US Department of the Interior
Bureau of Land Management
Hollister Field Office

Oil and Gas Leasing and Development
Environmental Impact Statement and Resource
Management Plan Amendment

SCOPING SUMMARY REPORT
AUGUST 2014

TABLE OF CONTENTS

Section Page

SUMMARY **S-1**

1. INTRODUCTION **1-1**

1.1 Background of the Resource Management Plan Amendment Process 1-2
1.2 Preliminary Purpose of and Need for the Resource Management Plan Amendment .. 1-3
1.3 Description of the RMP Amendment Planning Area 1-3
1.3.1 Geographic Scope 1-4
1.4 Overview of the Public Involvement Process 1-4
1.5 Description of the Scoping Process 1-7
1.5.1 EIS Planning Update and Mailing List 1-7
1.5.2 News Release 1-7
1.5.3 Project Website 1-8
1.5.4 Scoping Public Meetings 1-8
1.5.5 Notice of Intent 1-9
1.6 Collaborative Involvement Process 1-10
1.6.1 Cooperating Agencies 1-10
1.6.2 Outreach and Coordination with Tribes 1-12

2. COMMENT SUMMARY **2-1**

2.1 Method of Comment Collection and Analysis 2-1
2.2 Summary of Public Comments Received 2-2
2.2.1 General Themes of Verbal Comments at Scoping Meetings 2-2
2.2.2 Written Submissions by Affiliation 2-3
2.2.3 Written Submissions by Geographical Area 2-3
2.2.4 Number of Comments by Planning Process Category 2-6
2.2.5 Number of Comments by Planning Issue Category 2-7

3. ISSUE SUMMARY **3-1**

3.1 Planning Issue Development 3-1
3.2 Planning Issue Statements 3-2
3.3 Summary of Public Comments by Resource Planning Issue Category 3-7
3.3.1 Planning Issues to be Addressed in the RMP Amendment 3-8
3.3.2 Other Issues to be Addressed in the RMP Amendment 3-18
3.4 Issues Not Addressed in the RMP Amendment 3-18
3.5 Anticipated Decisions 3-19
3.5.1 Future Land Use Plan-level Decisions 3-20
3.5.2 Future Implementation-level Decisions 3-20
3.6 Valid Existing Management 3-20

4. PLANNING CRITERIA **4-1**

4.1 Preliminary Planning Criteria 4-1

5. DATA NEEDS/GAPS **5-1**

5.1 Independent Science Assessment (ISA) 5-2

6. FUTURE STEPS **6-1**

6.1 Future Steps and Public Participation Opportunities 6-1

6.2 Contact Information 6-2

7. REFERENCES 7-1

FIGURES

Page

1-1 Hollister Field Office RMP Amendment Planning Area 1-5
2-1 Comments by Commenter Affiliation 2-4
2-2 Commenters by Geographic Area 2-5

TABLES

Page

1-1 Public Scoping Meetings 1-9
2-1 Comments by Commenter Affiliation 2-4
2-2 Commenters by Geographic Area[1] 2-5
2-3 Comments by Planning Process Category 2-7
2-4 Comments by Planning Issue 2-7

APPENDICES

A Scoping Materials
B List of Commenters
C Comments by Resource Planning Issue
D Verbal Comments from Scoping Meetings
E References Substantially Discussed in Comments

ACRONYMS AND ABBREVIATIONS

Full Phrase

BLM	United States Department of the Interior, Bureau of Land Management
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
EIS	environmental impact statement
EPA	US Environmental Protection Agency
FLPMA	Federal Land Policy and Management Act of 1976
HFO	Hollister Field Office
ISA	Independent Science Assessment
NEPA	National Environmental Policy Act
NOI	Notice of Intent
RAC	Resource Advisory Council
RMP	resource management plan
ROD	record of decision
US	United States

SUMMARY

The United States (US) Department of the Interior, Bureau of Land Management (BLM) has conducted a scoping process to solicit public comments on how oil and gas resources on federal mineral estate should be managed in the BLM's Hollister Field Office (HFO) and whether the BLM should include areas of California beyond the HFO in this process.

This is the first phase of a process that may lead to the amendment of the Hollister Resource Management Plan (RMP) (2007). The BLM may also use this process to consider amending RMPs for other field offices in California with oil and gas leasing and development (Bakersfield, Palm Springs-South Coast, Mother Lode, and Ukiah Field Offices).

The HFO is located in west-central California and encompasses 12 counties either in part or in full. Within the HFO, the BLM manages approximately 270,000 acres of subsurface mineral estate underlying federal surface land and 588,000 acres of subsurface mineral estate underlying privately owned land, otherwise referred to as "split estate" lands.

The BLM has an obligation to evaluate the potential impacts of its decisions under the National Environmental Policy Act (NEPA) of 1969 (Public Law 91-190). For this RMP amendment effort, NEPA would be implemented through the preparation of an environmental impact statement (EIS). The RMP Amendment/EIS will comply with NEPA and with the Federal Land Policy Management Act (FLPMA) as required under 43 Code of Federal Regulations (CFR) 1601.0-6. The resulting RMP Amendment/EIS will also comply with the criteria outlined in the BLM's H-1601-1 Land Use Planning Handbook (BLM 2005).

Goals of the Public and Agency Collaboration and Communication Efforts

The policy of the BLM is to provide opportunities for the public, various groups, other federal agencies, tribal individuals and organizations, and state and local

governments to participate meaningfully and substantively and to give comments to the BLM during the preparation of the EIS. The BLM encourages various partners, cooperating agencies, and stakeholders to become involved in the process and provide information on local and regional factors unique to the project area. Local and regional factors include knowledge of area customs and culture, community values and traditions, and the social and economic makeup of the planning area. The BLM's goal is to consider these factors in a manner that is inclusive rather than exclusive, wherein key tribal, community, agency, and interest groups are provided with opportunities to participate in the process and are kept informed of the status of the project. The BLM must also ensure that participants are made aware of the effect their involvement will have on the final outcome; follow-through is a key element in meeting the goal of collaborative planning. Consensus among the participants wherever possible is desirable; where no consensus can be reached, the plan must explore reasonable alternatives that have been discussed with the participants.

Strategies on coordinating with other federal, state, and local agencies and private groups include, but are not limited to, conducting public information meetings, workshops, small group presentations, and management briefings; hosting field trips; issuing news releases; mailing informational materials; producing EIS planning updates; publishing newspaper notices; making media announcements; printing brochures, booklets, and pamphlets; and initiating other informal contacts.

Scoping is the term used in the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR 1500 et. seq.) to define the early and open process for determining the scope of issues to be addressed in the planning process. The scoping process serves a number of purposes. It provides an avenue to involve the public in identifying significant issues related to potential land use management actions and helps identify any issues that are not significant and can thereby be eliminated from detailed analysis. The list of stakeholders and other interested parties is also confirmed and augmented during the scoping process.

Public Scoping Activities

The formal public scoping period as required by NEPA began on August 5, 2013, with the publication of a Notice of Intent (NOI) in the *Federal Register*, and ended on February 28, 2014.

Public outreach for the EIS since publication of the NOI has included the following:

- An EIS planning update mailed to federal, state, and local agencies; tribal individuals and organizations and federally recognized tribes; interest groups; and members of the general public after publication of the NOI and at least two weeks prior to the first scoping meeting

- Four legal notices published in the following local newspapers:
  - San Benito County Today
  - Monterey Herald
  - The Fresno Bee
  - The Sacramento Bee
- Four scoping public meetings held in January and February 2014 in Hollister, Sacramento, Salinas, and Coalinga, California
- A public website that provides access to materials distributed at scoping meetings as well as information on the public involvement process
- Letters to 35 federal, state, and local agencies inviting them to be cooperating agencies for the project
- Letters to 28 tribal individuals and organizations, including the Tachi Yokut Tribe of Santa Rosa Rancheria to initiate consultation under Section 106 of the National Historic Preservation Act

The public scoping process provides a variety of opportunities for federal, state, and local agencies, interested organizations and industries, and members of the general public to express their comments and to provide meaningful input to the process.

Public Scoping Results

The BLM received 132 unique written submissions, including a letter from the non-governmental organization CREDO that included 10,577 electronic signatories, and another form letter from three individuals. In total, 734 unique comments were received during the public scoping period. Comments were categorized, coded, entered into a database, tallied, and analyzed. Categories included RMP planning process categories (e.g., how the comment relates to the RMP amendment process), planning issues, and commenter affiliation.

Members of the general public provided 110 written submissions (83.3 percent) during the scoping period, organizations or non-profit groups submitted 13 comments (9.8 percent), and businesses submitted 2 comments (1.5 percent). Federal agencies submitted 2 written submissions (1.5 percent), and local governmental agencies submitted 4 written submissions (3.0 percent). Tribal individuals and organizations submitted 1 written submission (0.8 percent). No written submissions were received from state government agencies, educational organizations, or elected officials.

Issue Summary

Based on scoping, the following planning issues have been identified. Comments received were classified into the planning issues below.

- Issue No. 1: Water Resources
- Issue No. 2: Health and Safety
- Issue No. 3: Vegetation and Wildlife
- Issue No. 4: Air Quality
- Issue No. 5: Climate Change
- Issue No. 6: Geology and Seismicity
- Issue No. 7: Soil Resources
- Issue No. 8: Socioeconomics
- Issue No. 9: Traffic
- Issue No. 10: Tribal and Cultural Resources
- Issue No. 11: Environmental Justice
- Issue No. 12: Land Use
- Issue No. 13: Livestock Grazing
- Issue No. 14: Recreation
- Issue No. 15: Visual Resources

The BLM will use the planning issues to help guide the development of a reasonable range of alternative management strategies for oil and gas management in the RMP amendment. In addition to planning issues, comments also addressed issues that are policy or administrative actions and issues that have been or will be addressed by the HFO outside of the RMP amendment, either because they are implementation-level decisions or otherwise beyond the scope of this RMP amendment.

Future Steps

Scoping is the first opportunity for public involvement in the RMP amendment process. The HFO will use the information collected during the scoping period to formulate alternatives and prepare the Draft RMP Amendment/EIS. Scheduling for the project beyond the scoping phase has not yet occurred. Release of the Draft RMP Amendment/EIS will be announced in a Notice of Availability in the *Federal Register* and in the local media as well as posted on the project website. Additional public meetings will be held to solicit public comment on the draft document, likely in the same locations as the scoping meetings. Public comments will be analyzed and used to update alternatives and impacts where applicable. At the conclusion of the public comment period, the Draft RMP Amendment/EIS will be revised, and a Proposed RMP Amendment/Final EIS will be published and made available for public review. While these are the specific opportunities for public involvement during the RMP amendment process, the BLM will consider input from the public throughout the process.

SECTION 1
INTRODUCTION

The United States (US) Department of the Interior, Bureau of Land Management (BLM), Hollister Field Office (HFO) is preparing a resource management plan (RMP) amendment and associated environmental impact statement (EIS) to guide management of oil and gas resources on BLM-administered mineral estate within the HFO. The RMP Amendment/EIS will amend the existing 2007 Hollister RMP, as amended (BLM 2007).

The planning area is initially being proposed as the area encompassed by the HFO. The BLM may also use this process to consider amending RMPs for other field offices in California with oil and gas leasing and development (e.g., Bakersfield, Palm Springs-South Coast, Mother Lode, and Ukiah Field Offices). The decision about the final geographic scope of the EIS will be based on public comments received during scoping and the results of the BLM-sponsored peer-reviewed Independent Science Assessment (ISA) of Well Stimulation Technologies.

The ISA is a separate but parallel document being prepared by the California Council on Science and Technology. The ISA will inform the development of this RMP Amendment/EIS and other future decision-making in the California BLM Oil and Gas Management program. The ISA will also address questions and comments brought up by the public during the scoping period. For more information about the ISA, refer to **Section 5.1,** Independent Science Assessment (ISA).

The HFO encompasses all or portions of 12 counties in west-central California, including the following. The proposed planning area includes federal, state, and private lands.

- Alameda County
- Contra Costa County

- Fresno County
- Merced County
- Monterey County
- San Benito County
- San Francisco County
- San Joaquin County
- San Mateo County
- Santa Clara County
- Santa Cruz County
- Stanislaus County

Once the planning area is defined, the decision area will include only the BLM-administered surface land and subsurface mineral estate underlying privately owned lands within that planning area. If the planning area were limited to HFO, the decision area would be composed of 270,000 acres of subsurface mineral estate underlying federal surface land and 588,000 acres of subsurface mineral estate underlying privately owned land, otherwise referred to as "split estate" lands.

The EIS and RMP amendment process will result in a Record of Decision (ROD) and an amended RMP.

1.1 BACKGROUND OF THE RESOURCE MANAGEMENT PLAN AMENDMENT PROCESS

The BLM land use planning process yields a dual-functioning document: an RMP and an EIS. An RMP is a land use plan that describes broad multiple-use direction for managing public lands administered by the BLM. The Federal Land Policy and Management Act of 1976 (FLPMA) directs the BLM to develop such land use plans to provide for appropriate uses of public land. Decisions in land use plans guide future land management actions and subsequent site-specific implementation decisions. These decisions establish goals and objectives (desired outcomes) for resource management and the measures needed to achieve them. These measures are expressed as actions and allowable uses (i.e., lands that are open or available for certain uses, including any applicable restrictions, and lands that are closed to certain uses). The EIS portion of the document identifies the environmental consequences of achieving the goals and objectives set forth in the RMP.

The BLM-administered lands within the Hollister RMP planning area are currently managed in accordance with the decisions in the 2007 Hollister RMP (BLM 2007).

One of the primary objectives of the RMP amendment planning effort is to provide a collaborative planning approach that assists the BLM in updating the

oil and gas resources management decisions of the current RMP. The final amended RMP will identify which lands are open or closed to oil and gas leasing and which stipulations would be applied on oil and gas exploration and development activities in order to protect environmental resources.

To support the RMP amendment preparation, the BLM will prepare an EIS that provides a comprehensive evaluation of the environmental issues and impacts associated with oil and gas exploration and development, including unconventional reservoirs and well stimulation techniques. Stimulation, with respect to petroleum production, refers to a range of techniques designed to increase the permeability of the rocks through which oil flows, thereby increasing the production of oil from the reservoir. An oil reservoir is considered to be unconventional if some type of well stimulation is required to make production economically feasible. This stimulation can include techniques that increase reservoir permeability to increase the rate of oil flow from the reservoir to the well. NEPA requires the BLM to consider a range of alternatives in its planning process and to analyze and disclose the potential environmental impacts of proposed RMP amendment decisions. The alternatives and impact analyses are documented in the EIS. The EIS process also provides opportunities for participation by the public, other federal, state, and local agencies, and tribal individuals and organizations in the RMP amendment development. The RMP amendment and EIS will be combined into one document.

1.2 Preliminary Purpose of and Need for the Resource Management Plan Amendment

The purpose of this planning process is to analyze the effects of alternative oil and gas management approaches on lands with federal mineral estate within the HFO. The need for the RMP amendment is to incorporate new information about well stimulation technologies, natural resource conditions, and socioeconomic trends to update the reasonably foreseeable development scenario (RFD) and Hollister RMP.

1.3 Description of the RMP Amendment Planning Area

The proposed planning area is the Hollister Field Office boundary, which encompasses 6,815,100 acres across twelve counties in western-central California (**Figure 1-1,** Hollister Field Office RMP Amendment Planning Area). The proposed planning area includes federal, state, and private lands.

The actual decision area for the EIS is where federal mineral interests exist. The decision area is only the surface land and subsurface mineral estate within the planning area for which the BLM has authority to make minerals management decisions.

If the planning area were limited to the HFO, the decision area would be composed of 270,000 acres of subsurface mineral estate underlying federal

surface land and 588,000 acres of subsurface mineral estate underlying privately owned land, otherwise referred to as "split estate" lands.

On-going oil and gas development is occurring in the HFO. Most of the production comes from the oil fields near Coalinga and the Jacalitos Valley in the San Joaquin Management Area. Additionally, the San Ardo and associated oil fields are located within the Salinas Management Area; however, the BLM administers few of the lands in this area. Likewise, the Vallecitos oil fields are in the San Benito Management Area; little of the production takes place on BLM-administered lands. Exploratory oil wells have historically been drilled on less than five percent of the leases issued on BLM-administered lands.

As of mid-2014, there are 71 oil and gas leases on federal mineral estate within the HFO covering about 44,243 acres. Approximately 35 to 40 percent of the leases cover BLM-administered surface. The remainder cover split-estate lands. There are 146 total wells on BLM oil and gas leases, including 80 producing oil and gas wells and service wells and 66 idle wells; this is the total number of wells on federal mineral estate, including wells on both federal surface and split-estate lands. There are an additional 4,293 wells on non-federal mineral estate. The BLM is involved in approximately 3.4 percent of all current oil and gas activity within the HFO boundary.

1.3.1 Geographic Scope

The preliminary planning area for this RMP Amendment/EIS was identified during scoping as the HFO. The BLM noted in the *Federal Register* and in the scoping materials that the BLM welcomed feedback from the public on a broader geographic scope. The decision about the final geographic scope of the EIS will be based on public comments received during scoping and on the results of the ISA. This report focuses primarily on the preliminary planning area; however, if the geographic scope increases, the BLM would conduct additional public outreach.

1.4 Overview of the Public Involvement Process

Public involvement is a vital and legal component of both the RMP and EIS processes. Public involvement vests the public in the decision-making process and allows for full environmental disclosure. Guidance for implementing public involvement under the National Environmental Policy Act (NEPA) is codified in 40 Code of Federal Regulations (CFR) Section 1506.6, thereby ensuring that federal agencies make a diligent effort to involve the public in the NEPA process. Section 202 of FLPMA directs the Secretary of the Interior to establish procedures for public involvement during land use planning actions on public lands. Guidance for implementing public involvement during land use planning actions on public lands can be found in the BLM Land Use Planning Handbook H-1601-1 (BLM 2005) and BLM NEPA Handbook H-1790-1 (BLM 2008). Public involvement requirements of both NEPA and FLPMA will be satisfied through this joint RMP Amendment/EIS process.

Hollister Field Office RMP Amendment Planning Area

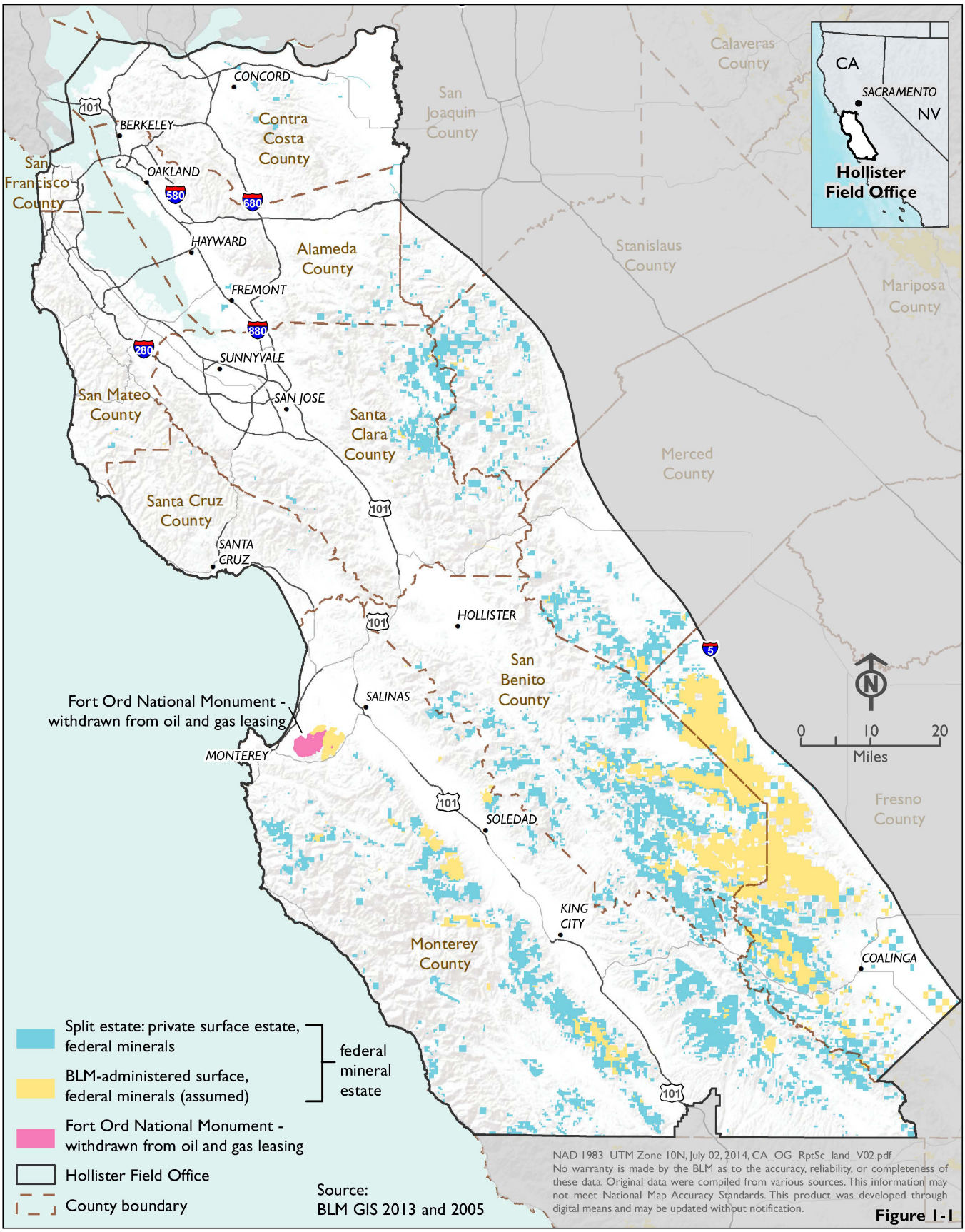

Figure 1-1

Public involvement for the RMP Amendment/EIS is being conducted in the following five phases:

- Prior to NEPA analysis, public scoping helps to determine the scope of issues and alternatives to be addressed in the RMP Amendment/EIS
- Public outreach via the EIS planning update, news releases, newspaper advertisements, and website postings
- Collaboration with federal, state, local, and tribal individuals and organizations; Resource Advisory Councils (RACs); and cooperating agencies
- Public review of and comment on the Draft RMP Amendment/EIS, which analyzes likely environmental effects and identifies the BLM's preferred alternative
- Public review and opportunity for protest of Final RMP Amendment/EIS

This scoping summary report documents the results of the first three phases of the public involvement process, beginning with public scoping, and provides information about the ongoing collaboration process.

Scoping is an early and open process for determining the scope of issues to be addressed and identifying the significant issues related to a proposed action. Information collected during scoping may also be used to develop the alternatives to be addressed in the NEPA document. The process has two components: internal scoping and external scoping. Internal scoping is conducted within an agency or cooperating agencies to determine preliminary and anticipated issues and concerns. In 2013, the BLM held a series of internal scoping meetings, which resulted in the list of preliminary planning issues and preliminary planning criteria that were published in the August 5, 2013 Notice of Intent (NOI) in the *Federal Register*.

External scoping is a public process designed to reach beyond the BLM and attempts to identify the concerns of high importance to the public. External scoping helps ensure that planning issues are identified early and properly studied, that issues of no concern do not consume time and effort, and that the proposed action and alternatives are balanced, thorough, and able to be implemented.

In accordance with 43 CFR 1610.2(d), the BLM must document the scoping results. The BLM Land Use Planning Handbook H-1601-1 (BLM 2005) requires the preparation of a Scoping Summary Report to capture public input in one document. This report must summarize the separate comments received during the formal external scoping period. It also must describe the issues and management concerns from public and any internal scoping meetings, the pre-

plan analysis, and must include a discussion of how these comments will be incorporated into the RMP amendment.

1.5 Description of the Scoping Process

The BLM follows the public involvement requirements documented in Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR 1501.7 for scoping and 1506.6 for public involvement). The BLM also follows public involvement requirements described in the BLM's planning regulations (43 CFR 1601-1610). The BLM solicits comments from relevant agencies and the public, organizes and analyzes all comments received, and then distills them to identify issues that will be addressed during the planning process. These issues help define the scope of analysis for the RMP amendment and are used to develop the project alternatives.

1.5.1 EIS Planning Update and Mailing List

In January 2014, the BLM mailed an EIS planning update with details about the public scoping period for the RMP Amendment/EIS to over 270 individuals from the public, agencies, tribes, and organizations who had participated in past HFO activities, had been included on past HFO distribution lists, or had expressed an interest in BLM oil and gas management decisions. The EIS planning update provided the dates and venues for the four public scoping meetings (see **Section 1.4.4**, Scoping Public Meetings), and described the various methods for submitting comments, including dedicated e-mail and postal addresses. The BLM will publish future EIS planning updates at major project milestones and will mail them to individuals and organizations that have requested to remain on or be added to the project mailing list. All EIS planning updates will be posted on the project website. Participants may request to receive EIS planning updates and other project information through electronic or postal mail. The EIS planning update is included in **Appendix A**, Scoping Materials.

1.5.2 News Release

On August 2, 2013, the BLM posted a news release to the project website (www.blm.gov/ca/eis-og) announcing the publication of the NOI on August 5, 2013, the initiation of a 60-day public scoping period for the RMP Amendment/EIS process, and the tentative scheduling of public scoping meetings for fall 2013. The news release indicated that an additional *Federal Register* notice would be published 15 days prior to the public scoping meetings and directed the public to check the project website in the future for the posting of public scoping meeting dates and locations.

A second additional news release was posted to the project website on October 23, 2013, indicating that due to the October 2013 federal government shutdown the public scoping meetings had not yet been scheduled and that they would occur beyond the initial 60-day scoping window. The news release reiterated that a *Federal Register* notice would announce the meetings 15 days prior to their occurrence.

A third news release was posted to the project website on January 13, 2014, providing dates, times, and locations of the four public scoping meetings. The news release also indicated that depending on the results of the scoping process, the geographic scope of the project may be expanded beyond the HFO.

A fourth news release was posted to the project website on February 4, 2014 highlighting the remaining two scoping meetings that had yet to occur as of that posting date.

The BLM also provided information on the scoping public meetings on the project website (see **Section 1.4.4**, Scoping Public Meetings) and described the various methods for submitting comments.

1.5.3 Project Website

A public website was launched and is regularly updated to provide the public with the latest information about the RMP Amendment/EIS process. The project website (www.blm.gov/ca/eis-og), provides the following:

- Background information about the project
- Citizen's Guide to NEPA
- *Federal Register* NOI
- EIS planning update
- All public scoping meeting handouts and posters, as well as the scoping meeting PowerPoint presentation
- All news releases posted since August 2013
- Scoping comment form
- BLM proposed hydraulic fracturing rule

1.5.4 Scoping Public Meetings

The BLM hosted four public meetings to provide the public with opportunities to become involved, learn about the project and the planning process, meet the Hollister RMP Amendment team members, and offer comments. The NOI announced the BLM would hold local public scoping meetings. The dates, meeting locations and times, and instructions for providing comments were announced via a January 2014 news release and the EIS planning update. The details of the public meetings are provided in **Table 1-1,** Public Scoping Meetings.

Table 1-1
Public Scoping Meetings

Location (California)	Venue	Date	Number of Attendees	Number of Completed Comment Forms Received
Hollister	San Juan Oaks Golf Course	1/29/2014	29	4
Sacramento	Doubletree Hotel	2/04/2014	35	2
Salinas	Cesar Chavez Library	2/11/2014	21	1
Coalinga	Harris Ranch Inn & Restaurant	2/12/2014	5	0
Total			**90**	**7**

Note: Meetings were from 6 PM to 8 PM.

Scoping meetings were held to encourage participants to discuss concerns and questions with BLM staff representatives. Copies of the first issue of the EIS planning update, a glossary of terms, blank scoping comment forms, and a guide to providing substantive comments were available at the sign-in station. A Microsoft PowerPoint presentation was given by a contractor representing the BLM and was followed by an opportunity for attendees to speak for up to three minutes each. BLM personnel were present after the public speaking time to discuss issues with attendees one-on-one and in small groups. Several poster maps were displayed around the room to illustrate the HFO, the presence of mineral estate and split estate, estimates of oil and gas potential, special land designations, air basins, and water resources. Current stipulations on oil and gas leases within the HFO were also shown. All handouts and poster maps were also posted on the RMP amendment website for public review. As shown in **Table 1-1,** Public Scoping Meetings, 90 people attended the public meetings.

Members of the public made verbal comments during the scoping meetings. This is not the official way of commenting, and attendees were encouraged to write their comments down and to follow the formal submission process. However, for informational purposes verbal comments were noted by BLM and contractor staff at the public scoping meetings and a summary of these comments is included in **Section 2.2.1**, General Themes of Verbal Comments at Scoping Meetings and **Appendix D,** Verbal Comments from Scoping Meetings.

1.5.5 Notice of Intent

The NOI is the legal document notifying the public of the BLM's intent to initiate the planning process and to prepare an EIS for a major federal action. The NOI invites the participation of affected and interested agencies, organizations, and members of the general public in determining the scope and significant issues to be addressed in planning alternatives and analyzed in the EIS. It also initiates the formal scoping public comment period as required by NEPA,

which extended 207 days following publication of the NOI in the *Federal Register*. The NOI was published on August 5, 2013, and the official scoping comment period ended on February 28, 2014. Comments received on or before February 28, 2014 are included in this report. The BLM will consider all comments received during the planning process, both before the publication of the NOI and after the end of the official scoping comment period. A link to the NOI is posted on the project website (www.blm.gov/ca/eis-og) and can also be found in Appendix A.

1.6 COLLABORATIVE INVOLVEMENT PROCESS

In addition to formal scoping, the BLM has implemented a collaborative outreach and public involvement process that will include working closely with cooperating agencies. These efforts are summarized below. The BLM will continue to meet with interested agencies and organizations throughout the planning process, as appropriate, and will coordinate closely with cooperating partners.

1.6.1 Cooperating Agencies

A cooperating agency is any federal, state, or local government agency or Indian tribe that enters into a formal agreement with the lead federal agency to help develop an environmental analysis. More specifically, cooperating agencies "work with the BLM, sharing knowledge and resources, to achieve desired outcomes for public lands and communities within statutory and regulatory frameworks" (BLM 2005). The benefits of enhanced collaboration among agencies in preparing NEPA analyses include the following:

- Disclosing relevant information early in the analytical process
- Obtaining relevant information from local communities, including social conditions
- Applying available technical expertise and staff support
- Avoiding duplication with other federal, state, tribal, and local procedures
- Establishing a mechanism for addressing intergovernmental issues

On January 15, 2014, the BLM wrote to 35 local, state, and federal agency or government representatives, inviting them to participate as cooperating agencies for the HFO Oil and Gas Leasing and Development RMP amendment and EIS. All appropriate parties to the Air Quality Memorandum of Understanding (as revised in 2011) were included in the invitation list. These parties included the following:

- BLM
- US Fish and Wildlife Service
- US National Parks Service

- US Forest Service
- US Environmental Protection Agency

The BLM will develop a Memoranda of Understanding with the agencies accepted into cooperating status. As of March 7, 2014, no agencies have requested to participate in the RMP Amendment/EIS process as designated cooperating agencies. The list of invited agencies included the following:

- Alameda Planning Department
- Bay Area Air Quality Management District
- California Department of Conservation
- California Department of Fish and Wildlife
- California Division of Oil, Gas and Geothermal Resources
- California Geological Survey
- California Natural Resources Agency
- California Office of Historic Preservation
- California State Air Resource Control Board
- Central Coast Regional Water Quality Control Board
- Central Valley Regional Water Quality Control Board - Fresno Office
- Central Valley Regional Water Quality Control Board - Sacramento Office
- Contra Costa County Planning Commission
- County of Monterey
- County of San Mateo
- Department of Toxic Substances Control
- Fresno County
- Lawrence Berkeley National Laboratory
- Los Padres National Forest
- Merced County
- Monterey Bay Unified Air Pollution Control District
- National Park Service
- San Benito County
- San Francisco Bay Regional Water Quality Control Board
- San Joaquin County Community Development Department

- San Joaquin Valley Air Pollution Control District (Central Office)
- Santa Clara County
- Santa Cruz County
- Stanislaus County
- State Water Resources Control Board
- US Army
- US Bureau of Reclamation
- US Environmental Protection Agency (EPA), Region 9
- US Fish and Wildlife Service
- US Geological Survey

The BLM anticipates up to 10 cooperating agency meetings (more if warranted) throughout the RMP amendment and EIS process. Invited cooperating agencies were also encouraged to attend the scoping meetings and provide comments during the scoping period. Cooperating agencies will be engaged throughout the planning process, including during alternatives development.

1.6.2 Outreach and Coordination with Tribes

The BLM has initiated Section 106 consultation with the 28 tribal individuals, organizations, and federally recognized tribes identified as having interests in the planning area. Consultation conducted as required by the National Historic Preservation Act and Executive Order 13007 "Indian Sacred Sites." During scoping, the first EIS update was mailed to 28 tribal individuals and organizations. Consultation efforts also included the distribution of consultation letters mailed to 28 tribal entities on January 15, 2014. In some cases a letter was sent to multiple individuals belonging to the same tribal organization:

- Amah Mutsun Ohlone
- Amah Mutsun Tribal Band
- Mr. Andrew Galvan
- California Valley Miwok Tribe
- Costanoan Rumsen Carmel Tribe
- Esselen Tribe of Monterey County
- Indian Canyon
- Ms. Jakki Kehl
- Ms. Judith Bomar Grindstaff
- Ms. Katherine Erolinda Perez
- Ms. Linda Yamane

- Muwekma Ohlone Tribe
- Ohlone-Costanoan Esselen Nation
- Pajaro Valley Ohlone Indian Council
- Mr. Richard Larios
- Salinan Nation Cultural Preservation Association
- Salinan Tribe
- Salinan Tribe of Monterey, San Luis Obispo and San Benito Counties
- Salinan-Chumash Nation
- Santa Rosa Rancheria of Tachi Yokuts
- Trina Marina Ruano Family
- Xolon Salinan Tribe

Of the tribes contacted, the Ohlone/Costanoan-Esselen Nation responded with a letter indicating a desire for consultation on any planned projects that may adversely impact known or predicted cultural resources and sacred sites within the tribe's aboriginal territory.

No other written comments were received from tribal agencies during the scoping period. Government-to-government consultation will continue throughout the RMP amendment process to ensure that the concerns of tribal groups are considered in development of the RMP amendment.

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SECTION 2
COMMENT SUMMARY

2.1 METHOD OF COMMENT COLLECTION AND ANALYSIS

All written submissions received on or before February 28, 2014 were evaluated and are documented in this Scoping Summary Report. All comments received during the RMP amendment process will be considered in alternatives formulation and project planning.

A total of 132 unique written submissions, resulting in 734 unique comments, were received during the public scoping period. The most common format used for submissions was e-mail. Submissions were also mailed by US Mail to the BLM. In addition, comment forms were completed at the public scoping meetings.

Included in the 132 unique submissions is one letter received from the non-governmental organization CREDO that included 10,577 electronic signatures by its members. Also included in the 132 unique submissions was a form letter received by three individuals not associated with any particular organization. This letter was counted as three unique submissions. Details of those form letters are included in **Appendix B**, List of Commenters, **Table B-2**, Form Letter Submissions. Some CREDO members added unique comments to that form letter. When unique comments were added to the form letter, those comments were entered into the comment-tracking database.

A list of commenters and the dates of submittal are provided in **Appendix B**, List of Commenters. Most written submissions included more than one comment, and in many cases individual comments addressed more than one planning process topic or resource category. Where an individual comment addressed more than one process topic or resource category, that comment was counted more than once and was categorized under each applicable category. The 132 submissions yielded 734 uniquely categorizable comments.

To ensure that public comments were properly registered and that none were overlooked, a multi-phase management and tracking system was used. First, written submissions were logged and numbered. Once all comments were received and documented, the BLM assigned a planning process category code to each issue raised in the scoping comments. These codes detail which issues raised in the scoping comments will be resolved through this RMP amendment planning effort. Process category codes include the following:

1: Scoping issues that will be addressed in the RMP amendment

2: Scoping issues that will be addressed through BLM policy or administrative action (National and BLM policy) rather than through this RMP amendment

3: Scoping issues that are beyond the scope of this RMP amendment that will be considered but not addressed

To assist with the analysis, the BLM entered comments into the Public Input and Comment Tracking database and organized comments by planning issue categories and affiliation of the commenter. Finally, these identifiers were queried and tallied to provide information on planning and other issue categories. Details of comments received by planning issue are included in **Section 2.2.4**, Number of Comments by Planning Process Category.

2.2 SUMMARY OF PUBLIC COMMENTS RECEIVED

2.2.1 General Themes of Verbal Comments at Scoping Meetings

At each of the four public scoping meetings, attendees were invited to speak after the BLM presentation. The following number of attendees elected to speak at the meetings:

- Hollister – 13 speakers
- Sacramento – 15 speakers
- Salinas – 12 speakers
- Coalinga – 1 speaker

At each of the four meetings, a representative from the Western States Petroleum Association spoke, representing the socioeconomic benefits and safety features of current oil and gas exploration technologies. At the Hollister and Salinas meetings there were a few additional speakers who supported oil and gas leasing on public lands for the economic stimulatory effects that such an action would have on local communities. One of these speakers expressed concern that the BLM would make decisions based on popular opinion and urged the agency to make science-based decisions. Speakers in support of oil and gas leasing urged the BLM to conduct the EIS quickly, to keep the scope of the analysis narrowly focused on oil and gas leasing changes since the 2007 RMP, and offered informational sources for the BLM to use in preparing the EIS.

The remaining speakers offered a variety of comments generally expressing opposition to hydraulic fracturing on any federal mineral estate in California. Concerns were expressed regarding water use and water contamination, with frequent references made to the current historic drought. The role of fossil fuel extraction and combustion on climate change was a frequently raised topic. Speakers also raised concerns about air quality, induced seismicity, impacts on farming, accident scenarios, data sources for the EIS, and impacts on historic sites and cultural resources. A few speakers encouraged the BLM to coordinate with other agencies.

A detailed list of spoken comments is provided in **Appendix D**, Verbal Comments from Scoping Meetings.

2.2.2 Written Submissions by Affiliation

Table 2-1, Comments by Commenter Affiliation[1], and **Figure 2-1**, Comments by Commenter Affiliation[1], show the number and proportion of written submissions received from each type of affiliation. Letters on business, agency, or organization letterhead, or where the commenter signed using their official agency title, were considered to represent that organization. All other letters were considered to represent individuals. Members of the general public provided 110 of the comments (83.3 percent) received during the scoping period, representatives from businesses submitted 2 of the comments (1.5 percent), and non-profit or citizen groups submitted 13 of the comments (9.8 percent).

Federal agencies submitted 2 written submissions (1.5 percent), local government agencies submitted 4 written submissions (3.0 percent), and a tribal organization submitted 1 written submission (0.8 percent). No written submissions were received from elected officials, anonymous commenters, educational organizations, or state agencies. A list of commenters, their affiliations, and the submittal date of their comments is included as **Appendix B**, List of Commenters.

2.2.3 Written Submissions by Geographical Area

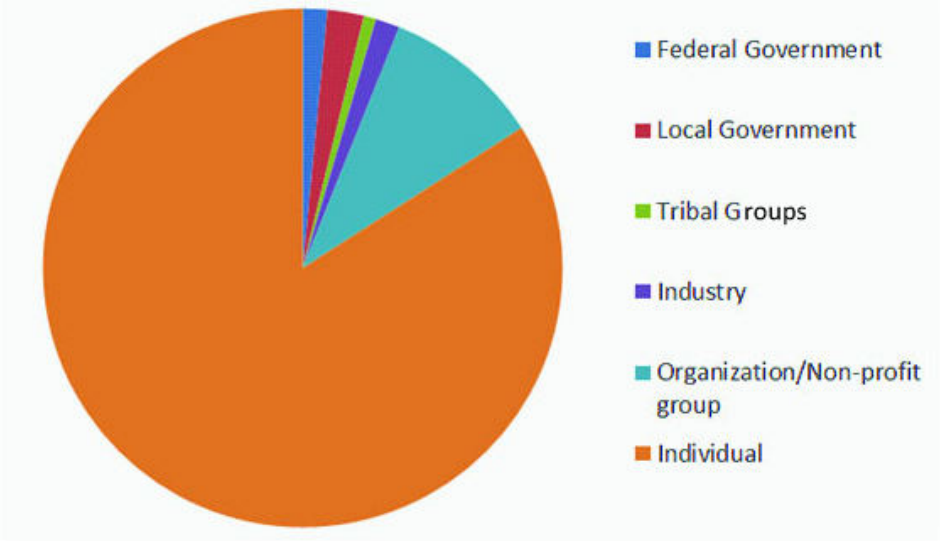
Table 2-2, Commenters by Geographic Area[1], and **Figure 2-2**, Commenters by Geographic Area1, show the number and proportion of written submissions received by the geographic location of the sender. A total of 117 commenters (90.7 percent) were from California. Of the remaining submissions, 1 commenter (0.8 percent) was from outside of California, and 11 commenters (8.5 percent) did not indicate a geographic origin. Note that these calculations do not include the CREDO form letter commenters, unless those commenters added unique comments to their form letter submissions. In addition, some commenters made multiple submissions and some letters had more than one signatory; therefore, the total for commenters by geographic area is not equal to the total letter submissions.

Table 2-1
Comments by Commenter Affiliation[1]

Affiliation	Number of Comment Letters	Percentage of Total Comment Letters[2]
Government	6	4.5
Federal	*2*	*1.5*
State	*0*	*0*
Local	*4*	*3.0*
Elected Official	*0*	*0*
Businesses	2	1.5
Organizations/Non-profits	13	9.8
Individuals	110	83.3
Tribal Groups	1	0.8
Total	**132**	**100**

[1]Calculations include the CREDO form letter as one submission from an organization.
[2]Total may not add up to 100 due to rounding

Figure 2-1
Comments by Commenter Affiliation[1]



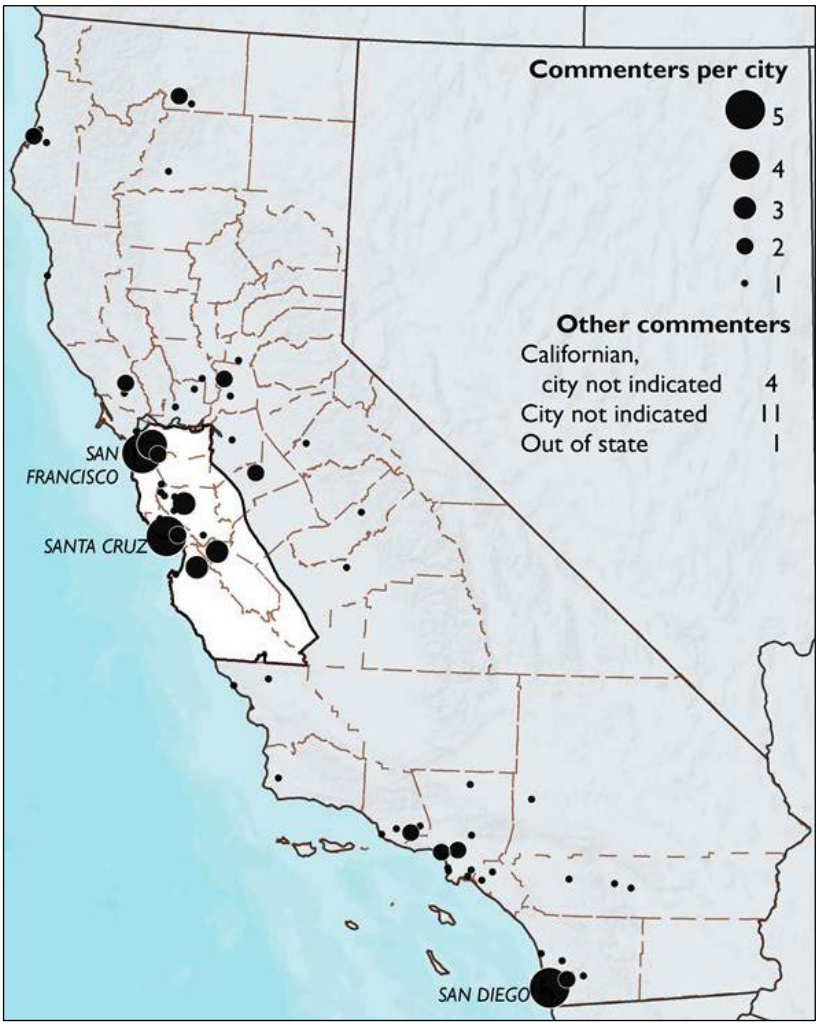
[1]Calculations include the CREDO form letter as one submission from an organization and the other form letter as three submissions from three individuals.

Table 2-2
Commenters by Geographic Area[1]

Location	Number of Commenters	Percentage of Total Commenters
Within California	117	90.7
Outside California	1	0.8
Unknown	11	8.5
Total	**129**	**100**

[1]Calculations do not include the CREDO form letters submissions unless commenter added unique comments to the submission

Figure 2-2
Commenters by Geographic Area[1]



[1]Calculations do not include the CREDO form letter submissions unless commenter added unique comments to the submission.

2.2.4 Number of Comments by Planning Process Category

Table 2-3, Comments by Planning Process Category, shows the number of comments raised during scoping. Of the 734 comments received, 541 comments (74 percent) were related to a specific planning issue that will be addressed in the RMP amendment. Some comments addressed multiple planning issues and were therefore counted more than once for analysis. For example, a commenter concerned about traffic might have concerns about the impact of oil and gas development on traffic or the impact of traffic on other resources such as on air quality, climate change, wildlife, or public health and safety. In such a situation, one comment could be classified as a concern about multiple resource issues. Many of the resources and, consequently, many of the impacts on the resources are interrelated.

Another example can be found with commenters who are concerned about the impact oil and gas development has on climate change. Along with this concern comes the concern that, if climate change is exacerbated by oil and gas development related to this RMP Amendment/EIS, then the RMP Amendment/EIS should also analyze the impacts of climate change on underrepresented populations that would be disproportionately impacted by climate change. As a result, a climate change comment could be classified as both a climate change comment and an environmental justice comment, as well as a socioeconomic comment if the commenter is concerned with underrepresented populations being disproportionately affected by impacts on farming or ranching. The comment could otherwise be a water resources comment if the commenter is concerned about unequal access to a diminishing water supply, to name a few examples. These comments are discussed in detail below and in **Section 3**, Issue Summary.

Approximately 182 comments (25 percent) were comments that will be addressed in the RMP amendment but that do not fall within a specific planning issue category. These include 69 comments (9 percent) related to the project in general, 53 comments (7 percent) about alternatives to be considered during the process, 50 comments (7 percent) related to the scope of the project, and 10 comments (1 percent) that are within the scope of the RMP amendment process but that have already been resolved through other means. See **Section 3.3.7**, Other Issues to be Addressed in the RMP Amendment, for further detail about these types of comments.

The remaining 2 percent of the comments were issues that were beyond the scope of the RMP amendment (1 percent), or issues that will be resolved through national policy or administrative action (1 percent). See **Section 3.4**, Issues Not Addressed in the RMP Amendment, for more detail.

Comments are provided in **Appendix C**, Comments by Resource Planning Issue. Comment letters can be viewed in their entirety at the BLM California State Office in Sacramento.

Table 2-3
Comments by Planning Process Category

Process Category	Number of Comments	Percentage of Total Comments
Issues that will be resolved in the RMP amendment	723	98
General comment related to project	*69*	*9*
Planning issue	*541*	*74*
Alternatives	*53*	*7*
Scope of the EIS	*50*	*7*
Inside scope, addressed under existing policies, plans, and legislation	*10*	*1*
General issue beyond the scope of the RMP	4	1
Issue resolved through national policy or administrative action	7	1
Total	**734**	**100**

2.2.5 Number of Comments by Planning Issue Category

Table 2-4, Comments by Planning Issue, shows the number and percentage of comments received by planning issue. The BLM received 541 planning issue comments and categorized them into 14 planning issue categories. **Section 3**, Issue Summary, provides a detailed analysis of the comments received for each planning issue category.

Table 2-4
Comments by Planning Issue

Planning Issue	Number of Comments	Percentage of Total Comments
Issue 1. Water Resources	138	26%
Issue 2. Health and Safety	104	19%
Issue 3. Vegetation and Wildlife	53	10%
Issue 4. Air Quality	68	13%
Issue 5. Climate Change	47	9%
Issue 6. Geology and Seismicity	55	10%
Issue 7. Soil Resources	8	1%
Issue 8: Socioeconomics	25	5%
Issue 9. Traffic	5	1%
Issue 10. Tribal and Cultural Resources	10	2%
Issue 10. Environmental Justice	14	3%
Issue 12. Land Use	5	1%
Issue 13. Livestock Grazing	1	0%

Table 2-4
Comments by Planning Issue

Planning Issue	Number of Comments	Percentage of Total Comments
Issue 14. Recreation	4	1%
Issue 15. Visual Resources	4	1%
Total	**541**	**100%**

Of the planning issue categories, the highest number of comments (138 comments and 26 percent of total comments) were about water resources. Health and safety was the category that received the next highest number of comments (104 comments and 19 percent), followed by air quality (68 comments and 13 percent), geology and seismicity (55 comments and 10 percent), vegetation and wildlife (53 comments and 10 percent), climate change (47 comments and 9 percent), socioeconomics (25 comments and 5 percent), environmental justice (14 comments and 3 percent), tribal and cultural resources (10 comments and 2 percent), soil resources (8 comments and 1 percent), traffic (5 comments and 1 percent), land use (5 comments and 1 percent), recreation (4 comments and 1 percent), visual resources (4 comments and 1 percent), and livestock grazing (1 comment and less than 1 percent).

SECTION 3
ISSUE SUMMARY

Issue identification is the first step of the nine-step BLM planning process. As defined in the BLM Land Use Planning Handbook H-1601-1 (BLM 2005), planning issues include concerns or controversies about existing and potential land and resource allocations, levels of resource use, production, and related management practices. Issues include concerns, needs, and opportunities for resource use, development, and protection to consider in amending RMPs. These issues may stem from new information, changed circumstances, or from the need to reassess the appropriate mix of allowable uses.

3.1 PLANNING ISSUE DEVELOPMENT

The BLM enacted a two-step issue identification process for the RMP Amendment/EIS planning effort, starting with internal BLM scoping meetings in 2013 and finishing with public scoping that ended in February 2014.

Preliminary planning issues identified through internal meetings were included in the August 5, 2013 NOI in the *Federal Register*. The NOI initiated the formal scoping period, as required by NEPA, and solicited written comments from the public (further discussed in **Section 1.4**, Description of the Scoping Process). Public outreach for scoping continued with the release of the first EIS planning update in January 2014, followed by scoping meetings in January and February 2014. Scoping is a collaborative public involvement process implemented to identify and refine planning issues to address in the planning process. During the scoping period, the BLM also engaged cooperating agencies, as discussed in **Section 1.5**, Collaborative Involvement Process. Formal tribal consultation also began during the scoping period. During scoping, tribal individuals and organizations were sent the EIS planning update as well as individual letters offering government-to-government consultation. The BLM hosted four public meetings and solicited written comments from the public during the scoping period. The scoping period provided the BLM with additional information on the

public's concerns and suggestions regarding issues of concern for the RMP amendment.

Information accepted during internal and external scoping was compiled to develop discrete planning issue statements; these are discussed in **Section 3.2**, Planning Issue Statements. The purpose of these planning issue statements is to highlight the key issues distilled from these initial planning and scoping processes. The issues are also discussed in **Section 3.3**, Summary of Public Comments by Resource Planning Issue Category, according to the various issue categories and associated comments received from interested individuals, agencies, elected officials, businesses, tribes, and organizations. The BLM will use the planning issues and associated statements, planning criteria, and other information collected in the early planning and scoping phases of the RMP amendment process to help formulate a reasonable range of alternative management strategies that will be analyzed during the RMP Amendment/EIS process.

3.2 PLANNING ISSUE STATEMENTS

A planning issue is a conflict or dispute over resource management activities, allocations, or land use that is well defined or topically discrete and entails alternatives between which to choose. Fifteen planning issue categories were developed during the scoping period, with a planning issue statement developed for each category.

The planning issue statements presented below are based on the best information gathered to date. These issues will be presented as questions that will be addressed through the RMP amendment. The process of developing this RMP amendment will afford many opportunities for collaboration with local, state, and federal agencies and tribal governments; land management agencies; public interest groups; and public land users. As a result, these issues and concerns may need to be modified and refined to reflect public comments and concerns. The majority of the comments received focused particularly on well stimulation techniques associated with unconventional oil reservoirs in California. These techniques include hydraulic fracturing and acidization, which can include either acid fracturing or matrix acidizing. Therefore, many of the issue statements below focus on the impacts of these processes.

Some of the overarching planning issues the BLM will address are listed below. Each overarching issue, in turn, has several sub-topics, issue questions, and management concerns that address more specific uses and resources. As applicable, items listed in Appendix C of the Land Use Planning Handbook (BLM 2005) will be addressed and decisions will be made. Planning issue statements include the following:

Issue 1: Water Resources

Issue Statement: What would be the impact of different approaches to oil and gas management, including well stimulation activities, on water resources? What measures will be implemented to protect these resources?

- Migration of chemicals from deep systems to aquifers
- Well casing failures
- Leaks, spills, pipeline failures, train derailments
- Open pit leaks and infiltration
- Groundwater contamination
- Surface water contamination
- Groundwater supply reductions
- Surface water supply reductions
- Impacts on downstream stream functions and users
- Wetlands, vernal pools, springs, seeps, riparian areas
- Nexus of groundwater with surface waters
- Increased storm water runoff

Issue 2: Health and Safety

Issue Statement: What would be the impact of different approaches to oil and gas management, including well stimulation activities, on public and worker health and safety? What measures will be implemented to protect the public, workers, and sensitive receptors??

- Valley Fever
- Inhalation of emissions of workers and local communities
- Spills and other accidents
- Water supply contamination
- Air quality degradation and hazardous air pollutants
- Carcinogenic and endocrine-disrupting effects of chemicals
- On-site wastewater treatment facilities
- Closed loop systems
- Radioactive elements
- Noise and light pollution
- Increased traffic and accident risks
- Need for thorough risk assessment

Issue 3: Vegetation and Wildlife

Issue Statement: What would be the impact of different approaches to oil and gas management, including well stimulation activities, on plants and wildlife? What measures will be implemented to protect these resources?

- Dispersion and persistence of chemicals into environment
- Biomagnification (concerns about toxins, heavy metals, and other substances moving up through the food chain)
- West Nile virus from mosquitos in sumps
- Invasive species introduction, including aquatic
- Effects of spills and intentional dumping of wastewater on aquatic species and riparian vegetation
- Subterranean microbial diversity in shale formations
- Effects on condors from steam plumes from thermal stimulation
- Effects of noise, light, and pollution on wildlife
- Ground nesting birds avoiding tall structures (drill rigs) that attract predators
- Wildlife corridors
- US Fish and Wildlife Service recovery plans

Issue 4: Air Quality

Issue Statement: What would be the impact of different approaches to oil and gas management, including well stimulation activities, e on air quality? What measures will be implemented to protect air quality?

