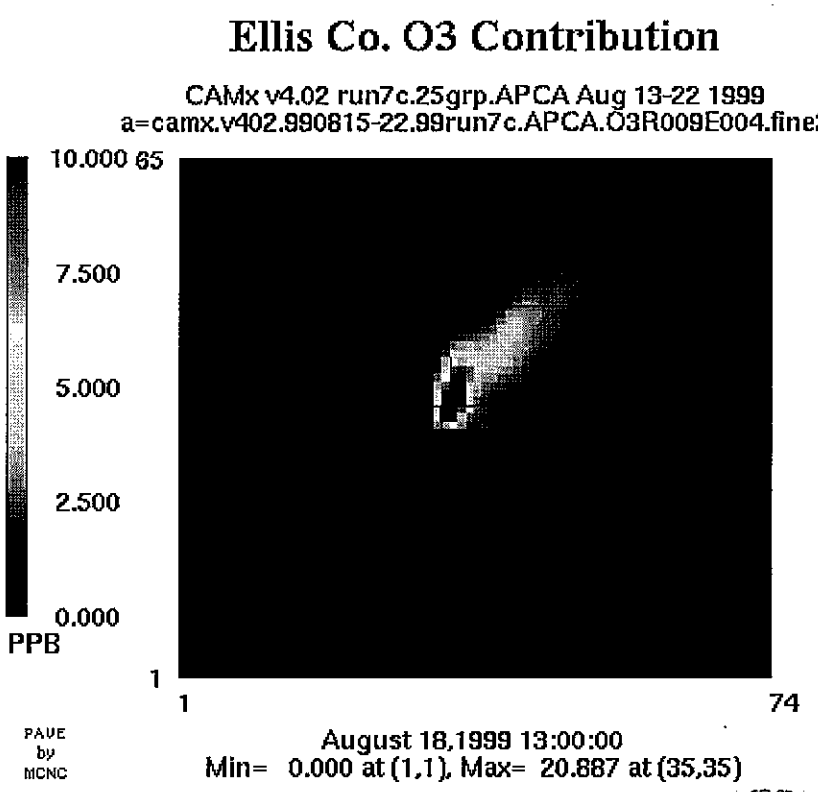
Ellis Co. O3 Contribution



Ellis Co. Source Contributions:

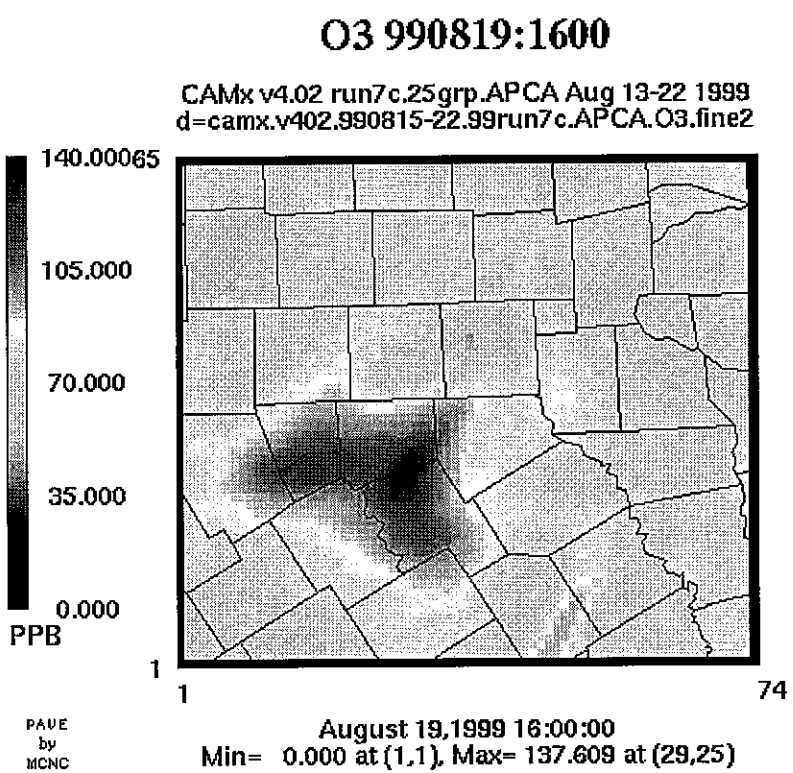
13:00 on 18 August 1999

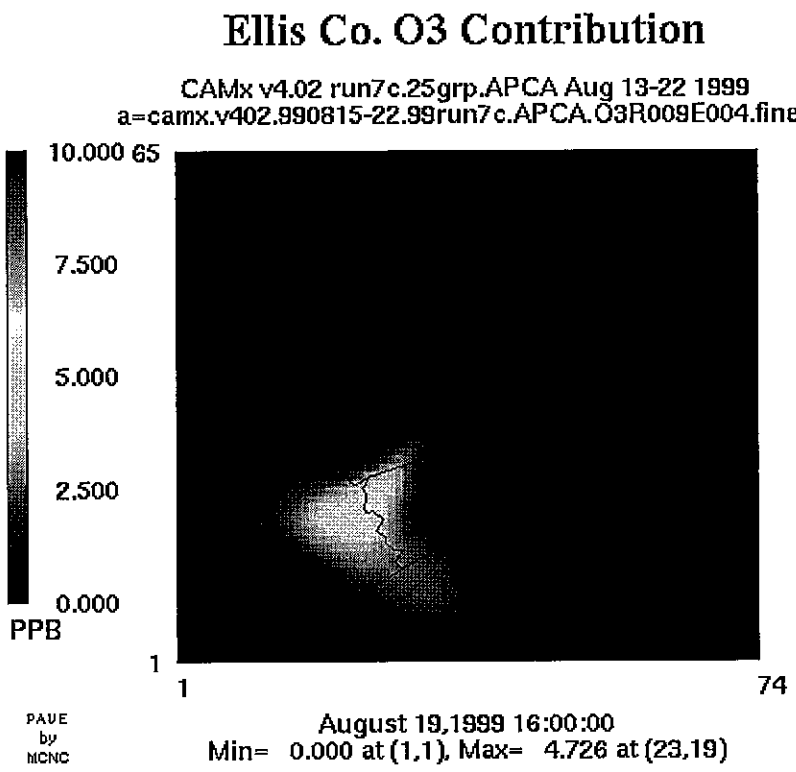




Ellis Co. Source Contributions:

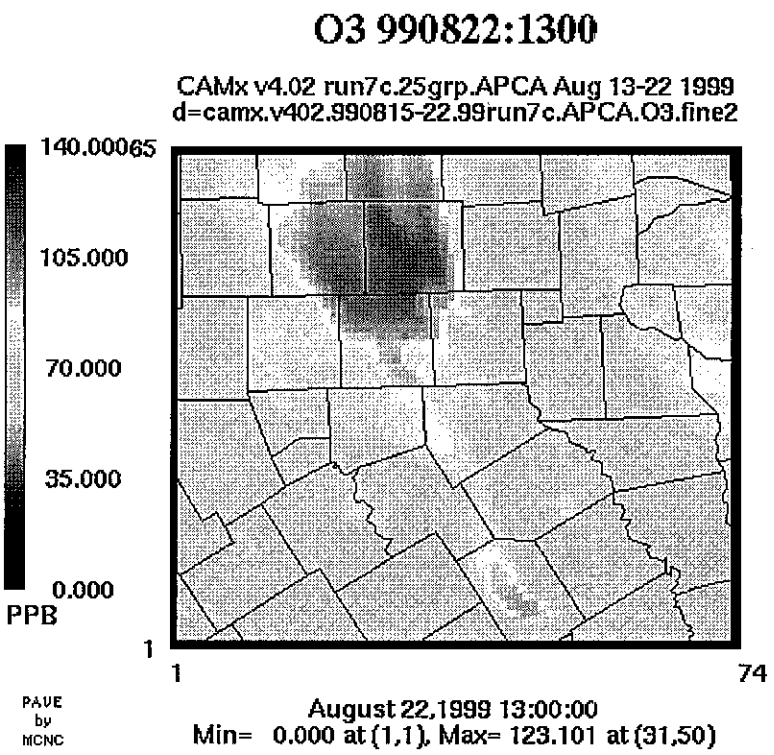
16:00 on 19 August 1999

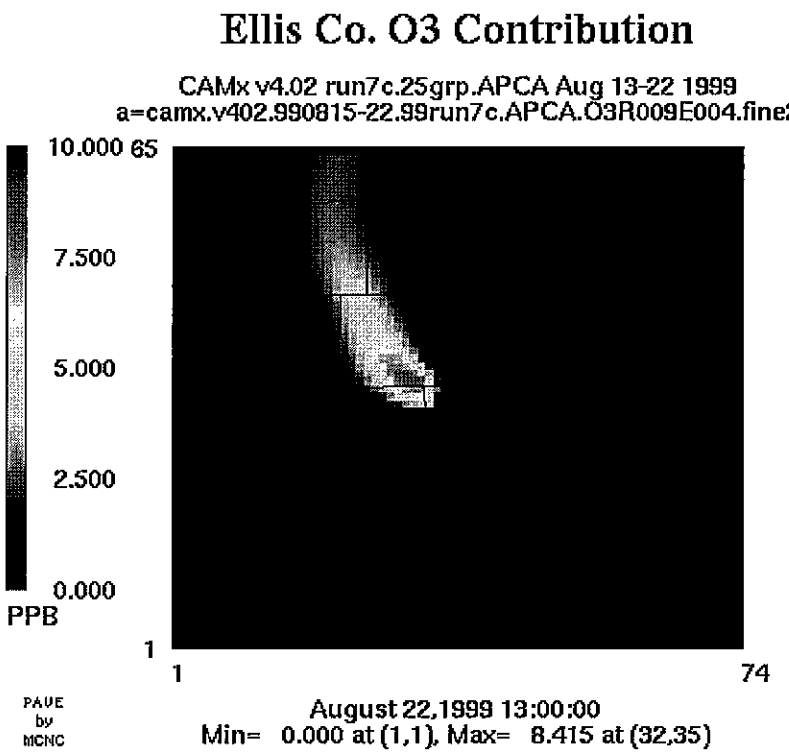




Ellis Co. Source Contributions:

13:00 on 22 August 1999



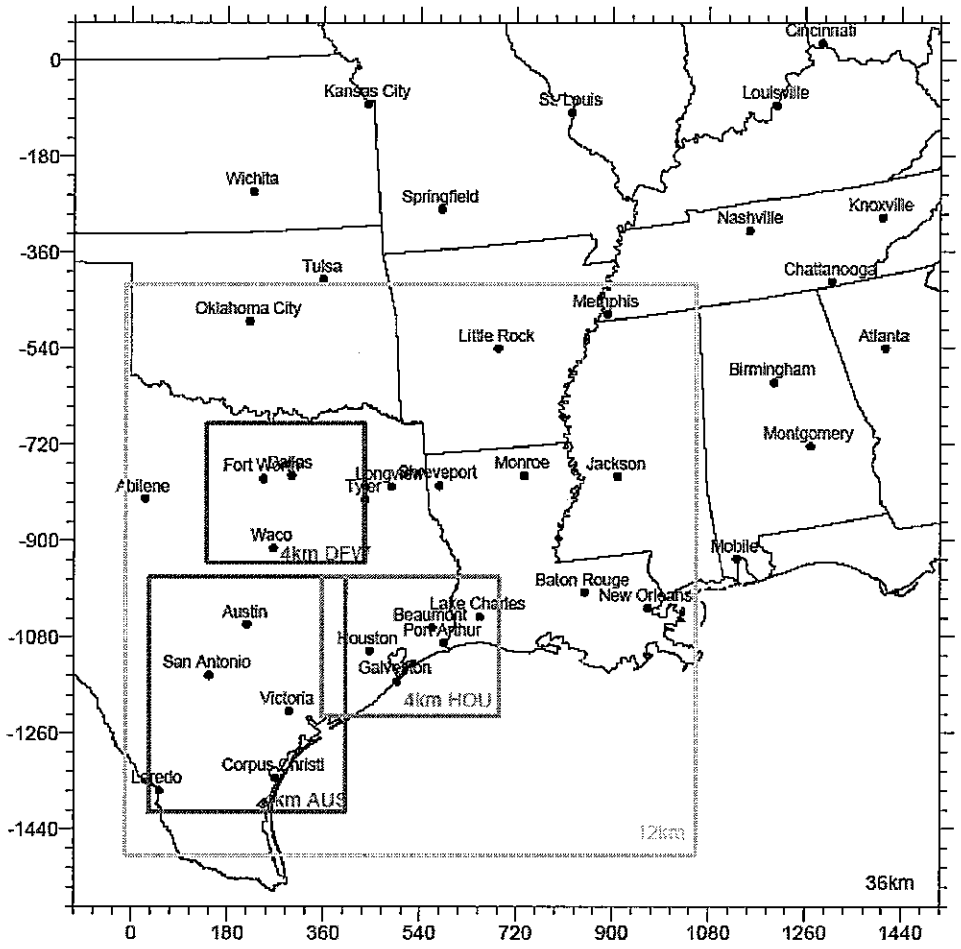


Houston Area Research Council
H35 Phase I Report

http://www.harc.edu/harc/Projects/AirQuality/Projects/Status/Files/H35_Phase1_FinalReport_7feb05.pdf

Evaluation of single EGUs on ozone levels within 3 Texas ozone episodes

August 15-22, 1999 (Dallas/NETAC Episode)
September 13-20, 1999 (Austin/San Antonio Episode)
August 22 – September 6, 2000 (Houston/Beaumont Episode)



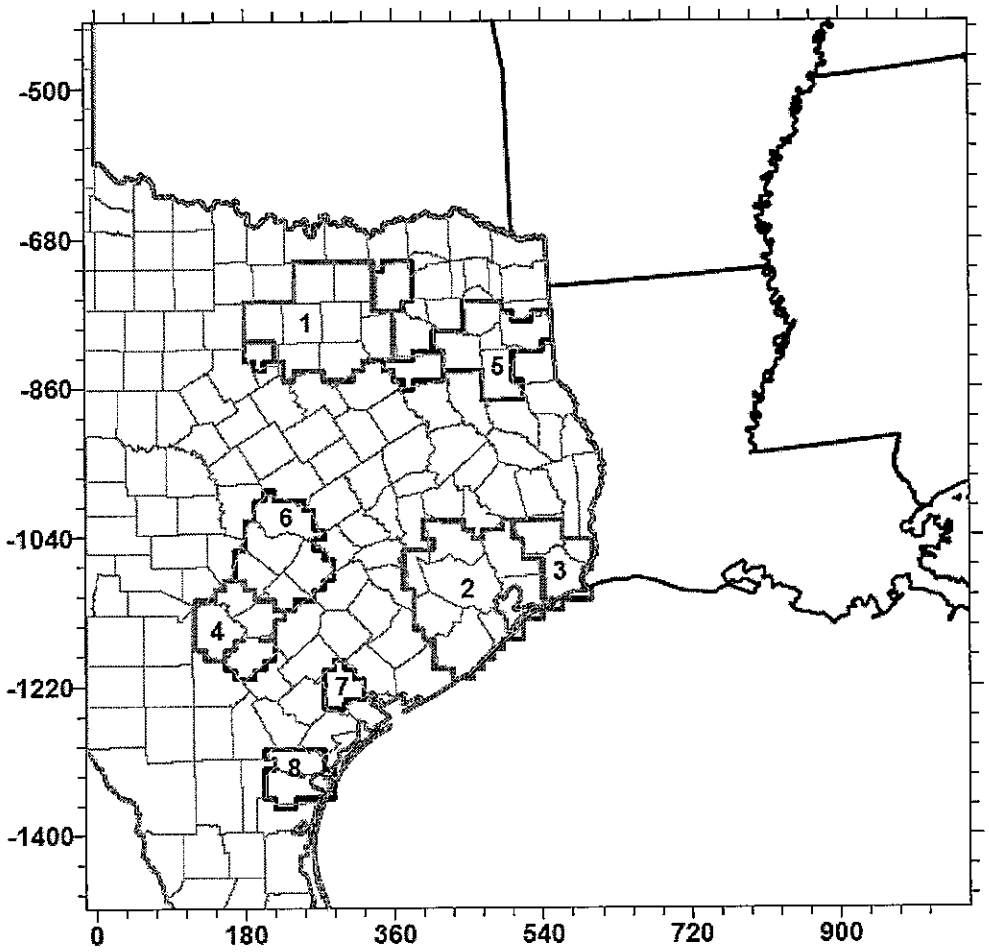
CAMx GRID DIMENSIONS
LCP Grid with reference origin at (40 N, 100 W)

36 km Grid:	(-108, -1584)	to (1512, 72)	45 x 46
12 km Grid:	(-12, -1488)	to (1056, -420)	89 x 89
4 km AUS:	(32, -1408)	to (400, -968)	92 x 110
4 km DFW:	(140, -940)	to (436, -680)	74 x 65
4 km HOU:	(356, -1228)	to (688, -968)	83 x 65

nested grids include buffer cells

DFW – 3 TX area episodes Grids

Figure 2-1. CAMx modeling domains for the DFW, Austin and Houston modeling episodes.



Non Attainment Area
Near Non-Attainment Area

1. Dallas/Ft. Worth
2. Houston/Galveston
3. Beaumont/Port Arthur
4. San Antonio
5. Northeast Texas
6. Austin
7. Victoria
8. Corpus Christi

Receptor Areas within Texas

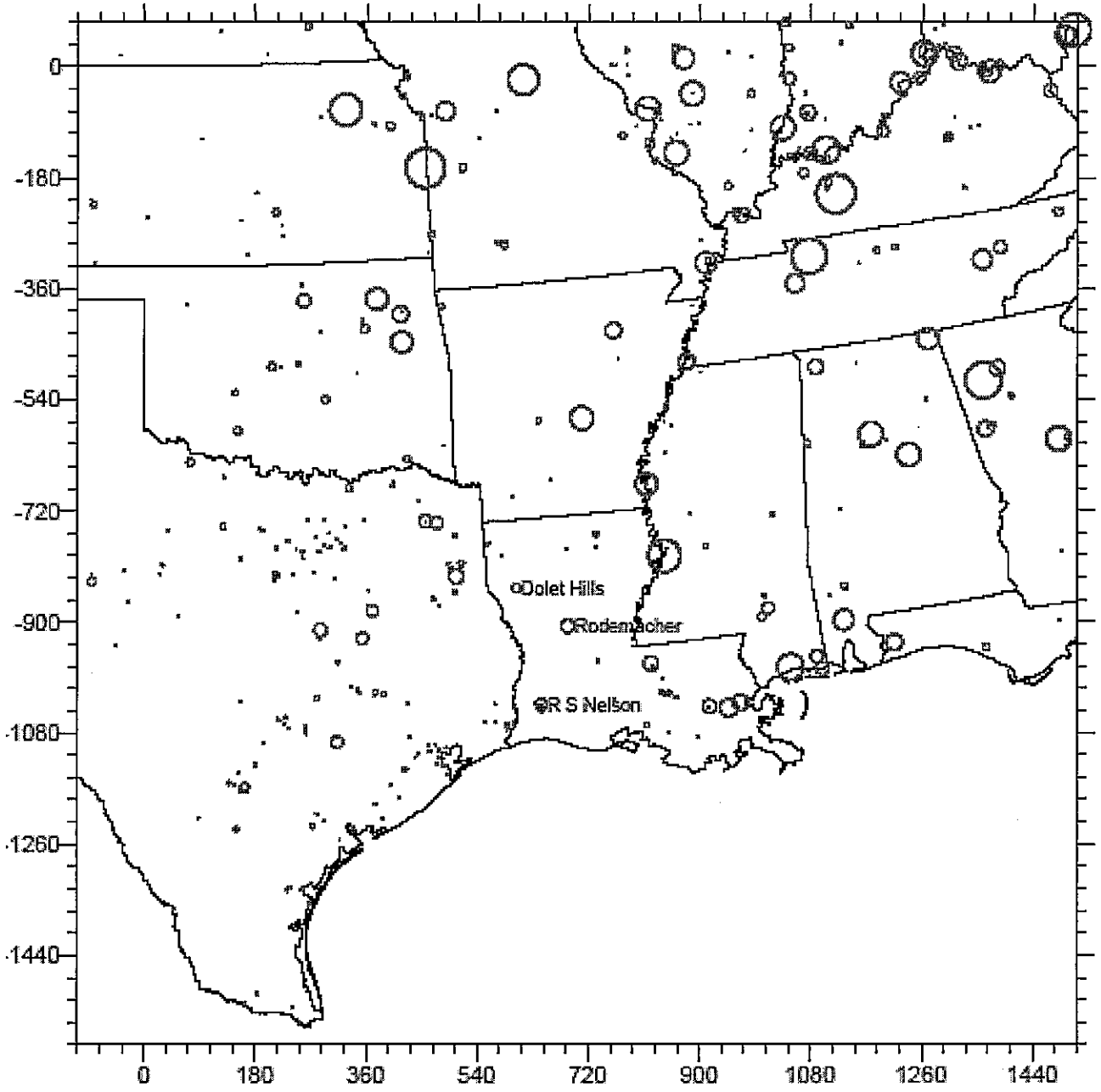


Figure 4-7a. EGU Sources in the DFW modeling episode. The circle size represents the magnitude of weekday NOx emissions.

EGUs within the 36km - LA's 3 sources

Dolet Hills EGU (Maximum 8-Hr Impacts)

23.2 NOx tpd (8468 tpy Avg.)

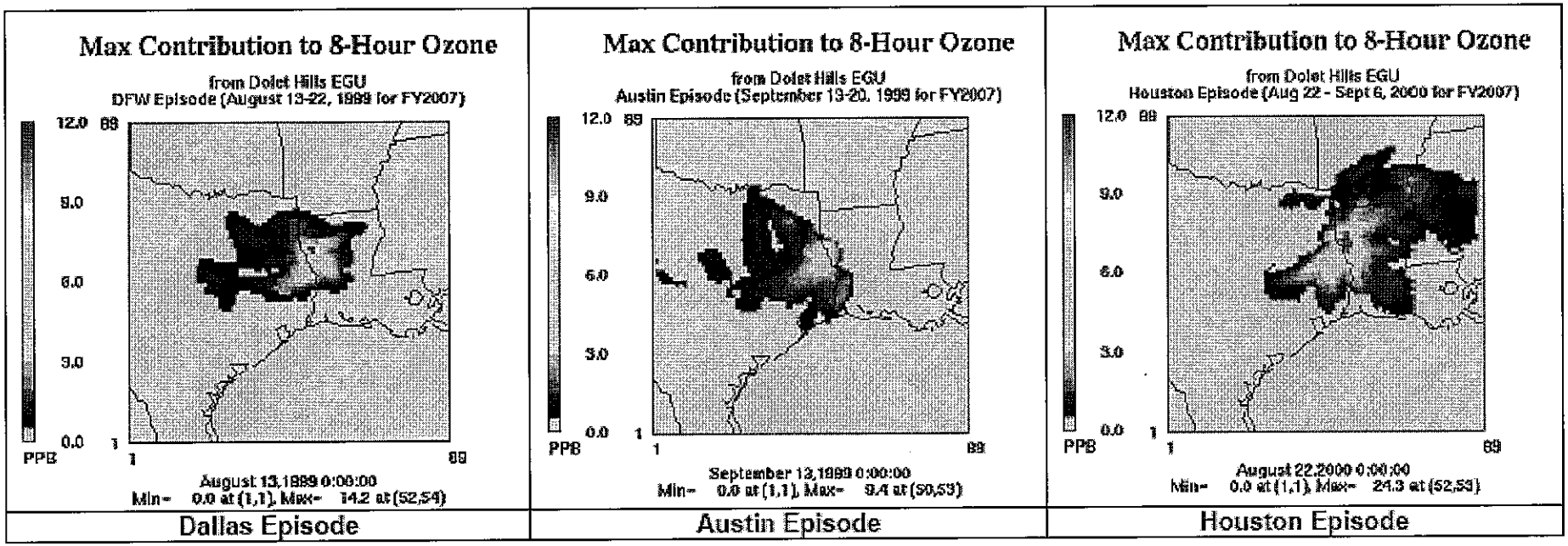
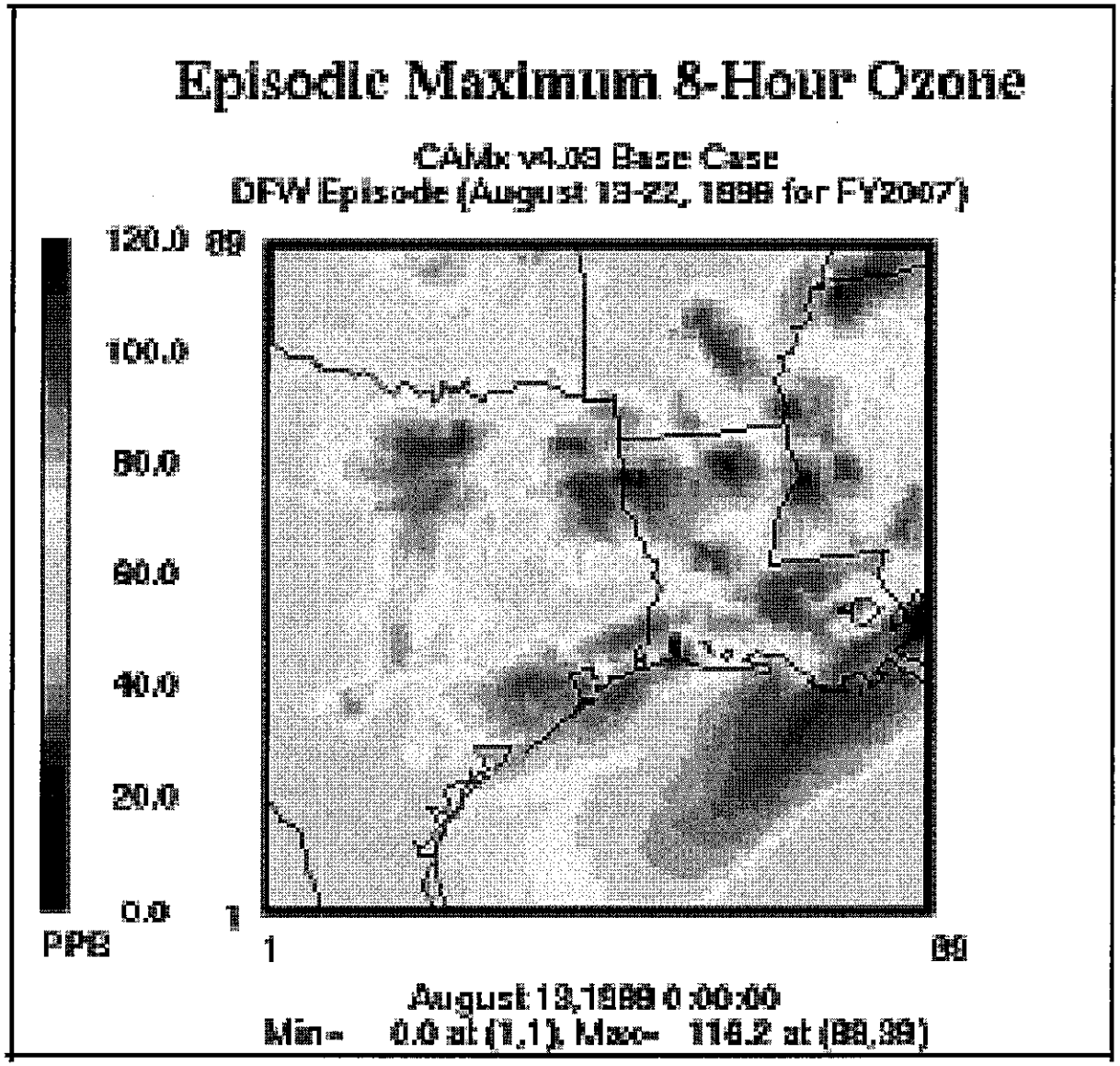
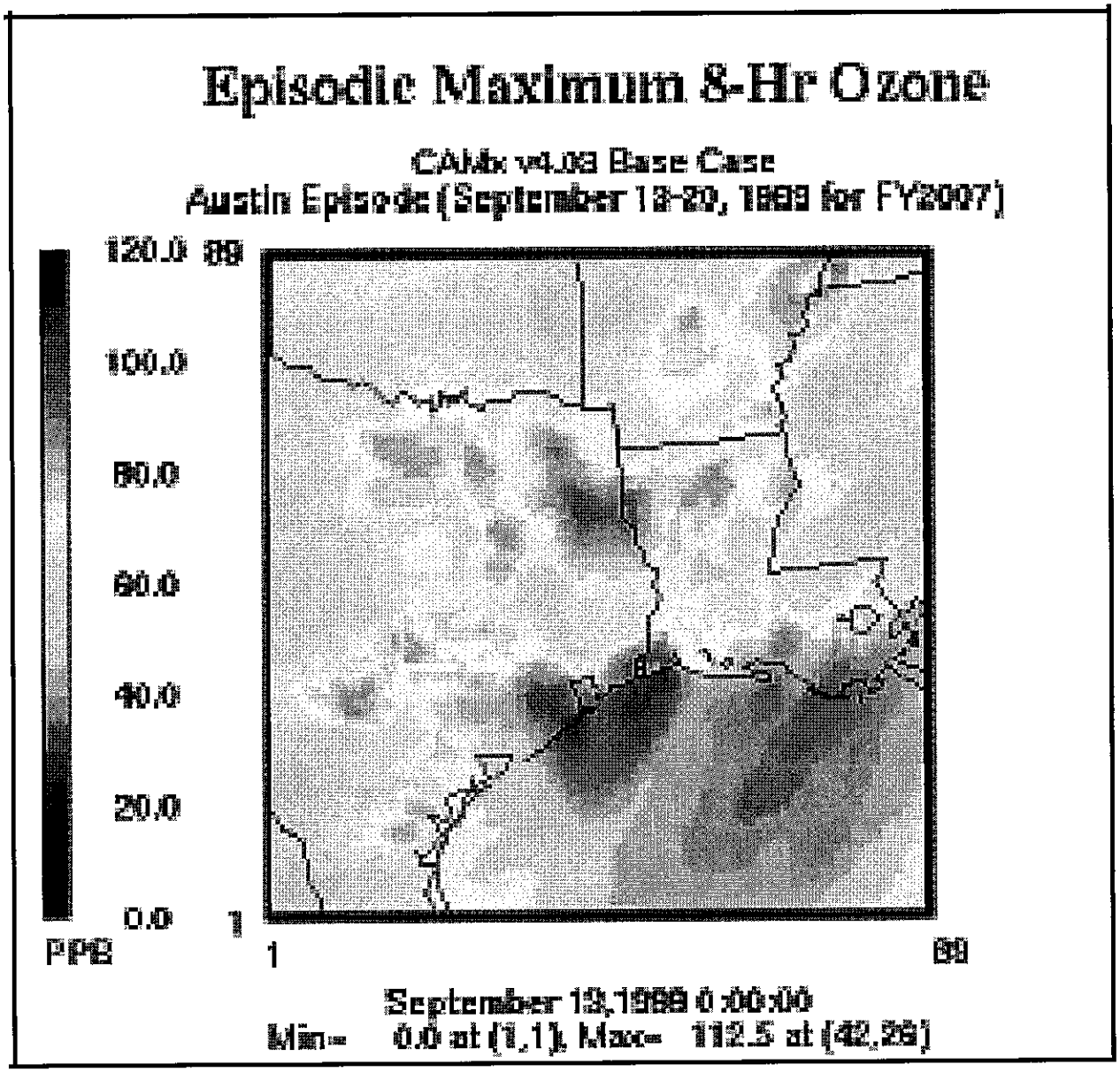


Figure 4-8. Spatial plots of the episodic maximum 8-hour contributions from the Dolet Hills EGU in the Dallas, Austin, and Houston episodes using zero-out analysis.



igure 2-5. Episode maximum 8-hour ozone for the DFW episode.



igure 2-6. Episode maximum 8-hour ozone for the Austin episode.

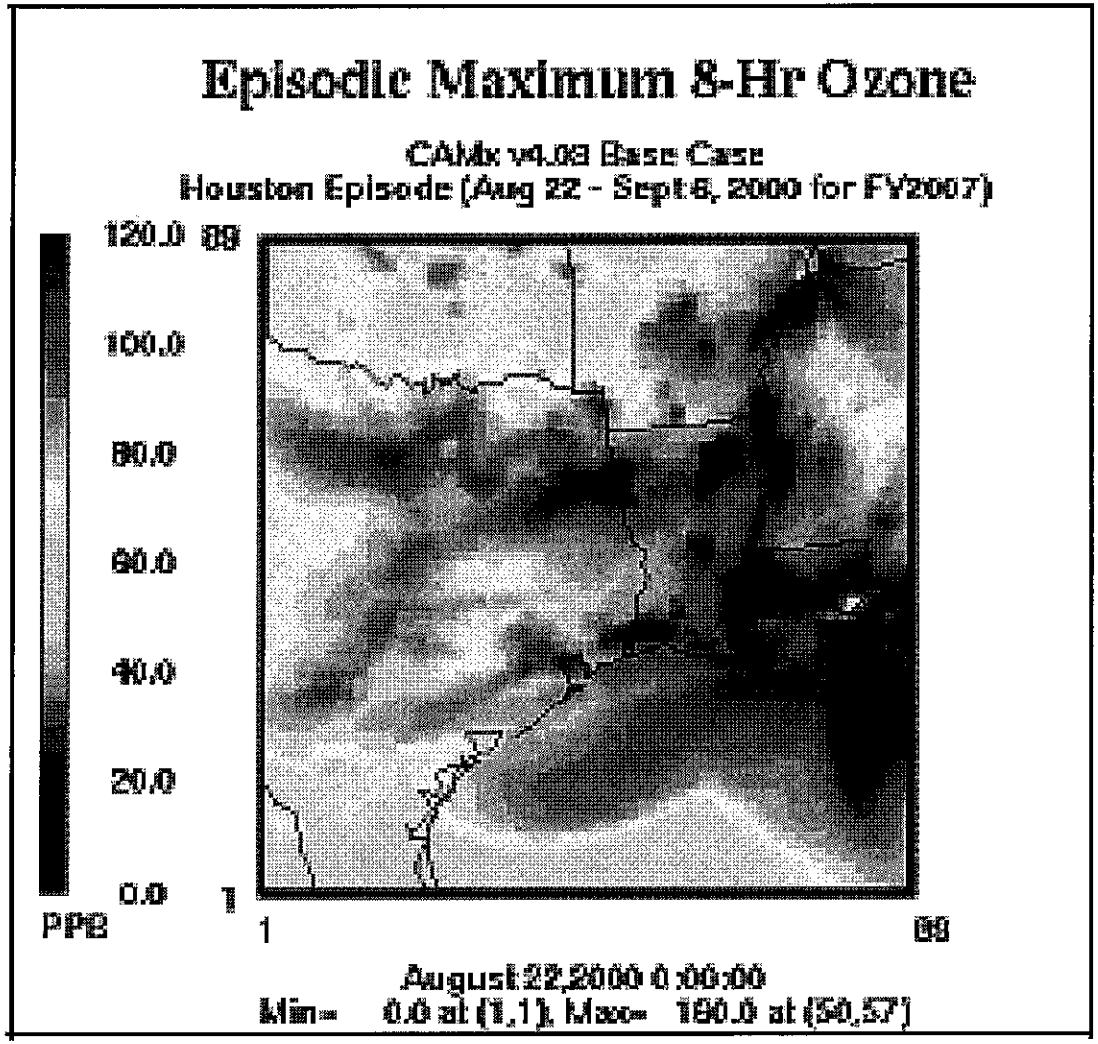


Figure 2-7. Episode maximum 8-hour ozone for the Houston episode.