- Evaporation and assisted evaporation from open pits
- Emissions from closed loop systems
- Emissions from oilfield operations
- Flaring, venting
- Truck traffic along travel routes
- Presence of hazardous air pollutants in hydraulic fracturing mixtures
- Pollution from eventual combustion of extracted fossil fuels
- Impacts on air quality related values assessed through the use of quantitative modeling

Issue 5: Climate Change

Issue Statement: What would be the impact of different approaches to oil and gas management, including well stimulation activities, on climate change and federal efforts to minimize climate change? What measures will be implemented to minimize contributions to and the impacts of climate change?

- Relationship between drought, climate change, greenhouse gases, fossil fuel combustion, and fossil fuel extraction
- Consistency with federal government goals for carbon sequestration
- Role of public lands in carbon sequestration and groundwater recharge

Issue 6: Geology and Seismicity

Issue Statement: What would be the impact of different approaches to oil and gas management, including well stimulation activities, on geology and induced seismicity? What measures will be implemented to protect geology and mitigate for induced seismicity?

- Induced seismicity from disposal wells
- Seismic effects on nearby lakes, dams, and reservoirs

Issue 7: Soil Resources

Issue Statement: What would the be impact of different approaches to oil and gas management, including well stimulation activities, on soil resources? What measures will be implemented to protect soil resources?

- Open pits and soil contamination
- Closed loop systems and soil contamination
- Spills and accidents and soil contamination
- Erosion, sedimentation, subsidence

Issue 8: Socioeconomics

Issue Statement: What would be the impact of different approaches to oil and gas management, including well stimulation activities, on the social values and economic revenues of the community? What measures will be implemented to protect these values and revenue sources?

- Water quality and volume available for farming
- Costs of accidents and spills
- Influx of workers to rural towns: schools, housing
- Loss of scenic beauty and changes to tourism
- Climate change
- Economic stimulation of local and regional economies

Issue 9: Traffic

Issue Statement: What would be the impact of different approaches to oil and gas management, including well stimulation activities, on traffic and local roads? What measures will be implemented to protect local roads and manage increased traffic?

- Heavy truck use of local residential roads
- Changes in traffic patterns
- Spills and accidents

Issue 10: Tribal and Cultural Resources

Issue Statement: What would be the impact of different approaches to oil and gas management, including well stimulation activities, on tribal and cultural resources? What measures will be implemented to protect these resources?

- Light, noise, and scenic changes affecting Juan Bautista de Anza National Historic Trail
- Disturbance of Native American burials
- Protection of Indian sacred sites

Issue 11: Environmental Justice

Issue Statement: What would be the impact of different approaches to oil and gas management, including well stimulation activities, on poor, minority, and underrepresented communities? What measures will be implemented to protect these communities from experiencing disproportionate negative effects from oil and gas development?

- Farm and ranch workers
- Water and air quality impacts on sensitive receptors from oil and gas development
- Connection between oil and gas development and climate change, and the disproportionate impacts of climate change on poor, minority, and underrepresented communities
- Development occurring in communities already overburdened with oil and gas development and other forms of pollution

Issue 12: Land Use

Issue Statement: What would be the impact of different approaches to oil and gas management, including well stimulation activities, on existing land uses? What measures will be implemented to protect existing land uses?

- Wildlife habitat
- Scenic viewsheds
- Streams and springs
- Impacts on private surface owners on split-estate lands

Issue 13: Livestock Grazing

Issue Statement: What would be the impact of different approaches to oil and gas management, including well stimulation activities, on existing livestock

grazing operations? What measures will be implemented to protect these operations?

- Water supply for livestock

Issue 14: Recreation
Issue Statement: What would be the impact of different approaches to oil and gas management, including well stimulation activities, on visitor experience and the safety of existing lands and water bodies used for recreation? What measures will be implemented to protect recreational resources?

- Access
- Visitor experience (e.g., viewshed, noise, and smell)
- Visitor safety
- National Historic Trails and National Parks

Issue 15: Visual Resources
Issue Statement: What would be the impact of different approaches to oil and gas management, including well stimulation activities, on visual resources? What measures will be implemented to protect these resources?

- Light pollution
- Pinnacles National Park
- Juan Bautista de Anza National Historic Trail

3.3 SUMMARY OF PUBLIC COMMENTS BY RESOURCE PLANNING ISSUE CATEGORY

As described previously, each comment received during public scoping was reviewed and coded. Comments were coded once for each category to which they applied, and therefore some comments were coded multiple times. Of the 734 comments received, 541 comments (74 percent) were related to one of the planning issues defined above. In addition, 69 comments (9 percent) were general comments related to issues that will be addressed in the RMP amendment but do not fall within a specific planning issue category. See **Table 2-4**, Comments by Planning Issue, for a breakdown of the number of comments received for each planning issue.

Summaries of the scoping comments received for each planning issue category, as well as general RMP comments, are provided in **Sections 3.3.1**, Planning Issues to be Addressed in the RMP Amendment and **3.3.2**, Other Issues to be Addressed in the RMP Amendment. These summaries provide details only on comments related to issues that will be resolved in the RMP Amendment. Tables with all comments for each planning issue, as well as tables for issues that will not be addressed in the RMP Amendment, are included in **Appendix C**, Comments by Resource Planning Issue. Adjustments or additions may be made to the planning issues as the planning process proceeds and the BLM continues

to review information, meet with the interdisciplinary team, and talk with the public.

3.3.1 Planning Issues to be Addressed in the RMP Amendment

Issue 1: Water Resources. *What would be the impact of different approaches to oil and gas management, including well stimulation activities, on water resources? What measures will be implemented to protect these resources?*

The BLM received 138 comments on the impacts of oil and gas development on water resources (26 percent of the planning issue comments). Most commenters expressed concern about negative impacts that hydraulic fracturing can have on the quality and supply volume of both surface and groundwater.

Concerns about groundwater contamination dominated water-related comments and most often focused on contamination related to well casing failures, long-term upward migration into aquifers from either natural or fracturing-induced cracks and fissures, leaking from open pits, and accident-induced spills related to the transportation of chemicals to project sites and petroleum and produced wastewaters away from project sites.

Commenters were also concerned about surface water contamination resulting from accident-induced spills, and the changing of surface water features such as wetlands and vernal pools due to disturbance, fill, and drawdown of local water tables. Commenters were also concerned that ground disturbance caused by oil and gas development would increase stormwater runoff, which could result in changing water flow patterns, erosion, flooding, and habitat loss.

Many commenters expressed concern about water supply during this time of historic drought in California. Commenters opposed the use of water for fossil fuel extraction at a time when water tables are at historic lows and when there is already not enough water to allocate to farming and to streamflows to support special status fish species. Commenters also drew connections between the drought and to global climate change as a potential causative factor, and expressed that by promoting more fossil fuel extraction, conditions are being set up for exacerbated drought conditions in the future. Commenters noted that unlike agricultural uses, water used for hydraulic fracturing is not returned to the landscape because it is contaminated and thereby unusable, and is either transported offsite or injected at depths below the existing water table. Commenters further tied the risk of water contamination to water supply, highlighting that any contamination of existing drinking or irrigation water supplies will render those supplies unusable.

Commenters requested that the BLM require Water Resource Management Plans prior to approving any project. Commenters

requested that a geologic analysis be performed to identify areas with faults that could facilitate the transfer of fluids from hydraulic fracturing zones upwards into aquifers, and that leasing decisions should be based in part on the results of such an analysis. Commenters requested that the EIS include analysis of long-term studies on the frequency and effect of fluid migration through newly created subsurface pathways. Commenters requested that the EIS analysis include data on well casing failure rates under high pressure conditions such as hydraulic fracturing. Commenters requested that studies on methane contamination of water wells near gas wells in the Utica and Marcellus shale be examined and considered in the analysis of potential impacts.

Commenters requested that the EIS include mapping of groundwater and surface water resources in the planning area as well as an identification of surface and groundwater uses in the area. This request includes identification of all source water protection areas, such as sole source aquifers, drinking water source protection zones, and municipal watersheds. Commenters requested that this mapping include the location and source identification of agricultural, domestic and public water supply wells, springs, and surface water intakes.

Commenters requested that the BLM consider buffer areas around wetlands, riparian areas, and water bodies to minimize the risk of contaminating these sensitive areas.

The EPA recommends the BLM adopt a requirement for monitoring to occur in private wells within one mile of an oil and/or gas project area to help assure mitigation measures are adequate and that water resources are being fully protected.

Commenters noted that the BLM, while not having jurisdiction over groundwater, has an independent duty to protect the ecological resources that occur on BLM-managed surface lands and that many of these resources are linked to groundwater quality and quantity through springs, seeps, pools, wetlands, and riparian areas. Commenters requested that the EIS include mapping of wetlands and waters of the US within the planning area as well as a list of best management practices that may be required to protect surface and groundwater resources and the circumstances under which the best management practices would be applied.

Commenters requested that the BLM examine potential streamflow withdrawals for use in well stimulation activities and the effects that such reductions in streamflow may have on downstream ecology, economy, agriculture, and human health, including diminished capacity for streamflows to dilute and degrade pollutants.

Issue 2: Health and Safety. *What would the be impact of different approaches to oil and gas management, including well stimulation activities, on public and worker*

health and safety? What measures will be implemented to protect the public, workers, and sensitive receptors?

The BLM received 104 comments about impacts of oil and gas development on the health and safety of workers and the public (19 percent of the planning issue comments).

Commenters expressed concern about future projects disturbing soil and stirring up the fungus that causes Valley Fever and asked that the EIS include information on how BLM will manage those risks to protect workers and the public from contracting this disease. Commenters were concerned about local resident health risks from emissions from oil and gas drilling projects, as well as potential exposures to harmful chemicals from spills during transportation of materials to and from project sites.

Commenters requested that the BLM analyze all health risks and potential routes of exposure for all chemicals likely to be introduced to the environment during well stimulation practices. Commenters suggested that the BLM utilize FracFocus as a data source for chemicals commonly used in hydraulic fracturing. These health risks should include all available research on carcinogenic and endocrine disrupting effects of chemicals known to be associated with hydraulic fracturing. Commenters requested that chemical use and possible exposure routes be analyzed for all phases of a project, including drill rig mobilization and demobilization, well drilling, well completion, well production, and equipment cleaning, maintenance, and repair. Commenters also asked that health risks associated with chemical dispersants used to clean up oil spills be addressed.

Commenters expressed concerns related to on-site chemical storage and processing, including hydrofluoric acid and on-site wastewater treatment facilities. Commenters asked that the EIS evaluate public health risks associated with air pollution on top of existing air pollution levels and that the analysis include not only the criteria pollutants but also the 25 chemicals used in hydraulic fracturing that are regulated as hazardous air pollutants.

Commenters asked that the EIS assess the amount, the type, and the potency of radioactive elements that are naturally occurring in federal minerals and evaluate the likely risks that stem from bringing such materials to the surface, as well as any appropriate mitigation. Commenters asked that the EIS address possible routes of exposure to produced wastewater, taking into consideration all possible disposal routes of such water.

Commenters asked that the EIS address impacts related to noise pollution, light pollution, the increased risk of traffic accidents, and increased seismic activity as a result of future unconventional extraction projects.

Commenters asked that the EIS address the potential for long-term fluid migration from hydraulic fracturing zones into drinking water or irrigation water aquifers and potential public health and safety effects. Commenters asked that the EIS discuss human health effects of climate change and tie climate change to the combustion and precursory extraction of fossil fuels that may be authorized in the RMP amendment.

Commenters requested that the BLM conduct a Health Impact Assessment, or equivalent study, of the aggregate impact that hydraulic fracturing and other unconventional extraction techniques will have on human health. Any such study should identify sensitive receptors in the planning area, such as children, the elderly, and the infirm, and specify the means by which impacts to these populations would be minimized.

Commenters requested that the EIS outline accident scenarios and consider what the health impacts would be if certain safety measures fail and if certain accidents occur. Commenters requested that the EIS discuss what measures would be in place to prevent accidents, and that the EIS report historic incidence rates of these accident types (e.g., instances of fracturing fluid being spilled while in transport, instances of well casing breaches, etc.). Commenters requested that the BLM prepare a Risk Assessment as a separate supporting document to the NEPA analysis and that this assessment utilize existing published data on all of the possible accident scenarios. Commenters indicated that the risk assessment would allow for the quantification of the chance of each kind of impact occurring that local communities have a right to know. Commenters noted recent disastrous pipeline failures and train derailments that have devastated communities and ecosystems. Commenters further requested that if historic accident rates are not available, the BLM must justify how such activities can be approved without a thorough risk analysis.

Issue 3: Vegetation and Wildlife. *What would be the impact of different approaches to oil and gas management, including well stimulation activities, on plants and wildlife? What measures will be implemented to protect these resources?*

The BLM received 53 comments about impacts of oil and gas development on vegetation and wildlife (about 10 percent of the planning issue comments).

Commenters were concerned about the risk of wildlife entering via land or air open pits containing toxic chemicals and not being able to escape. Commenters were also concerned about new open pits providing additional breeding habitat for mosquitos and the related proliferation of West Nile virus and its detrimental effects on wildlife.

Commenters requested that since fossil fuel extraction contributes to climate change, that the scope of the EIS analysis include global

effects of climate change on plants and wildlife. Commenters requested that the EIS discuss the dispersion and persistence in the environment of all chemicals used in well stimulation technologies and the long-term cumulative effects on plants and wildlife.

Commenters asked that the EIS address the introduction of invasive species to the landscape, including invasive aquatic species from the import of fresh waters to project sites for well stimulation. Commenters asked that the EIS address the potential for impacts on plants, wildlife, and aquatic life from streamflow reductions resulting from surface water withdrawals. Commenters requested that the analysis include potential impacts on aquatic species and riparian vegetation from accidental spills, pipeline failures, or the intentional dumping of wastewater.

Commenters asked that the EIS discuss new research and potential impacts on underground microbial diversity found in shale formations. Several commenters expressed concern about impacts to the condor through the consumption of contaminated waters and carrion, particularly after spill incidents. Commenters asked that the lists of chemicals commonly used for well stimulation be examined for bioaccumulation and biomagnification potential and that these potentials be translated into risk for the condor. Commenters asked that impacts from steam plumes several hundreds of feet high resulting from thermal stimulation techniques be evaluated for effects on condors and other wildlife.

Commenters asked that the EIS address indirect impacts from noise, light, and pollution on wildlife beyond immediate project areas and that it address how the introduction of drill rigs would result in avoidance of project areas by ground nesting birds. Commenters asked that the EIS identify wildlife corridors in the planning area, and that the BLM consider potential impacts on US Fish and Wildlife Service species recovery plans.

Commenters requested that the BLM conduct extensive biological studies that address: (1) habitat loss, degradation, and fragmentation, including edge effects; (2) water depletion; (3) air and water contamination; (4) introduction of invasive species; (5) climate change impacts; (6) health and behavioral effects such as increased stress and changes in life history behaviors; (7) changes in demographic rates such as reproductive success and survival; and (8) potential for population-level impacts such as declines and extirpations, and that these studies should consider these harms both individually and cumulatively.

Commenters provided references to several scientific studies and asked that the BLM include these data sources in the EIS analysis.

Issue 4: Air Quality. *What would be the impact of different approaches to oil and gas management, including well stimulation activities, on air quality? What measures will be implemented to protect air quality?*

The BLM received 68 comments about impacts of oil and gas development on air quality (about 13 percent of the planning issue comments).

Commenters expressed concern about existing air quality in the planning area and the exacerbation of these problems through additional fossil fuel development. Commenters requested that the EIS analyze air quality effects from all phases of potential future projects, including emissions from closed loop systems, flaring, and venting. Commenters expressed concern over fugitive dust emissions, combustion-related emissions, emissions from open pit evaporation of produced wastewaters, and emissions from chemical spills and leaks.

Commenters requested that the EIS contain an analysis of the toxics identified by the South Coast Air Quality Management District as being common chemicals used in hydraulic fracturing and that are included on the EPA's list of hazardous air pollutants. Commenters requested that the EIS include impact analysis for all chemicals included in California Health and Safety Code 44321, which includes toxic air contaminants and federal hazardous air pollutants.

Commenters requested that air modeling be conducted to understand which areas would be most affected by expanded use of unconventional extraction methods. Commenters requested that analysis be conducted on Class I and II areas and that guidance from the National Air Quality Memorandum of Understanding should be followed.

Commenters requested that the EIS air quality analysis include the full life cycle analysis of the fossil fuels that would be extracted, including their assumed end-point combustion. Commenters requested that the EIS describe all the methods by which the BLM can protect air quality.

Issue 5: Climate Change. *What would be the impact of different approaches to oil and gas management, including well stimulation activities, on climate change and federal efforts to minimize climate change? What measures will be implemented to minimize contributions to and the impacts of climate change?*

The BLM received 47 comments about impacts of oil and gas development on climate change (about 9 percent of the planning issue comments).

Commenters asked that the EIS address the relationship between greenhouse gases, climate change, the California drought, and how further combustion of fossil fuels as a result of expanded extraction in the planning area may exacerbate climate change and the current

drought. Commenters noted federal policy and funding to develop carbon sequestration technologies and that the lowest energy method of sequestering carbon is to not extract carbon-based fuels in the first place. Commenters asked that the EIS discuss the increasingly important role of public lands for precipitation infiltration during increasingly severe climate change-related drought.

Issue 6: Geology and Seismicity. *What would be the impact of different approaches to oil and gas management, including well stimulation activities, on geology and induced seismicity? What measures will be implemented to protect geology and mitigate for induced seismicity?*

The BLM received 55 comments about impacts of oil and gas development on geology, and seismicity (about 10 percent of the planning issue comments).

Commenters were concerned about induced seismicity from wastewater injection in disposal wells, as well as from hydraulic fracturing operations. Specific concerns were expressed about seismic impacts on Monterey County-operated lakes, dams, and reservoirs. Commenters were also concerned about the effects seismic activity could have on local communities and infrastructure.

Commenters requested that further studies be done to examine the link between hydraulic fracturing and seismic activity. Commenters cited a study on induced seismicity conducted by the US Geological Survey. Several commenters also expressed particular concern about the risk of increased seismic activity in California, a place already prone to earthquakes.

Issue 7: Soil Resources. *What would be the impact of different approaches to oil and gas management, including well stimulation activities, on soil resources? What measures will be implemented to protect soil resources?*

The BLM received 8 comments about impacts of oil and gas development on soil resources (about 1 percent of the planning issue comments).

Commenters expressed concerns about the contamination of soils from leaks from open pits and from tanks and trucks of produced wastewaters in closed loop systems. Commenters were also concerned about soil contamination from accidental spills of chemicals during transportation to project sites. Commenters requested that the EIS address erosion, sedimentation, and subsidence issues associated with potential future projects.

Issue 8: Socioeconomics. *What would be the impact of different approaches to oil and gas management, including well stimulation activities, on the social values and economic revenues of the community? What measures will be implemented to protect these values and revenue sources?*

The BLM received 25 comments about impacts of oil and gas development on local economies and services (about 5 percent of the planning issue comments).

Commenters were concerned about impacts on the agricultural economy due to the drawdown or contamination of irrigation water supplies. Additionally, commenters were concerned about the impacts on the state's viticulture (wine) and fishing industries and the subsequent economic impacts this could have on livelihoods. Commenters were also concerned about the impacts on schools, property values, and housing availability and pricing as a result of influx of workers to support new extraction projects in rural communities. Commenters were concerned about changes in tourism from a shift to a more industrialized landscape. Commenters asked that the EIS describe the socioeconomic impacts of accident scenarios. Commenters were also concerned that hydraulic fracturing operations would occur near disadvantaged communities and that the environmental justice impacts would be severe.

Commenters asked that the EIS describe socioeconomic impacts resulting from climate change and how climate change may be affected by the BLM's decisions in this RMP amendment.

Commenters also asked that the EIS describe the economic stimulation effects of new extraction projects in the planning area.

Issue 9: Traffic. *What would be the impact of different approaches to oil and gas management, including well stimulation activities, on traffic and local roads? What measures will be implemented to protect local roads and manage increased traffic?*

The BLM received five comments about impacts of oil and gas development on roads and traffic (about one percent of the planning issue comments).

Commenters were concerned about increased traffic, particularly heavy truck traffic, on all county, regional, and city roadways resulting from new extraction projects and from traffic problems during project-related accidents and spills. Commenters requested that a traffic study be prepared in support of the EIS of sufficient geographic scope to adequately identify all potential impacts, including congestion, traffic management, and impacts on infrastructure. Commenters requested that mitigation measures for all traffic circulation and pavement impacts on Monterey County roads be included in the EIS and that the EIS should include analysis of the needs and benefits of providing pedestrian/bicycle facilities as well as carpool/vanpool and other alternative modes of transportation that would reduce peak demand on roadways in future potential project areas.

Issue 10: Tribal and Cultural Resources. *What would be the impact of different approaches to oil and gas management, including well stimulation activities,*

on tribal and cultural resources? What measures will be implemented to protect these resources?

The BLM received 10 comments about impacts of oil and gas development on tribal and cultural resources (about two percent of the planning issue comments).

Commenters were concerned about visual and noise impacts on the Juan Bautista de Anza National Historic Trail.

Native American commenters requested that the EIS address the potential for the disturbance of Native American burials and to explain procedures to deal with such incidents if they were to occur. Native American commenters highlighted the potential presence of Indian sacred sites in future potential project areas, and asked that the EIS address Executive Order 13007 and discuss how the BLM would avoid adversely affecting the integrity, accessibility, or use of sacred sites, should they be identified at or near future project sites. Native American commenters requested that the EIS include a summary of all coordination with tribal individuals and organizations and with the State Historic Preservation Officer/Tribal Historic Preservation Officer, including identification of National Register of Historic Places-eligible sites, and development of a Cultural Resource Management Plan.

Issue 11: Environmental Justice. *What would be the impact of different approaches to oil and gas management, including well stimulation activities, on poor, minority, and underrepresented communities? What measures will be implemented to protect these communities from experiencing disproportionate negative effects from oil and gas development?*

The BLM received 14 comments about impacts of oil and gas development on environmental justice populations (about three percent of the planning issue comments).

Commenters were concerned about communities that may be proximate to future well sites and communities that would be affected by (1) air pollution because they are located downwind from future project sites, (2) water pollution from being downstream from future project sites, (3) groundwater contamination from using underground sources that are exposed to fluid migration, and (4) communities disproportionately affected by the impact of climate change. Commenters noted that communities in Kern County already bear disproportionate burdens from air, water, and pesticide pollution and that these communities are consistently ranked as having the worst air pollution in the country.

Commenters requested that any analysis of the environmental justice impacts of increased oil and gas production must look at the effect of that increased production on climate change, and the corresponding disproportionate effects on global environmental justice communities such as the Native Village of Kivalina in Alaska,

which, located north of the Arctic Circle, will be forced to relocate due to the melting ice pack.

Commenters requested the EIS disclose data sources and methodologies used in the environmental justice impact analysis, and the EPA provided specific recommendations as to how to approach the analysis.

Issue 12: Land Use. *What would be the impact of different approaches to oil and gas management, including well stimulation activities, on existing land uses? What measures will be implemented to protect existing land uses?*

The BLM received five comments about impacts of oil and gas development on other land uses (about one percent of the planning issue comments).

Commenters were concerned about impacts on wildlife habitat, viewsheds, and on streams and springs, which could affect uses of those areas by wildlife and recreationalists. Commenters recommended the BLM use buffers to protect other land uses from oil and gas extraction projects.

Issue 13: Livestock Grazing. *What would be the impact of different approaches to oil and gas management, including well stimulation activities, on existing livestock grazing operations? What measures will be implemented to protect these operations?*

The BLM received one comment about impacts of oil and gas development on livestock grazing operations (less than one percent of the planning issue comments).

Commenters were concerned about impacts on water supplies used for livestock.

Issue 14: Recreation. *What would be the impact of different approaches to oil and gas management, including well stimulation activities, on visitor experience and the safety of existing lands and water bodies used for recreation? What measures will be implemented to protect recreational resources?*

The BLM received four comments about the impacts of oil and gas development on recreation (about 1 percent of the planning issue comments).

Commenters were concerned about degradation of scenic beauty and the contamination of lands and soils as a result of future oil and gas extraction projects. Commenters were also concerned about impacts on the recreational opportunities on the Juan Bautista de Anza National Historic Trail and in Pinnacles National Park.

Issue 15: Visual Resources. *What would be the impact of different approaches to oil and gas management, including well stimulation activities, on visual resources? What measures will be implemented to protect these resources?*

The BLM received four comments about impacts of oil and gas development on visual resources (about 1 percent of the planning issue comments).

Commenters were concerned about light pollution from future oil and gas extraction projects and changes to the viewshed from Pinnacles National Park and the Juan Bautista de Anza National Historic Trail.

3.3.2 Other Issues to be Addressed in the RMP Amendment

Of the 734 comments received, 182 comments (25 percent) focused on non-resource specific topics, such as the planning process in general, scope of the EIS, alternatives, or the public involvement process. These topics will be addressed in the RMP amendment but do not fit within any particular planning issue category. Comments are displayed in **Appendix C**, Comments by Resource Planning Issue, **Table C-2**, General Comments Related to the RMP Amendment.

Comments that expressed opinions on what future management direction the BLM should take regarding allowing hydraulic fracturing on public lands were categorized under "Alternatives," since a majority of these comments urged the BLM to ban hydraulic fracturing, and a "no leasing alternative" is clearly an alternative that the public would like to see included in the EIS.

Several commenters also requested the scope of the EIS be expanded to include a more in-depth analysis of a greater range of topics, or be expanded to include a larger geographic region of the state. Of the 734 comments received, 50 comments (6.8 percent) referred to the scope of the project. Some of these comments requested that the EIS encompass other methods of unconventional oil and gas extraction and production and many requested that the BLM analyze all activities surrounding oil and gas extraction and development, including gravel packing and acidization. Commenters also requested that the impact of increasing the number of disposal wells in the state be evaluated. Many commenters requested that all chemicals used in the hydraulic fracturing process be analyzed, including those used in hydraulic fracturing fluid, chemicals used in the event of a spill, and chemicals used as a cleaning solvent for equipment. Others asked that the scope of the EIS include geothermal resource development methods, such as enhanced or engineered geothermal systems (EGS). Others requested the EIS be expanded to cover the entire state of California. These comments are displayed in **Appendix C**, Comments by Resource Planning Issues.

3.4 Issues Not Addressed in the RMP Amendment

Approximately two percent of the comments related to issues that will not be addressed in the RMP amendment. These include issues resolved through policy or administrative action and issues beyond the scope of the RMP amendment that have been considered but will not be included. These comments are

represented in **Appendix C**, Comments by Resource Planning Issue, **Table C-1**, General Comments Outside the Scope of the RMP Amendment, and **Table C-2**, Comments Related to Issues to Be Solved by National Policy.

Administrative or policy issue comments included issues pertaining to national BLM policy that will not be addressed during the Hollister RMP amendment process. Comments primarily included issues related to the independent scientific study conducted by the California Council on Science and Technology and issues related to how the BLM would comply with NEPA. Some issues noted by commenters were issues that are within the scope of the EIS, but have already been resolved through other policy. These comments included recommendations that the BLM adhere to NEPA and CEQ regulations and comments related to the BLM's interaction with other federal agencies.

Some comments were also categorized as issues that are outside of the scope of the RMP amendment. These comments included comments suggesting the BLM not analyze the impacts of hydraulic fracturing fluid in the EIS, that the BLM minimize the analysis of other resources, and comments objecting to the EIS entirely. This category includes comments on issues in which the BLM has limited or no administrative authority.

3.5 ANTICIPATED DECISIONS

FLPMA requires the BLM to manage public lands using the principles of multiple use and sustained yield. Management direction resulting from the planning process for the RMP amendment needs to be adaptable to changing conditions and demands over the life of the RMP. The RMP amendment will provide management direction and guide decision making for determining appropriate multiple uses and allocation of resources. It will also include strategies to manage and protect resources and systems to monitor and evaluate the status of resources and the effectiveness of management practices. The BLM is reviewing the condition of the environment and the current management situation to identify which management directions should be continued, which should be modified, and which should be developed and added.

This scoping report does not make any decisions, nor does it change current management direction set forth in the 2007 Hollister RMP, as amended. Instead it summarizes those issues identified during the scoping period. The BLM will use planning issues summarized in this scoping report, along with subsequently identified issues, any special studies, and other information (such as the ISA), to help formulate a reasonable range of oil and gas management alternatives during the next phase of the RMP amendment process. Each identified alternative (including continuation of existing management practices) will represent a complete and reasonable plan for managing oil and gas resources in the HFO. Future decisions will occur at two levels: the RMP (or land use plan) level, and the implementation level. These decision types are described below. In general, only land use plan-level decisions will be made as part of the RMP amendment

process. The BLM's evaluation of identified alternatives will be documented in an EIS prepared as part of the RMP amendment process, as required under NEPA.

The kinds of decisions that would be made as part of the RMP Amendment are outlined in Appendix C of the BLM Land Use Planning Handbook (H-1601-1). These decisions include:

- Areas open and closed to leasing
- Opening areas with constraints, such as seasonal and controlled surface use restrictions and no surface occupancy stipulations• Implementing resource condition objectives that have been established and specific lease stipulations, conditions of approval, and best management practices to accomplish objectives in areas open to leasing

The BLM will consider a combination of these decisions based on scoping and planning criteria.

3.5.1 Future Land Use Plan-level Decisions

The RMP amendment will provide a comprehensive yet flexible framework for managing federal minerals within the HFO. Changes to planning decisions regarding mineral management would only occur through another RMP amendment or a full RMP revision, both of which require a NEPA analysis either through an EIS or an environmental assessment.

3.5.2 Future Implementation-level Decisions

The RMP amendment will contain broad-scale decisions that guide future oil and gas management actions. Subsequent site-specific implementation, often characterized as project-level or activity-level decisions, will require the BLM's final approval of on-the-ground actions. Implementation decisions require a more-detailed, site-specific environmental analysis that tiers off of the EIS prepared for the RMP amendment. These decisions generally constitute final approval of on-the-ground actions to proceed (BLM 2005).

Implementation-level decisions require site-specific planning and NEPA analysis. Where implementation decisions are made as part of the land use planning process, they are still subject to the appeals process or other administrative review as prescribed by specific resource program regulations after the BLM resolves the protests to land use plan decisions and makes a decision to adopt or amend the RMP (High Desert Multiple Use Coalition, Inc. et al. Keith Collins, 142 IBLA 285 [1998]).

3.6 VALID EXISTING MANAGEMENT

The BLM-administered lands within the Hollister RMP planning area are currently managed in accordance with the decisions in the 2007 Hollister RMP (BLM 2007) and subsequent amendments. Decisions in this RMP Amendment

will only address changing usage of well stimulation technologies and changing understanding of their environmental effects. Current plan decisions from the 2007 RMP outside of this scope will be carried forward. .

Additionally, the BLM has identified through its planning criteria that the potential RMP Amendment will retain the existing resource condition goals and objectives in the Hollister RMP and will carry forward any decisions closing areas to oil and gas leasing.

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SECTION 4
PLANNING CRITERIA

During its initial planning sessions, BLM staff developed preliminary planning criteria. Planning criteria establish constraints, guidelines, and standards for the planning process. They help planners define the scope of the process and estimate the extent of data collection and analysis. Planning criteria are based on standards prescribed by applicable laws and regulations; agency guidance; results of consultation and coordination with the public, other federal, state, and local agencies, and tribal individuals and organizations; analysis of information pertinent to the planning area; and professional judgment. The plan will be completed in compliance with the FLPMA, NEPA, and all other applicable laws, regulations, and policies. Impacts from the management alternatives considered in the amended RMP will be analyzed in an EIS developed in accordance with regulations at 43 CFR 1610 and 40 CFR 1500.

The following preliminary criteria were developed internally by the BLM and presented for public comment. After public input is analyzed, the criteria become proposed criteria and can be added to or changed as the issues are addressed or as new information is presented. The BLM managers will approve the issues and criteria, along with any changes.

4.1 PRELIMINARY PLANNING CRITERIA

The following general planning criteria will be considered in development of the RMP amendment:

- The potential plan amendment will be completed in compliance with FLPMA, NEPA, and all other federal laws, executive orders, and management policies for the BLM.
- The potential plan amendment will retain the existing resource condition goals and objectives in the Hollister RMP..

- The potential plan amendment will analyze impacts to areas that are currently open to leasing and will not consider opening areas to leasing that are currently closed.
- The potential plan amendment will recognize valid existing rights.

SECTION 5
DATA NEEDS/GAPS

As part of the RMP planning, evaluation, and data collection process, the BLM has inventoried available information and has identified the need to include new information on well stimulation techniques and their potential environmental effects. A separate but parallel Independent Science Assessment (ISA) of Well Stimulation Technologies is currently being prepared by the California Council on Science and Technology. The ISA will be a compilation and synthesis of existing information about well stimulation technologies and their environmental effects as they pertain to the California-specific oil and gas resources and California's natural environment. The ISA will inform the development of this RMPA/EIS and other future decision-making in the California BLM Oil and Gas Management program. The ISA will address questions and comments brought up by the public during the scoping period

Based on the results of scoping input, the BLM may decide to conduct further studies to support a robust impact analysis in the EIS. Commenters requested several additional studies be conducted in preparation for the EIS. Some of the studies and data requests the commenters identified included:

- Risk assessments that analyze all possible accident scenarios and quantifies the risks of those impacts
- Quantitative air quality modeling
- Geologic study to address the risk of induced seismicity
- Geological stratigraphy surveys that evaluate surface and near-surface traces of known or suspected fault planes in the planning area for the risk of seismic activity
- Hydrological impact assessments
- Traffic analysis that considered impact of increased traffic and impact of heavy trucks on all county, regional, and city roadways

- Inventories and maps of existing wetlands and waters within the planning area, including wetlands regulated under Section 404 of the Clean Water Act and wetlands that are determined to be non-jurisdictional and protected under Executive Order 11990 "Protection of Wetlands" (May 24, 1977). Inventories should include acreages and channel lengths, habitat types, values, and the functions of the waters.

Many commenters also referenced peer-reviewed studies in their comments or suggested literature for BLM review. References that were incorporated into comments substantively are included in **Appendix E**, References Substantially Discussed in Comments.

5.1 INDEPENDENT SCIENCE ASSESSMENT (ISA)

The BLM has funded an independent scientific assessment of well stimulation technologies utilized in unconventional oil reservoirs in California which involved an exhaustive review of existing scientific literature and a rigorous peer review protocol.

Preparation of *An Independent Review of Scientific and Technical Information on Advanced Well Stimulation Technologies in California* was led by The California Council on Science and Technology (CCST) and is authored by CCST, Lawrence Berkeley National Laboratory, and Pacific Institute.

The purpose of the ISA is to provide the BLM with an independent technical assessment of well stimulation technologies employed onshore in California, with a focus on hydraulic fracturing. The ISA provides a synthesis of available scientific and engineering information related to hydraulic fracturing and other stimulation technologies used in the state. The information will be used in future planning, leasing, and development decisions. The ISA addresses three key questions: (1) what are the past, current, and potential future practices in well stimulation technologies in California; (2) where will well stimulation technologies allow expanded production of oil onshore in California; and (3) what are the potential direct environmental hazards of well stimulation technologies in California.

The ISA is based on review and analysis of existing data and scientific literature. Preference was given to peer-reviewed scientific literature, but due to limitations of this high quality data source, data gaps existed and other information sources were used. Other sources included government reports and records, web-based databases, and analogues from other locations outside California. CCST assembled a steering committee whose members were appointed based on technical expertise and a balance in technical viewpoints. Lawrence Berkeley National Laboratory was contracted to support the analysis and develop findings. The steering committee used the findings to develop consensus conclusions. The findings were rigorously peer reviewed by CCST and the United States Geological Survey. The ISA will be published by CCST.

The findings of the ISA will provide the best available information to help the BLM conduct a statewide evaluation of oil and gas leasing decisions in RMPs to determine if the decisions reflect current science and best management practices related to well stimulation practices.

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SECTION 6
FUTURE STEPS

6.1 FUTURE STEPS AND PUBLIC PARTICIPATION OPPORTUNITIES

The next phase of the BLM's planning process is to develop draft oil and gas management alternatives based on the issues presented in **Sections 3.2,** Planning Issue Statements, and **3.3,** Summary of Public Comments by Resource Planning Issue Category. These alternatives will address planning issues identified during scoping and will meet goals and objectives to be developed by the BLM's interdisciplinary team. In compliance with NEPA, CEQ regulations, and BLM planning regulations and guidance, alternatives should be reasonable and capable of implementation. The BLM will also meet with cooperating agencies, interested tribes, the RAC, and community groups and individuals. A detailed analysis of the alternatives will be completed, and the BLM's preferred alternative will then be identified.

The analysis of the alternatives will be documented in a Draft RMP Amendment/EIS. Although the BLM welcomes public input at any time during the planning process, the next official public comment period will begin when the Draft RMP Amendment/EIS is published. The draft document will be widely distributed to elected officials, regulatory agencies, and members of the public, and it will be available on the project website. The availability of the draft document will be announced via a Notice of Availability in the *Federal Register*, and a 90-day public comment period will follow. Public meetings will be held throughout the project area during the 90-day comment period.

At the conclusion of the public comment period, the Draft RMP Amendment/EIS may be revised. A Proposed RMP amendment/Final EIS will then be published. The availability of the proposed document will be announced in the *Federal Register*, and a 30-day public protest period will follow regarding the proposed planning-level decisions (43 CFR Part 1610.5.2). If necessary, a notice will be published in the *Federal Register* requesting comments on significant changes made as a result of protest. Concurrently, the California

Governor's office will review the document for consistency with approved state and local plans, policies, and programs.

At the conclusion of the public protest period and the 60-day Governor's consistency review, the BLM will resolve all protests and any inconsistencies, and the approved RMP amendment and Record of Decision will be published. The availability of these documents will be announced in the *Federal Register*. Any implementation-level decisions in the RMP amendment are not subject to the protest process but instead are subject to administrative remedies set forth in regulations applicable to the specific resource management program. These remedies generally take the form of appeals to the Office of Hearings and Appeals within 30 days of the effective date of the Record of Decision or in accordance with the provisions of 43 CFR 4.4.

All publications, including this report, the EIS planning update, the Draft RMP Amendment/EIS, and the Notice of Availability, will be published on the project website. In addition, pertinent dates regarding solicitation of public comments will be published on the website.

6.2 CONTACT INFORMATION

The public is invited and encouraged to participate throughout the planning process for the RMP amendment. Some ways to participate include the following:

- Reviewing the progress of the RMP amendment at the project website, which will be updated with information, documents, and announcements throughout the duration of the RMP amendment preparation
- Requesting to be added to or to remain on the official project mailing list in order to receive future mailings and information

Anyone wishing to be added to or deleted from the distribution list, wishing to change their contact information, or requesting further information are directed on the website and in the EIS planning update to email a request to the project email address or contact the BLM project manager. The BLM project manager, Sara Acridge, can be reached via telephone at (916) 978-4557, via mail at 2800 Cottage Way, Rm W-1623, Sacramento, CA 95825, or via email at blm_ca_ogeis@blm.gov.

SECTION 7
REFERENCES

BLM (US Department of the Interior, Bureau of Land Management). 2005. Handbook H-1601-1—Land Use Planning Handbook. BLM, Washington, DC. March 11, 2005. 161 pp.

_____. 2007. Hollister Field Office Resource Management Plan and Record of Decision.

_____. 2008. Handbook H-1790-1—BLM National Environmental Policy Act. BLM, Washington, DC. January 2008. 184 pp.

BLM GIS. 2005. GIS data for federal mineral estate, and RMP boundary from the Hollister Field Office RMP Final EIS. Acquired from BLM GIS Specialist Vincent Lincoln.

_____. 2013. Published GIS data surface management. Downloaded from www.ca.blm.gov/gis. November 2013.

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Appendix A

Scoping Materials

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APPENDIX A
SCOPING MATERIALS

Public scoping for the HFO Oil and Gas Leasing and Development RMP Amendment/EIS has included an EIS planning update, four scoping public meetings, four news releases, and a public website (www.blm.gov/ca/eis-og). The formal public comment period as required by NEPA began on August 5, 2013, with the publication of a Notice of Intent in the *Federal Register*, and ended on February 28, 2014.

This appendix provides the materials used to advertise the scoping period. These materials include the following:

- *Federal Register* Notice of Intent
- News releases
- EIS planning update
- Newspaper advertisements

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The Federal Register

The Daily Journal of the United States Government

Notice

Notice of Intent to Prepare an Environmental Impact Statement for Oil and Gas Leasing and Development on Public Lands and Federal Mineral Estate and Potentially Amend the Hollister Resource Management Plan, CA

A Notice by the **Land Management Bureau** on **08/05/2013**

Action

Notice Of Intent.

Summary

In compliance with the National Environmental Policy Act of 1969, as amended (NEPA), and the Federal Land Policy and Management Act of 1976, as amended (FLPMA), the Bureau of Land Management (BLM) intends to prepare an Environmental Impact Statement (EIS) and potential resource management plan (RMP) amendment to evaluate oil and gas leasing and development on public lands and Federal mineral estate in the Hollister Field Office.

Table of Contents

- **DATES:**
- **ADDRESSES:**
- **FOR FURTHER INFORMATION CONTACT:**
- **SUPPLEMENTARY INFORMATION:**

DATES:

This notice initiates the public scoping process for the EIS. Comments on issues may be submitted in writing until October 4, 2013. The date(s) and location(s) of any scoping meetings will be announced at least 15 days in advance through local media, newspapers and the BLM Web site at: ***www.blm.gov/ca/eis-og***. In order to be included in the Draft EIS, all comments must be received prior to the close of the 60-day scoping period or 15 days after the last public meeting, whichever is later. We will provide additional opportunities for public participation upon publication of the Draft EIS.

ADDRESSES:

You may submit comments related to the Oil and Gas Leasing and Development EIS by any of the following methods:

- *Web site:* ***www.blm.gov/ca/eis-og***
- *Email:* ***BLM_CA_OGEIS@blm.gov***
- *Fax:* 916-978-4388
- *Mail:* 2800 Cottage Way, Rm. W-1623, Sacramento, CA 95825

Documents pertinent to this proposal may be examined at the BLM California State Office, 2800 Cottage Way, Sacramento, CA 95825.

FOR FURTHER INFORMATION CONTACT:

Sara Acridge, Natural Resources Specialist, telephone 916-978-4557; address 2800 Cottage Way, Rm. W-1623, Sacramento, CA 95825; email ***BLM_CA_OGEIS@blm.gov***. You may contact Ms. Acridge to have your name added to our mailing list. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Information Relay Service (FIRS) at 1-800-877-8339 to contact the above individual during normal business hours. The FIRS is available 24 hours a day, 7 days a week, to leave a message or question with the above individual. You will receive a reply during normal business hours.

SUPPLEMENTARY INFORMATION:

The BLM is initiating a planning process to address oil and gas development on public lands and Federal mineral estate in the Hollister Field Office. This Federal Register notice initiates a scoping period to solicit public input on that process. This is the first phase of a process that may lead to the amendment of the Hollister RMP (2006). The BLM may also use this process to consider amending RMPs for other field offices in California with oil and gas leasing and development (Bakersfield, Palm Springs-South Coast, Mother Lode, and Ukiah Field Offices).

The outcome of this effort to prepare an oil and gas leasing and development EIS may provide information for the BLM to potentially amend the Hollister RMP in order to establish additional stipulations, conditions of approval, best management practices, or terms and conditions to further guide safe and responsible lease development practices. The EIS will also analyze various current or reasonably foreseeable well completion and stimulation practices, including hydraulic fracturing and the use of horizontal drilling, in the Hollister Field Office. The EIS will further analyze a potential update to the reasonably foreseeable development scenario.

In addition to this planning effort the BLM is concurrently initiating a separate peer-reviewed, interdisciplinary assessment of the current state of industry practices for well completion and stimulation in California. This assessment of well completion and stimulation practices will include maps, findings, and synthesized sets of data that will inform the BLM's environmental analysis documents for subsequent oil and gas lease sales. It is anticipated that the information generated by this assessment will be used to inform the planning process.

During the scoping process for this EIS, the high degree of public attention to oil and gas development will provide the BLM with input regarding the suite of oil and gas leasing and development issues and geographic areas that are of most concern to the public. The scoping process will also provide input to assist the BLM in fully developing a range of potential RMP amendment alternatives to address leasing and development and well completion and stimulation practices of concern to the public. In conjunction with the independent science assessment, the BLM will use the results of scoping to refine the geographic scope of the potential plan amendment. In addition, information resulting from the planning and science review will further inform future oil and gas leasing decisions.

The purpose of the public scoping process is to determine relevant issues that will influence the scope of the environmental analysis, including alternatives, and guide the process for developing the EIS. Preliminary issues for oil and gas leasing and development to be addressed within the Hollister planning area have been identified by BLM personnel, Federal, State, and local agencies, and other stakeholders, and include: surface water, groundwater, and air quality; greenhouse gases and climate change; the environmental effects of chemicals, if any, used; the potential for induced seismicity; endangered and threatened species; public health and safety; and socioeconomics.

With respect to the potential RMP amendment, preliminary planning criteria include:

- The potential plan amendment will be completed in compliance with FLPMA, NEPA, and all other Federal laws, executive orders, and management policies for the BLM.
- The potential plan amendment will retain the existing resource condition goals and objectives in the Hollister RMP.
- The potential plan amendment will analyze impacts to areas that are currently open to leasing and will not consider opening areas to leasing that are currently closed.
- The potential plan amendment will recognize valid existing rights.

You may submit comments on issues and planning criteria in writing to the BLM at any public scoping meeting, or by using one of the methods listed in the "ADDRESSES" section above.

The BLM will follow NEPA public participation requirements to assist the agency in satisfying the public involvement requirements under Section 106 of the National Historic Preservation Act (NHPA) (**16 U.S.C. 470**(f)) pursuant to **36 CFR 800.2**(d)(3). The information about historic and cultural resources within the area potentially affected by the proposed action will assist the BLM in identifying and evaluating impacts to such resources in the context of both NEPA and Section 106 of the NHPA.

The BLM will consult with Indian tribes on a government-to-government basis in accordance with **Executive Order 13175** and other policies. Tribal concerns, including impacts on Indian trust assets and potential impacts to cultural resources, will be duly considered.

Federal, State, and local agencies, along with tribes and other stakeholders that may be interested in or affected by the proposed action that the BLM is evaluating, are invited to participate in the scoping process and, if eligible, may request or be requested by the BLM to participate in the development of

the environmental analysis as a cooperating agency.

Before including your address, phone number, email address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Authority:

40 CFR 1501.7.

James V. Scrivner,

Deputy State Director, Energy and Minerals.

[FR Doc. **2013-18839** Filed 8-2-13; 8:45 am]

BILLING CODE 4310-40-P

Release Date: 08/02/13
Contacts: David Christy (BLM) 916-941-3146

News Release No. CA-CC-13-64

BLM California Launches Planning and Science Review Regarding Oil and Gas Development on Public Lands

As part of a cooperative effort with the State of California and in response to a series of legal challenges, the Bureau of Land Management (BLM) will launch a broad science review and a planning review of oil and gas development on public lands managed by the Hollister Field Office in California. The process will evaluate a full range of options, including whether such development is appropriate and if so, where and how it could be carried out safely and responsibly. Information resulting from the planning and science review will further inform future oil and gas leasing decisions.

The planning review will begin with a scoping period to solicit public input. This is the first phase of a process that may lead to the development of an environmental impact statement to amend one or more BLM resource management plans (RMPs) for field offices that have existing leases and expressions of interest in future leasing. Following publication of a Notice of Intent in the Federal Register on August 5 2013, interested parties will have 60 days to submit comments on issues related to oil and gas leasing and development. Public scoping meetings are tentatively scheduled for fall 2013. For more information on the scoping schedule visit: www.blm.gov/ca/eis-og.

The science review will be undertaken as part of a third party independent assessment of industry practices and the geology of oil and gas basins in the state. Led by the California Council on Science and Technology (CCST), the assessment report will consider geology, well completion techniques and the environmental impacts of those techniques. The report, anticipated in early 2014, will be peer-reviewed and published through CCST.

"The planning process, coupled with the findings of the science assessment, will improve our resource management plans," said BLM California State Director, Jim Kenna. "This approach goes a long way toward bringing the most current scientific information on industry practices to planning and public dialogue about oil and gas leasing and development."

Over the last 24 months, most oil and gas leasing actions on BLM-managed public lands in California have been litigated, appealed, or protested. In particular, the Hollister Field Office is facing legal challenges that threaten its ability to conduct oil and gas leasing. The scoping period provides the public an opportunity to comment on the full suite of oil and gas leasing and development issues in the geographic area covered by the field office. In addition, the science review and planning effort will allow the BLM to revisit litigated, appealed, and protested lease sales at a later date. Applications for permits to drill on existing leases will continue to be processed during the reviews.

Fifteen (15) days prior to the public scoping meetings, the BLM will publish a notice of the meetings in the Federal Register, issue news releases and post notices of the dates on multiple BLM California web pages. For more information visit www.blm.gov/ca/eis-og.

--BLM--

Central California District 2800 Cottage Way, Sacramento, CA 95825

Release Date: 10/23/13
Contacts: David Christy (916) 985-4474

News Release No. CA-CC-14-03

BLM California Takes Comments for Planning Review Regarding Oil and Gas Development on Public Lands for 15 Days After Last Public Meeting

The Bureau of Land Management (BLM) will accept scoping comments for the planning review of oil and gas development on BLM-managed public lands in the Hollister Field Office in California for 15 days past the date of the last public meeting.

The BLM initially announced it would take comments for 60 days or 15 days past the last public meeting, whichever came last. Due to delays from the lapse in appropriations and the resulting Federal government shutdown, the public meetings will run beyond the 60-day mark.

Fifteen days prior to the public scoping meetings, the BLM will publish a notice of the meetings in the *Federal Register,* issue news releases and post notices of the dates on multiple BLM California web pages. For more information, visit www.blm.gov/ca/eis-og.

As part of a joint effort with the State of California and in response to a series of legal challenges, the BLM is conducting a planning and science review of oil and gas development on BLM-managed public lands in the Hollister Field Office in California. The process will evaluate a full range of options, including whether such development is appropriate and if so, where and how it could be carried out safely and responsibly. Information resulting from the planning and science review will further inform future oil and gas leasing decisions.

The planning review will begin with a scoping period to solicit public input. This is the first phase of a process that may lead to the development of an environmental impact statement to amend one or more BLM resource management plans (RMPs) for field offices that have existing leases and expressions of interest in future leasing.

--BLM--

Central California District 2800 Cottage Way, Sacramento, CA 95825

Release Date: 01/13/14
Contacts: David Christy (916) 941-3146

News Release No. CC-14-09

BLM Solicits Public Comment to Prepare Environmental Impact Statement on Oil and Gas Leasing and Development

The Bureau of Land Management is conducting a scoping process to solicit public comments on how oil and gas resources on federal mineral estate should be managed in the BLM's Hollister Field Office and whether the BLM should include areas of California beyond the Hollister Field Office in this process.

The public scoping process is the first step in preparing an Environmental Impact Statement.

Public open houses will run from 6 p.m. to 8 p.m. at:

- Jan. 29: San Juan Oaks Golf Course, 3285 Union Road, Hollister.
- Feb. 4: Doubletree Hotel, 2001 Point W Way, Sacramento.
- Feb. 11: Cesar Chavez Library, 615 Williams Road, Salinas.
- Feb. 12: Harris Ranch Inn and Restaurant, 24505 W. Dorris Ave, Coalinga.

The purpose of this planning process is to analyze the effects of alternative oil and gas management approaches on lands with federal mineral estate within the BLM's Hollister Field Office. The need for the plan amendment is to incorporate new information about well stimulation technologies, natural resource conditions, and socioeconomic trends to update the reasonably foreseeable development scenario and the Hollister Field Office Resource Management Plan. The decision to be made is to establish additional lease stipulations, conditions of approval, or best management practices to guide safe and responsible oil and gas development.

Depending on the results of this scoping process, the BLM may also use this process to consider amending RMPs for other field offices in California with oil and gas leasing and development (Bakersfield, Palm Springs-South Coast, Mother Lode, and Ukiah Field Offices).

Early public involvement is crucial to identify various issues that should be addressed in the EIS. The scoping period provides the public with an opportunity to learn about the EIS, to help identify issues and concerns to be addressed in the EIS, and to provide input used in developing alternatives to be analyzed in the EIS.

Submit written comments to the Bureau of Land Management, California State Office, 2800 Cottage Way, Oil and Gas Leasing and Development Comments, Attn: Sara Acridge, Project Manager, Sacramento, CA 95825, or via email at BLM_CA_OGEIS@blm.gov.

For more information contact Sara Acridge at (916) 978-4557. Information also is available on the BLM website at www.blm.gov/ca/eis-og.

--BLM--

Release Date: 02/04/14
Contacts: David Christy (916) 941-3146

News Release No. CC-14-20

BLM Solicits Public Comment to Prepare Environmental Impact Statement on Oil and Gas Leasing and Development

The Bureau of Land Management is conducting a scoping process to solicit public comments on how oil and gas resources on federal mineral estate should be managed in the BLM's Hollister Field Office and whether the BLM should include areas of California beyond the Hollister Field Office in this process.

The public scoping process is the first step in preparing an Environmental Impact Statement.

Public open houses will be from 6 p.m. to 8 p.m. at:

- Feb. 11: Cesar Chavez Library, 615 Williams Road, Salinas.
- Feb. 12: Harris Ranch Inn and Restaurant, 24505 W. Dorris Ave, Coalinga.

The purpose of this planning process is to analyze the effects of alternative oil and gas management approaches on lands with federal mineral estate within the BLM's Hollister Field Office. The need for the plan amendment is to incorporate new information about well stimulation technologies, natural resource conditions, and socioeconomic trends to update the reasonably foreseeable development scenario and the Hollister Field Office Resource Management Plan. The decision to be made is to establish additional lease stipulations, conditions of approval, or best management practices to guide safe and responsible oil and gas development.

Depending on the results of this scoping process, the BLM may also use this process to consider amending RMPs for other field offices in California with oil and gas leasing and development (Bakersfield, Palm Springs-South Coast, Mother Lode, and Ukiah Field Offices).

Early public involvement is crucial to identify various issues that should be addressed in the EIS. The scoping period provides the public with an opportunity to learn about the EIS, to help identify issues and concerns to be addressed in the EIS, and to provide input used in developing alternatives to be analyzed in the EIS.

Submit written comments to the Bureau of Land Management, California State Office, 2800 Cottage Way, Oil and Gas Leasing and Development Comments, Attn: Sara Acridge, Project Manager, Sacramento, CA 95825, or via email at BLM_CA_OGEIS@blm.gov.

For more information contact Sara Acridge at (916) 978-4557. Information also is available on the BLM website at www.blm.gov/ca/eis-og.

--BLM--

Hollister Field Office Oil & Gas Leasing and Development EIS Planning Update

US Department of the Interior
Bureau of Land Management - California

January 2014

Introduction and Overview

The Bureau of Land Management (BLM) California State Office is conducting a scoping process to solicit public comments on how oil and gas resources on federal mineral estate should be managed in the BLM's Hollister Field Office (HFO), and whether the BLM should include areas of California beyond the HFO in this process.

The public scoping process is the first step in preparing an Environmental Impact Statement (EIS) under the National Environmental Policy Act of 1969 (NEPA).

The purpose of this planning process is to analyze the effects of alternative oil and gas management approaches on lands with federal mineral estate within the BLM's HFO. The need for the plan amendment is to incorporate new information about well stimulation technologies, natural resource conditions, and socioeconomic trends to update the reasonably foreseeable development scenario (RFD) and HFO Resource Management Plan (RMP). The decision to be made is to establish additional lease stipulations, conditions of approval, or best management practices to guide safe and responsible oil and gas development.

Depending on the results of this scoping process, the BLM may also use this process to consider amending RMPs for other field offices in California with oil and gas leasing and development (Bakersfield, Palm Springs-South Coast, Mother Lode, and Ukiah Field Offices).

Early public involvement is crucial to identify various issues that should be addressed in the EIS. The scoping period provides the public with an opportunity to learn about the EIS, to help identify issues and concerns to be addressed in the EIS, and to provide input used in developing alternatives to be analyzed in the EIS.

HFO Planning Area

The HFO is an administrative unit of the BLM that encompasses the entirety or portions of twelve counties in north-central coastal California (see map). Within this planning area, the BLM manages approximately 280,000 acres of subsurface mineral estate underlying federal surface land and 577,000 acres of split estate land.

NEPA and the EIS

NEPA requires consideration of a reasonable range of oil and gas management alternatives to be analyzed in any EIS.

Each alternative will be analyzed for its anticipated environmental impacts. This comparative analysis will help decision makers choose a path forward that is in alignment with the multiple-use mission of the BLM.

The EIS will provide information for the BLM to amend the Hollister RMP in order to establish additional stipulations, conditions of approval, best management practices, or terms and conditions to further guide safe and responsible lease development practices. The EIS will also help decisionmakers select a "Preferred Alternative" in the Final EIS. Public input on issues related to these decisions is essential and encouraged.

Independent Science Assessment

The BLM is concurrently initiating a separate, independent, peer-reviewed assessment of the current state of industry practices for well completion and stimulation in California. This assessment of well completion and stimulation practices will include maps, findings, and synthesized sets of data that will inform the BLM's environmental analysis documents for subsequent oil and gas lease sales as well as for subsequent oil and gas development NEPA analysis. It is anticipated that the information generated by this assessment will be used to inform the planning process.

Oil & Gas Resources in the HFO

There is currently oil and gas production within the Planning Area. Most of the production comes from oil fields near Coalinga and the Jacalitos Valley in the San Joaquin Management Area (MA). Additionally, the San Ardo and associated oil fields are located within the Salinas MA; however, little of this area is on lands managed by the BLM. Likewise, the Vallecitos oil fields are in the San Benito MA, but, again, little of the production is on lands managed by the BLM. Exploratory oil wells have historically been drilled on less than 5 percent of the leases issued on BLM public lands.

The HFO manages 45,900 acres of federal oil and gas leases and 80 BLM-permitted oil and gas wells. This is the total number of wells on federal mineral estate, including wells on both federal surface and split estate lands.

Decisions to be Made

The Hollister RMP revision may establish additional stipulations, conditions of approval, best management practices, or terms and conditions to further guide safe and responsible lease development practices. The RMP revision may also identify new areas to be closed to oil and gas leasing.

Decisions coming out of the EIS will not affect oil or gas extraction on state lands or private lands that do not have federal mineral estate. Decisions coming out of the EIS will not authorize any actual drilling for exploration or development of oil and gas resources. Subsequent NEPA analysis would be required for any such proposals, which would involve further public scoping, public involvement, and environmental impact analysis. The RMP amendment would not result in opening areas to oil and gas leasing that are currently closed.

Phases of BLM Authorization Prior to Oil & Gas Development

Planning/RMP	Leasing	Development
Occurs via RMP revision or amendment Define which areas are open or closed to leasing Develop list of stipulations that can be applied to future leases to protect resources	Occurs via lease sale Confirm nominated area is defined as "open to leasing" in RMP Evaluate presence of environmental resources on nominated area Apply stipulations to lease to protect identified resources Auction off lease at public auction, with stipulations known to bidders	Receive *Application for Permit to Drill* (APD) from oil or gas company Confirm proposed activities conform to lease stipulations Apply Conditions of Approval to specific plan of operations Issue or Deny Permit to Drill

Current phase

As outlined on the left, there are three main phases of BLM authorization that must take place before any oil or gas development can occur. Separate NEPA and public involvement is required at each phase.

The first phase is the "planning" phase, which occurs through an RMP amendment or revision. Through this process, lands are identified as being open or closed to leasing. Also at this phase, stipulations are developed, which can then be applied at the leasing phase.

Leases are issued at a lease auction. Prior to going to auction, a nominated parcel is evaluated for environmental resources, and the BLM applies protective stipulations on the parcels, as needed.

At the development phase, the BLM can attach additional Conditions of Approval, or deny an Application for Permit to Drill altogether.

Planning Criteria

With respect to the RMP amendment, preliminary planning criteria include the following:

- The plan amendment will be completed in compliance with Federal Land Policy and Management Act, NEPA, and all other federal laws, executive orders, and management policies for the BLM.
- The plan amendment will retain the existing resource condition goals and objectives in the Hollister RMP.
- The plan amendment will analyze impacts to areas that are currently open to leasing and will not consider opening areas to leasing that are currently closed.
- The plan amendment will recognize valid existing rights.

How Can You Participate?

Public involvement is an integral part of preparing the California Oil & Gas Leasing and Development EIS. This public scoping period gives the public and other interested agencies and organizations the opportunity to provide comments on issues to be addressed and information sources to use in the EIS before the BLM begins drafting it.

The official scoping period began with the publication of the Notice of Intent (NOI) in the Federal Register on August 5, 2013, and will continue for 207 days (ending on February 28, 2014). During the scoping period, the BLM will host four public open houses across the planning area and in Sacramento. Notices directing the public to the EIS website, which has information on these meetings, will be published in local newspapers.

The public is formally invited and encouraged to participate in preparation of the EIS during public scoping period. Some ways you can participate are by:

- ✓ Attending one or more of the open house meetings to learn about the project and planning process and to meet BLM representatives;
- ✓ Reviewing the progress of the EIS on-line at the EIS website at: www.blm.gov/ca/eis-og. The website will be updated with information, documents, and announcements throughout the EIS preparation;
- ✓ Mailing a comment to the EIS mailing address at:

  BLM, California State Office
  Attn: HFO O&G Leasing EIS
  2800 Cottage Way, Rm. W-1623,
  Sacramento, CA 95825
- ✓ Emailing a comment to the project email address BLM_CA_OGEIS@blm.gov;
- ✓ Joining the EIS mailing list to receive future mailings and information, by emailing us at BLM_CA_OGEIS@blm.gov;
- ✓ Submitting any process-related questions to the e-mail address provided above.

Upcoming Public Meetings

Each meeting will start with an open house at 6 pm and will be followed by a presentation from 6:15 to 6:35. A public discussion session will follow for up to one hour, followed by additional open house time until 8:00.

The public discussion portion of the meeting time will be for members of the public to make public statements, although only written comments will be entered into the project record.

The open house time will be for browsing the information stations that will be set up, having conversations with BLM staff, and for preparing written comments for those who seek to do so at the meeting.

Wednesday, January 29, 2014
San Juan Oaks Golf Course
3285 Union Road, Hollister, CA 95023

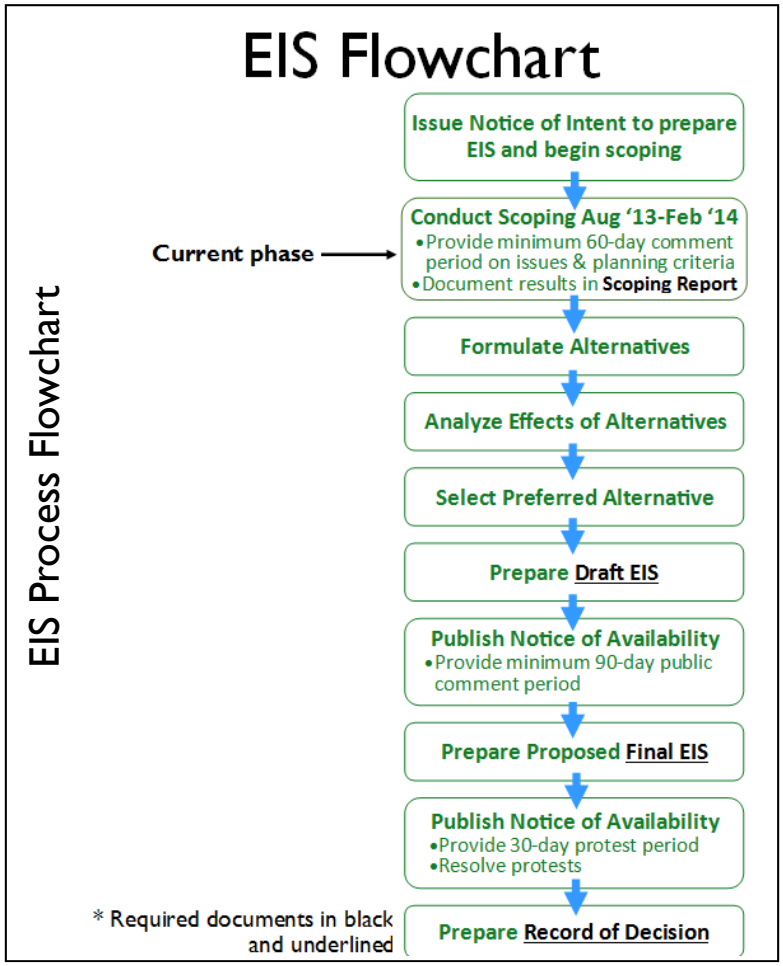
Tuesday, February 4, 2014
Doubletree Hotel
2001 Point W Way, Sacramento, CA 95815

Tuesday, February 11, 2012
Cesar Chavez Library
615 Williams Road, Salinas, CA 93905

Wednesday, February 12, 2014
Harris Ranch Inn & Restaurant
24505 W Dorris Avenue, Coalinga, CA 93210

What Kinds of Comments are Helpful?

- Providing studies or data on the environmental impacts of hydraulic fracturing, specifically for oil and gas in the Monterey shale and other formations. These kinds of comments can contribute to a more robust environmental impact analysis.
- Describing specific environmental, human, or economic resources that you are concerned about and how they may be affected by oil and gas leasing decisions on federal mineral estate in the HFO.
- Suggesting areas of land to be made remain open or be closed to leasing, and suggesting stipulations (restrictions) on certain parcels of land or for certain kinds of resources on lands. These kinds of comments tie directly into the decisions that would be made in an RMP amendment and help analysts and decisionmakers focus on key areas of concern.
- Suggesting alternatives to be considered in the EIS.
- Suggestions on geographic scope of the EIS.


EIS Flowchart
EIS Process Flowchart
Issue Notice of Intent to prepare EIS and begin scoping
Current phase
Conduct Scoping Aug '13-Feb '14
•Provide minimum 60-day comment period on issues & planning criteria
•Document results in Scoping Report
Formulate Alternatives
Analyze Effects of Alternatives
Select Preferred Alternative
Prepare Draft EIS
Publish Notice of Availability
•Provide minimum 90-day public comment period
Prepare Proposed Final EIS
Publish Notice of Availability
•Provide 30-day protest period
•Resolve protests
* Required documents in black and underlined
Prepare Record of Decision

Account: 5440440ENV Class: 894 Last user: AKASPARIAN
Ad Start: 1/29/14 Ad Stop: 2/05/14 Total Cost: $690.20 Run Days: Wed

PUBLIC NOTICE

#29309

Notice of Public Scoping and Coalinga Meeting on Oil and Gas

The U.S. Bureau of Land Management (BLM) is soliciting comments during a public scoping process for an Environmental Impact Statement (EIS) for oil and gas leasing and development on Federal mineral estate in the BLM Hollister Field Office. Comments on issues to be addressed and alternatives to be considered in the EIS will be accepted through February 28, 2014, and may be submitted by email to BLM_CA_OGEIS@blm.gov or by mail to the address below.

Four public scoping meetings will be held across north-central California. A meeting will be held in Coalinga on Wednesday February 12, 2014, from 6 pm - 8 pm at the Harris Ranch Inn & Restaurant, 24505 W Dorris Ave. For further information on the public scoping meetings and the EIS process, visit the project website at: www.blm.gov/ca/eis-og. To have your name added to the project mailing list, send an email to the email address above. You may also contact Sara Acridge, EIS Project Manager; telephone 916⁄⁄978⁄⁄4400; address 2800 Cottage Way, Rm. W-1623, Sacramento, CA 95825.

Notice of Public Scoping and Hollister Meeting on Oil and Gas

The U.S. Bureau of Land Management (BLM) is soliciting comments during a public scoping process for an Environmental Impact Statement (EIS) for oil and gas leasing and development on Federal mineral estate in the BLM Hollister Field Office. Comments on issues to be addressed and alternatives to be considered in the EIS will be accepted through February 28, 2014, and may be submitted by email to BLM_CA_OGEIS@blm.gov or by mail to the address below.

Four public scoping meetings will be held across north-central California. A meeting will be held in Hollister on Wednesday January 29, 2014, from 6 pm – 8 pm at the San Juan Oaks Golf Course, 3285 Union Rd. For further information on the public scoping meetings and the EIS process, visit the project website at: www.blm.gov/ca/eis-og. To have your name added to the project mailing list, send an email to the email address above. You may also contact Sara Acridge, EIS Project Manager; telephone 916–978–4400; address 2800 Cottage Way, Rm. W-1623, Sacramento, CA 95825.

Publish: January 17 & 24, 2014
F/11550768

The Sacramento Bee

P.O. Box 15779 • 2100 Q Street • Sacramento, CA 95852

EMPSI
26 O'FARRELL ST, 7TH FLR
SAN FRANCISCO, CA 94108

DECLARATION OF PUBLICATION
(C.C.P. 2015.5)

COUNTY OF SACRAMENTO
STATE OF CALIFORNIA

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interest ed in the above entitled matter. I am the printer and principal clerk of the publisher of The Sacramento Bee, printed and published in the City of Sacramento, County of Sacramento, State of California, daily, for which said newspaper has been adjudged a newspaper of general circulation by the Superior Court of the County of Sacramento, State of California, under the date of September 26, 1994, Action No. 379071; that the notice of which the annexed is a printed copy, has been published in each issue thereof and not in any supplement thereof on the following dates, to wit:

January 20, 26, 2014

I certify (or declare) under penalty of perjury that the foregoing is true and correct and that this declaration was executed at Sacramento, California, on **January 26, 2014**

(Signature)

NO 361 PUBLIC NOTICE

Notice of Public Scoping and Sacramento Meeting on Oil and Gas

The U.S. Bureau of Land Management (BLM) is soliciting comments during a public scoping process for an Environmental Impact Statement (EIS) for oil and gas leasing and development on Federal mineral estate in the BLM Hollister Field Office.

Comments on issues to be addressed and alternatives to be considered in the EIS will be accepted through February 28, 2014, and may be submitted by email to BLM_CA_OGEIS@blm.gov or by mail to the address below.

Four public scoping meetings will be held across north-central California. A meeting will be held in Sacramento on Tuesday February 4, 2014, from 6 pm - 8 pm at the Doubletree, 2001 Point West Way.

For further information on the public scoping meetings and the EIS process, visit the project website at: www.blm.gov/ca/eis-og. To have your name added to the project mailing list, send an email to the email address

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Notice of Public Scoping and Salinas Meeting on Oil and Gas

The U.S. Bureau of Land Management (BLM) is soliciting comments during a public scoping process for an Environmental Impact Statement (EIS) for oil and gas leasing and development on Federal mineral estate in the BLM Hollister Field Office. Comments on issues to be addressed and alternatives to be considered in the EIS will be accepted through February 28, 2014, and may be submitted by email to BLM_CA_OGEIS@blm.gov or by mail to the address below.
Four public scoping meetings will be held across north-central California. A meeting will be held in Salinas on Tuesday February 11, 2014, from 6 pm – 8 pm at the Cesar Chavez Library, 615 Williams Road. For further information on the public scoping meetings and the EIS process, visit the project website at: www.blm.gov/ca/eis-og. To have your name added to the project mailing list, send an email to the email address above. You may also contact Sara Acridge, EIS Project Manager; telephone 916-978-4400; address 2800 Cottage Way, Rm. W-1623, Sacramento, CA 95825.

Published 1/27/14 and 2/5/14

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Appendix B

List of Commenters

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APPENDIX B
LIST OF COMMENTERS

The formal public comment period as required by NEPA began on August 5, 2013, with the publication of a Notice of Intent in the *Federal Register*, and ended on February 28, 2014. **Table B-1**, Commenters, lists the commenters who submitted written submissions to the BLM for the HFO Oil and Gas Leasing and Development RMP Amendment/EIS as part of the public scoping process. All comments received on or before February 28, 2014, were included in this scoping report. The commenters are listed in chronological order of when their comments were received. Form letters submissions are not included in **Table B-1**, Commenters. **Table B-2**, Form Letter Submissions, includes a brief description of the form letters received, including number of letters received.

Table B-1
Commenters

	Commenter Name	Affiliation	Date Received (Month/Day/Year)
		Federal Government Agency	
1.	Patricia L. Neubacher	National Park Service	9/24/2013
2.	Scott Sysum	US Environmental Protection Agency	2/25/2014
		Local Government Agency	
1.	Christopher B. Mynk	Kern County	8/15/2013
2.	Michael Novo	Monterey County	10/4/2013
3.	Arnaud Marjollet	San Joaquin Valley Air Pollution Control District	1/29/2014
4.	Tera Chumley	Stanislaus County	2/24/2014
		Tribal Individuals and Organizations	
1.	Louise J. Miranda Ramirez	Ohlone/Costanoan-Esselen Nation	2/11/2014
		Business/Commercial Sector (if applicable)	
1.	Richard Ranger	American Petroleum Institute	10/4/2013
2.	Catherine H. Reheis-Boyd	Western States Petroleum Association	2/27/2014

Table B-1
Commenters

	Commenter Name	Affiliation	Date Received (Month/Day/Year)
		Organization (non-profit, citizen's group)	
1.	Center for Biological Diversity	Center for Biological Diversity	9/23/2013
2.	Stephan C. Volker	North Coast Rivers Alliance	10/1/2013
3.	Multiple submitters	CREDO action	10/2/2013
4.	Janie Painter	Medicine Lake Citizens for Quality Environment	10/2/2013
5.	Jhon Arbelaez	Earthworks	10/3/2013
6.	Dr. Tom Williams	Citizens Coalition for a Safe Community	10/4/2013
7.	Hollin Kretzmann	Center for Biological Diversity	10/4/2013
8.	George W. D. Pack	San Benito Rising	1/29/2014
9.	Peter Hain	San Benito Rising	1/29/2014
10.	Hillary Aidun	Center for Biological Diversity	2/4/2014
11.	Michael Kerhin	Sierra Club Loma Prieta Chapter	2/4/2014
12.	Kevin Collins	The Sierra Club, Ventana Chapter	2/13/2014
13.	Amanda Reed	The Nature Conservancy	2/21/2014
		Individual	
1.	Sheri McGowan		8/22/2013
2.	Alan Jorgensen		10/2/2013
3.	Alixandra Mullins		10/2/2013
4.	Ann Wellhouse		10/2/2013
5.	Anthony Biondo		10/2/2013
6.	Barbara Ferguson		10/2/2013
7.	Brenda Lee		10/2/2013
8.	Brigitte Desouches		10/2/2013
9.	Bruce Jackson		10/2/2013
10.	Carlin Black		10/2/2013
11.	Carol Warren		10/2/2013
12.	Carol Hasenick		10/2/2013
13.	Charlene Hillman		10/2/2013
14.	Charles Callen		10/2/2013
15.	Chris Finnie		10/2/2013
16.	Connie Rogers		10/2/2013
17.	Cynthia Dela Rionda		10/2/2013
18.	Dana L. Stewart		10/2/2013
19.	David Waldon		10/2/2013
20.	Deborah Carosela		10/2/2013
21.	Dennis K. Mann		10/2/2013
22.	Dirk van Nouhuys		10/2/2013
23.	Dr. Robert Petty		10/2/2013
24.	Eileen Bill		10/2/2013
25.	Elizabeth Gulick		10/2/2013
26.	Emily Jencks		10/2/2013

Table B-1
Commenters

	Commenter Name	Affiliation	Date Received (Month/Day/Year)
27.	Eric Bernhard		10/2/2013
28.	Eve Simmons		10/2/2013
29.	Ezra Jones		10/2/2013
30.	Forrest Batson		10/2/2013
31.	Georgiana K. K. Birch		10/2/2013
32.	Heidi Guillermo		10/2/2013
33.	Ida E. Casillas		10/2/2013
34.	J. K.		10/2/2013
35.	James Heartland		10/2/2013
36.	James O'Connell III		10/2/2013
37.	Jan Charvat		10/2/2013
38.	Janet Smarr		10/2/2013
39.	Jay Myers		10/2/2013
40.	Jeff Cordeiro		10/2/2013
41.	Jessica Carson		10/2/2013
42.	John Wood		10/2/2013
43.	John Taijala		10/2/2013
44.	Judith Stege		10/2/2013
45.	Judy Thibodeau		10/2/2013
46.	K Burch		10/2/2013
47.	Karen Raskin		10/2/2013
48.	Kathy Smith		10/2/2013
49.	Lang M. Dayton		10/2/2013
50.	Laura Peck		10/2/2013
51.	Lee Rosen		10/2/2013
52.	Lia von Damm		10/2/2013
53.	Linda Baumann		10/2/2013
54.	Lori Paul		10/2/2013
55.	Lynete Coffey		10/2/2013
56.	Margaret Harrell		10/2/2013
57.	Mary Bresnan		10/2/2013
58.	Mary Williams-Fields		10/2/2013
59.	Micahel Griffin		10/2/2013
60.	Michael Collins		10/2/2013
61.	Mitchell Enfield		10/2/2013
62.	Nicholin Wagner Quakenbush		10/2/2013
63.	Pamela Cundy		10/2/2013
64.	Patti Montgomery		10/2/2013
65.	Peter Joyce		10/2/2013
66.	Phyllis Butler		10/2/2013
67.	R T		10/2/2013
68.	R P		10/2/2013
69.	Richard Elliot		10/2/2013

Table B-1
Commenters

	Commenter Name	Affiliation	Date Received (Month/Day/Year)
70.	Richard Jones		10/2/2013
71.	Rick Nixon		10/2/2013
72.	Rick Blanc		10/2/2013
73.	Robert McCombs		10/2/2013
74.	Robert Hathaway		10/2/2013
75.	Ron Jeske		10/2/2013
76.	Sadie Sullivan-Greiner		10/2/2013
77.	Shari Home		10/2/2013
78.	Shawn Hoose		10/2/2013
79.	Siddharth Mehrotra		10/2/2013
80.	Suzanne Nathans		10/2/2013
81.	Suzy Lyons		10/2/2013
82.	Tanya Wilhelm		10/2/2013
83.	Victoria Wu		10/2/2013
84.	Wilma Ralls		10/2/2013
85.	Yosh Yamanka		10/2/2013
86.	Shauna Haines		10/13/2013
87.	Teresa Paris		10/21/2013
88.	Mitchell Drachman		11/19/2013
89.	Stuart Phillips		1/20/2014
90.	Pauline Seales		1/28/2014
91.	Gabriel Michaels		1/29/2014
92.	Jeannette Langstaff		1/29/2014
93.	CJ Jawahar		2/4/2014
94.	Arielle Tonkin		2/5/2014
95.	Hugh Moore		2/5/2014
96.	Jeffrey Meyer		2/5/2014
97.	Kimberly Tomicich		2/5/2014
98.	Samantha Ngotel		2/5/2014
99.	Alby Quinlan		2/6/2014
100.	Kayla Reeser		2/7/2014
101.	Sara A. Steiner		2/11/2014
102.	Anna Rikkelman		2/12/2014
103.	Jeff Irwin		2/12/2014
104.	Brett Garrett		2/26/2014
105.	Bert Johnson		2/27/2014
106.	Katherine He		2/27/2014
107.	Laura Daly		2/27/2014
108.	Brian Treanor		2/28/2014
109.	Don Larkin		2/28/2014
110.	Kimberly Osborne	Quinnipiac Law Review	2/28/2014

Table B-2
Form Letter Submissions

Organization Identified (if any)	Number of Form Letters Received	Description of Form Letter Contents
(none identified)	3	Comments express opposition to hydraulic fracturing
CREDO action	10,577	Comments express opposition to hydraulic fracturing

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Appendix C

Comments by Resource Planning Issue

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APPENDIX C
COMMENTS BY RESOURCE PLANNING ISSUE

The BLM received 734 discrete comments during the Hollister RMP amendment scoping period. These comments were classified by RMP amendment process category and by planning issue. Comments for each the RMP amendment process categories and for planning issue categories are included in this appendix. Comments are included verbatim from the comment letters; however, information in letters that was not considered a comment is not included here. Comments are included for the following groups:

Comments by Process Category:

Table C-1 Alternatives (p. C-3)

Table C-2 General Comments Related to the Project (p. C-10)

Table C-3 Issues Inside Scope – Already Addressed Under Existing Policies, Plans, and Legislation (p. C-18)

Table C-4 Issues Outside of Scope – Resolved through Policy (p. C-21)

Table C-5 Scope of the EIS (p. C-24)

Comments by Planning Issue:

Table C-6 Issue No. 1: Water Resources (p. C-33)

Table C-7 Issue No. 2: Health and Safety (p. C-48)

Table C-8 Issue No. 3: Vegetation and Wildlife (p. C-21)

Table C-9 Issue No. 4: Air Quality (p. C-6924)

Table C-10 Issue No. 5: Climate Change (p. C-79)

Table C-11 Issue No. 6: Geology and Seismicity (p. C-86)

Table C-12 Issue No. 7: Soil Resources (p. C-93)

Table C-13 Issue No. 8: Socioeconomics (p. C-96)

Table C-14 Issue No. 9: Traffic (p. C-97)

Table C-15 Issue No. 10: Tribal and Cultural Resources (p. C-99)

Table C-16 Issue No. 11: Environmental Justice (p. C-101)

Table C-17 Issue No. 12: Land Use (p. C-102)

Table C-18 Issue No. 13: Livestock Grazing (p. C-103)

Table C-19 Issue No. 14: Recreation (p. C-104)

Table C-20 Issue No. 15: Visual Resources (p. C-105)

Table C-1
Alternatives

Both the EIS and the Statewide Study should include all of the subjects outlined below. Inclusion of each topic is prerequisite for BLM to make an informed decision regarding approach to the exploitation of federal mineral estate in the Hollister Field Office and throughout California. In addition, BLM must thoroughly consider all reasonable alternatives, including, at a minimum, cancellation of the 2011 and 2012 Hollister Field Office lease sales that have been litigated, and, more broadly, a prohibition on all oil and gas activities in areas managed by the Hollister Field Office as well as a prohibition on all unconventional oil and gas activities in areas managed by the Hollister Field Office.

As explained in Section III, alternatives should include a full consideration of a complete prohibition of hydraulic fracturing, acidization, and other dangerous and unconventional oil and gas extraction. Because a properly conducted EIS and Statewide Study are likely to show that the risks to public health, safety, and the environment cannot be eliminated or fully mitigated through regulation, a prohibition is the only alternative that can stop the damage to human health and safety and the environment posed by unconventional drilling on public lands.

NEPA requires that an agency consider all reasonable alternatives to the proposed regulation. The agency must also identify the alternative that is environmentally preferable, which is typically "the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources." As stated above, the agency's action must satisfy the goals of NEPA, which are to:

(1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;

(2) assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings;

(3) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;

(4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice;

(5) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and

(6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

The EIS must thoroughly consider all reasonable alternatives, including, at a minimum, cancellation of the 2011 and 2012 Hollister Field Office lease sales that have been litigated, and, more broadly, a prohibition on all oil and gas activities in areas managed by the Hollister Field Office as well as a prohibition on all unconventional oil and gas activities in areas managed by the Hollister Field Office. A prohibition on all oil and gas activities is the best alternative, and is the only alternative that will satisfy each environmental goal of NEPA. The benefits of this alternative are substantial, and it is the only option that completely eliminates the following risks and harms that would otherwise be caused by unconventional oil and gas extraction techniques and associated operations:

(1) groundwater contamination;

(2) surface water contamination;

(3) freshwater depletion;

(4) air emissions of hazardous air pollutants and other air toxics;

(5) damage to wildlife and their habitats;

(6) greenhouse gas emissions;

(7) induced seismicity.

Eliminating these occurrences will lead to invaluable benefits that include:

Table C-1
Alternatives

1) Cleaner, safer, and more reliable water supply;

2) Fewer illnesses and deaths caused by exposure to contaminated water;

3) Preservation of jobs in industries dependent on clean and ample freshwater;

4) Cleaner and safer air quality;

5) Fewer illnesses and deaths caused by exposure to polluted air;

6) Increased opportunities for recreation due to clean air and water;

7) Fewer workplace accidents on well sites;

8) Increased health to wildlife populations and greater biodiversity;

9) Mitigation of global warming;

10) Reduction of death, injury, and property damage caused by seismic activity

11) Reduction of truck traffic and damage to roads

12) Higher property values for land that would otherwise be located close to a well site.

BLM is also considering revisions to the 2006 Hollister Field Office's Resource Management Plan ("RMP") (2006). The revisions should reflect the scope of the EIS and Statewide Study and implement the best alternative of prohibiting oil and gas extraction techniques on federal land and subsurface rights administered by the Hollister Field Office.

A prohibition is consistent with the current Hollister RMP's goals and objectives for air, soil, water, vegetation, wildlife, and visual resources management, special status species protection, fire management, recreation, livestock grazing, energy and minerals, cultural resources, paleontological resources, social and economic conditions, transportation and access, hazardous materials and public safety, and land realty.

Conversely, continuing to allow oil and gas extraction, including unconventional methods, would run counter to many if not all of the stated objectives in the current Hollister RMP. For example, it is impossible to "protect public health and safety and environmental resources by minimizing environmental contamination from past and present land uses..on public lands" while allowing extreme oil and gas extraction to endanger public health and safety and the environment. Similarly, it is difficult to reconcile the Hollister RMP's goal to "maintain, restore, or improve water quality and quantity to sustain the designated beneficial uses on BLM lands" without consideration of a complete ban on oil and gas extraction techniques that pose grave threats to water quality and supply.

Thus, changes to the Hollister Office RMP should be made to respond to the risks analyzed in the EIS and Statewide Study and to accomplish the best alternative of prohibiting oil and gas extraction on BLM mineral estate in this area. BLM should extend these RMP revisions to other field offices to protect all public lands in California from further damage from oil and gas activities, and in particular from the latest unconventional techniques including fracking and acidizing.

The alternatives considered in the EIS must include at a minimum, cancellation of the 2011 and 2012 Hollister Field Office lease sales subject to litigation, and, more broadly, a prohibition on all oil and gas activities in areas managed by the Hollister Field Office as well as a prohibition on all unconventional oil and gas activities in areas managed by the Hollister Field Office. A prohibition on all oil and gas activities is the only option that will completely eliminate the risk of several of the harms described above. Revisions to the Hollister office's RMP should be implemented after a full consideration of the EIS and Statewide Study in order to protect people, wildlife, and our public lands from the many risks and damages of oil and gas extraction.

Table C-1
Alternatives

BLM land in all California Field Offices should be closed to further oil and gas development and future leasing of oil and gas. Specifically, BLM land must be closed to oil and gas development that involves hydraulic fracturing.
I'm writing to urge you to continue to halt new oil lease sales on California's public lands while these studies are completed.
The best way to protect our treasured public lands along with our air, water, health, and climate from fracking is to simply prohibit this inherently dangerous form of fossil fuel extraction. There's no better place to start than by banning fracking on our public lands. It would make no sense to go forward with new oil and gas lease sales before studies are complete.
Please prohibit new oil lease sales on California's public lands while you study fracking's threats to our Golden State. Critical decisions about opening more of California public lands to oil and gas development and fracking cannot be informed decisions until your studies are complete.
BLM should adopt an immediate ban on oil and gas development on our public lands. Our public federal lands are an invaluable asset and should be protected. Federal public lands include some of the most beautiful, biologically diverse, and ecologically important land in California. Allowing oil and gas activity, including operations that employ fracking, to occur in these areas is an unacceptable risk. Consequently, oil and gas leases on federal land should be prohibited indefinitely.
The BLM must include a no-oil-and-gas-lease alternative in its EIS. Under NEPA, an agency must consider "all reasonable alternatives" to its action. This includes the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources. A permanent ban on leases for oil and gas development is the only alternative that eliminates the risks posed by oil and gas development.
[The Project Description must include:] The Project Alternatives the Preferred Alternative and if different the Environmentally Superior Alternative Listing and Compilation of Features for All Alternatives
In regard to the issue of the recommendation of alternatives during scoping; the alternatives to the project analysis should included a review of the potential for wind and solar power development, including where, how, and with what limitations. Realistic mitigations might be possible with renewable energy. We would not recommend the placement of wind turbines in the habitat of the endangered California Condor. But there may be areas under BLM jurisdiction where such projects would be a beneficial alternative to fracking oil development. Renewable energy must soon be our primary energy source in the very near future if the planet is to avoid the catastrophic impacts of climate change and ocean acidification caused by the build up of excess carbon dioxide.
California is a leader when it comes to protecting the environment. The State Legislature will soon be voting a statewide moratorium on fracking and other aggressive oil and gas extraction. The California Coastal Commission will soon announce its findings on the dangerous practice of off-shore drilling. Many local governments, including Marin, San Benito and Santa Cruz County, have passed local ordinances on fracking. It’s time for the BLM to realize the public dangers posed by these extreme energy extraction practices and amend the Hollister Field Office’s RMP to include a ban on fracking. The same should apply to all regional management plans in BLM’s California State Offices.

Table C-1
Alternatives

All areas should be closed to Fracking (hydraulic fracturing) or "Fracking like" activities based on experience to date and knowledge of the current technology and limited knowledge of total impacts. Other conventional access to oil and gas resources should be evaluated against above concerns prior to opening areas.
Examine other land uses that do not have as many potentially high negative consequences. Such as agriculture, wind farms, solar farms,
Regarding alternatives, the EIS should take a different approach. The 2006 Hollister RMP EIS considered alternatives that would strike different balances of competing land uses, such as preservation of sensitive resources, grazing, recreation, and mining as well as oil and gas leasing. For the new EIS, the NOI instead describes a specific oil and gas leasing EIS, focused on this single use. According to the January 2014 EIS Planning Update, the "decision to be made is to establish additional lease stipulations, conditions of approval, or best management practices to guide safe and responsible oil and gas development." As such, alternatives to be considered would be alternative suites of standard lease stipulations and conditions, while the "no project alternative" would be continued reliance on the list of stipulations and conditions in Appendix D of the 2006 RMP EIS. As discussed above, the EIS should not reopen the basic goals and objectives of the existing RMP or the selection of the preferred alternative incorporating an appropriate balance among competing uses.
In the public scoping meetings held in January and February 2014, some commenters have proposed that the EIS consider a moratorium or ban on well stimulation as "alternatives" pursuant to NEPA. WSPA does not believe that a moratorium or ban alternative is appropriate. NEPA requires consideration of a reasonable range of alternatives to a proposed action. "Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense"; see Council on Environmental Quality, 40 Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, Question 2a. The severe consequences to California's economy and energy supplies would render a moratorium or ban impractical or infeasible. Moreover, a moratorium or ban would be inconsistent with the basic goals and objectives of the existing RMP and with the balance struck in the selected preferred alternative.
I am here from San Francisco on behalf of the Center for Biological Diversity to ask BLM to permanently close off our public lands to the oil and gas industry.
We have gathered over 10,000 comment letters asking BLM to keep our public lands free from oil and gas activity. These include some of the most beautiful and ecologically important land in California. Allowing oil and gas activity, including operations that employ fracking and other unconventional fossil fuel extraction methods, to occur in these areas presents unacceptable risks. These industrial operations could irreparably harm our water, air, wildlife, and climate. Consequently, oil and gas leases on federal land should be prohibited indefinitely.
We applaud BLM's halt to oil and gas leases and drilling permits while the agency satisfies its legal obligation to complete an Environmental Impact Statement. We strongly urge BLM to continue this halt while the EIS is being conducted. We are confident that once all of the harms from oil and gas development are made clear, the BLM's only reasonable option will be to prohibit not just fracking, but all oil and gas activity on public lands.
We entrust our public lands to the government so that they can be enjoyed by all people and future generations. We depend on the BLM to keep those lands safe and unpolluted. When looking at all the potential harms posed by these dangerous activities, it should be clear that the only option that will avoid the threat to our water, air, health, and climate is to ban oil and gas development on public lands.
Please take the necessary steps to ban fracking and acidization on federal land. The EIS must include an alternative that bans oil and gas leases while encouraging development of renewable energy sources.
But even for those who have doubts about global warming, some of the new oil drilling technology is really frightening This includes hydraulic fracturing (fracking), and I definitely support a moratorium and a permanent ban on fracking.

Table C-1
Alternatives

So, in summary, I think oil exploration and development should be banned on federal land. The Environmental Impact Study needs to include an alternative that bans oil and gas leases while encouraging renewable energy sources ("Wind, Geothermal, Solar, etc." as highlighted on BLM's comment form). But if oil development is allowed, there must be a ban on well stimulation techniques, including fracking and matrix acidization.
Ban fracking now in the county of San Benito and the State of Calif.
A draft of proposed regulations by the California Department of Oil and Gas and Geothermal Resources that was recently receiving public comment contained language requiring notification and before and after water monitoring for adjacent landowners if a well bore was within 1500 feet of a property boundary. Project Indian is slated to expand to 640 acres if pilot studies prove the project feasible. If the oil recovery well bores were kept further than 1500 feet from property lines it is conceivable that thousands of wells could be drilled with no notification or testing at all for adjacent property owners. If oil and gas development were allowed to proceed on BLM lands then notification and before, during and after water monitoring of all contiguous property should be required.
The BLM moratorium to halt all oil and gas leases was the correct action and, in order to "protect, preserve, and enhance historic, cultural and natural resources," the Hollister Field Office's Regional Management Plan along with the rest of the state of California, should make it a permanent ban.
The BLM should operate under the precautionary principle when it comes to hydraulic fracturing. Hydraulic fracturing should not be utilized as an oil and gas well stimulation technique until: - All impacts have been analyzed and until more studies have been done about the health impacts of the chemicals in the fracturing fluid and drill lubricants - More is known about the likelihood of well casing failure - More is known about the relationship between induced seismicity and wastewater injection, and until - More is known about the potential of fracturing fluid left underground after completion to contaminate groundwater. Currently much of this is unknown and studies are continuing to reveal more and more about the serious and negative impacts of hydraulic fracturing.
All areas in the HFO should be closed to leasing and on all existing leases, the HFO should attach COAs for new permits to drill that do not allow well stimulation technologies such as hydraulic fracturing and well acidization.
Public lands are supposed to be preserved for the public, not handed over to private profit-making industries that will poison the water, soil, and air. I urge you to impose a moratorium on this practice until the BLM's studies are completed and demonstrate that fracking can be done without harming Californians, our public lands, our precious water, or the climate.
It's seems strange to allow fracking on public lands in California while preparing an Environmental Impact Statement and independent analysis of fracking. I would urge a continuation of the moratorium new oil leases- or at least on fracking- until the BLM's studies are completed and demonstrate that fracking can be done without harm.
The best way to protect our treasured public lands along with our air, water, health, and climate from fracking is to simply prohibit this inherently dangerous form of fossil fuel extraction. There's no better place to start than by banning fracking on our public lands. It would make no sense to go forward with new oil and gas lease sales before studies are complete.
Please prohibit new oil lease sales on California's public lands while you study fracking's threats to our Golden State. Critical decisions about opening more of California public lands to oil and gas development and fracking cannot be informed decisions until your studies are complete.

Table C-1
Alternatives

We respectfully request BLM to continue to prohibit new oil, gas and geothermal lease sales on California's public lands while you study fracking's threats to our Golden State. Critical decisions about opening more of California public lands to oil and gas development and fracking cannot be informed decisions until your studies are complete and include geothermal fracking.
Due to the wide-ranging dangers of unconventional oil, gas and geothermal extraction, we strongly urge BLM to extend its current moratorium on oil and gas leases to include geothermal leases to thoroughly evaluate the full array of impacts and threats.
Do not allow fracking on California public lands. Ruining our water and ecosystems forever is not acceptable. Protect the land and water. There is no amount of money to be made that is worth ruining our beautiful state forever.
As a member of the public who has studied geophysics, I am deeply concerned about the practice of fracking for the removal of natural gas. When I first learned of the practice I predicted earthquakes, groundwater pollution, ground subsidence, and eventual travel of the pollutants to the surface 'downstream' through aquifers, faults, and natural fissures in the bedrock. We haven't seen all these yet, but there is strong evidence of the first two in the other states. Please, do not lift the fracking moratorium in California until the environmental studies are complete, and then only if they indicate the practice has no long-term damaging effects for the environment.
I think these examples and more show that fracking poses a serious threat to my home state. I therefore ask you to impose a moratorium on this practice until the BLM's studies are completed and demonstrate that fracking can be done without harming California.
All said, fracking should certainly not be allowed on public lands in California. The unfortunate passage of the Senate Bill 4 indicates that the gas and oil industry has bought off CA politicians who approved the giant loopholes and CEQA exemption for fracking; or, our state legislators have failed to take the time to accurately understand the full risks of fracking and the affect of fracking on climate change. Perhaps the state legislature suffers from both "faults" (pun intended); however, in any case, SB4 will not successfully "regulate" fracking. With this in mind, I strongly urge that the BLM be highly responsive to good science and a full, objective EIR process. Act conservatively until all the data re: fracking has been independently analyzed. Do not "cave in" to the pressure and greed of those promoting fracking in California. Please implement a full moratorium on fracking on all BLM lands immediately until all studies are completed.
Impose a moratorium on this practice until the BLM's studies are completed and demonstrate that fracking can be done without harming Californians or the climate.
I am so disappointed to learn that so much fracking has already been done in our beautiful state- which is currently lacking in clean water (which is wasted in huge amounts in the fracking process!!!!). So, please at least put a moratorium on the process until or unless it can be proven that it is safe and harmless.
fracking has already been shown to be a dangerous and damaging practice and I want it banned in California. Once the BLM studies are completed, this will be proven. I beg you not to approve fracking on ANY California land.
Since it is impossible to isolate water below the ground from fracking- both public and private land fracking should be prohibited. Money/payoffs and sealed agreements never to speak of harm done do not restore a more precious commodity- such as clean water, soil, and human life.
Fracking is already damaging ground water, and is seriously degrading the areas where it is practiced. We don't need the oil from fracking, not at the expense of our water sources. Water is already at a premium. It will be more so, going forward. Water is more important than oil. This is basic common sense. Please apply it to this situation and extend the moratorium.
I strongly urge you to wait until your proposed (Federal Register, 8/5/13) environmental impact statement, analyzing the potential impacts of allowing hydraulic fracturing on the 284,000 acres of public land within the Hollister field office's jurisdiction, is completed, before resuming new oil lease sales on California's public lands. I further urge you to discontinue the processing of permits to drill on existing leases, until the EIS has been completed. It makes no sense to allow hydraulic fracturing and related methods, which are strongly suspected to be potentially serious threats to public health and the environment, as well as significant contributors to global warming, to be utilized, before their potential impacts have been thoroughly studied and evaluated.

Table C-1
Alternatives

Please don't allow continued fracking on California public lands while preparing an Environmental Impact Statement and independent analysis of fracking. Fracking threatens our precious water supply as well and human and environmental health.. Impose a moratorium on fracking until the BLM's studies can demonstrate that fracking can be done without harming Californians or the climate.
Evidence in other states shows fracking contributes to ground water and well pollution and may be involved in triggering earthquakes in areas where earthquakes were formally minimal or nonexistent. California is earthquake central. DO NOT allow fracking in California. The hazards to air, water and soil pollution are known. The hazards they might present to our fault lines are not worth the risk
I, and my family, personally believe, that the wise, temporary moratorium on new oil lease sales put in place earlier this year by the Bureau of Land Management should be made permanent but certainly it should not be lifted before these studies are complete and can demonstrate to the Public, without any doubt, that fracking can be done without harming Californians, the land, or the climate.
Because fracking is still a new method of extracting natural gas and because there has been widespread concern primarily about its potential to contaminate groundwater, lakes, and streams, the safer course for the BLM and the entire state of California would be to have a moratorium on fracking for two reasons. First, the risks of fracking will become more evident as the experiences of other states that have fracked for years, like Pennsylvania and Ohio, gives it an environmental track record. The second reason is that, with experience, states and gas companies will become better at avoiding adverse environmental consequences of fracking and dealing with them when they occur, as they have and will in the future.

Table C-2
General Comments Related to Project

The decision of how and whether to permit unconventional oil and gas extraction on federal mineral estate and public lands is a broad and far-reaching determination that will require a full and candid assessment of a full range of environmental impacts. We commend BLM for launching both an environmental impact statement ("EIS") for the Hollister Field Office and a statewide study of the impacts of hydraulic fracturing, acidization, and other unconventional oil and gas extraction methods (the "Statewide Study"). As noted by BLM, the Statewide Study will be "[l]ed by the California Council on Science and Technology (CCST), the assessment report will consider geology, well completion techniques and the environmental impacts of those techniques."
Under NEPA, agencies must use "all practicable means" to protect the environment by adhering to the purposes of NEPA, which are to: (1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations; (2) assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings; (3) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences; (4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice; (5) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and (6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources. In passing NEPA, Congress also recognized and enshrined the principle that "each person should enjoy a healthful environment and that each person has a responsibility to contribute to the preservation and enhancement of the environment."
Agencies must take a "hard look" at the environmental consequences of their actions before these actions occur; and agencies must make the relevant information available to the public so that it may also play a role in both the decision-making process and the implementation of that decision.
The objectives of the scoping process are to 1) Identify potentially interested parties; 2) Identify public and agency concerns 3) Define the range of issues that will be examined in the plan 4) Ensure that relevant issues are identified early and drive the analysis; and 5) Establish a public record.
Another requirement of NEPA mandates that BLM evaluate and consider in its EIS all reasonable alternatives. Federal agencies must ""rigorously explore and objectively evaluate all reasonable alternatives.. [and] [d]evote substantial treatment to each alternative considered in detail.." The comparison between different alternatives should study, at minimum: (1) Direct effects and their significance; (2) Indirect effects and their significance; (3) Possible conflicts between the proposed action and the objectives of Federal, regional, State, and local (and in the case of a reservation, Indian tribe) land use plans, policies

Table C-2
General Comments Related to Project

and controls for the area concerned; (4) The environmental effects of alternatives including the proposed action; (5) Energy requirements and conservation potential of various alternatives and mitigation measures; (6) Natural or depletable resource requirements and conservation potential of various alternatives and mitigation measures; (7) Urban quality, historic and cultural resources, and the design of the built environment, including the reuse and conservation potential of various alternatives and mitigation measures; and (8) Means to mitigate adverse environmental impacts.
Include, in the DEIS, a list of BMPs that may be required to protect surface water and groundwater resources, and the circumstances under which the BMPs would be applied (e.g., proximity to surface water resources, presence of erosive soils, slope, shallow water aquifers, proximity of water wells, etc.).
Explain, in the DEIS, how the BLM would ensure that the BMPs would be monitored and enforced.
We recommend following CEQ's recent guidance, Appropriate Use of Mitigation and Monitoring and Clarifying the Appropriate Use of Mitigated Findings of No Signficant Impact, when addressing mitigation of any impacts identified in the DEIS.
The cumulative impacts analysis should provide the context for understanding the magnitude of the impacts of the alternatives by analyzing the impacts of other past, present, and reasonably foreseeable projects or actions and then considering those cumulative impacts in their entirety (CEQ's Forty Questions, #18). The DEIS should clearly identify the resources that may be cumulatively impacted, the time over which impacts would occur, and the geographic area that would be impacted by the proposed projects. The DEIS should focus on resources of concern- those resources that are "at risk" and/or are significantly impacted by the proposed projects, before mitigation. In the introduction to the Cumulative Impacts Section, identify which resources are analyzed, which ones are not, and why.
Identify the current condition of the resource as a measure of past impacts. For example, the percentage of species habitat lost to date.
Identify the trend in the condition of the resource as a measure of present impacts. For example, the health of the resource is improving, declining, or in stasis.
Identify the future condition of the resource based on an analysis of impacts from reasonably foreseeable projects or actions added to existing conditions and current trends.
Assess the cumulative impacts contribution of the proposed alternatives to the long-term health of the resource, and provide a specific measure for the projected impact from the proposed alternatives.
Disclose the parties that would be responsible for avoiding, minimizing, and mitigating those adverse impacts.
Identify opportunities to avoid and minimize impacts, including working with other entities.
The use of fracking anywhere is not consistent with the effort to move our world to a sustainable environment.
There is not yet enough baseline information about the impacts of hydraulic fracturing for the BLM to conduct a comprehensive impact analysis. There are too many unknowns about the impacts of hydraulic fracturing at this point for the BLM to accurately and properly analyze the impacts of fracking in the EIS.
Unfortunately, leakages and spills are usual. Best management practices and specific plans of optimal operations cannot prevent mechanical error, miscalculations of geology, and other accidents. The impacts analysis should assume leaks, spills and human and wildlife contact with fracturing fluid will occur, not that everything will go according to plan.

Table C-2
General Comments Related to Project

Additionally the RMP established the energy and mineral resource management objective of balancing responsible mineral resource development with the protection of other resource values; based on the currently-known negative impacts to surface water and ground water, to air quality, and to human health and safety through exposure to endocrine disruptors and other chemicals present in fracturing fluids that are highly likely due to fracking, it will be impossible for BLM to achieve these RMP objectives while using hydraulic fracturing as an oil and gas extraction method.
The Hollister Field Office's RMP should include a ban on oil and gas leases. Given the potential for environmental harm to the Hollister Field Office's management area, the regional office's RMP should be amended to include a ban on all oil and gas development leases. The same should apply to all regional management plans in California.
On behalf of the County of Monterey, I am writing to share the County's concerns regarding the potential sale of oil and gas leasing and development on public lands and federal mineral estate and the potential amendment to the Hollister RMP and to request that EIS document address those concerns. The County requests explicit notification of all upcoming proposals, applications to drill and determinations of the BLM. All notifications may be sent to the County in care of Michael Novo, Director of RMA-Planning, 168 West Alisal Street, 2nd Floor, Salinas, CA 93901 or by e-mail to novom@co.montery.ca.us
The County supports the decision to prepare this EIS and requests that the document analyze not just hydraulic fracturing and horizontal drilling, but all reasonably foreseeable well completion and stimulation practices and all foreseeable related impacts. It cannot be assumed that once opened for leasing and development that there will be only a few permits issued. The County assumes that the number of permits will greatly expand and that the impact cannot be understated. The EIS should include analysis of both the immediate and cumulative impacts due to oil and gas development and should include analysis of impacts to private as well as public lands.
The County assumes that leasing of BLM lands and federal mineral estate for gas and oil development may result in impacts to traffic/road infrastructure, water quality, water quantity, aesthetics, hazardous materials exposure, seismic hazards and housing.
The County strongly urges the BLM to include a robust analysis of all of the potential impacts in the EIS so that the decision regarding the potential amendment of the Hollister RMP and the decision as to whether and how leasing of federal lands for oil and gas development should occur will be made with full public disclosure of the potential impacts to the environment.
We have reviewed various accessible documents regarding the proposed "Project" and have been thoroughly confused as to what the "Project(s)" and "RMP" and "EIS" and "Studies" are and what comments are requested. Therefore our comments will attempt to formulate a "best-guess" Project and then provide comments on what must be included and how the elements must be organized within the Project and the Environmental Impact Statement (EIS) for such a Project.
We request that a Scoping Report be circulated at a later date with a request for additional public comments, OR that BLM revise and recirculate the entire NOI for further comments. General Comments include: Project Description must include all Oil and Gas (O&G) Exploration and Production (E&P) Facilities and Operations within any BLM Areas; RMP - Prepare a Progammatic RMP for California/Statewide O&G-E&P facilities and operations in any BLM areas, with detailed tiered-RMP for the Hollister Area; EIS - Prepare a Progammatic EIS for California/Statewide E&P RMP(s) with detailed tiered-EIS for the BLM Hollister Area RMP; "Studies" - Provide all supporting efforts and documents and include in appendices for RMP and EIS and in searchable web-accessible documents; "Terms" - Provide section of Definitions, Glossary, and Acronyms to be consistently and comprehensively applied throughout all documents, for example "development" for BLM-RMP is different from E&P "development" and O&G refers to an industrial sector including refining and retailing which I don't believe are covered in the BLM definition of O&G;

Table C-2
General Comments Related to Project

Inter-/Intra-Agency Coordination - A statewide workshop(s) to establish a regulatory program.
Available documents do not provide a clear and consistent presentation of the "Project" for an EIS but the Notice appears to include the following three elements: a. RMP for Hollister to act as template for other districts b. Programmatic EIS for BLM RMP and Leases for Oil and Gas/Exploration and Production along with Project Specific Tiered EIS for Hollister RMP c. Supporting Studies and Other Documents for PEIS and RMP
"Reasonably Foreseeable Development Scenario" depends on the basis of defining and must thoroughly define: "Reasonably" and "Foreseeable", since all primary parameters for the leasee, and perhaps the leaser, are of financial and risks management character.
In response to recent National Environmental Policy Act ("NEPA") litigation involving BLM lease sales for oil and gas development in the Monterey Shale formation in the Hollister Field Office, BLM has decided to complete an Environmental Impact Statement ("EIS") for the scope of lands covered by the entire Hollister Field Office. If conducted appropriately and within a reasonable timeline, this could be an effective and efficient means of authorizing additional lease sales for oil and gas development in light of a further vetting of the environmental issues pertaining to such development. In contrast, an open ended process, timeline, and scope of review would only serve to unnecessarily delay the development of resources and fulfillment of BLM's mission under the Mining and Minerals Policy Act ("MMPA") to promote shale oil development. Specifically, in order to ensure that the EIS process is completed in an effective manner that realizes the goals of the Bureau for these lands and the interests of outside stakeholders, we recommend the following:
There Are Compelling Reasons for BLM to Move Forward Expeditiously Timely completion of the EIS is in the best interests of the public as a whole and of the Industry Associations' members and is consistent with BLM's statutory multiple use mandate. A timely resolution of the NEPA process, followed by responsible development of the Monterey Shale, offers significant benefits for citizens of California and of the entire nation. The 1,750 square mile Monterey Shale, which encompasses part of the lands administered by the Hollister Field Office, is the largest shale oil formation in the United States. The United States Energy Information Administration ("EIA") estimates that it holds 15.4 billion barrels of oil. BLM has a statutory obligation to make management decisions "on the basis of multiple use and sustained yield." 43 USC. § 1701(a)(7). As part of that mandate, BLM is required to manage federal lands "in a manner which recognizes the Nation's need for domestic sources of minerals, food, timber, and fiber from the public lands including implementation of the Mining and Minerals Policy Act of 1970." Id. § 1701(a)(12) (emphasis added). In turn, the MMPA directs BLM to "foster and encourage private enterprise in . . . the development of economically sound and stable domestic mining . . ." and specifically includes shale oil among the minerals that BLM must promote. See 30 USC. § 21a.
Due to the negative impacts to surface water and groundwater, to air quality, and to human health through exposure to endocrine disruptors and other chemicals present in fracking fluids, it will be impossible for the BLM to reach these RMP objectives while using hydraulic fracturing as an oil and gas extraction method.
California's SB4 requires the regulation of all well stimulation techniques, including acidizing, which will be the technique used for O&G extraction in the state. SB4 also requires the disclosure of all chemicals used during drilling operations. It is imperative that the BLM include similar rules and regulations for use in public lands in California. Doing so will help protect public health, the environment, respect the will of the people of California, and ensure that O&G development in the state will be conducted in a safe and responsible manner.
The best environmental analysis, by itself, cannot protect public health and the environment from the impact of energy development. It is necessary for the BLM to consider all possible alternatives, as well as all the cumulative impacts associated with additional permitting of O&G development. A full economic analysis, paired with a vigorous health impact study, and an extensive public review period is necessary to safeguard the public, the environment, and the sustainability of California's public lands.