Rodemacher EGU (Maximum 8-Hr Impacts)

39.0 NOx tpd (14,235 tpy Avg.)

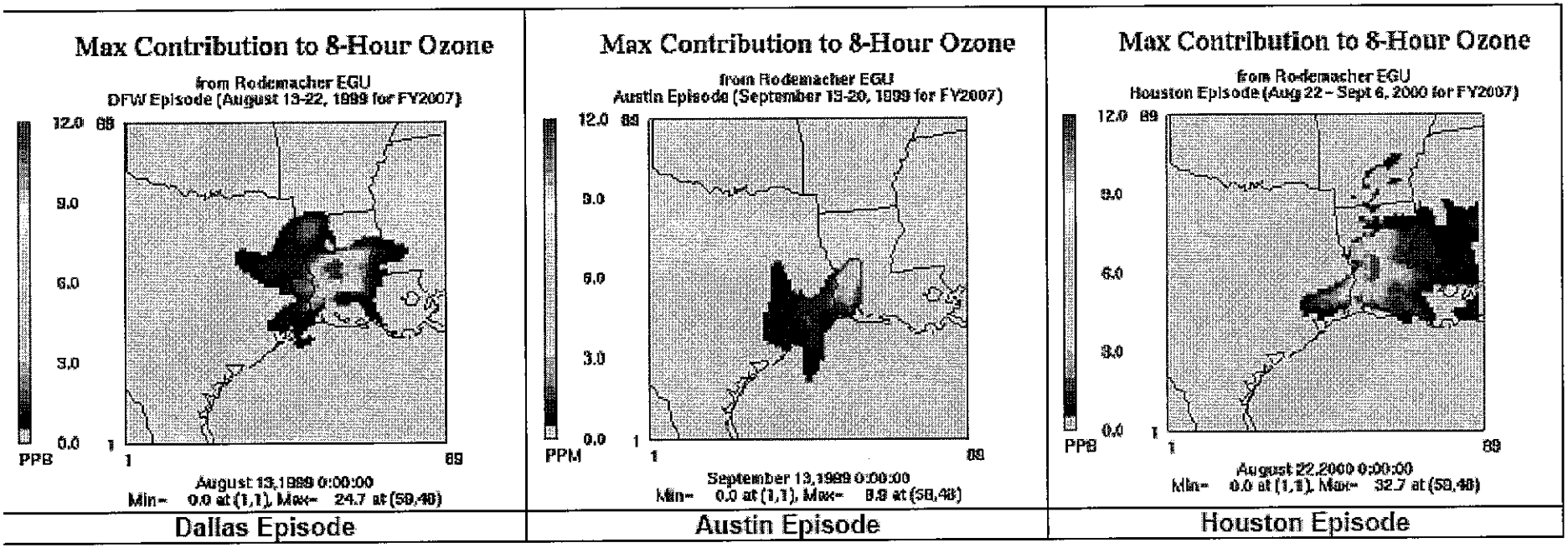


Figure 4-9. Spatial plots of the episodic maximum 8-hour contributions from the Rodemacher EGU in the Dallas, Austin, and Houston episodes using zero-out analysis.

R. S. Nelson EGU (Maximum 8-Hr Impacts)

DFW - 32.8 NOx tpd (11,972 tpy Avg.)

Austin — 7.3 NOx tpd (2664.5 tpy Avg.)

Houston - 32.8 NOx tpd (11,972 tpy Avg.)

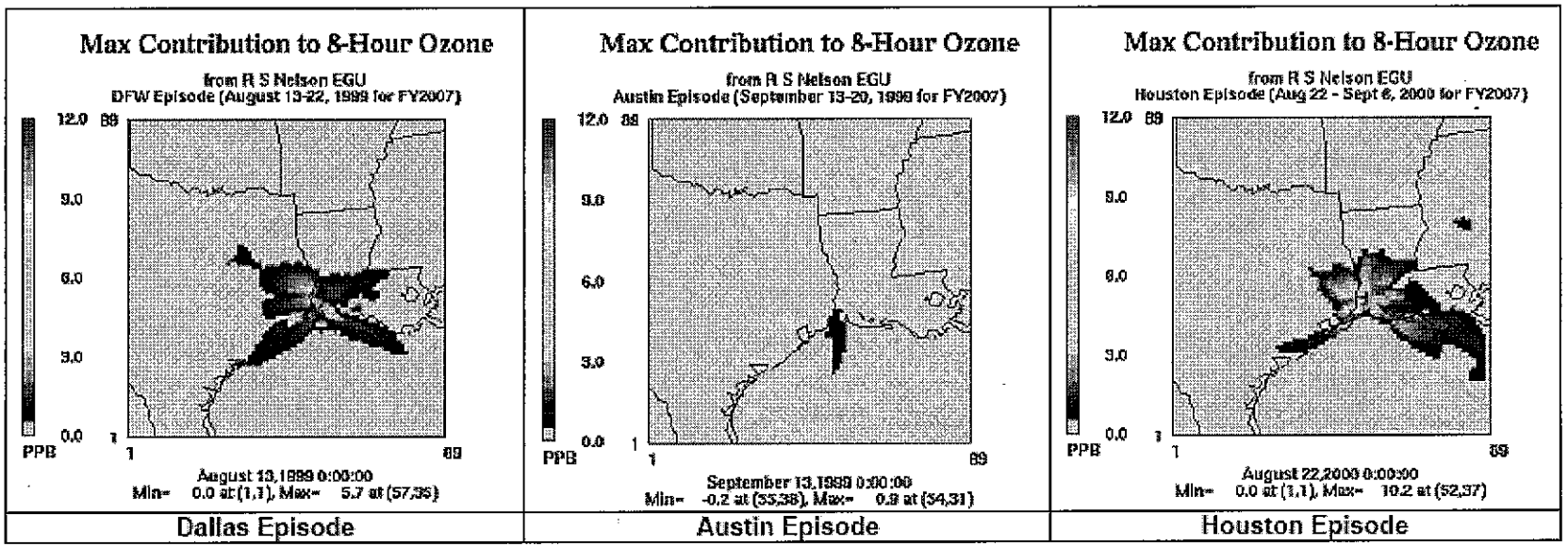


Figure 4-10. Spatial plots of the episodic maximum 8-hour contributions from the R.S. Nelson EGU in the Dallas, Austin, and Houston episodes using zero-out analysis.

APCA/Zero-out metrics

- The magnitude metric is quantified by the highest anthropogenic contribution from the source to receptor pairing in any grid-hour or grid-day exceeding the threshold using APCA or zero-out analysis, respectively.

- APCA measures a second metric for magnitude by calculating the average anthropogenic contribution from all grid-hours over a threshold in a day, and reporting the highest daily average contribution in both ppb and as a percentage of total ozone averaged over grid-hours exceeding the threshold.

- Frequency metrics for both APCA and zero-out analyses count the number of grid-hours and grid-days, respectively, over the threshold, when the anthropogenic contribution is at least 2 ppb.

- The frequency metric is expressed as both a number and percentage of total grid-hours or grid-days over the threshold.

- The metric for relative amount using APCA analysis is an episode average of a state's anthropogenic contribution relative to the total anthropogenic contribution using only grid-hours exceeding the threshold.

Metrics Analysis TX area

Table 4-8. Zero-out metrics from the R.S. Nelson EGU to Texas NAAs for each of the three episodes.

Zero-out Modelling EGU Source R.S. Nelson, Gulf States Utilities Co. 8-hr O3 ≥ 85 ppb						
Episode	Receptor	Avg contribution [ppb]	% total ppb reduced	# grid days reduced >= 2 ppb	% grid days reduced >=2 ppb	Max contribution [ppb]
August 1999 for 2007 (Dallas episode)	Beaumont/PA	1.2	28	0	0	1.9
	Dallas/Ft Worth	0.0	0	0	0	0.1
	Houston/Galveston	0.4	10	0	0	1.3
	San Antonio	0.0	0	0	0	0.0
September 1999 for 2007 (Austin Episode)	Beaumont/PA	0.2	5	0	0	0.6
	Dallas/Ft Worth	0.0	0	0	0	0.0
	Houston/Galveston	0.0	0	0	0	0.2
	San Antonio	0.0	0	0	0	0.0
Aug/Sept 2000 for 2007 (Houston Episode)	Beaumont/PA	1.2	10	98	22	10.5
	Dallas/Ft Worth	0.0	0	0	0	0.0
	Houston/Galveston	0.1	1	1	0	2.0
	San Antonio	0.0	0	0	0	0.1

three episodes.

Zero-out Modeling
EGU Source R.S. Nelson, Gulf States Utilities Co.
8-hr O3 ≥ 75 ppb

Episode	Receptor	Avg contribution [ppb]	% total ppb reduced	# grid days reduced >= 2 ppb	% grid days reduced >=2 ppb	Max contribution [ppb]
August 1999 for 2007 (Dallas episode)	Austin	0.0	0	0	0	0.1
	Beaumont/PA	0.7	9	1	2	2.1
	Corpus Christi	0.0	0	0	0	0.0
	Dallas/Ft Worth	0.0	0	0	0	0.2
	Houston/Galveston	0.3	4	0	0	1.3
	NE Texas	0.0	0	0	0	0.1
	San Antonio	0.0	1	0	0	0.1
	Victoria	0.3	10	0	0	0.3
September 1999 for 2007 (Austin Episode)	Austin	0.0	0	0	0	0.0
	Beaumont/PA	0.2	2	0	0	0.6
	Corpus Christi	0.0	1	0	0	0.1
	Dallas/Ft Worth	0.0	0	0	0	0.0
	Houston/Galveston	0.0	1	0	0	0.2
	NE Texas	0.0	0	0	0	0.0
	San Antonio	0.0	0	0	0	0.0
	Victoria	0.0	2	0	0	0.1
Aug/Sept 2000 for 2007 (Houston Episode)	Austin	0.0	0	0	0	0.0
	Beaumont/PA	0.6	5	122	11	10.5
	Corpus Christi	0.0	0	0	0	0.0
	Dallas/Ft Worth	0.0	0	0	0	0.1
	Houston/Galveston	0.1	1	4	0	2.2
	NE Texas	0.0	0	0	0	0.2
	San Antonio	0.0	0	0	0	0.2
	Victoria	0.2	3	0	0	0.3

Wrap-up and Recommendations

- Looking at only areas around the monitors is not sufficient – need to be evaluating the whole fine grid area. Need to be evaluating impacts at tenths of a ppb (0.1 ppb) in order to maintain high resolution of details.
- Caution on the representativeness of using a limited number of episode days when EPA guidance is to use 3 years of MM5 type data or 5 years NWS. Some episodes may not be appropriate to evaluate ozone impacts due to the winds of the episode and the location of the source. Do not recommend relocating source to a pseudo-site other than potentially as a sensitivity run. If the episode is inappropriate for evaluation purposes, a potential option is to do a detailed statistical analysis of the transport winds during all ozone episodes and evaluating against the location of the proposed source. These issues should be discussed with the EPA Regional Modeling Contact.

Wrap-up and Recommendations

- 8-hr modeling results are being utilized in a relative sense, not an absolute sense.

- Many modeling systems in the last few years seem to have under-prediction biases. Furthermore, the limited number of days likely underestimates the number of days that could test positive for impacts compared to a 3-yr MM5 based analysis. Recommend using a 75 ppb (8-hr) as a cut-off value and not look at impacts in grid cells with source+everyone below 75 ppb. If impacts are over a large area of elevated ozone, higher cutoffs could yield some distribution of the impacts. Other techniques to describe the distribution such as histograms could be used if large areas of impact are predicted to address potential averaging concerns.

Wrap-up and Recommendations

- Due to the many caveats (including # of days), this procedure should only be applied as a positive test, and never as a conclusive negative test that a source would not have an impact. This procedure should not be used for evaluation of the control strategies in attainment demonstration simulations to try and show a control strategy does not have impacts.

- Plume-in-grid (PIG) with chemistry built into the plume should be used when possible, as this is more technically sound.

- Individual Source apportionment techniques and each methods strengths and weaknesses should be understood and discussed with the Regional Modeling Contact in developing a protocol for the analysis.

Wrap-up and Recommendations

- Multiple metrics could be evaluted in addition to the daily average and maximum changes at grid cells above 75 ppb. Other ozone metrics that could be evaluated between the base run and a base run with the source include ozone exposure metrics of: Σ[number of grid cell-hrs above 75 ppb], Σ[grid cell hrs * ozone level above 75 ppb], Σ[grid cell hrs * ozone level above 75 ppb^2], % of ozone reduction, etc.
- The impacts should be evaluated on an individual day basis, and the maximum impact level should be tied to the same period that has a grid-cell value above 75 ppb.
- For this approach to be used in a regulatory framework, a definition of Significant Impact will need to be resolved.
- These approaches are experimental currently and are continuing to be refined and should be treated as such.

What if you don't have regional modeling to use (or the episode is inappropriate)

- Other non-regulatory models exist that could be used:
  - Lagrangian Particle models with chemistry modules (LRPM, etc.)
  - SCIPUFF/SCICHEM, ….

These issues should be discussed with the Regional Modeling Contact as the use of these models would require evaluations in accordance with the GAQM guidance for non-guideline models.

Thanks to Contributors

Steven Smeltzer – Alamo Area Council of Governments
Texas Commission on Environmental Quality and
Houston Area Research Council studies
ENVIRON
Missouri DNR
ODEQ

QUESTIONS?

Desert Rock Energy Co., PSD Appeal 08-03
Conservation Petitioners' Exhibits

EXHIBIT 36

UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

NATURAL RESOURCES DEFENSE COUNCIL, and SIERRA CLUB, Petitioners, v. UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, Respondent.	No. 08-1250 ORAL ARGUMENT NOT YET SCHEDULED

RESPONDENT EPA'S MEMORANDUM IN OPPOSITION TO PETITIONERS' MOTION FOR STAY PENDING REVIEW

INTRODUCTION AND SUMMARY

In this action, Petitioners the Natural Resources Defense Council and Sierra Club ("Petitioners") seek the Court's review, pursuant to section 307(b) of the Clean Air Act ("CAA"), 42 U.S.C. § 7607(b), of an EPA final rule entitled "Implementation of the New Source Review (NSR) Program for Particulate Matter Less Than 2.5 Micrometers (PM2.5)." See 73 Fed. Reg. 28,321 (May 16, 2008) (the "Final Rule" or "Rule"). On August 18, 2008, Petitioners filed a "Motion for Stay Pending Review" ("Mot.") asking that the Court enjoin selected provisions of the Rule while allowing other closely-related provisions to remain in effect.

For example, in one challenged portion of the Rule, EPA provided that certain newly-promulgated regulatory requirements would take effect immediately in all States subject to the federal implementation plan for "Prevention of Significant Deterioration" ("PSD"), but with the caveat that certain previously-submitted permit applications could continue to rely on an earlier EPA policy allowing a different implementation approach (the "PM10 Surrogate Policy"). 73 Fed. Reg. at 28,340/3; id. at 28,349/3 (new regulatory text at 40 C.F.R. § 52.21(i)(1)(xi); see also infra at I.A (background regarding PSD), III.A (explaining

the PM10 Surrogate Policy). Petitioners impermissibly seek to stay the caveat, but not the general regulatory requirement. Mot. at 20. The Rule also triggers a three-year deadline for States that have their own approved PSD plans to revise those plans, while allowing these States to rely on the PM10 Surrogate Policy during the transitional period until the plan revisions are due. 73 Fed. Reg. at 28,340/3-28,341/1. Here, again, Petitioners impermissibly seek a *partial* stay that would leave the deadline in place, but stay the integral provision allowing reliance on the earlier policy prior to the deadline. Mot. at 20.

A stay of a newly-promulgated rule may be granted if the movant establishes a substantial likelihood of success on the merits, and demonstrates that such relief is necessary to avert irreparable harm and that staying the rule will not to lead to a different and greater harm. See infra at II. A stay is not, however, a means to "rewrite" a rule by severing related provisions and allowing some, but not others, to take effect. This Court has long recognized that "[s]everance . . . of a portion of an administrative regulation is improper if there is substantial doubt that the agency would have adopted the severed portion on its own." Davis County Solid Waste Mgmt. v. EPA, 108 F.3d 1454, 1459 (D.C. Cir. 1997) (internal quotation omitted); see also North Carolina v. FERC, 730 F.2d 790, 795-96 (D.C. Cir. 1984) ("Whether an administrative agency's order or regulation is severable . . . depends on the . . . agency's intent."). Accordingly, where challenged and unchallenged portions of a rule are "intertwined," the Court will not sever them by vacating one portion and affirming another. Compare, e.g., Davis County, 108 F.3d at 1459 (provisions that "operate[d] entirely independently of one another" could be severed), with Appalachian Power Co. v. EPA, 208 F.3d 1015, 1028 (D.C. Cir. 2000) (although EPA guidance was challenged only in part, those portions were not severable). Moreover, while the cited cases all concern the form of relief to be granted after a final decision on the

merits, the same approach should be used to determine the scope of a stay pending review, as it arises fundamentally from recognition of the constitutional separation of powers. See National Treasury Employees Union v. Chertoff, 452 F.3d 839, 867 (D.C. Cir. 2006) ("[W]e are obliged to respect the fundamental principle that agency policy is to be made, in the first instance, by the agency itself – not by courts . . . .") (internal quotation omitted); North Carolina, 730 F.3d at 796 (severability is a "jurisdictional" issue).

Thus, with respect to the two sets of closely-related Rule provisions cited above, the proper form of relief – had Petitioners adequately supported their motion – would be to stay those provisions as a whole, thereby restoring the regulatory status quo that existed prior to the rulemaking. However, Petitioners have not requested such relief. Even if they had, a return to the prior status quo would not address Petitioners' alleged "harm." Infra at III.A.1.

Even if the Court accepts the premise that the piecemeal stay Petitioners advocate would be an appropriate form of relief, Petitioners still have failed to meet their heavy burden of demonstrating irreparable harm with respect to either of the above-referenced sets of provisions concerning use of the PM 10 Surrogate Policy, or the remaining Rule provisions at issue in this motion (those addressing "condensable" emissions). Infra at III.A.2-3, III.B. Furthermore, a stay could adversely affect the public interest by further delaying States' revision of the PSD provisions of their SIPs – an outcome that is contrary to Petitioners' own espoused goal in seeking review. Infra at III.C. Finally, Petitioners have also failed to show a sufficient likelihood of success on the merits. Infra at IV. For these reasons, the Court should deny the "extraordinary" relief Petitioners seek. See Cuomo v. United States Nuclear Regulatory Comm'n, 772 F.2d 972, 978 (D.C. Cir. 1985) ("On a motion for stay, it is the movant's obligation to justify the court's exercise of such an extraordinary remedy.").

I. STATUTORY AND REGULATORY BACKGROUND

A. General Background Regarding NAAQS and New Source Review

The CAA, enacted in 1970 and extensively amended in 1977 and 1990, establishes a comprehensive program for controlling and improving the nation's air quality through a combination of state and federal regulation. Under Title I, EPA identifies criteria air pollutants anticipated to endanger the public health and welfare and formulates national ambient air quality standards ("NAAQS"), which establish maximum permissible concentrations of those pollutants in the ambient air. 42 U.S.C. §§ 7408-09; 40 C.F.R. pt. 50.

Within three years of promulgating a new or revised NAAQS, EPA must "designate" areas of the country as either "attainment" (i.e., meeting that NAAQS), "nonattainment," or "unclassifiable." Id. § 7407(d)(1). The CAA sets forth a complex program for implementing NAAQS in these areas, including a preconstruction permitting program, known as "New Source Review" or "NSR," that applies when a stationary source is constructed or modified. See New York v. EPA, 413 F.3d 3, 10 (D.C. Cir. 2005) (per curiam). There are several components of the NSR program, including "Prevention of Significant Deterioration" or "PSD," which applies when a major source is constructed or undergoes a major modification in an area designated "attainment" or "unclassifiable" for any criteria pollutant. 42 U.S.C. § 7475; "Nonattainment NSR," which applies to the construction or major modification of major sources in "nonattainment" areas, id. §§ 7502(c)(5), 7503; and "minor NSR," which applies generally in all areas and to all sources, id. § 7410(a)(2)(C). See 73 Fed. Reg. at 28,323/3.[1]

In general, a PSD permit may not be issued absent a demonstration that construction or operation of the proposed new or modified major source will not

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[1] EPA uses the shorthand term "major source" to refer to the sources defined as being subject to the PSD and Nonattainment NSR programs. Id. at 28,323/3 n.2.

"cause, or contribute to" a violation of any NAAQS, and that the source is subject to the best available control technology ("BACT") "for each pollutant subject to regulation under this chapter emitted from, or which results from, such facility." 42 U.S.C. §§ 7475(a)(3), (4); see generally id. §§ 7475(a)(1)-(8). Nonattainment NSR is more stringent, requiring emissions reductions to offset any increased emissions from the new or modified source, and compliance with technology-based standards based on the lowest achievable emissions rate ("LAER"). Id. §§ 7503(a)(1)(A), (2); see id. § 7501(3) (defining LAER).

B. NAAQS Implementation Through State and Federal Implementation Plans

Congress "delegated to the States primary responsibility for implementing the NAAQS." Louisiana Envtl. Action Network v. EPA, 382 F.3d 575, 578-79 (5th Cir. 2004). States are required to submit to EPA a state implementation plan or "SIP" setting forth the required pollution control measures and other programs the State will use to timely attain the NAAQS. 42 U.S.C. §§ 7410(a), 7502(b). SIPs must meet numerous substantive requirements under 42 U.S.C. § 7410(a)(2). See also id. §§ 7502, 7513 (additional requirements in nonattainment areas). Among other things, a SIP must contain the necessary elements of NSR preconstruction permitting. Id. § 7410(a)(2)(I)-(J).

SIPs are adopted by States after reasonable public notice and a hearing. Id. § 7410(a)(1). EPA then reviews each submitted plan. Id. § 7410(k). If EPA approves the SIP in whole or in part, the approved provisions become federally enforceable. Id. §§ 7413, 7604. If EPA does not approve the SIP or finds it incomplete, the State may be subject to sanctions and, eventually, federally imposed clean air measures. Id. §§ 7410(c), 7509. EPA's SIP approval is subject to review in the appropriate United States Court of Appeals. Id. § 7607(b)(1).

In certain instances, EPA may adopt a federal implementation plan to implement an air pollution control program in areas lacking an approved SIP for that program. For example, 40 C.F.R. § 52.21 sets forth the federal PSD program, which applies in States that have not obtained EPA's approval of a PSD SIP. See 73 Fed. Reg. at 28,340/3. These States are referred to as "delegated States" (a reference to EPA's delegation of federal authority to implement 40 C.F.R. § 52.21, under paragraph (u) of that section), while States with an approved PSD program in their SIPs are known as "SIP-approved States." 73 Fed. Reg. at 28,340/3.

C. Particulate Matter Pollution and the PM 2.5 NAAQS

Particulate matter is one of six criteria air pollutants that were covered by the original NAAQS promulgated in 1971. 36 Fed. Reg. 8186 (Apr. 30, 1971). The term "particulate matter" or "PM" embraces a broad class of discrete, but chemically and physically diverse, particles in the ambient air. There are two generally different modes of PM – fine and coarse. Fine particles derive from combustion by-products that volatilize and quickly condense or form gases (such as sulfur oxides, nitrogen oxides and volatile organic compounds) that react and transform in the atmosphere. Coarse particles are emitted by some of the same industrial sources that emit fine particles, and are also formed by mechanical disruption (crushing, grinding, and abrasion) and suspension of dust. See generally 70 Fed. Reg. 65,984, 65,992 (Nov. 1, 2005) (Proposed Rule preamble).

The particulate matter NAAQS have evolved in tandem with the ongoing development of scientific evidence concerning the public health and welfare risks associated with PM exposure. The original PM NAAQS imposed a limit on the ambient concentration of "Total Suspended Particles" or "TSP," measured by a device that captured most particles smaller than 25-45 micrometers in diameter.

When EPA first revised the PM NAAQS in 1987, it refined the air quality standards to focus on "inhalable" particles. EPA changed the PM indicator from

TSP to "PM10," based on evidence that the risk of adverse health effects associated with particles 10 micrometers or less in diameter, which can penetrate into the trachea, bronchi and deep lungs, was "markedly greater" than that associated with larger particles. 52 Fed. Reg. 24,634, 24,639 (July 1, 1987).

In its second revision of the PM NAAQS, in 1997, EPA determined that it was appropriate to have separate standards for fine particles and coarse particles, based on evidence of adverse health effects associated specifically with exposure to fine particles. See 62 Fed. Reg. 38,652, 38,665-68 (July 18, 1997). EPA adopted the indicator "PM2.5" – referring to particles 2.5 micrometers or less in diameter – while retaining the PM10 indicator for the coarse particle standard.

In reviewing the 1997 PM NAAQS, this Court reached two key conclusions that are relevant in assessing the merits of the PM10 Surrogate Policy. First, although there are differences in the evidence of human health and public welfare impacts associated, respectively, with fine and coarse particles, PM2.5 and PM10 are not separate "criteria pollutants" under the CAA. American Trucking Assn's, Inc. v. EPA, 175 F.3d 1027, 1055 (D.C. Cir. 1999) ("ATA I"), op. on rehearing en banc, 195 F.3d 4 (D.C. Cir.) ("ATA II"), rev'd in part on other grounds, Whitman v. American Trucking Ass'n, 531 U.S. 457 (2001), op. after remand, 283 F.3d 355 (D.C. Cir. 2002) ("ATA III"). Second, PM10 by definition includes all of the emissions encompassed by the PM2.5 indicator. ATA I, 175 F.3d at 1055.[2]

II. STANDARD OF REVIEW

As noted above, a stay of a administrative regulation pending judicial review is an "extraordinary" and generally disfavored remedy, and the movant bears a heavy burden to show that the Court's exercise of such power is warranted. Cuomo, 772 F.2d at 974, 978. The factors considered in determining whether a

[2] The latest PM NAAQS revision (in 2006) is under review in American Farm Bureau Fed'n v. EPA, No. 06-1410 (D.C. Cir.) (argument held Sept. 15, 2008).

stay pending review is warranted are: (1) the likelihood that the movant will prevail on the merits; (2) the likelihood that the movant will be irreparably harmed absent a stay; (3) the prospect that others may be harmed if the Court grants the stay; and (4) the public interest. Id. at 974; see also Fed. R. App. P. 18.

To demonstrate a likelihood of success, Petitioners must show that they are likely to persuade this Court that the Rule is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." 42 U.S.C. § 7607(d)(9)(A). This narrow, deferential standard prohibits a court from substituting its judgment for that of the agency and presumes the validity of agency actions. Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto Ins. Co., 463 U.S. 29, 43-44 (1983).

The "irreparable harm" alleged by the movant "must be both certain and great; it must be actual and not theoretical," and "of such imminence that there is a clear and present need for equitable relief to prevent irreparable harm." Wisconsin Gas Co. v. FERC. 758 F.2d 669, 674 (D.C. Cir. 1985). Petitioners must "substantiate the claim that irreparable injury is 'likely' to occur," and that it "will directly result from the action which [they seek] to enjoin." Id. Failure to meet this test is sufficient grounds, by itself, to deny the motion. Id.; see also, e.g., New Jersey v. EPA, No. 05-1097, 2005 WL 3750257 (D.C. Cir. Aug. 4, 2005) (denying a stay in a case where petitioners later prevailed on the merits).

III. PETITIONERS HAVE NOT SHOWN THAT A STAY IS NECESSARY TO PREVENT IRREPARABLE HARM.

At issue in this motion are the Final Rule's provisions concerning: (1) the continued application of EPA's long-established policy allowing the use of PM10 as a surrogate for PM2.5 for purposes of compliance with certain PSD requirements (the "PM10 Surrogate Policy"); and (2) the extent to which "condensable" particulate emissions must be addressed in complying with these requirements. See Mot. at 4-6; id. at Ex. C (a copy of the PM10 Surrogate Policy

originally established in 1997[3]); 73 Fed. Reg. at 28,340-42 (discussing the application of that policy); id. at 28,334-35 (discussing condensable emissions). As discussed below, the Rule achieves the ultimate end sought by Petitioners – that is, it requires SIP-approved States to adopt revised SIP provisions requiring emissions sources to directly address PM2.5 emissions rather than relying on the use of PM10 as a surrogate, and to address condensable emissions. Petitioners' dispute primarily is with the time EPA is giving States to make this transition, as well as with the "grandfathering" of certain previously-submitted permit applications in delegated States. However, Petitioners have not shown that a stay would prevent "irreparable harm," and in fact a stay of the entire Rule could further delay States' submission of SIP revisions to directly address PM2.5.

A. The PM10 Surrogate Policy

EPA established the PM10 Surrogate Policy shortly after promulgating the PM2.5 NAAQS in 1997. The previous PM NAAQS had only included standards limiting the ambient concentration level of PM10 pollution, and EPA recognized that "significant technical difficulties . . . now exist with respect to PM2.5 monitoring, emissions estimation, and modeling." PM10 Surrogate Policy at 1. EPA concluded that PM10 – which by definition includes all PM2.5 emissions, supra at 7-8[4] – "may properly be used as a surrogate for PM2.5 in meeting [NSR] requirements until these difficulties are resolved." PM10 Surrogate Policy at 1.

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[3] John S. Seitz, Director, Office of Air Quality Planning & Standards, EPA, "Interim Implementation of [NSR] Requirements for PM2.5" (Oct. 23, 1997).

[4] See also Stephen D. Page, Director, "Implementation of [NSR] Requirements in PM-2.5 Nonattainment Areas" (Apr. 5, 2005), at 2 ("applying a PM-10 NSR program . . . will effectively mitigate increases in PM-2.5 . . . because PM-2.5 is a subset of PM-10 emissions") (Opp. Ex. A); 73 Fed. Reg. at 28,341/3 (same).

Petitioners impermissibly seek an order severing and staying portions of the Rule relating to this policy while leaving in place other closely related provisions, which effectively would "rewrite" the Rule and produce a result that the Agency did not intend. The appropriate question, instead, is whether a *complete* stay of these provisions is necessary. Petitioners have not requested such relief, however; and even if they had, they could not meet their burden of justifying it. Infra at A.1.

Furthermore, even if the "severance and stay" sought by Petitioners is a permissible form of relief, they still have not met their burden to show irreparable harm. First, there is substantial evidence that the technologies typically selected as the "best available control technology" ("BACT") for PM10 and other pollutants presently subject to PSD requirements are also the best technologies available to control PM2.5 emissions. Infra at A.2. Second, while EPA's policy *presumes* that PM10 may be used as a surrogate for PM2.5 in permit reviews during the transition period, it does not *mandate* that applicants rely on the presumption, nor does it preclude reevaluation of the presumption on a case-by-case basis in connection with review of individual applications (as two state tribunals have recognized) if the record shows a surrogate analysis is insufficient to meet PM2.5 requirements in case-specific circumstances. Infra at A.3.

1. A complete stay of the pertinent Rule provisions would merely restore the prior status quo, in which the PM Surrogate Policy was applicable nationwide.

At the time the Final Rule was promulgated, EPA had continuously applied the PM10 Surrogate Policy since 1997. The Rule will finally bring an end to the transitional reliance on PM10 as a surrogate for PM2.5 by requiring all States with approved PSD implementation plans to adopt, by 2011, plan revisions that provide for addressing PM 2.5 directly. 73 Fed. Reg. at 28,340/3-41/1. The three-year period for submitting these plan revisions is mandated by pre-existing regulations codified at 40 C.F.R. § 51.166(a)(6)(i). See 73 Fed. Reg. at 28,341/1.

In States that do not have approved PSD SIPs (delegated States), there is no analogous transition period. Rather, the requirement to address PM2.5 directly took effect in these States immediately upon the effective date of the Rule, except for certain sources for which: (a) permit applications relying on the PM10 Surrogate Policy were submitted prior to date of the Rule; and (b) those applications are determined to be complete as submitted. See 73 Fed. Reg. at 28,340/3. Only a small number of permit applications are covered by this "grandfathering" provision. See Declaration of William T. Harnett ¶¶ 6-8 (Opp. Ex. B) (nine permit applications meet the above-listed criteria, and comments concerning use of the PM10 Surrogate Policy were submitted in response to only six of those applications; by comparison, over 1000 total PSD permits have been issued with BACT emissions limits for PM since January 1, 1997).

Thus, the Rule changed the regulatory status quo by: (1) making the PM10 Surrogate Policy inapplicable in a number of States (the delegated States) except as to a limited and finite subset of sources; and (2) setting a final deadline beyond which sources in the remaining States (the SIP-approved States) no longer may rely on the policy. If the entire Rule were stayed, the effect would be to block adoption of regulations necessary to end the Surrogate Policy and thus to make the policy once again applicable to *all* PSD permit applications in *all* States with no date for ending the policy. This would not address Petitioners' alleged "harm."

2. Petitioners fail to demonstrate that a partial stay is necessary to prevent irreparable harm from the adoption of allegedly inferior control technologies as BACT.

Petitioners' argument for selectively staying the Rule provisions continuing the applicability of the Surrogate Policy during the transition period for SIP-approved States, and with respect to the "grandfathered" applications in delegated States, is based on the premise that permit applicants will not be required to employ control technologies that constitute the best available control technology

for PM2.5 emissions. See Mot. at 16 ("Unless this grandfathering exemption is stayed, [facilities] will be allowed to construct without ensuring adequate PM2.5 controls, threatening Petitioners' members with irreparable harm."). Their motion cites the recent Desert Rock Energy Facility permit as typifying this problem. Id. However, Petitioners have not substantiated their claim that EPA's policy will allow sources to be constructed without the best PM2.5 control technologies.

The Desert Rock permit requires that the facility install fabric filters, wet limestone flue gas desulfurization technology (a form of a device commonly called a wet scrubber), low NOx (nitrogen oxide) burners, and selective catalytic reduction technology. See Desert Rock Permit, Condition IX.B.2. (pp. 4-5) (Opp. Ex. C); Ambient Air Quality Impact Report, at pp. 6-19 (Opp. Ex. D). These technologies combined provide a high level of capture for PM2.5.

EPA analysis shows that fabric filters and electrostatic precipitators ("ESPs") reduce PM10 and PM2.5 emissions at very high collection efficiencies – often 96 to 99 percent or more. Stationary Source Control Technique Document for Fine PM, EPA Contract No. 68-D-98-026, at 5.2-26 and 5.3-23 (Oct. 1998) ("CTD") (Opp. Ex. E). The report also shows that fabric filters produced higher collection efficiencies for PM2.5 than for PM10 at ferroalloy electric arc furnaces, thus rebutting Petitioners' allegation (based on the simplistic analogy of placing marbles and flour in a kitchen strainer) that "a fabric filter will always collect large particles more efficiently than small particles." Compare CTD at 5.3-23, with Att. to Taylor Decl. at 10 (Mot. Ex. D). More recent reports confirm that dry ESPs – another technology used to control PM10 emissions – are also highly efficient at reducing solid PM2.5. Mastopietro, Worldwide Pollution Control Association News, Issue 12 (2007) (Opp. Ex. F). EPA's RACT/BACT/LAER Clearinghouse – a database that includes records of past BACT determinations – shows that both fabric filters and ESPs are technologies typically required as BACT to control

PM10 emissions. <http://cfpub.epa.gov/rblc/htm/bl02.cfm)>; see also CTD at 5.2-26 to 5.2-27, 5.3-23 to 5.3-24 (identifying a wide variety of typical industrial applications for these technologies).

Petitioners' expert alleges that wet ESPs would be required as BACT for PM2.5 at a coal-fired power plant, but provides no analysis to support this claim. See Attachment to Taylor Decl. at 7.[5] The documents cited above indicate that fabric filters and ESPs have similar control efficiencies for both PM2.5 and PM10, and thus suggest that either technology might be determined to constitute BACT for a particular type of source after a case-by-case analysis. Thus, Petitioners have not demonstrated that the Desert Rock permit or other permits would necessarily require additional technologies to address solid PM2.5 emissions if the Surrogate Policy was not applicable. See Wisconsin Gas Co., 758 F.2d at 674 (alleged injury must be "certain," not "theoretical").

3. Petitioners also fail to show irreparable harm in connection with modeling of air quality impacts.

Petitioners also cite the J.K. Smith Power Plant permit application in Kentucky (a SIP-approved State) as an example of the harm that purportedly will arise from allowing permit applications to model air quality impacts using PM10 as a surrogate for PM2.5. Mot. at 17. What Petitioners overlook, however, is that even in States that are subject to the surrogate policy during the transition period, the adequacy of using PM10 as a surrogate for PM2.5 is still subject to reevaluation – and, if challenged, to judicial review – on a case-by-case basis whenever evidence is presented indicating that PM 10 may not be a reliable

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[5] Determining BACT is a case-by-case process requiring consideration of cost and environmental and energy impacts. EPA recommends a complex five-step analysis to satisfy BACT criteria. See In Re Prairie State Generating Co., PSD Appeal No. 05-05, slip. op. at 14-18 (EPA Envt'l App. Board 2006) (Opp. Ex. G).

surrogate for PM 2.5 for purposes of a particular permit application. See PM10 Surrogate Policy at 2 (the policy "do[es] not bind State and local governments and the public as a matter of law"); 73 Fed. Reg. at 28,341/2 (reiterating that the policy "recommends" the surrogacy approach); see also In re: Southern Montana Elec. Generation & Transmission Cooperative-Highwood Generating Station Air Quality Permit No. 3423-00, Case No. BER 2007-07 AQ, slip. op. at 44 (Montana Board of Envt'l Review May 30, 2008) (Opp. Ex. H) (concluding that surrogacy approach was not supported by the record and remanding with instructions to conduct PM2.5 BACT analysis); Friends of the Chattahoochee, Inc. v. Couch, No. 2008CV146398, slip op. at 9-12 (Ga. Sup. Ct. June 30, 2008) (same) (Opp. Ex. I); Harnett Decl. ¶¶ 6-7 (comments regarding surrogacy were submitted in response to 6 of the 9 grandfathered permit applications in delegated States). Because case-by-case remedies are available if particular permits lack record justification for the surrogacy approach, a stay of the Rule is not necessary.

B. Condensable Emissions

"Condensable" particulate matter is emitted in a gaseous form and then condenses in the atmosphere into solid or liquid particles. See 70 Fed. Reg. at 65,992/1. Prior to this rulemaking, EPA guidance indicated that States were required to address condensable emissions in establishing emissions limitations for PM 10, but that guidance was not consistently applied either by EPA or by the States. See 70 Fed. Reg. at 66,044/1; 73 Fed. Reg. at 28,335/1.

In this rulemaking, EPA originally proposed to require that all States immediately begin addressing condensable emissions in determining major NSR applicability and control requirements under the PSD program. See 70 Fed. Reg. at 66,044/1. The Agency received a large number of comments both for and against this proposal, many of which raised concerns about the availability of reliable test methods or emissions estimation techniques for condensable

emissions. 73 Fed. Reg. at 28,335/1; Response to Comments ("RTC"), EPA-HQ-OAR-2003-0062-278 (March 2008) at 49-50 (Opp. Ex. J). Recognizing these concerns, EPA decided in the Final Rule to adopt a transition period during which it "will undertake a collaborative testing effort with industry, [the] National Association of Clean Air Agencies (NACAA), and other stakeholders to assess and improve the effectiveness and accuracy of the available or revised test methods." 73 Fed. Reg. at 28,335/2. The Agency will then undertake a rulemaking to codify the improved test methods. Id. at 28,334/2-3. After the transition period – i.e., no later than January 1, 2011, or such earlier date as may be established in the rulemaking codifying test methods, id. – all PSD (as well as all Nonattainment NSR) permits will be required to include limitations on condensable emissions. Id. at 28,334/3. Thus, rather than reversing course as Petitioners allege (Mot. at 5), the Agency adopted the proposed Rule provisions that require States to address condensables but simply delayed the appliction of these provisions until the conclusion of the transition period.

During this transition period, States with SIPs that require condensable emissions to be addressed shall continue to implement those requirements, see 73 Fed. Reg. at 28,349 (52 C.F.R. § 52.21(b)(50)(vi)),[6] while States that have not adopted such requirements will not be required to address condensable emissions until the transition period ends. Essentially, the Final Rule preserves the regulatory status quo during the transition. Therefore, no significant change in regulation of condensable emissions would result from granting a stay.

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[6] "Compliance with emissions limitations for PM, PM 2.5 and PM 10 issued prior to [January 1, 2011 or such earlier date as may be established] shall not be based on condensable [PM] *unless required by the terms and conditions of the permit or the applicable implementation plan.*" Id. (emphasis added).

Moreover, as with the PM10 Surrogate Policy, Petitioners have not shown that permits issued during the transition period necessarily will fail to require the best control technologies for addressing condensable PM emissions. In fact, the Desert Rock permit includes a limitation on PM10 emissions that covers condensable emissions. See Responses to Comments on Proposed PSD Permit for [Desert Rock] at 83 (Opp. Ex. K). Furthermore, technologies used to meet BACT requirements for other pollutants that are often precursors to PM – e.g., SO2 and NOx, see 70 Fed. Reg. at 65,995-96 – can achieve substantial control of condensable emissions. The Desert Rock permit requires low NOx burdners and selective catalytic reduction as BACT for NOx emissions. See Desert Rock Permit, Condition IX.B.2. (pp. 4-5). These technologies frequently have been identified as BACT for NOx at coal-fired generating facilities. Ambient Air Quality Impact Report ("AAQIR") at 13. To comply with BACT for SO2, the Desert Rock permit requires use of a wet scrubber, a technology that is often required as BACT for SO2 and is also recommended to control condensable PM2.5. See Desert Rock Permit, Condition IX.B.2. (pp. 4-5); AAQIR at 18; Mastropietro at 10. Although wet ESPs can also address condensable emissions, they are not necessarily suitable for all sources because they are limited to operating below a specific gas stream temperature. CTD at 5.2-7.[7]

C. A Stay Could Adversely Affect the Public Interest By Delaying Submission of PSD SIP Revisions to Directly Address PM2.5 .

Finally, a stay of the entire Rule would nullify, for the duration of the litigation, the deadline by which States with approved PSD plans would otherwise have to submit revised SIPs addressing PM2.5, which was triggered by EPA's

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[7] This page inadvertently was omitted from the separately bound volume of Exhibits to this Opposition, and accordingly is attached directly to this Motion as "Supplement to Exhibit E."

revision of its PM implementation rule. See 40 C.F.R. 51.166(a)(6)(i) ("Any State required to revise its [SIP] by reason of an amendment to this section . . . shall adopt and submit such plan revision to [EPA] for approval no later than three years after such amendment is published in the Federal Register."). Granting a stay will not lead to States submitting those SIP revisions any sooner, and could delay the submissions beyond the existing deadline. Since Petitioners argue that the transition already is too long, this further shows that a stay is not appropriate.

IV. PETITIONERS HAVE NOT SHOWN A LIKELIHOOD OF SUCCESS ON THE MERITS.

Petitioners also have not carried their burden to "make out a substantial case on the merits." Cuomo, 772 F.2d at 974 (internal quotation omitted). To begin with, because the adequacy of using PM10 as a surrogate for PM2.5 is subject to case-by-case evaluation in the review of individual permits, challenges related to the PM 10 Surrogate Policy (Mot. at 10-13) are unripe. Cf. New York v. EPA, 413 F.3d at 43-44 (claim that EPA's rule would cause "backsliding" could not be evaluated until an adequate factual record was developed, "as might occur in the course of a state's quest for [SIP] approval"); Citizens for a Better Env't v. Costle, 515 F. Supp. 264, 270 (N.D. Ill. 1981) (challenge to an EPA control technique guideline for determining "reasonably available control technology" was unripe).

Moreover, the Surrogate Policy does not "waive" or "exempt" sources from complying with statutory requirements (Mot. at 11-12); rather, it presumes that assessing control technologies and modeling air quality impacts for PM10 is an effective means of fulfilling those statutory requirements for PM2.5 as well PM 10, during the transition period while EPA works to develop better PM2.5 monitoring data and modeling techniques. The Seventh Circuit has upheld the use of a surrogate ozone analysis to demonstrate compliance with PSD permitting critiera during the transition to implementation of a newer air quality standard.

Sierra Club v. EPA, 499 F.3d 653, 658 (7th Cir. 2007) ("[P]ending adoption of a compliance measure tailored to the new standard, the agency was entitled to use the measure used for the older standard as a stopgap to demonstrate that if the plant complied with that measure it would be unlikely to violate the new standard."). This Court has likewise upheld surrogate approaches for regulating air pollutants that were based on a similar rationale to that articulated here. Compare 73 Fed. Reg. at 28,341/3 ("PM 10 will act as an adequate surrogate for PM 2.5 in most respects . . . because PM 2.5 is a subset of PM 10"), with National Lime Ass'n v. EPA, 233 F.3d 625, 637-39 (D.C. Cir. 2001) (as amended) (EPA reasonably used PM as a surrogate for hazardous air pollutant ("HAP") metals in establishing national emission standards for portland cement facilities, where the record showed that PM generated by these facilities invariably contains HAP metals), and Sierra Club v. EPA, 353 F.3d 976, 984-85 (D.C. Cir. 2004) (same).

The three-year period for SIP-approved States to submit revised PSD SIPs was not adopted "without notice and public comment" (Mot. at 4, 6-7). Rather, it is mandated by a pre-existing regulation. See 40 C.F.R. § 51.166(a)(6)(i); 73 Fed. Reg. at 28,341/1 (citing same). Although EPA had proposed to modify that time period and establish an earlier deadline for submitting revised PSD provisions, it committed no procedural error by reverting to the existing rule after it became impossible as a practical matter for States to meet the proposed submission deadline (which had already passed by the time EPA promulgated the Final Rule).

Furthermore, none of the statutory provisions and judicial decisions Petitioners cite (Mot. at 7-9) supports their claim that either the three-year transition or the "grandfathering" provision applicable to certain permit applications in delegated States is unlawful. First, the Rule does not "waive" compliance with CAA section 165(a)(3)'s requirement that a permit applicant demonstrate that the source will not cause or contribute to a violation of "any

NAAQS." 42 U.S.C. § 7475(a)(3). Instead, the Rule allows sources in SIP-approved States, along with a limited number of sources in delegated States, to continue to *comply* with section 165(a)(3) by "show[ing] that PM10 emissions will not cause a violation of the PM10 NAAQS *as a surrogate for* demonstrating compliance with the PM2.5 NAAQS." 73 Fed. Reg. at 28,341/2 (emphasis added). Second, Sierra Club v. EPA, 294 F.3d 155 (D.C. Cir. 2002), is not on point; that decision held that EPA lacks authority to extend an area's attainment deadline, id. at 160-62, which this Rule does not purport to do. 42 U.S.C. § 7502(b) also is inapplicable, as it concerns submission of nonattainment area SIPs, whereas the PM10 Surrogate Policy only addresses PSD SIPs submitted by "attainment" areas. Finally, the deadline in section 110(a)(1) does not apply to the SIP revisions submitted in response to this Rule. 42 U.S.C. § 7410(a)(1). States were required to make initial "infrastructure" SIP submissions for PM2.5 by July 2000 to meet this statutory deadline, and EPA agreed in a consent decree to make findings of failure by October 5, 2008 for any State that has still failed to make the initial submission. See 70 Fed. Reg. at 66,043-44 n.104; 73 Fed. Reg. at 28,341 n.16; see also Early Planning Guidance[8] at 5-8 (Opp. Ex. L); Consent Decree in Environmental Defense v. Johnson, Case No. 1:05-cv-00493 RBW (D.D.C. June 15, 2005) (Opp. Ex. M). Thus, the Rule under review does not concern the initial SIP submission necessary to meet the section 110(a)(2) requirements for the PM2.5 NAAQS by the statutory deadline.

The Final Rule provisions on condensable emissions also were not adopted without notice as Petitioners claim. To the extent the Final Rule differs from the proposal, that is in direct response to the comments EPA received questioning

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[8] Sally L. Shaver, Dir., Air Quality Strategies & Standards Div., "Re-Issue of the Early Planning Guidance for the Revised Ozone and [PM] [NAAQS]" (June 16, 1998).

whether available test methods and modeling techniques were reliable enough to support a requirement that all States immediately begin addressing condensable emissions, as had been proposed. See 73 Fed. Reg. at 28,335 (discussing comments and EPA's response); RTC at 48-52 (same); Northeast Maryland Waste Disposal Auth. v. EPA, 358 F.3d 936, 951 (D.C. Cir. 2004) ("Agencies are free – indeed, they are encouraged – to modify proposed rules as a result of the comments . . . ."); New York v. EPA, 413 F.3d at 32 (same). The three-year period for addressing condensable emissions was reasonable given: (a) the above-noted concerns regarding available test methods and modeling; (b) EPA's conclusion that addressing only filterable PM2.5 and PM precursors likely would provide adequate protection of the PM2.5 NAAQS; (c) its finding that technologies selected as BACT or LAER for PM2.5 and PM10 can control condensables; and (d) its recognition that States with SIP provisions requiring condensables to be addressed could continue to enforce those provisions during the transition, and could do so earlier than 2011 at their discretion. See generally 73 Fed. Reg. at 28,334-35; RTC at 50-52; see also 25 Pa. Code §§ 127.81-127.83 (Pennsylvania has adopted the final PSD requirements for PM2.5 without a transition period).[9]

CONCLUSION

For the foregoing reasons, the Court should deny Petitioners' motion.

Respectfully submitted,

RONALD J. TENPAS
Assistant Attorney General
Environment and Natural Resources Div.

Dated: September 29, 2008 By: _____
BRIAN H. LYNK, D.C. Bar No. 459525

[9] EPA has provided only a partial summary of its merits arguments here. It will address the issues more fully in its Respondent's brief.

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SUPPLEMENT TO EXHIBIT E
(all other exhibits are separately bound)

Stationary Source Control Techniques Document for Fine Particulate Matter

EPA CONTRACT NO. 68-D-98-026
WORK ASSIGNMENT NO. 0-08

Prepared for:

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stream conditions, temperatures, and pressures. However, once an ESP is designed and installed, changes in operating conditions are likely to degrade performance.[1,2,3]

5.2.3.2 Wet ESPs

The basic components of a wet ESP are the same as those of a dry ESP with the exception that a wet ESP requires a water spray system rather than a system of rappers. Because the dust is removed from a wet ESP in the form of a slurry, hoppers are typically replaced with a drainage system. Wet ESPs have several advantages over dry ESPs. They can adsorb gases, cause some pollutants to condense, are easily integrated with scrubbers, and eliminate reentrainment of captured particles. Wet ESPs are not limited by the resistivity of particles since the humidity in a wet ESP lowers the resistivity of normally high resistivity particles.[2,4]

Previously, the use of wet ESPs was restricted to a few specialized applications. As higher efficiencies have currently become more desirable, wet ESP applications have been increasing. Wet ESPs are limited to operating at stream temperatures under approximately 170°F. In a wet ESP, collected particulate is washed from the collection electrodes with water or another suitable liquid. Some ESP applications require that liquid is sprayed continuously into the gas stream; in other cases, the liquid may be sprayed intermittently. Since the liquid spray saturates the gas stream in a wet ESP, it also provides gas cooling and conditioning. The liquid droplets in the gas stream are collected along with particles and provide another means of rinsing the collection electrodes. Some ESP designs establish a thin film of liquid which continuously rinses the collection electrodes.[2,3]

5.2.3.3 Wire-Plate ESPs

Wire-plate ESPs are by far the most common design of an ESP. In a wire-plate ESP, a series of wires are suspended from a frame at the top of the unit. The wires are usually weighted at the bottom to keep them straight. In some designs, a frame is also provided at the bottom of the wires to maintain their spacing. The wires, arranged in rows, act as discharge electrodes and are centered between large parallel plates, which act as collection electrodes. The flow areas between the plates of wire-plate ESPs are called ducts. Duct heights are typically 20 to 45 feet.[2] A typical wire-plate ESP is shown in Figure 5.2-2.[2]

Wire-plate ESPs can be designed for wet or dry cleaning. Most large wire-plate ESPs, which are constructed on-site, are dry. Wet wire-plate ESPs are more common among smaller units that are pre-assembled and packaged for delivery to the site.[4] In a wet wire-plate ESP, the wash system is located above the electrodes.[2]

5.2.3.4 Wire-Pipe ESPs

CERTIFICATE OF SERVICE

I, the undersigned, hereby certify that on September 29, 2008, I caused a true and correct copy of the foregoing Respondent EPA's Memorandum in Opposition to Petitioners' Motion for Stay Pending Review to be sent by first class mail, postage prepaid, and by electronic transmission to the following counsel, and that on the same date I caused a separately bound, true and correct copy of Exhibits A through M to the Memorandum to be sent by overnight delivery to the same counsel:

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Desert Rock Energy Co., PSD Appeal 08-03
Conservation Petitioners' Exhibits

EXHIBIT 37

Department of the Interior
Preliminary Technical Comments on the Desert Rock
Prevention of Significant Deterioration (PSD) Permit Application
September 2006

Background

Sithe Global Power LLC (Sithe) proposes to construct and operate its Desert Rock Energy Project consisting of two, new, 750 MW, supercritical, pulverized coal (PC) boilers near the current Four Corners power plant on the Navajo Reservation near Farmington, New Mexico. Combined annual average sulfur dioxide (SO_2) emissions from the two boilers would be controlled to 3,315 tons per year (tpy) by a Wet Limestone Scrubber; short-term emission limits would be set at 1,224 lb/hr (equivalent to 0.090 lb/mmBtu) on a 3-hour average and 0.060 lb/mmBtu on a 24-hour average. Sithe would control nitrogen oxide (NO_x) emissions to 3,315 tpy (816 lb/hr on a 3-hour average and 0.060 lb/mmBtu on a 24-hour average) by Low-NO_x Burners and Selective Catalytic Reduction (SCR). Total particulate matter (PM_{10}) would be limited to 0.020 lb/mmBtu and 1,105 tpy by a Fabric Filter (baghouse). The project is also subject to PSD review for sulfuric acid mist (221 tpy), lead (11.1 tpy) and hydrogen fluoride (13.3 tpy); no additional controls are proposed for these pollutants. Emissions from other sources at the plant (e.g., auxiliary boilers, emergency backup generators) would be relatively insignificant.

Mercury emissions are not regulated under the PSD program. Therefore, the EPA did not address mercury in its draft permit or staff analysis for the Desert Rock project. While Sithe estimates that annual mercury emissions would be 114 lb, EPA's Maximum Achievable Control Technology (MACT) standard would allow up to 263 lb to be emitted annually.

There are 27 NPS units, which accommodated over 13 million visitors in 2005, within 300 km of the proposed plant site. Nine of those units are mandatory Class I areas. (See attached map.) The Desert Rock project would significantly impact Air Quality Related Values (AQRVs) in 24 of those units (e.g., visibility impacts exceeded 5% change in extinction threshold), including eight Class I areas. (See attached Table 1--Desert Rock Scorecard.)

Descriptions of AQRVs in those eight impacted Class I areas were extracted from the National Park Service's (NPS) Air Resources Information System (ARIS) website:

http://www2.nature.nps.gov/air/Permits/ARIS/index.cfm

and are included in attached Appendix A, along with information on air quality in the Southern Colorado Plateau.

Pollutants of concern for our parks in the Four Corners area include ozone, nitrogen and sulfur compounds, mercury, and visibility-reducing compounds.

Visibility is a very important Air Quality Related Value (AQRV) in many national parks. For example, the purposes of Mesa Verde National Park include the protection of Ancestral Puebloan cultural features and landscapes as well as the natural features and values, wilderness characteristics, and the scenery. Mesa Verde also is a Class I area and, therefore, requires the highest level of protection from visibility impairment and acid deposition.

Visibility protection has special importance at Mesa Verde from a historical context. Clear vistas are part of the Ancestral Puebloan story as described in the Air Quality Related Values identified for the parks. The park's early inhabitants were highly dependent on visual contact for long-distance communication. Ideally, Mesa Verde's isolation would shield it from excessive air and light pollution, sustaining the naturally long-range vistas dominated by natural landmarks by day, the heavens by night, and a strong feeling of immense space largely unchanged since pre-Columbian times. Having several new major industrial developments in recent years spring up near this ancient culture's center does not help the park achieve its mission.

Preserving visibility is an important means of enhancing visitor understanding of Ancestral Puebloan culture. Air pollution forms a tangible barrier to experiencing the past, visually and emotionally. Some years ago the visiting public at Mesa Verde ranked air quality as one of the park's most important features. Continued degradation of the park's visual quality would greatly diminish the experience of park visitors.

The Grand Canyon is one of the most recognized landscapes on Earth. Colorful rock eroded into a spectacular array of buttes and spires stretch to the horizon. Clean, clear air is essential to appreciate the Canyon's beauty. Vistas within the Canyon can stretch for 50 miles, and landmarks over 100 miles away can be seen on the best days. The Canyon's clearest days tend to follow major winter storms from the northwest. However, the Canyon's long views compound the impact of even tiny increments of haze. Especially during the summer, air from urban and industrial areas to the south and west blows into the Park. Colors dull, textures flatten, and distant peaks disappear behind a veil of regional haze.

Well over four million people visit Grand Canyon National Park each year, generating over $687 million for the regional economy, and maintaining about 12,000 jobs. Visitors who arrive on the clearest days are rewarded with stunning panoramas, but most must settle for a lesser view through hazy air. Recent trend analysis of visibility at Grand Canyon shows that the best days are improving slightly, but in spite of decades of effort to clear the air, the haziest days show no improvement. There is strong public support for keeping the Canyon clear. Visitors identify protecting Grand Canyon's air quality as "Extremely Important," with a score of 4.7 out of 5 in a recent survey.

As at Mesa Verde and Grand Canyon, visibility is typically the most sensitive AQRV in these parks, and protection of visibility was often cited in their establishing legislation (see attached Appendix B).

Visibility Trends

Data have been collected at many sites in the Four Corners area and compiled by the Western Regional Air Partnership (WRAP) as it develops strategies for improving western air quality. Examples of visibility analyses compiled by WRAP are attached as Figures 1.a. – 1.c. If one examines Figure 1.a. that depicts "WRAP Total Extinction Trends," it can be seen that we have a mixed situation in the Four Corners area. At some monitoring sites, there has been a significant improvement in visibility (reduction in extinction) during the 1997 – 2004 period. (For example, Bandelier shows a strong improvement—the large blue down-pointing triangle.) On the other hand, Mesa Verde has experienced a decline in visibility, as illustrated by the large, up-pointing red triangle. Other sites show lesser changes (smaller triangles), or no significant change at all.

In Figure 1.b. we see that extinction due to ammonium sulfate, the primary product of emissions of sulfur dioxide and ammonia appears to be decreasing, or holding steady, throughout the WRAP region—that means that visibility should be improving, provided that nothing else is changing.

However, one factor that does appear in Figure 1.c. to be changing for the worse across the WRAP region is extinction due to ammonium nitrate, the primary product of emissions of nitrogen oxides and ammonia. At both Mesa Verde and Petrified Forest we see significant increases in nitrate extinction, probably due to increases in emissions from oil and gas development.

Best Available Control Technology (BACT) Analysis

One of the requirements for issuing a Prevention of Significant Deterioration (PSD) permit is that the applicant must demonstrate that it will use BACT. The Clean Air Act defines BACT as:

> "an emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under the Clean Air Act which would be emitted from any proposed major stationary source or major modification which the Administrator, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant..."

SO_2: Sithe has proposed wet limestone scrubbing (WLS), which represents a top-rank SO_2 control technology at 94% - 96% control efficiency. EPA has proposed a 3-hour limit equivalent to 0.09 lb/mmBtu, and a 24-hour limit of 0.06 lb/mmBtu. While these limits are the lowest we have seen for a PC boiler using conventional WLS technology, we are now aware that Peabody Energy has proposed use of an innovative technology at its 300 MW Mustang PC boiler project which would achieve 99.4% SO_2 control and

result in an SO_2 emission rate one-third of that proposed for Desert Rock. We recommend that Sithe and the EPA investigate this innovative technology to reduce SO_2 emissions from the Desert Rock facility even further.

NOx: EPA has proposed a 3-hour limit equivalent to 0.06 lb/mmBtu. Because this is the lowest limit we have seen proposed for a PC boiler, we agree that this represents BACT for a PC boiler burning the proposed coal.

PM: EPA has proposed a 24-hour limit of 0.020 lb total PM_{10}/mmBtu which, considering the uncertainty in predicting condensable PM_{10} emissions, is a relatively low total PM_{10} limit for a PC boiler. However, we suggest that Permitting Authorities might be able to reduce this uncertainty by applying stringent limits to filterable PM_{10}, which is the only PM_{10} component controlled directly, and allowing less stringent limits on total PM_{10} to reflect that uncertainty. For example, EPA may wish to consider the approach recently taken by the Pennsylvania Department of Environmental Protection in limiting the River Hill gob-burning boiler to 0.010 lb filterable PM_{10}/mmBtu and 0.050 lb total PM_{10}/mmBtu. We also acknowledge and commend EPA for requiring Sithe to install and operate a Continuous Emissions Monitor for PM.

Hazardous Air Pollutants--Mercury

In its permit application, Sithe indicated that it expects the controls proposed for NO_x and SO_2 to be adequate to achieve 80% mercury reduction, which would yield lower mercury emission rates than required by EPA's MACT standard. However, we are now aware of several applications/permits for coal-using power plants that will use Powdered Activated Carbon (PAC) to remove 90% of potential mercury emissions. Use of PAC to achieve 90% mercury control would halve the anticipated emissions, and represent a 78% reduction from EPA's allowable limit. Sithe has agreed to raise the mercury control efficiency to a minimum of 90% provided that the incremental cost effectiveness of the additional controls (such as PAC) does not exceed $13,000/lb of incremental mercury removed.

Clean Coal Technologies

A fundamental principle of pollution control is that it is generally desirable to avoid creating the pollution in the first place. We believe that a technological solution is now available that would allow use of coal to generate electricity without the large quantities of emissions associated with pulverized coal-fired boilers. The Integrated Gasification Combined Cycle (IGCC) process has now been demonstrated by Tampa (FL) Electric at its Polk Generating Station to be clean, reliable, and economical.[1] Our Air Resources Division office in Denver is currently reviewing six proposed IGCC facilities. If the Desert Rock facility were to produce 1500 MW using the same IGCC technology as the

[1] At a recent workshop in Denver on clean coal technology, a representative of Tampa Electric related that the Polk IGCC is now its most reliable unit in its system and is dispatched first because it is also the most economical.

Cash Creek project proposed in Kentucky, emissions would drop to the levels shown in Figure 2.

While IGCC is currently 10% to 20% more expensive to build than an equivalent PC facility, energy industry experts contend that that cost disadvantage will be partially or entirely offset when national legislation requires carbon dioxide capture and sequestration. While switching to IGCC would not reduce the millions of tons of CO_2 produced by the Desert Rock facility every year, those millions of tons would be concentrated in the IGCC exhaust by a factor of 10 to 100 times smaller than the exhaust from a PC, thus reducing the inevitable cost of capture by one – two orders of magnitude.

Furthermore, energy industry leaders such as General Electric have recently acquired the capability to build a complete 600 MW IGCC facility, for the first time bringing all the components of IGCC together in an integrated and cost-effective package. GE expects this approach alone will reduce the IGCC capital cost "penalty" to no more than 10%.

While it is true that no IGCC has yet been successfully demonstrated using western sub-bituminous coal or at high altitude, neither has a reason been demonstrated that these issues are insurmountable. We are currently aware of two western IGCC projects (Bowie in AZ and Xcel in CO) that are moving toward reality, as well as western states (CO, WY, and MT) that have adopted policies to promote western IGCC projects. And, IGGC has one more additional and very significant benefit in the arid west—it uses far less water than a PC boiler.

All things considered, we believe it is time for new power generators to take a serious look at the sorts of "Clean Coal Technologies" being promoted by our administration as it seeks to relieve our dependence upon foreign energy sources while protecting our environment. We also believe that IGCC is a leading candidate for that role, and should be considered by Sithe and or the Navajo Nation at this site.

Sithe's Air Quality/AQRV Modeling Analysis

Sithe performed the air quality modeling analysis with the EPA guideline long-range CALPUFF modeling system, and followed the recommendations of the Federal Land Managers' Air Quality Related Values Work Group Report (FLAG, 2000). The modeling used three years of meteorological data (2001-2003) which included 2001 Mesoscale Model (MM5) 36 kilometer (km) resolution data, 2002 MM5 12 km data and 2003 Rapid Update Cycle (RUC) 20 km data. Sithe applied these data in two different modeling domains. The large domain covered an area of 680 km x 552 km (E-W/N-S) and encompassed all 15 Class I areas in the region. The CALMET grid resolution for this domain was at four km. An additional sub-grid of 125 km x 190 km (E-W/N-S) covering only Mesa Verde NP was run with a 500 meter CALMET grid. Sithe performed additional finer-scale modeling to address visibility impacts for several short time periods with four km and 12 km MM5 data and CALMET with a three km grid for the periods of January 3–30 2001, January 1-16 2003, and April 4 –May 1, 2004. The four km MM5 sub-grid covered an area 492 km x 372 km and extended as far westward as the main

large domain and was specially designed to assess impacts at Grand Canyon NP, and also was used to assess the impact for the special time periods at Canyonlands NP, Capitol Reef NP, Mesa Verde NP and the USFS Weminuche WA. An additional fine-scale modeling analysis for the three special time periods listed above was modeled with 12 km MM5 for the other ten Class I areas in the region.

Receptors for all 15 Class I areas were obtained from the database of fixed nationwide receptors that was created by the NPS. Five upper air stations were used in all three years. The number for surface stations ranged between 38 and 44 for the three years, and the number of precipitation stations ranged between 85 and 101 for the three years. Sithe apparently modeled emission rates contained in Table 2-2 of its January 2006 report. These emission rates are consistent with the draft permit, and PM was speciated in accordance with NPS guidance.

Single-Source Modeling Results: The Class I modeling results are summarized in the attached Table 1—Desert Rock Scorecard, and discussed below.

Class I Increment Consumption: Desert Rock's emissions alone would not exceed any increment. However, the impacts of the SO_2 emissions are sufficient to trigger a cumulative increment analysis at Bandelier, Canyonlands, Mesa Verde, and Petrified Forest. In that Minor Source Baseline Dates have been triggered for SO_2 at Bandelier (5/14/81), Canyonlands (4/01/90), Mesa Verde (10/77), and Petrified Forest (10/31/77), according to EPA's New Source Review Workshop Manual (NSRWM):

> Emissions increases that consume a portion of the applicable increment are, in general, all those not accounted for in the baseline concentration and specifically include:
>
> - *actual emissions increases occurring after the **major source baseline date**, which are associated with physical changes or changes in the method of operation (i.e., construction) at a major stationary source*; and
> - *actual emissions increases at any stationary source, area source, or mobile source occurring after the **minor source baseline date**.*

The results of the cumulative analyses provided by Sithe showed no exceedances of increments, but Sithe included emission reductions at Four Corners and San Juan power plants that may not be valid.[2] Sithe also modeled emission rates at other increment-affecting sources that were too low,[3] did not properly consider the respective Minor

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[2] For example, although the Minor Source Baseline Date for Mesa Verde is 10/77, in estimating the amount of emission reductions to be credited toward increment expansion, EPA used data from 1985 instead of a time period (e.g., 1980) more representative of emissions at the time of the Minor Source Baseline Date. As a consequence, emission reductions at San Juan Generating Station were overestimated, since 1985 emissions were 42,375 tons versus 1980 emissions of 4,664 tons.