Table C-2
General Comments Related to Project

In addition to potentially unlocking billions of barrels of previously unrecoverable oil, the new fracking techniques pose serious, novel, and little-understood risks to human health and the natural environment. Such risks include irreparably contaminating surface and groundwater, contributing to air pollution and climate change, killing and sickening livestock, fish, and wildlife, and inducing earthquakes, as well as contributing to global warming from the combustion of oil and gas.
San Benito and Monterey Counties are unique and desirable locations for farming, ranching, recreation, and wildlife conservation. The open working landscapes that define San Benito County and areas of Monterey County are not only essential to our community's rural traditions, economic stability and food production but also to the conservation of our natural and cultural resources. For further information, please contact Karen Beppler-Dorn, Superintendent, Pinnacles National Park, 5000 Highway 146, Paicines, CA 95043 (831) 389-4486 x233.
Concerned about: Migration of negative impacts from above s beyond specific lea s and beyond BLM controlled areas.
Issues raised in "Gasland" and "Gasland 2" documentaries by Josh Fox.
Particular concern for Salinas Valley and areas that could impact the Salinas Valley.
In addition, The Nature Conservancy has been an active participant in working with the Department of Interior on ways to improve mitigation for impacts to public lands. In October, Secretary Jewell issued Secretarial Order 3330 to establish a Department-wide mitigation strategy for development on public lands. We want to emphasize three components of this Secretarial Order as important for this EIS: 1. In the order, the term "mitigation" refers to the entire mitigation hierarchy: avoidance first, then minimization of impacts, and finally offsets to compensate for unavoidable impacts. 2. The Order specifically applies to oil and gas development 3. Five elements are central to Departmental mitigation strategy and should be incorporated into this EIS: a. Use of a landscape-scale approach to identify and facilitate investment in key conservation priorities in a region; b. Early integration of mitigation considerations in project planning and design; c. durability of mitigation measures over time; d. Transparency and consistency in mitigation decisions; and e. Mitigation efforts that improve the resilience of our nation's resources in the face of climate change.
The Conservancy thus strongly supports implementation of the ideas included in the Secretarial Order in the Hollister EIS, including an evaluation of how the Bureau will incorporate the mitigation hierarchy and other aspects of the Order in the pending oil and gas environmental impact statement and accompanying scientific study. In particular the analysis should set standards for those effects on lands and water resources that must be avoided (e.g., habitat), how effects will be minimized (including limiting surface disturbance through the use of smaller multi-well pads, co-locating roads and pipeline infrastructure, etc.), and how unavoidable adverse effects will be offset.
In the August 2013 comments TNC submitted on BLM's proposed agency-wide hydraulic fracturing rules (attached), we cited with approval BLM's use of landscape scale analysis, combined with avoidance requirements and compensatory mitigation that the agency implemented in Wyoming's Pinedale Anticline oil and gas leasing and development. We believe that model should serve as a prototype here.

Table C-2
General Comments Related to Project

Other Scoping Recommendations: Conventional and Unconventional Oil and Gas Development, Groundwater, Fragmentation, and State and Local Coordination BLM's Federal Register announcement recounts a reasonably inclusive list of preliminary scoping issues to be addressed by the EIS. These include surface water, groundwater, air quality, greenhouse gases and climate change, the environmental effects of fracking chemicals, potential for induced seismicity, endangered and threatened species, public health and safety and socioeconomics. We concur that the EIS should fully address all of these issues.
To date, the majority of oil and gas development that has occurred in California has been from conventional reservoirs. However, the application of well stimulation in combination with other techniques (e.g., horizontal drilling) has allowed for development of unconventional oil and gas development in other parts of the United States and may allow for similar development in California. To understand the full range of potential environmental impacts from oil and gas development, the BLM should analyze separately the development of conventional oil and gas reservoirs as distinct from development of unconventional oil and gas resources.
For both conventional and unconventional oil and gas development, the EIS should: - Identify and map all existing oil and gas development in California, including all development on BLM-managed lands and sub-surface resources and all BLM existing oil and gas leased tracts in the state. - Identify all existing wells in which well stimulation practices have been used, and, for these wells, any reports or information evidencing well failures, casing or cement failures, spills, or groundwater or surface contamination.
In addition, for unconventional oil and gas development, the EIS should map areas where the Monterey Shale and other shale resources exist and analyze where new oil and gas development is reasonably likely to occur.
Lastly, the EIS should evaluate how state and local regulation and controls will be accommodated in federal leasing and development areas. As noted above, the State of California enacted new legislation requiring a scientific study of the effects of well stimulation practices and set up permit requirements for oil and gas production using well stimulation practices. It is important for BLM's EIS to include an evaluation of how state--and especially county and local jurisdiction--requirements will affect and be accommodated in BLM's oil and gas leasing programs.
With regard to addressing "the environmental effects of chemicals, if any, used" in well stimulation (78 Fed.Reg. 47409), the EIS should draw on available information on the chemical composition of well stimulation fluid. The implementation of FracFocus, which WSPA fully supports, has effectively served to provide timely public information about the content of hydraulic fracturing fluid. In addition, S.B. 4 and interim implementing regulations require public disclosure regarding the base fluid and each additive contained in well stimulation fluids used, as well as the total volume of fluid used. 14 Cal. Code Regs. § 1788.
The Bureau of Land Management's environmental impact statement (EIS) must seriously and comprehensively consider all the environmental consequences of oil and gas production in BLM- controlled areas. These consequences include a few I'll discuss in more detail here- climate change, the release of toxic chemicals into the earth and the air, methane discharges from well heads, and the consumption of large amounts of water in drilling operations.
I urge the BLM to manage the oil and gas within its purview by doing everything in its power to make sure the carbon stays safely sequestered in the ground. Do not issue any new oil or gas leases. Close all areas that you can to oil and gas leasing. Where leases have already been granted, impose stringent requirements that (a) prevent toxic contamination now and in the future, (b) prohibit methane releases, and (c) allow only minimal water consumption.
Any benefits from fossil fuel extraction are short-term only. But just one error, or one "compromised" well, can have devastating long-term consequences for the entire region.
It states currently oil and gas production is going on in fields near Coalinga and Jacalitos Valley in the San Joaquin MA, in San Ardo and fields in Salinas MA, and San Benito MA has oil fields in Vallacitos. In addition, HFO manages 45,900 acres of federal oil and gas leases and 80 BLM permitted oil and gas wells. This is more than enough for such destructive extractions. Adverse effects are endangering our health, water and planet.

Table C-2
General Comments Related to Project

If historic accident rates aren't available, the EIS must justify how such activities can be approved without a thorough risk analysis
On behalf of the members of the undersigned organizations, we respectfully request BLM to hold several public hearings before the agency issues its draft Environmental Impact Statement (EIS) on Oil and Gas Leasing on California Public Lands, independent scientific study of fracking statewide and potential amendments to the Hollister Resource Management Plan (RMP).
We request that at a minimum hearings be held in Monterey, Kern County, Los Angeles, Santa Barbara, and the San Francisco Bay Area. These are communities where fracking is already underway or likely to expand or where there is deep concern about the impacts of fracking statewide. We request that the hearings be held at hours and locations convenient to the working public and that Spanish language translation be provided.
Scoping and other key decisions on the EIS and RMP will have a substantial effect on the final assessment on environmental impacts. The public's heightened interest in this issue and the enormous potential effect that oil and gas development will have on the environment and public health mandate that the public be given a full and fair opportunity to provide its input through several public hearings. People throughout California live amongst and neighboring public lands and will be directly affected by any oil and gas development on them.
As your agency is certainly aware, there is a tremendous amount of interest in oil and gas development on public lands. When BLM solicited comments for its rules on hydraulic fracturing ("fracking") earlier this year, over 650,000 people submitted comments in favor of a ban. A sizable portion of those comments were from Californians, who have seen fracking operations expand rapidly over the last few years. These communities, including over 6.7 million people who live in the Hollister District's eight counties alone, will be the ones to bear the burden of impacts of fracking and other oil and gas activity, have a right to have their voices heard on the proper scope of the EIS before BLM commences its study.
Different constituencies will undoubtedly have valuable input on each of these and potentially other topics, and allowing the public to discuss each of these areas of concern will take time. In addition, any amendments to the RMP will also have a long-lasting effect on the manner in which decisions about oil production are made. The public needs ample opportunity to voice their opinions about any changes to the RMP.
The public should also have adequate time to comment on the independent science review that will assess the state of industry practices and the geology of oil and gas basins. Because this study informs the EIS, the public should be part of the process for shaping the scope of the scientific assessment.
The breadth of the EIS scoping issues, the scientific study, and the concurrent consideration of amendments to the Hollister RMP are broad enough in themselves, but BLM also cites the potential to extend the use of the Hollister Office's EIS and RMP as models for the entire state of California, making it quite probably that the Hollister Office's actions will affect the entire state. Due to the breadth, potential impact, and public interest of the scope of the EIS, the BLM should plan for requested public hearings to allow Californians to speak about their concerns regarding oil and gas development.
I urge you to examine the results of fracking in Towanda, PA and Karnes City, TX
please not this article in the Bloomberg Business Week today: http://www.businessweek.com/news/2013-10-02/radiation-in-pennsylvania-creek-seen-as-legacy -of-fracking-waste
A draft of proposed regulations by the California Department of Oil and Gas and Geothermal Resources that was recently receiving public comment contained language requiring notification and before and after water monitoring for adjacent landowners if a well bore was within 1500 feet of a property boundary. Project Indian is slated to expand to 640 acres if pilot studies prove the project feasible. If the oil recovery well bores were kept further than 1500 feet from property lines it is conceivable that thousands of wells could be drilled with no notification or testing at all for adjacent property owners. If oil and gas development were allowed to proceed on BLM lands then notification and before, during and after water monitoring of all contiguous property should be required.

Table C-2
General Comments Related to Project

The BLM should operate under the precautionary principle when it comes to hydraulic fracturing. Hydraulic fracturing should not be utilized as an oil and gas well stimulation technique until: - All impacts have been analyzed and until more studies have been done about the health impacts of the chemicals in the fracturing fluid and drill lubricants - More is known about the likelihood of well casing failure - More is known about the relationship between induced seismicity and wastewater injection, and until - More is known about the potential of fracturing fluid left underground after completion to contaminate groundwater. Currently much of this is unknown and studies are continuing to reveal more and more about the serious and negative impacts of hydraulic fracturing.
It's dangerous and irresponsible to allow fracking to continue on public lands in California while preparing an Environmental Impact Statement and independent analysis of fracking in California.
Perform a diligent 3rd Party Air and Water Test Analysis on the areas of localized Fracking to determine real dangers before giving approval.
Do not life the moratorium on new oil lease sales until the environmental impact studies are completed. There is enough evidence from other fracking problems in other states to require the Precautionary Principle to be used in decision making by the BLM.
We must have both studies completed on the fracking risks before lifting any moratorium on fracking on public lands. And there are pending requests for the Secretary of the Interior to reopen the hastily and erroneously closed investigations in 3 states where fracking has resulted in irreparable damage to the water table and land where it has been done.
The cost is too great and more studies need to be done, at the very least, before/IF these corporations are given permission to frack in California.
Where is the proof that fracking can be done without harming Californians or the climate? Fracking has been implicated in countless health and environmental tragedies all around the country.

Table C-3
Issues Inside Scope – Already Addressed Under Existing Policies, Plans, and Legislation

The de facto moratorium should remain in place. BLM agreed to halt oil and gas leases on federal land, but left unclear whether it would end the moratorium in the future. One of the basic tenets of environmental and public health protection is that we should study and understand the risks before proceeding with an activity. It would be irresponsible to allow any fracking activity before the EIS is complete.

BLM Should Complete the NEPA Analysis in as Timely and Efficient a Manner as Possible in One Year or Less

BLM's decision to prepare an EIS to assess the potential environmental impacts associated with well drilling and completion techniques such as horizontal drilling and hydraulic fracturing is of critical importance for lessees and potential lessees within the Hollister Field Office and beyond. Lessees under existing leases, including those leases at issue in CBD v. BLM, No. 11-6174 (N.D. Cal.) and CBD v. Jewell, No. 13-1749 (N.D. Cal.), may face a de facto moratorium on exploration activities on federal lands within the Hollister Field Office until the EIS is complete. Likewise, prospective lessees in the area overseen by the Hollister Field Office will experience delays as future lease sales are placed on hold until the NEPA process is complete. Moreover, BLM has indicated that it may extend its NEPA analysis to other areas in California. 78

Fed. Reg. at 49,408 (BLM "may also use this process to consider amending RMPs for other field offices in California with oil and gas leasing development (Bakersfield, Palm Springs-South Coast, Mother Lode, and Ukiah Field Offices).") Indeed, BLM's conclusions here, along with any amendments to the 2006 Hollister Field Office RMP ("2006 RMP"), may well inform future BLM decisions for other locations with viable shale reserves.

Given the significant and pressing interests of current lessees in areas overseen by the Hollister Field Office and the significant economic benefits associated with shale oil development, BLM must complete its NEPA analysis without undue delay. At the same time, the potentially broad scope that BLM has suggested for this NEPA analysis demands a review based on sound science that ensures the accuracy of BLM's ultimate conclusions. To achieve these two goals, the Industry Associations urge BLM to comply with the Council on Environmental Quality's ("CEQ's") NEPA regulations by adopting a timely and efficient schedule for completing its NEPA analysis and by taking advantage of existing analyses to narrow the scope of the NEPA review.

A. BLM Should Set a Timely Schedule of No More than One Year to Complete the NEPA Review in an Expeditious Manner

Foremost, consistent with CEQ regulations, BLM should set a schedule to complete this NEPA review promptly. While "[a]ccurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA," 40 C.F.R. § 1500.1(b), the CEQ regulations stress that NEPA reviews must be completed in a timely manner. The regulations repeatedly admonish agencies to avoid delay in the NEPA process. E.g., 40 C.F.R. §§ 1500.5, 1501.1(a), 1502.4(d). In order to complete NEPA reviews in an expeditious manner, CEQ directs agencies to streamline the NEPA process through a variety of means, including coordinating with other agencies, id. § 1501.6; eliminating duplicative work, id. §§ 1502.20 (tiering), 1502.21 (incorporation by reference); deemphasizing insignificant issues, id. § 1500.4(g); and adopting deadlines for the NEPA analysis, id. § 1501.8.

Establishing firm deadlines for NEPA review- including for each constituent part of the review process- is among the most effective tools BLM has at its disposal for avoiding undue delay. CEQ regulations encourage federal agencies "to set time limits appropriate to individual actions (consistent with the time intervals required by [40 C.F.R.] § 1506.10). 40 C.F.R. § 1501.8; see also CEQ, Final Guidance on Improving the Process for Preparing Efficient and Timely Environmental Reviews Under the National Environmental Policy Act, 77 Fed. Reg. 14,473, 14,475 (Mar. 12, 2012) ("Agencies are encouraged to develop meaningful and expeditious timelines for environmental review."). In fact, CEQ directs agencies to consider adopting specific timelines "for each constituent part of the NEPA process." 40 C.F.R. § 1501.8(b)(2). BLM's implementing regulations echo this requirement. See 43 C.F.R. § 46.240(a) ("For each proposed action, on a case-by-case basis, bureaus shall: (1) Set time limits from the start to the finish of the NEPA analysis and documentation, consistent with the requirements of 40 CFR 1501.8 and other legal obligations . . . .").

In light of these regulatory requirements, the Industry Associations request that BLM establish, as part of the scoping process, a specific and enforceable schedule for the completion of its EIS for the Hollister Field Office. The Industry Associations believe that adopting a 12-month deadline for completing the EIS is both sufficient and consistent with BLM's NEPA obligations and appropriately values the goals of accuracy and prompt resolution of NEPA analyses. Further, a 12-month deadline is consistent with CEQ's own guidance that "under the new NEPA regulations, even large complex energy projects would require only about 12 months for the completion of the entire EIS process." CEQ, Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, Question 35 ("CEQ FAQ"). A 12-month deadline is also supported by the

Table C-3
Issues Inside Scope – Already Addressed Under Existing Policies, Plans, and Legislation

intended scope of BLM's proposed EIS, which will inform the very narrow question of whether the Hollister RMP should be amended. See 78 Fed. Reg. at 47,408.
Second, BLM should follow the authority the Congress delegated to EPA and the State of California under the Clean Air Act. While certain air emissions are associated with well development and completion, those emissions should not be addressed through BLM lease conditions. Instead, such emissions should be addressed through any applicable Clean Air Act permits administrated by the state of California subject to EPA oversight. EPA is fully aware of air emission issues associated with hydraulic fracturing that may fall within the Clean Air Act's regulatory jurisdiction. Air emission issues can be addressed through existing and generally applicable permitting requirements, as well as any EPA air emission regulations that are specifically applicable to such emissions. See 77 Fed. Reg. 49,490 (Aug. 16, 2012). The NEPA process should not be a mechanism to supersede the permitting decisions and regulatory authority and expertise of the agencies charged with issuing regulations and permits under the Clean Air Act to ensure that air emissions do not endanger public health and the environment.
BLM announced in its Notice of Intent that the NEPA review is "the first phase of a process that may lead to the amendment of the Hollister RMP (2006)." 78 Fed. Reg. 47,409. As CEQ explains in its NEPA regulations, "NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken." 40 C.F.R. § 1500.1(b). Consistent with this purpose, BLM must avoid prejudging whether any amendments to the 2006 RMP are necessary. While it is important for BLM to consider the potential effects that advances in horizontal drilling and hydraulic fracturing may have on the scope and pace of oil and gas development in the Monterey Shale and in the area overseen by the Hollister Field Office specifically, this does not mean that amendment of the 2006 RMP is a fait accompli. For example, even if the reasonably foreseeable well development scenario is increased, BLM could conclude at the end of its NEPA review that the results of recent studies- as well as the changes taking place as a result of new BLM and California regulations- suggest that no additional conditions or safeguards are needed as part of the RMP. Rather than prejudging that more oil and gas development requires additional regulatory oversight (or even that more oil and gas development will occur), BLM must await the completion of the EIS in order to make an informed decision on whether amendments are necessary.
The BLM recognizes the need to update current rules regarding O&G development on public lands, due to increased concern over the use of alternative well stimulation techniques, such as fracking and acidizing, and their impacts on public health and the environment. The EIS will reflect public comments and additional information not found in current regulations - resulting in new analyses of impacts and proposed mitigation measures. Because of this, no new wells should be allowed in California's public lands until a Final Environmental Impact Study (FEIS) is completed.
The EIS for which the Hollister BLM office is now conducting scoping will specify which areas of federal public lands are opened or closed to oil and gas leasing and it will also prepare a list of stipulations to be applied to future leases to protect natural resources. If the Resource Management Plan prepared for the Hollister District is applied to other BLM management areas, then this needs to be made clear and specific well in advance of the release of any EIS documents or related research reports
The EIS must accurately assess the impacts predictable if a large oil "play" begins and financial and political pressure mounts upon your agency to lease ever---larger areas of land. The decisions of whether to sell hydraulic fracturing leases at all, and if so, where and how to permit any unconventional oil and gas extraction (fracking) on public BLM lands and mineral estate in California is a major determination that requires your agency to conduct a thorough and honest assessment of a full range of environmental impacts. The Sierra Club is particularly interested in how areas might be selected as suitable for oil and gas leasing, why and based upon what principles such determinations will be made, and if the information used to make these decision is consistent with the fundamental issues defined by NEPA.
The purposes of the National Environmental Policy Act are as follows: (1) Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations; (2) Assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings; (3) Attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;

Table C-3
Issues Inside Scope – Already Addressed Under Existing Policies, Plans, and Legislation

(4) Preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice; (5) Achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and (6) Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources. The objectives of a NEPA scoping process are to: (1) Identify potentially interested parties; (2) Identify public and agency concerns (3) Define the range of issues that will be examined in the plan (4) Ensure that relevant issues are identified early and drive the analysis; and (5) Establish a public record. The full public record must be made readily available on a website and that web address must be easily available to the public. All reasonable alternatives to oil and gas leasing must be evaluated objectively. These alternatives must receive the full attention of BLM in detail.
The comparison between differing alternatives must, at minimum assess: (1) Direct effects and their significance; (2) Indirect effects and their significance; (3) Possible conflicts between the proposed action and the objectives of Federal, regional, State, and local (and in the case of a reservation, Indian tribe) land use plans, policies and controls for the area concerned; (4) The environmental effects of alternatives including the proposed action; (5) Energy requirements and conservation potential of various alternatives and mitigation measures; (6) Natural or depletable resource requirements and conservation potential of various alternatives and mitigation measures; (7) Urban quality, historic and cultural resources, and the design of the built environment, including the reuse and conservation potential of various alternatives and mitigation measures; (8) Means to mitigate adverse environmental impacts.
As described in the NOI, the proposed Environmental Impact Statement ("EIS") is unusual, in that it is not related to a proposed Resource Management Plan ("RMP"), lease sale or permit to drill, or to any other presently proposed "major federal action" subject to review under the National Environmental Policy Act ("NEPA"). The NOI states that it represents the first phase of a "planning process" that may lead to the subsequent amendment of the 2006 Resource Management Plan ("RMP") and, potentially, to amendment of other RMPs. However, no proposed RMP amendment is referenced in the NOI.

Table C-4
Issues Outside of Scope – Resolved through Policy

Develop a construction traffic and parking management plan that maintains traffic flow and plan construction to minimize vehicle trips.
A critical component of the scoping process is distinguishing between those impacts that are significant and those which are insignificant. See CEQ Guidance, 77 Fed. Reg. at 14,477 ("The scoping process provides a transparent way to identify significant environmental issues and to deemphasize insignificant issues, thereby focusing on the most pertinent issues and impacts."). Once the scoping process is complete, "NEPA documents must concentrate on the issues that are truly significant to the action in question. . . ." 40 C.F.R. § 1500.4. To the extent that it determines that supplemental analyses are required for any of the issues identified in the Notice of Intent, BLM should ensure that it limits its analysis to significant issues, in part by avoiding consideration of issues that are subject to the expertise and regulatory oversight of other agencies. Extensive analysis of such issues would prove counterproductive as BLM's resources would be spent on issues that are beyond its regulatory authority. Instead, BLM should support the technical and policy decisions of other expert agencies to the extent that their areas of expertise arise in the NEPA process. First, BLM should exercise caution as it considers "the environmental effects of chemicals, if any, used." 78 Fed. Reg. at 47,409. The Industry Associations understand that the content of hydraulic fracturing fluid is an issue of interest for regulators and stakeholders, and have supported the development and use of FracFocus as a way to communicate information about the content of fracturing fluid to the public. Many states already require some form of post-treatment disclosure of additives used in fracturing fluids- some through FracFocus- although valid trade secrets are typically exempted. In California, S.B. 4, which was signed by Governor Brown on September 20, 2013, requires DOGGR to develop disclosure regulations by January 15, 2015. See Cal. Pub. Res. Code § 3160(a)(7)(2). BLM's proposed hydraulic regulations would also require such post-treatment disclosure. See 78 Fed. Reg. at 31,677. In light of the agency's position regarding disclosure, there is nothing left for the EIS to consider.
Last, BLM should also refrain from duplicative and unnecessary reviews of surface and groundwater withdrawals and water quality, as these issues are regulated and permitted by other expert state and federal agencies, including the EPA. BLM's analyses should, at most, rely on and incorporate those agencies' prior guidance and information, and BLM should refrain from proposing additional limitations, mitigation, or restrictions on water resources. Likewise, BLM should refrain from unwarranted analysis of impacts to threatened and endangered species for which legal responsibility lies with other expert agencies.
The Department is currently processing a project-level Environmental Impact Report (EIR) in conjunction with an amendment to Chapter 19.98 (Gas and Oil Production) of the Zoning Ordinance. The EIR will cover all oilfield activities and result in development standards and mitigation measures on oil exploration and projection activities. The final EIR may also be used by the Department of Oil, Gas, and Geothermal Resources (DOGGR) in their permitting. The final local permit will remain ministerial and there will be no Conditional Use Permit or public hearings required for normal oil and gas activities. The project's Notice of Preparation is anticipated to circulate in late August 2013 and the draft EIR is projected to circulate in the spring of 2014. Please be advised that BLM will be provided the opportunity to comment on the Department's Oil and Gas Amendment NOP and EIR once completed and circulating for agency/public comment.
In addition to completing an EIS for the Hollister Field Office, BLM announced that it is "concurrently initiating a separate peer-reviewed interdisciplinary assessment of the current state of industry practices for well completion and stimulation in California." 78 Fed. Reg. at 47,409. The study is wholly unnecessary as BLM has already conducted a thorough assessment of industry practices related to hydraulic fracturing in association with its proposed rulemaking and other NEPA analyses. Further, such a study is now going to be undertaken by the State of California, and another study would add unnecessary delay and is contrary to BLM's duty under the MMPA to promote the development of shale oil resources. See 30 USC. §21a. The Industry Associations strongly urge EPA to reconsider its decision to initiate a separate, peer-reviewed study of hydraulic fracturing concurrently with its NEPA analysis. First, an "assessment of well completion and stimulation practices" is wholly unnecessary and excessively broad. BLM has been actively engaged in assessing hydraulic fracturing for some time, and an additional peer-reviewed analysis would be redundant and wasteful. BLM recently addressed the same issues related to horizontal drilling and hydraulic fracturing in association with its proposed rulemaking for hydraulic fracturing on federal lands. In addition, it has completed at least four other NEPA analyses related to hydraulic fracturing over the past several years. These studies have provided BLM with a robust understanding of current industry practices for horizontal drilling and hydraulic fracturing. Additional analysis would waste time and resources, and go far beyond the court's narrow holding in CBD v. BLM.

Table C-4
Issues Outside of Scope – Resolved through Policy

Moreover, there is no need for additional peer review of BLM's analysis. Each of BLM's analyses to date has been subject to intensive review during the public comment period. BLM received so many detailed and constructive comments in response to its initial rulemaking proposal for hydraulic fracturing that the Bureau withdrew the proposed rule and, after incorporating information from the public comment period, issued a second proposal earlier this year. Likewise, BLM's analyses with respect to this NEPA review will again be subject to notice and comment, where the public will have every opportunity to submit comments and data on the content of BLM's EIS. Further, as described above, extensive studies addressing the potential environmental impacts of hydraulic fracturing have already been completed and the Bureau is more than capable of assessing these studies without the assistance of an outside panel.
The Industry Associations are also aware that the State of California, pursuant to the recently enacted S.B. 4, will conduct "an independent scientific study on well stimulation treatments, including ..hydraulic fracturing treatments." S.B. 4, signed into law on September 20, nearly two months after BLM published its Notice of Intent, provides yetanother reason why BLM should conduct a limited environmental review and should not proceed with an additional study of hydraulic fracturing. It is hard to gauge what environmental or public health benefits, if any, could accrue on the basis of nearly simultaneous, surely overlapping and duplicative, and potentially conflicting or contradictory studies of the same well stimulation technique in the same geological formations. If anything, BLM should collaborate with the State of California to provide their insight and experiences in overseeing hydraulic fracturing on federal lands for decades, not launch yet another federal inquiry into an activity with a long safety record confirmed by recent Department of Interior ("DOI") research and former and current DOI and BLM officials.
Finally, concurrently conducting a peer reviewed, independent assessment of horizontal drilling and hydraulic fracturing has the potential to dramatically delay BLM's NEPA analysis. As described above, consistent with direction from CEQ, BLM should make every effort to complete its NEPA analysis within one year. However, that will be extremely difficult if BLM must wait in order to allow this assessment to inform its views. Given the amount of time it will take for an advisory body to complete an assessment and seek peer review, it will be virtually impossible for the study to be completed in time for BLM to meet a one-year deadline after considering the outcome of the assessment. Alternatively, if BLM completes its NEPA analysis without waiting for the results of the peer-reviewed assessment, that assessment would be rendered moot. Thus, to avoid unnecessary delay in the NEPA analysis, BLM should withdraw its plan to initiate a separate assessment of horizontal drilling and hydraulic fracturing.
As BLM completes its NEPA review for the Hollister Field Office, the Industry Associations urge the Bureau to remain mindful of the limited scope and impact of its decision-making process while the EIS is ongoing. The NEPA process is intended to produce informed decision making and, therefore, must necessarily precede any decisions that alter the status quo in the interim. Specifically, BLM must defer any decision with respect to the 2006 RMP until after the NEPA process is complete. However, to the extent that BLM chooses to reconsider resource goals and objective planning criteria for the development of oil and gas resources, we urge the Bureau to consider expanding those goals and criteria to encourage oil and gas development in the Monterey Shale.
BLM's science review will be led by the California Council on Science and Technology ("CCST"), which BLM claims is an independent third party. BLM should make public and available for comment its assessment of CCST's ability to act as an independent third party. If it did not conduct such an assessment, it should do so immediately. The group chosen to lead the science review must include individuals with extensive knowledge not only of the science and business aspects of oil and gas extraction, but also with a background in ground and surface water quality, air quality, fish and wildlife habitat, and human health and safety. However, those with a current financial stake in companies involved in fracking cannot possibly be considered objective participants in such a study. CCST's members include Patrick Lee, a senior vice president at Southern California Gas Company, a subsidiary of Sempra Energy. Both companies have substantial economic interests in energy development. Mr. Lee is responsible for customer service at Southern California Gas Company, "as well as strategic planning and development of new businesses and technologies." If Mr. Lee cannot or will not recuse himself from participation in the science review, BLM should seek a different organization that is free from economic conflicts of interest to lead the review.
In addition, BLM must address conflict-of- interest issues involved in having CCST lead its science review. Finally, the planning process should reflect the fact that increasing oil and gas extraction is not in the public interest, and that the focus should be redirected toward reducing demand and developing renewable energy alternatives.

Table C-4
Issues Outside of Scope – Resolved through Policy

The BLM's public lands moratorium is especially important, since Governor Brown recently signed SB 4, the dangerous and misguided bill that green-lights massively expanded fracking in California. We need our local governments and the federal government to step in and protect us from fracking.

Table C-5
Scope of the EIS

It is paramount that BLM fully assess each stage of the lifecycle of unconventional oil and gas development, from drilling to the end use of extracted oil and gas. Ignoring any stage would result in an incomplete understanding of the harms.
The EIS and Statewide Study Should Examine All Methods of Unconventional Resource Extraction. The EIS should encompass all methods of unconventional oil and gas extraction and production. Although hydraulic fracturing has been the primary focus of the litigation prompting this review and has garnered the most attention from the public, well stimulation and underground injection techniques can vary widely. Examples include acidization, acid hydraulic fracturing, and gravel packing. Each of these techniques raises a unique yet dangerous set of concerns and potential impacts on human health, safety, and the environment. The EIS and Statewide Study must address all types of unconventional oil and gas recovery that may be utilized in California.
The EIS and Statewide Study Must Examine All Aspects of Unconventional Resource Extraction BLM must analyze the whole of these actions, tracking the complete impacts of the complete lifecycle of activity. Unconventional oil and gas extraction techniques do not occur in a vacuum, but rather along with all other aspects of oil and gas exploration and development. Moreover, unconventional oil and gas extraction techniques lead to exploration and development in new and previously undeveloped areas. It would make no sense- and be in violation of NEPA- to analyze hydraulic fracturing and other unconventional techniques apart from all other aspects of the exploration and development process. An increase in the use of unconventional techniques increases the types of risks and their severity associated with oil and gas development while simultaneously introducing those risks to new areas where previously such activity was considered infeasible or uneconomical.
BLM must analyze not only the well completion or stimulation, but also the various preceding, concurrent, and subsequent activities that surround oil and gas extraction. Oil and gas leases affect the environment not only through the well stimulation and recovery processes, but also through related activities needed to drill, construct, operate, maintain, monitor, and shut down each well. Each stage of the oil and gas extraction and recovery process carries its own set of public health, safety, and environmental concerns.
The EIS and Statewide Study should cover not only the particular method of extraction, but all aspects of exploration and development, including but not limited to: drilling rig mobilization, site preparation, and demobilization; completion rig mobilization and demobilization; well drilling; well completion; and well production. Equipment cleaning, maintenance, and repair also become necessary and necessitate additional chemical use and expand the risks from exposure.
Under current practices in California, some flowback fluid is stored in open pits near the well pad. The EIS and Statewide Study must review the risks posed by these pits, which can contaminate the soil, pollute nearby surface water through breaches and spills, and pollute the air through evaporation. Liners are known to tear, and spills and evaporation occur even when the lining remains intact. Both can kill wildlife that is exposed to the pits' toxic contents.
In addition, the EIS and Statewide Study should assess the impact of refining and burning the newly accessible supply of oil and gas. Allowing unconventional oil and gas recovery would increase need for refineries as well as the total amount of oil and gas available for consumption. The US Energy Information Administration ("EIA") estimates that the Monterey Shale contains over 15 billion gallons of oil. End-users who burn this oil will be polluting the air with many different air pollutants, not the least of which is carbon dioxide, the leading contributor to global warming. The EIS and Statewide Study will be incomplete without assessing the effects of harmful air emissions from burning the fuel that would otherwise remain underground. In particular, the amount of carbon dioxide emitted as a result of oil and gas produced through unconventional extraction methods will lead us further toward irreversible and catastrophic climate change. Oil and gas extraction also emits a substantial amount of methane, a powerful greenhouse gas that will contribute significantly to the climate warming footprint of oil and gas activity.
In short, the entire lifecycle of oil and gas development and consumption must be included in the EIS and Statewide Study. And because unconventional techniques open new lands and federal minerals up to production, each of these harms may extend far beyond the state's current inventory of oil and gas development sites. BLM must assess the full impact of these environmental harms in which development expands to public land that previously could not be considered for production.

Table C-5
Scope of the EIS

The EIS and Statewide Study Should Analyze All Chemicals Used in Oil and Gas Production
Congress charged BLM with managing public lands "in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values." BLM will not be able to adequately assess the environmental impacts of unconventional oil and gas recovery and fulfill these duties without full knowledge of the chemicals used in the process. To date, operators have been unwilling to disclose a full list of chemicals used in new techniques that involve injection of toxic chemicals underground. While some chemical ingredients are known through Material Safety Data Sheets and other sources, many are withheld from public disclosure under claims of trade secret protection. But BLM is not precluded from requiring the submission of such information. In fact, BLM is required to gather and disclose chemical information under the statutory mandates in NEPA, Federal Land Policy and Management Act, 42 USC. § 1701 et seq. ("FLPMA"), and other applicable law.
The federal Trade Secrets Act, which BLM has interpreted as a restriction on disclosing chemical information to the public in the context of BLM's proposed rules for hydraulic fracturing, does not in fact place such restrictions on an agency. BLM has the authority to create regulations that permit disclosure of information even for information that would otherwise be considered a trade secret. Given BLM's statutory duties to fully disclose the environmental damages from its actions, as well as to prevent unnecessary and undue degradation of public lands, the collection and disclosure of crucial information is well within the contemplation of the grant of legislative authority under the FLMPA. Thus, BLM has the obligation to collect such information and make it publicly available.
The EIS and Statewide Study should examine the chemicals that are being injected underground as well as the chemicals that flow back to the surface. Full information on all substances that flow back up to the surface will allow BLM to identify harms particular to flowback fluid. Flowback fluid is comprised of a different mixture of chemicals because some naturally occurring, yet dangerous, chemicals that were previously contained in the subsurface will rise to the surface. These include heavy metals, salts, and naturally occurring radioactive materials ("NORMs"). Conversely, some chemicals may be more likely to remain underground and pose threats to underground water supplies and increase the risk of induced seismic activity. It is important to understand how different chemicals travel and mix throughout the extraction process in order to adequately identify particular risks
New technology and techniques rely heavily on harmful chemicals to achieve high rates of production. The chemicals serve a variety of purposes during the process, and BLM should assess all of the chemicals used for each purpose. Well stimulation alone uses chemicals for a variety of functions, such as: dissolving acids, biocides, breakers, clay stabilizers, corrosion inhibitors, crosslinkers, foamers and defoamers, friction reducers, gellants, pH controllers, proppants, scale controllers, and surfactants.
In addition to well stimulation process, chemicals are also used in other stages of oil and gas production. For example, a study found 22 chemicals used in the drilling process in Colorado gas development fields. Chemical dispersants might also be used in the event of a spill or other accident. These dispersants may be just as harmful as the spill itself. Another example is the discovery of methylene chloride being used as a cleaning solvent for equipment. This chemical was found in 73 percent of air samples in one study, but methylene chloride was not reported on any list of disclosed chemicals, despite its toxicity. The discovery of an undisclosed, harmful, and pervasive chemical underscores the need for BLM to conduct its own monitoring and measuring and not simply relying on reports from operators. Meaningful monitoring is made impossible when compounds used are unknown. Furthermore, contaminants cannot be traced back to their source if operators do not disclose which chemicals they use. Thus, anything short of full disclosure with regard to chemical information will violate NEPA and other applicable law while endangering public health and safety.
As for chemicals known to have been used in hydraulic fracturing, the list is as long as it is dangerous. A study of gas production in Colorado yielded 632 chemicals used in 944 different products. Of these chemicals, 75 percent have been shown to cause harm to the skin, eyes, and other sensory organs; 37 percent could affect the endocrine system; and 25 percent could cause cancer and mutations. Recent disclosure requirements adopted by the South Coast Air Quality Management District ("SCAQMD") in California revealed that operators engaged in unconventional oil and gas extraction in southern California, in just 30 days of reporting, used dozens of chemicals known to be air toxics over hundreds of occasions. BLM cannot complete an EIS or Statewide Study without understanding and documenting the full extent of the harms from each and every chemical used in the oil and gas extraction process. This applies to both known and currently unknown chemicals. It is thus important for BLM and the public to know the full array of chemicals used in the extraction process.

Table C-5
Scope of the EIS

In short, knowing the exact identities, quantities, concentrations, and migration paths of all chemicals will help BLM determine the scope and extent of risks to human health, safety and the environment. Incomplete knowledge in these areas will result in an inadequate EIS and Statewide Study.
The EIS and Statewide Study should incorporate BLM's own literature review of the harmful effects of each of these chemicals known to be used in hydraulic fracturing and other unconventional oil and gas extraction methods. Without knowing the effects of each chemical, an EIS or Statewide Study cannot accurately project the true impact of unconventional oil and gas extraction on public lands.
Given the possible expansion of the use of hydraulic fracturing in California- most notably to the lands that overlay the Monterey Shale formation - the EPA strongly supports the BLM's decision to prepare an EIS that analyzes the effects of hydraulic fracturing and other oil and gas drilling activities in the area administered by the Hollister Field Office. The scope of subjects that EPA recommends be included in the DEIS is described in the enclosed detailed comments. Topics include air quality, water resources, climate change, vegetation and wildlife, cumulative impacts, environmental justice, tribal consultation, public health and safety and induced seismicity. We also recommend that the DEIS discuss the connection between the Hollister Field Office analysis of hydraulic fracturing and the BLM statewide study announced in a federal court filing on September 16th, 2013.
The oil and gas sector has utilized hydraulic fracturing in California for decades. It's possible expansion, however, especially to the lands that overlay the potentially rich oil reserves of the Monterey Shale formation, present a management challenge, to both state and federal regulators, to proactively plan for this possible boom. The EPA recommended - in comment letters submitted in 2011 for Draft EISs developed for the Bakersfield and South Coast resource management plans - that the BLM prepare for this possible expansion by assessing the scope of, and potential impacts associated with, hydraulic fracturing activities in the Monterey Shale region. We are pleased to see that an analysis will be conducted of the use ofhydraulic fracturing in oil and gas operations within the Hollister Field Office. We are aware that the BLM is also undertaking a statewide study ofhydraulic fracturing in California, which was announced in a federal court filing on September 16, 2013, and that the State is conducting an assessment pursuant to California's well stimulation permitting law, SB 4. Recommendations: - The Hollister Field Office should coordinate with the teams that will prepare the statewide hydraulic fracturing assessments, for both the BLM and State of California, to inform the analysis and alternatives developed for the Hollister DEIS. - The DEIS should describe the connection between the Hollister Field Office analysis of hydraulic fracturing and the BLM statewide study.
A general evaluation of the geographic scope of the impact area and identification of minority, low-income, and tribal communities within that scope.
We request that a Scoping Report be circulated at a later date with a request for additional public comments, OR that BLM revise and recirculate the entire NOI for further comments. General Comments include: Project Description must include all Oil and Gas (O&G) Exploration and Production (E&P) Facilities and Operations within any BLM Areas; RMP - Prepare a Progammatic RMP for California/Statewide O&G-E&P facilities and operations in any BLM areas, with detailed tiered-RMP for the Hollister Area; EIS - Prepare a Progammatic EIS for California/Statewide E&P RMP(s) with detailed tiered-EIS for the BLM Hollister Area RMP; "Studies" - Provide all supporting efforts and documents and include in appendices for RMP and EIS and in searchable web-accessible documents; "Terms" - Provide section of Definitions, Glossary, and Acronyms to be consistently and comprehensively applied throughout all documents, for example "development" for BLM-RMP is different from E&P "development" and O&G refers to an industrial sector including refining and retailing which I don't believe are covered in the BLM definition of O&G;

Table C-5
Scope of the EIS

Inter-/Intra-Agency Coordination - A statewide workshop(s) to establish a regulatory program.
First, BLM must ensure that the EIS is conducted in an efficient and timely manner. Oil development in the Monterey shale offers significant economic and energy security benefits that will be facilitated if BLM establishes a schedule to complete its EIS in the next twelve months and appropriately limits its analysis to the specific concerns over horizontal drilling and hydraulic fracturing that the court identified in the recent NEPA challenges.
Second, BLM should streamline its NEPA analysis to the fullest extent possible. BLM can do that by relying on existing BLM NEPA analyses covering the same issues, by avoiding consideration of issues subject to regulation by other agencies, by incorporating existing studies and guidelines from third parties, and by considering the effects of other ongoing regulatory processes that will affect the scope of oil and gas development in the Hollister Field Office.
Third, BLM should reconsider its proposal to initiate an independent, peer-reviewed assessment of horizontal drilling and hydraulic fracturing. Ample efforts in this area have been undertaken and are being conducted by multiple agencies and academic institutions across the United States. A further peer reviewed study would merely result in undue duplication of effort.
Fourth, BLM should not reopen broad policy issues related to the resource goals and objective planning criteria that were adopted for the Hollister Resource Management Plan ("RMP") in 2006. Instead, BLM should build upon the RMP and not redo the analysis completed there.
BLM Should Use the Scoping Process to Narrow the Issues under Consideration and Avoid Reopening Issues that Were Resolved in the 2006 RMP Establishing the appropriate scope for an EIS is a critical aspect of the NEPA process and, when used effectively, can focus and streamline an agency's analysis. See CEQ Guidance, 77 Fed. Reg. at 14,477 ("The scoping process provides a transparent way to identify significant environmental issues and to deemphasize insignificant issues, thereby focusing on the most pertinent issues and impacts."). While it is important for the agency to use the scoping process to identify significant issues, the identification and elimination of extraneous issues is just as critical to ensuring an efficient and expedient NEPA review. An important part of this scoping process is to identify environmental impacts that have already been addressed in prior NEPA analyses and, therefore, need not be revisited. See 40 C.F.R. §1501.7 (As part of the scoping process, an agency must "[i]dentify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (§ 1506.3), narrowing the discussion of these issues in the statement to a brief presentation of why they will not have a significant effect or providing a reference to their coverage elsewhere." (emphasis added)). Here, the primary question that BLM must answer is whether "various current or reasonably foreseeable well completion and stimulation practices, including hydraulic fracturing and the use of horizontal drilling" may require an amendment to the 2006 Hollister RMP or to the reasonably foreseeable development scenario for lands overseen by the Hollister Field Office. 78 Fed. Reg. at 47,408. This is the only question that arose out of the court's order on liability in CBD v. BLM, Case No. 11-6174 (Mar. 31, 2013 N.D. Cal.), and the scope of the EIS should be limited to the NEPA deficiencies identified by the court. In that decision, the court focused on the reasonably foreseeable well development scenario included in the 2006 RMP, finding that the RMP failed to account for the recent expansion of hydraulic fracturing in combination with horizontal drilling. CBD v. BLM, slip op. at 21-24. As a result, the Court found that BLM failed to adequately assess three of the so-called "intensity factors" that an agency is required to address under NEPA. Id. at 24-28; see also 40 C.F.R. § 1508.27 (listing the eight intensity factors). While the Environmental Assessment ("EA") conducted by BLM for the lease sale tiered from the 2006 RMP and relied heavily on its environmental analysis, the Court did not question any other aspect of the 2006 RMP. In light of the court's narrow holding in CBD v. BLM, the Industry Associations urge BLM to adopt an equally narrow scope for its NEPA analysis by focusing on the ways in which the combination of hydraulic fracturing and horizontal drilling since 2006 have altered the reasonably foreseeable well development scenario for the Hollister Field Office, along with any potential associated environmental impact. BLM should resist any suggestion to reopen and consider amendments to any additional portions of the 2006 RPM that were not called into question by the court's decision. In the absence of any indication that an issue would be called into question by a change in the reasonably foreseeable well development scenario, BLM should simply note in the EIS that these issues were covered by BLM's prior environmental review of the Hollister Field Office in conjunction with the 2006 RMP and will not be reopened.
In the Notice of Intent, BLM requests comment on a preliminary list of issues that includes "surface water, groundwater, and air quality; greenhouse gases and climate change; the environmental effects of chemicals, if any, used; the potential for induced seismicity; endangered and threatened species; public health and safety; and socioeconomics." 78

Table C-5
Scope of the EIS

Fed. Reg. at 47,409. This list is unnecessarily expansive, and an entirely independent evaluation of each issue would take a significant amount of time and strain the Bureau's resources. Instead, in accordance with CEQ and BLM regulations and guidance, we urge BLM to narrow the scope of the EIS by tiering to, incorporating by reference, or otherwise relying on existing BLM analyses, industry guidelines, and state and federal regulations that have already- and thoroughly- addressed the issues that BLM is contemplating here. In addition, we urge BLM to rely to the fullest extent on existing scientific literature that has addressed these issues. Reliance on existing analyses and documents provides an invaluable tool for streamlining the NEPA process. See 40 C.F.R. §§ 1502.20 (tiering); 1502.21 (incorporation by reference). CEQ guidance recognizes that "[s]coping, incorporation by reference, and integration of other environmental analyses are additional methods that may be used to avoid redundant or repetitive discussion of issues." CEQ Guidance, 77 Fed. Reg. at 14,476; see also id. at 14,476 ("NEPA reviews should coordinate and take appropriate advantage of existing documents and studies, including through adoption and incorporation by reference."). Likewise, BLM's implementing regulations require the agency to use these techniques to narrow the scope of EISs. 43 C.F.R. § 405 ("To the extent possible, bureaus should use techniques such as incorporation of referenced documents into the NEPA analysis (46.135) and tiering (46.140) in an effort to remain within the pages limits stated in 40 CFR 1502.7."). The amount of available information related to hydraulic fracturing and horizontal drilling is expanding rapidly, and there is ample opportunity for BLM to rely on and incorporate this information to narrow and streamline the NEPA process.
BLM regulations and guidelines recognize that existing NEPA analyses are often the best resources for streamlining NEPA reviews and direct responsible officials to "make the best use of existing NEPA documents by supplementing, tiering to, incorporating by reference, or adopting previous NEPA environmental analyses to avoid redundancy and unnecessary paperwork." 43 C.F.R.§ 46.120(d); see also BLM, Environmental Quality Programs, 516 DM 11.4.A, 11.6. Here BLM should rely on the existing 2006 RMP and existing EPA analyses of horizontal drilling and hydraulic fracturing that the Bureau has completed in recent years. Through these analyses, BLM has already assessed potential environmental impacts associated with horizontal drilling and hydraulic fracturing which will be equally applicable to its consideration of these activities in the Hollister Field Office and in the Monterey Shale generally. First, BLM should rely to the greatest extent possible on the existing 2006 RMP for the Hollister Field Office.5 This RMP, in coordination with the Memorandum of Understanding ("MOU") between BLM and the California Department of Conservation Division of Oil, Gas, and Geothermal Resources ("DOGGR"), has provided a workable means of managing and promoting oil and gas development on federal lands in California in accordance with the MMPA and BLM's multiple use mandate. BLM should continue to rely on these documents, which assess the environmental impacts associated with oil and gas development in California and provide necessary safeguards to ensure responsible oil and gas development, to the fullest extent possible. Very few of the analyses or conclusions in these documents have been affected in any material way by advances or changes in hydraulic fracturing and horizontal drilling. Thus, aside from any changes or analyses that are compelled by the court's decision in CBD v. BLM, BLM should incorporate by reference the NEPA analyses that accompanied the RMP. In addition to streamlining the NEPA process, this will promote the continued cooperation with DOGGR by avoiding unnecessary conflict with the MOU that BLM has already negotiated based on the existing RMPs.
Second, for specific issues related to hydraulic fracturing and horizontal drilling, BLM should look first to existing NEPA analyses that the agency has conducted. For example, BLM recently conducted an Environmental Assessment in connection with its proposed hydraulic fracturing regulations. That analysis addresses many of the same issues that BLM intends to review here. In addition, BLM has recently conducted EISs for a number of projects involving hydraulic fracturing and horizontal drilling, including the Pinedale Anticline Oil and Gas Exploration and Development Project in Wyoming, the West Tavaputs Plateau Project in Utah, the Gasco Energy Inc. Uinta Basin Natural Gas Development Project in Utah, and the Greater Natural Buttes Project in Utah. In particular, the Gasco Energy FEIS provides a detailed analysis of "Potential Impacts from Hydraulic Fracturing" which BLM could incorporate by reference into its EIS for the Hollister Field Office. See Gasco Final EIS at 4-340. Thus, while BLM may need to address some exclusively local issues in this EIS, the Bureau's experience with hydraulic fracturing should encourage reliance on existing NEPA analyses to addressalmost all of the issues identified in the Notice of Intent. Such reliance would also assure consistency in the agency's management of oil and gas operations across administrative regions.
In the event that BLM decides- now or after the EIS is complete- to amend the 2006 RMP, it should adhere to its current plan to "retain the existing condition goals and objectives in the Hollister RMP." 78 Fed. Reg. at 47,409. This existing goal for energy development in the RMP "balances the resource conservation and ecosystem health with the production of commodities and with public use of the land." Draft RMO 2-1 (Alternative C). According to the RMP, this would "provide opportunities to produce commodities from natural resources and to use the land for public purposes on a sustainable basis while maintaining key ecological, visual, and recreational values." Id. BLM

Table C-5
Scope of the EIS

should not reopen these core goals and objectives to debate.

Indeed, nothing in the court's decision in CBD v. BLM calls into question the 2006 RMP's resource goals and objectives. Rather than questioning BLM's broad policy goals and objectives, the court's decision focused on specific factual deficiencies regarding the number of oil exploration and development wells that BLM projected would be completed on the leased lands. This deficiency can be remedied in a simple, straightforward manner without implicating the broader policies at issue in the resource objectives and goals. Thus, reopening this issue would add needless complexity to BLM's task-particularly if it occurs as a part of the EIS process.

BLM's announcement describes the planning process as addressing oil and gas development on public lands and the federal mineral estate in the Hollister Field Office. BLM should enlarge the scope of its planning process to ensure that it studies all lands - both public and private- where wells may be fracked in California, and revises all relevant RMPs to address the cumulative effects of this activity. Fracking takes place throughout California - not only on lands within the Hollister Field Office's jurisdiction. For example, the website Fracfocus.com, which only includes voluntarily reported fracking operations, shows that wells have been fracked in many areas beyond the Hollister Field Office's jurisdiction, such as Kern, Los Angeles, Colusa, Sutter, Ventura, Glenn, and Kings counties. While much of the discussion about fracking has focused on the Monterey Shale, this voluntary reporting shows that fracking is happening throughout California. For example, Glenn, Colusa, and Sutter counties are situated more than 100 miles north of the Monterey Shale formation.

BLM's announcement indicates that the agency "may also use this process to consider amending RMPs for other field offices in California with oil and gas leasing and development (Bakersfield, Palm Springs-South Coast, Mother Lode, and Ukiah)." BLM should include those four areas in its planning process. In addition, since fracking technology continues to evolve, areas with oil and gas deposits that do not seem promising now may become more attractive for fracking development in the future. Therefore, the planning process should be statewide. That process should address as well the fact that fracking contributes to global warming and consequently is not in the public interest as discussed in section E below.

The planning process and science assessment are a first step toward addressing the impacts offracking in California. However, the scope of the planning process must be enlarged to address all lands potentially vulnerable to fracking, and the RFD scenarios must be updated to reflect the current state offracking technology.

All geographic areas that could be negatively impacted by proposed activities. If the EIS cannot address the entire geographic area potentially affected by the proposed activities those activities should not be allowed.

We believe that the geographic scope of the proposed Hollister Field Office Environmental Impact Statement (EIS) is too narrow. In the Hollister notice, BLM implicitly acknowledges the need to examine the effects of oil and gas leasing more broadly: "The BLM may also use this process to consider amending RMPs for other field offices in California with oil and gas leasing and development.."

At a minimum, BLM should conduct an EIS for all BLM-administered lands and sub-surface resources in California, analyzing both its oil and gas leasing practices and the full extent of its associated impacts, rather than limiting the scope to the area under the management of the Hollister field office.3 BLM manages 15 million acres of surface and 47 million acres of mineral estate in California. A recent DOE Energy Information Agency report projected that California's widespread Monterey shale formation may contain as many as 13.7 billion barrels of technically recoverable oil. The agency will undoubtedly have under future consideration- as it does now in the Hollister area- many leased areas where the development target is the Monterey shale, and where new well drilling practices and stimulation methods, including hydraulic fracturing and horizontal drilling, will be proposed. We support BLM's accompanying proposal to conduct an independent scientific review of the impact of well drilling practices in California, and that study should extend state- wide as well.

Both the Hollister EIS and the BLM scientific review should be closely coordinated with the new programs and scientific and technical reviews required by California's Senate Bill 4, recently signed into law by Governor Brown. In the past, BLM has accepted and applied State regulatory programs to federal oil and gas leases in addition to the federal requirements. We believe that it is appropriate to reexamine the nature of the state-federal relationship in oil and gas development in light of changes in regulatory standards and drilling practices.

Table C-5
Scope of the EIS

The 2010 Environmental Assessment for the recently challenged Hollister field office leases proposed for Fresno and Monterey Counties stated:

BLM's 2008 MOU with CDOGGR agrees to apply State regulations for oil and gas drilling to applications for permits to drill on Federal mineral estate to prevent surface and groundwater contamination and ensure protection of sensitive resources However, BLM and CDOGGR both consider hydraulic fracturing to be a "routine" drilling operation, so there are no special regulations for the use of this technology on private or Federal mineral estate in California.

We believe that hydraulic fracturing can no longer be regarded by either state or federal authorities as a routine drilling operation; the practice must be fully evaluated in accord with the requirements of both NEPA and SB 4's new provisions. In the Hollister EIS notice, BLM proposed to conduct a peer reviewed independent scientific assessment of industry well stimulation and completion practices in California. This analysis is of critical importance and should focus on state-wide practices and impacts. That study and the federal EIS should be closely coordinated with the parallel state scientific study and Environmental Impact Report required by SB 4, and any differences between state and federal study conclusions and regulatory approaches fully discussed and justified.

In an "EIS Planning Update" issued in January 2014, BLM more specifically describes potential amendments to the 2006 Hollister RMP. The EIS Planning Update states that the "need for the plan amendment is to incorporate new information about well stimulation technologies, natural resource conditions, and socioeconomic trends to update the reasonably foreseeable development scenario (RFD) and HFO Resource Management Plan (RMP). The decision to be made is to establish additional lease stipulations, conditions of approval, or best management practices to guide safe and responsible oil and gas development." However, any potential RMP amendment "will retain the existing resource condition goals and objectives in the Hollister RMP", as stated in the NOI, 78 Fed. Reg. at 47409.

In its 2007 Record of Decision, BLM adopted (with minor modifications) the preferred alternative from the 2006 Draft Hollister RMP and EIS, which incorporates the goal of "balanced resource conservation and ecosystem health with commodity production and public use of the land. . . . to provide opportunities for sustainable use of the resources while maintaining key ecological, visual and recreational values." Hollister RMP Record of Decision, p. i. WSPA concurs with the NOI's emphasis on retaining the existing goals and objectives. As such, WSPA believes that the EIS scope should not reopen consideration of the broad range of policy issues and environmental consequences already evaluated in the EIS for the Hollister RMP and adopted in the final RMP and Record of Decision. Instead, the EIS should build upon the RMP and prior EIS analysis, focusing on specifically on the effects of current and reasonably foreseeable well stimulation practices and an updated development scenario as stated in the NOI.

While the scoping process serves to identify significant issues, it is also designed to "identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review", to ensure an efficient and expedient NEPA review. 40 C.F.R. § 1501.7(a)(3). Considerable information on the potential impacts identified in the NOI, and mitigation measures for those impacts, is already available from existing scientific literature, prior NEPA reviews and other pertinent agency analyses, federal and state regulations, and industry guidelines and best practices. WSPA encourages BLM to rely on reliable existing information to the maximum extent possible, to help ensure consistency and avoid redundant effort and delay.

As BLM is aware, the California Natural Resources Agency, Division of Oil, Gas and Geothermal Resources ("DOGGR") is currently preparing its own Environmental Impact Report ("EIR") examining potential environmental impacts of well stimulation throughout the state, as directed by recent legislation. S.B. 4, Cal. Pub. Res. Code § 3161(b)(3). We urge BLM to coordinate with DOGGR, as well as with Kern County and other local agencies that are conducting or have conducted environmental reviews of oil and gas developments. Utilizing information developed in these EIR processes, to the maximum extent possible, again will help to ensure consistency and avoid redundant effort and delay.

The EIS should also be consistent with the court's order in Center for Biological Diversity v. Bureau of Land Management (N.D. Cal., Case No. C 11-06174 PSG, March 31, 2013)("CBD v. BLM"). In that case, the court's primary concern was that BLM's Environmental Assessment for a lease sale should have updated the reasonably foreseeable development scenario from the Hollister RMP, to take into account potentially increased activity and environmental consequences from advances in well stimulation practices. Consistent with the court's order, the NOI indicates that the "EIS will further analyze a potential update to the reasonably foreseeable development scenario." In this context, we again urge coordination with DOGGR, which is developing pertinent information and assumptions on projected development activity for purposes of its S.B. 4 EIR that could be used to update the scenario in Appendix F of the Hollister RMP.

Table C-5
Scope of the EIS

The NOI and EIS Planning Update both solicit comments on the geographic scope of the EIS. Given that BLM contemplates relying on this EIS for potential amendments to the Hollister RMP, the appropriate scope should be the same as that of the EIS for the RMP. Moreover, as acknowledged in the 2006 RMP EIS, p. 4.12-4, "Most of the exploration and development areas are expected to be adjacent to existing disturbed private lands such as existing oil fields." Accordingly, focusing the geographic scope on reasonably foreseeable development areas will improve the accuracy of the impact assessment.
Regarding mitigation measures, the EIS should consider the sufficiency of the oil and gas leasing standard stipulations and conditions described in Appendix D of the 2006 RMP EIS. The prior EIS identified these lease stipulations and conditions as mitigation measures for impacts, based on the reasonably foreseeable development scenario in Appendix F. The new EIS should follow the same basic approach in evaluating mitigation measures to address the updated development scenario, and should determine whether or not additional stipulations and conditions may be necessary. If so, as noted above, WSPA urges BLM to coordinate with DOGGR and other agencies, to utilize information developed in their EIR processes, including information on existing standards and best practices which may be relied on as mitigation measures for environmental impacts.
The NOI also states that, separate from the EIS, BLM is concurrently preparing a "peer-reviewed, interdisciplinary assessment of the current state of industry practices for well completion and stimulation in California" which will inform BLM's future NEPA evaluations for oil and gas lease sales. Here, again, WSPA encourages BLM to coordinate its effort with DOGGR, which is preparing a comparable scientific study as directed by S.B. 4, Pub. Res. Code § 3160(a).
Both the EIS and the peer-reviewed scientific assessment should be based on credible, peer-reviewed scientific literature. Even where definitive scientific evidence may be lacking or incomplete, unsupported speculations or assertions of advocacy groups should not be relied on as a basis for impact analysis. The Council on Environmental Quality's NEPA regulations provide guidelines for dealing with scientific uncertainties in an EIS. If complete information cannot be obtained, an EIS must state that information is incomplete or unavailable, explain the ways in which it would be relevant to evaluating reasonably foreseeable significant impacts, and provide both a "summary of existing credible scientific evidence" and "the agency's evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community." 40 C.F.R. § 1502.22. Thus, only credible and generally accepted science has a place in the proposed EIS. In addition, to ensure reliability for purposes of future NEPA reviews of oil and gas lease sales, the interdisciplinary assessment should follow the same approach.
Fossil fuel development results in many types of environmental damage. The various stages in development- site preparation, construction, drilling, well completion, oil production, transportation, waste disposal, oil refinement, and combustion by the end user- each come with environmental dangers. The EIS should study all stages and all types of oil and gas development, encompassing the entire lifecycle.
But fracking is just the tip of the iceberg in California. I'm even more concerned about matrix acidization, a process that is believed to be very effective for extracting fuel from the Monterey Shale. Good for oil companies, and bad for people. This technique involves pumping large quantities of hydrofluoric acid into the ground. Hydrofluoric acid dissolves glass and concrete. It also dissolves rock which is why oil companies find it useful. And it dissolves people, from the inside out. If you get it on your skin, it goes straight to the bone. We don't want truckloads of hydrofluoric acid going up and down the freeway.
The BLM should widen the scope of the EIS to include all oil and gas producing regions of California
Geothermal Fracking, better known as Enhanced or Engineered Geothermal Systems (EGS) must also be included in the BLM's studies regarding the environmental impacts associated with fracking. EGS is not a benign hydraulic fracturing process. For instance, in the Medicine Lake Highlands, (Glass Mountain KGRA, BLM leases) in Northern California, the geothermal developer's EGS solicitation to the DOE, included Halliburton Corporation injecting high pressure concoctions using toxic hydrochloric and hydrofluoric acids with other chemicals deep into the geothermal wells, in the hopes of stimulating a meager geothermal resource. The experimental EGS proposal was put on hold by the USFS due to the lack of environmental review and legal challenges.

Table C-5
Scope of the EIS

We also request that you thoroughly evaluate the full array of environmental and public health impacts of hydraulic fracturing and other unconventional oil, gas and geothermal extraction methods as part of your scoping for (1) the Environmental Impact Statement (EIS) on Oil, Gas and Geothermal Leasing on California Public Land, (2) the independent scientific study of fracking statewide, and (3) potential amendments to the Hollister Resource Management Plan (RMP).
Determining the proper scope of these studies is a critical step in assessing the true impact of oil, gas and geothermal activity on public lands. The scope of BLM's evaluation should include all types of unconventional oil, gas and geothermal recovery, including but not limited to hydraulic fracturing, acidization, and gravel packing. The studies should also include all stages and all aspects of oil, gas and geothermal recovery, from construction, drilling, and truck traffic to production, waste disposal, and the end use of extracted resources.
I would like to urge the BLM to continue the moratorium on fracking on California's public lands until more is known about it's consequences to the environment, specifically the public water supply that may be put at risk by the secret proprietary chemicals that the oil companies pump into the ground to break up the rocks to extract oil and natural gas. The oil companies won't make public exactly what's being used in the fracking process. My children drink water that may eventually contain these chemicals, if fracking is allowed to occur. If we, as citizens of California, are not allowed to know exactly what is being pumped into th eground so they can pump out oil and gas, then I don't think the oil companies should be allowed to go ahead with their fracking. We can't make informed decisions about the pros and cons without all the information. Keep the moratorium in place until we actually have all the facts. It's critical to the future of California's drinking water and the health of all of us
The side effects of fracking are not yet known- or maybe known to the companies doing the work, but they are certainly not volunteering the information. Damage to underground water supplies, poisoning farmland and wildlife, and long-term human health impacts have all been reported. Please do not allow these little understood risks to be forced upon Californians without more studies and safeguards. Once risks are identified, the companies doing the fracking should be obliged to pay for all remedies, such as increased health care costs, restoration of water supplies, etc.

Table C-6
Issue No. 1: Water Resources

Wetlands and Riparian Areas
Harm to Wetlands High volume removal of surface or groundwater can result in damage to wetlands, which rely on ample water supplies to maintain the fragile dynamics of a wetland habitat. Damage can also occur from spills of chemicals or wastewater, filling operations, and sediment runoff. Many plant and animal species depend on wetland habitats, and even small changes can lead to significant impacts. Wetlands provide a variety of "eco-service" functions, including water purification, protection from floods, and functioning as carbon sinks. The ecological importance of wetlands is unquestionable, and their full protection is paramount. The EIS and Statewide Study must analyze these potential impacts to wetlands.
Inventories and maps of existing wetlands and waters of the US within the planning area, including wetlands that are regulated under Section 404 of the CWA and wetlands that are determined to be non-jurisdictional and protected under Executive Order 11990 - Protection of Wetlands (May 24, 1977), and, where applicable, acreages and channel lengths, habitat types, values, and functions of these waters.
Executive Order 11990 directs all federal Agencies to take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands regardless of the CWA § 404 jurisdictional status of the wetlands. Executive Order 11988 - Floodplain Management calls on Agencies to avoid, to the extent possible, impacts associated with the occupancy and modification of floodplains, and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative. Well pad construction in floodplains presents the potential for flood damage to well-heads and associated production equipment that could result in leaks or spills of toxic materials to waterbodies, and should be avoided.
In addition to the water quality and water quantity impacts discussed in the preceding sections, the EPA recommends that the BLM disclose the extent to which wetlands, riparian areas and floodplains could be impacted by potential activities, including with respect to: stream structure and channel stability; streambed substrate, including season and spawning habitats; stream bank vegetation, riparian habitats, and aquatic biota; and the cumulative effects of increased levels of erosion and sedimentation.
We also recommend that the DEIS analyze methods for restricting actions in these important resource areas and developing and enforcing BMPs to mitigate the potential impacts of the project. More specifically, the EPA suggests that the DEIS: - Include a development buffer to protect wetlands, riparian areas and floodplains. A buffer will help to prevent erosion and sedimentation impacts in sensitive soils, possible spills or leaks from reaching surface water resources, impacts to wetland plants in unique wetlands such as springs and seeps, which can be difficult to replace (e.g., compensatory mitigation through restoration or creation may not be feasible), or disturbance to surface or groundwater hydrology which could impact the viability of wetlands. - Identify specific mitigation requirements and BMPs applicable to the operator for all phases and actions involved in drilling and production to prevent direct and/or indirect impacts that may exist despite the No Surface Occupancy stipulation (e.g., water quality or hydrologic impacts). - As future development proceeds, the EPA encourages the BLM to require delineation and marking of perennial seeps, springs and wetlands on maps and on the ground before development so operators can avoid impacts to them.
Water Quality – General
For these concerns, as well as grave concerns around the health of our drinking water, as proven by a precedent case in in northeastern Pennsylvania and upstate NY (the Marcellus and Utica shale formations were found to have 17 higher levels of methane than in drinking wells that were not near drilling sites. See the article "Blind Rush?: Shale Gas Boom Proceeds amid Human Health Questions, published in Environmental Health Perspectives" by C.W. Schmidt in 2011 for citation, please take very seriously the plans to begin fracking.
Harm to Water Quality Water quality must be a focus of the EIS and Statewide Study. Across the US, in states where hydraulic fracturing or other types of unconventional oil and gas recovery has

Table C-6
Issue No. 1: Water Resources

occurred, surface water and groundwater have been contaminated. Water contamination has been attributed to unconventional oil and gas activity in several states, including Wyoming, Texas, Pennsylvania, Colorado, and Ohio.
The DEIS should present baseline data on the condition and quality of groundwater and surface water resources and, where appropriate and possible, reasons why these resources have been impacted (e.g., oil and gas development, mining), including: o Lists of any Clean Water Act impaired or threatened waterbody segments within, or downstream of, the project area, including the designated uses of the waterbodies and the specific pollutants of concern.
The DEIS should include a comprehensive analysis of potential impacts to the quality of surface water and groundwater resources and evaluate the following activities for their impacts: o Waste management, including use, reuse, recycling and disposal of oil and gas produced and flowback water. o Impacts to shallow aquifers from oil and gas well drilling, well completion and production. o Management of spills or leaks from surface impoundments, oil and gas pits, or produced water evaporation ponds. o Erosion and sedimentation impacts associated with surface disturbance, including those associated with roads, well pad construction, well drilling and completion, and pipelines. - As part of completing the aforementioned evaluation, the following resource impacts should be discussed, including disclosure of which waters may be impacted, the nature of potential impacts, and specific pollutants likely to impact those waters: o Groundwater: Potential impacts to groundwater, including municipal or private water supplies. We recommend that this include an analysis of the management of any fluids that will be injected underground for well completion, including the toxicity and fate of these fluids, with a focus on avoiding surface spills or leaks of these fluids. o Impaired Waterbodies: Potential impacts to impaired waterbodies, including waterbodies listed on the CWA § 303(d) list and waterbodies with completed Total Maximum Daily Loads (TMDLs). o Surface Water Quality and Sedimentation: Potential impacts to water quality from runoff associated with surface disturbance. Erodible soils can represent a significant nonpoint source, and runoff could introduce sediments, as well as salts, selenium and other heavy metals into surface waters. To ensure sufficient information is included about the potential impacts of soil disturbance, we recommend that the DEIS include an estimate of erosion rates for each alternative in tons per year based on amount of surface disturbance, soil types, topography and slope, to avoid significant sedimentation.
Drinking water wells studied near the Marcellus and Utica shale formations in northeastern Pennsylvania and upstate NY were found to have 17 higher levels of methane than in drinking wells that were not near drilling sites (Blind Rush?: Shale Gas Boom Proceeds amid Human Health Questions, published in Environmental Health Perspectives by C.W. Schmidt in 2011.
The EIS should study the full range of adverse environmental effects that stem from oil and gas development. These include Air , Water, and Soil Contamination - Oil and gas development release a number pollutants that degrade the quality of our air, water, and soil.
The EIS should study all environmental impacts made more severe by fracking and other types of unconventional oil and gas extraction. These include: o Air, Water, and Soil Contamination: Fracking uses hundreds of chemicals that are known to have adverse human health impacts. Numerous instances of contamination have been reported in places where fracking has occurred. The EIS must include an analysis of adverse human health impacts from all of the chemicals used in the fracking process, as

Table C-6
Issue No. 1: Water Resources

well as from those chemicals used in other types of unconventional oil and gas extraction techniques.
BLM land should be closed, in particular to oil and gas development that involves hydraulic fracturing. There are too many unknowns about the impacts of hydraulic fracturing at this point for the BLM to properly analyze the impacts of fracking in the EIS. New studies have been released as recently as December 2013 (such as Estrogen and Androgen Receptor Activities of Hydraulic Fracturing Chemicals and Surface and GroundWater in a Drilling-Dense Region Kassotis et al. 2013) on the negative impacts hydraulic fracturing has on public health and safety and on water and air quality.
Due to the negative impacts to surface water and groundwater, to air quality, and to human health through exposure to endocrine disruptors and other chemicals present in fracking fluids, it will be impossible for the BLM to reach these RMP objectives while using hydraulic fracturing as an oil and gas extraction method.
Disposal of produced and wastewater generated during drilling activities is a problem faced by all areas where O&G extraction occurs. Although some methods of recycling make produced water from drilling activities available for agricultural uses, there is no guarantee of its quality, and this water is classified as not safe for human or animal consumption. Reinjection activities may further degrade the quality of groundwater sources, and increase the possibility of seismic activity. Well- defined and concise plans for disposal of wastewater will help protect the quality of surface and groundwater, and prevent seismic activity.
In California, fracking threatens the soil and water quality that are essential to the state's wine, agricultural and fishing industries. While no government agency currently keeps track of fracking activities in California, BLM estimates that 90 percent of wells drilled on Indian and Federal lands are fracked. 77 Fed. Reg. 27,691, 27,693 (May 11, 2012). BLM currently leases over 36 million acres of land a land area equal in size to the state of Michigan - for potential oil and gas development in 24 states, and periodically offers more land for leasing. BLM is initiating a planning process to address oil and gas development on public lands and federal mineral estate in California, and may amend the Resource Management Plans ("RMPs") for some of BLM's California field offices. To help inform the planning process, BLM is also initiating a scientific assessment of the current state of practices for well completion and stimulation in California. This science assessment will be led by the California Council on Science and Technology, and will be peer-reviewed.
Concerned about: The high consequences of contamination or loss of drinking water and the perceived probability of one that protections are not adequate or are not reliable results In unacceptable Risk.
In the search for oil, gas and development of federal minerals in the Central Coast, Ohlone/Costanoan- Esselen Nation objects to disturbance using the hydraulic fracturing process. Fracturing can lead to environmental risks, contamination of ground water, depletion of fresh water, contamination of the air. There are increases in earthquake activity associated with the degradation of bedrock.
The current Citadel Project Indian, taking place on private land six to eight miles from the Pinnacles National Park is an example of a threat to the condors. This project involves thermal stimulation with high pressure steam at a depth of three to six hundred feet. This is very close to the surface and in an area known for earthquakes and faults. A blowout occuring during stimulation could discharge water contaminated with oil and chemicals to the surface and pose a risk to animals and to the condors themselves.
It has been clearly demonstrated in states like Pennsylvania that fracking cannot be done without harming aquifers, people, or our climate.
Consider the impacts of seismic activity induced by wastewater injection would have on socioeconomics, public health and safety, and water quality.
Water Quality – Ground
Accidental spills are also an inevitable occurrence and the risk of harms from such spills must be incorporated into the EIS and Statewide Study. Improper well construction and loss of mechanical integrity are recognized as one of the highest risks of groundwater contamination and constitute another event through which chemicals can threaten public health and safety. (See Section II.G.2 for further discussion.)

Table C-6
Issue No. 1: Water Resources

Groundwater Contamination There have been many instances of groundwater contamination in other parts of the country where hydraulic fracturing has occurred. Hydraulic fracturing and other unconventional techniques pose an inherent risk to groundwater that must be properly evaluated in the EIS and Statewide Study. Once groundwater is contaminated, it is very difficult, if not impossible, to restore the original quality of the water. Groundwater contamination can occur in a number of ways. Poorly constructed or abandoned wells are recognized as one of the most likely ways by which contaminants may reach groundwater. Improper well construction is cited as a confirmed or potential cause of groundwater contamination in numerous incidents at locations across the US including but not limited to Pennsylvania, Colorado, Ohio, and Wyoming. Mechanical integrity, which refers to an absence of leakage pathways through the casing and cement, can degrade over time, eventually leading to mechanical integrity failures that may impact groundwater. A well in which stimulation operations are being conducted may also "communicate" with nearby wells, which may lead to groundwater contamination, particularly if the nearby wells are improperly constructed or abandoned.
Current state and federal rules do not ensure well integrity. The well casing can potentially fail over time and potentially create pathways for contaminants to reach groundwater. Well casing failure can occur due to improper or negligent construction. BLM should study the rates of well casing failures over time and evaluate the likelihood that well casing failures can lead to groundwater contamination.
Chemicals and naturally occurring substances can also migrate to groundwater through newly created fractures underground. Many unconventional techniques intentionally fracture the formation to increase the flow of gas or oil. These new cracks and fissures can allow the additives or naturally occurring elements such as natural gas to migrate to groundwater. Fluids can also migrate through pre-existing and natural faults and fractures that may become pathways once the hydraulic fracturing or other method has been used.
The migration may occur over a number of years. Thus, the EIS and Statewide Study must include long-term studies on the frequency and effect of fluid migration through newly created subsurface pathways. Fluid migration is of particular concern when oil and gas operations are close to drinking water supplies. Unfiltered drinking water supplies especially at risk because they have no readily available means of removing contaminants from the water. Even water supplies with filtration systems are not designed to handle the kind of contaminants that result from unconventional oil and gas extraction.
The DEIS should discuss groundwater resources, with particular emphasis on: o The major aquifers in the basin, their three dimensional extent, the physical and chemical characteristics of their groundwater, estimates of the quantity of water in the aquifers and aquifer recharge rates. o The location and extent of the groundwater recharge areas. o The location of shallow and sensitive aquifers that are susceptible to contamination from surface activities. o The location of existing and potential underground sources of drinking water. Underground sources of drinking water include not only those formations that are presently being used for drinking water, but also those that can reasonably be used in the future.
The EPA recommends that the DEIS identify and discuss how surface water and groundwater quality would be protected during future oil and gas development and how significant impacts would be mitigated. This can be accomplished by developing specific stipulations for avoiding wells and surface disturbing activities in sensitive resources areas. Once the impact analysis is complete, EPA would like to work with BLM in on the identification of appropriate strategies to mitigate significant impacts.
In the absence of groundwater modeling to determine the distance from the project at which impacts may occur, the EPA recommends that the BLM adopt a requirement for monitoring to occur in private wells within one mile of an oil and/or gas project area. This monitoring will help assure mitigation measures are adequate and that water

Table C-6
Issue No. 1: Water Resources

resources are being fully protected.
BLM land in all California Field Offices should be closed to further oil and gas development and future oil and gas leasing, especially in regard to hydraulic fracturing. Lots of research to support this, but the biggest is we are in a drought and fracking costs millions of gallons of water that is unusable. That polluted water is sent back beneath the water table but it is possible for it to leach into local water supplies.
Studies such as the Endrocrine Society's 2013 study by Christopher D. Kassotis et al, entitled Estrogen and Androgen Receptor Activities of Hydraulic Fracturing Chemicals and Surface and GroundWater in a Drilling-Dense Region, have concluded that the fracturing fluid used in hydraulic fracturing contains end ocrine disrupting chemicals, which are linked to increased instances of cancer, birth defects, decreased sperm quality and quantity, infertility and reproductive tract deformities. After hydraulic fracturing is completed, only 60 to 80 percent of the fracturing fluid is reclaimed. This means that the remaining 40 to 20 percent of the fluid remains underground has the potential to contaminate groundwater over time. Even though fracturing fluid is primarily made up of water, and chemicals constitute only a very small percentage, the chemicals are potent enough to have negative impacts even in low concentrations. Endocrine disrupters in particular are known for having impacts at very low levels, and they have the potential for exacerbated effects when mixed with other chemicals.
Drinking water wells studied near the Marcellus and Utica shale formations in northeastern Pennsylvania and upstate NY were found to have 17 times higher levels of methane than in drinking wells that were not near drilling sites (from the article Blind Rush?: Shale Gas Boom Proceeds amid Human Health Questions, published in Environmental Health Perspectives by C.W. Schmidt in 2011).
Injection wells are typically used for long---term and essentially permanent storage of waste fluid and "produced water. Thus the long term integrity and effect of these injection wells must be evaluated as part of the EIS and Statewide Study. Injecting and storing polluted wastewater underground in these injection wells has been shown to cause a variety of risks. The potential for the permanent pollution of ground water basins is a major question that must be addressed in the EIS. The long-term integrity of cement well seals that are commonly claimed to protect ground water from being polluted by the migration of injection fluids is an open question. There is extensive evidence from many locations that well seals commonly fail over time and allow deep storage injection fluids to migrate up the well bore and casing and pollute and ruin ground water supplies.
During high-pressure fracking, extreme fluid pressures are applied to well bores (including horizontal bores. These pressures can split well bore casings, well pipes, and potentially crack the well seals that are intended to isolate different geological strata. The potential for the failure of well seals and zonal isolation from ground water must be addressed.
Hydrology and Water Quality. The increased use of scare groundwater resources and the potential contamination of drinking water and irrigation water resources by chemicals used in well stimulations treatments for the unconventional development of oil and gas are of paramount concern. The EIS should analyze the range of potential impacts to water sources and water quality from both conventional and unconventional oil and gas development. To do this, the EIS should identify water resources within the geographic region that may be used or developed for conventional and unconventional oil and gas production and analyze the potential that these sources will be contaminated by well stimulation activity. This analysis should also take into account the disposal of wastewater, including the recycling or reuse of wastewater, resulting from well stimulation treatments and related oil and gas development activities. Finally, the amount of water used in well stimulation treatments for unconventional development of oil and gas needs to be estimated and the EIS must analyze the impact this use will have on further constraining the available water supply for both human uses and biological resources. Specific recommendations include:
The chemicals used in well stimulation activities and likely to be encountered in flowback and produced fluids should be identified and their impacts on drinking water and agricultural water should be analyzed.
Furthermore, the permanent risks to Central California's aquifer and wells from fracking fluid contamination are too permanent and too great to consciously permit fracking. Oil exploration cannot come at the detriment of agriculture, ranching, and tourism, which are the fundamentals of San Benito economy.
Oil and gas development on federal lands within the condor's range poses a significant risk to the continued recovery of the California Condor. This risk stems from possible contamination of surface water supplies, including springs, creeks and livestock water troughs, created by leaks and blowouts associated with oil and gas development. Condors

Table C-6
Issue No. 1: Water Resources

not only drink from these surface water sources but are also at risk of consuming contaminated carrion.
Along with water depletion, we risk contamination to existing water supplies. Hundreds of thousands of gallons of water per well are pumped out of the ground for fracking, and then returned as toxic waste to wells of documented uncertain integrity. Should ground water become contaminated through well casing failure the damage can reach far beyond BLM boundaries.
You should abide by the precautionary principle and protect our ground waters from the imminent risk of contamination by the toxic brew involved in fracking.
The water under BLM land does not stay there. BLM ground water flows under my land. If BLM pollutes their ground water and I end up with polluted water are you going to buy my land? My only water source is a deep well. This is a giant class action suite waiting to happen. Do NOT allow fracking on BLM land.
Water Quality – Surface
Under current practices in California, some flowback fluid is stored in open pits near the well pad. The EIS and Statewide Study must review the risks posed by these pits, which can contaminate the soil, pollute nearby surface water through breaches and spills, and pollute the air through evaporation. Liners are known to tear, and spills and evaporation occur even when the lining remains intact. Both can kill wildlife that is exposed to the pits' toxic contents.
Withdrawal of large quantities of freshwater from streams and other surface waters will undoubtedly have an impact on the environment. Withdrawing water from streams will decrease the supply for downstream users, such as farmers or municipalities. Reductions in stream flows may also lead to downstream water quality problems by diminishing the water bodies' capacity for dilution and degradation of pollutants. The EIS and Statewide Study must examine these issues.
Rapid runoff, even without contaminants, can harm the environment by changing water flow patterns and causing erosion, habitat loss, and flooding. Greater runoff volumes may also increase the amount of sediment that is carried to lakes and streams, affecting the turbidity and chemical content of surface waters. Oil and gas operations require land clearance for access roads, well pads, drilling equipment, chemical storage, and waste disposal pits. Not only do these activities create pollution, they create greater conduits for storm water runoff to carry those pollutants far from the operation site.
Surface water contamination Surface waters can be contaminated in many ways from unconventional well stimulation. In addition to storm water runoff, described above, surface water contamination may also occur from chemical and waste transport, chemical storage leaks, and breaches in pit liners. As described below, contaminated surface water can result in many adverse effects to wildlife, agriculture, and human health and safety. It may make waters unsafe for drinking, fishing, swimming and other activities. The EIS and Statewide Study should fully assess the risk of harm to surface waters as well as the feasibility of restoring the original water quality once surface water is contaminated.
Accidental spills or intentional dumping of wastewater can contaminate surface water and cause large-scale harm to wildlife. Numerous incidents of wastewater contamination from pipelines, equipment blowouts, and trucks accidents have been reported, and have resulted in kills of fish, aquatic invertebrates, and trees and shrubs, as well as negative health effects for wildlife and domestic animals. For example, a company recently admitted to dumping wastewater from hydraulic fracturing operations into the Acorn Fork Creek in Kentucky, causing a massive fish kill. Among the species harmed was the blackside dace, a threatened minnow species. The discharge of fracking wastewater into the Susquehanna River in Pennsylvania is suspected to be the cause of fish abnormalities, including high rates of spots, lesions, and intersex. In West Virginia, the permitted application of hydrofracturing fluid to an area of mixed hardwood forest caused extensive tree mortality and a 50-fold increase in surface soil concentrations of sodium and chloride.
The EPA recommends that the DEIS identify and discuss how surface water and groundwater quality would be protected during future oil and gas development and how significant impacts would be mitigated. This can be accomplished by developing specific stipulations for avoiding wells and surface disturbing activities in sensitive resources areas. Once the impact analysis is complete, EPA would like to work with BLM in on the identification of appropriate strategies to mitigate significant impacts.

Table C-6
Issue No. 1: Water Resources

Water Supply – General
Some unconventional extraction techniques, most notably hydraulic fracturing, require the use of tremendous amounts of freshwater. The increased use of freshwater in California, a state struggling to provide enough freshwater to its various constituencies, would be greatly affected by the increased demand for water if hydraulic fracturing and other unconventional oil and gas extraction is permitted on public lands. In other states where hydraulic fracturing has occurred, operators reported using millions of gallons of freshwater per well that has used hydraulic fracturing. Although some have claimed water use in California will be less than other states, some operators have reported similar levels of water use. Water used in large quantities may lead to several kinds of harmful environmental impacts. The EIS and Statewide Study must analyze where water will be sourced, how much, and the effects on water sources under different alternatives.
Aquifer Depletion Withdrawing large quantities of water from subsurface waters to supply oil and gas production will likely deplete and harm aquifers. Removing water from surface water or directly from underground sources of water faster than the rate that aquifers can be replenished will lower the volume of water available for other uses. Depletion can also lead to aquifer compaction, after which the original level of water volume can never be restored. The EIS and Statewide Study must consider the potential aquifer depletion and impacts.
Water depletion can also affect species whose habitats are far removed from the actual well site. Because of the high volume of water required for even a single well that uses unconventional extraction methods, the cumulative water depletion could have a significant impact on species that rely on water sources that serve to supply oil and gas operations. There may also be changes to water temperature and chemistry. Habitat can be altered in other ways that negatively impact wildlife. For example, ground nesting birds such as grouse will avoid tall structures.
The BLM should conduct a full assessment of the direct and indirect impacts of oil and gas development activities on wildlife and ecosystems through a suite of comprehensive studies on all species and ecosystems that could be affected. The studies should be particularly detailed for federally and state listed species, federal and state candidates for listing, and state species of special concern. The studies should address the following impacts: (1) habitat loss, degradation, and fragmentation, including edge effects; (2) water depletion; (3) air and water contamination; (4) introduction of invasive species; (5) climate change impacts; (6) health and behavioral effects such as increased stress and changes in life history behaviors; (7) changes in demographic rates such as reproductive success and survival; and (8) potential for population-level impacts such as declines and extirpations. These studies should consider these harms individually and cumulatively.
Further, because availability of freshwater could be a concern for future oil and gas development projects in the planning area, we recommend that the DEIS confirm that future projects will need a water resource management plan to address water consumption and produced water disposal, including identifying water recycling opportunities.
BLM land in all California Field Offices should be closed to further oil and gas development and future oil and gas leasing, especially in regard to hydraulic fracturing. Lots of research to support this, but the biggest is we are in a drought and fracking costs millions of gallons of water that is unusable. That polluted water is sent back beneath the water table but it is possible for it to leach into local water supplies.
Water Resource Depletion- Fracking can use up to 1 million gallons of freshwater per fracking event, and each well can be fracked multiple times over the life of the well. Especially given that California is in a declared state emergency drought, the impact of water resource depletion through fracking must be fully understood and analyzed.
Fracking will consume millions of gallons of freshwater, at a time when state water reserves are far below desired levels. Combined with the chemicals, the once fresh water is now poisonous fracking fluid. This contaminated wastewater must be discharged from the wells, transported and stored. Each of these steps is a chance for contamination of the local groundwater, soil and air. California is in a declared drought emergency. The impact of water resource depletion through fracking must be fully understood and analyzed.
Concerned about: The high consequences of contamination or loss of drinking water and the perceived probability of one that protections are not adequate or are not reliable results in

Table C-6
Issue No. 1: Water Resources

unacceptable Risk.
Hydraulic fracturing, especially when used to stimulate oil and gas production from a shale resource, customarily requires large quantities of water. In arid landscapes such as California, the use of surface or groundwater supplies should be minimized and mitigated so that there is no net consumptive use of water. Where water use for hydraulic fracturing would threaten ecologically important resources, leasing should be precluded.
Heather Cooley, co-director of Pacific Institutes water program, talks about its scarcity in California. Adding hydraulic fracturing to extract oil and gas will affect our limited supply- fracking uses massive quantities that can pose conflicts with other needs including agriculture and wildlife habitats. Methane has contaminated drinking wells. Devastating incidents with storage, transport, and waste water have plagued communities.
Lifting the current ban on fracking on BLM land is a game of long and short-term risk. Risk to depleteing water in some of the more arid environments in the state; example- San Benito County where I live. California places nature, people and agriculture at odds over water. The state supplies almost 50% of the nation's fresh food. 10 year estimates increase our state population to 50 million people. The current drought threatens Coho salmon with extinction. Can we really afford to add powerful corporate oil interests to the tug of war on water?
Due to the potential serious environmental, human health and safety, and socioeconomic impacts that hydraulic fracturing has already been shown to be capable of, I request the following of the BLM during the EIS process: The cumulative impacts on water supply contamination must be analyzed.
CONSIDER THE SERIOUS THREAT TO OUR WATER SUPPLY.
We need clean water in this state. Fracking is very water intensive.
In the search for oil, gas and development of federal minerals in the Central Coast, Ohlone/Costanoan- Esselen Nation objects to disturbance using the hydraulic fracturing process. Fracturing can lead to environmental risks, contamination of ground water, depletion of fresh water, contamination of the air. There are increases in earthquake activity associated with the degradation of bedrock.
Fracking is dangerous to all concerned, workers, people and other life living in the area, the environment. It should be ditched and investments made to make sustainable wind, solar and other green energy sources workable for the power grid. In California, there are 3 top reasons to continue the moratorium- damage to agriculture & water supplies and earthquakes. There is even concern that it can cause earthquakes or tremors. This is of special concern of course in California especially with Diablo Canyon nuclear power plant located on a fault zone which ties into larger systems. Fracking is a heavily polluting invasive extraction system which also has the potential to harm water supplies in a state that has water shortages. No only that, California is one of the richest agricultural zones on the planet.
We cannot afford the huge volume of water wasted in this process.
I believe fracking poses a danger to us on many levels including excessive water use
Water is scarce in CA already! Why do we want toxic chemicals pumped into our water tables? Put an end to fracking now!
Fracking could potentially cause devastating earthquakes and would certainly require copious amounts of water. The risks and water consumption outweigh the possible benefits of fracking
Water Supply – Ground
The DEIS should discuss groundwater resources, with particular emphasis on: o The major aquifers in the basin, their three dimensional extent, the physical and chemical characteristics of their groundwater, estimates of the quantity of water in the

Table C-6
Issue No. 1: Water Resources

aquifers and aquifer recharge rates. o The location and extent of the groundwater recharge areas. o The location of shallow and sensitive aquifers that are susceptible to contamination from surface activities. o The location of existing and potential underground sources of drinking water. Underground sources of drinking water include not only those formations that are presently being used for drinking water, but also those that can reasonably be used in the future.
Increased traffic on underdeveloped and rural roads, along with increased construction and operation activities, will have a detrimental impact on air quality and other resources. A complete cumulative impacts study is necessary in order to fully analyze the results of increased O&G development in these areas, such as decreased land use for agriculture, cattle grazing, and recharge areas for groundwater.
A thorough study of the risks associated with leaks from well casings will help create a comprehensive mitigation plan in case of failure, and prevent contamination of groundwater supplies.
Hydrology and Water Quality. The increased use of scare groundwater resources and the potential contamination of drinking water and irrigation water resources by chemicals used in well stimulations treatments for the unconventional development of oil and gas are of paramount concern. The EIS should analyze the range of potential impacts to water sources and water quality from both conventional and unconventional oil and gas development. To do this, the EIS should identify water resources within the geographic region that may be used or developed for conventional and unconventional oil and gas production and analyze the potential that these sources will be contaminated by well stimulation activity. This analysis should also take into account the disposal of wastewater, including the recycling or reuse of wastewater, resulting from well stimulation treatments and related oil and gas development activities. Finally, the amount of water used in well stimulation treatments for unconventional development of oil and gas needs to be estimated and the EIS must analyze the impact this use will have on further constraining the available water supply for both human uses and biological resources. Specific recommendations include:
Groundwater aquifers and existing (and new) groundwater wells should be identified and mapped, along with an indication of whether the aquifer supports important biological resources or is used for a particular human use (e.g., agriculture, residential drinking water).
The EIS should analyze the effects of using ranges of water quantities in well stimulation activities for conventional and unconventional oil and gas development. The EIS should also analyze the impacts on groundwater- dependent and freshwater systems if groundwater is pumped to supply the well stimulation activities, across the broader area where conventional and unconventional oil and gas development could occur.
In many states, including California, the regulation of groundwater pumping is inadequate to prevent harm to important ecological resources. Despite the predominant role of state regulation of groundwater, the BLM has an independent duty, found in its organic act and other authorities, to protect the ecological resources of federal lands. That duty includes maintaining sufficient water to support natural communities that depend on it. BLM's scientific and environmental study should include an assessment of the effects of the use of significant quantities of water in conventional and unconventional hydrocarbon production.
Due to the potential serious environmental, human health and safety, and socioeconomic impacts that hydraulic fracturing has already been shown to be capable of, I request the following of the BLM during the EIS process: The EIS must consider the nexus of groundwater contamination to the surface uses that are within BLM management range (i.e. vernal pools, riparian areas)
Fracking has a very negative effect on the water tables - in California these water tables supply much of the water needed for our food and also to drink. Don't destroy the "bread basket" of the world by allowing fracking on public land.
We don't know yet what the impacts to our underground aquifers are, or the effect on earthquake faults.

Table C-6
Issue No. 1: Water Resources

Water Supply – Surface
Withdrawal of large quantities of freshwater from streams and other surface waters will undoubtedly have an impact on the environment. Withdrawing water from streams will decrease the supply for downstream users, such as farmers or municipalities. Reductions in stream flows may also lead to downstream water quality problems by diminishing the water bodies' capacity for dilution and degradation of pollutants. The EIS and Statewide Study must examine these issues.
Harm to Aquatic Life and Habitats When streams and other surface waters are depleted, the habitat for countless plans and animals will be harmed and place tremendous pressure on species that depend on having a constant and ample stream of water. Physical habitats such as banks, pools, runs, and glides (low gradient river sections) are important yet susceptible to disturbance with changing stream flows. Altering the volume of water can also change the water's temperature and oxygen content, harming some species that require a certain level of oxygenated water. Decreasing the volume of streamflow and stream channels by diverting water to hydraulic fracturing would have a negative impact on the environment and should be included in an EIS and Statewide Study.
Surface water resources (lakes, rivers, streams, springs, wetlands, etc.) should be identified and mapped.
Water Resources
On May 31, 2013, the US District Court for the Northern District of California ruled in Center for Biological Diversity v. Bureau of Land Management that BLM violated the National Environmental Policy Act3 ("NEPA") in issuing oil and gas leases without first analyzing the full extent of extreme extraction techniques such as hydraulic fracturing. Where such activity has occurred in other states, the environmental impact has been considerable. Water, air, soil, wildlife, and the climate have all been harmed by the expansion of unconventional extraction methods.
Storm Water Runoff The EIS and Statewide Study should examine the effect that oil and gas development would have with increasing storm water runoff. Water from precipitation and snowmelt can serve as an avenue through which contaminants travel from an operation site to sensitive areas. While undisturbed land can retain greater amounts of water through plants and pervious soil, land that has been disturbed or developed may be unable to retain as much water, thereby increasing the volume of runoff. The area of land that is able to retain water will be significantly decreased if unconventional oil and gas extraction methods are permitted to expand.
Conversely, continuing to allow oil and gas extraction, including unconventional methods, would run counter to many if not all of the stated objectives in the current Hollister RMP. For example, it is impossible to "protect public health and safety and environmental resources by minimizing environmental contamination from past and present land uses..on public lands" while allowing extreme oil and gas extraction to endanger public health and safety and the environment. Similarly, it is difficult to reconcile the Hollister RMP's goal to "maintain, restore, or improve water quality and quantity to sustain the designated beneficial uses on BLM lands" without consideration of a complete ban on oil and gas extraction techniques that pose grave threats to water quality and supply.
The water used in drilling and hydraulic fracturing can come from a variety of sources. It may be: purchased or leased from municipal supplies; transferred as water rights, such as agriculture water rights; fully consumable water (leased or purchased effluent); or produced water (non-tributary). The amount of water used in oil and gas operations depends largely upon the type of well being drilled.
We recommend that the BLM map groundwater and surface water resources in the development area. This should include: o A summary discussion of the water resources that exist in the planning area (i.e., miles of streams, acreage of lakes, acreage of riparian areas, number of springs, etc.). o Identification of surface and groundwater uses within the planning area, including: all source water protection areas within each alternative (i.e., Sole Source Aquifers, Drinking Water Source Protection Zones, or Municipal Watersheds), and the location and source identification of agricultural, domestic and public water supply wells, springs, or surface water intakes.

Table C-6
Issue No. 1: Water Resources

The technique of hydraulic fracturing and completion of each well may require the consumption of 2 to 4 million gallons of water.7 Though recycling is being used in some oil and gas fields, most of the water used is consumed. The fracturing fluids used consist mostly of freshwater amended with chemical additives. Between 25 and 100 percent of the fracturing fluid may be returned to the surface as "flowback" and eventually transitions to "produced" water, which must then be treated or disposed. In addition to chemical additives, the flowback water from hydraulic fracturing typically contains high levels of total dissolved solids, hydrocarbons, heavy metals and radionuclides and must be properly managed. This flow back water is either treated or disposed of in deep injection wells.
The DEIS should disclose, to the extent that information is available, the water needs and anticipated sources for projected oil and gas development in the planning area. The EPA recommends reuse of produced water for these activities to reduce the use of drinking water resources and help ensure the long term sustainability of these operations.
In order to protect surface water and groundwater resources, the DEIS should include a requirement for fracture monitoring. Fracture monitoring can be accomplished with Tiltmeter Monitoring and/or Microseismic Monitoring. The purpose of these monitoring techniques is primarily to locate the vertical extent of the newly created fractures and verify that the vertical extent of fracturing does not reach any aquifers.
The DEIS should include a commitment that future project-level NEPA analyses for oil and gas development will contain a monitoring plan and program to track groundwater and surface water impacts as drilling and production operations occur. The purpose would be to ensure that the BMPs are mitigating impacts from routine development activity, and to identify potential impacts associated with spills or leaks of hazardous materials. An essential component of future project-level monitoring would be baseline and long-term monitoring for private wells.
I believe that hydraulic fracking at any time, especially this time, in a time of drought, is idiotic and dangerous. Why would we waste already so precious, clean water in GREAT amounts to poison it and put it back in the ground where it has potential to contaminate remaining clean ground water.
Water Resources Agency The Monterey County Water Resources Agency (MCRWA) has previously expressed concern regarding the impact of potential lease areas to MCRWA water supply facilities. The Rinconada Fault lies directly under the San Antonio Dam and has been identified as a likely earthquake source. The MCRWA does not recommend approval of hydraulic fracturing operations within close proximity to Nacimiento and San Antonio Dams and Reservoirs due to the presence of nearby faults and the potential of hydraulic fracturing operations to impact water quality and quantity in the local area. The following must be analyzed in the EIS: - Analysis of the potential impacts of hydraulic fracturing to water quality and quantity both locally and regionally. - Analysis of the potential for increased seismic activity due to hydraulic fracturing and the potential impacts, including impacts to County operated lakes, dams and reservoirs.
The County of Monterey also has great concern regarding the water supply impacts of hydraulic fracturing and other well stimulation techniques. Where will the water come from? Does the water used in these techniques conflict with agricultural or domestic water supplies? Is it obtained from surface waters or groundwater, and what is the impact on the aquifer?
Because of the large amounts of water necessary for alternative and unconventional well stimulation techniques, the possibility exists that surface and groundwater supplies will be depleted, creating a deficit in recharge areas and lowering the local water table. Clear plans for mitigating water quality and quantity issues are necessary to prevent negative environmental and public health impacts.
Pinnacles National Park The federally endangered California condor has been reintroduced at Pinnacles National Park and along the Big Sur coast. This central California flock of 60 wild condors regularly utilizes public lands managed by the BLM Hollister Field Office. NPS is concerned about potential impacts to the California condor from proposed oil and gas development within the central California flock's range, and also has concerns about potential impacts to water quality and quantity of local aquifers.

Table C-6
Issue No. 1: Water Resources

NPS is also concerned about potential impacts to this area's scarce water resources both of water quality and quantity due to the disposal of oil development waste products and requirements for large quantities of water.
(5) California's complex geology includes many unknown deep faults, geologic slip planes and other geologic formation elements that could allow chemical fracking fluids, oil and gas to escape upward into the five hundred foot deep level that is generally considered to the lower depth of most ground water basins. Fracking may occur as much as one to two miles below the earth surface, but rock faults can exist or be opened and thus allow deep salt and fracking chemical polluted water to merge with ground water over time. A geo analysis of the lands intended for possible leasing has to occur before any lease of public lands is considered. The EIS must include the geologic study sufficient to address this risk.
(7) The sheer volume of water that may be used for new unconventional oil and gas production needs to be assessed and estimated. The water supplies in the California counties spanning the jurisdiction of the Hollister office are virtually all over---subscribed and under stress. In many instances the hydraulic fracturing of oil and gas wells uses huge volumes of water. Water used in a Monterey Shale oil play will be in competition with agriculture, wildlife, municipal, and rural homestead uses. This completion for water supplies may prove to be intense. The EIS must assess the impacts of the additional demand for water resources that these new unconventional oil production sites will create. Few people in California want to replace agriculture with oil production. This is a major issue to be addressed in the EIS.
Concerned about: Clean drinking water (potential contamination and subsequent loss)
Concerned about: Aquifer contamination affecting human and agriculture use. (potential contamination and subsequent loss)
Concerned about: Integrity and reliability of drill casing and impact of any failures.
The EIS should analyze potential wastewater disposal impacts on water and land resources and seismicity for unconventional oil and gas development.
The EIS should analyze impacts to freshwater systems from sedimentation due to land disturbance activities from both conventional and unconventional oil and gas development.
Water is a precious resource in the Western part of the United States. Many competing interests vie for it in our state - Northern California vs Southern California, agriculture vs rivers and fish, households vs golf courses, and so on. At the same time, well stimulation techniques require vast amounts of water. There is no doubt that the oil and gas industry has the wherewithal to purchase the water it needs. But at whose expense? At what cost to the environment? These are questions the EIS must address.
When it comes to water, well stimulation is a double whammy: On the front end, water is consumed and turned into toxic waste. On the back end, when the oil and gas is burned, it will add more carbon to the atmosphere and contribute to global warming. Among other things, that will further intensify extreme weather events, like our current drought, restricting our supply of water still more.
Fracking and other types of unconventional oil and gas extraction also employ vast amounts of freshwater which cannot be reused for other purposes. California is currently experiencing a historic daught. It is unreasonable and dangerous to further stress our water resources by permanently removing precious gallons from our supply.
And I don't want hydrofluoric acid anywhere near our precious water supplies. Looking at recent events in Virginia, I don't trust industry with our water. We need to preserve our aquifers, especially as it appears that drought is becoming more common.

Table C-6
Issue No. 1: Water Resources

It might be reasonable to expect our basic laws to protect our water supplies, but both the Clean Water Act and the Safe Drinking Water Act contain exclusions for oil and gas production. It's the Halliburton Loophole. So it's really up to us, it's up to you, to protect our water supply.
Water has become extremely limited resource with multiple life defining agencies, household, and farming to industries competing for water. Use of water in large quantity is unacceptable. Hence fracking must be discouraged and banned.
Seismological and hydrological impact assessments are critical in consideration of any land use consideration of hydrological fracturing/acid fracturing/steam fracturing techniques in oil and gas exploration. Central California does not have the water supply to support fracking without causing a severe challenge to agricultural, ranching, and residential water usage.
Peter Gleick, Ph.D, a water and climate expert, spoke with "Los Angeles Magazine" about being up against peak limits on how much humans can consume. One example is the over pumping of groundwater and levels falling in many places throughout California. He says as we recognize the basic needs and human rights to water we should also guarantee that for the ecosystems. Our institutions must find better ways to protect the rural areas and open space as a guarantee in the future of availability and sustainability. We must proceed with new programs of planning and managing water systems, instead of business as usual, especially with this rapid climate change.
The EIS must justify the water use required in hydraulic fracturing and analyze how the use of water for oil and gas development will result in socioeconomic impacts, including socioeconomic impacts to individuals involved in the agricultural industry
In analyzing impacts of oil and gas development on water quality, soil and water contamination, public health and safety, hazardous materials, and socioeconomics, discuss the results of the paper, Fluid Migration Mechanisms due to Faulty Well Design and/or Construction: An Overview and Recent Experiences in the Pennsylvania Marcellus Play, by Anthony R. Ingraffea, that reported the increasing rate of well failure in the Marcellus Play between 2010-2012, with a well failure rate in 2012 of 7.2%.
Clean Safe Water is the most precious resource we have and any Fracking is a direct threat to that. We have barely enough clean water for our state and any loss will have huge health and economic consequences. Please Don't Frack my state.
There should be a state-wide moratorium on all fracking until we know all the ingredients used in the fracking process and what it's doing to our watertable. At the very least, it should be banned from public lands.
California already faces a water crisis and we can't risk this vital resource to the unknown dangers of fracking.
As a member of the public who has studied geophysics, I am deeply concerned about the practice of fracking for the removal of natural gas. When I first learned of the practice I predicted earthquakes, groundwater pollution, ground subsidence, and eventual travel of the pollutants to the surface 'downstream' through aquifers, faults, and natural fissures in the bedrock. We haven't seen all these yet, but there is strong evidence of the first two in the other states. Please, do not lift the fracking moratorium in California until the environmental studies are complete, and then only if they indicate the practice has no long-term damaging effects for the environment.
California is already short of potable water. As Texas has demonstrated so ably, fracking makes that worse.
As I understand it, once there are unwanted chemicals in the aquifers it is difficult and expensive to get them out. We know that one of our most precious resources now, and it will be increasingly more precious, is fresh water. Do not allow any practices which endanger our fresh water.
Some may be unaware that California is shot through with earthquake faults- fracking fluids will definitely contaminate aquifers. We need water much more than we need the drops of oil and gas achieved by fracking.
THERE IS MORE THAN ABUNDANT PROOF THAT FRACKING DESTROYS WATER SUPPLIES. DON'T MAKE CALIFORNIA DEPENDENT ON FOREIGN BOTTLED WATER (LIKE FROM, SAY, TEXAS) BECAUSE WE HAVE COMPLETELY DESTROYED OUR OWN.

Table C-6
Issue No. 1: Water Resources

California doesn't have the water to spare for an industry that prolongs our dependence on fossil fuels. Moreover, the very real likelihood that drinking water will be contaminated with pollutants, not to mention the increased risk of earthquakes that pumping vast amounts of water underground entails, makes this a no-win situation.
Here in the Central Coast, we have massive water shortages affecting both the Cambria area but inland in the Paso Robles basin. We know of massive damage to the natural resources in numerous other states. We should not be fracking in Calirornia at all.
There are new studies just released by Duke University that show that radioactive levels are now more prevalent in water in Penn. shale fracking area and dangerous levels of methane and ethane in drinking water. Why would we allow this to continue on public lands in California while preparing an Environmental Impact Statement and independent analysis of fracking in California
Fracking uses (wastes) millions of gallons of water and fracking causes earthquakes where earthquakes are rare if ever. California is the last place to allow a planet destroying business for the sake of a job.
The fracturing of shale with toxic chemicals threatens our water supplies.They must be required to disclose those chemicals! They WILL invariably leach into our waterways.
Include, in the DEIS, a list of BMPs that may be required to protect surface water and groundwater resources, and the circumstances under which the BMPs would be applied (e.g., proximity to surface water resources, presence of erosive soils, slope, shallow water aquifers, proximity of water wells, etc.).
Explain, in the DEIS, how the BLM would ensure that the BMPs would be monitored and enforced.
Stand strong and protect our water, land and air from fracking. Remember, 6 MILLION gallons of water PER WELL!
I am so disappointed to learn that so much fracking has already been done in our beautiful state- which is currently lacking in clean water (which is wasted in huge amounts in the fracking process!!!!). So, please at least put a moratorium on the process until or unless it can be proven that it is safe and harmless.
Water is a precious commodity in CA and to risk polluting our aquifers, not to mention massive amounts of water required for fracking is irresponsible!
Trading fresh- or even reclaimable - water for fossil energy is a bad deal and good for nobody but the fossil firms and the people they pay off.
Fracking is already damaging ground water, and is seriously degrading the areas where it is practiced. We don't need the oil from fracking, not at the expense of our water sources. Water is already at a premium. It will be more so, going forward. Water is more important than oil. This is basic common sense. Please apply it to this situation and extend the moratorium.
If fracking is to be allowed in California, then require the industry to hold iron-clad insurance that will (more than) compensate communities in the event that their water supplies are compromised.
we know fracking water has high concentrations of RADIUM.
California already has water quantity and quality problems enough.
Before they were pulled, the scientific studies by the EPA were indicating that fracking was dangerous and had longterm effects on both land, water and the air quality.
I live in the Inland Empire (Riverside County) and we're underlain by part of the Monterey Shale. In addition, we get 100% of our water from wells (not Northern CA or the Colorado River). If the wells become polluted, my wife and I will be up a famous creek without a canoe (much less a paddle). Please do not put the cart before the horse here. Finish the studies and then make a policy determination.
I am concerned about the amount of water needed for fracking - it well known that California does not have enough water for its needs as it is. I am also concerned about the pollution of our ground water from fracking. There are already several towns in this state where the drinking water has become unsafe due to agricultural pollution or

Table C-6
Issue No. 1: Water Resources

hazardous waste disposal.
I would like to urge the BLM to continue the moratorium on fracking on California's public lands until more is known about it's consequences to the environment, specifically the public water supply that may be put at risk by the secret proprietary chemicals that the oil companies pump into the ground to break up the rocks to extract oil and natural gas. The oil companies won't make public exactly what's being used in the fracking process. My children drink water that may eventually contain these chemicals, if fracking is allowed to occur. If we, as citizens of California, are not allowed to know exactly what is being pumped into th eground so they can pump out oil and gas, then I don't think the oil companies should be allowed to go ahead with their fracking. We can't make informed decisions about the pros and cons without all the information. Keep the moratorium in place until we actually have all the facts. It's critical to the future of California's drinking water and the health of all of us
The side effects of fracking are not yet known- or maybe known to the companies doing the work, but they are certainly not volunteering the information. Damage to underground water supplies, poisoning farmland and wildlife, and long-term human health impacts have all been reported. Please do not allow these little understood risks to be forced upon Californians without more studies and safeguards. Once risks are identified, the companies doing the fracking should be obliged to pay for all remedies, such as increased health care costs, restoration of water supplies, etc.
Knowing that hydraulic fracture releases poisonous material into the air and water supply; destroys bedrock formations necessary to the stability of cities; and extracts negligible amounts of fuel in exchange for centuries' worth of pollution; we ask a prohibition thereof until superior fuels are in nationwide use, by all classes of society.
Because fracking is still a new method of extracting natural gas and because there has been widespread concern primarily about its potential to contaminate groundwater, lakes, and streams, the safer course for the BLM and the entire state of California would be to have a moratorium on fracking for two reasons. First, the risks of fracking will become more evident as the experiences of other states that have fracked for years, like Pennsylvania and Ohio, gives it an environmental track record. The second reason is that, with experience, states and gas companies will become better at avoiding adverse environmental consequences of fracking and dealing with them when they occur, as they have and will in the future.