[3] There are no regulatory bases for excluding the highest 1% of emissions as was done by Sithe with the concurrence of EPA. On the contrary, section C.IV.D.4 of the NSRWM directs:

> For each short-term averaging period (24 hours and less), the change in the actual ***emissions rate*** for the particular averaging period is calculated as the difference between:
>
> - *the current maximum actual **emissions rate**, and*
> - *the maximum actual **emissions rate** as of the minor source baseline date (or major source baseline date for applicable major stationary sources undergoing construction before the minor source baseline date).*

Source Baseline Dates for each Class I area, and omitted other sources that are likely to have affected increment.[4] While our concerns regarding the adequacy of the cumulative increment analysis have been documented in prior correspondence with EPA, they have not been completely addressed.

Visibility analysis:

Because of the importance of the Visibility AQRV, extensive analyses of the impacts of the Desert Rock project upon visibility were conducted.

- Sithe's visibility modeling using the FLAG approach predicts that Desert Rock could exceed 5% change in extinction at **Arches**, Aztec Ruins, **Bandelier, Black Canyon, Canyonlands, Capitol Reef**, Chaco Culture, Currecanti, El Malpais, Glen Canyon, **Grand Canyon**, Hovenweep, Hubbell Trading Post, **Mesa Verde, Petrified Forest**, Yucca House, and Zuni-Cibola.[5] Visibility modeling also predicts that there would be a greater than 10% change in extinction at the **Canyonlands, Capitol Reef, Mesa Verde and Petrified Forest Class I areas,** as well as the Canyon de Chelly, Chaco Culture, El Malpais, Glen Canyon, Hovenweep, Navajo, Yucca House, and Zuni-Cibola Class II areas. Summing the number of days over 10% change in extinction across all Class I areas affected, there are eight days in three years in which the 10% change in extinction threshold could be exceeded at NPS Class I areas due to this project. Mesa Verde is the most-impacted single park, with four days in which the 10% change in extinction threshold could be exceeded.

  Sithe then discounted the days with impacts above the 5% and 10% thresholds by examining individual hours of those days to check for times when visibility was naturally obscured by rainy or cloudy weather. Sithe concluded that excluding those problematic hours from the averages brings Desert Rock's impacts under the 5% level, so that its visibility impacts are no longer a problem. Such an analysis is unacceptable for a first-level CALPUFF modeling analysis.

  The CALPUFF first-level screening technique is primarily designed to identify those sources that are unlikely to significantly affect visibility and warrant no further analysis, and those that **may** adversely impact visibility and warrant further scrutiny. Visibility is experienced instantaneously, not on a 24-hour average basis. The 24-hour average visibility calculation is acceptable because of a number of simplifying assumptions in the prescribed technique. Modifying those simplifying assumptions

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In each case, the maximum rate is the highest occurrence for that averaging period during the previous 2 years of operation.

[4] For example, although the Minor Source Baseline Date for Petrified Forest is 10/31/77, in estimating the amount of emission increases to be credited toward increment consumption, Sithe only included emissions from Cholla Unit #2 and Springerville. However, if one compares the emissions from the three major power plants within 100 km of Petrified Forest, we see that emissions at all three have increased substantially since 1980: Cholla from 9,986 tons to 22,027 tons in 2005; Coronado from 2,024 tons in 1980 to 10,476 tons in 2005; and Springerville from 0 tons in 1980 to 9,880 tons in 2005. Considering that, even with the omissions noted, 74% of the 24-hour increment at Petrified Forest is consumed, Sithe should model the increases at the other Cholla units, plus Coronado.

[5] Parks in bold type are mandatory Class I areas.

negates the acceptability of using a 24-hour average. Consequently, any applicant visibility analysis that deviates from the screening procedures necessitates performance of an hour-by-hour analysis.

Furthermore, deviations from the first-level screening procedure should lead to refinements in the modeling and visibility analyses, not arbitrary adjustments to the prescribed first-level technique. This is especially important in dealing with weather-related events. Given the NPS' desire to balance the positive and negative biases of the CALPUFF screening methodology, it is not acceptable to modify the screening technique. Consequently, the NPS does not expect permit applicants that exceed the visibility effects thresholds to scrutinize the data and attempt to disregard specific impact days due to weather. Under those circumstances, the permit applicant can accept the modeling results at face value, and then the FLM will decide whether or not those impacts are adverse. Alternatively, the applicant could conduct an hour-by-hour analysis (as opposed to using a 24-hour average) by performing a more refined analysis using a more sophisticated approach that requires determining particle concentrations and size distributions, calculation of particle growth dynamics, and application of Mie Theory to determine the optical characteristics of the aerosol distribution. Sophisticated radiative transfer models can then be applied, using aerosol optical characteristics, lighting and scene characteristics, and spatial distribution of the pollutants to calculate the path and wavelength of image-forming and non-image-forming light that reaches a specific observer from all points in the scene being viewed. The NPS performed such a "refined" analysis for Desert Rock (see below).

- Sithe has conducted additional modeling using methods suggested by EPA in its Best Available Retrofit Technology (BART)[6] guidance. Although not subject to BART, the results indicate that Desert Rock would significantly contribute[7] to visibility impairment at Mesa Verde. Modeling results provided by Sithe predict 27 days at Mesa Verde over three years in which the 5% change in extinction threshold would be exceeded, including one year with 16 exceedances, and one year with ten exceedances.
- NPS had suggested that more refined modeling was needed to assess the effects of local terrain and aqueous phase conversion of pollutants. Sithe rejected this suggestion, but the NPS Air Resources Division conducted more sophisticated modeling that highlighted the potential for pollution buildup in the Four Corners area during stagnation events accompanied by the presence of clouds (which cause rapid transformation of gaseous pollutants into fine particles). This modeling, presented to Sithe and EPA a year ago, indicated that there was a potential for airflow into Grand

[6] To be eligible for EPA's Best Available Retrofit Technology (BART) requirements under its Regional Haze program, a "BART-eligible" power plant must have begun operation after 8/7/62 and commenced construction before 8/7/77. Therefore, the Desert Rock project is not subject to EPA's BART guidelines for determining its contribution to visibility impairment. However, this information is useful in assessing Desert Rock's contribution to visibility impairment.

[7] The BART guidelines say that a source significantly contributes to visibility impairment if it exceeds 5% change in extinction more than seven days in any one year or more than 21 days over the three-year modeling period.

Canyon National Park following stagnation events, resulting in significant visibility impacts. This peer-reviewed, more refined analysis ("*Simulation of the Impact of the SO_2 Emissions from the Proposed Sithe Power Plant on the Grand Canyon and other Class I Areas*") is attached as Appendix C. Appendix C also contains an additional modeling analysis that the NPS performed to assess potential impacts of the proposed Sithe power plant in the Four Corners basin (see "*Simulation of the potential impacts of the proposed Sithe power plant in the Four Corners basin using CAMx.*")

- Sithe's special time period, fine scale modeling produced mixed results in comparison to the large modeling domain visibility impacts. The January 3-30, 2001, four km MM5 grid produced lower maximum visibility at the five Class I areas. With the four km MM5 data for the January 1-16, 2003 time period, impact to the Grand Canyon was lower than the results from the large scale domain results, but higher at the remaining four Class I areas. The maximum impact from this special time period was at the US Forest Service Weminuche Wilderness Area, with an impact of 7.91% change in extinction. For the special time periods the results were also mixed at the ten other Class I areas using the 12 km MM5 data. The most notable was a 15 % change in extinction at Bandelier National Monument, up from an 8.9% change in the large scale domain. The results of the April 4-May 1, 2004, special time period showed very low impacts at all 15 Class I areas for both the four and 12 km special fine scale domains.
- FLAG guidance recommends that a cumulative visibility analysis be conducted if the change in light extinction exceeds 5% or if a cumulative increment analysis has been done. Sithe initially declined to conduct a comprehensive cumulative visibility analysis, but the NPS was able to negotiate a more limited analysis focusing on the combined impact of Desert Rock and two other existing power plants in the immediate area that are reducing their emissions as a result of a consent decree (San Juan Generating Station--SJGS) and a (pending) voluntary agreement (Four Corners Power Plant--FCPP). Since 2002, the magnitude of the SO_2 and NO_x emission reductions at these plants has more than offset the emission increases from Desert Rock. Sithe concluded that this analysis shows that, with these emission reductions, there would be a net visibility improvement in the area, despite the emission increases associated with Desert Rock.
- The NPS conducted a similar relative offset modeling analysis that evaluated the effects to visibility impacts at five nearby Class I NPS units (Mesa Verde NP, Bandelier NM, Canyonlands NP, Capitol Reef NP and Petrified Forest NP) assuming there were 1:1 SO_2 emission reductions or 3:1 NO_x emission reductions at either of the two nearby coal fired power plants. (Note: these reductions are similar to those that Sithe agreed to obtain in its mitigation proposal. See below.) The FCPP and the SJGS were modeled together under eight different scenarios. The scenarios are based upon FCPP and SJGS with their present emissions (Scenario 1 in the attached Table 2), and the two power plants at their supposed reduced (Scenario 3) emission rates in 2013 (because of the voluntary reductions at FCPP and the consent decree for SJGS). The Desert Rock short-term 24-hour emissions for both SO_2 and NO_x were then modeled alone (Scenario 2) in conjunction with FCPP and SJGS for both the present emission rates (Scenario 4) and with their 2013 reduced emissions (Scenario 5). The offset modeling analyses were then run (Scenarios 6 & 7) assuming emission

reductions that reflect the equivalent short-term 24-hour emission rates for Desert Rock at 816 lb/hr SO_2 or the 3:1 offset rate of 2,447 lb/hr NO_x reduction (Scenarios 8 & 9) at either plant while maintaining the other older power plant emitting at the reduced 2013 emission rate and the proposed 24-hour permitted Desert Rock emission rates for SO_2 and NO_x. The results are presented in Table 2. To summarize the findings, the 1:1 SO_2 and the 3:1 NO_x achieve similar small visibility improvements. The greatest visibility improvements from the current conditions occur due to the 2013 reductions at FCPP and SJGS. The visibility improvements from the proposed offsets are dwarfed due to the overwhelming amount of emissions from the two older power plants, even when they are reduced by equivalent SO_2 or triple the NO_x emissions produced by the proposed Desert Rock facility.

- While the net result of emission reductions at SJGS and FCPP and increases at Desert Rock would be improvement in visibility at many parks in the area under certain meteorological conditions, many of these improvements are likely to be lessened due to emission increases at FCPP, addition of other new power generating units, and growth in the local oil and gas industry. And, even if visibility improvement is realized, projections by the Western Regional Air Partnership (WRAP) indicate that those improvements may not be sufficient to meet EPA's presumptive rate of reasonable progress toward the national goal of achieving natural conditions by 2064.

Deposition Analysis:

Based on Desert Rock's impacts alone, the original modeled sulfur (S) and nitrogen (N) deposition rates are shown in attached Table 1 and summarized as follows. Desert Rock's impacts were compared to the Deposition Analysis Thresholds (DAT) for nitrogen and sulfur. The DAT is the additional amount of nitrogen or sulfur deposition within a Class I area, below which estimated impacts from a proposed new or modified source are considered insignificant. Desert Rock's contributions to sulfur and nitrogen deposition exceed both the nitrogen and sulfur DATs and, by definition, are considered to be significant.

- Nitrogen deposition would exceed the DAT at: Aztec Ruins, **Bandelier**, Canyon de Chelly, Chaco Culture, El Malpais, **Mesa Verde, Petroglyph**, and Yucca House. The effects of nitrogen deposition on AQRVs in these parks have not been examined in detail. However, scientific research has shown that nitrogen deposition can facilitate the invasion of exotic plant species, including noxious weeds, into arid grasslands typical of these parks. Recent studies in Utah demonstrated that nitrogen additions in arid ecosystems stimulated the growth of invasive annual weeds, such as Russian Thistle. Studies in southern California have found that nitrogen additions not only encouraged the growth of non-native invasive plants, but increased plant abundance, leading to increased frequency and severity of wildland fires.

- Sulfur deposition would exceed the DAT at: **Arches**, Aztec Ruins, **Bandelier, Black Canyon**, Canyon de Chelly, **Canyonlands**, Chaco Culture, Colorado National Monument, El Malpais, Glen Canyon, Hovenweep, Hubbell Trading Post, **Mesa Verde**, Natural Bridge, Petroglyph, Yucca House, and Zuni-Cibola. The effects of sulfur deposition on AQRVs in these parks have not been examined in detail.

However, at Mesa Verde, surface waters are also an important resource of the park. Mesa Verde has a species of amphibian, the tiger salamander (*Ambystoma tigrinum*), that is sensitive to acid deposition. It is not known whether surface waters in the park are sufficiently buffered, or if their pH can drop to harmful levels during acidic rain or snowmelt events. And at Mesa Verde and Aztec Ruins, it is also not known how sensitive to acid the calcium carbonate matrix might be that binds the sand particles in the parks' sandstone bedrock. It is from this sandstone that the ancient masonry structures were constructed by the Ancestral Puebloan culture. The National Park Service is concerned that the long-term cumulative effects of acid deposition on sandstone archeological sites may be serious.

As discussed in "Guidance on Nitrogen and Sulfur Deposition Analysis Thresholds,"[8] the DAT is a deposition threshold, not necessarily an adverse impact threshold. The DAT is the additional amount of deposition that triggers a management concern, not necessarily the amount that constitutes an adverse impact to the environment. Adverse impact determinations are considered on a case-by-case basis for modeled deposition values that are higher than the DAT, evaluating the best scientific information available for the affected park to assess existing as well as potential future deposition impacts. As stated above, although we have not examined these parks for nitrogen and sulfur impacts, scientific research in similar areas indicates a significant potential for impacts in these areas.

Findings of Adverse Impact

In determining if a project may have an adverse impact, the FLM is to consider magnitude, frequency, duration, and geographic extent. By predicting the changes in extinction and the deposition rate, estimates are obtained for the magnitude of the impacts. Visibility impacts greater than 5% change in extinction, and/or deposition rates greater than 0.005 kg/ha/yr (in the western US), may be considered "significant" magnitude.

The frequency of the impacts is estimated by the number of periods (days for visibility and years for deposition), while the duration is simply the time period over which the impact is estimated. The geographic extent of the impacts can be evaluated by considering the number of receptors and parks in which the impacts are predicted to occur.

Desert Rock is predicted to cause significant impacts upon visibility in eight of the nine Class I areas within 300 km, as well as in 16 of 18 Class II parks in that area. Four Class I parks would experience a combined total of eight days over the three-year modeling period with changes in extinction greater than 10%, while eight Class II parks would also experience changes in extinction greater than 10%. Even though Desert Rock is not subject to the BART requirements for much older plants, if it were, under the EPA's impact criteria, its impacts at Mesa Verde would be considered a significant contribution to visibility impairment there.

[8] **http://www2.nature.nps.gov/air/Pubs/pdf/flag/nsDATGuidance.pdf**

Although NPS currently lacks scientific evidence to accurately assess the impacts of nitrogen and sulfur deposition on parks in the area, 19 of the 27 parks there would receive significant amounts of deposition from Desert Rock.

Two recent PSD permit applications have resulted in findings of adverse impact by the Assistant Secretary for Fish and Wildlife and Parks. In the Longview Power case, impacts upon visibility (one day in one modeled year exceeding 10% change in extinction) and acid deposition (sulfur deposition 170% of DAT) at Shenandoah NP were predicted for that proposed coal-fired power plant in West Virginia. The Greene Energy waste-coal-burning power plant in Pennsylvania was predicted to cause 12 days with change in extinction greater than 10% in three years, and sulfur deposition 300% of the DAT in Shenandoah NP.

Potential Mitigation Measures

Several "Mitigation Measures" have been jointly developed among Sithe and the FLMs, and a draft agreement is contained in Appendix D. Specifically, Sithe has proposed a strategy to obtain emission reductions within the region that will likely mitigate their contribution to regional visibility impairment and atmospheric deposition (i.e., acid rain).

Conclusions and Recommendations

- Clean Coal Technologies such as IGCC could substantially reduce annual SO_2, NO_x, PM_{10}, and CO_2 emissions, and warrant consideration by Sithe.
- Sithe should investigate the application of innovative technologies, such as that proposed by Peabody/Mustang, to reduce SO_2 emissions.
- Sithe's cumulative analyses of increment consumption and visibility impacts are incomplete and underestimate impacts.
- Desert Rock's impacts on visibility and deposition exceed NPS significance thresholds and fall into the range of impacts for which adverse impact findings have been made in other cases (Longview Power in West Virginia and Greene Energy in Pennsylvania).
- EPA should incorporate the "Mitigation Measures" described in Appendix D in any final permit. There are precedents for such actions, most recently Longview and Greene.

Desert Rock Energy Co., PSD Appeal 08-03
Conservation Petitioners' Exhibits

EXHIBIT 38

July 26, 2007

Ms. Harrilene Yazzie, Regional NEPA Coordinator
Desert Rock Energy Project EIS
Bureau of Indian Affairs, Navajo Regional Office
P.O. Box 1060
Gallup, New Mexico 87305

Re: Draft Environmental Impact Statement for the Desert Rock Energy Project

Dear Ms. Yazzie:

The New Mexico Environment Department (NMED) has reviewed the Draft Environmental Impact Statement (EIS) for the proposed Desert Rock Energy Facility. We are filing these comments to be part of the public record and considered in finalizing the EIS.

NMED has serious concerns regarding the proposed Desert Rock Energy Facility. Air quality in the San Juan Basin is close to violating the current 8-hour ozone National Ambient Air Quality Standard (NAAQS). If the 8-hour ozone NAAQS is revised as recommended by the Clean Air Scientific Advisory Committee to 70 parts per billion, the region will most likely be non-attainment for ozone. Visibility at Class I areas in the vicinity is seriously impacted by industrial development. The rivers and lakes in the region have fish advisories due to mercury contamination. The addition of a third power plant in a 25 mile radius will only exacerbate these existing problems. In addition, water is an important and scarce resource in New Mexico. This facility has the potential to negatively impact both surface and ground water resources. Our comments on specific sections of the DEIS are included in the attachment to this letter.

NMED appreciates this opportunity to comment. If you have any questions, please contact Mark Jones of the Air Quality Bureau at 505-327-6854.

Sincerely,

Ron Curry
Secretary

Attachment

***(Signed by Secretary Curry on July 27, 2007. For a signed version, please contact Marissa Stone at (505) 827-0314 or Marissa.Stone@state.nm.us)

New Mexico Environment Department
Comments on Desert Rock Energy Project
Draft Environmental Impact Statement
DOI DEIS 07-23 May 2007

WATER QUALITY ISSUES

The Desert Rock Energy Facility will have the potential to negatively impact both surface and ground water resources. This power plant will require National Pollution Discharge Elimination System (NPDES) construction and industrial permits from the U.S. Environmental Protection Agency's (EPA) Region 9. NMED currently views double lined ponds with leak detection as the start of the art for protection of ground water and would encourage that this facility use this technology.

AIR QUALITY ISSUES

3.0 Affected Environment

Page 3-10 [3.1.3.3] Measured Ambient Air Pollutant Concentrations in Project Vicinity:
Ozone concentrations in San Juan County and the Draft Environmental Impact Statement (DEIS) review area are a key concern as the San Juan County area is currently within eleven percent of the current 8-hour National Ambient Air Quality Standard (NAAQS) for ozone, 0.08 parts per million (ppm) and has been as close as within five percent of the NAAQS in the last five years. In addition, EPA is currently in the process of revising the 8-hour ozone NAAQS, potentially lowering it. The Clean Air Scientific Advisory Committee (CASAC), technical advisors to the EPA, have recommended that the standard by changed to a concentration in the range of 0.060 to 0.070 ppm to protect public health. EPA has proposed setting the standard between 0.070 and 0.074 ppm.

In San Juan County during the years 2002 and 2003, the New Mexico Environment Department (NMED) monitored 8-hr ozone design values of 0.75 and 0.76 ppm, respectively. The final 8-hr ozone design value for 2005 for San Juan County (Substation and Bloomfield monitors) was 0.072 ppm. The 2006 8-hr ozone design value for Substation monitor was 0.071 ppm. The 2006 8-hr ozone design value for the Bloomfield monitor was 0.069 ppm. While NMED has monitored a decrease in 8-hour ozone design values in San Juan County over the past seven years, the concentrations remain close to the 8-hour NAAQS and may be considered high for a rural area with low population density.

The formation of ozone is complex and varies in different regions of the country. For a study such as the DEIS, where potential impacts of a new coal-fired power plant in the northwest New Mexico area are evaluated, it is crucial that special attention be paid to ozone and how the source may affect the formation of this pollutant. The mechanisms for the formation of ozone in the region should be analyzed and well documented in the report. To demonstrate attainment of the 8-hour ozone NAAQS, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm. See details on the NAAQS on EPA's website, http://www.epa.gov/air/criteria.html, or in 40 Code of Federal Regulations (CFR) Part 50.

In the DEIS, in Table 3-4: Summary of Ambient Air Quality Background Measurements at Monitoring Stations Near the Project Site, final column, O_3 Primary NAAQS ozone standard values is represented as 171.3 $\mu g/m^3$ for 8-hour standard. This is not accurate. The primary 8-hour NAAQS ozone standard is 136.5 $\mu g/m^3$. Note the established standard is for 8-hour ozone concentrations to be measured in parts per million (ppm). Also, incorrect in Table 3-4 are the measured design values for 2001 through 2005. The correct design values for the Substation monitor are listed in the Table 1, below.

Table 1: O_3 8-Hour Design Values for San Juan Substation Monitor, ppm ($\mu g/m^3$)				
2001	**2002**	**2003**	**2004**	**2005**
0.073 ppm (143 $\mu g/m^3$)	0.076 ppm (149 $\mu g/m^3$)	0.075 ppm (147 $\mu g/m^3$)	0.073 ppm (143 $\mu g/m^3$)	0.072 ppm (141 $\mu g/m^3$)

Page 3-18 [3.1.3.6] <u>Other Emission Sources in the Region</u>:
The report consistently minimizes oil and gas source emissions. In this section, major oil and gas sources are listed. No reference is made to the cumulative emissions from area oil and gas sources. There is an abundance of recent research and work on this by the Western Regional Air Partnership and the New Mexico Environment Department. Recent estimates show that oil and gas area sources in San Juan and Rio Arriba Counties account for over 35,000 tons/yr nitrogen oxides (NOx) and over 100,000 tons/yr volatile organic compounds (VOC) emissions. These sources must be considered when analyzing potential ozone and visibility impacts to the region. The oil and gas resource is continuing to be developed. Reasonable foreseeable development by the U.S. Department of Interior, Bureau of Land Management (BLM) estimates 10,000 to 16,000 new gas wells over the next 20 years. Modeling and impact assessments are incomplete without accounting for these sources.

4.0 Environmental Consequences
Proposed Action Alternative B – 1,500 MW Plant and Associated Facilities
Pages 4-10 – 4-11 [4.1.2.2.2] <u>Air Pollutant Emissions Caused by Operation of Power Plant</u>:
"Total PM and $PM_{2.5}$ were not modeled. Based on Table 2-4 from the Desert Rock Updated Class I Modeling Report (Sithe 2006a), $PM_{2.5}$ would comprise approximately 78 percent of the total PM_{10} emissions modeled from the power plant," and from Table 4-3 PM_{10} Project PTE (tpy) equals 1,125 tons. Therefore, according to the report, there would be approximately 877.5 tons per year of $PM_{2.5}$ emissions from Desert Rock. Exposure to particle pollution is linked to a variety of significant health problems, ranging from aggravated asthma to premature death in people with heart and lung disease. Particle pollution also is the main cause of visibility impairment in the nation's cities and national parks. The $PM_{2.5}$ emissions that would be directly and indirectly emitted by the proposed power plant should be modeled to determine if the proposed plant's emissions will meet state and federal ambient air quality standards.

Mercury and Other Hazardous Air Pollutant Emissions
The estimated annual emission rate for mercury emissions at the proposed Desert Rock Energy Facility listed in the DEIS is 161 pounds per year. The total mercury removal efficiency of the

control equipment (bag house & wet scrubber) is estimated to be approximately 80 percent (pp. 4-11, 4-12).

NMED encourages the use of Activated Carbon Injection (ACI) technology to obtain mercury removal of 90% and above. NMED encourages the use of mercury control technology regardless of whether bag house and wet scrubber control equipment achieve 80 percent mercury reduction.

Other Hazardous Air Pollutants (HAPs) and toxic air pollutants emitted from the proposed Desert Rock Energy Facility have the potential to cause serious health effects and adverse environmental and ecological effects. Collectively, with three major coal-fired power plants located within 25 miles of each other, the HAPs emissions associated with coal combustion in the area are a serious concern.

Page 4-15 [4.1.2.2.4] Predicted Ambient Air Quality Impacts of Mine and Power Plant Operations (Alternative B – 1500 MW Plant):

Page 4-15 Class I Area Impacts: Emissions reductions by the two largest coal-fired power plants in the Four Corners region (San Juan Generating Station and Four Corners Power Plant) have been a positive move towards improving air quality. Serious visual degradation can still be observed in the region and ozone levels are alarmingly close to the NAAQS. A major source such as the proposed 1500 MW power plant will have at least a minor or moderate air quality impact on the surrounding area.

The New Mexico Environment Department's jurisdiction does not include the Navajo Nation (Bullet 2). The San Juan Substation monitor located at the Shiprock Electrical Substation is not located in Shiprock. It is about 15 miles east of Shiprock. It is at the farthest reach of the NMED northwest New Mexico monitoring network. Since there are no air quality monitoring stations in close proximity to the west and north of the Substation monitor, there is a large degree of uncertainty with regard to air quality concentrations west and north of the monitor on tribal lands.

The portrayal of emissions reductions by the Four Corners Power Plant and San Juan Generating Station (Bullet 3) is misleading with respect to PM_{10} emissions. While substantial reductions in sulfur dioxide (SO_2) and NOx emissions have taken place and are planned to continue to decrease with upgrades at San Juan Generating Station, PM emissions have not realized the same improvements. It is possible the 2,500 TPY PM reductions is an overstatement.

Repeat of comments from Page 3-18 [3.1.3.6] Other Emission Sources in the Region:
The report consistently minimizes oil and gas source emissions. In this section, some of the major oil and gas sources are accounted for; however, no reference is made to the large amount of emissions from smaller area oil and gas area sources. There is an abundance of recent research and work on this by the Western Regional Air Partnership and the New Mexico Environment Department. Recent estimates show that area sources in San Juan and Rio Arriba Counties account for over 35,000 tons/yr NOx and over 100,000 tons/yr VOC emissions. These are very important sources to consider when looking at ozone concentrations and visibility

effects. The oil and gas resource is continuing to be developed. Reasonable foreseeable development estimates are 10,000 to 16,000 new gas wells over the next 20 years. Modeling and impact assessments are incomplete without accounting for these sources.

Page 4-17 Visibility / Regional Haze Impacts:
In concluding that "the potential effects on air quality and air quality related values analyzed here due to emissions from the proposed Desert Rock Energy Facility, especially in conjunction with the nearby source emission reductions, are expected to result in no adverse impacts," the DEIS is not clear. Based on the provided information and some knowledge of the northwest New Mexico area, a more reasonable and informed assessment would be that the Desert Rock Facility would have at least a **moderate** impact on Class I and Class II area visibility, haze, and other criteria pollutants such as NO_2, SO_2, carbon monoxide (CO) and ozone. The report fails to account for the cumulatively significant oil and gas area sources.

Pages 4-18 – 4-19 [4.1.2.2.5] Carbon Dioxide Emissions:
Carbon dioxide (CO_2) is a greenhouse gas. The predicted 12.7 millions tons of CO_2 emitted annually by the Desert Rock Energy Facility will lead to an increase in New Mexico's greenhouse gas emissions. Per capita, New Mexico already emits twice the national average of greenhouse gases. New Mexico has several initiatives to reduce greenhouse gas emissions. The 12 tons of additional CO_2 emissions emitted from the Desert Rock Energy Project would increase greenhouse gas emissions in the state by about 15 percent, making Governor Richardson's greenhouse gas reduction goals difficult to meet. If the Desert Rock Energy facility employed Integrated Gasification Combined Cycle technology, CO_2 emissions (as well as emissions of other air pollutants, such as mercury) would be minimized. The conventional coal combustion technology being used at Desert Rock makes CO_2 capture and storage (control) less feasible technically and economically.

Pages 4-26 – 4-27 [4.1.2.3.4] Predicted Ambient Air Quality Impacts of Mine and Power Plant Operations (Alternative C, 550 MW Plant):

Page 4-27 Carbon Dioxide Emissions
A comparison of Alternatives B and C with respect to greenhouse gas emissions is significant.

- Alternative B is a 1,500 MW super-critical plant with estimated CO_2 emissions of 12.7 million tons per year.
- Alternative C is a 550 MW super-critical plant with estimated CO_2 emissions of 4.74 million tons per year.
- Alternative C would emit 8 million fewer tons of CO_2 emissions than Alternative B.

Page 5-1 [5.1] Cumulative Impacts
Emissions from the 12,000 existing gas wells in San Juan County and 8,000 existing gas wells in Rio Arriba County are not listed or accounted for in the impact analysis. In this section, some of the major oil and gas sources are accounted for; however, no reference is made to the large amount of emissions from oil and gas area sources. There is an abundance of recent research and work on this by the Western Regional Air Partnership and the New Mexico Environment Department. Recent estimates show that area sources in San Juan and Rio Arriba Counties account for over 35,000 tons/yr NOx and over 100,000 tons/yr VOC emissions. These are very

important sources to consider when looking at ozone concentrations and visibility effects. The oil and gas resource is continuing to be developed. Reasonable foreseeable development estimates are 10,000 to 16,000 new gas wells over the next 20 years. Modeling and impact assessments are incomplete without accounting for these existing and new sources.

Page 5-10, [5.1.2.1] Air Quality Trends in San Juan Basin:
The retrofitting project at San Juan Generating Station is not expected to significantly reduce emissions of fine particulates, contradicting the claim made in the draft EIS.

SO_2 emissions trends for two of the local coal-fired power plants are shown in the graph in this section. What are the trends in other pollutants, from other major sources? Why is only the pollutant that has been relatively well controlled at local power plants in the recent past shown in the analysis? Why are other major sources not shown for NOx and VOC emissions? The treatment of the SO_2 emissions trends seems to be a persuasive argument to show that the plant will have minimal effects. A comprehensive cumulative analysis for other criteria pollutants (VOC, NOx, ozone, PM, CO) is not presented here. As precursors to ozone formation (VOC, NOx, and CO) it is important to see cumulative trends in VOC, NOx and CO emissions.

The Milagro Power Plant is an existing cogeneration facility, not a proposed facility.

Page 5-11, [5.1.2.2] Alternative B:
The statement that "the cumulative impacts of the proposed project would be overall lower emissions in the Four Corners Region" is misleading. The Desert Rock Energy Project is proposing a power plant that would emit thousands of tons of criteria pollutants and over 12 million tons of CO_2 each year. The Desert Rock Energy Project does not receive allowances or credits for Four Corners Power Plant or San Juan Generating Station emissions reductions. Furthermore, oil and gas area sources are not analyzed adequately in the cumulative analysis. Cumulatively, with the amount of growth in the area in consideration, it is not clear as to whether emissions trends are decreasing or increasing in the Four Corners area. It may be that cumulative SO_2 emissions in the area are on the decline due to enhanced scrubbing at existing coal-fired power plants, but this sole pollutant and its trends do not necessarily represent the spectrum of combustion-based criteria pollutants in the area such as NOx and PM. With respect to greenhouse gas emissions, the Desert Rock Energy Project Alternative B or C also adds significant amounts to the existing amount of New Mexico greenhouse gas emissions.

Desert Rock Energy Co., PSD Appeal 08-03
Conservation Petitioners' Exhibits

EXHIBIT 39

USDA United States Department of Agriculture | Forest Service | Rocky Mountain Region

P.O. Box 25127
Lakewood, CO 80401
Delivery: 740 Simms Street
Golden, CO 80401
Voice: 303-275-5350
TDD: 303-275-5367

File Code: 2580-3
Date: September 8, 2006

Ms. Deborah Jordan
Division Director
US EPA Region IX
75 Hawthorn Street
AIR - 1
San Francisco, CA 94105-3901

Dear Ms. Jordan:

On April 26, 2006 we provided you with a comment letter (enclosed) regarding the Prevention of Significant Deterioration (PSD) permit application prepared by Sithe Global Energy (Sithe) for the construction and operation of the Desert Rock Energy Facility. The proposed facility will include two 750-megawatt pulverized-coal boilers on the Navajo Nation land in northwestern New Mexico for a total of 1500 MW.

In that letter we expressed our concerns about the potential impacts from the proposed Desert Rock facility emissions on mandatory Class I Wilderness Areas and federal Class II Areas administered by the USDA Forest Service (USDA-FS). We would like to clarify exactly what the USDA-FS intended to convey to EPA in our April 26, 2006 letter since there has been some confusion about whether or not the USDA-FS found that the impacts were adverse and subsequently whether mitigation in the PSD permit was needed.

Based on the information provided to us by Sithe, the USDA-FS does find that the predicted impacts would be adverse. But, with the mitigation agreement (enclosed) that Sithe has agreed to execute, the USDA-FS finds those impacts would be sufficiently mitigated and it would not recommend that the permit be denied based on impacts to resources in the areas that it administers. However, and this is a key point, without the mitigation the impacts would be adverse.

Under section 165(d)(B) of the Clean Air Act, (42 U.S.C. § 7475(d)(B)), the USDA-FS has an affirmative responsibility to protect the visibility and other air quality related values of USDA-FS administered Class I Wilderness Areas and to consider whether a proposed major emitting facility will have an adverse impact on such values. We must ensure that new sources do not adversely impact the visibility in these Wilderness Areas, or if they do, ensure that those impacts are adequately mitigated.