Table C-7
Issue No. 2: Health and Safety

Hazardous Materials
Firstly, according to various studies, the fracturing fluid used in hydraulic fracturing contains endocrine disrupting chemicals, which are linked to increased instances of cancer, birth defects, decreased sperm quality and quantity, infertility and reproductive tract deformities. One example that sites these health side effects is the 2013 article published by the Endocrine Society, titled Estrogen and Androgen Receptor Activities of Hydraulic Fracturing Chemicals and Surface and Groundwater in a Drilling-Dense Region, by Christopher D. Kassotis et al. Even though fracturing fluid is primarily made of water, and chemicals constitute only a very small percentage, the chemicals are able to have negative impacts even in low concentrations. This means that even if only trace amounts are detected, the harm to us and our children is simply not worth the risk. Please take these concerns seriously.
Oil and gas leasing on federal lands has become a much more serious risk to public health, safety, and the environment over the last few years with the increased use of unconventional and dangerous recovery techniques. Oil well operators have recently employed a variety of risky methods to extract resources from previously infeasible geologic formations. These oil and gas extraction methods, which include hydraulic fracturing, gravel packing, and acidization, involve the use hundreds of kinds of chemicals, many of which are known to be carcinogenic or otherwise harmful to human health. The utilization of these unconventional techniques presents new and more potent risks over those of conventional oil and gas extraction.
The EIS and Statewide Study should cover not only the particular method of extraction, but all aspects of exploration and development, including but not limited to: drilling rig mobilization, site preparation, and demobilization; completion rig mobilization and demobilization; well drilling; well completion; and well production. Equipment cleaning, maintenance, and repair also become necessary and necessitate additional chemical use and expand the risks from exposure.
The transportation of toxic chemicals also poses a risk if any trucks were to spill or otherwise leak contaminants due to accidents. The need for expansion of distribution and refining facilities will also contribute to the additional environmental impact that can be expected from allowing unconventional oil and gas extraction to proceed.
Unconventional oil and gas recovery also results in large amounts of waste fluid and produced water, byproducts that can potentially contaminate air, water, and soil and harm humans and wildlife
Under current practices in California, some flowback fluid is stored in open pits near the well pad. The EIS and Statewide Study must review the risks posed by these pits, which can contaminate the soil, pollute nearby surface water through breaches and spills, and pollute the air through evaporation. Liners are known to tear, and spills and evaporation occur even when the lining remains intact. Both can kill wildlife that is exposed to the pits' toxic contents.
So-called "closed loop" systems, which store flowback in tanks, still have potential environmental impacts. Even with reduced emission completions, spills and fugitive emissions can still cause soil, water, and air contamination. Using tanks does not obviate the need for trucks and pipes to transport flowback and waste water fluid to offsite disposal facilities. As mentioned above, increased truck traffic also has deleterious effects on the environment through increased traffic, air emissions, and spills.
The EIS and Statewide Study Should Analyze All Chemicals Used in Oil and Gas Production Congress charged BLM with managing public lands "in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values." BLM will not be able to adequately assess the environmental impacts of unconventional oil and gas recovery and fulfill these duties without full knowledge of the chemicals used in the process. To date, operators have been unwilling to disclose a full list of chemicals used in new techniques that involve injection of toxic chemicals underground. While some chemical ingredients are known through Material Safety Data Sheets and other sources, many are withheld from public disclosure under claims of trade secret protection. But BLM is not precluded from requiring the submission of such information. In fact, BLM is required to gather and disclose chemical information under the statutory mandates in NEPA, Federal Land Policy and Management Act, 42 USC. § 1701 et seq. ("FLPMA"), and other applicable law.
Moreover, under the directives of NEPA, BLM must ensure that Americans have a "safe [and] healthful" environment. Its actions must be taken "without degradation, risk to health or safety, or other undesirable and unintended consequences." All federal agencies must use "all practical means.. to restore and enhance the quality of the human environment and avoid or minimize any possible adverse effects of their actions upon the quality of the human environment." BLM thus has the clear authority and obligation to

Table C-7
Issue No. 2: Health and Safety

gather and disclose information on all chemicals used for activities on public lands.
The EIS and Statewide Study should examine the chemicals that are being injected underground as well as the chemicals that flow back to the surface. Full information on all substances that flow back up to the surface will allow BLM to identify harms particular to flowback fluid. Flowback fluid is comprised of a different mixture of chemicals because some naturally occurring, yet dangerous, chemicals that were previously contained in the subsurface will rise to the surface. These include heavy metals, salts, and naturally occurring radioactive materials ("NORMs"). Conversely, some chemicals may be more likely to remain underground and pose threats to underground water supplies and increase the risk of induced seismic activity. It is important to understand how different chemicals travel and mix throughout the extraction process in order to adequately identify particular risks
In addition to well stimulation process, chemicals are also used in other stages of oil and gas production. For example, a study found 22 chemicals used in the drilling process in Colorado gas development fields. Chemical dispersants might also be used in the event of a spill or other accident. These dispersants may be just as harmful as the spill itself. Another example is the discovery of methylene chloride being used as a cleaning solvent for equipment. This chemical was found in 73 percent of air samples in one study, but methylene chloride was not reported on any list of disclosed chemicals, despite its toxicity. The discovery of an undisclosed, harmful, and pervasive chemical underscores the need for BLM to conduct its own monitoring and measuring and not simply relying on reports from operators. Meaningful monitoring is made impossible when compounds used are unknown. Furthermore, contaminants cannot be traced back to their source if operators do not disclose which chemicals they use. Thus, anything short of full disclosure with regard to chemical information will violate NEPA and other applicable law while endangering public health and safety.
As for chemicals known to have been used in hydraulic fracturing, the list is as long as it is dangerous. A study of gas production in Colorado yielded 632 chemicals used in 944 different products. Of these chemicals, 75 percent have been shown to cause harm to the skin, eyes, and other sensory organs; 37 percent could affect the endocrine system; and 25 percent could cause cancer and mutations. Recent disclosure requirements adopted by the South Coast Air Quality Management District ("SCAQMD") in California revealed that operators engaged in unconventional oil and gas extraction in southern California, in just 30 days of reporting, used dozens of chemicals known to be air toxics over hundreds of occasions. BLM cannot complete an EIS or Statewide Study without understanding and documenting the full extent of the harms from each and every chemical used in the oil and gas extraction process. This applies to both known and currently unknown chemicals. It is thus important for BLM and the public to know the full array of chemicals used in the extraction process.
Chemical and Waste Transport Unconventional well stimulation relies on numerous trucks to transport chemicals to the site as well as collect and carry disposal fluid from the site to processing facilities. A US GAO study found that up to 1,365 truck loads can be required just for the drilling and fracturing of a single well pad while the New York Department of Conservation estimated the number of truck trips to be about 3,950 per horizontal well. Accidents during transit may cause leaks and spills that result in the transported chemicals and fluids reaching surface waters. Chemicals and waste transported by pipeline can also leak or spill. The EIS and Statewide Study should evaluate how often such accidents can be expected to occur, and the effect of chemical and fluid spills.
On-site Chemical Storage and Processing Chemicals that are being stored at unconventional well stimulation sites can also be susceptible to accidental spills and leaks. Natural occurrences such as storms and earthquakes may cause accidents, as can negligent operator practices. Recent floods in Colorado have shown how weather events may result in uncontrolled chemical spills and leaks on a massive scale. Some sites may also use on-site wastewater treatment facilities. Improper use or maintenance of the processing equipment used for these facilities may result in discharges of contaminants.
In addition, recent reporting requirements implemented by the South Coast Air Quality Management District (SCAQMD) have shown that at least a dozen chemicals known to be air toxics have been used in hydraulic fracturing and other types of unconventional oil and gas recovery in California. Though the reporting requirements are relatively new, already operators have been forced to disclose the fact that they have been using several types of air toxics in California, including crystalline silica, methanol, hydrochloric acid,

Table C-7
Issue No. 2: Health and Safety

hydrofluoric acid, 2- butoxyethanol, ethyl glycol monobutyl ether, xylene, amorphous silica fume, aluminum oxide, acrylic polymer, acetophenone, and ethylbenzene. The EIS and Statewide Study should examine whether and to what extent these and other listed air toxics will be released into the air.
Many of these chemicals also appear on the US EPA's list of hazardous air pollutants. A study by the US House of Representatives' on chemicals used in hydraulic fracturing showed twenty-five chemicals regulated as hazardous air pollutants were used in hydraulic fracturing in various states across the country.
SCAQMD's list of air toxics refers to all chemicals included in California Health and Safety Code 44321, which include toxic air contaminants and federal hazardous air pollutants. The EIS and Statewide Study should study the potential harm from all the chemicals included in Section 44321 and any other pollutants that may pose a risk to human health.
Naturally occurring radioactive materials can be brought to the surface through drilling and extraction processes. The buildup of radioactive materials in pipes and equipment can accumulate to amounts that are harmful to workers who interact with the pipes and equipment. In Pennsylvania, researchers found high concentrations of the element radium, a highly radioactive substance, in water samples from streams. Concentrations were roughly 200 times higher than background levels. The EIS and Statewide Study should assess the amount, the type, and the potency of radioactive elements that are naturally occurring in federal lands and evaluate the likely risks that stem from bringing such materials to the surface.
A study of 353 identifiable chemicals used in hydraulic fracturing found that many caused harm to skin, eye and sensory organs; respiratory systems; gastrointestinal and liver systems; brain and nervous systems; immune systems, kidneys, and cardiovascular systems. The study also found certain chemicals were carcinogenic, mutagens, endocrine disruptors, and/or ecologically harmful. Chemicals used during the drilling process showed many of the same dangers. Chemicals identified in evaporation pits also were linked to the same array of harms.
The DEIS should include a comprehensive analysis of potential impacts to the quality of surface water and groundwater resources and evaluate the following activities for their impacts: o Waste management, including use, reuse, recycling and disposal of oil and gas produced and flowback water. o Impacts to shallow aquifers from oil and gas well drilling, well completion and production. o Management of spills or leaks from surface impoundments, oil and gas pits, or produced water evaporation ponds. o Erosion and sedimentation impacts associated with surface disturbance, including those associated with roads, well pad construction, well drilling and completion, and pipelines. - As part of completing the aforementioned evaluation, the following resource impacts should be discussed, including disclosure of which waters may be impacted, the nature of potential impacts, and specific pollutants likely to impact those waters: o Groundwater: Potential impacts to groundwater, including municipal or private water supplies. We recommend that this include an analysis of the management of any fluids that will be injected underground for well completion, including the toxicity and fate of these fluids, with a focus on avoiding surface spills or leaks of these fluids. o Impaired Waterbodies: Potential impacts to impaired waterbodies, including waterbodies listed on the CWA § 303(d) list and waterbodies with completed Total Maximum Daily Loads (TMDLs). o Surface Water Quality and Sedimentation: Potential impacts to water quality from runoff associated with surface disturbance. Erodible soils can represent a significant nonpoint source, and runoff could introduce sediments, as well as salts, selenium and other heavy metals into surface waters. To ensure sufficient information is included about the potential impacts of soil disturbance, we recommend that the DEIS include an estimate of erosion rates for each alternative in tons per year based on amount of surface disturbance, soil types, topography and slope, to avoid significant sedimentation.

Table C-7
Issue No. 2: Health and Safety

Studies such as the Endrocrine Society's 2013 study by Christopher D. Kassotis et al, entitled Estrogen and Androgen Receptor Activities of Hydraulic Fracturing Chemicals and Surface and GroundWater in a Drilling-Dense Region, have concluded that the fracturing fluid used in hydraulic fracturing contains end ocrine disrupting chemicals, which are linked to increased instances of cancer, birth defects, decreased sperm quality and quantity, infertility and reproductive tract deformities. After hydraulic fracturing is completed, only 60 to 80 percent of the fracturing fluid is reclaimed. This means that the remaining 40 to 20 percent of the fluid remains underground has the potential to contaminate groundwater over time. Even though fracturing fluid is primarily made up of water, and chemicals constitute only a very small percentage, the chemicals are potent enough to have negative impacts even in low concentrations. Endocrine disrupters in particular are known for having impacts at very low levels, and they have the potential for exacerbated effects when mixed with other chemicals.
The 1996 Hollister RMP that this EIS could be amending established a hazardous materials and public safety objective of identifying and controlling imminent hazards or threats to human health and/or the environment from hazardous substances released on public lands.
Also, in spite of best intentions and best practices, it is logical to assume that there will be leaks and spills and harm to wildlife, given the caustic nature of the products involved.
Oil and gas drilling stimulation techniques that utilize hazardous materials result in more hazardous materials being transported on the roadways, stored on drilling sites and injected into the ground. It is the experience of the Environmental Health Bureau that it is difficult to obtain compliance from drilling companies with existing regulations regarding hazardous materials, therefore, expansion of drilling activities could result in increased contamination of soils and water with hazardous materials. The EIS should include analysis of the potential impacts due to this increased contamination.
Disposal of produced and wastewater generated during drilling activities is a problem faced by all areas where O&G extraction occurs. Although some methods of recycling make produced water from drilling activities available for agricultural uses, there is no guarantee of its quality, and this water is classified as not safe for human or animal consumption. Reinjection activities may further degrade the quality of groundwater sources, and increase the possibility of seismic activity. Well- defined and concise plans for disposal of wastewater will help protect the quality of surface and groundwater, and prevent seismic activity.
Naturally occurring radioactive elements in soils are found all over the world. It is necessary to understand the risks when these elements are brought to the surface by drilling activities. Dangers associated with exposure to radioactive elements by the public and the environment must be studied and mitigation plans put into place in case there is a release of any dangerous material on the surface.
NPS is also concerned about potential impacts to this area's scarce water resources both of water quality and quantity due to the disposal of oil development waste products and requirements for large quantities of water.
(6) The EIS must include a list of the chemicals that could be used in unconventional oil and gas production. These numerous toxic and corrosive chemicals may be spilled, leaked from pond or tank storage, or be pumped into the earth. No legitimate EIS can be prepared without including a thorough assessment of the risks posed by the use of these chemicals, both at the surface and deep in the earth. BLM has the legal authority to create regulations that permit the disclosure of this information, even for chemical information that would otherwise be considered a trade secret.
The EIS should study all environmental impacts made more severe by fracking and other types of unconventional oil and gas extraction. Fracking uses hundreds of undisclosed yet toxic chemicals. Numerous cases of contamination have been reported in places where fracking has occurred. The EIS must include a disclosure of the materials used in the fracking process and an analysis of the effects of these materials on human and wildlife health.
CHEMICALS USED IN HYDRAULIC FRACTURING http://www.conservation.ca.gov/dog/general_information/Documents/Hydraulic%20Fracturing%20Report%204%2018%2011.pdf

Table C-7
Issue No. 2: Health and Safety

Concerned about: Injection of hazardous chemicals into the biosphere.
Concerned about: Potential for dumping of hazardous chemical wastes without studies, documentation or controls.
The EIS should analyze potential wastewater disposal impacts on water and land resources and seismicity for unconventional oil and gas development.
The chemicals used in well stimulation activities and likely to be encountered in flowback and produced fluids should be identified and their impacts on drinking water and agricultural water should be analyzed.
In the various techniques of "well stimulation," including hydraulic fracturing or "fracking," toxic chemicals are mixed into water and pumped into the ground to release trapped oil and gas. These toxics pose a danger that the EIS must take into account, since well stimulation would probably be the primary means of extraction in BLM areas. When representatives of the oil and gas industry say that the toxic mixtures they pump into the earth will stay safely sequestered far underground and will not contaminate surface soil or aquifers, they are making a promise they cannot keep. For the moment, set aside the fact that contamination has occurred at numerous drilling sites, that significant amounts of fluid are regurgitated to the surface while the well is being worked, that toxic gases are released into the atmosphere from the ponds and tanks that hold those fluids, and that holding ponds typically leak. Consider only the long term, after the companies have abandoned the wells and moved on. The wells that they leave behind are themselves conduits through which toxics can come back to the surface. In time, all well casings fail, leaving open channels for contamination. Add in the prevalence of earthquakes, which produce new fissures in subsurface rock and can contort drilling channels, and it is a near certainty that well stimulation is a pathway to future ecological disasters. The bottom line is this: No one has a moral right - nor should they have a legal or regulatory right - to push toxic chemicals into the environment and leave them there.
Health Impacts: TAGs are defined as air pollutants that which may cause or contribute to an increase in mortality or serious illness, or which may pose a hazard to human health. The most common source of TAGs can be attributed to diesel exhaust fumes that are emitted from both stationary and mobile sources. Health impacts may require a detailed health risk assessment (HRA). Project related health impacts should be evaluated to determine if emissions of toxic air contaminants (TAG) will pose a significant health risk to nearby sensitive receptors.
I have recently moved to California from West Virginia. I have witnessed first hand the disaster that fracking has created in my home state. People whose home is literally the only asset they possess have been forced to move because they get sick from the fumes. The gas companies asirex us that it was safe, it would be fine. They lied! Air pollution terrible degradation of the environment, and radioactive waste that the landfills are in no way repaired to handle.
With regard to addressing "the environmental effects of chemicals, if any, used" in well stimulation (78 Fed.Reg. 47409), the EIS should draw on available information on the chemical composition of well stimulation fluid. The implementation of FracFocus, which WSPA fully supports, has effectively served to provide timely public information about the content of hydraulic fracturing fluid. In addition, S.B. 4 and interim implementing regulations require public disclosure regarding the base fluid and each additive contained in well stimulation fluids used, as well as the total volume of fluid used. 14 Cal. Code Regs. § 1788.
Pennsylvania- Fracking- finding radium levels 200 times greater. ref. http://rt.com/usa/fracking-rad ioactivity-contaminants-study-661/
Minerals and Mining
In addition, for unconventional oil and gas development, the EIS should map areas where the Monterey Shale and other shale resources exist and analyze where new oil and gas development is reasonably likely to occur.

Table C-7
Issue No. 2: Health and Safety

For both conventional and unconventional oil and gas development, the EIS should:

- Identify and map all existing oil and gas development in California, including all development on BLM-managed lands and sub-surface resources and all BLM existing oil and gas leased tracts in the state.

- Identify all existing wells in which well stimulation practices have been used, and, for these wells, any reports or information evidencing well failures, casing or cement failures, spills, or groundwater or surface contamination.

Public Health and Safety

Firstly, according to various studies, the fracturing fluid used in hydraulic fracturing contains endocrine disrupting chemicals, which are linked to increased instances of cancer, birth defects, decreased sperm quality and quantity, infertility and reproductive tract deformities. One example that sites these health side effects is the 2013 article published by the Endocrine Society, titled Estrogen and Androgen Receptor Activities of Hydraulic Fracturing Chemicals and Surface and Groundwater in a Drilling-Dense Region, by Christopher D. Kassotis et al. Even though fracturing fluid is primarily made of water, and chemicals constitute only a very small percentage, the chemicals are able to have negative impacts even in low concentrations. This means that even if only trace amounts are detected, the harm to us and our children is simply not worth the risk. Please take these concerns seriously.

Oil and gas leasing on federal lands has become a much more serious risk to public health, safety, and the environment over the last few years with the increased use of unconventional and dangerous recovery techniques. Oil well operators have recently employed a variety of risky methods to extract resources from previously infeasible geologic formations. These oil and gas extraction methods, which include hydraulic fracturing, gravel packing, and acidization, involve the use hundreds of kinds of chemicals, many of which are known to be carcinogenic or otherwise harmful to human health. The utilization of these unconventional techniques presents new and more potent risks over those of conventional oil and gas extraction.

The increased utilization of unconventional oil and gas extraction techniques also increases the overall amount of oil and gas development in the state. Moreover, the use of unconventional techniques increases the spatial intensity of oil and gas wells. Multi-well pads and a higher density of wells become viable when operators begin to use unconventional oil and gas extraction techniques. Thus, the public health and safety and environmental problems stemming from traditional oil and gas development will only be exacerbated by allowing oil and gas activity to reach new areas that would otherwise remain untouched. Permitting unconventional extraction methods on public lands may also extend the life of pre-existing wells and in the process increase the risk of harm.

The EIS and Statewide Study Should Examine All Methods of Unconventional Resource Extraction.

The EIS should encompass all methods of unconventional oil and gas extraction and production. Although hydraulic fracturing has been the primary focus of the litigation prompting this review and has garnered the most attention from the public, well stimulation and underground injection techniques can vary widely. Examples include acidization, acid hydraulic fracturing, and gravel packing. Each of these techniques raises a unique yet dangerous set of concerns and potential impacts on human health, safety, and the environment. The EIS and Statewide Study must address all types of unconventional oil and gas recovery that may be utilized in California.

BLM must analyze not only the well completion or stimulation, but also the various preceding, concurrent, and subsequent activities that surround oil and gas extraction. Oil and gas leases affect the environment not only through the well stimulation and recovery processes, but also through related activities needed to drill, construct, operate, maintain, monitor, and shut down each well. Each stage of the oil and gas extraction and recovery process carries its own set of public health, safety, and environmental concerns.

In addition to well stimulation process, chemicals are also used in other stages of oil and gas production. For example, a study found 22 chemicals used in the drilling process in Colorado gas development fields. Chemical dispersants might also be used in the event of a spill or other accident. These dispersants may be just as harmful as the spill itself. Another example is the discovery of methylene chloride being used as a cleaning solvent for equipment. This chemical was found in 73 percent of air samples in one study, but methylene chloride was not reported on any list of disclosed chemicals, despite its toxicity. The discovery of an undisclosed, harmful, and pervasive chemical underscores the need for BLM to conduct its own monitoring and measuring and not simply relying on reports from operators. Meaningful monitoring is made impossible when compounds used are unknown. Furthermore, contaminants cannot be traced back to their source if operators do not disclose which chemicals they use. Thus, anything short of full disclosure

Table C-7
Issue No. 2: Health and Safety

with regard to chemical information will violate NEPA and other applicable law while endangering public health and safety.
As for chemicals known to have been used in hydraulic fracturing, the list is as long as it is dangerous. A study of gas production in Colorado yielded 632 chemicals used in 944 different products. Of these chemicals, 75 percent have been shown to cause harm to the skin, eyes, and other sensory organs; 37 percent could affect the endocrine system; and 25 percent could cause cancer and mutations. Recent disclosure requirements adopted by the South Coast Air Quality Management District ("SCAQMD") in California revealed that operators engaged in unconventional oil and gas extraction in southern California, in just 30 days of reporting, used dozens of chemicals known to be air toxics over hundreds of occasions. BLM cannot complete an EIS or Statewide Study without understanding and documenting the full extent of the harms from each and every chemical used in the oil and gas extraction process. This applies to both known and currently unknown chemicals. It is thus important for BLM and the public to know the full array of chemicals used in the extraction process.
In short, knowing the exact identities, quantities, concentrations, and migration paths of all chemicals will help BLM determine the scope and extent of risks to human health, safety and the environment. Incomplete knowledge in these areas will result in an inadequate EIS and Statewide Study.
Surface water contamination Surface waters can be contaminated in many ways from unconventional well stimulation. In addition to storm water runoff, described above, surface water contamination may also occur from chemical and waste transport, chemical storage leaks, and breaches in pit liners. As described below, contaminated surface water can result in many adverse effects to wildlife, agriculture, and human health and safety. It may make waters unsafe for drinking, fishing, swimming and other activities. The EIS and Statewide Study should fully assess the risk of harm to surface waters as well as the feasibility of restoring the original water quality once surface water is contaminated.
The migration may occur over a number of years. Thus, the EIS and Statewide Study must include long-term studies on the frequency and effect of fluid migration through newly created subsurface pathways. Fluid migration is of particular concern when oil and gas operations are close to drinking water supplies. Unfiltered drinking water supplies especially at risk because they have no readily available means of removing contaminants from the water. Even water supplies with filtration systems are not designed to handle the kind of contaminants that result from unconventional oil and gas extraction.
The potential harm resulting from increased exposure to the dangerous air pollutants described above far serious and wide ranging. The negative effects of criteria pollutants are well documented and are summarized by the US EPA's website: Nitrogen oxides (NOx) react with ammonia, moisture, and other compounds to form small particles. These small particles penetrate deeply into sensitive parts of the lungs and can cause or worsen respiratory disease, such as emphysema and bronchitis, and can aggravate existing heart disease, leading to increased hospital admissions and premature death. NOx and volatile organic compounds react in the presence of heat and sunlight to form ozone.
The potential harm resulting from increased exposure to the dangerous air pollutants described above far serious and wide ranging. The negative effects of criteria pollutants are well documented and are summarized by the US EPA's website: Particulate matter (PM) - especially fine particles - contains microscopic solids or liquid droplets that are so small that they can get deep into the lungs and cause serious health problems. Numerous scientific studies have linked particle pollution exposure to a variety of problems, including: premature death in people with heart or lung disease, increased mortality, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms, such as irritation of the airways, coughing or difficulty breathing.
The potential harm resulting from increased exposure to the dangerous air pollutants described above far serious and wide ranging. The negative effects of criteria pollutants are well documented and are summarized by the US EPA's website: Sulfur Dioxide (SO2) - has been shown to cause an array of adverse respiratory effects including bronchoconstriction and increased asthma symptoms. Studies also show a connection between short-term exposure and increased visits to emergency departments and hospital admissions for respiratory illnesses, particularly in at-risk populations

Table C-7
Issue No. 2: Health and Safety

including children, the elderly, and asthmatics.
The potential harm resulting from increased exposure to the dangerous air pollutants described above far serious and wide ranging. The negative effects of criteria pollutants are well documented and are summarized by the US EPA's website: Carbon Monoxide (CO) can cause harmful health effects by reducing oxygen delivery to the body's organs (like the heart and brain) and tissues. At extremely high levels, CO can cause death. Exposure to CO can reduce the oxygen-carrying capacity of the blood. People with several types of heart disease already have a reduced capacity for pumping oxygenated blood to the heart, which can cause them to experience myocardial ischemia (reduced oxygen to the heart), often accompanied by chest pain (angina), when exercising or under increased stress. For these people, short-term CO exposure further affects their body's already compromised ability to respond to the increased oxygen demands of exercise or exertion.
The potential harm resulting from increased exposure to the dangerous air pollutants described above far serious and wide ranging. The negative effects of criteria pollutants are well documented and are summarized by the US EPA's website: Ozone (O3) can trigger or worsen asthma and other respiratory ailments. Ground level ozone can have harmful effects on sensitive vegetation and ecosystems. Ozone may also lead to loss of species diversity and changes to habitat quality, water cycles, and nutrient cycles.
Air toxics and hazardous air pollutants, by definition, can result in harm to human health and safety. The full extent of the health effects of exposure is still far from being complete, but already there are numerous studies that have found these chemicals to have serious health consequences for humans exposed to even minimal amounts. The range of illnesses that can result are summarized in a study by Dr. Theo Colburn, which charts which chemicals have been shown to be linked to certain illnesses. Other studies and reports have confirmed the pervasive and extensive amount of chemicals that have the potential to cause health risks by being emitted into the air.
The EIS and Statewide Study should incorporate BLM's own literature review of the harmful effects of each of these chemicals known to be used in hydraulic fracturing and other unconventional oil and gas extraction methods. Without knowing the effects of each chemical, an EIS or Statewide Study cannot accurately project the true impact of unconventional oil and gas extraction on public lands.
The EIS and Statewide Study must fully analyze the impact of unconventional oil and gas extraction on the biggest and most challenging environmental problem of our time: climate change. The first goal listed under NEPA is to "fulfill the responsibilities of each generation as trustee of the environment for succeeding generations." Expansion of oil and gas production into California's federal lands will substantially increase the volume of greenhouse gases emitted into the atmosphere and jeopardize the sustainability of the environment and the health and well being of future generations. In order to avoid catastrophic climate change, BLM should be looking for ways to reduce, rather than increase, greenhouse gas emissions.
Naturally occurring radioactive materials can be brought to the surface through drilling and extraction processes. The buildup of radioactive materials in pipes and equipment can accumulate to amounts that are harmful to workers who interact with the pipes and equipment. In Pennsylvania, researchers found high concentrations of the element radium, a highly radioactive substance, in water samples from streams. Concentrations were roughly 200 times higher than background levels. The EIS and Statewide Study should assess the amount, the type, and the potency of radioactive elements that are naturally occurring in federal lands and evaluate the likely risks that stem from bringing such materials to the surface.
The dangers listed above are described primarily in the context of the potential to affect human health. For example, water contamination is a danger because humans can ingest the water and develop a variety of ailments. The EIS and Statewide Study should include a health impact assessment, or equivalent, of the aggregate impact that hydraulic fracturing and other unconventional extraction techniques will have on human health. Studies have shown the chemicals used in unconventional oil and gas extraction have caused increased risk of sickness, chronic disease, cancer, and even death. The EIS and Statewide Study must examine the full array of potential human health and safety impacts when studying each of the harms listed above.

Table C-7
Issue No. 2: Health and Safety

In addition, the EIS and Statewide Study should study the human health and safety impacts of noise pollution, light pollution, and traffic accidents resulting from oil and gas leases on federal land.
A study of 353 identifiable chemicals used in hydraulic fracturing found that many caused harm to skin, eye and sensory organs; respiratory systems; gastrointestinal and liver systems; brain and nervous systems; immune systems, kidneys, and cardiovascular systems. The study also found certain chemicals were carcinogenic, mutagens, endocrine disruptors, and/or ecologically harmful. Chemicals used during the drilling process showed many of the same dangers. Chemicals identified in evaporation pits also were linked to the same array of harms.
Conversely, continuing to allow oil and gas extraction, including unconventional methods, would run counter to many if not all of the stated objectives in the current Hollister RMP. For example, it is impossible to "protect public health and safety and environmental resources by minimizing environmental contamination from past and present land uses..on public lands" while allowing extreme oil and gas extraction to endanger public health and safety and the environment. Similarly, it is difficult to reconcile the Hollister RMP's goal to "maintain, restore, or improve water quality and quantity to sustain the designated beneficial uses on BLM lands" without consideration of a complete ban on oil and gas extraction techniques that pose grave threats to water quality and supply.
The alternatives considered in the EIS must include at a minimum, cancellation of the 2011 and 2012 Hollister Field Office lease sales subject to litigation, and, more broadly, a prohibition on all oil and gas activities in areas managed by the Hollister Field Office as well as a prohibition on all unconventional oil and gas activities in areas managed by the Hollister Field Office. A prohibition on all oil and gas activities is the only option that will completely eliminate the risk of several of the harms described above. Revisions to the Hollister office's RMP should be implemented after a full consideration of the EIS and Statewide Study in order to protect people, wildlife, and our public lands from the many risks and damages of oil and gas extraction.
Identify any sensitive receptors in the project area, such as children, elderly, and the infirm, and specify the means by which impacts to these populations will be minimized (e.g. locate construction equipment and staging zones away from sensitive receptors and building air intakes).
Coccidioidomycosis, (kok-sid-oy-doh-my-KOH-sis), or Valley Fever, is a fungal infection that is almost always acquired from the environment via the inhalation of fungal spores. It can affect humans, many species of mammals and some reptiles.10 The fungus, Coccidioides, is endemic (native and common) in the soil of the southwestern United States, Mexico, and parts of Central and South America. Coccidioides can live for long periods of time in soil under harsh environmental conditions including heat, cold, and drought. Coccidioides can be released into the air when soil containing the fungus is disturbed, either by strong winds or activities such as farming or construction. Distribution of the fungus is typically patchy, but in some "hot spots," up to 70% of the human population has been infected. The number of reported Valley Fever cases in the US has risen from less than 5,000 in 2001 to more than 20,000 cases in 2011. An estimated 150,000 more cases go undiagnosed every year. The majority of reported cases are located in Arizona and California. The reason for the recent increase in cases, however, is unclear. Dust storms in endemic areas are often followed by outbreaks of coccidioidomycosis. If the dust storms are severe, the fungal spores can be carried outside the endemic area into neighboring counties, where outbreaks follow. According to the Centers for Disease Control and Prevention, workers engaged in soil-disturbing activities in endemic areas should be considered at risk for the disease. Occupational groups at risk include farmers, agricultural workers, construction workers and archaeologists. Some groups of people appear to be at increased risk for disseminated disease and can become seriously ill when infected. People at risk for severe disease include those with weakened immune systems, persons with cancer or who are on chemotherapy, or persons who are HIV-infected. Also at higher risk for serious illness are the elderly, persons of African or Filipino descent, and women in the third trimester of pregnancy.
The EPA recommends that the DEIS assess potential exposures to the fungus, Coccidioides, and susceptibilities of workers and nearby residents to Valley Fever due to soil-disturbing activities of the project.
That an Environmental Awareness Program for the workers be implemented and it should include training on the health hazards of Valley Fever, how it is contracted, what symptoms to look for, proper work procedures, how to use personal protective equipment, the need to wash prior to eating, smoking or drinking and at the end of the shift,

Table C-7
Issue No. 2: Health and Safety

and the need to inform the supervisor of suspected symptoms of work-related Valley Fever. The training should identify those groups of individuals most at risk and urge individuals to seek prompt medical treatment if Valley Fever symptoms (flu-like illness with cough, fever, chest pain, headache, muscle aches, and tiredness) develop.

In addition to regulatory required fugitive dust controls, the Applicant should:

- Avoid areas that may harbor the fungus if practicable.

- Restrict high risk workers from contaminated areas if possible.

- Test soils to be disturbed for presence of the cocci fungus, understanding that even in known endemic areas, the distribution of the fungus in the soil is sporadic and very limited.

- Require that grading and construction equipment cabs be enclosed, HEPA ventilated, and air-conditioned.

- Use personal protective equipment in dusty work areas:

  o Disposable clothing.

  o Method to clean work boots at the end of the shift.

  o NIOSH certified N95 respirator, at a minimum or one with a higher protection factor.

- Provide personal hygiene (washing) facilities.

- Require crews to work upwind from excavation sites.

- Pave construction roads.

- Minimize ground disturbance as much as possible. Revegetate temporarily disturbed areas promptly.

- Discourage workers from carrying any fomites home with them. Institute hygiene measures to limit dust transport offsite.

- Consider limiting visitor site access without proper training or personal protective equipment.

- Prohibit work activities when wind speeds exceed 25 mph.

- Consider mitigation measures that would provide advanced notification to sensitive receptors of the potential effects of a Coccidioides infection.

- Contact the local or state public health agency to better understand the incidence of Coccidioidomycosis in the project area and surrounding region. Provide local public health officials with a schedule of project activities that disturb soil. Ensure local physicians consider Coccidioidomycosis in diagnoses involving flu or flu-like symptoms.

Studies such as the Endrocrine Society's 2013 study by Christopher D. Kassotis et al, entitled Estrogen and Androgen Receptor Activities of Hydraulic Fracturing Chemicals and Surface and GroundWater in a Drilling-Dense Region, have concluded that the fracturing fluid used in hydraulic fracturing contains end ocrine disrupting chemicals, which are linked to increased instances of cancer, birth defects, decreased sperm quality and quantity, infertility and reproductive tract deformities. After hydraulic fracturing is completed, only 60 to 80 percent of the fracturing fluid is reclaimed. This means that the remaining 40 to 20 percent of the fluid remains underground has the potential to contaminate groundwater over time. Even though fracturing fluid is primarily made up of water, and chemicals constitute only a very small percentage, the chemicals are potent enough to have negative impacts even in low concentrations. Endocrine disrupters in particular are known for having impacts at very low levels, and they have the potential for exacerbated effects when mixed with other chemicals.

Table C-7
Issue No. 2: Health and Safety

In the 2012 study, "Impacts of Gas Drilling on Human and Animal Health" Bamberger and Oswald found exposure to the chemicals used in hydraulic fracturing to be linked to negative respiratory, gastrointestinal, dermatologic, immunologic, reproductive, and endocrine human and animal health effects.
Oil and gas drilling also results in impacts on air quality which could have consequences for human health. In a study titled Human health risk assessment of air emissions from development of unconventional natural gas resources (McKenzie et al 2012) found that it is likely that oil and gas drilling operations emit petroleum hydrocarbons and VOCs, the inhalation of which is linked to irritation of the eyes, nose, and throat, breathing difficulties, cancer, childhood leukemia, blood disorders, and nervous system impairment.
I am a nurse and very concerned about the risks to human health associated with fracking. A study by McKenzie et al 2012 found that this kind of drilling is linked to several health-compromising conditions such as childhood leukemia, cancer, and nervous system illnesses.
The EIS should study the full range of adverse environmental effects that stem from oil and gas development. These include Accidents- Recent oil-carrying train accidents in the US and Canada demonstrate the dangers of transporting oil.
BLM land should be closed, in particular to oil and gas development that involves hydraulic fracturing. There are too many unknowns about the impacts of hydraulic fracturing at this point for the BLM to properly analyze the impacts of fracking in the EIS. New studies have been released as recently as December 2013 (such as Estrogen and Androgen Receptor Activities of Hydraulic Fracturing Chemicals and Surface and GroundWater in a Drilling-Dense Region Kassotis et al. 2013) on the negative impacts hydraulic fracturing has on public health and safety and on water and air quality.
Oil and gas drilling also results in impacts on air quality that could be harmful to human health. A study by McKenzie et al 2012 called Human health risk assessment of air emissions from development of unconventional natural gas resources found that it is likely that the pollutants emitted in oil and gas drilling operations cause eyes, nose and throat irritation as well as respiratory issues. These pollutants could also lead to cancer and leukemia.
The 1996 Hollister RMP that this EIS could be amending established a hazardous materials and public safety objective of identifying and controlling imminent hazards or threats to human health and/or the environment from hazardous substances released on public lands.
Due to the negative impacts to surface water and groundwater, to air quality, and to human health through exposure to endocrine disruptors and other chemicals present in fracking fluids, it will be impossible for the BLM to reach these RMP objectives while using hydraulic fracturing as an oil and gas extraction method.
California's SB4 requires the regulation of all well stimulation techniques, including acidizing, which will be the technique used for O&G extraction in the state. SB4 also requires the disclosure of all chemicals used during drilling operations. It is imperative that the BLM include similar rules and regulations for use in public lands in California. Doing so will help protect public health, the environment, respect the will of the people of California, and ensure that O&G development in the state will be conducted in a safe and responsible manner.
California suffers from some of the worst air pollution in the country. Facilities classified as sensitive receptors, such as schools and residences, are found throughout rural areas where public lands are located. These areas will be exposed to high levels of exhaust and emissions from construction and operations, adversely impacting public health and air quality. Cumulative contributions of emissions that will reduce air quality must be properly evaluated to ensure that public health is protected, and determine whether proposed O&G development will conflict with implementation of plans for air quality attainment under applicable state and federal laws.
Increased traffic on underdeveloped and rural roads, along with increased construction and operation activities, will have a detrimental impact on air quality and other resources. A complete cumulative impacts study is necessary in order to fully analyze the results of increased O&G development in these areas, such as decreased land use for agriculture, cattle grazing, and recharge areas for groundwater.

Table C-7
Issue No. 2: Health and Safety

The EIS must encompass all methods of unconventional oil and gas extraction and production. Although hydraulic fracturing or fracking has been the primary focus of public attention and litigation, well stimulation and underground injection techniques can vary widely. Examples include acidization, acid hydraulic fracturing, gravel packing and the extravagantly broad range of chemicals that drillers have used to stimulate oil and gas wells. Each of these techniques and classes of chemicals raise a new set of concerns and potential impacts on human health, safety, and the environment. The EIS and Statewide Study must address all types of unconventional oil and gas recovery that may be utilized in California. Because the Monterey Shale and California fracking "oil play" has just begun, it is not clear which techniques of fracking, well stimulation, horizontal drilling and so forth, are likely to be used within the jurisdiction of BLM. For this reason your agency must assess and anticipate in the EIS, all possible forms of "fracking" and unconventional oil and gas drilling that may be used. Certainly the oil industry itself could be a productive source of such information.
The expanded use of fracking and other unconventional methods of oil and gas extraction have become an additional area of concern. Fracking typically involves the use of hundreds of chemicals, many of which are known to have adverse human health effects, including the potential to cause cancer. In communities across the country, people have been exposed to these toxins through the air or water, and studies suggest a connection between fracking and an array of illnesses afflicting those nearby.
But fracking is just the tip of the iceberg in California. I'm even more concerned about matrix acidization, a process that is believed to be very effective for extracting fuel from the Monterey Shale. Good for oil companies, and bad for people. This technique involves pumping large quantities of hydrofluoric acid into the ground. Hydrofluoric acid dissolves glass and concrete. It also dissolves rock which is why oil companies find it useful. And it dissolves people, from the inside out. If you get it on your skin, it goes straight to the bone. We don't want truckloads of hydrofluoric acid going up and down the freeway.
Approval of fracking Monterey shale oil on BLM land will impact not only our health and local diversity but, continued federal subsidy and development of carbon generating fossil fuels will push us further towards the larger climate change question of whether or not there will be future generations.
There are risks to transportation of crude oil or toxic water waste on winding rural roads and highways. Further risks are involved with crude oil transportation by rail- the preferred method of transportation by oil refineries. We have already witnessed numerous tragic accidents, with long term consequences, throughout the US and Canada. Inherent in oil and gas fracking are pollutants that degrade the quality of our air, soil and water. All of the chemicals transported on public roads, stored and used must be disclosed and the health risks evaluated. The Environmental impact statement must include all short and long term risks of environmental degradation. Not only must all chemicals be disclosed, for the health and safety of surrounding environs, their storage should be regulated and monitored by third party experts.
the EIS should include accident scenarios that consider what the impacts would be if certain safety measures fail. The EIS should also discuss what measures are in place to prevent accidents, and what the instances historically are of these accidents occurring (i.e. instances of fracturing fluid being spilled while in transport, instances of well casing breaches, etc.)
The BLM should consider a risk assessment as a separate supporting document to the EIS that utilizes existing data on all of the possible accident scenarios and quantifies the risks of those impacts based on the outcomes of that assessment (i.e. a risk assessment that considers the impacts with a 5% chance of well breach and aquifer contamination, one that considers the impacts if the risk of well breach is 2%, etc.)
The EIS must explain all health and safety impacts of the accident scenarios and all the socioeconomic impacts
In analyzing the public health and safety impacts of oil and gas development, the EIS must consider the recent Endocrinology study that reported the presence of endocrine disruptors, which are linked to cancer, birth defects, reproductive tract deformities, infertility, and decreased sperm quality and quantity, in fracturing fluid (Estrogen and Androgen Receptor Activities of Hydraulic Fracturing Chemicals and Surface and Ground Water in a Drilling-Dense Region, by C.D. Kassotis, D.E Tillitt, J.W. Davis, A.M. Hormann and S.C. Nagel, 2013. The Endocrine Society)

Table C-7
Issue No. 2: Health and Safety

In analyzing impacts of oil and gas development on water quality, soil and water contamination, public health and safety, hazardous materials, and socioeconomics, discuss the results of the paper, Fluid Migration Mechanisms due to Faulty Well Design and/or Construction: An Overview and Recent Experiences in the Pennsylvania Marcellus Play, by Anthony R. Ingraffea, that reported the increasing rate of well failure in the Marcellus Play between 2010-2012, with a well failure rate in 2012 of 7.2%.
Include in the analysis the results of the New Solutions study that found that exposure to the chemicals used in fracturing fluid is linked to negative neurologic, endocrine, dermatologic, gastrointestinal, respiratory, and reproductive health outcomes (Impacts of Gas Drilling on Human and Animal Health, M. Bamberger and R.E. Oswald, 2012, New Solutions)
It is TOTALLY IRRESPONSIBLE and UNFORGIVABLE to JEOPARDIZE THE PUBLIC HEALTH AND WELFARE OF ALL CALIFORNIANS BY PERMITTING FRACKING- THE MOST DANGEROUS AND TOXIC PRACTICE TO OBTAIN CRUDE OIL PARTICULARLY WHEN THE ADMINISTRATION PROMISED GREEN ENERGY. SAVE CALIFORNIA FROM THIS HORRIBLE PRACTICE.
The oil and gas available by fracking is not worth the price in public health and safety.
These dangerous extraction techniques threaten our health, safety, and environment in numerous ways, each deserving of a thorough assessment. The impacts include surface and groundwater contamination, water resource depletion, air contamination, induced seismic activity, light and noise pollution, increased truck traffic, and the contribution to catastrophic climate change. Each of these can lead to a detrimental effect on human health and safety as well as harm to plants and animals and their habitats.
Health Impacts: TAGs are defined as air pollutants that which may cause or contribute to an increase in mortality or serious illness, or which may pose a hazard to human health. The most common source of TAGs can be attributed to diesel exhaust fumes that are emitted from both stationary and mobile sources. Health impacts may require a detailed health risk assessment (HRA). Project related health impacts should be evaluated to determine if emissions of toxic air contaminants (TAG) will pose a significant health risk to nearby sensitive receptors.
Prior to conducting an HRA [health risk assessment], an applicant may perform a prioritization on all sources of emissions to determine if it is necessary to conduct an HRA. A prioritization is a screening tool used to identify projects that may have significant health impacts. If the project has a prioritization score of 1.0 or more, the project has the potential to exceed the District's significance threshold for health impacts of 10 in a million and an HRA should be performed.
If an HRA [health risk assessment] is to be performed, it is recommended that the project proponent contact the District to review the proposed modeling approach. The project would be considered to have a significant health risk if the HRA demonstrates that project related health impacts would exceed the District's significance threshold of 10 in a million.
For both conventional and unconventional oil and gas development, the EIS should: - Identify and map all existing oil and gas development in California, including all development on BLM-managed lands and sub-surface resources and all BLM existing oil and gas leased tracts in the state. - Identify all existing wells in which well stimulation practices have been used, and, for these wells, any reports or information evidencing well failures, casing or cement failures, spills, or groundwater or surface contamination.
If historic accident rates aren't available, the EIS must justify how such activities can be approved without a thorough risk analysis
Consider the impacts of seismic activity induced by wastewater injection would have on socioeconomics, public health and safety, and water quality.
Fracking is a serious threat to public health and the climate.

Table C-7
Issue No. 2: Health and Safety

The side effects of fracking are not yet known- or maybe known to the companies doing the work, but they are certainly not volunteering the information. Damage to underground water supplies, poisoning farmland and wildlife, and long-term human health impacts have all been reported. Please do not allow these little understood risks to be forced upon Californians without more studies and safeguards. Once risks are identified, the companies doing the fracking should be obliged to pay for all remedies, such as increased health care costs, restoration of water supplies, etc.

Table C-8
Issue No. 3: Vegetation and Wildlife

Fish
Harm to Aquatic Life and Habitats When streams and other surface waters are depleted, the habitat for countless plans and animals will be harmed and place tremendous pressure on species that depend on having a constant and ample stream of water. Physical habitats such as banks, pools, runs, and glides (low gradient river sections) are important yet susceptible to disturbance with changing stream flows. Altering the volume of water can also change the water's temperature and oxygen content, harming some species that require a certain level of oxygenated water. Decreasing the volume of streamflow and stream channels by diverting water to hydraulic fracturing would have a negative impact on the environment and should be included in an EIS and Statewide Study.
Accidental spills or intentional dumping of wastewater can contaminate surface water and cause large-scale harm to wildlife. Numerous incidents of wastewater contamination from pipelines, equipment blowouts, and trucks accidents have been reported, and have resulted in kills of fish, aquatic invertebrates, and trees and shrubs, as well as negative health effects for wildlife and domestic animals. For example, a company recently admitted to dumping wastewater from hydraulic fracturing operations into the Acorn Fork Creek in Kentucky, causing a massive fish kill. Among the species harmed was the blackside dace, a threatened minnow species. The discharge of fracking wastewater into the Susquehanna River in Pennsylvania is suspected to be the cause of fish abnormalities, including high rates of spots, lesions, and intersex. In West Virginia, the permitted application of hydrofracturing fluid to an area of mixed hardwood forest caused extensive tree mortality and a 50-fold increase in surface soil concentrations of sodium and chloride.
Aquatic invasive species may also spread more easily given the large amounts of freshwater that must be transported to accommodate new drilling and extraction techniques. These species may be inadvertently introduced to new habitats when water is discharged at the surface. Alternatively, hoses, trucks, tanks, and other water use equipment may function as conduits for aquatic invasive species to access new habitats.
Special Status Species
Oil and gas development has been linked to population-level impacts on wildlife, including lower reproductive success of sage grouse and declines in the abundance of songbirds and aquatic species. For example, young greater-sage grouse avoided mating near infrastructure of natural-gas fields, and those that were reared near infrastructure had lower annual survival rates and were less successful at establishing breeding territories compared to those reared away from infrastructure. In Wyoming, an increasing density of wells was associated with decreased numbers of Brewer's sparrows, sage sparrows, and vesper sparrows. In the Fayetteville Shale of central Arkansas, the proportional abundance of sensitive aquatic taxa, including darters, was negatively correlated with gas well density.
Federal lands in California are also home to many endangered and threatened species. The EIS and Statewide Study must fully assess whether any of these protected species will be adversely affected by an increase in oil and gas activity on public lands. BLM's regulations may have an impact on some of these species and thus should include a full assessment of the potential harm in its EIS and Statewide Study. Moreover, the federal Endangered Species Act requires BLM to consult with the US Fish and Wildlife Service to ensure that its activities are not likely to jeopardize the continued existence of listed species or adversely modify designated critical habitats.
Currently, hundreds of species in California are listed by the state or federal government as being endangered or threatened, and many others are candidates for addition to the list. These species, which include iconic species such as the California condor and the San Joaquin kit fox, are highly vulnerable and warrant protection from activities that may cause harm to their diminished populations.
The BLM should conduct a full assessment of the direct and indirect impacts of oil and gas development activities on wildlife and ecosystems through a suite of comprehensive studies on all species and ecosystems that could be affected. The studies should be particularly detailed for federally and state listed species, federal and state candidates for listing, and state species of special concern. The studies should address the following impacts: (1) habitat loss, degradation, and fragmentation, including edge effects; (2) water depletion; (3) air and water contamination; (4) introduction of invasive species; (5) climate change impacts; (6) health and behavioral effects such as increased stress and changes in life history behaviors; (7) changes in demographic rates such as reproductive success and survival; and (8) potential for population-level impacts such as declines and extirpations. These studies should consider these harms individually and cumulatively.

Table C-8
Issue No. 3: Vegetation and Wildlife

Vegetation – General
The indirect effects from oil and gas development can often be far greater than the direct disturbances to habitat. The impacts from the well site- including noise, light, and pollution-- extend beyond the borders of the operation site and will consequently render even greater areas uninhabitable for some wildlife. Species dependent on having an "interior" habitat will lose their habitat if operation sites or other infrastructure abuts previously secluded areas. These and other indirect effects can be far greater than the direct disturbances to land. The NYSGEIS estimated that gas wells can indirectly affect over ten times the acreage as their direct footprint. In the Marcellus shale of Pennsylvania, 8.8 acres of forest on average were cleared for each drilling pad along with associated infrastructure, but after accounting for ecological edge effects, each drilling station actually affected 30 acres of forest. In the Big Piney-LaBarge field in Wyoming, only 4 percent of land is occupied by oil and gas infrastructure, but 97 percent of the total area is within one quarter mile of some type of infrastructure, which creates an enormous stress on natural habitats for plants and animals.
Accidental spills or intentional dumping of wastewater can contaminate surface water and cause large-scale harm to wildlife. Numerous incidents of wastewater contamination from pipelines, equipment blowouts, and trucks accidents have been reported, and have resulted in kills of fish, aquatic invertebrates, and trees and shrubs, as well as negative health effects for wildlife and domestic animals. For example, a company recently admitted to dumping wastewater from hydraulic fracturing operations into the Acorn Fork Creek in Kentucky, causing a massive fish kill. Among the species harmed was the blackside dace, a threatened minnow species. The discharge of fracking wastewater into the Susquehanna River in Pennsylvania is suspected to be the cause of fish abnormalities, including high rates of spots, lesions, and intersex. In West Virginia, the permitted application of hydrofracturing fluid to an area of mixed hardwood forest caused extensive tree mortality and a 50-fold increase in surface soil concentrations of sodium and chloride.
Anthropogenic climate change poses a significant threat to biodiversity. Climate disruption is already causing changes in distribution, phenology, physiology, genetics, species interactions, ecosystem services, demographic rates, and population viability: many animals and plants are moving poleward and upward in elevation, shifting their timing of breeding and migration, and experiencing population declines and extinctions. Because climate change is occurring at an unprecedented pace with multiple synergistic impacts, climate change is predicted to significantly increase extinction risk for many species. The IPCC concluded that 20% to 30% of plant and animal species will face an increased risk of extinction if global average temperature rise exceeds 1.5°C to 2.5°C relative to 1980-1999, with an increased risk of extinction for up to 70% of species worldwide if global average temperature exceeds 3.5°C relative to 1980-1999. Other studies have predicted similarly severe losses: 15%-37% of the world's plants and animals committed to extinction by 2050 under a mid-level emissions scenario; the extinction of 10% to 14% of species by 2100 if climate change continues unabated; and the loss of more than half of the present climatic range for 58% of plants and 35% of animals by the 2080s under the current emissions pathway, in a sample of 48,786 species. Because expansion of oil and gas production into California's federal lands will substantially increase the emissions of greenhouse gases, this activity will further contribute to the harms from climate change to wildlife and ecosystems.
The EIS should study the full range of adverse environmental effects that stem from oil and gas development. These include o Habitat Destruction- Oil and gas development harms plants and animals, including endangered and threatened species. Industrial activity destroys habitat and harms delicate ecosystems where drilling and other oil and gas activity occurs.
Biological Resources. While most well stimulation activity occurs below ground or within the immediate vicinity of the well and well pad, such operations can still dramatically affect surface resources. Biological resources are likely to be subjected to new environmental impacts because advances in well stimulation technology will likely enable exploration and extraction of unconventional oil and gas resources that heretofore have not been exploited in areas that historically have not seen this industry. The potential impacts to these resources stems from the well stimulation treatments themselves, the disposal of waste water from such activity, the transport of materials to and from the well site, the drilling of new wells, and construction of roads, pipelines and other associated infrastructure. The EIS should analyze both the direct and indirect land use impacts of expanded (conventional and unconventional) oil and gas development on biological resources. In particular, the EIS should: - Identify the presence and habitat of sensitive, rare, and threatened, and endangered species under the Endangered Species Act, including rare and listed plant species and Species of Concern identified by the Bureau of Land Management, within BLM-managed lands and resources overlying or including the Monterey Shale formation as well as other conventional and unconventional plays, and assess the likelihood that these resources would be affected by oil and gas field development, including but not limited to impacts

Table C-8
Issue No. 3: Vegetation and Wildlife

from habitat loss, fragmentation, sedimentation in freshwater and marine systems, and water use (e.g., withdrawal of groundwater).

- Identify wildlife corridors within areas likely to see oil and gas development and assess impacts to these corridors.

- Examine potential impacts on USFWS recovery plans

Vegetation – Weeds

Executive Order 13112, Invasive Species (February 3, 1999), mandates that federal agencies take actions to prevent the introduction of invasive species, provide for their control, and minimize the economic, ecological, and human health impacts that invasive species cause. Executive Order 13112 also calls for the restoration of native plants and tree species. If the proposed project will entail new landscaping, the DEIS should describe how the project will meet the requirements of Executive Order 13112. In addition, we encourage alternative management practices that limit herbicide use, focusing instead on other methods to limit invasive species vegetation and decrease fire risk, and using herbicides only as a last resort.

The DEIS should describe the invasive plant management plan used to monitor and control noxious weeds. If herbicides will be used to manage vegetation, the DEIS should disclose the projected quantities and types of chemicals. The invasive plant management plan should identify methods that can be used to limit the introduction and spread of invasive species during and post-construction. These measures can include marking and avoidance of invasives, timing construction activities during periods that would minimize their spread, proper cleaning of equipment, and proper disposal of woody material removed from the site.

Because construction measures may not be completely effective in controlling the introduction and spread of invasives, the DEIS should describe post-construction activities that will be required, such as surveying for invasive species following restoration of the construction site and measures that will be taken if infestations are found.

Wildlife

On May 31, 2013, the US District Court for the Northern District of California ruled in Center for Biological Diversity v. Bureau of Land Management that BLM violated the National Environmental Policy Act3 ("NEPA") in issuing oil and gas leases without first analyzing the full extent of extreme extraction techniques such as hydraulic fracturing. Where such activity has occurred in other states, the environmental impact has been considerable. Water, air, soil, wildlife, and the climate have all been harmed by the expansion of unconventional extraction methods.

Under current practices in California, some flowback fluid is stored in open pits near the well pad. The EIS and Statewide Study must review the risks posed by these pits, which can contaminate the soil, pollute nearby surface water through breaches and spills, and pollute the air through evaporation. Liners are known to tear, and spills and evaporation occur even when the lining remains intact. Both can kill wildlife that is exposed to the pits' toxic contents.

Harm to Aquatic Life and Habitats

When streams and other surface waters are depleted, the habitat for countless plans and animals will be harmed and place tremendous pressure on species that depend on having a constant and ample stream of water. Physical habitats such as banks, pools, runs, and glides (low gradient river sections) are important yet susceptible to disturbance with changing stream flows. Altering the volume of water can also change the water's temperature and oxygen content, harming some species that require a certain level of oxygenated water. Decreasing the volume of streamflow and stream channels by diverting water to hydraulic fracturing would have a negative impact on the environment and should be included in an EIS and Statewide Study.

The physical equipment itself that is designed to intake and divert water may also pose a threat to certain wildlife. If not properly designed, such equipment and intake points may be a risk to wildlife.

Surface water contamination

Surface waters can be contaminated in many ways from unconventional well stimulation. In addition to storm water runoff, described above, surface water contamination may also occur from chemical and waste transport, chemical storage leaks, and breaches in pit liners. As described below, contaminated surface water can result in many adverse

Table C-8
Issue No. 3: Vegetation and Wildlife

effects to wildlife, agriculture, and human health and safety. It may make waters unsafe for drinking, fishing, swimming and other activities. The EIS and Statewide Study should fully assess the risk of harm to surface waters as well as the feasibility of restoring the original water quality once surface water is contaminated.
The EIS and Statewide Study should evaluate the full environmental impact of oil and gas activity on wildlife species and ecosystems. Depending on the area and the species, wildlife can be affected from oil and gas activity in a variety of ways. The expansion of oil and gas development activities on public lands will likely lead to harm through habitat destruction and fragmentation, stress and displacement caused by development-related activities (e.g., construction and operation activities, truck traffic, noise and light pollution), surface water depletion, water and air contamination, introduction of invasive species, and climate change. These harms can result in negative health effects and population declines. Studies and reports of observed impacts to wildlife from unconventional oil and gas extraction activities are summarized in Appendix B.
Oil and gas development creates a network of well pads, roads, pipelines, and other infrastructure that lead to direct habitat loss and fragmentation, as well as displacement of wildlife from these areas due to increased human disturbance. Habitat loss can occur as a result of a reduction in the total area of the habitat, the decrease of the interior-to-edge ratio, isolation of one habitat fragment from another, breaking up of one habitat into several smaller patches of habitat, and decreasing the average size of a habitat patch. In the western United States, the amount of high-quality habitat for the pronghorn, for example, has shrunk drastically due to oil and gas development.
The indirect effects from oil and gas development can often be far greater than the direct disturbances to habitat. The impacts from the well site- including noise, light, and pollution-- extend beyond the borders of the operation site and will consequently render even greater areas uninhabitable for some wildlife. Species dependent on having an "interior" habitat will lose their habitat if operation sites or other infrastructure abuts previously secluded areas. These and other indirect effects can be far greater than the direct disturbances to land. The NYSGEIS estimated that gas wells can indirectly affect over ten times the acreage as their direct footprint. In the Marcellus shale of Pennsylvania, 8.8 acres of forest on average were cleared for each drilling pad along with associated infrastructure, but after accounting for ecological edge effects, each drilling station actually affected 30 acres of forest. In the Big Piney-LaBarge field in Wyoming, only 4 percent of land is occupied by oil and gas infrastructure, but 97 percent of the total area is within one quarter mile of some type of infrastructure, which creates an enormous stress on natural habitats for plants and animals.
While individual well sites may cause some disturbance and destruction, the cumulative impacts of oil and gas production using unconventional methods must receive attention as well. While the actual well pads may only occupy a small proportion of a particular habitat, their impact can be much greater when their aggregate impact is considered. As discussed above, interior habitats will be destroyed by removing the buffer between the interior habitat and the operation site.
Water depletion can also affect species whose habitats are far removed from the actual well site. Because of the high volume of water required for even a single well that uses unconventional extraction methods, the cumulative water depletion could have a significant impact on species that rely on water sources that serve to supply oil and gas operations. There may also be changes to water temperature and chemistry. Habitat can be altered in other ways that negatively impact wildlife. For example, ground nesting birds such as grouse will avoid tall structures.
Accidental spills or intentional dumping of wastewater can contaminate surface water and cause large-scale harm to wildlife. Numerous incidents of wastewater contamination from pipelines, equipment blowouts, and trucks accidents have been reported, and have resulted in kills of fish, aquatic invertebrates, and trees and shrubs, as well as negative health effects for wildlife and domestic animals. For example, a company recently admitted to dumping wastewater from hydraulic fracturing operations into the Acorn Fork Creek in Kentucky, causing a massive fish kill. Among the species harmed was the blackside dace, a threatened minnow species. The discharge of fracking wastewater into the Susquehanna River in Pennsylvania is suspected to be the cause of fish abnormalities, including high rates of spots, lesions, and intersex. In West Virginia, the permitted application of hydrofracturing fluid to an area of mixed hardwood forest caused extensive tree mortality and a 50-fold increase in surface soil concentrations of sodium and chloride.
In addition, open air pits that store waste fluid pose risks for wildlife that may come into contact with the chemicals stored in the pits. Already, there have been several documented cases of animal mortality resulting from contact with pits. A field inspection of open pits in Wyoming found 269 bird carcasses, the likely cause of death being exposure to toxic chemicals stored in the open pits. Open pits can also serve as breeding grounds for mosquitoes, which serve as a vector for West Nile virus, a threat to humans and animals alike. In Wyoming, an increase of ponds led to an increase of West Nile virus among greater sage-grouse populations.

Table C-8
Issue No. 3: Vegetation and Wildlife

Invasive species that be introduced through a variety of pathways that would be increasingly common if oil and gas activity is allowed to expand on public lands. Machinery, equipment, and trucks moved from site to site can carry invasive plant species to new areas. In addition, materials such as crushed stone or gravel transported to the site from other locations may serve as a conduit for invasive species to migrate to the well site or other areas en route.
Anthropogenic climate change poses a significant threat to biodiversity. Climate disruption is already causing changes in distribution, phenology, physiology, genetics, species interactions, ecosystem services, demographic rates, and population viability: many animals and plants are moving poleward and upward in elevation, shifting their timing of breeding and migration, and experiencing population declines and extinctions. Because climate change is occurring at an unprecedented pace with multiple synergistic impacts, climate change is predicted to significantly increase extinction risk for many species. The IPCC concluded that 20% to 30% of plant and animal species will face an increased risk of extinction if global average temperature rise exceeds 1.5°C to 2.5°C relative to 1980-1999, with an increased risk of extinction for up to 70% of species worldwide if global average temperature exceeds 3.5°C relative to 1980-1999. Other studies have predicted similarly severe losses: 15%-37% of the world's plants and animals committed to extinction by 2050 under a mid-level emissions scenario; the extinction of 10% to 14% of species by 2100 if climate change continues unabated; and the loss of more than half of the present climatic range for 58% of plants and 35% of animals by the 2080s under the current emissions pathway, in a sample of 48,786 species. Because expansion of oil and gas production into California's federal lands will substantially increase the emissions of greenhouse gases, this activity will further contribute to the harms from climate change to wildlife and ecosystems.
Oil and gas development has been linked to population-level impacts on wildlife, including lower reproductive success of sage grouse and declines in the abundance of songbirds and aquatic species. For example, young greater-sage grouse avoided mating near infrastructure of natural-gas fields, and those that were reared near infrastructure had lower annual survival rates and were less successful at establishing breeding territories compared to those reared away from infrastructure. In Wyoming, an increasing density of wells was associated with decreased numbers of Brewer's sparrows, sage sparrows, and vesper sparrows. In the Fayetteville Shale of central Arkansas, the proportional abundance of sensitive aquatic taxa, including darters, was negatively correlated with gas well density.
The BLM should conduct a full assessment of the direct and indirect impacts of oil and gas development activities on wildlife and ecosystems through a suite of comprehensive studies on all species and ecosystems that could be affected. The studies should be particularly detailed for federally and state listed species, federal and state candidates for listing, and state species of special concern. The studies should address the following impacts: (1) habitat loss, degradation, and fragmentation, including edge effects; (2) water depletion; (3) air and water contamination; (4) introduction of invasive species; (5) climate change impacts; (6) health and behavioral effects such as increased stress and changes in life history behaviors; (7) changes in demographic rates such as reproductive success and survival; and (8) potential for population-level impacts such as declines and extirpations. These studies should consider these harms individually and cumulatively.
The alternatives considered in the EIS must include at a minimum, cancellation of the 2011 and 2012 Hollister Field Office lease sales subject to litigation, and, more broadly, a prohibition on all oil and gas activities in areas managed by the Hollister Field Office as well as a prohibition on all unconventional oil and gas activities in areas managed by the Hollister Field Office. A prohibition on all oil and gas activities is the only option that will completely eliminate the risk of several of the harms described above. Revisions to the Hollister office's RMP should be implemented after a full consideration of the EIS and Statewide Study in order to protect people, wildlife, and our public lands from the many risks and damages of oil and gas extraction.
The project area may contain numerous special status species, including Endangered Species Act listed species. Recommendation: - The BLM should engage the US Fish and Wildlife Service and the California Department of Fish and Wildlife as early in the analysis as possible to ensure that this topic is adequately analyzed during the NEPA review. Generally, we suggest the analysis include a summary of the status and trends of analysis area ESA-listed species and potential suitable habitat; disclosure of potential impacts to these resources; and the results of USFWS/CDFW coordination, including any recommended design criteria, monitoring and mitigation requirements.

Table C-8
Issue No. 3: Vegetation and Wildlife

In the 2012 study, "Impacts of Gas Drilling on Human and Animal Health" Bamberger and Oswald found exposure to the chemicals used in hydraulic fracturing to be linked to negative respiratory, gastrointestinal, dermatologic, immunologic, reproductive, and endocrine human and animal health effects.
The EIS should study the full range of adverse environmental effects that stem from oil and gas development. These include o Habitat Destruction- Oil and gas development harms plants and animals, including endangered and threatened species. Industrial activity destroys habitat and harms delicate ecosystems where drilling and other oil and gas activity occurs.
Pinnacles National Park The federally endangered California condor has been reintroduced at Pinnacles National Park and along the Big Sur coast. This central California flock of 60 wild condors regularly utilizes public lands managed by the BLM Hollister Field Office. NPS is concerned about potential impacts to the California condor from proposed oil and gas development within the central California flock's range, and also has concerns about potential impacts to water quality and quantity of local aquifers.
From a population low of 22 birds in the mid 1980s, California condors are making a slow but tenuous recovery through captive breeding, intensive wild release program and public education efforts. Today, the total population includes 200 California condors in captivity and 230 in the wild. Reintroduced to their ancestral nesting range at Pinnacles National Park in 2003 and along the Big Sur coast by Ventana Wildlife Society in 1997, the central California flock is made up of 60 condors that use inland and coastal habitats. Pinnacles National Park and Ventana Wildlife Society biologists monitor condors on a daily basis and have radio tracked birds on some lands managed by Hollister BLM. NPS is concerned about the potential impacts on the endangered condor that could result from oil and gas leasing and development within the range of the central California flock. Recovery efforts of the federally endangered California condor have benefited directly from ranching and hunting traditions in San Benito and Monterey counties on both private and public lands. Condors regularly utilize livestock troughs as a source of water, forage on carcasses left behind from ranching and hunting operations, and find nesting habitat on public and private open lands.
There are many endangered species within the BLM Central Coast planning area and across federal lands in all of southern CA. The habitat for these listed plants and animals must be mapped and evaluated accurately in the EIS before any leases are anticipated. Public lands are held to a higher standard of protection than is privately owned land.
(3) Unconventional oil and gas production results in large volumes of waste fluid and produced water, byproducts that have contaminated air, water, and soil and harmed humans and wildlife. Under current CA Dept. Of Oil Gas and Geothermal Resources code in California, flowback fluid can be stored in open pits near the well pad. The EIS and Statewide Study must review the risks posed by these pits, which can contaminate the soil, pollute nearby surface water with breaches and spills, and pollute the air through evaporation. Liners tear, and spills and evaporation occur even when the lining remains intact. Wildlife can be killed when exposed to these pits' toxic contents.
Researchers from West Virginia University and the Ohio State University have been awarded a National Science Foundation grant through the Division of Environmental Biology to study the microbial biodiversity found in deep underground shale formations. http://wvutoday.wvu.edu/n/2013/10/30/wvu-ohio-state-researchers-awarded-2-million-for-shale-energy-research
Concerned about: Unknown underground biosphere impacts estimating biology ground level to 5000 feet deep.
The second step of the mitigation hierarchy -- minimization - includes the siting and operation of oil development in a manner that minimizes harm to habitats and species. Critical to achieving minimization of impacts is the identification, development and employment of best management practices (BMPs) that avert or limit site-specific harm to habitats and species. BMPs also specify monitoring and enforcement mechanisms, including adaptive management provisions that require corrective action by lessees, for inclusion in development permits. Adaptive management is the modification of projects based on the results of monitoring actual ecological impacts, as distinct from projected impacts, taking into account variances over time from the ecological conditions that may have been initially presumed to be stable over the projected life of the project. Again,

Table C-8
Issue No. 3: Vegetation and Wildlife

Master Leasing Planning could assist the agency in establishing these requirements.
For unavoidable impacts that remain following avoidance and minimization, effective measures must be taken to offset unavoidable negative impacts to affected habitats and species to ensure the viability of species and habitats over time.
Biological Resources. While most well stimulation activity occurs below ground or within the immediate vicinity of the well and well pad, such operations can still dramatically affect surface resources. Biological resources are likely to be subjected to new environmental impacts because advances in well stimulation technology will likely enable exploration and extraction of unconventional oil and gas resources that heretofore have not been exploited in areas that historically have not seen this industry. The potential impacts to these resources stems from the well stimulation treatments themselves, the disposal of waste water from such activity, the transport of materials to and from the well site, the drilling of new wells, and construction of roads, pipelines and other associated infrastructure. The EIS should analyze both the direct and indirect land use impacts of expanded (conventional and unconventional) oil and gas development on biological resources. In particular, the EIS should: - Identify the presence and habitat of sensitive, rare, and threatened, and endangered species under the Endangered Species Act, including rare and listed plant species and Species of Concern identified by the Bureau of Land Management, within BLM-managed lands and resources overlying or including the Monterey Shale formation as well as other conventional and unconventional plays, and assess the likelihood that these resources would be affected by oil and gas field development, including but not limited to impacts from habitat loss, fragmentation, sedimentation in freshwater and marine systems, and water use (e.g., withdrawal of groundwater). - Identify wildlife corridors within areas likely to see oil and gas development and assess impacts to these corridors. - Examine potential impacts on USFWS recovery plans
Oil and gas development on federal lands within the condor's range poses a significant risk to the continued recovery of the California Condor. This risk stems from possible contamination of surface water supplies, including springs, creeks and livestock water troughs, created by leaks and blowouts associated with oil and gas development. Condors not only drink from these surface water sources but are also at risk of consuming contaminated carrion.
The current Citadel Project Indian, taking place on private land six to eight miles from the Pinnacles National Park is an example of a threat to the condors. This project involves thermal stimulation with high pressure steam at a depth of three to six hundred feet. This is very close to the surface and in an area known for earthquakes and faults. A blowout occuring during stimulation could discharge water contaminated with oil and chemicals to the surface and pose a risk to animals and to the condors themselves.
Given the dangers posed to the condors and other endangered species by oil and gas development on public lands a ban on all well stimulation operatoins should be instituted.
Lease revenues from oil and gas development collected by the Bureau of Land Management might pale in comparison to the revenues lost from tourist that stay away. The danger to the continued survival of the endangered California Condor presented by oil and gas development on lands within the jurisdiction of the Hollister Field Office is undeniable. A ban on all well stimulation technologies and all new drilling within the jurisdiction of the Hollister Field Office should be instituted and maintained.

Table C-9
Issue No. 4: Air Quality

On May 31, 2013, the US District Court for the Northern District of California ruled in Center for Biological Diversity v. Bureau of Land Management that BLM violated the National Environmental Policy Act3 ("NEPA") in issuing oil and gas leases without first analyzing the full extent of extreme extraction techniques such as hydraulic fracturing. Where such activity has occurred in other states, the environmental impact has been considerable. Water, air, soil, wildlife, and the climate have all been harmed by the expansion of unconventional extraction methods.
Under current practices in California, some flowback fluid is stored in open pits near the well pad. The EIS and Statewide Study must review the risks posed by these pits, which can contaminate the soil, pollute nearby surface water through breaches and spills, and pollute the air through evaporation. Liners are known to tear, and spills and evaporation occur even when the lining remains intact. Both can kill wildlife that is exposed to the pits' toxic contents.
So-called "closed loop" systems, which store flowback in tanks, still have potential environmental impacts. Even with reduced emission completions, spills and fugitive emissions can still cause soil, water, and air contamination. Using tanks does not obviate the need for trucks and pipes to transport flowback and waste water fluid to offsite disposal facilities. As mentioned above, increased truck traffic also has deleterious effects on the environment through increased traffic, air emissions, and spills.
In addition, the EIS and Statewide Study should assess the impact of refining and burning the newly accessible supply of oil and gas. Allowing unconventional oil and gas recovery would increase need for refineries as well as the total amount of oil and gas available for consumption. The US Energy Information Administration ("EIA") estimates that the Monterey Shale contains over 15 billion gallons of oil. End-users who burn this oil will be polluting the air with many different air pollutants, not the least of which is carbon dioxide, the leading contributor to global warming. The EIS and Statewide Study will be incomplete without assessing the effects of harmful air emissions from burning the fuel that would otherwise remain underground. In particular, the amount of carbon dioxide emitted as a result of oil and gas produced through unconventional extraction methods will lead us further toward irreversible and catastrophic climate change. Oil and gas extraction also emits a substantial amount of methane, a powerful greenhouse gas that will contribute significantly to the climate warming footprint of oil and gas activity.
The EIS and Statewide Study should fully examine the detrimental impact that unconventional well stimulation techniques have on local and regional air quality. Allowing hydraulic fracturing and other techniques on federal lands will greatly increase the release of harmful air emissions. California is already home to many of the nation's worst air quality regions. Thus, the EIS and Statewide Study should consider how increased emissions will exacerbate poor air quality in the state. Though projects must comply with federal Clean Air Act regulations, oil and gas production activity can lead to harmful air quality impacts even when in compliance. Thus, it is essential to look beyond compliance with federal regulations.
The EIS and Statewide Study should assess air emissions from all stages of unconventional oil and gas recovery, including drilling, completion, well stimulation, production, and disposal.
Drilling and casing the wellbore require substantial power from large equipment. In other states, the engines typically run on diesel fuel, which emits particularly harmful types of air pollutants when burned. Similarly, high-powered pump engines are used in the fracturing and completion phase. This too can amount in large volumes of air pollution.
Flaring, venting, and fugitive emissions of gas are also a potential source of air emissions. Gas flaring and venting can occur in both oil and gas recovery processes when underground gas rises to the surface and is not captured as part of production. Fugitive emissions can occur at every stage of extraction and production, often leading to high volumes of gas being released into the air.
Evaporation from open pits can also contribute to air pollution. Open pits that store waste fluid are exposed to the open air. Chemicals mixed with the wastewater can escape into the air through evaporation. Some pits are equipped with pumps that spray effluents into the air to hasten the evaporation process. Even where waste fluid is stored in so-called "closed loop" storage tanks, fugitive emissions can escape from tanks.
As mentioned above, increased truck traffic will lead to more air emissions. Trucks capable of transporting large volumes of chemicals and waste fluid typically use large engines that run on diesel fuel. Air pollutants from truck engines will be emitted not only at the well site, but also along truck routes to and from the site.

Table C-9
Issue No. 4: Air Quality

As a result of drilling, well stimulation or completion, production of a well, open pits, truck traffic, flaring and venting, and fugitive emissions, the emission of several air pollutants will undoubtedly increase, further harming California's already poor air quality.
EPA has identified six "criteria" air pollutants that must be regulated under the National Ambient Air Quality Standards (NAAQS) due to their potential to cause primary and secondary health effects. Concentrations of these pollutants- ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide and lead- will likely increase in regions where federal land is opened up to unconventional oil and gas recovery techniques.
Volatile organic compounds, though not listed as a criteria pollutant, can form ground- level (tropospheric) ozone when combined with nitrogen oxides and sunlight. This reaction can diminish visibility and air quality. VOCs can be emitted from car and truck engines as well as the drilling and completion stages of oil and gas production. Tropospheric ozone can also be caused by methane as it interacts with nitrogen oxides and sunlight. Methane is leaked and vented at various stages of unconventional oil and gas development.
In addition, recent reporting requirements implemented by the South Coast Air Quality Management District (SCAQMD) have shown that at least a dozen chemicals known to be air toxics have been used in hydraulic fracturing and other types of unconventional oil and gas recovery in California. Though the reporting requirements are relatively new, already operators have been forced to disclose the fact that they have been using several types of air toxics in California, including crystalline silica, methanol, hydrochloric acid, hydrofluoric acid, 2- butoxyethanol, ethyl glycol monobutyl ether, xylene, amorphous silica fume, aluminum oxide, acrylic polymer, acetophenone, and ethylbenzene. The EIS and Statewide Study should examine whether and to what extent these and other listed air toxics will be released into the air.
Many of these chemicals also appear on the US EPA's list of hazardous air pollutants. A study by the US House of Representatives' on chemicals used in hydraulic fracturing showed twenty-five chemicals regulated as hazardous air pollutants were used in hydraulic fracturing in various states across the country.
SCAQMD's list of air toxics refers to all chemicals included in California Health and Safety Code 44321, which include toxic air contaminants and federal hazardous air pollutants. The EIS and Statewide Study should study the potential harm from all the chemicals included in Section 44321 and any other pollutants that may pose a risk to human health.
The potential harm resulting from increased exposure to the dangerous air pollutants described above far serious and wide ranging. The negative effects of criteria pollutants are well documented and are summarized by the US EPA's website: Nitrogen oxides (NOx) react with ammonia, moisture, and other compounds to form small particles. These small particles penetrate deeply into sensitive parts of the lungs and can cause or worsen respiratory disease, such as emphysema and bronchitis, and can aggravate existing heart disease, leading to increased hospital admissions and premature death. NOx and volatile organic compounds react in the presence of heat and sunlight to form ozone.
The potential harm resulting from increased exposure to the dangerous air pollutants described above far serious and wide ranging. The negative effects of criteria pollutants are well documented and are summarized by the US EPA's website: Particulate matter (PM) - especially fine particles - contains microscopic solids or liquid droplets that are so small that they can get deep into the lungs and cause serious health problems. Numerous scientific studies have linked particle pollution exposure to a variety of problems, including: premature death in people with heart or lung disease, increased mortality, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms, such as irritation of the airways, coughing or difficulty breathing.
The potential harm resulting from increased exposure to the dangerous air pollutants described above far serious and wide ranging. The negative effects of criteria pollutants are well documented and are summarized by the US EPA's website: Sulfur Dioxide (SO2) - has been shown to cause an array of adverse respiratory effects including bronchoconstriction and increased asthma symptoms. Studies also show a connection between short-term exposure and increased visits to emergency departments and hospital admissions for respiratory illnesses, particularly in at-risk populations

Table C-9
Issue No. 4: Air Quality

including children, the elderly, and asthmatics.
The potential harm resulting from increased exposure to the dangerous air pollutants described above far serious and wide ranging. The negative effects of criteria pollutants are well documented and are summarized by the US EPA's website: Carbon Monoxide (CO) can cause harmful health effects by reducing oxygen delivery to the body's organs (like the heart and brain) and tissues. At extremely high levels, CO can cause death. Exposure to CO can reduce the oxygen-carrying capacity of the blood. People with several types of heart disease already have a reduced capacity for pumping oxygenated blood to the heart, which can cause them to experience myocardial ischemia (reduced oxygen to the heart), often accompanied by chest pain (angina), when exercising or under increased stress. For these people, short-term CO exposure further affects their body's already compromised ability to respond to the increased oxygen demands of exercise or exertion.
The potential harm resulting from increased exposure to the dangerous air pollutants described above far serious and wide ranging. The negative effects of criteria pollutants are well documented and are summarized by the US EPA's website: Ozone (O3) can trigger or worsen asthma and other respiratory ailments. Ground level ozone can have harmful effects on sensitive vegetation and ecosystems. Ozone may also lead to loss of species diversity and changes to habitat quality, water cycles, and nutrient cycles.
Air toxics and hazardous air pollutants, by definition, can result in harm to human health and safety. The full extent of the health effects of exposure is still far from being complete, but already there are numerous studies that have found these chemicals to have serious health consequences for humans exposed to even minimal amounts. The range of illnesses that can result are summarized in a study by Dr. Theo Colburn, which charts which chemicals have been shown to be linked to certain illnesses. Other studies and reports have confirmed the pervasive and extensive amount of chemicals that have the potential to cause health risks by being emitted into the air.
BLM should use air modeling to understand what areas and communities will most likely be affected by air pollution. Wind and weather patterns will determine which direction most air pollution will disperse and at what rate. An EIS and Statewide Study should be informed by air modeling to show where the air pollution will flow.
The BLM should conduct a full assessment of the direct and indirect impacts of oil and gas development activities on wildlife and ecosystems through a suite of comprehensive studies on all species and ecosystems that could be affected. The studies should be particularly detailed for federally and state listed species, federal and state candidates for listing, and state species of special concern. The studies should address the following impacts: (1) habitat loss, degradation, and fragmentation, including edge effects; (2) water depletion; (3) air and water contamination; (4) introduction of invasive species; (5) climate change impacts; (6) health and behavioral effects such as increased stress and changes in life history behaviors; (7) changes in demographic rates such as reproductive success and survival; and (8) potential for population-level impacts such as declines and extirpations. These studies should consider these harms individually and cumulatively.
The potential expansion of oil and gas drilling, through the process of hydraulic fracturing, to BLM- administered lands in the Hollister Field Office, could have profound effects on regional air quality. The Hollister planning area contains two Federal Class I Areas, the Ventana Wilderness and the Pinnacles National Monument. The EPA believes that disclosing and analyzing the anticipated emissions, from a variety of project activities related to oil and gas drilling, will be necessary to protect these areas. Examples of these activities and their anticipated emission types are particulate matter from surface disturbing activities and from truck traffic and other road travel; combustion emissions from oil and gas well drilling, and operation of other stationary, mobile and non-road engines including those needed to produce and develop oil and gas, etc.; and fugitive emissions of volatile organic compounds from oil and gas well development and production.
Recommendations: - The DEIS should disclose the current air quality conditions in the Hollister planning area, as well as potential air quality impacts associated with oil and gas development activities to be addressed the DEIS.

Table C-9
Issue No. 4: Air Quality

The DEIS should evaluate the direct, indirect, and cumulative impacts of oil and gas leasing on: each of the criteria pollutants (i.e., ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide and lead) and attainment or maintenance of their appropriate National Ambient Air Quality Standards; prevention of Significant Deterioration increment consumption at Class I Areas; projected ambient concentrations of hazardous air pollutants (e.g., formaldehyde, benzene, toluene, ethyl benzene, xylene, n-hexane, etc.); and Air Quality Related Values in Class I areas and sensitive Class II areas (e.g., visibility, deposition).

Air Quality MOU for Oil and Gas Decisions on Federal Lands

On June 23,2011, the US Department ofthe Interior, the US Department of Agriculture and the EPA signed a Memorandum of Understanding that established a common process for the agencies to follow in analyzing the potential air quality impacts of proposed oil and gas activities on federally managed public lands. The EPA has begun to use this helpful tool to ensure effective and efficient NEPA air quality evaluations for federal oil and gas decisions. We are eager to work with the BLM using this tool, and believe it works best to convene a technical workgroup composed of the MOU signatory agencies who will participate in this BLM action. The EPA is committed to working productively with our federal partners on this effort.

In accordance with the MOU, an early step that serves to focus the NEPA analysis is the completion of a well conceived and accurate reasonably foreseeable development scenario, which includes at least the reasonably likely number of oil and gas wells or ancillary operations. With the RFD scenario, an emissions inventory of criteria pollutants, volatile organic compounds and hazardous air pollutants can then be prepared. Based upon this emissions inventory, it will be possible to determine whether quantitative modeling needs to be conducted to assess impacts to air quality and/or Air Quality Related Values. This decision can be informed by the National Air Quality MOU, which specifies that modeling is necessary if the proposed action meets specific criteria for level of emissions/impacts as well as geographic location (outlined in section V.E.3. of the MOU). If the BLM concludes that modeling is not required, the DEIS should document the decision not to model and include a qualitative narrative analysis of the impacts to air quality and AQRVs. We would like to collaborate with you early in this decision-making effort to develop an agreeable approach regarding modeling.

If an RFD is included, the DEIS should include an emissions inventory of criteria pollutants, volatile organic compounds and hazardous air pollutants. Based upon this emissions inventory, and following the requirements of the MOU, determine whether quantitative modeling needs to be conducted to assess impacts to air quality and/or AQRVs. The DEIS should include the modeling result or document the decision not to model and include a qualitative narrative analysis of the impacts to air quality and AQRVs.

The BLM should, in collaboration with other affected agencies, identify reasonable mitigation and control measures and design features to address potential adverse impacts to air quality or AQRVs on affected lands in the NEPA process. As articulated in the MOU, this includes evaluating the mitigation measures and determining which ones would need to be employed to eliminate or reduce adverse impacts to air quality and AQRVs.

The DEIS should describe the selected methods for protecting air quality (which can include emission standards or limitations, best management practices, control technologies, and considerations of the pace of development) and the regulatory mechanisms the BLM will use to ensure their implementation (including lease stipulations and conditions of approval, notices to lessees, and permit terms and conditions). We look forward to participating in the technical workgroup to help identify reasonable mitigation measures once more is known about potential future mineral development.

Mitigation for Air Emissions Impacts

The EPA recommends that the DEIS include plans for addressing dust control for oil and gas development. We suggest the plan include, but not be limited to: dust suppression methods and the level of required or anticipated control, inspection schedules, and documentation and accountability processes. The EPA recommends consideration of the following measures to reduce emissions of criteria air pollutants, hazardous air pollutants (air toxics) and fugitive dust.

Construction Emissions Mitigation Plan- The DEIS should include a draft Construction Emissions Mitigation Plan and ultimately adopt this plan in the Record of Decision. In addition to all applicable local, state, or federal requirements, we recommend the following control measures be included in the Construction Emissions Mitigation Plan in order to reduce impacts associated with emissions of particulate matter and other toxics from construction-related activities:

o Fugitive Dust Source Controls: The DEIS should identify the need for a Fugitive Dust Control Plan to reduce PM10 and PM2.s during construction and operations. We

Table C-9
Issue No. 4: Air Quality

recommend that the plan include these general commitments: - Stabilize heavily used unpaved construction roads with a non-toxic soil stabilizer or soil weighting agent that will not result in loss of vegetation, or increase other environmental impacts. - During grading, use water, as necessary, on disturbed areas in construction sites to control visible plumes. - Vehicle Speed - Limit speeds to 25 miles per hour on stabilized unpaved roads as long as such speeds do not create visible dust emissions. - Limit speeds to 10 miles per hour or less on unpaved areas within construction sites on un-stabilized (and unpaved) roads. - Post visible speed limit signs at construction site entrances. - Inspect and wash construction equipment vehicle tires, as necessary, so they are free of dirt before entering paved roadways, if applicable. - Provide gravel ramps of at least 20 feet in length at tire washing/cleaning stations, and ensure construction vehicles exit construction sites through treated entrance roadways, unless an alternative route has been approved by appropriate lead agencies, if applicable. - Use sandbags or equivalent effective measures to prevent run-off to roadways in construction areas adjacent to paved roadways. Ensure consistency with the project's Storm Water Pollution Prevention Plan, if such a plan is required for the project. - Sweep the first 500 feet of paved roads exiting construction sites, other unpaved roads en route from the construction site, or construction staging areas whenever dirt or runoff from construction activity is visible on paved roads, or at least twice daily (less during periods of precipitation). - Stabilize disturbed soils (after active construction activities are completed) with a non-toxic soil stabilizer, soil weighting agent, or other approved soil stabilizing method. - Cover or treat soil storage piles with appropriate dust suppressant compounds and disturbed areas that remain inactive for longer than 10 days. Provide vehicles (used to transport solid bulk material on public roadways and that have potential to cause visible emissions) with covers. Alternatively, sufficiently wet and load materials onto the trucks in a manner to provide at least one foot of freeboard. - Use wind erosion control techniques (such as windbreaks, water, dust suppressants, and/or vegetation) where soils are disturbed in construction, access and maintenance routes, and materials stock pile areas. Keep related windbreaks in place until the soil is stabilized or permanently covered with vegetation.
Mobile and Stationary Source Controls: - If practicable, lease new, clean equipment meeting the most stringent of applicable Federal or State Standards. In general, commit to the best available emissions control technology. Tier 4 engines should be used for project construction equipment to the maximum extent feasible. - Where Tier 4 engines are not available, use construction diesel engines with a rating of 50 hp or higher that meet, at a minimum, the Tier 3 California Emission Standards for Off-Road Compression-Ignition Engines, unless such engines are not available. - Where Tier 3 engine is not available for off-road equipment larger than 100 hp, use a Tier 2 engine, or an engine equipped with retrofit controls to reduce exhaust emissions of nitrogen oxides and diesel particulate matter to no more than Tier 2 levels. - Consider using electric vehicles, natural gas, biodiesel, or other alternative fuels during construction and operation phases to reduce the project's criteria and greenhouse gas emissions.

Table C-9
Issue No. 4: Air Quality

- Plan construction scheduling to minimize vehicle trips. - Limit idling of heavy equipment to less than 5 minutes and verify through unscheduled inspections. - Maintain and tune engines per manufacturer's specifications to perform at CARB and/or EPA certification levels, prevent tampering, and conduct unscheduled inspections to ensure these measures are followed.
Include provisions for monitoring fugitive dust in the fugitive dust control plan and initiate increased mitigation measures to abate any visible dust plumes.
In addition to regulatory required fugitive dust controls, the Applicant should: - Avoid areas that may harbor the fungus if practicable. - Restrict high risk workers from contaminated areas if possible. - Test soils to be disturbed for presence of the cocci fungus, understanding that even in known endemic areas, the distribution of the fungus in the soil is sporadic and very limited. - Require that grading and construction equipment cabs be enclosed, HEPA ventilated, and air-conditioned. - Use personal protective equipment in dusty work areas: o Disposable clothing. o Method to clean work boots at the end of the shift. o NIOSH certified N95 respirator, at a minimum or one with a higher protection factor. - Provide personal hygiene (washing) facilities. - Require crews to work upwind from excavation sites. - Pave construction roads. - Minimize ground disturbance as much as possible. Revegetate temporarily disturbed areas promptly. - Discourage workers from carrying any fomites home with them. Institute hygiene measures to limit dust transport offsite. - Consider limiting visitor site access without proper training or personal protective equipment. - Prohibit work activities when wind speeds exceed 25 mph. - Consider mitigation measures that would provide advanced notification to sensitive receptors of the potential effects of a Coccidioides infection. - Contact the local or state public health agency to better understand the incidence of Coccidioidomycosis in the project area and surrounding region. Provide local public health officials with a schedule of project activities that disturb soil. Ensure local physicians consider Coccidioidomycosis in diagnoses involving flu or flu-like symptoms.
Oil and gas drilling also results in impacts on air quality which could have consequences for human health. In a study titled Human health risk assessment of air emissions from development of unconventional natural gas resources (McKenzie et al 2012) found that it is likely that oil and gas drilling operations emit petroleum hydrocarbons and VOCs, the inhalation of which is linked to irritation of the eyes, nose, and throat, breathing difficulties, cancer, childhood leukemia, blood disorders, and nervous system impairment.

Table C-9
Issue No. 4: Air Quality

The EIS should study the full range of adverse environmental effects that stem from oil and gas development. These include Air , Water, and Soil Contamination - Oil and gas development release a number pollutants that degrade the quality of our air, water, and soil.
The EIS should study all environmental impacts made more severe by fracking and other types of unconventional oil and gas extraction. These include: o Air, Water, and Soil Contamination: Fracking uses hundreds of chemicals that are known to have adverse human health impacts. Numerous instances of contamination have been reported in places where fracking has occurred. The EIS must include an analysis of adverse human health impacts from all of the chemicals used in the fracking process, as well as from those chemicals used in other types of unconventional oil and gas extraction techniques.
Air Quality and Greenhouse Gas Emissions: The County requests that local and cumulative impacts to air quality be analyzed in the EIS.
Third, with respect to greenhouse gases ("GHGs") and climate change, the Industry Associations urge BLM to avoid taking an unduly broad approach toward assessing GHG emissions associated with oil and gas development. In particular, the emissions associated with the ultimate combustion of refined oil products within the energy sector are completely beyond the scope of what is required by NEPA. Such emissions have nothing to do with the process by which oil reserves are developed or with a resource management plan that provides broad guidelines for such development. CEQ has recognized the difficulty in assessing climate change impacts associated with broad resource management actions such as this and proposed to exclude those projects from its climate change guidance. See CEQ, Draft Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions 2 (Feb. 18, 2010) ("CEQ" does not propose to make this guidance applicable to Federal land and resource management actions . . . .").
If BLM decides to address GHG emissions and climate change in its NEPA analysis, the analysis should be limited to direct emissions associated with the combination of hydraulic fracturing and horizontal drilling on lands overseen by the Hollister Field Office. Because oil is an essentially fungible product, it would not be relevant to consider downstream emissions associated with oil combustion as those emissions would have occurred anyway though the combustion of oil drawn from competing sources. Thus, such emissions should be excluded from the NEPA analysis as insignificant because they would occur regardless of the source of oil used. Furthermore, conducting a complete lifecycle analysis of the emissions associated with shale oil would entail engaging in comparisons with competing sources; such an undertaking would require significant Bureau resources beyond the BLM's scope of expertise and would not be commensurate with the narrow scope of BLM's assessment that is appropriate in this context. BLM should also acknowledge that GHG emissions will be co-controlled by the existing Clean Air Act requirements cited above.
BLM land should be closed, in particular to oil and gas development that involves hydraulic fracturing. There are too many unknowns about the impacts of hydraulic fracturing at this point for the BLM to properly analyze the impacts of fracking in the EIS. New studies have been released as recently as December 2013 (such as Estrogen and Androgen Receptor Activities of Hydraulic Fracturing Chemicals and Surface and GroundWater in a Drilling-Dense Region Kassotis et al. 2013) on the negative impacts hydraulic fracturing has on public health and safety and on water and air quality.
Oil and gas drilling also results in impacts on air quality that could be harmful to human health. A study by McKenzie et al 2012 called Human health risk assessment of air emissions from development of unconventional natural gas resources found that it is likely that the pollutants emitted in oil and gas drilling operations cause eyes, nose and throat irritation as well as respiratory issues. These pollutants could also lead to cancer and leukemia.
Due to the negative impacts to surface water and groundwater, to air quality, and to human health through exposure to endocrine disruptors and other chemicals present in fracking fluids, it will be impossible for the BLM to reach these RMP objectives while using hydraulic fracturing as an oil and gas extraction method.
California suffers from some of the worst air pollution in the country. Facilities classified as sensitive receptors, such as schools and residences, are found throughout rural areas where public lands are located. These areas will be exposed to high levels of exhaust and emissions from construction and operations, adversely impacting public health and air quality. Cumulative contributions of emissions that will reduce air quality must be properly evaluated to ensure that public health is protected, and determine whether proposed O&G development will conflict with implementation of plans for air quality attainment under applicable state and federal laws.
If oil and gas activities proposed under the Hollister RMP may result in increased air emissions, the EIS may need to evaluate the impacts to air quality and air quality related

Table C-9
Issue No. 4: Air Quality

values (AQRVs) in NPS Class I and sensitive Class II areas, as outlined in an Air Quality Memorandum of Understanding (MOU) among the US Department of Agriculture, US Department of the Interior and the US Environmental Protection Agency1. The air quality MOU provides a consistent approach to analyzing air quality and AQRV impacts in NEPA documents for federal oil and gas decisions. It also outlines the expectations for collaboration among the five signatory agencies. We request the opportunity to work with the BLM on the air quality analysis should the air quality MOU apply to the Hollister Field Office RMP Revision.

Assessing potential air quality and AQRV impacts at the RMP phase is imperative, as it establishes the desired conditions and goals for air resources, and provides direction for all subsequent oil and gas leasing and permitting decisions, including identifying necessary mitigation measures, as stipulations or conditions of approval, to ensureadequate resource protection into the future. The NPS believes that the RMP is the most appropriate stage in the planning process to ensure that cumulative air quality mitigation is consistently employed across the field office and region for both leased and un-leased areas. This is consistent with BLM policy outlined in the BLM Land Use Planning Handbook H-1601-1 (Appendix C, Part H, Fluid Minerals: Oil and Gas, Tar Sands, and Geothermal Resources), which lists the land use planning decisions for Fluid Minerals that are to be identified in the land use planning document. Among other things, the plan should identify "Whether constraints identified in the land use plan for new leases also apply to areas currently under lease." This approach ensures that mitigation is consistently applied in the field office and regionally through a coordinated planning effort.

For further information, please contact Tonnie Cummings, Air Resources Specialist, National Park Service, Pacific West Region, 612 E. Reserve Street, Vancouver, WA 98661 (360) 816-6201

(8) Air pollution impacts from the evaporation of fracking chemicals, the leaked release or intentional flaring of natural gas, and the machinery and trucking that may run 24 hours a day servicing these well drilling, and production sites must be estimated and included in the EIS.

Concerned about:

Clean air (impact of any atmospheric releases)

In the search for oil, gas and development of federal minerals in the Central Coast, Ohlone/Costanoan- Esselen Nation objects to disturbance using the hydraulic fracturing process. Fracturing can lead to environmental risks, contamination of ground water, depletion of fresh water, contamination of the air. There are increases in earthquake activity associated with the degradation of bedrock.

Methane is a much more potent greenhouse gas than carbon dioxide, and it is released into the air in prodigious amounts in the process of fracking for gas. Recent reports have shown that much more methane is being released at well heads than the industry has claimed - enough to call into question the oft-repeated assertion that natural gas is cleaner than coal.

The EIS must consider these releases as a serious consequence of oil and gas production.

Sources of pollution from oil and gas development include: construction emissions (i.e.-mobile sources, construction off-road equipment) and operational emissions (i.e.-mobile source, stationary sources). The District recommends the air quality emissions associated with well stimulation technologies be identified and quantified to identify the impacts. For CEQA, the District applies the following thresholds of significance for criteria pollutants: 10 tons per year oxides of nitrogen (NOx), 10 tons per year reactive organic gases (ROG), and 15 tons per year particulate matter of 10 microns or less in size (PM10). Emissions from stationary sources and mobile sources should be analyzed separately

Stationary sources would include the equipment associated with the well stimulation technologies (IC engines powering pumps, separators, and flares) and emissions associated with handling of well stimulation fluids and fluids during back after well stimulation.

Mobile sources include vehicular emissions associated with any potential truck deliveries or hauling, employee transportation in preparation for well stimulation technologies, and de-mobilization after well stimulation technologies are completed.

Table C-9
Issue No. 4: Air Quality

When assessing the significance of well stimulation technology projects on air quality, it should be noted that the impacts from operational activities may be significant. Under such circumstances, the District recommends that an ambient air quality analysis be performed for all pollutants.
For air quality impacts determined to be significant, the District recommends feasible mitigation through a Voluntary Emission Reduction Agreement (VERA).
A VERA is a mitigation measure by which a project proponent provides pound- for-pound mitigation of emissions increases through a process that develops, funds, and implements emission reduction projects, with the District serving a role of administrator of the emissions reduction projects and verifier of the successful mitigation effort. To implement a VERA, the project proponent and the District enter into a contractual agreement in which the project proponent agrees to mitigate project specific emissions by providing funds to the District. The funds are disbursed in the form of grants for projects that achieve emission reductions. Thus, the project specific impacts on air quality can be fully mitigated. Types of emission reduction projects that have been funded in the past include electrification of stationary internal combustion engines (such as agricultural irrigation pumps), replacing old heavy-duty trucks with new, cleaner, more efficient heavy-duty trucks, and replacement of old farm tractors.
In implementing a VERA, the District verifies the actual emission reductions that have been achieved as a result of completed grant contracts, monitors the emission reduction projects, and ensures the enforceability of achieved reductions. The initial agreement is generally based on the projected maximum emissions increases as calculated by the District approve air quality impact assessment, and contains the corresponding maximum fiscal obligation. However, because the goal is to mitigate actual emissions, the District has designed flexibility into the VERA such that the final mitigation is based on actual emissions related to the project as determined by actual equipment used, hours of operation, etc., and as calculated by the District. After the project is mitigated, the District certifies to the lead agency that the mitigation is completed, providing the lead agency with an enforceable mitigation measure demonstrating that project specific emission have been mitigated to less than significant.
The District has been developing and implementing VERA contracts with project developers to mitigate project specific emissions since 2005. It is the District's experience that implementation of a VERA is a feasible mitigation measure, and effectively achieves the emission reductions required by a lead agency, by mitigated project related impacts on air quality by supplying real and contemporaneous emission reductions.
Nuisance Odors: The project should be evaluated to determine the likelihood that the project would result in nuisance odors. Nuisance orders are subjective, thus the District has not established thresholds of significance for nuisance odors. Nuisance odors may be assessed qualitatively taking into consideration of project design elements and proximity to off-site receptors that potentially would be exposed objectionable odors.
Health Impacts: TAGs are defined as air pollutants that which may cause or contribute to an increase in mortality or serious illness, or which may pose a hazard to human health. The most common source of TAGs can be attributed to diesel exhaust fumes that are emitted from both stationary and mobile sources. Health impacts may require a detailed health risk assessment (HRA). Project related health impacts should be evaluated to determine if emissions of toxic air contaminants (TAG) will pose a significant health risk to nearby sensitive receptors.
More information on TAGs, prioritizations and HRAs can be obtained by: E-mailing inquiries to: hramodeler@valleyair.org; or Visiting the District's website at: http://www. valleyair.org/busind/ptofTox_Resources/AirQualityMonitoring.htm.
In addition to the discussions on potential impacts identified above, the District recommends the EIS also include the following discussions: a) A discussion of the methodology, model assumptions, inputs and results used in characterizing the project's impact on air quality. To comply with National Environmental Policy Act (NEPA) requirements, the District recommends that the modeling outputs be provided as appendices to the EIS. The District further recommends, that the District be provided with an electronic copy of all input and output files for all modeling

Table C-9
Issue No. 4: Air Quality

In addition to the discussions on potential impacts identified above, the District recommends the EIS also include the following discussions: A discussion of project design elements and mitigation measures, including characterization of the effectiveness of each mitigation measure incorporated into the project.
Some equipment used in well stimulation activities may be subject to District Permits/Portable Equipment Registration and/or California Air Resources Board (GARB) portable equipment registration. District Regulation VIII Fugitive PM10 Prohibitions may apply to unpaved roadways, construction activities in support of well stimulation technologies.
I do not want fracking ANYWHERE In California. It is far, far from green, releasing thousands of unknown chemicals and METHANE, which is the strongest of the air pollutants released by these monstrosities.
Further require drillers to place reserves to cover any potential environmental damage that may arise from their activities over time eg 20 yrs or more. Too easy to be sloppy when they can just drill and leave. All pollution related to drilling and production should be avoided or fully mitigated. That includes leaking gas. Require all new supply of the product (natural gas and oil) not to be burned as that is adding to global warming and other pollutants. One alternative, use in fuel cells which do not burn but use chemical reactions and are zero emission. Oil for lubrication, plastics, drugs and other non burn uses.
Before they were pulled, the scientific studies by the EPA were indicating that fracking was dangerous and had longterm effects on both land, water and the air quality.

Table C-10
Issue No. 5: Climate Change

Climate Change – Adaptation
BLM land in all California Field Offices should be closed to further oil and gas development and future oil and gas leasing, especially in regard to hydraulic fracturing. Lots of research to support this, but the biggest is we are in a drought and fracking costs millions of gallons of water that is unusable. That polluted water is sent back beneath the water table but it is possible for it to leach into local water supplies.
The EIS must consider not just the current effects of global warming, but also the future effects if more fossil fuels are produced and burned, releasing more carbon into the atmosphere. For example, severe weather will become more severe, more ecosystems will crash, and more species will become extinct, to name just some of what we can expect. Scientists warn of a "mass extinction event," the sixth in the history of the earth, paralleling the one that killed off the dinosaurs and other large reptiles. They also postulate an abrupt and irreversible shift in the global ecosystem, "a planetary-scale critical transition as a result of human influence," principally global warming ["Approaching a state shift in Earth's biosphere," Nature, June 7, 2012]. It is important for the EIS to take these matters seriously. It should not diminish the contribution that oil and gas extracted from BLM-controlled land would make to climate change - by claiming, for example, that production from BLM sources would not be "significant" compared to worldwide production. It is all significant. Production from BLM sources would: - Directly increase global warming by adding carbon to the atmosphere. Every bit of fossil fuel that's extracted from the earth and burned contributes to climate change. - Indirectly increase global warming by adding to the supply and availability of carbon-based fuels, thus lowering their cost. That will make sustainable (non-carbon) energy sources relatively more expensive, slowing their adoption and prolonging the unsustainable use of fossil fuels. - Give an excuse to others, who can adopt the same logic and say, "Look, they're producing oil and gas over there on BLM-managed land (and in North Dakota, Pennsylvania, the Gulf of Mexico, the Arctic Ocean, etc.). What we would produce over here is just a drop in the bucket compared to that, so it won't matter." That conformist logic is a path to ecocide and an unlivable planet. It all matters, every drop. To pretend otherwise would be intellectually dishonest and, frankly, a cop-out.
When it comes to water, well stimulation is a double whammy: On the front end, water is consumed and turned into toxic waste. On the back end, when the oil and gas is burned, it will add more carbon to the atmosphere and contribute to global warming. Among other things, that will further intensify extreme weather events, like our current drought, restricting our supply of water still more.
You will likely hear an argument that opening more areas to oil and gas drilling will create jobs and spur economic growth, and that any environmental considerations must be balanced against these economic imperatives. But what kind of jobs? No matter how much it pays, a job cannot be said to be "good" if it contributes to the kind of world-changing destruction we face with climate change. And what kind of economy? An economy based on carbon fuels will necessarily flounder. I believe it was David Brower who observed that the economy is a wholly owned subsidiary of the ecology. As the global environment deteriorates due to climate change, we humans will find it more and more difficult to sustain ourselves (as fisheries go belly up, forests die, agriculture becomes impossible in many areas and more difficult and tenuous in others, etc.). At the same time, we will, at minimum, be buffeted by violent storms, droughts, floods, rising seas levels, and prolonged periods of extreme temperatures. Who can imagine a robust growing economy in such circumstances? We, and all our endeavors, are irrevocably tied to the natural world. As we destroy that world, we too will suffer the consequences. There are times when balancing competing interests is appropriate, and times when it is not. It is not appropriate when facing an existential crisis, as we are now.
As a member of 350.org, I'm deeply concerned about the environmental impacts of fossil fuels, including climate change and global warming. To keep our planet habitable, we must leave some of the known oil reserves in the ground. Calculations have been done to show that developing all of the known oil reserves will releases so much carbon dioxide that it basically amounts to committing collective suicide, five times over.