In order to meet those responsibilities the USDA-FS worked with Sithe, the Navajo Nation, the Department of the Interior-National Park Service and Environmental Protection Agency Region 9 representatives to mitigate the predicted impacts in the mandatory Class I areas and in the federal Class II areas.

We would like to commend Sithe for their willingness to work cooperatively with the USDA-FS in order to arrive at a workable solution. Sithe has agreed to a mitigation strategy that will obtain emission reductions within the region that will more than offset their contribution to regional visibility impairment and will also reduce atmospheric deposition (i.e. acid rain). It is our understanding that Sithe is committed to executing the mitigation agreement in whole (telephone conversation between Bud Rolofson (USDA-FS) and Gus Eghneim (Sithe) August 7, 2006). Although we accept and respect that commitment, we never the less reserve our right to revisit the issue of adverse impacts if that commitment is not met by all the parties.

The USDA-FS believes that this clarification can result in the mitigation agreement being included as a federally enforceable permit condition for regulated pollutants subject to PSD review and as voluntary mitigation for mercury and carbon dioxide emissions also agreed to by Sithe as part of the overall mitigation agreement.

By this letter USDA-FS is meeting its affirmative responsibility in the PSD process while at the same time avoiding the need to recommend that the PSD permit be denied for the proposed project at this time. We ask that you help us meet this responsibility by including the mitigation agreement in the PSD permit as a federally enforceable permit condition to the fullest extent possible.

If you have any questions regarding this matter, please contact Rick Cables, USDA-FS R2 Regional Forester, at (303) 275-5450 or Harv Forsgren, USDA-FS R3 Regional Forester, at (505)-842-3300.

Sincerely,

/s/ Richard Stem (for)
RICK D. CABLES
Regional Forester

/s/ Harv Forsgren
HARV FORSGREN
Regional Forester, R3

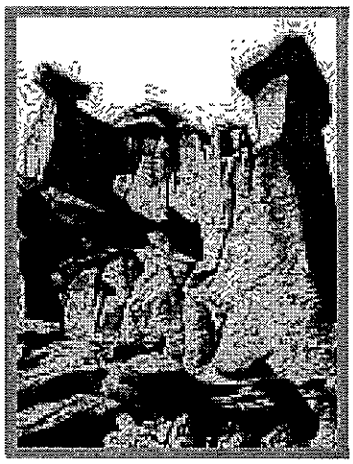
cc: Bud Rolofson
Jeff A Sorkin
Wayne A Robbie
Bob Davis
Mark Boche

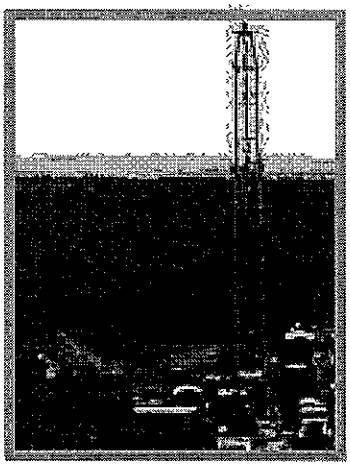
Desert Rock Energy Co., PSD Appeal 08-03
Conservation Petitioners' Exhibits

EXHIBIT 40

Farmington Proposed Resource Management Plan and Final Environmental Impact Statement

Volume I: Chapters 1–5





March 2003

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

Farmington Field Office
Farmington, New Mexico

BLM-NM-PL-03-014-1610

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Farmington Field Office
1235 La Plata Highway, Suite A
Farmington, New Mexico 87401

IN REPLY REFER TO: 1610 (07200)

Dear Reader:

Enclosed is the Proposed Farmington Resource Management Plan (PRMP) and Final Environmental Impact Statement (FEIS). The PRMP/FEIS outlines alternatives for managing all the uses of the public lands within the Farmington Field Office (FFO) boundaries. In addition, the management of the federal oil and gas resources within the New Mexico portion of the San Juan Basin is being considered.

The Draft RMP/EIS was made available for public review and comment from June 28, 2002 to September 26, 2002. Four public hearings were held to take formal oral comments. The BLM received a total of 174 written and 46 oral comments from 196 individuals. In addition to the original comments, there were over 12,000 form letters from at least 3 different organizations that were submitted to the FFO by e-mail, facsimile, or mail. Comment documents, either oral or written, generated more than 1,500 comments. Comments were assessed and utilized in making substantive changes in the document, which strengthened the PRMP/FEIS. Appendix P of the PRMP/FEIS contains summarized comments and responses.

Air quality issues received the greatest amount of public comment. Since release of the DRMP/EIS the FFO met with the NM Air Quality Bureau (NMAQB) and Environmental Protection Agency (EPA) to discuss air quality issues. Additional air quality analysis has been conducted and is described in the PRMP/FEIS. Air quality concerns in the planning area have resulted in the formation of the Four Corners Ozone Task Force. This cooperative effort of concerned stakeholders, including federal and state agencies, local governments, industry, environmental groups and the general public is focused on developing strategies to prevent further decline in air quality in the region. BLM has a representative on the task force steering committee and will work within its authority to implement appropriate mitigation measures recommended by NMAQB and the task force.

Some reviewers commented that the Farmington Field Office prepare a regional EIS encompassing all of the San Juan Basin, including those areas in Colorado analyzed by the Southern Ute Indian Reservation Final EIS for Oil and Gas Development (SUIT) and the Northern San Juan Basin Draft EIS. This approach was considered impractical for several reasons. The SUIT and Northern Basin projects are focused entirely on oil and gas, particularly Coal Bed Methane (CBM). The Farmington RMP is a comprehensive land use plan, which addresses all uses of the public lands in the FFO. Attempting to combine the three documents would have greatly complicated the analysis for each by bringing in different issues caused by independent jurisdictions and legal responsibilities across state, county, and reservation lines, as well as Federal (USFS, EPA, FWS) regional boundaries. CBM development issues (particularly those related to water disposal and potential for coal bed fires) at the edge of the San Juan Basin in Colorado are different from those of the central basin in New Mexico. The Draft Northern Basin EIS is scheduled for release in April 2003, while the SUIT was completed in July 2002. Data and pertinent analysis presented in the SUIT were used in the cumulative analysis for the Farmington PRMP/FEIS.

The preferred alternative (Alternative D) presented in the Farmington DRMP has been brought forward, with minor modification, as the Proposed RMP. This alternative allows for full field oil and gas development in an environmentally sound manner, while minimizing surface disturbance. The amount of public land contained in Areas of Critical Environmental Concern would increase by

28,793 acres. The area of important wildlife habitat protected by timing restrictions would increase by 288, 641 acres. The area limiting OHV use to existing roads and trails would increase from 248,108 acres to 1,353,301 acres. Changes to the coal program would allow leasing by application and would address the need for coal development in areas that were not analyzed in prior planning documents.

Copies of this document have been mailed to individuals who submitted original letters or provided oral comments at public hearings, as well as appropriate state and federal agencies and local and tribal governments. In addition, copies have been sent to those persons who received copies of the Draft and requested to be on the mailing list for the PRMP/FEIS. The PRMP/FEIS is available for review at the Bureau of Land Management, Farmington Field Office, 1235 La Plata Highway Suite A, Farmington, NM 87410. The document is also available on the internet by going to the Farmington Field Office web page at www.nm.blm.gov.

BLM Planning Regulations (43 CFR 1610.5-2) state that any person who participated in the planning process and has an interest which may be adversely affected may protest. A protest may only raise those issues which were submitted for the record during the planning process. The protest must be filed within 30 days of the date that the Environmental Protection Agency publishes the notice of receipt of the Final Environmental Impact Statement. All protests must be in writing and mailed to the following address:

Regular Mail:
Director (210)
Attention: Brenda Williams
P.O. Box 66538
Washington, D.C. 20035

Overnight Mail:
Director (210)
Attention: Brenda Williams
1620 L Street, N.W.
Suite 1075
Washington, D.C. 20036

E-mail protests will not be accepted. Faxed protests will be considered as potential valid protests provided (1) that the signed faxed letter is received by the Washington Office protest coordinator by the closing date of the protest period and (2) that the protesting party also provides the original letter by either regular or overnight mail postmarked by the close of the protest period. Please direct faxed protests to "BLM Protest Coordinator" at 202-452-5112. Please direct the follow-up letter to the appropriate address above.

The protest must contain:

a. The name, mailing address, telephone number, and interest of the person filing the protest.
b. A statement of the part or parts of the plan and the issue or issues being protested.
c. A copy of all documents addressing the issue(s) that the protesting party submitted during the planning process or a statement of the date they were discussed for the record.
d. A concise statement explaining why the protestor believes the State Director's decision is wrong.

Plan approval will be documented in a Record of Decision that will be made available to the public and mailed to all interested parties. Land use plan implementation usually involves on-the-ground management actions and permitted uses which require further analysis and decision making including public involvement and allows for appeals of decisions under applicable regulations. The Farmington Field Office plans to use the PRMP as the framework for pursuing collaborative management of natural resources on public lands in the San Juan Basin. If you have any questions regarding this document, please contact Jim Ramakka, RMP Project Manager, at 505-599-6307.

Sincerely,

Steve Henke
Farmington Field Office Manager

FARMINGTON RESOURCE MANAGEMENT PLAN

AND

FINAL ENVIRONMENTAL IMPACT STATEMENT

Draft ( ) Final (X)

The United States Department of the Interior, Bureau of Land Management

Type of Action: Administrative

Jurisdiction: San Juan, McKinley, Rio Arriba and Sandoval Counties in New Mexico

Abstract: The Proposed Resource Management Plan (PRMP) and final environmental impact statement (FEIS) analyzes four alternatives for managing the public lands and resources under the jurisdiction of the Farmington Field Office, New Mexico. The administration of federal oil and gas within the New Mexico portion of the San Juan Basin is also covered. The four alternatives are: (A) Continuation of Current Management (No Action), (B) Resource Production, (C) Resource Conservation, (D) Balanced Approach. Alternative D, the preferred alternative in the Draft RMP, was selected, with minor modification, as the Proposed RMP.

The impacts of the four alternatives are presented in Chapter 4. Comments received on the Draft RMP resulted in the inclusion of additional information and clarifications. Public and agency comments are summarized in Appendix P.

For further information, please call 505-599-6307, or contact:

RMP Project Manager
Bureau of Land Management
Farmington Field Office
1235 La Plata Highway, Suite A
Farmington, NM 87401-8754

Protests on the proposed plan must be filed within 30 days following the date that the Notice of Availability is published in the Federal Register.

Recommended:

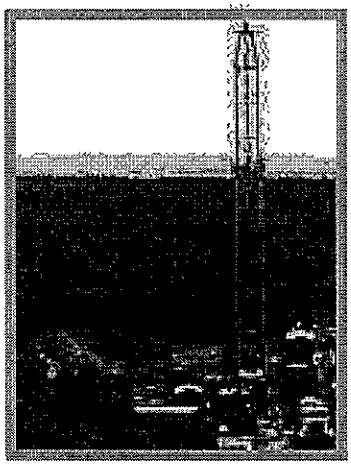
Steve Henke
Field Office Manager
Farmington Field Office

Approved:

Linda S.C. Rundell
State Director
New Mexico State Office

Farmington Proposed Resource Management Plan and Final Environmental Impact Statement

Volume I: Chapters 1–5



March 2003

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

Farmington Field Office
Farmington, New Mexico

BLM-NM-PL-03-014-1610

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ACRONYMS AND ABBREVIATIONS

AACL	Acceptable Ambient Concentration Level
ACEC	Area of Critical Environmental Concern
ACHP	Advisory Council on Historic Preservation
ACRV	air quality related values
AFO	BLM Albuquerque Field Office
APD	Application for Permits to Drill
AUM	animal unit month
ATV	all-terrain vehicle
BA	Biological Assessment
BACT	best available control technology
BHP	Broken Hills Proprietary Company, Limited
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BM II	Basketmaker II
BM III	Basketmaker III
BMP	Best Management Practice
BTU	British Thermal Units
CAA	Clean Air Act
CBM	coalbed methane
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CNF	Carson National Forest
CO	carbon monoxide
COA	Condition of Approval
CRMP	Cultural Resource Management Plan
CSU	Controlled Surface Use
CWA	Clean Water Act
DEIS	Draft EIS
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
ETZ	extraterritorial zone
FAR	functioning at risk
FFO	BLM Farmington Field Office
FLPMA	Federal Land Policy and Management Act
FY	fiscal year
GIS	Geographic Information System
GRTS	Glade Run Trail System
HABS	Historic American Buildings Survey
HAP	hazardous air pollutant
HMP	Habitat Management Plan
HUC	hydrologic unit code
$ISCST_3$	Industrial Source Complex Short Term
MEI	maximally-exposed individual
MLA	Mineral Leasing Act
MLE	most-likely exposure
MOU	Memorandum of Understanding
MPO	Metropolitan Planning Organization
MSA	Management Situation Analysis
MSL	mean sea level
NAAQS	National Ambient Air Quality Standards
NAPI	Navajo Agricultural Products Industry
NATICH	National Air Toxics Information Clearinghouse
NEPA	National Environmental Policy Act
NF	non-functional
NHP	National Historical Park
NHPA	National Historic Preservation Act
NMAAQS	New Mexico Ambient Air Quality Standards
NMAC	New Mexico Administrative Code
NMAQB	New Mexico Air Quality Bureau
NMDGF	New Mexico Department of Game and Fish
NMED	New Mexico Environment Department
NMEIB	New Mexico Environmental Improvement Board
NMOCD	New Mexico Oil Conservation Division
NM Tech	New Mexico Institute of Mining and Technology
NMWQCA	New Mexico Water Quality Control Act
NMWQCC	New Mexico Water Quality Control Commission
NO_2	nitrogen dioxide
NOI	Notice of Intent
NOx	nitrogen oxides
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSA	Noise Sensitive Area
NSO	No Surface Occupancy
NTL	Notice to Lessee
NWA	National Wilderness Area
O_3	ozone
OEHHA	Office of Environmental Health Hazard Assessment
OHV	off-highway vehicle
OLM	ozone limiting method
ORV	off-road vehicle
P&A	plugging and abandonment
PAC	Protected Activity Center
PAH	polynuclear aromatic hydrocarbon
PFC	Proper Functioning Condition
PI	Pueblo I
PII	Pueblo II
PIII	Pueblo III
PIV	Pueblo IV
PIF	Partners in Flight
PILT	Payment in Lieu of Taxes
PL	Public Law
$PM_{2.5}$	particulate matter 2.5 microns or less
PM_{10}	particulate matter 10 microns or less
PNM	Public Service Company of New Mexico

PRIA	Public Rangelands Improvement Act
PRLA	Preference Right Lease Application
PSD	Prevention of Significant Deterioration
REL	Reference Exposure Level
RFDS	Reasonable Foreseeable Development Scenario
RMP	Resource Management Plan
RMPA	Resource Management Plan Amendment
RNA	Research Natural Area
ROD	Record of Decision
ROI	Region of Influence
ROS	Recreation Opportunity Spectrum
ROW	right-of-way
R&PP	Recreation and Public Purposes
SDA	Specially Designated Area
SFNF	Santa Fe National Forest
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SJCC	San Juan Coal Company
SMA	Special Management Area
SMCRA	Surface Mining Control and Reclamation Act
SO_2	sulfur dioxide
SOx	sulfur oxides
SRHP	State Register of Historic Places
SRMA	Special Recreation Management Area
SRP	Special Recreation Permit
STATSGO	State Soil Geographic Database
STC	Standard Terms and Conditions
SUIT	Southern Ute Indian Tribe
SWAT	Soil-Water Analysis Tool
SWWF	southwestern willow flycatcher
TCP	traditional cultural property
TDS	total dissolved solids
T&E	threatened and endangered
TL	Timing Limitation
TSP	total suspended particulates
UNESCO	United Nations Educational, Scientific, and Cultural Organization
USBR	U.S. Bureau of Reclamation
USC	United States Code
USDA	U.S. Department of Agriculture
USDOI	U.S. Department of the Interior
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VOC	volatile organic compound
VRM	Visual Resource Management
WA	Wilderness Area
WRCS	Western Regional Corridor Study
WSA	Wilderness Study Area
WUG	Western Utility Group

MEASUREMENTS

° F	degrees Fahrenheit
bbls	barrels
Bcf	billion cubic feet
Bcfd	billion cubic feet per day
Bscf	billion standard cubic feet
dB	decibels
dBA	A-weighted decibels
gm/HP-hr	gram per horsepower-hour
gpm	gallons per minute
HP	horsepower
km	kilometer
$kWh/m^2/day$	kilowatt hours per meter squared per day
L_{eq}	equivalent sound level
Mcf	thousand cubic feet
MMcf	million cubic feet
$\mu g/m^3$	micrograms per cubic meter
mg/L	milligrams per liter
mi	miles
mi^2	square miles
mmt	million metric tons
Mscf	million standard cubic feet
ppm	parts per million
scf	standard cubic feet
TPY	tons per year
Tscf	trillion standard cubic feet

SUMMARY

The Proposed Resource Management Plan (RMP) and Final Environmental Impact Statement (EIS) for the Farmington Field Office (FFO) of the Bureau of Land Management (BLM) and cooperating federal agencies (U.S. Forest Service [USFS] and U.S. Bureau of Reclamation [USBR]) identifies the projected development of federal oil and gas reserves within the San Juan Basin in New Mexico and the proposed management direction for administration of public lands in the area administered by the FFO for the next 20 years. Located in northwestern New Mexico, the FFO is directly responsible for managing approximately 1,415,300 acres of public land and 3,020,693 acres of federal minerals in San Juan, McKinley, Rio Arriba, and Sandoval Counties. The overall planning area encompasses 8,274,100 acres.

In 1988, the FFO approved an RMP following many of the same steps that are being done now. The RMP was amended six times between 1990 and 2000. Decisions from the RMP document (including amendments) that are still valid have been carried forward into this RMP/EIS and would continue to be implemented to the extent that they are not in conflict with the direction proposed in this RMP Revision. Changes in land use demands from lessees and from the public have precipitated a revision to the RMP to evaluate impacts that would result from major changes in land use management that were not analyzed in the previous RMP and amendments.

Preparation of this document was guided by BLM planning regulations issued under the authority of the Federal Land Policy and Management Act of 1976 and federal environmental policy under the National Environmental Policy Act (NEPA) of 1969. The RMP/EIS primarily focuses on five planning issues and the decisions needed to resolve them. The issues were identified through public scoping, interviews with members of the public in the FFO area, concerns raised to BLM staff in their interactions with public land users, and resource management concerns of the BLM and cooperating agencies. The five issues are: (1) Oil and Gas Leasing and Development; (2) Land Ownership Adjustments; (3) Off-Highway Vehicle Use; (4) Management of Specially Designated Areas; and (5) Coal Leasing Suitability Assessment.

Oil and gas leasing and development is an issue primarily because of the rate of development occurring in the planning area. The EIS for the RMP Amendment (BLM 1991a), under which oil and gas activities have been conducted to date, analyzed impacts for a projection of 4,465 wells drilled in the 20-year period 1991-2011. Changes in state spacing regulations and infill drilling have revised the estimate of projected new wells on federal surface to 9,970. The surface disturbance associated with this projected increase in development would exceed the level analyzed in prior NEPA analysis.

Land ownership adjustments are conducted by the BLM to consolidate administrative boundaries when it is in the public interest. The population of San Juan County has continued to grow since the original 1988 RMP was prepared. This growth has increased the demand to make land available for urban expansion or public purposes in the tri-city area of Farmington, Bloomfield, and Aztec. The RMP revision serves to re-examine the status of lands that may be available for disposal, as well as identify lands that the BLM would like to acquire if they are made available by willing sellers.

Federal regulations (43 CFR 8342.2) require that OHV designations be accomplished through the resource management planning process. As the population of San Juan County has increased, so has the amount of OHV use on public lands along with concerns that the OHV designations established in the 1988 RMP are no longer appropriate to protect public resources. An RMP revision is necessary to re-visit OHV designations with the objective of protecting sensitive surface resources while

providing opportunities for OHV based recreation on public lands.

Prior planning efforts established a variety of Specially Designated Areas (Areas of Critical Environmental Concern [ACEC], Research Natural Areas [RNA], Special Management Area [SMA]). As time progresses, new information uncovered by inventory and monitoring efforts as well as regulatory and policy changes can identify additional lands needing special management attention. For areas to be designated as ACEC, federal regulations (43 CFR 1610.7-2) indicate the RMP process as the vehicle for analyzing proposed ACEC designations.

Coal companies have expressed an interest in leasing coal in areas that have not been analyzed since previous plans. Section 3 (3A) of the Federal Coal Leasing Amendments Act of 1976 requires comprehensive land-use planning prior to coal leasing.

These planning issues were developed partly by considering the concerns and comments from people outside the BLM and the cooperating agencies. Comments were received both in formal public scoping meetings and through public interviews conducted for the BLM in the local communities from September 2000 to April 2001. Formal consultations with tribal governments and Endangered Species Act (ESA), Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS) were conducted for this planning effort. Informal consultation and coordination was carried out with other federal and state agencies and with municipalities in the area.

The FFO received over 12,000 comment documents, either in letter format via mail, e-mail, and fax, or in oral comments at public hearings. Most of these comments were submitted in form letters that contained identical text. Of the comments submitted, over 1,500 separate ones received responses that are listed in Appendix P. In response to some of these comments, changes were made to the document, now called the Proposed RMP/Final EIS. The major changes involved additional air quality modeling and the addition of a Mitigation and Monitoring section at the end of Chapter 4.

To assist the agency decision-makers and the general public in choosing appropriate solutions to the planning issues, four alternatives or combinations of management options are proposed and their impacts evaluated. These four alternatives are identified in the RMP/EIS as Alternative A—Current Management, Alternative B—Resource Production focus, Alternative C—Resource Conservation focus, and Alternative D—a Balanced Approach, which has been carried forward as the Proposed Plan. The alternatives were limited to those that span a reasonable and implementable way of managing public lands and federal minerals, while offering a broad range of potential impacts to be evaluated. All assumptions on oil and gas production potential were based on the data and projections presented in a Reasonable Foreseeable Development Scenario (RFDS) prepared for the BLM by New Mexico Institute of Mining and Technology (Engler et al. 2001).

All of the alternatives were developed to meet the intent of BLM's multiple use mission while complying with applicable laws, regulations, and policies.

Alternative A constitutes the No Action Alternative, which describes the current management of the resources affected by the planning issues and evaluates the impacts if those management practices were to continue over the 20-year planning period. Alternative A provides a baseline for comparison of other alternatives. Under all of the alternatives, resources would continue to be managed according to the Continuing Management Guidance presented in Chapter 2. Many existing management decisions that were derived from previous planning documents are incorporated into Alternative A and some would be carried forward under all alternatives. Management under all alternatives would allow for land use decisions to be responsive to changing regulations and policies.

Where there is some flexibility in management decisions, resource specialists in the FFO proposed changes that are incorporated into the other three alternatives. The Resource Production Alternative, Alternative B, attempts to resolve the planning issues while placing primary emphasis on making public land and oil and gas resources available for use and development. It was developed to evaluate the impacts of the highest amount of new well locations by assuming that there would be no commingling and little co-location of oil and gas infrastructure. Based on the history of the industry in this region, this scenario is not likely to occur to the extreme analyzed in this document, but is used as a comparison to enable the full range of surface disturbance possible and its impact on other resources. Other changes in management direction evaluated under this alternative include changes to off-highway vehicle (OHV) use designations, an increase in potential disposal areas around the tri-cities of Farmington, Aztec, and Bloomfield, a few new specially designated areas to protect natural resources, and consideration of new areas of interest for coal mining.

The Resource Conservation Alternative, Alternative C, attempts to resolve the planning issues while placing primary emphasis on protecting natural and cultural resource values. The visual resources, wilderness, wildlife, cultural resources, paleontology, threatened and endangered species, and other resource conservation-oriented programs are the focus. The goal of this alternative is to permit extraction of the mineral resources while placing limits on development activities where protection of important natural and cultural resources would be likely to be affected. Under this alternative, acreage of public land within specially designated areas would increase and have more stringent limitations on surface-disturbing activities. OHV use, areas under consideration for coal mining, and land disposal would be the most limited under Alternative C.

The Proposed Plan, Alternative D, is designed to provide balanced management direction. The goal is to resolve the five issues by providing for a combination of resource uses that would protect important environmental values and sensitive resources while also allowing development of mineral resources that provide employment and tax revenues to the region. This alternative incorporates concepts proposed in both the resource conservation and hydrocarbon production alternatives, as well as encouraging the use of new technology to lessen conflicts between the emphasis areas.

Alternative D has been selected as the Proposed Plan that would guide the future management of public lands in the FFO area. After resolution of any protests received during the 30-day protest period, the decisions about the FEIS and proposed plan will be documented in a separate Record of Decision (ROD), which has to be approved by the BLM State Director. A summary of the potential impacts that have been identified during the evaluation of each alternative is presented in the following table. The impacts identified include both adverse and beneficial effects as a basis for comparing the alternatives and for considering their environmental consequences. It is important to recognize that the following table is a summary of the most significant potential impacts identified under each alternative to enable comparison of the alternatives by the reader. Other impacts are discussed in Chapter 4 that have not been included in this section. Most of these impacts would be lessened by compliance with BLM guidelines and policy, as well as through the implementation of the mitigation measures listed at the end of Chapter 4. Definitions of terms and more complete explanations of the impacts described in this summary are included in the narrative in Chapter 4 under each resource and alternative.

SUMMARY OF POTENTIAL IMPACTS BY ALTERNATIVE

Alternative A: Current Management (No Action)	Alternative B: Resource Production	Alternative C: Resource Conservation	Alternative D: Proposed Plan
Watersheds			
Surface disturbance, especially bare soil on unpaved roads, is a major contributor to changes in sediment yield and the management of natural and cultural resources in a watershed. Initial short-term surface disturbance is estimated to total 13,971 acres due to new wells, roads, and small pipelines, in addition to the surface disturbance resulting from construction of large pipelines and compressors, with 4,598 acres to be revegetated after construction. There would be approximately 358 miles of new oil and gas service roads.	Initial short-term surface disturbance is estimated to total 41,941 acres due to new wells, roads, and small pipelines, in addition to the surface disturbance resulting from construction of large pipelines and compressors, with 13,806 acres to be revegetated after construction. There would be approximately 1,075 miles of new oil and gas service roads.	Initial short-term surface disturbance is estimated to total 31,459 acres due to new wells, roads, and small pipelines, in addition to the surface disturbance resulting from construction of large pipelines and compressors, with 10,229 acres to be revegetated after construction. There would be approximately 797 miles of new oil and gas service roads.	Initial short-term surface disturbance is estimated to total 36,451 acres due to new wells, roads, and small pipelines, in addition to the surface disturbance resulting from construction of large pipelines and compressors, with 10,339 acres to be revegetated after construction. There would be approximately 805 miles of new oil and gas service roads.
Minerals			
Estimated future production of gas would be affected by the number of APDs approved and the amount of reserves developed. After consideration of limitations, there would be 4,910 billion standard cubic feet (Bscf) (44 percent of potential reserves) of gas estimated to be produced during the 20-year planning period. 73 wells would be directionally drilled and 17 would not be accessible due to no surface occupancy constraints. Approximately 138,000 acres of federal minerals would be available for consideration for coal leasing after preliminary application of the unsuit-	After consideration of limitations, there would be 11,158 Bscf (100 percent of potential reserves) of gas estimated to be produced during the 20-year planning period. 84 wells would be directionally drilled and 17 would not be accessible due to no surface occupancy constraints. Approximately 378,875 acres of federal minerals would be available for consideration for coal leasing after preliminary application of the unsuitability criteria. Potential conflicts between oil and gas and coal operators are possible south of the high development oil and gas area.	After consideration of limitations, there would be 11,002 Bscf (98.6 percent of potential reserves) of gas estimated to be produced during the 20-year planning period. 195 wells would be directionally drilled and 134 would not be accessible due to no surface occupancy constraints. Approximately 378,275 acres of federal minerals would be available for consideration for coal leasing after preliminary application of the unsuitability criteria. Potential conflicts between oil and gas and coal operators are possible south of the high development oil and gas area.	After consideration of limitations, there would be 11,125 Bscf (99.7 percent of potential reserves) of gas estimated to be produced during the 20-year planning period. 145 wells would be directionally drilled and 28 would not be accessible due to no surface occupancy constraints. Approximately 378,275 acres of federal minerals would be available for consideration for coal leasing after preliminary application of the unsuitability criteria. Potential conflicts between oil and gas and coal operators are possible south of the high development oil and gas area.

Alternative A: Current Management (No Action)	Alternative B: Resource Production	Alternative C: Resource Conservation	Alternative D: Proposed Plan
ability criteria. Potential conflicts between oil and gas and coal operators are possible south of the high development oil and gas area.			
Soils			
The impact to soils would be an increase in soil erosion due to the increase in bare ground and unpaved roads. The amount of short-term disturbance of soils is described above under **Watersheds**. When accounting for the reclamation of plugged and abandoned (P&A) wells and roads, and the installation of large pipelines and compressors, the net long-term surface disturbance over 20 years would be over 900 acres. There would be the greatest potential for damage to soils from OHVs under this alternative due to the large acreage of open designations. Localized protection of soils would be anticipated in specially designated areas that limit OHV access and surface disturbing activities.	The impact to soils would be an increase in soil erosion due to the increase in bare ground and unpaved roads. The amount of short-term disturbance of soils is described above under **Watersheds**. When accounting for the reclamation of P&A wells and roads, and the installation of large pipelines and compressors, the net long-term surface disturbance over 20 years would be almost 24,800 acres. There would be much less potential for damage to soils from OHVs under this alternative due to the majority of the FFO being under limited designations.	The impact to soils would be an increase in soil erosion due to the increase in bare ground and unpaved roads. The amount of short-term disturbance of soils is described above under **Watersheds**. When accounting for the reclamation of P&A wells and roads, and the installation of large pipelines and compressors, the net long-term surface disturbance over 20 years would be over 18,000 acres. There would be much less potential for damage to soils from OHVs under this alternative due to the majority of the FFO being under limited designations.	The impact to soils would be an increase in soil erosion due to the increase in bare ground and unpaved roads. The amount of short-term disturbance of soils is described above under **Watersheds**. When accounting for the reclamation of P&A wells and roads, and the installation of large pipelines and compressors, the net long-term surface disturbance over 20 years would be over 18,500 acres. There would be much less potential for damage to soils from OHVs under this alternative due to the majority of the FFO being under limited designations.
Water			
Water usage for well drilling is estimated to be approximately 3,100 acre-feet over the planning period. Impacts to surface water quality from mineral development would result from increased erosion and sedimentation from surface disturbance during construction and bare soils on wells and roads. Localized long-term impacts from increased peak runoff rates,	Water usage for well drilling is estimated to be approximately 9,300 acre-feet over the planning period. Impacts to surface water quality from mineral development would result under this alternative from increased erosion and sedimentation from surface disturbance during construction and bare soils on wells and roads. Localized long-term impacts from increased peak	Water usage for well drilling is estimated to be approximately 6,900 acre-feet over the planning period. Impacts to surface water quality from mineral development would result from increased erosion and sedimentation from surface disturbance during construction and bare soils on wells and roads. Localized long-term impacts from increased peak runoff rates,	Water usage for well drilling is estimated to be approximately 7,000 acre-feet over the planning period. Impacts to surface water quality from mineral development would result from increased erosion and sedimentation from surface disturbance during construction and bare soils on wells and roads. Localized long-term impacts from increased peak runoff rates,

Alternative A: Current Management (No Action)	Alternative B: Resource Production	Alternative C: Resource Conservation	Alternative D: Proposed Plan
erosion, and sedimentation are likely to result from additional mineral infrastructure and open OHV access.	runoff rates, erosion, and sedimentation are likely to result from additional mineral infrastructure. Impacts would be greatest under this alternative. The limitation of most OHV access would result in localized benefits to water resources. OHV limitations would provide a beneficial impact to water resources by reducing surface disturbance.	erosion, and sedimentation are likely to result from additional mineral infrastructure. Impacts would be greater than Alternative A, but less than Alternative B or D. The limitation of most OHV access would result in localized benefits to water resources. OHV limitations would provide a beneficial impact to water resources by reducing surface disturbance.	erosion, and sedimentation are likely to result from additional mineral infrastructure. Impacts would be greater than Alternative C and A, but less than Alternative B. The limitation of most OHV access would result in localized benefits to water resources. OHV limitations would provide a beneficial impact to water resources by reducing surface disturbance.
Air Quality			
Near-field ambient pollutant impacts due to gas production would be low, as the amount of development proposed for the alternative is the least of all alternatives. The net change in emissions (tons per year) from compressors by year 20 would be—volatile organic compounds (VOC): 744.1; carbon monoxide (CO): 12,621.7; nitrogen oxides (NOx): 13,102.7; particulate matter (PM_{10}): 5.3. The impact of greatest concern from OHV use would be the intense vehicular usage in concentrated areas adjacent to residential areas or roadways. State standards would be achieved. BLM will work with the New Mexico Air Quality Bureau (NMAQB) to ensure standards are met.	Near-field ambient pollutant impacts due to gas production would be higher than under Alternative A, as the amount of development proposed assumes maximum production. The net increase in emissions (tons per year) from compressors by year 20 would be—VOC: 2,771.5; CO: 60,462.3; NOx: 62,160.7; PM_{10}: 26.2. The State has primacy for air quality and issues permits for the larger compressors. It is possible that the 24-hour state standard for nitrogen dioxide (NO_2) could be reached or exceeded if all of the compressors identified in the RFDS were installed. FFO will participate on the steering committee of the Four Corners Regional Task Force with the NMAQB to monitor air quality and identify appropriate mitigation measures that would minimize projected impacts to air quality. State standards would be achieved. BLM will work with the NMAQB to ensure standards are met. BLM will only approve projects that are	Near-field ambient pollutant impacts due to gas production would be higher than under Alternative A, as the amount of development proposed assumes maximum production. The net increase in emissions from compressors by year 20 would be 69 percent of that described under Alternative B. The State has primacy for air quality and issues permits for the larger compressors. It is possible that the 24-hour state standard for NO_2 could be reached or exceeded if all of the compressors identified in the RFDS were installed. FFO will participate on the steering committee of the Four Corners Regional Task Force with the NMAQB to monitor air quality and identify appropriate mitigation measures that would minimize projected impacts to air quality. State standards would be achieved. BLM will work with the NMAQB to ensure standards are met. BLM will only approve projects that are	Near-field ambient pollutant impacts due to gas production would be higher than under Alternative A, as the amount of development proposed assumes almost maximum production. The net increase in emissions from compressors by year 20 would be 70 percent of that described for Alternative B. The State has primacy for air quality and issues permits for the larger compressors. It is possible that the 24-hour state standard for NO_2 could be reached or exceeded if all of the compressors identified in the RFDS were installed. FFO will participate on the steering committee of the Four Corners Regional Task Force with the NMAQB to monitor air quality and identify appropriate mitigation measures that would minimize projected impacts to air quality. State standards would be achieved. BLM will work with the NMAQB to ensure standards are met. BLM will only approve projects that are

Alternative A: Current Management (No Action)	Alternative B: Resource Production	Alternative C: Resource Conservation	Alternative D: Proposed Plan
	approve projects that are in compliance with applicable air quality regulations. Limitations on OHV use would provide beneficial impacts in concentrated areas adjacent to residential areas or roadways to residential areas or roadways.	in compliance with applicable air quality regulations. Limitations on OHV use would provide beneficial impacts in concentrated areas adjacent to residential areas or roadways.	in compliance with applicable air quality regulations. Limitations on OHV use would provide beneficial impacts in concentrated areas adjacent to residential areas or roadways.
Upland Vegetation			
Long-term impacts to the piñon-juniper woodlands and Great Basin Desert Scrub plant communities within the high development area would result from construction of oil and gas facilities. Revegetation would not replace these plant communities during the 20-year planning period. With the least amount of surface disturbance predicted, this alternative would affect the fewest acres of vegetation (13,971 acres short-term, 9,373 long-term). The disposal of land could have negative effects on upland vegetation if new land disturbance activities were to take place after transfer. Land acquisition has the potential to have a beneficial impact on plant communities that would be placed under FFO management. The continuation of open OHV use in most of the FFO area would result in the continued degradation of upland plant communities.	Long-term impacts to the piñon-juniper woodlands and Great Basin Desert Scrub plant communities within the high development area would result from the highest acreage (41,941 acres short-term, 28,135 acres long-term) of surface disturbance for construction of oil and gas facilities. Revegetation would not replace these plant communities during the 20-year planning period. Emphasis on weed management plans and reestablishment of native vegetation would provide positive benefits. This alternative has the highest acreage that would be available for disposal, which could have negative effects on upland vegetation if new land disturbance activities were to take place after transfer. Land acquisition has the potential to have a beneficial impact on plant communities that would be placed under FFO management. The limitations on open OHV use in most of the FFO area would result in beneficial impacts to upland plant communities.	Long-term impacts to the piñon-juniper woodlands and Great Basin Desert Scrub plant communities within the high development area would result from the surface disturbance (31,549 acres short-term, 21,320 acres long-term) for construction of oil and gas facilities. Revegetation would not replace these plant communities during the 20-year planning period. Emphasis on weed management plans and reestablishment of native vegetation would provide positive benefits. Land disposal could have negative effects on upland vegetation if new land disturbance activities were to take place after transfer. This alternative has the highest acreage of land to be acquired and the greatest potential for beneficial impacts on plant communities that would be placed under FFO management. The limitations on open OHV use in most of the FFO area would result in beneficial impacts to upland plant communities.	Long-term impacts to the piñon-juniper woodlands and Great Basin Desert Scrub plant communities within the high development area would result from the surface disturbance (36,451 acres short-term, 26,112 acres long-term) for construction of oil and gas facilities. Revegetation would not replace these plant communities during the 20-year planning period. Emphasis on weed management plans and reestablishment of native vegetation would provide positive benefits. Land disposal could have negative effects on upland vegetation if new land disturbance activities were to take place after transfer. This alternative has close to the highest acreage of land to be acquired and a high potential for beneficial impacts on plant communities that would be placed under FFO management. The limitations on open OHV use in most of the FFO area would result in beneficial impacts to upland plant communities.

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Riparian Areas and Wetlands			
Beneficial impacts on riparian areas and wetlands would be derived from Controlled Surface Use (CSU) constraints on oil and gas development within approximately 2,500 acres of public land in the River Tracts SMA. However, small isolated patches of riparian vegetation that do not meet the criteria to be designated as Riparian Areas could be affected by oil and gas development through surface disturbance, construction, and removal of vegetation. Land acquisition has the potential to have a beneficial impact on riparian plant communities, especially if land were acquired in support of the riparian resource program along the rivers and washes on FFO land. Designated FFO riparian areas would not be included in land being considered for disposal. The continuation of limited OHV designations would be beneficial to riparian resources within River Tract Habitat Management Plan (HMP) lands. The continuation of the open OHV designation in other riparian areas could degrade riparian resources.	The proposed Ephemeral Wash Riparian Area on 7,459 acres of public land would provide additional protection to riparian and wetland areas. There would be more emphasis on acquiring inholdings within the River Tracts Riparian Area than there would be under Alternative A, which would provide additional protection to those riparian areas by applying the more stringent management prescriptions. CSU constraints in over 236,000 acres in SDAs would assist managers in avoiding riparian and wetland areas because oil and gas operations can be moved in order to minimize impacts to riparian areas and wetlands. The limitation on OHV access within designated Riparian Areas of the River Tract HMPs and the addition of the Ephemeral Wash Specially Designated Areas containing approximately 7,000 acres of public land would have a beneficial impact by protecting them from damage caused by OHV travel. The continuation of OHV traffic in dry washes could degrade small isolated patches of riparian vegetation that do not meet the criteria to be designated as Riparian Areas.	NSO constraints on oil and gas development within the 100-year floodplain of Ephemeral Wash Riparian Area and CSU constraints within most of the 10,000 acres of public land in the River Tracts and Ephemeral Wash Riparian Areas would reduce impacts to riparian and wetland areas. Impacts would be less than under Alternative B and more than under Alternative A. Land acquisition has the potential to have a beneficial impact on riparian plant communities, especially if land were acquired in support of the riparian resource program along the rivers and washes on FFO land. Designated FFO riparian areas would not be included in land being considered for disposal. The limitation on OHV access within designated Riparian Areas and the expansion of these areas to include an additional 7,000 acres of public land would have a beneficial impact by protecting them from damage caused by OHV travel. The elimination of OHV traffic in dry washes could benefit riparian vegetation outside designated Riparian Areas, as would the limited OHV designations in most of the FFO.	NSO constraints on oil and gas development within the 100-year floodplain of Ephemeral Wash Riparian Area and CSU constraints within most of the 10,000 acres of public land in the River Tracts and Ephemeral Wash Riparian Areas would reduce impacts to riparian and wetland areas. Impacts would be less than under Alternative B and more than under Alternatives A and C. Land acquisition has the potential to have a beneficial impact on riparian plant communities, especially if land were acquired in support of the riparian resource program along the rivers and washes on FFO land. Designated FFO riparian areas would not be included in land being considered for disposal. The limitation on OHV access within designated Riparian Areas of the River Tract HMPs and the addition of the Ephemeral Wash Specially Designated Areas containing approximately 7,000 acres of public land would have a beneficial impact by protecting them from damage caused by OHV travel. The continuation of OHV traffic in dry washes could degrade small isolated patches of riparian vegetation that do not meet the criteria to be designated as Riparian Areas.

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Special Status Species			
The implementation of Alternative A is not likely to adversely affect any federally listed species or designated critical habitats. FFO has established special management, monitoring, and survey protocols for all listed species. All listed plants are protected in RNAs or ACECs where OHV use is controlled and oil and gas development stipulations are established. Listed avian species are protected in ACECs, SMAs, or designated suitable habitat. Listed fish species in the San Juan River benefit from riparian management outlined in the Farmington Riparian and Aquatic Habitat Management Plan (August 2000). As new species are listed in the future, FFO would conduct necessary surveys, initiate monitoring programs, establish protective stipulations, and coordinate and consult with USFWS to ensure that development authorized by FFO will comply with the ESA.	The implementation of Alternative B is not likely to adversely affect any federally listed species or designated critical habitats. FFO has established special management, monitoring, and survey protocols for all listed species. All listed plants are protected in RNAs or ACECs where OHV use is controlled and oil and gas development stipulations are established. Listed avian species are protected in ACECs, SMAs, or designated suitable habitat. Listed fish species in the San Juan River benefit from riparian management outlined in the Farmington Riparian and Aquatic Habitat Management Plan (August 2000). As new species are listed in the future, FFO would conduct necessary surveys, initiate monitoring programs, establish protective stipulations, and coordinate and consult with USFWS to ensure that development authorized by FFO will comply with the ESA.	The implementation of Alternative C is not likely to adversely affect any federally listed species or designated critical habitats. FFO has established special management, monitoring, and survey protocols for all listed species. All listed plants are protected in RNAs or ACECs where OHV use is controlled and oil and gas development stipulations are established. Listed avian species are protected in ACECs, SMAs, or designated suitable habitat areas. Listed fish species in the San Juan River benefit from riparian management outlined in the Farmington Riparian and Aquatic Habitat Management Plan (August 2000). As new species are listed in the future, FFO would conduct necessary surveys, initiate monitoring programs, establish protective stipulations, and coordinate and consult with USFWS to ensure that development authorized by FFO will comply with the ESA.	The implementation of Alternative D is not likely to adversely affect any federally listed species or designated critical habitats. FFO has established special management, monitoring, and survey protocols for all listed species. All listed plants are protected in RNAs or ACECs where OHV use is controlled and oil and gas development stipulations are established. Listed avian species are protected in ACECs, SMAs, or designated suitable habitat. Listed fish species in the San Juan River benefit from riparian management outlined in the Farmington Riparian and Aquatic Habitat Management Plan (August 2000). As new species are listed in the future, FFO would conduct necessary surveys, initiate monitoring programs, establish protective stipulations, and coordinate and consult with USFWS to ensure that development authorized by FFO will comply with the ESA.
Fisheries and Wildlife			
No significant impacts to fisheries have been identified. Habitat fragmentation and road traffic from existing oil and gas wells, pipelines, and roads, added to projected construction would result in the potential for negative impacts to wildlife in the best locations of wildlife population. Within proposed wildlife areas, an additional 44 miles of road	No significant impacts to fisheries have been identified. Habitat fragmentation and road traffic from existing oil and gas wells, pipelines, and roads, added to projected construction would result in the potential for negative impacts to wildlife in the best locations of wildlife population. Within proposed wildlife areas, an additional 296 miles of road	No significant impacts to fisheries have been identified. Habitat fragmentation and road traffic from existing oil and gas wells, pipelines, and roads, added to projected construction would result in the potential for negative impacts to wildlife in the best locations of wildlife population. Within proposed wildlife areas, an additional 219 miles of road	No significant impacts to fisheries have been identified. Habitat fragmentation and road traffic from existing oil and gas wells, pipelines, and roads, added to projected construction would result in the potential for negative impacts to wildlife in the best locations of wildlife population. Within proposed wildlife areas, an additional 220 miles of road

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and 1,812 acres of long-term habitat disturbance is projected in addition to the existing 18,956 acres already disturbed. Habitat fragmentation would be the least under Alternative A but would still be likely to reduce the carrying capacity of the habitat for mule deer, elk, pronghorn antelope, and breeding birds. Projected functional habitat loss is projected to be 7,046 acres within 660 feet of roads. The open OHV designation throughout most of the FFO area would have a negative effect on wildlife by allowing continued disturbance and habitat loss.	and 11,546 acres of long-term habitat disturbance is projected in addition to the existing 18,956 acres already disturbed. Habitat fragmentation would be the greatest under Alternative B and would be likely to reduce the carrying capacity of the habitat for mule deer, elk, pronghorn antelope, and breeding birds. Projected functional habitat loss is projected to be 40,320 acres within 660 feet of roads The limited OHV designation throughout most of the FFO area would have a positive effect on wildlife by restricting cross-country travel in wildlife habitat areas.	and 8,569 acres of long-term habitat disturbance is projected in addition to the existing 18,956 acres already disturbed. Habitat fragmentation would be less than under Alternative B, but would still be likely to reduce the carrying capacity of the habitat for mule deer, elk, pronghorn antelope, and breeding birds. Projected functional habitat loss is projected to be 35,200 acres within 660 feet of roads The limited OHV designation throughout most of the FFO area would have a positive effect on wildlife by restricting cross-country travel in wildlife habitat areas.	and 8,569 acres of long-term habitat disturbance is projected in addition to the existing 18,956 acres already disturbed. Habitat fragmentation would be similar to that under Alternative C and would be likely to reduce the carrying capacity of the habitat for mule deer, elk, pronghorn antelope, and breeding birds. Projected functional habitat loss is projected to be 35,200 acres within 660 feet of roads The limited OHV designation throughout most of the FFO area would have a positive effect on wildlife by restricting cross-country travel in wildlife habitat areas.
Wilderness			
No direct impacts are anticipated to the Wilderness Areas (WA) from any of the alternatives. Direct impacts would only occur if oil and gas development or coal mining were allowed within the Wilderness Study Areas (WSA) in the planning area. This would most likely affect the Ah-shi-sle-pah WSA if the Preference Right Lease Applications (PRLA) currently being adjudicated would be approved for coal mining. Acquisition of inholdings within the Bisti/De-na-zin WA would benefit the area by consolidating land use management.	No direct impacts are anticipated to the WAs from any of the alternatives. Direct impacts would only occur if oil and gas development or coal mining were allowed within the WSAs in the planning area. This would most likely affect the Ah-shi-sle-pah WSA if the PRLAs currently being adjudicated would be approved for coal mining. Acquisition of inholdings within the Bisti/De-na-zin WA would benefit the area by consolidating land use management.	No direct impacts are anticipated to the WAs from any of the alternatives. Direct impacts would only occur if oil and gas development or coal mining were allowed within the WSAs in the planning area. This would most likely affect the Ah-shi-sle-pah WSA if the PRLAs currently being adjudicated would be approved for coal mining. Acquisition of inholdings within the Bisti/De-na-zin WA would benefit the area by consolidating land use management.	No direct impacts are anticipated to the WAs from any of the alternatives. Direct impacts would only occur if oil and gas development or coal mining were allowed within the WSAs in the planning area. This would most likely affect the Ah-shi-sle-pah WSA if the PRLAs currently being adjudicated would be approved for coal mining. Acquisition of inholdings within the Bisti/De-na-zin WA would benefit the area by consolidating land use management.

Alternative A: Current Management (No Action)	Alternative B: Resource Production	Alternative C: Resource Conservation	Alternative D: Proposed Plan
Rangeland			
Impacts on rangeland from added oil and gas development would have a minimal effect on current livestock grazing when comparing the acreage of forage (13,971 acres short-term, 9,373 long-term) that would be removed from grazing due to construction of oil and gas facilities to the acreage available in the FFO. Ongoing conflicts between oil and gas operators and grazing permittees may continue. Other continuing areas of potential conflict between oil and gas operations and grazing permittees would include livestock inhibiting revegetation of disturbed areas, truck traffic disturbing or harming livestock, and the spread of noxious weeds by oil and gas vehicles that compete with desired rangeland plants. Land disposal could change the grazing authorization in the FFO area. Most of the land available for disposal would be in the area south of US Highway 550. Unlimited OHV access would continue to damage forage in most of the FFO area, leading to loss of topsoil, a reduction of soil quality, a downward trend of forage, and conflicts over OHV traffic and vandalism of rangeland improvements and fences. There would be approximately 10,000 acres in 22 specially designated areas that would limit grazing.	Impacts on rangeland from added oil and gas development would have a minimal effect on current livestock grazing when comparing the acreage of forage (41,941 acres short-term, 28,135 acres long-term) that would be removed from grazing due to construction of oil and gas facilities to the acreage available in the FFO. Ongoing conflicts between oil and gas operators and grazing permittees may continue. Other continuing areas of potential conflict between oil and gas operations and grazing permittees would include livestock inhibiting revegetation of disturbed areas, truck traffic disturbing or harming livestock, and the spread of noxious weeds by oil and gas vehicles that compete with desired rangeland plants. Land disposal could change the grazing authorization in the FFO area in the area south of US Highway 550 and around the tri-cities where 28 allotments could be affected. This would increase the potential for conflicts over livestock exclusion from urbanizing areas. Limited OHV access would benefit forage and limit damage to rangeland improvements in most of the FFO area. There would be over 9,300 acres in 23 specially designated areas that would limit grazing.	Impacts on rangeland from added oil and gas development would have a minimal effect on current livestock grazing when comparing the acreage of forage (31,549 acres short-term, 21,320 acres long-term) that would be removed from grazing due to construction of oil and gas facilities to the acreage available in the FFO. Ongoing conflicts between oil and gas operators and grazing permittees may continue. Other continuing areas of potential conflict between oil and gas operations and grazing permittees would include livestock inhibiting revegetation of disturbed areas, truck traffic disturbing or harming livestock, and the spread of noxious weeds by oil and gas vehicles that compete with desired rangeland plants. Land disposal could change the grazing authorization in the FFO area. Most of the land available for disposal would be in the area south of US Highway 550. Limited OHV access would benefit forage and limit damage to rangeland improvements in most of the FFO area. There would be approximately 64,500 acres in 67 specially designated areas that would limit grazing.	Impacts on rangeland from added oil and gas development would have a minimal effect on current livestock grazing when comparing the acreage of forage (36,451 acres short-term, 26,112 acres long-term) that would be removed from grazing due to construction of oil and gas facilities to the acreage available in the FFO. Ongoing conflicts between oil and gas operators and grazing permittees may continue. Other continuing areas of potential conflict between oil and gas operations and grazing permittees would include livestock inhibiting revegetation of disturbed areas, truck traffic disturbing or harming livestock, and the spread of noxious weeds by oil and gas vehicles that compete with desired rangeland plants. Land disposal could change the grazing authorization in the FFO area. Most of the land available for disposal would be in the area south of US Highway 550. Limited OHV access would benefit forage and limit damage to rangeland improvements in most of the FFO area. There would be approximately 25,700 acres in 31 specially designated areas that would limit grazing.

Alternative A: Current Management (No Action)	Alternative B: Resource Production	Alternative C: Resource Conservation	Alternative D: Proposed Plan
Lands and Access			
Changes in the volume of industry-related traffic due to projected oil and gas development is primarily an access issue. It is estimated that there would be a -16 percent change in trips at the end of the 20-year planning period under Alternative A. There would be a projected increase in the amount of land in split estate in the FFO by about 264,800 acres or from 11 to 15 percent from land disposal. BLM would retain any necessary rights-of-way (ROW) during land disposal transactions. Acquisition of inholdings in specially designated areas would benefit land use management. Conflicts among OHV users, private property owners, and ranchers arising from unlimited cross-country vehicular access would continue under ongoing OHV policy.	It is estimated that there would be a +8 percent change in trips at the end of the 20-year planning period under Alternative B. There would be a projected increase in the amount of land in split estate in the FFO by about 329,300 acres, or about 44 percent, from land disposal. BLM would retain any necessary ROWs during land disposal transactions. Acquisition of inholdings in specially designated areas would benefit land use management. Conflicts among OHV users, private property owners, and ranchers would be reduced under the proposed limitations to OHV access.	It is estimated that there would be a -3 percent change in trips at the end of the 20-year planning period under Alternative C. There would be a projected increase in the amount of land in split estate in the FFO by about 14,000 acres from land disposal. BLM would retain any necessary ROWs during land disposal transactions. Acquisition of inholdings in specially designated areas would benefit land use management. Conflicts among OHV users, private property owners, and ranchers would be reduced under the proposed limitations to OHV access.	It is estimated that there would be a -2 percent change in trips at the end of the 20-year planning period under Alternative D. There would be a projected increase in the amount of land in split estate in the FFO similar to Alternative B from land disposal. BLM would retain any necessary ROWs during land disposal transactions. Acquisition of inholdings in specially designated areas would benefit land use management. Conflicts among OHV users, private property owners, and ranchers would be reduced under the proposed limitations to OHV access.
Visual Resources			
There would be a trend toward degradation of visual resources under each alternative due to the additional surface disturbance from oil and gas development and potential additional coal mining. The impact to visual resources would be the least in the high development area under Alternative A because the least development is projected. Acquisition of inholdings within specially designated areas could add	There would be a trend toward degradation of visual resources under each alternative due to the additional surface disturbance from oil and gas development and potential additional coal mining. The impact to visual resources would be the greatest in the high development area under Alternative B because the most well locations would be developed. Acquisition of inholdings within specially designated areas could add	There would be a trend toward degradation of visual resources under each alternative due to the additional surface disturbance from oil and gas development and potential additional coal mining. The impact to visual resources would be less than Alternative B and more than Alternative A. Acquisition of inholdings within the highest acreage of specially designated areas could add higher protection of visual qualities through the applica-	There would be a trend toward degradation of visual resources under each alternative due to the additional surface disturbance from oil and gas development and potential additional coal mining. The impact to visual resources would be less than Alternative B and more than Alternative A. Acquisition of inholdings within more specially designated areas could add higher protection of visual qualities through the application of VRM

Alternative A: Current Management (No Action)	Alternative B: Resource Production	Alternative C: Resource Conservation	Alternative D: Proposed Plan
higher protection of visual qualities through the application of Visual Resource Management (VRM) designations in some areas. OHV use would continue to contribute to localized alterations, mostly around the tri-city area, further degrading areas with deteriorated visual value. The emphasis on land disposal under this alternative would put additional land at risk for future development without VRM constraints throughout the FFO area.	higher protection of visual qualities through the application of VRM designations in some areas. Limiting OHV use to roads and trails and concentrating cross-country use into very localized areas would limit potential scarring and visual degradation. The emphasis on land disposal under this alternative would put additional land at risk for future development without VRM constraints throughout the FFO area.	tion of VRM designations in some areas. Limiting OHV use to roads and trails and concentrating cross-country use into very localized areas would limit potential scarring and visual degradation. The emphasis on land acquisition under this alternative would benefit visual resources.	designations in some areas. Limiting OHV use to roads and trails and concentrating cross-country use into very localized areas would limit potential scarring and visual degradation. The emphasis on land acquisition under this alternative would benefit visual resources.
Cultural Resources			
Impacts to cultural resources would be caused by surface disturbance from construction that has the potential to adversely affect cultural resources, including archaeological sites, historic properties, and traditional cultural properties (TCP) that previously have not been disturbed, especially in the areas with the highest density of sites and surface disturbance. Inventories are required prior to all surface disturbing activities. It is projected that 736 sites would be affected and would require mitigation or avoidance before oil and gas facilities could be constructed. The addition of over 350 miles of new roads could result in increased vandalism from increased public access. The open OHV access would adversely affect cultural resources by cross-country travel. There are 84 specially designated	Impacts to cultural resources would be caused by surface disturbance from construction that has the potential to adversely affect cultural resources, including archaeological sites, historic properties, and TCPs that previously have not been disturbed, especially in the areas with the highest density of sites and surface disturbance. Inventories are required prior to all surface disturbing activities. It is projected that 2,211 sites would be affected and would require mitigation or avoidance before oil and gas facilities could be constructed. The addition of almost 1,100 miles of new roads could result in increased vandalism from increased public access. The limited OHV access would have a beneficial effect on cultural resources by providing protection from cross-country travel.	Impacts to cultural resources would be caused by surface disturbance from construction that has the potential to adversely affect cultural resources, including archaeological sites, historic properties, and TCPs that previously have not been disturbed, especially in the areas with the highest density of sites and surface disturbance. Inventories are required prior to all surface disturbing activities. It is projected that 1,658 sites would be affected and would require mitigation or avoidance before oil and gas facilities could be constructed. The addition of almost 800 miles of new roads could result in increased vandalism from increased public access. The limited OHV access would have a beneficial effect on cultural resources by providing protection from cross-country travel.	Impacts to cultural resources would be caused by surface disturbance from construction that has the potential to adversely affect cultural resources, including archaeological sites, historic properties, and TCPs that previously have not been disturbed, especially in the areas with the highest density of sites and surface disturbance. Inventories are required prior to all surface disturbing activities. It is projected that 1,896 sites would be affected and would require mitigation or avoidance before oil and gas facilities could be constructed. The addition of over 800 miles of new roads could result in increased vandalism from increased public access. The limited OHV access would have a beneficial effect on cultural resources by providing protection from cross-country travel.

Alternative A: Current Management (No Action)	Alternative B: Resource Production	Alternative C: Resource Conservation	Alternative D: Proposed Plan
areas covering over 40,400 acres of public land in the FFO that would protect cultural resources.	There are 84 specially designated areas covering over 40,400 acres of public land in the FFO that would protect cultural resources.	There are 79 specially designated areas covering over 89,000 acres of public land in the FFO that would protect cultural resources.	There are 79 specially designated areas covering over 78,700 acres of public land in the FFO that would protect cultural resources.
Paleontology			
Impacts to paleontological resources would be measured by physical damage to fossil-bearing formations through excavation or surface disturbance. Alternative A would involve the least acreage of surface disturbance and have the least potential for impacts to paleontological resources due to the lower projected well numbers and the current management prescriptions within the 4 SDAs The open OHV access would continue to cause damage to paleontological formations through directly wearing down rock formations or causing accelerated erosion under Alternative A. Prior to coal mining, the required documentation would add to the body of knowledge about paleontological resources in the San Juan Basin, while permanently removing fossils from their original context.	Alternative B would involve the most acreage of surface disturbance and have the greatest potential for impacts to paleontological resources due to the highest projected well numbers. CSU constraints would limit oil and gas development impacts to paleontological resources within 9 SDAs, resulting in more protection than would occur under the 4 areas in Alternative A. The limited OHV access would protect paleontological formations from damage. The additional acreage of specially designated fossil areas would result in additional protection to known and important paleontological resources. Prior to coal mining, the required documentation would add to the body of knowledge about paleontological resources in the San Juan Basin, while permanently removing the fossils from their original context.	Alternative C would involve less acreage of surface disturbance and have fewer potential impacts to paleontological resources than under Alternative B, but more than under Alternative A. CSU constraints would limit oil and gas development impacts to paleontological resources within 9 SDAs, resulting in more protection than would occur under the 4 areas in Alternative A. The limited OHV access would protect paleontological formations from damage. The additional acreage of specially designated fossil areas would result in additional protection to known and important paleontological resources. Prior to coal mining, the required documentation would add to the body of knowledge about paleontological resources in the San Juan Basin, while permanently removing fossils from their original context.	Alternative D would involve less acreage of surface disturbance and therefore result in fewer impacts to paleontological resources than under Alternative B, but more than under Alternatives A and C. CSU constraints would limit oil and gas development impacts to paleontological resources within 9 SDAs, resulting in more protection than would occur under the 4 areas in Alternative A. The limited OHV access would protect paleontological formations from damage. The additional acreage of specially designated fossil areas would result in additional protection to known and important paleontological resources. Prior to coal mining, the required documentation would add to the body of knowledge about paleontological resources in the San Juan Basin, while permanently removing fossils from their original context.
Recreation			
Potential exists for moderate impacts on the quality of recreation opportunities from oil and gas development, particularly due to noise from compressors. It is likely that some recreational users would be annoyed by	Potential exists for widespread impacts on the quality of recreation opportunities from oil and gas development, particularly due to noise from compressors. It is likely that some recreational users would be annoyed by	Potential exists for widespread impacts on the quality of dispersed recreation opportunities from oil and gas development, particularly due to noise from compressors. The noise Notice to Lessee (NTL) would provide	Impacts on recreation would be similar to Alternative C. The noise NTL would provide somewhat less extensive protection against noise for recreational sites, but impacts would be less than under Alternatives A and B. Noise

Alternative A: Current Management (No Action)	Alternative B: Resource Production	Alternative C: Resource Conservation	Alternative D: Proposed Plan
widespread noise in the FFO. Acquisition of non-federal inholdings in designated recreation areas would improve management of recreation areas and benefit the qualities of these areas. Widespread OHV cross-country access would appeal to some recreationists, but conflicts with non-motorized recreational activities would persist. Development of coal mining near WA or WSA could have localized indirect effects on the quality of primitive recreational opportunities.	widespread noise in the FFO. Acquisition of non-federal inholdings in designated recreation areas would improve management of recreation areas and benefit the qualities of these areas. Limiting OHV use to designated roads and trails would not appeal to some OHV users, but would lessen potential conflict with other non-motorized recreational uses. These competing effects could be neutralized if 100,000 acres are considered for open OHV use during development of OHV management unit plans. The extensive road system in the gas fields would continue to provide access to most areas where dispersed recreational activities occur. This alternative would benefit recreational opportunities by designating four new recreation areas (as trail corridors), and subsequently, up to 94 miles of trails may be designated for various motorized and non-motorized uses in OHV management unit plans. Development of coal mining near WA or WSA could have localized indirect effects on the quality of primitive recreational opportunities.	some protection to designated noise sensitive recreation areas. However, noise levels may still be annoying for some recreational users and uses at some locations, and diminish the quality of recreational experiences. Acquisition of non-federal inholdings in designated recreation areas would improve management of recreation areas and benefit the qualities of these areas. Limiting OHV use to designated roads and trails would not appeal to some OHV users, but would lessen potential conflict with other non-motorized recreational uses. The extensive road system in the gas fields would continue to provide access to most areas where dispersed recreational activities occur. This alternative would benefit recreational opportunities by increasing the amount of land managed for recreational values by about 42 percent in four new recreation area, and subsequently, up to 94 miles of trails may be designated for various motorized and non-motorized uses in OHV management unit plans. Development of coal mining near WA or WSA could have localized indirect effects on the quality of primitive recreational opportunities.	levels may still be annoying for some recreational users at some locations and may diminish the quality of recreational experiences. Impacts on OHV use would be similar to Alternative B. However, impacts on motorized users would be offset by designation of new trails that provide for motorized sports, and consideration of open OHV use on about 66,000 acres. Non-motorized users would also benefit from trails that provide for separated uses in order to minimize users conflicts. Development of coal mining near WA or WSA could have localized indirect effects on the quality of primitive recreational opportunities.

Alternative A: Current Management (No Action)	Alternative B: Resource Production	Alternative C: Resource Conservation	Alternative D: Proposed Plan
Noise			
Increased numbers of wellhead compressors associated primarily with gas operations would add to the noise levels in the region. Under Alternative A, there would be approximately 9,410 additional wellhead compressors and approximately 142 larger compressors that would add to the overall level of noise. Noise mitigation would be required on a case-by-case basis to minimize impacts to residents and other land users. The noise policy to protect nesting raptors would continue to minimize impacts.	Increased numbers of wellhead compressors associated primarily with gas operations would add to the noise levels in the region. Under Alternative B, there would be approximately 14,000 additional wellhead compressors and approximately 320 larger compressors that would add to the overall level of noise. Noise mitigation would be required on a case-by-case basis to minimize impacts to residents and other land users. The noise policy to protect nesting raptors would continue to minimize impacts.	Increased numbers of wellhead compressors associated primarily with gas operations would add to the noise levels in the region. Under Alternative C, there would be approximately 12,118 additional wellhead compressors and approximately 316 larger compressors that would add to the overall level of noise. Noise mitigation would be required by the proposed Noise Policy on approximately 206,000 acres of federal minerals within and around 88 designated boundaries. The noise policy to protect nesting raptors would continue to minimize impacts.	Increased numbers of wellhead compressors associated primarily with gas operations would add to the noise levels in the region. Under Alternative D, there would be approximately 12,200 additional wellhead compressors and approximately 319 larger compressors that would add to the overall level of noise. Noise mitigation would be required by the proposed Noise Policy within and around 16 designated boundaries and 45 areas with designated receptor points. The noise policy to protect nesting raptors would continue to minimize impacts.
Social and Economic Conditions			
Change in oil and gas production has the greatest potential to cause economic impacts. Under Alternative A, there could be a moderate loss of jobs (16 percent, or 1,210 fewer jobs per year). This could have moderate impacts on the local economy, but minimal for the region. Tax revenues could benefit from gradual increase in annual production (up to 43 percent over current levels). However, market value will continue to greatly influence tax revenues. Coal industry jobs on federal leases are expected to remain steady during the planning period but could increase if new coal leases are developed. There should be little change in tax royalties from coal, and some increase in royal-	Change in oil and gas production has the greatest potential to cause economic impacts. Under Alternative B, there could be moderate increases in oil and gas industry annual jobs. About 1,460 additional jobs would represent a 20 percent increase over current levels for this industry after 20 years, and about 3 percent increase in jobs in the tri-city area over current levels. This could have minor beneficial impacts on the local economy, but minimal for the region. Tax revenues could benefit substantially from gradual increase in annual production (almost doubling current production over 20 years). However, market value will continue to greatly influence tax revenues.	Change in oil and gas production has the greatest potential to cause economic impacts. Under Alternative C, changes in job levels in the oil and gas industry would be minor. About 500 additional jobs would represent a 6 percent increase over current levels for this industry after 20 years, and about 1 percent increase in jobs in the tri-city area. This would have minimal affect on the local and regional economy. Tax revenues could benefit substantially from gradual increase in annual production (almost doubling current production over 20 years). However, market value will continue to greatly influence tax revenues. Up to 450 coal industry jobs on federal leases could be lost if San Juan	Change in oil and gas production has the greatest potential to cause economic impacts. Under Alternative D, changes in job levels in the oil and gas industry would be minor. About 540 additional jobs would represent a 7 percent increase over current levels for this industry after 20 years, and about 1 percent increase in jobs in the tri-city area. This would have minimal affect on the local and regional economy. Tax revenues could benefit substantially from gradual increase in annual production (almost doubling current production over 20 years). However, market value will continue to greatly influence tax revenues. Coal industry jobs on federal leases are expected to remain steady during

Alternative A: Current Management (No Action)	Alternative B: Resource Production	Alternative C: Resource Conservation	Alternative D: Proposed Plan
ties from oil and gas. This could have a moderate benefit to state and local revenues.	Coal industry jobs on federal leases are expected to remain steady during the planning period but could increase if new coal leases and interests are developed. Overall, increases in royalties from expanding production of federal energy resources would benefit state and local revenues.	and La Plata mines are not expanded. Less development of federal coal reserves under this alternative could decrease royalties and slightly reduce federal mineral dispersements to New Mexico. This should be offset from increased federal oil and gas employment and production.	the planning period but could increase if new coal leases and interests are developed. Overall, increases in royalties from expanding production of federal energy resources would benefit state and local revenues.
Environmental Justice			
Losses in jobs from slower development of oil and gas resources could impact minority and low-income populations in the area that are affected by the local job market. Localized impacts from new well sites could affect dispersed minority and low-income populations, but noise impacts can be mitigated on a case-by-case basis.	Overall, local minorities and low-income populations could benefit from new jobs in energy extractive resources under this alternative. All populations groups, including minorities and low-income persons residing throughout the area, could experience dispersed impacts from gas field development, but noise impacts can be mitigated on a case-by-case basis.	Local minorities and low-income populations (particularly in the Shiprock area) could be affected by job losses in coal industry under this alternative. All populations groups, including minorities and low-income persons residing throughout the area, could experience dispersed impacts from gas field development. The noise policy would tend to reduce potential incompatible development.	Impacts would be similar to Alternative B. The noise policy would tend to reduce potential incompatible development.

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CHAPTER 1
PURPOSE AND NEED

PURPOSE AND NEED

The Farmington Proposed Resource Management Plan (RMP) Revision and Final Environmental Impact Statement (EIS) has been prepared to provide a comprehensive framework for managing the public lands and for allocating resources during the next 20 years using the principles of multiple use and sustained yield. The life of the approved RMP can be extended through maintenance and amendments, as necessary to keep the document up to date and current. The Proposed RMP Revision and Final EIS establishes and analyzes areas for limited, restricted, or exclusive uses, levels of production, allowable resource uses, resource condition objectives, program constraints, and general management direction.

This document includes both a Proposed RMP Revision (with four different management alternatives) and a Final EIS, which fulfill the Federal Land Policy and Management Act (FLPMA) and the National Environmental Policy Act (NEPA) requirements for comprehensive land use planning for public lands. In this document, from this point forward, the Proposed RMP Revision and Final EIS will simply be referred to as the Proposed RMP/Final EIS.

Five issues are addressed in the Proposed RMP/Final EIS, including:

1. Oil and Gas Leasing and Development
2. Land Ownership Adjustments
3. Off-Highway Vehicle Use
4. Specially Designated Areas (SDA)
5. Coal Leasing Suitability Assessment

Section 3 (3A) of the Federal Coal Leasing Amendments Act of 1976 also requires comprehensive land-use planning prior to coal leasing. In addition, the statutory requirement that public lands be designated as "open", "limited", or "closed" to off-road vehicle or off-highway vehicle (ORV/OHV) use will be met upon final approval of one of the decisions proposed in this document.

This document updates management constraints on and analyzes the environmental impacts of oil and gas leasing and development in the San Juan Basin in New Mexico. Various private companies hold valid federal, state, and private leases for oil and natural gas in the planning area. These leases, many dating back to the 1950s and 1960s, have created contractual rights allowing companies to develop oil and natural gas resources. These resources provide federal minerals to meet the United States' (U.S.) growing energy needs while reducing the nation's dependence on foreign energy sources. Planned development of oil and natural gas also helps protect the financial interest of the U.S. by ensuring efficient drainage of federal minerals.

Preparation of this document is guided by Bureau of Land Management (BLM) planning regulations issued under FLPMA, environmental regulations issued under NEPA and by BLM Handbook H-1600-1 (Land Use Planning) and H-1624-1 (Planning for Fluid Mineral Resources). Plan amendments, if necessary, will keep the Approved RMP current with resource management needs and policies.

In 1988, the BLM Farmington Field Office (FFO) approved an RMP following many of the same steps that are being done now. The RMP was amended six times between 1990 and 2000. Decisions from the RMP document (RMP and amendments) that are still valid will be carried forward into this Proposed RMP/Final EIS and continue to be implemented to the extent they are not in conflict with the direction proposed in this Proposed RMP/Final EIS.

The primary purpose of the EIS portion of the Proposed RMP/Final EIS is to analyze the impacts of implementing existing and future land use decisions. The EIS portion is also needed to ". . . analyze and document the

direct, indirect, and cumulative impacts of . . . reasonably foreseeable future actions resulting from federally authorized fluid mineral activities. By law, these impacts must be analyzed before the agency makes an irreversible commitment. In the fluid minerals program, this commitment occurs at the point of lease issuance. Therefore, the Proposed RMP/Final EIS satisfies NEPA requirements for issuing fluid mineral leases" (BLM Handbook H-1624-1 B.-1).

LOCATION

The planning area, located in northwestern New Mexico, encompasses approximately 8,000,000 acres of mixed land ownership and includes all of San Juan County, most of McKinley County, western Rio Arriba County, and northwestern Sandoval County. Included within this area are approximately 2,000,000 acres of public surface estate and approximately 3,000,000 acres of subsurface minerals. The management objectives and philosophies developed in this plan would be applied only to the public surface and/or mineral estate. **Map 1-1** illustrates the planning area and shows its location within New Mexico. The population of the area is centered around the Farmington-Aztec-Bloomfield-Shiprock area to the north, the Gallup-Crownpoint area to the south, and Cuba to the east.

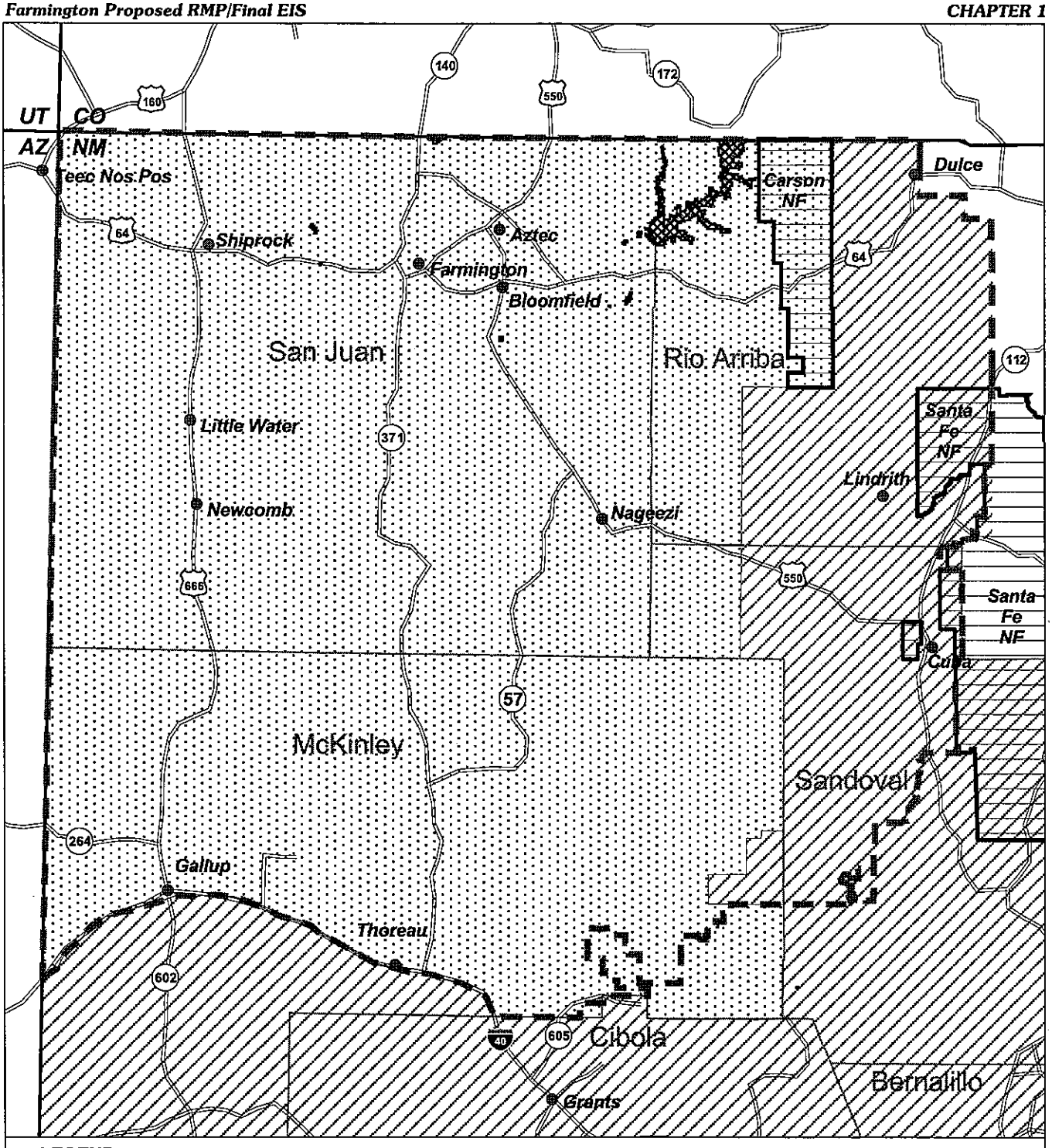
The distribution of the public lands has an important influence on land management options. The public lands are fairly well consolidated in northeastern San Juan County, while scattered, or checkerboard, ownership patterns predominate over much of the remaining planning area. The planning area includes some public land (and federal minerals) in Sandoval County that is part of the BLM Albuquerque Field Office (AFO).

SCOPE OF THE DOCUMENT

The land use planning addressed in this document pertains to public (federal) lands and federal minerals within the FFO boundaries. Additional land use planning is performed for oil and gas on U.S. Bureau of Reclamation (USBR) land. Impact analysis for future leasing and development of federal oil and gas will be addressed for the New Mexico portion of the San Juan Basin.

An Inter-Area Agreement No. NM-010-071 resulted in a change in the administration of some programs (livestock grazing and oil and gas) in the FFO and AFO. As of July 1992, the AFO assumed the responsibilities for administering (permitting) the federal minerals in the Lindrith, New Mexico area. They also assumed the permitting for oil and gas leases in the (extreme) southern portion of FFO boundaries. For this reason, the minerals (oil and gas) under the administration of the AFO are included in the Farmington Proposed RMP/Final EIS.

There are a number of surface owners that are involved in the approval (permitting) process for developing federal minerals (i.e., BLM, U.S. Forest Service [USFS], USBR, Bureau of Indian Affairs [BIA], state, private, etc.). In accordance with Title 43 Code of Federal Regulations (CFR) Subpart 1501.6, the USFS and USBR are participating as Cooperating Agencies in the preparation of this document. The USFS and USBR staff participating in this project are located in the (1) Santa Fe and Carson (Jicarilla Ranger District) National Forests (Santa Fe and Bloomfield, New Mexico) and (2) Upper Colorado Region, Western Colorado Area Office. **Map 1-2** illustrates the administrative boundaries for the lands and minerals administered by the BLM (FFO and AFO), USFS and USBR in the planning area. The amount of land and federal minerals administered by each office in the planning area is presented in **Tables 1-1 and 1-2.** Approximately half of USBR land does not overlie federal minerals.



LEGEND

- RMP/EIS Boundary
- County Boundary
- Farmington Field Office
- Albuquerque Field Office
- Bureau of Reclamation
- National Forest
- Town
- Major Road
- Interstate Highway
- U.S. Route
- State Highway

N

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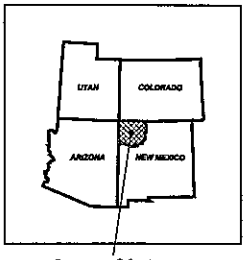
Scale in Miles



Area of Interest

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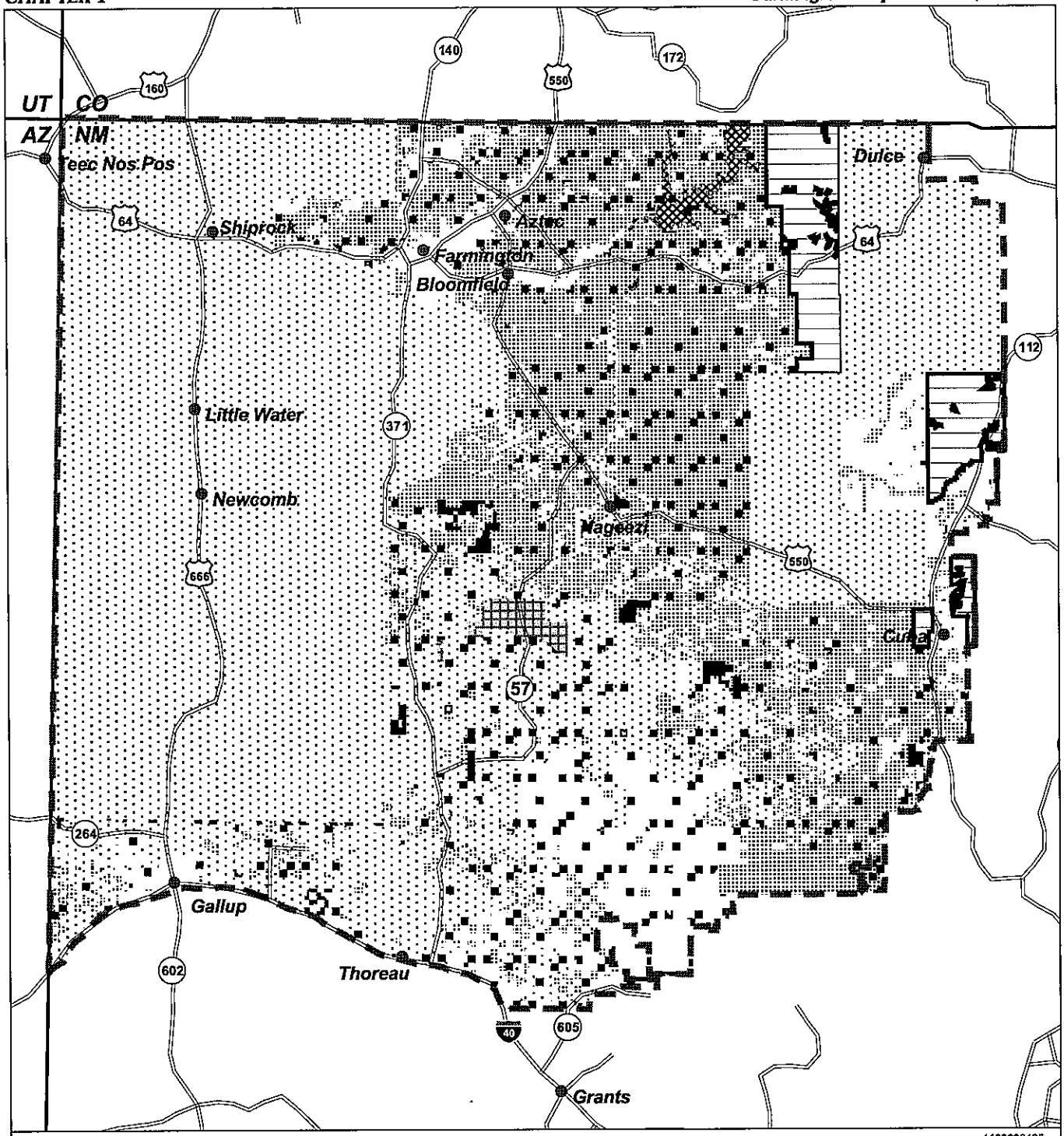
Map 1-1: General Location of the Planning Area

Source: BLM 2000



LEGEND

- RMP/EIS Boundary

Land Ownership

- BLM
- Bureau of Reclamation
- Forest Service
- National Park Service
- Private
- State
- Tribal Land

- Town
- Major Road
- Interstate Highway
- U.S. Route
- State Highway

N

15 0 15

Scale in Miles

Source: BLM 2002

Map 1-2: Land Ownership in the Planning Area

Table 1-1. Surface Acres in the Planning Area

Cooperating Land Agencies	San Juan County	McKinley County	Rio Arriba County	Sandoval County	Total: Surface Acres by Owner
FFO BLM	856,593	163,580	322,431	72,682	1,415,286
AFO BLM	0	40,035	22,895	314,225	377,155
USFS	0	13	23,4301	22,558	256,872
USBR	15,982	0	15,053	0	31,035
Subtotal: Surface Acres by County	**872,575**	**203,628**	**594,680**	**409,465**	**2,080,348**
Other Land Agencies					
DOD	0	259	0	0	259
Tribal Lands	2,323,806	1,616,225	612,141	222,250	4,774,422
National Park Service	31,301	2,904	0	0	34,205
State	122,326	135,994	43,476	32,879	334,675
Private	234,460	512,522	199,499	103,719	1,050,200
Subtotal: Surface Acres by County	**2,711,893**	**2,267,904**	**855,116**	**358,848**	**6,193,761**
Total: Surface Acres	**3,584,468**	**2,471,532**	**1,449,796**	**768,313**	**8,274,109**

Source: GIS data derived from BLM FFO and SO coverages.

Table 1-2. Acres Overlying Federal Minerals in the Planning Area

Cooperating Land Agencies	San Juan County	McKinley County	Rio Arriba County	Sandoval County	Total: Surface Acres Overlying Federal Minerals by Owner
FFO BLM	843,574	149,724	315,843	69,561	1,378,702
AFO BLM	0	40,035	22,759	312,654	375,448
USFS	0	13	234,301	22,558	356,872
USBR	7,984	0	7,891	0	15,875
Subtotal: Surface Acres Overlying Federal Minerals by County	**851,558**	**189,772**	**580,794**	**404,773**	**2,026,897**
Other Land Agencies					
DOD	0	259	0	0	259
Tribal Lands	153,309	211,499	1,166	25,514	391,488
National Park Service	17,139	2,351	0	0	19,490
State	19,325	15,206	1,798	6,379	42,708
Private	142,338	119,074	195,819	82,620	539,851
Subtotal: Surface Acres Overlying Federal Minerals by County	**332,111**	**348,389**	**198,783**	**114,513**	**993,796**
Total: Surface Acres Overlying Federal Minerals	**1,183,669**	**538,161**	**779,577**	**519,286**	**3,020,693**

Source: GIS data derived from BLM FFO and SO coverages.

The Proposed RMP/Final EIS addresses the impacts of federal oil and gas leasing and development regardless of the surface ownership (i.e., state, tribal and private). When federal oil and gas are leased and developed on lands administered by other federal agencies, the BLM contacts the agency for consent to lease, specific surface protection lease stipulations, and mitigation requirements for field operations.

The BLM issues oil and gas leases where federal minerals underlie the Indian-owned surface. The Indian surface owner (BIA or tribe) is contacted for concurrence and to identify specific surface protection stipulations, if any, before the lease is issued.

Management constraints prescribed for federal oil and gas leasing and development on split estate apply only to mineral development activities permitted by the BLM. On such mineral development, the BLM provides surface and subsurface constraints that ensure the environment is protected. These constraints do not restrict the activities of private landowners. The amount of land and federal minerals administered by other surface owners is presented in Table 1-1.

Oil and gas leases for Indian mineral estate are issued by the BIA. The decision to lease or enter into a joint venture or agreement to develop Indian oil and gas is solely that of the BIA or the tribe and is not considered in this document.

THE PLANNING PROCESS

The BLM resource management planning process consists (primarily) of nine basic steps. This process requires an interdisciplinary team of resource specialists. Staff from the FFO and AFO, USFS, and USBR comprise the interdisciplinary team preparing this Proposed RMP/Final EIS. The steps described in BLM's planning regulations and handbook (H-1600-1) and followed in preparing this Proposed RMP/Final EIS are summarized below and graphically displayed in **Figure 1-1**. Publication of this document represents completion of Steps 1 through 7.

Step 1. Identification of Issues

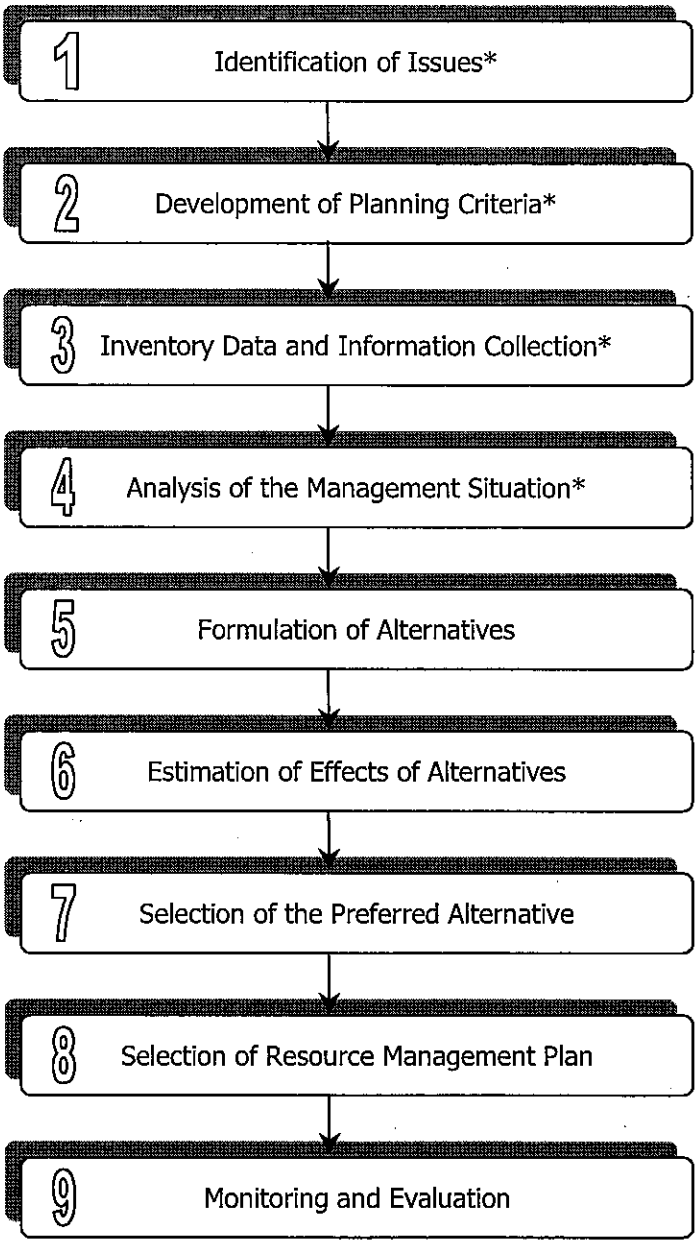
The first step in the planning process is intended to identify resource management problems or conflicts that can be resolved through the planning process. These problems or conflicts (issues) were identified by the BLM and other agency personnel as well as members of the public. Five issues were identified for this planning effort and are considered and discussed in detail in this document. Valid Existing Decisions, from BLM's previous land use planning documents, are also considered in this document. Valid Existing Decisions, with the various ways of dealing with the issues, will comprise the four different management alternatives.

Step 2. Development of Planning Criteria

During this step, preliminary decisions are made regarding the kinds of information needed to clarify the issues, the kinds of alternatives to be developed, and the factors to be considered in evaluating alternatives and selecting a preferred RMP. As each issue was identified, a list of planning criteria was developed to help guide the resolution of that issue. Valid Existing Decisions were also identified during this part of the planning process and are included in the alternatives presented in Chapter 2.

Step 3. Inventory Data and Information Collection

This step involves the collection of various kinds of environmental, social, economic, resource, and institutional data needed for completion of the process. This step can include detailed field studies, talking to individuals or groups who may have information, literature studies, or consultation with appropriate professionals. In most cases, this process is limited to inventories needed to address the issues.



** These steps may be revisited throughout the planning process and may overlap other steps.*

Figure 1-1. Steps in the RMP/EIS Planning Process

Step 4. Management Situation Analysis

This step calls for deliberate assessment of the current situation. It includes a description of current BLM management guidance, a discussion of existing problems and opportunities for solving them, and a consolidation of existing data needed to analyze and resolve the identified issues. The end result of this step was the development of an unpublished companion document known as the Management Situation Analysis (MSA). Chapter 3 of that document was used to develop the Continuing Management Guidance section of the Proposed RMP/Final EIS. MSA Chapter 2 was used as a basis for compiling the Affected Environment chapter of the RMP/EIS. Copies of the MSA are available for review in the FFO.

Step 5. Formulation of Alternatives

During this step, several complete, reasonable resource management alternatives are prepared, including one for no action and others that strive to resolve the issues while emphasizing differing amounts of resource production or protection. This important section of the RMP/EIS has been incorporated into Chapter 2.

Step 6. Estimation of Effects of Alternatives

The physical, biological, economic, and social effects of implementing each alternative are estimated in order to allow for a comparative evaluation of impacts. This step, known as the Environmental Consequences chapter, is found in Chapter 4 in this Proposed RMP/Final EIS.

Step 7. Selection of the Preferred Alternative

Based on the information generated during Step 6, the Field Manager identifies a preferred alternative. The Draft RMP/EIS document is then printed and distributed for public review. There was a 90-day public review and comment period for the Draft RMP/EIS.

Step 8. Selection of the RMP

Based on the results of public review and comment, the Field Manager will develop the Proposed RMP and publish it along with the Final EIS. It is important to note the revised RMP will replace all the previous (RMP and Resource Management Plan Amendment [RMPA]) planning documents prepared for the FFO. A final decision is made after a 60-day Governor's Consistency Review and a 30-day public protest period on the Proposed RMP/Final EIS are completed.

Step 9. Monitoring and Evaluation

This step involves the collection and analysis of long-term resource condition and trend data to determine the effectiveness of the plan in resolving the identified issues and implementation of all decisions, and to ensure that implementation of the plan is achieving the desired results. Monitoring continues from the time the new RMP is adopted until changing conditions require amendments or a revision of the whole plan or any portion of it.

PLANNING ISSUES

The BLM planning regulations (43 CFR 1600) equate land use planning with problem solving and issue resolution. An issue is defined as an opportunity, conflict, or problem regarding the use or management of public lands and resources. Not all problems are capable of resolution through land use planning—some may require changes in policy, budget, or law. Issue-driven planning, which is the approach used in RMPs, means that an emphasis is placed on addressing those aspects of current management believed to be at issue. The FFO's previous land use plans will be replaced by this document. Existing decisions are reviewed for their relevance and use in the continued management of resource uses.

Several problems brought up during the issue identification process are not included as separate issues in the Proposed RMP/Final EIS. Some of these are resolvable within Continuing Management Guidance; others, such as the protection of significant cultural resources, would be resolved with the identification of SDAs. Those aspects of current management that are **not** issues are covered in Chapter 2, under Continuing Management Guidance.

The five issues addressed in this Proposed RMP/Final EIS were identified based on interagency consultation, state government input, cooperating agency input, review by BLM staff and managers, and through extensive discussions and public meetings with individuals, industry representatives, and special interest groups.

PLANNING CRITERIA

Planning criteria are the standards, rules, and measures used for data collection and alternative formulations, and have guided draft plan preparation. Planning criteria are taken from appropriate laws and regulations, guidance found in BLM Manuals and directives, and concerns expressed in meetings and consultations, both with the public and with other agencies. Four criteria were developed for the RMP/EIS and will guide the resolution of the issues addressed in this document. The criteria are listed below.

1. Actions must comply with laws, regulations, and executive orders.
2. Actions must be reasonable and achievable.
3. Actions will be considered for their long-term benefits to the public in relation to short-term benefits.
4. Actions will be considered in an interdisciplinary approach.

The following (five) planning issues were identified for resolution in this Proposed RMP/Final EIS. The criteria that were (1) developed and used and (2) are still applicable to the issues described in previous planning documents, are included as part of the text in each issue.

The following issues relate to planning within the FFO boundaries.

Issue #1: Oil and Gas Leasing and Development

The following issues and their associated planning criteria have been identified for resolution in the RMP/EIS.

Item 1. Determine if there is additional federal mineral estate that should be considered for oil and gas leasing.

Item 2. Based on a Reasonable Foreseeable Development Scenario (RFDS), determine the effect of developing oil and gas leases in designated and/or proposed SDAs and other areas of concern.

Item 3. Determine the impact of management constraints [lease stipulations and Conditions of Approval (COA)] on oil and gas development.

Item 4. Identify the cumulative impacts of oil and gas development.

Item 5. Determine if existing management constraints on oil and gas leasing and development in SDAs would achieve the greatest degree of protection of resource values.

Item 6. Identify management constraints necessary to protect wildlife, fragile soils, water resources, and other resource values.

Item 7. Clarify the stipulations applied at the lease issuance stage and COAs applied before development activities begin.

The planning criteria for Items 1 through 3 are concerned with identifying (1) oil and gas resource occurrence potential, (2) the amount of leased acreage, producing and non-producing, (3) areas where development is occurring or is projected to occur, and (4) areas where leasing and/or development is occurring or could occur with management constraints.

Criteria for Item 4 are based on identifying (1) the area where existing (and new) leases are issued under standard terms and conditions (STC), (2) the amount of oil and gas acreage

that would not be available for future leasing and development, and (3) the least restrictive management constraints on new lease development that would protect resource values and uses. The effects of future development of existing and new leases have been considered during impact identification and analyses in this Proposed RMP/Final EIS.

The criteria used to determine the impacts on oil and gas resources are similar to those developed for determining the amount of oil and gas acreage available for leasing and development. These criteria are based primarily on identifying (1) the amount of oil and gas acreage that would not be available for leasing and development, (2) whether the type and extent of management constraints would protect resource values and uses, and (3) the effects of management constraints on future oil and gas development and production.

The primary criteria for Items 5 and 6 are based on determining (1) if continued management will adequately protect and preserve SDAs and other resource values, and (2) the implementability of management prescriptions and objectives in areas with current and future development. An additional criterion to consider is the necessity of applying stipulations to new leases in areas where existing leases may expire or terminate, particularly in SDAs with critical resource values.

BLM resource specialists have identified specific lease stipulations, COAs, and the area(s) where they are required for future leasing and development. Because stipulations are applied at the leasing stage, they are general and apply to the entire lease. COAs, which are applied at the Application for Permits to Drill (APD) stage of lease development, apply to a particular well location. The COAs attached to each APD permit will be determined primarily by the proposed location of each well. The COAs usually considered and attached to APDs are listed in Appendix G.

Issue #2: Land Ownership Adjustments

Small, scattered, and isolated tracts are often expensive or difficult to manage, and normally contribute little to the public land resource. Some of these parcels, which are close to urban areas, are also in demand for community expansion. Exchange or disposal of these tracts often improves management efficiency by focusing efforts on larger tracts where the BLM has more opportunities to meet its goals and objectives.

The basic concept of land ownership adjustments is to consolidate administrative boundaries to create a more efficient and economical land ownership pattern. Areas for retention and disposal are identified under each of the four alternatives in Chapter 2. Parcels identified for disposal after approval of the new RMP could be considered for disposal on a case-by-case basis. Where the parcels are to be sold, the following criteria established in Section 203 of FLPMA must be met:

(1) such tract because of its location or other characteristics is difficult and uneconomical to manage as part of the public lands, and is not suitable for management by another federal department or agency; or

(2) such tract was acquired for a specific purpose and the tract is no longer required for that or any other federal purpose; or

(3) disposal of such tract will serve important public objectives, including but not limited to, expansion of communities and economic development, which cannot be achieved prudently or feasibly on land other than public land and which outweigh other public objectives and values, including, but not limited to, recreation and scenic values, which would be served by maintaining such tract in federal ownership.

If a parcel is to be disposed of through exchange, Section 206 of FLPMA requires that the action would serve the public interest. For example, the action would result in better federal land management, satisfy important state or local needs, or would help accomplish

management objectives defined in this plan (e.g., inholding acquisition, trespass abatement, access needs, resource improvement, etc.). Unlimited exchange opportunities may be entertained to consolidate federal and non-federal lands within the retention areas.

To reduce the impacts of split estate where practical, the BLM may pursue mineral exchanges as authorized by FLPMA Sec. 206. Nothing in this Proposed RMP/Final EIS is intended to prohibit mineral exchanges conducted under the BLM mineral exchange policy.

Lands may be transferred out of federal ownership by any of a wide variety of exchange or disposal authorities as long as all applicable sale or exchange criteria are met and there are no major conflicts with other resource management programs, such as oil and gas. Lands in the FFO disposal area can be utilized by other BLM field offices within the State of New Mexico to provide a pool of lands for exchange purposes. There will be no title transfers of public lands within any SDA unless the disposal would enhance management of the area. In general, attempts should be made to acquire non-federal inholdings in SDAs if it is important to the management of the area.

Management of the public lands in the southern portion of the area administered by the FFO has always been difficult due to the checkerboard land ownership pattern. Land exchanges have been completed in the past to resolve unauthorized occupancies and to acquire other lands with greater public benefits. The split estate that has resulted from these exchanges has made it more difficult to develop the retained federal minerals. This will be considered during any future land disposals.

The criteria developed during the planning process provides for the following:

Retention Areas

Ownership will remain with the BLM over the long term. Exchanges for consolidating ownership will be considered and may include conveying retention lands to accomplish a desirable exchange. Recreation and Public Purposes (R&PP) applications will be considered. Sale proposals may only be considered in (very) limited instances for parcels identified in Appendix H or on a case-by-case basis.

Disposal Areas

These lands may pass out of federal ownership over the long term. Priority for disposal would be given to exchanges; however, other forms of land transfers, such as those listed in the Chapter 2 Continuing Management Guidance section, would also be considered. Further exchanges with Indian tribes would be considered after problems are resolved in the development of the federal minerals by operators and/or lessees who hold the existing or future mineral (oil and gas) leases.

Acquisitions

Inholdings (non-BLM) will be designated for acquisition if important to proper management of the area. Ownership of public land will be maintained by the BLM over the long term.

To resolve these issues, answers are needed to the following question:

On which lands should ownership be adjusted (exchanged, disposed, and/or acquired) to facilitate more efficient management?

Issue #3: Off-Highway Vehicle Use

This issue addresses OHV designations. It is BLM policy to designate all public lands in its jurisdiction as "open", "limited," or "closed" to motor vehicle use.

Motorized vehicles will be discussed in terms of design and capabilities of OHVs. ORVs are vehicles designed for and capable of travel over natural terrain and water. OHVs are mainly designed for travel on unpaved roads or trails and not particularly for off-road use. The term OHV will be used in the rest of the

document when referring to either OHV or ORV.

Public lands currently or historically used by OHV user groups may be designated "open" or "limited" for intensive OHV use if there are no significant resource protection needs, user conflicts, or public safety concerns.

To resolve this issue, answers are needed to the following questions:

What public lands should be designated as "open," "limited," or "closed" to OHV use?

What special use areas should be designated for OHV use to meet specific user group and general public demand?

What OHV designations (and areas) would result in minimum conflicts between people and resources?

Issue #4: Specially Designated Areas

The FFO boundaries contain certain areas where special management could protect important natural, cultural, recreational, paleontological, scenic, mineral, botanical, wildlife, watershed, and wilderness values (see Appendix B for a list of these areas). Special management could be achieved through identification of a variety of designations. Past planning decisions concerning special management designations will be carried forward unless additional information requires further analysis.

To resolve this issue, answers are needed to the following questions:

What areas and resource values should be identified for special management attention?

How should such areas and resource values be managed?

Issue #5: Coal Leasing Suitability Assessment

Portions of the field office boundaries are potentially valuable for the development of coal. The demand to develop this resource fluctuates almost annually due to changing demands for electric power, trends in alternate fuel costs, and availability. Recent interest has been expressed by coal companies for leasing additional coal (tracts) to meet current and future demands for power generation in the Four Corners. Currently, over 33,000 acres of BLM-administered subsurface are under Preference Right Lease Applications (PRLA). In addition, 60,698 acres were designated as competitive coal lease tracts in 1988 and 4,480 acres were determined to be suitable for leasing (by application) in 1998.

Not all public lands are available for coal exploration or leasing. There is a rigorous land use planning process through which all public lands are reviewed for potential coal leasing. The requirements for the land use plan include multiple use, sustained yield, protection of critical environmental areas, applications of specific unsuitability criteria, and coordination with other government agencies. There are four specific land use screening steps that are unique to developing land use planning decisions for federal coal lands. These are: (1) Identification of coal with potential for development, (2) Determination if the lands are unsuitable for coal development (3) Consideration of multiple use conflicts, and (4) Surface owner consultation. The purpose of the coal screening part of the land use planning process (43 CFR 3420.1-4) is to identify those federal lands that are acceptable for further consideration for coal leasing and development. During this process, the unsuitability criteria must be applied.

Coal development potential would be addressed when data are available to estimate coal reserves.

To resolve this issue, answers are needed to the following questions:

After application of the four land use planning screens for coal, which tracts should be carried forward for further consideration for coal leasing?

Are there any new areas which should be considered acceptable for further consideration for coal leasing?

Desert Rock Energy Co., PSD Appeal 08-03
Conservation Petitioners' Exhibits

EXHIBIT 41

Comments on the Air Quality and Visibility Impact Analyses of the PSD Permit Application for the Desert Rock Energy Facility

October 5, 2006

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A 1500-MW coal-fired power plant, known as Desert Rock Energy Facility (DREF), has been proposed in the Four Corners area by Sithe Global Power, LLC (Sithe). AMI Environmental (AMI) has been retained by Western Clean Energy Campaign to review and comment on the air quality and visibility impact analyses of the proposed facility. These analyses have been conducted for the Prevention of Significant Deterioration (PSD) Permit Application that has been submitted by Sithe to U.S. Environmental Protection Agency (EPA) Region 9. Qualifications of Mr. Khanh Tran, Principal of AMI, are shown in Appendix B.

I. PROJECT DESCRIPTION

The proposed Desert Rock Energy Facility (DREF) will be a 1500-MW coal-fired plant with two supercritical boilers burning pulverized coal. The Facility will be located approximately 25 miles southwest of Farmington, New Mexico. It will be in the Northeastern Area of the Navajo Nation adjacent to Navajo Nation coal reserves.

The proposed DREF is located within the New Mexico portion of the Four Corners Interstate Air Quality Control Region. The area is currently designated as attainment for all regulated pollutants: nitrogen dioxide (NO_2), sulfur dioxide (SO_2), carbon monoxide (CO), particulate matter less than 10 microns in aerodynamic diameter (PM_{10}), lead, and ozone (regulated as volatile organic compounds (VOC) and oxides of nitrogen (NO_x). For purposes of this PSD permit and analysis, EPA will refer to NO_x, which is functionally equivalent to NO_2, for both pollutants. The Facility's surrounding area is classified as Class II. The nearest Class I area is the Mesa Verde National Park, which is located approximately 75 kilometers (km) north of the site. The Grand Canyon National Park is located approximately 290 km west of the site.

In addition to two pulverized coal-fired boilers, other emission sources include auxiliary boilers, emergency generators, firewater pumps, material handling and storage tanks. As shown in Table 2-1 of the DREF Updated Class I Modeling Report (January 2006), the project will emit significant emissions of NO_x (3,325 tons per year), SO_2 (3,319 tpy), PM_{10} (1,120 tpy), CO (5,529 tpy) and VOC (166 tpy).

II. REVIEW METHODOLOGIES

AMI's review has focused on the documents prepared by EPA Region 9 and those prepared by the applicant Sithe Global Power and its consultants ENSR Corporation. Below is a list of the reviewed documents that are available from the EPA Region 9 website www.epa.gov/region09/air/**permit/desertrock**/index.html.

AMI has also performed a review of the modeling inputs and some outputs of the Calpuff modeling that have been provided by EPA Region 9 to AMI on CD-ROM . EPA Region 9 has also provided the meteorological data for the years 2001 and 2002 on DVD. The 2003 meteorological data is not available because it is proprietary.

EPA Region 9 Documents

Proposed Desert Rock PSD Permit.

Desert Rock Ambient Air Quality Impact Report (NSR 4-1-3, AZP 04-01).

Sithe Global Power/ENSR Documents

Application for Prevention of Significant Deterioration Permit for the Desert Rock Energy Facility. Prepared for Steag Power LLC by ENSR Corporation, ENSR Document No. 09417-360-250R1, May 2004 (hereinafter referred to as *May 2004 PSD Permit Application*).

Application for Prevention of Significant Deterioration Permit for the Desert Rock Energy Facility. Prepared for Steag Power LLC by ENSR Corporation, ENSR Document February 2004 (hereinafter referred to as *February 2004 PSD Permit Application*).

Desert Rock Energy Facility Application for Prevention of Significant Deterioration Permit – Class I Area Modeling Update. Prepared for Sithe Global Power LLC by ENSR Corporation, ENSR Document No. 10784-001-0004, January 2006 (hereinafter referred to as *January 2006 Class I Area Modeling Update*).

Desert Rock Energy Facility: Class I Area Modeling Supplement. Prepared for Sithe Global Power LLC by ENSR Corporation, ENSR Document No. 10784-001-0004, March 2006 (hereinafter referred to as *March 2006 Class I Area Modeling Supplement*).

Desert Rock Energy Facility Application for Prevention of Significant Deterioration Permit – Class II Area Modeling Update. Prepared for Sithe Global Power LLC by ENSR Corporation, ENSR Document No. 10784-001-0004b, June 2006 (hereinafter referred to as *June 2006 Class II Area Modeling Update*).

Electronic Modeling Archive

Copies of the modeling inputs and some outputs of the Calpuff modeling have been provided by EPA Region 9 to AMI on CD-ROM . EPA Region 9 has also provided the meteorological data for the years 2001 and 2002 on DVD.

III. COMMENTS PSD CLASS I AREAS MODELING ANALYSIS

Comment #1: Air quality and Visibility Modeling use meteorological data that are too coarse to resolve the effects of complex terrain in the impacted areas

The DREF plant is located in the Four Corners basin on the Colorado Plateau, which is home to the Grand Canyon National Park and several other class I areas. The Colorado

Plateau is a region of complex terrain with large, deep canyons and high mountains. Mountains in the Four Corners region are higher than 1,000 meters. These mountains can influence the regional airflow and pollutant transport through terrain blocking and channeling, especially under stagnant conditions during the winter months. Past monitoring and modeling studies have shown that power plants located to the east of the Grand Canyon such as DREF can significantly contribute to haze in the Grand Canyon NP during the winter months, when pollutants that reached Lake Powell drained down the Grand Canyon following the Colorado River to Lake Mead. National Park Service (NPS) has provided a good summary of the regional airflow and pollutant transport in a modeling study of the DREF plant (Bret A. Schichtel et al., 2005).

The Calpuff model is the principal model used for air quality and visibility impact analyses of the proposed DREF facility. Meteorological data used by the Calmet preprocessor to generate the windfields required by the Calpuff modeling are too coarse for an accurate simulation of the complex terrain features as well as other micrometeorological processes such as fog, clouds that are controlling the pollutant formation and dispersion in the Four Corners region. As shown in the January 2006 Class I Modeling Update and the March 2006 Class I Area Modeling Supplement, meteorological inputs to Calmet are based on outputs from mesoscale models MM5 and RUC with varying spatial resolutions: 2001 MM5 at 36 km, 2002 MM5 at 12 km, and 2003 RUC at 20 km. The Calpuff modeling also uses MM5 data at 4 km resolution provided by NPS for selected days in January 2001, January 2003 and April 2004 (please see Comment #2 below regarding the use of these datasets). Among the meteorological datasets, maximum impacts have been predicted to frequently occur with the 2001 meteorological inputs. With a 36 km resolution, this dataset is too coarse the fully resolve the terrain features of the Colorado Plateau. An accurate simulation of the topographical effects and micrometeorological processes will require meteorological datasets with a much finer resolution than those presently in the Calpuff modeling. The 2005 NPS study has stated "the set of processes resulting in the Grand Canyon wintertime layered haze is challenging to model. In order to fully capture the drainage flows, fine scale meteorology, with a grid scale of less 0.5 km and time resolution of 1 – 5 minutes would be required. This resolution is beyond most meteorological models and the input data to drive the models at this resolution is generally unavailable. In addition, meteorological models have difficulty reproducing precipitation and clouds which are fundamental to reproducing these events". As a compromise, NPS has performed the MM5 simulations with a 4 km resolution. Based on AMI's experience with complex terrain modeling, even this 4 km resolution is not sufficient to fully resolve terrain features that are only a few kilometers wide. We have used the MM5 model to produce 48-hour forecasts of winds and wind energy at sites located in complex terrain with a fine resolution of 1.67 km. MM5 forecasts with this fine resolution have been shown to be more accurate than those with a coarser resolution at a wind energy plant located in west Texas (*Development and Testing of a Wind Energy Forecasting System*, Khanh Tran, 2005). We are also using MM5 with a finer 1.33 km resolution for another wind energy plant in Tehachapi, California.

Comment #2: The NPS 4 km meteorological data may not be properly used in the Calpuff modeling

NPS has provided MM5 datasets at 4 km resolution for selected days in January 2001, January 2003 and April 2004. These data have been used by Calpuff for regional haze assessment and compared directly with the results obtained for the same days with the full-year datasets (2001 MM5 at 36 km and 2003 RUC at 20 km). As shown in Table 4-10 of the January 2006 Updated Class I Modeling Report, visibility impacts are predicted to be consistently lower with the finer 4 km dataset than with the 36 km dataset.

The January 2006 Class I Area Modeling Update indicates that a 4 km grid resolution has been used by Calmet for the full-year datasets 2001 MM5 at 36 km, 2002 MM5 at 12 km, and 2003 RUC at 20 km . However, with the 4 km NPS data, a 3 km resolution has been used with Calmet (page 4-20 of the January 2006 report). This 3 km grid resolution has also been stated on page 3-2 of the Addendum to Modeling Protocol dated January 2006. Both the January 2006 Class I Area Modeling Update and the Addendum to Modeling Protocol do not provide any explanations of this change in Calmet resolution from 4 km to 3 km. Since the preprocessor Calmet interpolates the NPS 4 km data to the 3 km grid, this interpolation may have destroyed the dynamic balances embebbed within the original 4 km dataset. This may explain the consistent underprediction of visibility impacts by the MM5 4 km data compared to the original MM5 36 km data. The NPS 4 km data should be used at its original 4 km resolution in Calmet to preserve their accuracy and consistency.

Comment #3: Air quality and visibility impacts may be understated due to the omission of emissions of auxiliary boilers and other low-level sources

In the Calpuff modeling of air quality and visibility impacts at PSD Class I areas, only emissions from the main boilers are modeled, and emissions from the auxiliary boilers and other low-level sources (materials handling, emergency generators and firewater pumps) are not included in the modeling (Section 2.2.2 of the January 2006 Class I Area Modeling Update). Results of the Calpuff modeling show that maximum impacts occur at PSD Class I areas closest to the DREF site such as Mesa Verde, San Pedro Parks and Weminuche (Table 4-2 of the January 2006 Class I Area Modeling Update). As part of the Class II impact assessment, emissions from low-level sources have been shown to cause the maximum impacts within 50 km of the DREF site. Since Mesa Verde National Park is only located about 80 km north of the DREF site, it is highly probable that these low-level emissions could contribute significantly to the impacts predicted by Calpuff with the emissions from the main boilers alone. Thus, air quality and visibility impacts may be understated due to the omission of emissions of auxiliary boilers and other low-level sources.

Comment #4: Inappropriate modifications to the FLAG procedure are used to lower the significant impacts on regional haze

With the recommended FLAG procedure (Method 2), DREF emissions will cause significant impacts on regional haze at several Class I areas. As shown in Table 4-5 of the January 2006 Class I Area Modeling Update, several Class I areas, including Grand Canyon, will have maximum change in extinction of higher than 5% that occurs over several days. Of 15 PSD Class I areas modeled, only four areas are below the significance level of 5% (Great Sand Dunes, La Garita, Pecos and Wheeler Peak). Some Class I areas will even have change in extinction over 10% (Canyonlands, Capitol Reef, Mesa Verde, Petrified Forest, San Pedro Parks and Weminuche). With the alternative Method 6 that uses lower humidity than Method 2, two Class I areas (Mesa Verde and Cannyonlands) still show maximum extinction change over 10%. To lower the significant impacts even further, two other modifications are used in the January 2006 Class I Area Modeling Update: lower the background ammonia concentration from 0.2 ppb to 0.1 ppb; and, use an AERMOD-like turbulent diffusion scheme in Calpuff modeling.

The above modifications are neither technically defensible nor recommended by regulatory agencies. NPS has performed a recent photochemical modeling study with the CAMx model that shows that background ammonia concentrations for the month of January in the Four Corners region always exceed 0.1 ppb and typically vary between 0.2 and 0.4 ppb (*Simulation of the Potential Impacts of the Proposed Sithe Power Plant in the Four Corners Basin using CAMx*, Michael Barna et al., 2005). Hence, the decrease of ambient ammonia from 0.2 ppb to 0.1 ppb is not technically defensible. For Calpuff modeling, NPS does not recommend the AERMOD-like turbulence scheme, but an ISC-like turbulence scheme. Thus, without the ad hoc modifications to the FLAG screening procedure, significant visibility impacts due to DREF emissions are predicted to occur at several PSD Class I areas.

Comment #5: Advanced FLAG Levels II and III procedures should be used to assess regional haze impacts

Since the FLAG-recommended Level I screening procedure predicts significant impacts by DREF on regional haze at PSD Class I areas, and the ad hoc modifications have been shown to be inappropriate (see Comment #4), advanced visibility modeling procedures should be used, such as the Level II and Level III procedures recently recommended by NPS (*Proposed FLAG Level II and III Visibility Assessment*, Bret A. Schichtel et al., 2005). The NPS advanced procedures are based on more refined dispersion and visibility modeling to simulate the instantaneous degradation of visual air quality indexes along idealized sight paths under various ambient lighting conditions.

IV. COMMENTS ON PSD CLASS II AREAS MODELING ANALYSIS

Comment #6: The Calpuff model is inappropriate for near-field, short-range dispersion modeling of project impacts.

The U.S. EPA Modeling Guidelines recommend the AERMOD plume model for short-range modeling (within 50 km of the project site), and the Calpuff model for long-range transport modeling (beyond 50 km of the project site). In the PSD Permit Application, the Calpuff model has been used to assess both long-range and short-range impacts based on the complex terrain in the study region. Results of the Calpuff short-range modeling show that DREF SO_2 and PM_{10} emissions will cause significant impacts and these maximum short-range impacts occur within one kilometer of the project site. Table 4-6 of the June 2006 Class II Area Modeling Update indicates that 3-hour and 24-hour SO_2 concentrations due to DREF emissions will exceed the Significant Impact Levels (SIL) and these impacts occur at 0.22 km from the site. For PM_{10}, both 24-hour and annual concentrations will exceed the corresponding SILs, and these maximum impacts are predicted to occur at 0.22 km (for 24-hour PM_{10}) and 0.44 km (for annual PM_{10}) off the project site.

Since the maximum short-range impacts occur within one kilometer of the site, they must be caused by ground-level emissions (such as material handling) and emissions with low plume rise (such as emergency generators and fire water pumps). Due to their large plume rise, emissions from the main and auxiliary boilers contribute very little to these near-field impacts. Within one kilometer of the site, the terrain is relatively flat as shown in Figure 2-2 of the June 2006 Class II Area Modeling Update. Thus, the use of the Calpuff model is inappropriate and the AERMOD plume model recommended by the U.S. EPA should be used. The use of AERMOD will ensure that project impacts will not be underpredicted. This is important in light of the fact that the 24-hour PM_{10} concentration (27.73 ug/m^3 in Table 4-6) predicted by Calpuff is only 8% below the PSD Class II increment of 30 ug/m^3.

Comment #7: Comparison of project-related concentrations against national ambient standards is inappropriate and misleading

Table 4-6 of the June 2006 Class II Area Modeling Update compares the concentrations predicted by Calpuff based only DREF emissions against national ambient air quality standards (AAQS). This comparison is inappropriate and misleading, since only total concentrations (project-related concentrations + ambient background concentration) can be compared against ambient standards.

V. COMMENTS ON SOILS AND VEGETATION IMPACTS

Comment # 8: Project SO_2 emissions may cause significant impacts on sensitive soils and vegetation

Section 6.3 of the June 2006 Class II Area Modeling Update indicates that project emissions will not cause significant impacts on sensitive soils and vegetation since "most of the designated vegetation screening levels are equivalent to or less stringent than the NAAQS and/or PSD increments; therefore satisfaction of NAAQS and PSD increments assures that sensitive vegetation will not be impacted". A screening analysis has been performed by Sithe as recommended by the EPA's *Screening Procedure for the Impacts of Air Pollution Sources on Plants, Soils, and Animals* (EPA 450/2-81-078, December 1980). Results of this screening analysis are summarized in Table 6-1 of the June 2006 Class II Area Modeling Update. This table indicates that project emissions will result in a maximum SO_2 1-hour concentration of 801.48 ug/m^3. This maximum concentration is below the screening SO_2 1-hour concentration of 917 ug/m^3 recommended by the EPA. However, Table 6-15 of the February 2004 PSD Permit Application has reported a maximum SO_2 1-hour concentration of 1142.7 ug/m3 that is well above the screening level of 917 ug/m^3. This concentration indicates the project SO2 emissions may cause significant impacts on sensitive soils and vegetation.

VI. COMMENTS ON PUBLIC HEALTH & ENVIRONMENTAL JUSTICE ISSUES

Comment # 9: Project will emit toxic chemicals and their health risks have not been quantified

A coal-fired power plant such as DREF emits several toxic chemicals that are known to be carcinogens and/or to cause noncancer acute and chronic health effects. Table 2-1 of the January 2006 Class I Area Modeling Update shows that the project will emit significant emissions of lead (11.1 tpy), fluorides (13.3 tpy) and mercury (0.057 tpy). A detailed quantification of toxic chemicals has not been reported in the January 2006 Class I Area modeling Update.

The February 2004 PSD Permit Application has shown that the project will emit up to 244.7 tpy of hazardous air pollutants (HAP), with the pulverized coal-fired boilers accounting for 240.7 tpy (see Table 5-2). Table 3-3 of the February 2004 PSD Permit Application also shows that the project will emit carcinogens such as lead (Pb), beryllium and fluorides that will largely exceed the corresponding PSD significant emission rates.

As part of a health risk assessment required to fully address public health and environmental justice concerns, a detailed quantification of emissions of all toxic substances emitted by DREF will need to be performed. Recent speciation profiles approved by US EPA will be used to obtain emission rates for individual substances from the project VOC and PM_{10} emissions.

Following a quantification of emissions of toxic chemicals, a full health risk assessment will need to be conducted to assess potential health effects of these toxic chemicals as part of public health and environmental justice concerns. AMI has developed a model named ACEHWCF (Assessment of Chemical Exposure for Hazardous Waste Facilities) that can evaluate both inhalation and non-inhalation risks using the multipathway exposure algorithms recommended by the U.S. EPA (*Human Health Risk Assessment Protocol for Hazardous Waste Facilities, Final, EPA530-R-05-006, September 2005*). The ACEHWCF model has been described in a technical paper (Tran, 2001) and is available from AMI's website.

VII. COMMENTS ON OZONE AIR QUALITY IMPACTS

Comment #10: Project Emissions are different from those used in the San Juan Ozone Modeling Study

The proposed DREF plant will emit large amounts of NO_x (3,325 tpy) and VOC (166 tpy) that are known to be ozone precursors. Ozone modeling was not performed to assess the impacts of project emissions on ozone air quality in the Four Corners area. Instead, a modeling study conducted for New Mexico Environment Department (NMED) in 2004 was used to indicate that the project emissions will not have significant impacts on ozone air quality, i.e. "will not contribute or contribute to an exceedance of the ozone AAQS in the region" (page 6-12 of the June 2006 Class II Area Modeling Update). As shown in a NMED report (*Air Quality Modeling Analysis for the San Juan Early Action Ozone Compact: Maintenance for Growth and Control Strategy Modeling*, Draft Report prepared by Alpine Geophysics, LLC and Environ International, February 2004, available from the NMED website), emissions from the proposed DREF together with those from the Star Lake facility were inputted to the photochemical grid model CAMx to assess potential ozone impacts from the two proposed power plants in the Four Corners area. This CAMx model simulation is a sensitivity run to the 2007 future base case. Results of this sensitivity run indicates that the addition of the DREF and Star Lake power plants will have minimal effects on 8-hour ozone concentrations under the conditions of the modeled June 4-7, 2002 episode. Daily maximum 8-hr ozone increases range from 0.516 ppb to 1.993 ppb, with a four-day mean of 1.162 ppb (see Table 4-1 of the NMED 2004 Draft Report).

An examination of the modeling inputs for the DREF plant indicates that there are large discrepancies between the emissions documented in the DREF May 2004 PSD Permit Application and those in the NMED San Juan ozone modeling study. As shown in Table 1 below, NO_x emissions used in the NMED ozone study were more than a factor of two lower than the DREF NO_X emissions, while the NMED VOC emissions were more than a factor of four larger than the DREF VOC emissions. SO_2 emissions used in the NMED modeling study were also about 40% lower than the DREF SO_2 emissions. The NMED ozone modeling report states that the emissions used for DREF were provided by NMED.

Table 1 Comparison of DREF Emission Rates used in PSD Permit Application and NMED 2004 San Juan Ozone Modeling Study

Pollutant	DREF Application	NMED Ozone Study
NO_x (tpy)	3,325	1,569
VOC (tpy)	166	672.2
SO_2 (tpy)	3,319	2,018

Comment #11: Project Location and Stack Parameters are different from those used in the San Juan Ozone Modeling Study

In addition to the large discrepancies in the project emissions as documented above, there are large differences between the project location and stack parameters in the DREF Permit Application and those used in the NMED ozone modeling study. Table 2 shows the location of the project in terms of Universal Transverse Mercator coordinates (UTM zone 12). As shown in this table, the DREF facility in the NMED modeling study is located about 28 km south of the actual location in the Permit Application. The NMED modeling uses a 4-km resolution for the inner grid, so the DREF project emissions are emitted from a location that is 7 grid cells from the actual location.

Furthermore, the NMED modeling used stack parameters that are vastly different from those in the DREF May 2004 PSD Permit Application. As reported in Table 2, the NMED study assumed two 150 m stack and other stack parameters (diameter, temperature and velocity) to be the same as those from the San Juan Generating Station. Based on the stack parameters in Table 2, it can be deducted qualitatively that plume rise calculated with the stack parameters in the NMED study will be lower than the value obtained with those documented in the PSD Permit Application. Hence, project emissions are emitted at a lower plume height in the NMED ozone study.

Table 2 Comparison of DREF Stack Parameters used in PSD Permit Application and NMED 2004 San Juan Ozone Modeling Study

Parameter	DREF Application	NMED Ozone Study
Stack location (UTM kmE)	719.688	721.500
Stack location (UTM kmN)	4041.752	4014.000
Stack height (m)	279.49	150.0
Stack diameter (m)	11.21	6.10
Stack temperature (K)	323.15	318
Stack velocity (m/s)	24.99	18.29

The above discrepancies in modeling inputs for DREF, from project emissions to stack location and parameters, may lead to large differences in project ozone impacts than

those documented in the NMED study. They also raise serious doubts about the validity of the modeling results of the NMED modeling study.

VIII. COMMENTS ON CUMULATIVE AIR QUALITY AND VISIBILITY IMPACTS

Comment #12: Significant cumulative impacts at PSD Class I areas may have been overlooked.

There are 15 PSD Class I areas, including Grand Canyon, located within 300 km of DREF. Cumulative SO_2 modeling has only been performed for six PSD Class I areas (Bandelier, Canyonlands, Mesa Verde, Petrified Forest, San Pedro Parks, Weminuche). These six PSD Class I areas have shown to have project-only increments that exceed the corresponding significant impact levels (SIL). However, there may be other PSD Class I areas where DREF may not cause project-only increments above SIL, but together with other cumulative sources may cause significant impacts, i.e. PSD Class I increments to be exceeded. Thus, significant impacts art PSD Class I areas may have been overlooked and all 15 PSD Class I areas should be modeled in the cumulative modeling.

Comment #13: No analysis of cumulative visibility impacts at PSD Class I areas has been performed.

Only a regional haze impact assessment has been performed for project-only emissions. In addition to DREF, there are several facilities in the cumulative SO_2 inventory that have large emissions of SO_2. Table 4-11 of the January 2006 Class I Area Modeling Update shows the following facilities with SO_2 emissions larger than DREF: Springerville Generating Station, Nixon Unit 1, Holcim-Florence, Hunter Unit 2, San Juan GS Unit 3 and 4. These facilities not only emit SO_2 but also large amounts of NO_x and PM_{10} that can cause visibility impairment. Thus, cumulative visibility impacts at all PSD Class I areas need to be performed.

Comment #14: Stack parameters of Cameo Station in the cumulative SO_2 inventory have been incorrectly reported.

Table 4-11 of the January 2006 Class I Area Modeling Update indicates that Cameo Station has a stack height of 12.65 m and a stack diameter of 45.72 m. A check of input files used in the Calpuff modeling reveals that these values have been switched, i.e. the modeling uses a stack height of 45.72 m and a diameter of 12.65. The modeled values are likely to be more correct than those reported in Table 4-11.

Comment#15: The Calpuff modeling used a meteorological data set that is proprietary.

The Calpuff modeling used a meteorological data set, namely the 2003 RUC data, that is proprietary. The use of a critical input such as the RUC data set that is proprietary hinders its access for review. Furthermore, it is not available to other interested parties for running the Calpuff model to verify the results documented in the PSD Permit Application or to analyze potential impacts using alternative emissions scenarios.

Comment#16: Plume blight impacts from DREF alone are significant

Visibility impacts through plume blight have been analyzed by the VISCREEN model. Results of this screening analysis indicate that the DREF emissions alone will cause significant plume blight. For PSD Class I areas, maximum color differences (delta-E) are 3.10 against sky and 8.96 against terrain. Maximum absolute contrast |C| are 0.069 against sky and 0.079 against terrain. These values are well above the screening values of delta-E greater than 2.0 and maximum |C| greater than 0.05. Values of delta-E and |C| are even greater for PSD Class II areas (a maximum of 38.04 for delta-E, and 0.915 for |C|). Visibility impacts through plume blight are considered to be significant, with plumes from DREF visible for miles from the facility site.

Comment #17: The Calpuff model severely underpredicts air quality and visibility impacts from DREF at Grand Canyon and other PSD Class I areas

We have performed a comparison of the SO_2/SO_4 concentrations predicted by the Calpuff model at the Grand Canyon NP against those predicted with other models used by National Park Service (the CAPITA Monte Carlo dispersion model and the photochemical grid model CAMx). These NPS modeling studies analyzed the impacts of DREF at Grand Canyon NP and other PSD Class I areas. They are documented in the following references: the CAPITA Monte Carlo modeling study in B.A. Schichtel et al, 2005 and the CAMx study in M. Barna et al., 2006.

All the above models, including Calpuff, used the 4km MM5 meteorological data generated by NPS for the period January 3-30, 2001. We do not have SO2/SO4 concentrations predicted by Calpuff at the Grand Canyon. Table 4-10 of January 2006 Class I Area Modeling Update shows that a 4.14% maximum change in extinction was predicted by Calpuff. We assume that this change in extinction coefficient is all due to ammonium sulfates and 100% SO_2 are converted to ammonium sulfate. These two assumptions tend to increase the estimated SO_4 concentrations. The SO_4 concentration is calculated from the following formula recommended in the FLAG guidelines: delta-b = b_{ext}/b_{ref} x 100% and b_{ext} = 3[SO4]f(RH).

From the FLAG guidelines (NPS, 2000) we obtain b_{ref}=15.9 Mm^{-1}, f(RH)=2.4 for winter conditions in Grand Canyon NP. Using these values and delta-b=4.14%, the above FLAG

formula yield an estimated 24-hour average ammonium sulfate concentration of 0.0914 ug/m^3. This estimate is reasonably accurate, since the maximum 24-hour SO_2 concentration was calculated by Calpuff to be 0.086 ug/m^3 at Grand Canyon (Table 4-2 of the January 2006 Class I Area Modeling Update).

The above ammonium sulfate concentration estimated from Calpuff modeling results is largely smaller than the concentrations predicted by the NPS modeling studies. The Monte Carlo model predicted peak ammonium sulfate concentrations approaching 6 ug/m^3 with average concentrations over 1 ug/m^3 (Figure 11 of the NPS reference). These averages of 1 ug/m3 are over a factor of 10 higher than the concentration of 0.0914 ug/m3 estimated from Calpuff modeling results.The CAMx model also predicted peak concentrations of 0.8 ug/m^3 with an average of 0.4 ug/m^3 across the canyon (Figure 4 of the NPS reference). The CAMx concentrations are lower than the predictions of the Monte Carlo dispersion model, but they still are higher than those predicted by Calpuff (by a factor of 4). **Based on the comparison of SO4 concentrations at Grand Canyon NP, the Calpuff underpredicts by a factor of 4 compared to CAMx and by a factor of 10 compared to the CAPITA Monte Carlo dispersion model**. The severe underprediction of Calpuff compared to the other models seriously questions the validity of the modeling results for PSD Class I increment analysis and visibility impact analysis at the Grand Canyon and other PSD Class I areas.

Appendix A

Cited Refrences

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Appendix B

Qualifications of Khanh T.Tran

Mr. Khanh Tran is the owner and Principal Scientist of AMI Environmental since its establishment in 1980. He has over 30 years of experience in project management, meteorological modeling, air quality modeling, emissions inventory and visibility analysis. For the last 25 years, he successfully managed over 75 air quality studies conducted by AMI on behalf of government agencies as well as Fortune 500 companies.

Mr. Tran received his B.S. (1973) and M.S. (1974) degrees in Mechanical Engineering from the University of California, Santa Barbara. He completed graduate courses in Atmospheric Sciences, Computer Sciences and Environmental Fluid Dynamics at UCLA. In 1978, he also developed a predictive atmospheric modeling system for real-time emergencies as part of his Ph.D. research at UCLA. Mr. Tran is a former member of the National Committee on Meteorological Aspects of Air Pollution of the American Meteorological Society.

Mr. Tran has extensive experience in the development, evaluation and application of air quality simulation models, from simple Gaussian dispersion models (AERMOD, CALPUFF, ISCST3) to complex photochemical grid models (UAM, CAMx, Models3/CMAQ). He has also developed air quality models that have received approval from regulatory agencies. He has performed a wide variety of air quality modeling studies, including:

- He has recently reviewed the air quality and visibility impact analyses that have been performed as part of the PSD permit application of a proposed coal-fired power plant in Trimble County, Kentucky. He has performed Calmet and Calpuff modeling to verify the results documented in the PSD permit application.
- He has performed a comparative study of short-range dispersion models (ISCST3, ISC-PRIME and AERMOD). He has extensive experience in applying these models to air quality impact analyses for power plants, oil refineries and other facilities. He had applied Gaussian-based models to proposed coal leases by the Bureau of Land Management in New Mexico.
- He modified and applied the long-range transport MESOPUFF (a predecessor of CALPUFF) to coal development projects in Utah and North Dakota. As part of these project EIS, he had performed visibility modeling to assess potential impacts of end-use facilities (e.g. power plants) at nearby PSD Class I areas.
- He developed the diagnostic wind module that has been included in the preprocessor CALMET of the CALPUFF model.
- He developed PC-based versions of the MM5 model, and applied the model to air quality modeling studies, e.g. the 1997 Southern California Ozone Study (SCOZ).

He also modified the MM5 model to provide Web-based real-time weather forecasts for wind energy plants in California and Texas as well as tropical storms in Southeast Asia.

- He had developed the photochemical trajectory model TRACE and applied to power plant siting (e.g. the Lucerne Valley generating station for Southern California Edison) and offshore oil and gas development in California. He also applied other photochemical grid models to the development of ozone air quality attainment plans (AQAP) for Santa Barbara County, San Diego County and Kern County in California, and the Phoenix metropolitan area of Arizona. He recently applied the Urban Airshed Model to predict ozone impacts from proposed power plants in southern California and Phoenix.
- He developed the multipathway risk assessment model ACE2588 that has become widely used in over 1000 facilities under California's air toxics regulations (AB 2588). The ACE2588 model has also been used in other states and foreign countries. He improved the ACE2588 model to include a Monte Carlo uncertainty analysis to provide more realistic risk estimates. He recently developed the ACEHWCF model that implements the U.S. EPA health risk assessment guidelines for hazardous waste combustion facilities.
- He was in charge of prioritizing over 800 air toxics facilities in the Los Angeles air basin, reviewing and modifying their risk assessments submitted under AB 2588. He completed the development of a comprehensive emission inventory of over 10,000 point sources for regional exposure modeling of air toxics in the Los Angeles area.
- He has also used several dispersion models ranging from simple Gaussian puff to multiphase, dense gas models (e.g., DEGADIS and SLAB) to simulate accidental releases of hazardous chemicals.