Table C-10
Issue No. 5: Climate Change

The Bureau of Land Management should be conserving open space. It's a natural watershed that enables sustainability for the aquifers and groundwater. It provides for our basic needs and that of the environment that all life is dependent upon. As we are experiencing a devastating water shortage and severe climate change, the decision to be made by the HFO is new areas need to be closed to oil and gas drilling and no new permits issued on current leases.
Approval of fracking Monterey shale oil on BLM land will impact not only our health and local diversity but, continued federal subsidy and development of carbon generating fossil fuels will push us further towards the larger climate change question of whether or not there will be future generations.
It doesn't take a EI statement to understand that California cannot tolerate fracking. The ongoing drought and persistent year-round forest fires make it extremely dangerous, to say nothing of the farming industry. You do realize, don't you, that this state feeds well over half the country.
Fracking should not be allowed in seismically active California. The full consequences of fracking to precious groundwater resources and the potential effects of fracking on land subsidence and sensitive faults has not been studied sufficiently. Much remains unknown. Beyond that concern, fracking will result in even more CO2 being released into an already catastrophically altered climate. Global warming is already manifesting in our lifetimes with loss of glaciers and sea ice, erratic and destructive weather, and other rapid changes to climate that will devastate the environment, human communities, and the world's economy. Fracking, in that respect, threatens the security of the United States.
Climate Change – Greenhouse gases
In addition, the EIS and Statewide Study should assess the impact of refining and burning the newly accessible supply of oil and gas. Allowing unconventional oil and gas recovery would increase need for refineries as well as the total amount of oil and gas available for consumption. The US Energy Information Administration ("EIA") estimates that the Monterey Shale contains over 15 billion gallons of oil. End-users who burn this oil will be polluting the air with many different air pollutants, not the least of which is carbon dioxide, the leading contributor to global warming. The EIS and Statewide Study will be incomplete without assessing the effects of harmful air emissions from burning the fuel that would otherwise remain underground. In particular, the amount of carbon dioxide emitted as a result of oil and gas produced through unconventional extraction methods will lead us further toward irreversible and catastrophic climate change. Oil and gas extraction also emits a substantial amount of methane, a powerful greenhouse gas that will contribute significantly to the climate warming footprint of oil and gas activity.
Volatile organic compounds, though not listed as a criteria pollutant, can form ground- level (tropospheric) ozone when combined with nitrogen oxides and sunlight. This reaction can diminish visibility and air quality. VOCs can be emitted from car and truck engines as well as the drilling and completion stages of oil and gas production. Tropospheric ozone can also be caused by methane as it interacts with nitrogen oxides and sunlight. Methane is leaked and vented at various stages of unconventional oil and gas development.
The EIS and Statewide Study must fully analyze the impact of unconventional oil and gas extraction on the biggest and most challenging environmental problem of our time: climate change. The first goal listed under NEPA is to "fulfill the responsibilities of each generation as trustee of the environment for succeeding generations." Expansion of oil and gas production into California's federal lands will substantially increase the volume of greenhouse gases emitted into the atmosphere and jeopardize the sustainability of the environment and the health and well being of future generations. In order to avoid catastrophic climate change, BLM should be looking for ways to reduce, rather than increase, greenhouse gas emissions.
BLM should perform a full analysis of all gas emissions that contribute to climate change, including methane and carbon dioxide, two of the most common greenhouse gases. The EIS and Statewide Study should calculate the average amount of greenhouse gas that will result from a single approved well (expressed in global warming potential CO2 equivalent) as well as the estimated cumulative greenhouse gas emissions expected over the long term. Though globally, carbon dioxide is emitted in higher volumes, methane's global warming potential is 72 to 105 times higher than carbon dioxide over a 20-year period. The International Panel on Climate Change recently revised the global warming potential of methane to 84 times that of CO2 over a 20-year period. The oil and gas sector is one of the largest sources of global methane emissions, accounting for approximately 30 percent of US methane emissions, and is expected to be one of the most rapidly growing sources of anthropogenic methane emissions in the coming decades.
BLM must conduct a full lifecycle analysis of the impact of its action, including but not limited to the following sources. End-user oil and gas combustion. The combustion of the extracted oil and gas will add vast amounts of carbon dioxide to the atmosphere, further heating the climate and

Table C-10
Issue No. 5: Climate Change

moving the globe closer to catastrophic and irreversible climate change. Though much of the oil is used as gasoline to fuel the transportation sector, the produced oil may be combusted as different types of products. All uses should be included as contributors to climate change.
BLM must conduct a full lifecycle analysis of the impact of its action, including but not limited to the following sources. Emissions from Refineries and Production. Oil and gas must undergo intensive refinery and production processes before the product is ready for consumption. Refineries and their auxiliary activities constitute a significant source of emissions. Moreover, California's oil is largely low-grade crude, making the refinement process even more energy intensive. The state estimated that 70 percent of California's active wells produced extra-heavy or heavy crude. Refining this oil will produce even more greenhouse gases than refining other supplies of oil. The Union of Concerned Scientists projected that California's refineries emit 19 to 33 percent more greenhouse gases per barrel compared to other regions.
BLM must conduct a full lifecycle analysis of the impact of its action, including but not limited to the following sources. Vented emissions. As discussed in Section II.H.1, oil and gas operations frequently vent gas that flows to the surface at times where the gas cannot otherwise be captured and sold. Vented gas can contain methane and escape into the atmosphere.
BLM must conduct a full lifecycle analysis of the impact of its action, including but not limited to the following sources. Combustion during operations. Operators of oil and gas wells rely on both mobile and stationary sources of power to run their sites. The engines on drilling equipment, pumps, trucks, and other types of equipment burn large amounts of fuel to operate. Carbon dioxide, methane, and nitrous oxide (N2O, another potent greenhouse gas) are emitted from oxidized fuel during the combustion process. Engines emit greenhouse gases during all stages of oil and gas recovery, including drilling rig mobilization, site preparation and demobilization, completion rig mobilization and demobilization, well drilling, well completion (including hydraulic fracturing and other unconventional extraction techniques), and well production. Transportation of equipment and chemicals to and from the site are an integral part of the production process and contributes to greenhouse gas emissions. Gas that is flared to dispose of unwanted gas is another type of on-site combustion that is a potential source of carbon dioxide emissions.
BLM must conduct a full lifecycle analysis of the impact of its action, including but not limited to the following sources. Fugitive emissions. Production wells, especially gas wells, can leak potent greenhouse gases through fugitive emissions at many different points in the production process. Some studies show fugitive emissions as high as 7.9 percent.
The harms from continued anthropogenic greenhouse emissions are nothing short of catastrophic. A rise in global average temperature by just a few degrees will likely result in wide range of devastating consequences. To name only a few of the global-scale consequences, climate change may lead to: sea level rise and population displacement, increased frequency of extreme weather events, change in weather patterns, extreme floods and droughts, ocean acidification, mass species extinction, loss of biodiversity, spread of vector-born disease, and reduction of food and water security.
The EIS and Statewide Study cannot ignore the potential for oil and gas development on public lands to contribute to the global warming crisis.
When examining the increased oil and gas production activity's effect on communities disproportionately impacted by climate change, communities far from the drilling need to be considered, communities such as the Native Village of Kivalina in Alaska. The small Inupiaq village north of the Arctic Circle, which will be forced to relocate due to the melting ice pack, and many like it, are feeling the effects of global warming first and worst. Any analysis of the environmental justice impacts of increased oil and gas production must look at the effect of that increased production on climate change, and the corresponding disproportionate effects on environmental justice communities.
Anthropogenic climate change poses a significant threat to biodiversity. Climate disruption is already causing changes in distribution, phenology, physiology, genetics, species interactions, ecosystem services, demographic rates, and population viability: many animals and plants are moving poleward and upward in elevation, shifting their timing of breeding and migration, and experiencing population declines and extinctions. Because climate change is occurring at an unprecedented pace with multiple synergistic impacts, climate change is predicted to significantly increase extinction risk for many species. The IPCC concluded that 20% to 30% of plant and animal species will face an increased risk

Table C-10
Issue No. 5: Climate Change

of extinction if global average temperature rise exceeds 1.5°C to 2.5°C relative to 1980-1999, with an increased risk of extinction for up to 70% of species worldwide if global average temperature exceeds 3.5°C relative to 1980-1999. Other studies have predicted similarly severe losses: 15%-37% of the world's plants and animals committed to extinction by 2050 under a mid-level emissions scenario; the extinction of 10% to 14% of species by 2100 if climate change continues unabated; and the loss of more than half of the present climatic range for 58% of plants and 35% of animals by the 2080s under the current emissions pathway, in a sample of 48,786 species. Because expansion of oil and gas production into California's federal lands will substantially increase the emissions of greenhouse gases, this activity will further contribute to the harms from climate change to wildlife and ecosystems.
The BLM should conduct a full assessment of the direct and indirect impacts of oil and gas development activities on wildlife and ecosystems through a suite of comprehensive studies on all species and ecosystems that could be affected. The studies should be particularly detailed for federally and state listed species, federal and state candidates for listing, and state species of special concern. The studies should address the following impacts: (1) habitat loss, degradation, and fragmentation, including edge effects; (2) water depletion; (3) air and water contamination; (4) introduction of invasive species; (5) climate change impacts; (6) health and behavioral effects such as increased stress and changes in life history behaviors; (7) changes in demographic rates such as reproductive success and survival; and (8) potential for population-level impacts such as declines and extirpations. These studies should consider these harms individually and cumulatively.
The federal Energy Information Agency has estimated that the Monterey Shale formation holds more than 15 billion barrels of oil, or about 6 billion tons of C02. The full exploitation of these oil resources would result in considerable greenhouse gas emissions. Additionally, oil and natural gas systems are one of the largest contributors to anthropogenic methane emissions in the US, according to EPA's 2011 US Greenhouse Gas Inventory Report. Pursuant to the Council on Environmental Quality's "Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions," and Executive Order 13514, the EPA recommends that the BLM include, in the DEIS, an assessment of the projected GHG emissions for this action, a description of how these emissions would impact climate change, and how climate change may affect oil and gas activities in the planning area.
Describe the potential range of GHG emissions that may be associated with lifecycle commercial oil and gas development under each alternative, to help BLM decision makers and the public understand how GHG emissions scenarios may vary. We recommend that GHG emissions be quantified in CO2-equavalent terms and translated into equivalencies that are easily understood from the public standpoint (e.g., annual GHG emissions from x number of motor vehicles, see http://www.epa.gov/cleanenergy/energy-resources/calculator.html). In addition, because information on the "downstream" indirect GHG emissions from activities such as refining may be of interest to the public in obtaining a complete picture of the GHG emissions associated with the proposed project, it may be helpful to estimate and disclose such information.
Describe any existing Regional, Tribal or State climate change plans or goals that cover the oil and gas development area as well as the extent to which the BLM would reconcile, through mitigation or otherwise, its proposed action with such plans.
Qualitatively discuss the link between GHGs and climate change, and the potential impacts of climate change. Include a summary discussion of ongoing and projected regional climate change impacts relevant to the planning area.
Identify any potential impacts from the proposed action that may be exacerbated by climate change (e.g., reclamation could become more difficult with climate change, or the impacts of water consumption could increase). We recommend that the BLM assess and implement measures to reduce GHG emissions associated with the proposed project, including alternatives and/or potential means to mitigate emissions. We recommend considering mitigation measures from the EPA's Natural Gas STAR Program as examples of cost-effective technologies and practices to reduce GHG emissions (www.epa.gov/gasstar/).
Ban all fracking on BLM lands. I could go into greater detail about global climate change but you have already seen the evidence and you know that more than 95% of climate scientists agree that massive changes to reduce CO2 in our atmosphere must take place now to avert a catastrophe.
The EIS should study the full range of adverse environmental effects that stem from oil and gas development. These include o Greenhouse Gas Emissions- the development, production, transportation, refinement, and ultimate use of oil and gas will contribute to our climate crisis. Recent studies have

Table C-10
Issue No. 5: Climate Change

shown that methane- a highly potent greenhouse gas- is leaking from oil and gas activity at a much higher rate than previous estimates.

Third, with respect to greenhouse gases ("GHGs") and climate change, the Industry Associations urge BLM to avoid taking an unduly broad approach toward assessing GHG emissions associated with oil and gas development. In particular, the emissions associated with the ultimate combustion of refined oil products within the energy sector are completely beyond the scope of what is required by NEPA. Such emissions have nothing to do with the process by which oil reserves are developed or with a resource management plan that provides broad guidelines for such development. CEQ has recognized the difficulty in assessing climate change impacts associated with broad resource management actions such as this and proposed to exclude those projects from its climate change guidance. See CEQ, Draft Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions 2 (Feb. 18, 2010) ("CEQ" does not propose to make this guidance applicable to Federal land and resource management actions . . . .").

If BLM decides to address GHG emissions and climate change in its NEPA analysis, the analysis should be limited to direct emissions associated with the combination of hydraulic fracturing and horizontal drilling on lands overseen by the Hollister Field Office. Because oil is an essentially fungible product, it would not be relevant to consider downstream emissions associated with oil combustion as those emissions would have occurred anyway though the combustion of oil drawn from competing sources. Thus, such emissions should be excluded from the NEPA analysis as insignificant because they would occur regardless of the source of oil used. Furthermore, conducting a complete lifecycle analysis of the emissions associated with shale oil would entail engaging in comparisons with competing sources; such an undertaking would require significant Bureau resources beyond the BLM's scope of expertise and would not be commensurate with the narrow scope of BLM's assessment that is appropriate in this context. BLM should also acknowledge that GHG emissions will be co-controlled by the existing Clean Air Act requirements cited above.

(10) Climate Change and global warming are worsened by every gallon of oil or cubic foot of gas that is extracted from the earth. The USA is a nation without a coherent energy policy. The financial investment being put into the recovery of fracked gas and tight oil is a major problem for global climate disruption. If this money were invested instead, into renewable energy development, including wind and solar power, the benefits to the citizens of this country would be immense. Far more jobs would be created and our planet might have a chance to avoid the catastrophic impacts of climate change. Time is running out. The last thing the USA needs now is more oil and gas development. The nation of Spain now generates 21% of its entire national electricity supply from wind power alone. We need to learn from those nations that lead on energy policy.

This BLM EIS must assess the climate impacts of all the oil and gas burned from fuels produced from leases offered by the BLM. Carbon dioxide and leaked and flared methane, as well as the evaporation of fracking chemicals are all part of the negative climatic impacts of oil and gas production. How many tons of carbon dioxide may be produced from the public lands managed by the Hollister BLM Office, and general RMP you state that you are preparing?

Concerned about:

Injection of hazardous chemicals into the biosphere.

The NOI identifies greenhouse gases ("GHG") and climate change as among the preliminary issues to be addressed in the EIS. 78 Fed. Reg. 47409. In considering this issue, the scope of analysis should focus on GHG emissions directly associated with well development, completion and production, consistent with the updated development scenario. Downstream GHG emissions associated with combustion of refined products are driven by demand rather than by the specific source of production and would occur in any case through combustion of products from other sources. As such, under NEPA's analytic "rule of reason", it is in appropriate to extend the analysis beyond the potential addition of new lease stipulations and conditions to the Hollister RMP.

The EIS must consider not just the current effects of global warming, but also the future effects if more fossil fuels are produced and burned, releasing more carbon into the atmosphere. For example, severe weather will become more severe, more ecosystems will crash, and more species

will become extinct, to name just some of what we can expect. Scientists warn of a "mass extinction event," the sixth in the history of the earth, paralleling the one that killed off the dinosaurs and other large reptiles. They also postulate an abrupt and irreversible shift in the global ecosystem, "a planetary-scale critical transition as a result of human influence," principally global warming ["Approaching a state shift in Earth's biosphere," Nature, June 7, 2012].

It is important for the EIS to take these matters seriously. It should not diminish the contribution that oil and gas extracted from BLM-controlled land would make to climate

Table C-10
Issue No. 5: Climate Change

change - by claiming, for example, that production from BLM sources would not be "significant" compared to worldwide production. It is all significant. Production from BLM sources would: - Directly increase global warming by adding carbon to the atmosphere. Every bit of fossil fuel that's extracted from the earth and burned contributes to climate change. - Indirectly increase global warming by adding to the supply and availability of carbon-based fuels, thus lowering their cost. That will make sustainable (non-carbon) energy sources relatively more expensive, slowing their adoption and prolonging the unsustainable use of fossil fuels. - Give an excuse to others, who can adopt the same logic and say, "Look, they're producing oil and gas over there on BLM-managed land (and in North Dakota, Pennsylvania, the Gulf of Mexico, the Arctic Ocean, etc.). What we would produce over here is just a drop in the bucket compared to that, so it won't matter." That conformist logic is a path to ecocide and an unlivable planet. It all matters, every drop. To pretend otherwise would be intellectually dishonest and, frankly, a cop-out.
Finally, President Obama has promised bold action against climate change. Opening up public land to oil and gas development is counterproductive and takes us further down the path towards irreversible climate disruption. The EIS must evaluate all of these additional risks posed by fossil fuel development on public lands, and include prohibiting oil and gas activity on public lands as an alternative management approach.
As a member of 350.org, I'm deeply concerned about the environmental impacts of fossil fuels, including climate change and global warming. To keep our planet habitable, we must leave some of the known oil reserves in the ground. Calculations have been done to show that developing all of the known oil reserves will releases so much carbon dioxide that it basically amounts to committing collective suicide, five times over.
Methane leaks at the well-head posing a great threat to the atmosphere. Polluting our air, leading to climate change.
Sources of pollution from oil and gas development include: construction emissions (i.e.-mobile sources, construction off-road equipment) and operational emissions (i.e.-mobile source, stationary sources). The District recommends the air quality emissions associated with well stimulation technologies be identified and quantified to identify the impacts. For CEQA, the District applies the following thresholds of significance for criteria pollutants: 10 tons per year oxides of nitrogen (NOx), 10 tons per year reactive organic gases (ROG), and 15 tons per year particulate matter of 10 microns or less in size (PM10). Emissions from stationary sources and mobile sources should be analyzed separately
Stationary sources would include the equipment associated with the well stimulation technologies (IC engines powering pumps, separators, and flares) and emissions associated with handling of well stimulation fluids and fluids during back after well stimulation.
Mobile sources include vehicular emissions associated with any potential truck deliveries or hauling, employee transportation in preparation for well stimulation technologies, and de-mobilization after well stimulation technologies are completed.
A VERA is a mitigation measure by which a project proponent provides pound- for-pound mitigation of emissions increases through a process that develops, funds, and implements emission reduction projects, with the District serving a role of administrator of the emissions reduction projects and verifier of the successful mitigation effort. To implement a VERA, the project proponent and the District enter into a contractual agreement in which the project proponent agrees to mitigate project specific emissions by providing funds to the District. The funds are disbursed in the form of grants for projects that achieve emission reductions. Thus, the project specific impacts on air quality can be fully mitigated. Types of emission reduction projects that have been funded in the past include electrification of stationary internal combustion engines (such as agricultural irrigation pumps), replacing old heavy-duty trucks with new, cleaner, more efficient heavy-duty trucks, and replacement of old farm tractors.
In implementing a VERA, the District verifies the actual emission reductions that have been achieved as a result of completed grant contracts, monitors the emission reduction projects, and ensures the enforceability of achieved reductions. The initial agreement is generally based on the projected maximum emissions increases as calculated by the District approve air quality impact assessment, and contains the corresponding maximum fiscal obligation. However, because the goal is to mitigate actual emissions, the District has designed flexibility into the VERA such that the final mitigation is based on actual emissions related to the project as determined by actual equipment used, hours of

Table C-10
Issue No. 5: Climate Change

operation, etc., and as calculated by the District. After the project is mitigated, the District certifies to the lead agency that the mitigation is completed, providing the lead agency with an enforceable mitigation measure demonstrating that project specific emission have been mitigated to less than significant.
The District has been developing and implementing VERA contracts with project developers to mitigate project specific emissions since 2005. It is the District's experience that implementation of a VERA is a feasible mitigation measure, and effectively achieves the emission reductions required by a lead agency, by mitigated project related impacts on air quality by supplying real and contemporaneous emission reductions.
In addition to the discussions on potential impacts identified above, the District recommends the EIS also include the following discussions: A discussion of the components and phases of the project and the associated emission projections, including ongoing emissions from each previous phase.
Fracking is a serious threat to public health and the climate.
Fracking releases methane, a powerful greenhouse gas, and burning it will send the atmosphere over the tipping point.
Conflicts with Other Projects
Identify all on-going, planned, and reasonably foreseeable projects in the study area that may contribute to cumulative impacts.

Table C-11
Issue No. 6: Geology and Seismicity

Secondly, fracking could induce earthquake related activity in our state, as proven by Induced seismic activity has been linked to hydraulic fracturing/waste water disposal associated with hydraulic fracturing, and is being studied by the USGS. (http://www.usgs.gov/blogs/features/usgs_top_story/man-made-earthquakes/). Until the link between fracking and seismic activity has be DISPROVED, we can't consider it as an extraction method; the negative effects on our entire community and the colossal destruction from seismic activity is not commensurate with the benefit of extraction for the economy.
Wastewater also winds up in disposal wells, which have been linked to induced seismicity in states that have seen an increase in disposal wells. These injection wells are typically used for long-term storage of waste fluid, and thus the long term integrity and effect of these wells must be evaluated as part of the EIS and Statewide Study. Injecting and storing wastewater underground in these injection wells has been shown to cause a variety of risks, including inducing earthquakes. An increase in unconventional methods of oil and gas recovery will expand the number of these disposal wells necessary to store the flowback fluid from extraction and production activity. In an earthquake-prone state like California, it is imperative that the EIS and Statewide Study evaluate the environmental impact of making disposal wells more widespread throughout the state. (See further discussion in Section II.I, infra.)
The EIS and Statewide Study should fully assess the risk of induced seismicity caused by unconventional oil and gas extraction techniques as well as underground waste injection wells that will increase in number if oil and gas development is allowed to proliferate on public lands. California is at particular risk of induced seismicity due to the state's numerous faults and high background levels of seismic activity.
In regions of the central and eastern United States where unconventional oil and gas development has proliferated in recent years, earthquake activity has increased dramatically. More than 300 earthquakes with magnitude (M) ≥ 3 occurred between 2010 through 2012, compared with an average of 21 per year between 1967 and 2000.78 Moreover, although earthquakes with magnitude (M) ≥ 5.0 are very uncommon east of the Rocky Mountains, the number per year recorded in the midcontinent increased 11-fold between 2008 and 2011, compared to 1976 to 2007. Mid-continent states experiencing elevated levels of seismic activity include Arkansas, Colorado, New Mexico, Ohio, Oklahoma, Texas, and Virginia.
Much of this increased earthquake activity and several of the largest earthquakes in the US midcontinent in recent years have been linked to the disposal of wastewater into deep injection wells, which is well-established to pose a significant seismic risk. Earthquakes at magnitudes (M) that are felt (M3 and M4) or destructive (M4 and M5) have been attributed to wastewater injection wells in at least five states--Arkansas, Colorado, Ohio, Oklahoma, and Texas. The largest of these was a M5.7 earthquake in Prague, Oklahoma, which was the biggest in the state's history, destroying 14 homes and injuring two people. Other large earthquakes attributed to wastewater injection include an M5.3 in Colorado, M4.9 in Texas, M4.7 in Arkansas, and M3.9 in Ohio.
Other studies have found that hydraulic fracturing causes seismic activity directly. In the United Kingdom, Canada, and Oklahoma, studies have linked hydraulic fracturing to earthquakes.
Overall, the scientific literature demonstrates that the proliferation of unconventional oil and gas development, including increases in extraction and injection, will increase earthquake risk in California. Thus, the EIS and statewide study should fully assess the risk of induced seismicity cause by all unconventional oil and gas extraction and injection activities including wastewater injection wells. The analysis should assess the following issues based on guidance from the scientific literature, the National Research Council, and the Department of Energy: (1) whether existing oil and gas wells and wastewater injection wells in California have induced seismic activity, using earthquake catalogs (which provide an inventory of earthquakes of differing magnitudes) and fluid extraction and injection data collected by industry; (2) the fault environment on the public lands by identifying and characterizing all faults in these areas based on sources including but not limited to the USGS Quaternary Fault and Fold database and the most recent California Geological Survey Fault Activity Map GIS layer. In its analysis, the BLM should assess its ability to identify all faults in these areas, including strike-slip faults and deep faults that can be difficult to detect; (3) the background seismicity of public lands including the history of earthquake size and frequency, fault structure (including orientation of faults), seismicity rates, failure

Table C-11
Issue No. 6: Geology and Seismicity

mechanisms, and state of stress of faults; (4) the geology of public lands including pore pressure, formation permeability, and hydrological connectivity to deeper faults; (5) the hazards to human communities and infrastructure from induced seismic activity; and (6) the current state of knowledge on important questions related to the risk and hazards of induced seismicity from oil and gas development activities, including: (a) how the distance from a well to a fault affects seismic risk (i.e., locating wells in close proximity to faults can increase the risk of inducing earthquakes); (b) how fluid injection and extraction volumes, rates, and pressures affect seismic risk; (c) how the density of wells affects seismic risk (i.e., a greater density of wells affects a greater volume of the subsurface and potentially contacts more areas of a single fault or a greater number of faults); (d) the time period following the initiation of injection or extraction activities over which earthquakes can be induced (i.e., studies indicate that induced seismicity often occurs within months of initiation of extraction or injection although there are cases demonstrating multi-year delays); (e) how stopping extraction or injection activities affects induced seismicity (i.e., can induced seismicity be turned off by stopping extraction and injection and over what period, since studies indicate that there are often delays-sometimes more than a year- between the termination of extraction and injection activities and the cessation of induced earthquake activity); (f) the largest earthquake that could be induced by oil and gas development activities in California, including fracking and wastewater injection; and (g) whether active and abandoned wells are safe from damage from earthquake activity over the short and long-term.
Induced seismicity in oil and gas production has been observed ever since the 1930s. In the last decade, a number of examples of earthquake activity related to oil and gas production, as well as injection of liquids under high pressure, have been observed. Almost all induced seismicity associated with petroleum extraction can be traced to either fluid injection or extraction. In some recent cases, injection of produced water (excess water extracted during oil and gas extraction) has produced significant seismic activity. Examples are in Colorado and Texas, where gas and oil production yield large volumes of water that must be put back underground. Mitigation can be achieved through abatement and/or redistribution of the fluids to different areas or depths.
The DEIS should discuss the potential for geological hazards such as induced seismicity or subsidence.
The DEIS should discuss how geological hazards would be monitored, and mitigation measures employed, if detrimental geological hazards are manifested by the exploration and well completion activities, as well as by underground injection of produced water or flowback water.
Induced seismic activity has been linked to hydraulic fracturing/waste water disposal associated with hydraulic fracturing, and is being studied by the USGS The USGS has found the two to be linked : (http://www.usgs.gov/blogs/features/usgs_top_story/man-made-earthquakes/). The EIS should not proceed/oil and gas development that utilizes fracking should not proceed until further research has been completed and has disproved the link between the fracking and seismic activity. If it is not disproven, hydraulic fracturing should not be used as an extraction method because the negative impacts to other resources would outweigh the benefits of extracting the oil and gas.
Seismologists have long understood that earthquakes can be induced by the "withdrawal of fluids and gas from the subsurface, and injection of fluids into underground formations." William Ellsworth, Injection-Induced Earthquakes, DOI: 10.1126/science/1225942, Science 341, (2013). I assert that the EIS should thoroughly consider the potential of inducing seismic activity.
Induced Seismicity (Earthquakes): In other states, there is mounting evidence that the wastewater from fracking operations is causing earthquakes when injected into disposal wells. Given that California is especially prone to frequent and strong earthquakes, the BLM must fully and adequately study the dangers of induced seismicity before allowing fracking.
Water Resources Agency The Monterey County Water Resources Agency (MCRWA) has previously expressed concern regarding the impact of potential lease areas to MCRWA water supply facilities. The Rinconada Fault lies directly under the San Antonio Dam and has been identified as a likely earthquake source. The MCRWA does not recommend approval of hydraulic

Table C-11
Issue No. 6: Geology and Seismicity

fracturing operations within close proximity to Nacimiento and San Antonio Dams and Reservoirs due to the presence of nearby faults and the potential of hydraulic fracturing operations to impact water quality and quantity in the local area. The following must be analyzed in the EIS: - Analysis of the potential impacts of hydraulic fracturing to water quality and quantity both locally and regionally. - Analysis of the potential for increased seismic activity due to hydraulic fracturing and the potential impacts, including impacts to County operated lakes, dams and reservoirs.
Induced seismic activity caused by hydraulic fracturing/waste water disposal associated with hydraulic fracturing is being studied by the USGS and the USGS has found the two to be linked (http://www.usgs.gov/blogs/features/usgs_top_story/man- made-earthquakes/). The EIS should not proceed/oil and gas development that utilizes fracking should not proceed until further research has been completed and has disproved the link between the fracking and seismicity. If it is not disproven, hydraulic fracturing should not be used as an extraction method because the negative impacts to other resources would outweigh the benefits of extracting the oil and gas.
Disposal of produced and wastewater generated during drilling activities is a problem faced by all areas where O&G extraction occurs. Although some methods of recycling make produced water from drilling activities available for agricultural uses, there is no guarantee of its quality, and this water is classified as not safe for human or animal consumption. Reinjection activities may further degrade the quality of groundwater sources, and increase the possibility of seismic activity. Well- defined and concise plans for disposal of wastewater will help protect the quality of surface and groundwater, and prevent seismic activity.
(4) Wastewater is commonly injected into disposal wells, which have been linked to induced earthquakes in states that have seen an increase in disposal wells. Fracking itself has caused earthquakes as documented by the "Investigation of Observed Seismicity in the Horn River" (---source---British Columbia Oil and Gas Commission, August 2012). In an earthquake prone state such as California, the issue of seismicity is a major potential impact. The potential effects upon earthquake faults has yet to be studied.
(5) California's complex geology includes many unknown deep faults, geologic slip planes and other geologic formation elements that could allow chemical fracking fluids, oil and gas to escape upward into the five hundred foot deep level that is generally considered to the lower depth of most ground water basins. Fracking may occur as much as one to two miles below the earth surface, but rock faults can exist or be opened and thus allow deep salt and fracking chemical polluted water to merge with ground water over time. A geo analysis of the lands intended for possible leasing has to occur before any lease of public lands is considered. The EIS must include the geologic study sufficient to address this risk.
There is mounting evidence that the wastewater from fracking operations is causing earthquakes when injected into disposal wells. California is especially prone to frequent and strong earthquakes, the BLM must fully and adequately study the dangers of induced seismic activity before allowing fracking.
Concerned about: Impacts on known and unidentified seismic fault.
Wastewater disposal from fracking and other oil and gas extraction have also been linked to increased seismic activity.
Taking massive amounts of oil from the soil causes earthquakes and should not even be considered!
Seismological and hydrological impact assessments are critical in consideration of any land use consideration of hydrological fracturing/acid fracturing/steam fracturing techniques in oil and gas exploration. Central California does not have the water supply to support fracking without causing a severe challenge to agricultural, ranching, and residential water usage.
Studies by the University of Oklahoma have found a connection between fracking and increased seismic activity. San Benito County is the most seismically active area in North America. It is civilzational suicide to permit a practice that increases earthquakes in an active fault zone. I do not believe that we can safely risk fracking given the number of faults present in the region. I do not believe that the resources exist to permit a regulatory schema adequate to allow safe fracking.
The current Citadel Project Indian, taking place on private land six to eight miles from the Pinnacles National Park is an example of a threat to the condors. This project involves

Table C-11
Issue No. 6: Geology and Seismicity

thermal stimulation with high pressure steam at a depth of three to six hundred feet. This is very close to the surface and in an area known for earthquakes and faults. A blowout occuring during stimulation could discharge water contaminated with oil and chemicals to the surface and pose a risk to animals and to the condors themselves.
Consider the impacts of seismic activity induced by wastewater injection would have on socioeconomics, public health and safety, and water quality.
Don't ruin our wilderness areas- the oil and gas companies own more than enough land- they don't need the Public Lands as well. Besides- fracking is so environmentally damaging- we would only get garbage back from these companies. AND FRACKING CAUSES EARTHQUAKES a proven fact- this is California - we don't need no more stinkin' earthquakes.
An EPA scientist visited our area (Coachella Valley) 13 years ago when there was the possibility of a natural gas plant going in. We are practically on top of the San Andreas fault. He came out here to get people to stop this potentially very dangerous process. Fracking causes earthquakes!!! That's why Arkansas had a moratorium on the process- because swarms of earthquakes were traced back to their origin- fracking. Not to mention, using vital water resources, chemicals in the ground that would end of elsewhere in the chain, and exacerbating the climate change problem via inevitable methane leaks. No matter how safe the process is -ACCORDING TO THEIR INDUSTRY, that is an outright lie! And the lie is provable. Don't OK this destructive and irresponsible practice.
Not to mention that there may also be a link between fracking being a possible cause of earthquakes, which could be a recipe for disaster in a state that is already seismically active.
As a member of the public who has studied geophysics, I am deeply concerned about the practice of fracking for the removal of natural gas. When I first learned of the practice I predicted earthquakes, groundwater pollution, ground subsidence, and eventual travel of the pollutants to the surface 'downstream' through aquifers, faults, and natural fissures in the bedrock. We haven't seen all these yet, but there is strong evidence of the first two in the other states. Please, do not lift the fracking moratorium in California until the environmental studies are complete, and then only if they indicate the practice has no long-term damaging effects for the environment.
California is already prone to earthquakes. As we've seen in Ohio, Arkansas, Texas, The Netherlands, and the UK- even places that aren't known for earthquakes start to have them when they start fracking.
CA does not need any additional earthquakes.
Fracking should not be allowed in seismically active California. The full consequences of fracking to precious groundwater resources and the potential effects of fracking on land subsidence and sensitive faults has not been studied sufficiently. Much remains unknown. Beyond that concern, fracking will result in even more CO2 being released into an already catastrophically altered climate. Global warming is already manifesting in our lifetimes with loss of glaciers and sea ice, erratic and destructive weather, and other rapid changes to climate that will devastate the environment, human communities, and the world's economy. Fracking, in that respect, threatens the security of the United States.
Moreover, the very real likelihood that drinking water will be contaminated with pollutants, not to mention the increased risk of earthquakes that pumping vast amounts of water underground entails, makes this a no-win situation.
Fracking uses (wastes) millions of gallons of water and fracking causes earthquakes where earthquakes are rare if ever. California is the last place to allow a planet destroying business for the sake of a job.
The USGS has confirmed fracking as the cause of earthquakes in hitherto earthquake free areas of the mid-west. Are you going to risk our already earthquake prone state to corporate made earthquakes. Who will pay for the damages to our homes and infrastructure? The Federal government? The corporations? Ha, no one. We will be stuck with that bill.
Fracking has been known to trigger earthquakes where none have occurred before. Just what California needs - less potable water and more earthquakes!

Table C-11
Issue No. 6: Geology and Seismicity

The EIS should analyze potential wastewater disposal impacts on water and land resources and seismicity for unconventional oil and gas development.
In the search for oil, gas and development of federal minerals in the Central Coast, Ohlone/Costanoan- Esselen Nation objects to disturbance using the hydraulic fracturing process. Fracturing can lead to environmental risks, contamination of ground water, depletion of fresh water, contamination of the air. There are increases in earthquake activity associated with the degradation of bedrock.
Fracking is dangerous to all concerned, workers, people and other life living in the area, the environment. It should be ditched and investments made to make sustainable wind, solar and other green energy sources workable for the power grid. In California, there are 3 top reasons to continue the moratorium- damage to agriculture & water supplies and earthquakes. There is even concern that it can cause earthquakes or tremors. This is of special concern of course in California especially with Diablo Canyon nuclear power plant located on a fault zone which ties into larger systems. Fracking is a heavily polluting invasive extraction system which also has the potential to harm water supplies in a state that has water shortages. No only that, California is one of the richest agricultural zones on the planet.
California sits on earthquake generating faults that should not be disturbed by fracking, lest we end up with a worse situation. Leave the sub-stratas alone, keep fracking chemicals OUT!
We have earthquakes and fracking makes them more likely. Earthquakes have occurred in places they have never been before like Ohio. California gets its fair share and we don't need fracking to help it along.
Doesn't the simple fact that California is an earthquake zone from one end to the other register in the minds of BLM officials? Fracturing the earth intentionally in an area already heavily fractured is DANGEROUS.
Evidence in other states shows fracking contributes to ground water and well pollution and may be involved in triggering earthquakes in areas where earthquakes were formally minimal or nonexistent. California is earthquake central. DO NOT allow fracking in California. The hazards to air, water and soil pollution are known. The hazards they might present to our fault lines are not worth the risk
The BLM's studies must be completed before any decision is taken. California is earthquake prone, think about it. Fracking has already been related with seismic activities and it seems that fracking is a serious threat to public health and the climate.
Fracking has also been linked to earthquakes, California is ALREADY earthquake prone as it is.
We don't know yet what the impacts to our underground aquifers are, or the effect on earthquake faults.
Fracking causes earthquakes and trashes aquifers. Do we really need to encourage earthquakes in California?
WE haven't had a major earthquake in many years. Fracking has been linked to earthquakes!
It has also been connected to enabling earthquakes, something California does not need more of.
There is no way to frack safely. California is home to major fault lines known to cause 7+ magnitude earthquakes. Fracking is known to affect faults.
My immediate concerns are with the pressures imposed by the "fracking" fluids on earthquake faults that are known to be affected by environmental forces (ex: chemically-treated water pumped into the ground) In CA all of the active faults are known to be unknown, meaning that the "fracking" oil companies have no idea what natural disasters they are prematurely creating!
Fracking could potentially cause devastating earthquakes and would certainly require copious amounts of water. The risks and water consumption outweigh the possible benefits of fracking

Table C-11
Issue No. 6: Geology and Seismicity

Knowing that hydraulic fracture releases poisonous material into the air and water supply; destroys bedrock formations necessary to the stability of cities; and extracts negligible amounts of fuel in exchange for centuries' worth of pollution; we ask a prohibition thereof until superior fuels are in nationwide use, by all classes of society.
There is also the possibility of increased earthquake activity. There needs to be unbiased and thorough studies performed on this factor, as well.

Table C-12
Issue No. 7: Soil Resources

On May 31, 2013, the US District Court for the Northern District of California ruled in Center for Biological Diversity v. Bureau of Land Management that BLM violated the National Environmental Policy Act3 ("NEPA") in issuing oil and gas leases without first analyzing the full extent of extreme extraction techniques such as hydraulic fracturing. Where such activity has occurred in other states, the environmental impact has been considerable. Water, air, soil, wildlife, and the climate have all been harmed by the expansion of unconventional extraction methods.

The DEIS should include a comprehensive analysis of potential impacts to the quality of surface water and groundwater resources and evaluate the following activities for their impacts:

- o Waste management, including use, reuse, recycling and disposal of oil and gas produced and flowback water.
- o Impacts to shallow aquifers from oil and gas well drilling, well completion and production.
- o Management of spills or leaks from surface impoundments, oil and gas pits, or produced water evaporation ponds.
- o Erosion and sedimentation impacts associated with surface disturbance, including those associated with roads, well pad construction, well drilling and completion, and pipelines.

- As part of completing the aforementioned evaluation, the following resource impacts should be discussed, including disclosure of which waters may be impacted, the nature of potential impacts, and specific pollutants likely to impact those waters:

- o Groundwater: Potential impacts to groundwater, including municipal or private water supplies. We recommend that this include an analysis of the management of any fluids that will be injected underground for well completion, including the toxicity and fate of these fluids, with a focus on avoiding surface spills or leaks of these fluids.
- o Impaired Waterbodies: Potential impacts to impaired waterbodies, including waterbodies listed on the CWA § 303(d) list and waterbodies with completed Total Maximum Daily Loads (TMDLs).

o Surface Water Quality and Sedimentation: Potential impacts to water quality from runoff associated with surface disturbance. Erodible soils can represent a significant nonpoint source, and runoff could introduce sediments, as well as salts, selenium and other heavy metals into surface waters. To ensure sufficient information is included about the potential impacts of soil disturbance, we recommend that the DEIS include an estimate of erosion rates for each alternative in tons per year based on amount of surface disturbance, soil types, topography and slope, to avoid significant sedimentation.

The EIS should study the full range of adverse environmental effects that stem from oil and gas development. These include Air , Water, and Soil Contamination - Oil and gas development release a number pollutants that degrade the quality of our air, water, and soil.

The EIS should study all environmental impacts made more severe by fracking and other types of unconventional oil and gas extraction. These include:

o Air, Water, and Soil Contamination: Fracking uses hundreds of chemicals that are known to have adverse human health impacts. Numerous instances of contamination have been reported in places where fracking has occurred. The EIS must include an analysis of adverse human health impacts from all of the chemicals used in the fracking process, as well as from those chemicals used in other types of unconventional oil and gas extraction techniques.

In California, fracking threatens the soil and water quality that are essential to the state's wine, agricultural and fishing industries. While no government agency currently keeps track of fracking activities in California, BLM estimates that 90 percent of wells drilled on Indian and Federal lands are fracked. 77 Fed. Reg. 27,691, 27,693 (May 11, 2012).

BLM currently leases over 36 million acres of land a land area equal in size to the state of Michigan - for potential oil and gas development in 24 states, and periodically offers more land for leasing. BLM is initiating a planning process to address oil and gas development on public lands and federal mineral estate in California, and may amend the Resource Management Plans ("RMPs") for some of BLM's California field offices. To help inform the planning process, BLM is also initiating a scientific assessment of the current state of practices for well completion and stimulation in California. This science assessment will be led by the California Council on Science and Technology, and will be peer-

Table C-12
Issue No. 7: Soil Resources

reviewed.
Under current practices in California, some flowback fluid is stored in open pits near the well pad. The EIS and Statewide Study must review the risks posed by these pits, which can contaminate the soil, pollute nearby surface water through breaches and spills, and pollute the air through evaporation. Liners are known to tear, and spills and evaporation occur even when the lining remains intact. Both can kill wildlife that is exposed to the pits' toxic contents.
Include, in the DEIS, a list of BMPs that may be required to protect surface water and groundwater resources, and the circumstances under which the BMPs would be applied (e.g., proximity to surface water resources, presence of erosive soils, slope, shallow water aquifers, proximity of water wells, etc.).
Explain, in the DEIS, how the BLM would ensure that the BMPs would be monitored and enforced.

Table C-13
Issue No. 8: Socioeconomics

Farming and Agriculture
Surface water contamination Surface waters can be contaminated in many ways from unconventional well stimulation. In addition to storm water runoff, described above, surface water contamination may also occur from chemical and waste transport, chemical storage leaks, and breaches in pit liners. As described below, contaminated surface water can result in many adverse effects to wildlife, agriculture, and human health and safety. It may make waters unsafe for drinking, fishing, swimming and other activities. The EIS and Statewide Study should fully assess the risk of harm to surface waters as well as the feasibility of restoring the original water quality once surface water is contaminated.
Concerned about: Aquifer contamination affecting human and agriculture use. (potential contamination and subsequent loss)
Lifting the current ban on fracking on BLM land is a game of long and short-term risk. Risk to depleteing water in some of the more arid environments in the state; example- San Benito County where I live. California places nature, people and agriculture at odds over water. The state supplies almost 50% of the nation's fresh food. 10 year estimates increase our state population to 50 million people. The current drought threatens Coho salmon with extinction. Can we really afford to add powerful corporate oil interests to the tug of war on water?
The EIS must justify the water use required in hydraulic fracturing and analyze how the use of water for oil and gas development will result in socioeconomic impacts, including socioeconomic impacts to individuals involved in the agricultural industry
It doesn't take a EI statement to understand that California cannot tolerate fracking. The ongoing drought and persistent year-round forest fires make it extremely dangerous, to say nothing of the farming industry. You do realize, don't you, that this state feeds well over half the country.
Fracking is dangerous to all concerned, workers, people and other life living in the area, the environment. It should be ditched and investments made to make sustainable wind, solar and other green energy sources workable for the power grid. In California, there are 3 top reasons to continue the moratorium- damage to agriculture & water supplies and earthquakes. There is even concern that it can cause earthquakes or tremors. This is of special concern of course in California especially with Diablo Canyon nuclear power plant located on a fault zone which ties into larger systems. Fracking is a heavily polluting invasive extraction system which also has the potential to harm water supplies in a state that has water shortages. No only that, California is one of the richest agricultural zones on the planet.
Please don't risk California's billion dollar agriculture industry by polluting all the aquifers in California and causing irreparable damage!
As a bigger umbrella agency BLM must discourage and reject any request for stimulation well. California senate districts (illegible) count on Livestock, agricultural to water storage are lifeline in those counties. No fracking there.
Have the good citizens who are running this session taken the time to watch the movie gaslands one and two? Have you read the results of studies and interviews with people in Texas, the Bakken fields in North Dakota and New York State where the Marcellus Shale has been fracked into a new kind of hell on earth. Unfortunately, only after their lovely farmland has been destroyed did the people of New York State vote to stop fracking- too little, too late. And this vote was taken against the advice and will of the governor of the state and his allies- the billionaire corporate executives who buy and sell our representatives.
Socioeconomics
Aesthetic impacts: Monterey County is known for its beautiful landscapes and has worked to protect them through General Plan policies. Tourism is an important part of the county economy and the views and aesthetic that visitors come from around the world to enjoy is critical to the tourism industry. Analysis of the visual/aesthetic impacts from new industrial development in open lands should be included in the EIS as well as an economic analysis of the potential impacts to tourism.

Table C-13
Issue No. 8: Socioeconomics

Housing: Include an analysis of the potential impact to housing from an influx of new workers into rural areas. Temporary workers as well as migration of new workers into an area can impact housing availability, prices and the quality of life in a community.
Schools: Include analysis of impacts of new workers to schools.
Nor has there been a change in circumstances to warrant disturbing these criteria and goals, even if adjustments to the 2006 RMP ultimately are considered. On the contrary, federal policy is clear that energy development should be encouraged on federal lands, within the parameters of federal and state environmental laws as part of an "all of the above" energy strategy. In fact, Secretary Jewell recently explained that shale oil development using hydraulic fracturing "is a perfect example of how new and improved technology is allowing industry to tap previously inaccessible or unknown energy resources to create jobs, decrease our dependence on foreign oil, and grow our economy."
Lastly, fracking is most likely to take place near disadvantaged communities. The social justice implications of this are unfair. As many limitations as possible should be placed on fracking. The environmental, health, and socioeconomic impacts aren't worth it.
In California, fracking threatens the soil and water quality that are essential to the state's wine, agricultural and fishing industries. While no government agency currently keeps track of fracking activities in California, BLM estimates that 90 percent of wells drilled on Indian and Federal lands are fracked. 77 Fed. Reg. 27,691, 27,693 (May 11, 2012). BLM currently leases over 36 million acres of land a land area equal in size to the state of Michigan - for potential oil and gas development in 24 states, and periodically offers more land for leasing. BLM is initiating a planning process to address oil and gas development on public lands and federal mineral estate in California, and may amend the Resource Management Plans ("RMPs") for some of BLM's California field offices. To help inform the planning process, BLM is also initiating a scientific assessment of the current state of practices for well completion and stimulation in California. This science assessment will be led by the California Council on Science and Technology, and will be peer-reviewed.
Then there's the simple fact that oil drilling of any kind is development and development means the reduction in pristine natural beauty. Federal public lands include some of the most biologically diverse and ecologically important land in California. Allowing oil and gas activity, including operations that employ fracking, to occur in these areas is an unacceptable risk and is not compatible with the area's agricultural and tourism economy. Once open space habitats are developed and the land is contaminated you can't get them back to their original state. They will be gone forever.
I also consider myself an advocate for JOBS in our state. You see, last Thursday was not a good day for me- I lost my job. The subject of employment is one that is close to my heart and to my family's livelihood. I read a statistic that for every one job created by the Petroleum Industry, there are 7 additional jobs created in the community. There has to be a way to find a healthy balance here. The first step is to allow well stimulation per SB4 and the BLM hydraulic fracturing rule. We also need to find a way to allow it to occur in a safe manner. The current Secretary of Energy, EPA Adminstrator and other current and former Obama Administration officials have repeatedly stated that hydraulic fracturing poses no unmanageable threats to the environment, and that no evidence has been seen to indicate that this technology h caused any harm to groundwater. Hydraulic fracturing has been happening in California for years and in a manageable way! Responsible energy resource extraction on public lands can provide much-needed jobs, revenues and energy security while protecting the environment. We need jobs in this state. I for one WANT a job again. I want to be able to go back to work and work in a stable position through retirement. Job security won't happen until stability is put back in the petroleum industry in California. And I k now that I'm not alone in my views. Let's find a way to work together on this and allow well stimulation per SB4 and the BLM Hydraulic Fracturing Rule to proceed

Table C-13
Issue No. 8: Socioeconomics

AND create jobs, revenues and energy security in our state.
You will likely hear an argument that opening more areas to oil and gas drilling will create jobs and spur economic growth, and that any environmental considerations must be balanced against these economic imperatives. But what kind of jobs? No matter how much it pays, a job cannot be said to be "good" if it contributes to the kind of world-changing destruction we face with climate change. And what kind of economy? An economy based on carbon fuels will necessarily flounder. I believe it was David Brower who observed that the economy is a wholly owned subsidiary of the ecology. As the global environment deteriorates due to climate change, we humans will find it more and more difficult to sustain ourselves (as fisheries go belly up, forests die, agriculture becomes impossible in many areas and more difficult and tenuous in others, etc.). At the same time, we will, at minimum, be buffeted by violent storms, droughts, floods, rising seas levels, and prolonged periods of extreme temperatures. Who can imagine a robust growing economy in such circumstances? We, and all our endeavors, are irrevocably tied to the natural world. As we destroy that world, we too will suffer the consequences. There are times when balancing competing interests is appropriate, and times when it is not. It is not appropriate when facing an existential crisis, as we are now.
Furthermore, the permanent risks to Central California's aquifer and wells from fracking fluid contamination are too permanent and too great to consciously permit fracking. Oil exploration cannot come at the detriment of agriculture, ranching, and tourism, which are the fundamentals of San Benito economy.
The Pinnacles National Park provides significant resources for San Benito County, the State of California and the nation. It offers a wealth of biodiversity, recreational and educational opportunities and generates income for local businesses as well as state and federal agencies. The eastern side of the park is located in a fairly remote location and served by a single two lane highway. Tracts of land administered by the Bureau surround the park and the access highway. Significant oil and gas development within sight of the park and/or the highway would ruin the rural landscape and potentially impact visitation to the park and the influx of tourist dollars into the area and should be prohibited. An example of this is seen in New Mexico around the Carlsbad Caverns NP where oil and gas development have created a wasteland. Significant truck traffic associated with oil and gas development would pose a danger to wildlife and the public on rural Highway 25.
The EIS must explain all health and safety impacts of the accident scenarios and all the socioeconomic impacts
The EIS must justify the water use required in hydraulic fracturing and analyze how the use of water for oil and gas development will result in socioeconomic impacts, including socioeconomic impacts to individuals involved in the agricultural industry
Consider the impacts of seismic activity induced by wastewater injection would have on socioeconomics, public health and safety, and water quality.
California's economy is agricultural based, we feed the nation. Anything that threatens the scarce, precious water of California should immediately be suspect and never allowed.
Not only is fracking bad environmentally, it will destroy property values as we have reported: http://www.enviroreporter.com/ 2013/08/fracked-nation/

Table C-14
Issue No. 9: Traffic

The equipment and ingredients used in production also require heavy truck traffic, both to haul necessary components into the site, and to haul them away; increased traffic will also have an impact on the environment. New roads will be built where none existed before. Existing roads will dilapidate at a faster rate under the increased burden of trucks going to and from a well site.
So-called "closed loop" systems, which store flowback in tanks, still have potential environmental impacts. Even with reduced emission completions, spills and fugitive emissions can still cause soil, water, and air contamination. Using tanks does not obviate the need for trucks and pipes to transport flowback and waste water fluid to offsite disposal facilities. As mentioned above, increased truck traffic also has deleterious effects on the environment through increased traffic, air emissions, and spills.
Oil and gas production on public lands has the potential to dramatically and permanently change the landscape of California. Countless acres of public land may have to be leveled to allow for the construction and operation of well pads and related facilities such as wastewater pits. Roads may have to be constructed or expanded to accommodate trucks transporting chemicals and the large quantities of water needed for some recovery methods. Expansion of roads will lead to fragmentation of habitats for wildlife, increased potential for the introduction of invasive species, and harm to endangered and threatened species in California. Each of these effects is discussed in greater detail below. The photos below illustrate how the landscape can change once unconventional oil and gas activity begins.
Resource Management Agency- Public Works Department The Monterey County RMA-Public Works Department is responsible for maintenance of all County roads and transportation facilities. - Analysis of the impact of increased traffic, including heavy trucks, on all county, regional and city roadways should be included in the EIS. - The geographic area covered in the scope of the traffic study should be of sufficient size to adequately identify all potential impacts, including congestion, traffic management and impacts to infrastructure. - Mitigation measures for all traffic circulation and pavement impacts on County roads should be included. - Many of the County roads that will potentially be impacted are rural roads that are used primarily for local traffic. The EIS should include analysis of the needs and benefits of providing pedestrian/bicycle facilities as well as carpool/vanpool and other alternative modes of transportation that would reduce peak demand on roadways in the project area
Increased traffic on underdeveloped and rural roads, along with increased construction and operation activities, will have a detrimental impact on air quality and other resources. A complete cumulative impacts study is necessary in order to fully analyze the results of increased O&G development in these areas, such as decreased land use for agriculture, cattle grazing, and recharge areas for groundwater.

Table C-15
Issue No. 10: Tribal and Cultural Resources

Cultural and Heritage Resources
Consultation for tribal cultural resources is required under Section 106 of the National Historic Preservation Act. Historic properties under the NHPA are properties that are included in the National Register of Historic Places or that meet the criteria for the National Register. Section 106 of the NHPA requires a federal agency, upon determining that activities under its control could affect historic properties, consult with the appropriate State Historic Preservation Officer/Tribal Historic Preservation Officer. Under NEPA, any impacts to tribal, cultural, or other treaty resources must be discussed, and measures to mitigate such impacts must be identified. Section 106 of the NHPA requires that Federal agencies consider the effects of their actions on cultural resources, following regulation in 36 CFR 800.
Executive Order 13007, Indian Sacred Sites (May 24, 1996), requires federal land managing agencies to accommodate access to, and ceremonial use of, Indian sacred sites by Indian Religious practitioners, and to avoid adversely affecting the physical integrity, accessibility, or use of sacred sites. It is important to note that a sacred site may not meet the National Register criteria for a historic property and that, conversely, a historic property may not meet the criteria for a sacred site.
The DEIS should address the potential existence of Indian sacred sites in the project areas. It should address Executive Order 13007, distinguish it from Section 106 ofthe NHPA, and discuss how the BLM will avoid adversely affecting the physical integrity, accessibility, or use of sacred sites, if they exist.
The DEIS should provide a summary of all coordination with Tribes and with the State Historic Preservation Officer/Tribal Historic Preservation Officer, including identification of NRHP eligible sites, and development of a Cultural Resource Management Plan.
The Juan Bautista de Anza National Historic Trail (Anza Trail) is located within the Hollister RMP project area. Oil and gas leasing and development has the potential for negative effects on the Anza Trail, including, but not limited to, archaeological resources, visual resources, recreation, and noise. NPS is the overall administrator and coordinator for implementation and interpretation of the Anza Trail, and we request the opportunity to review and comment on the EIS for the RMP amendment when it is available for review. The RMP amendment should identify the Anza Trail corridor, recognize our planning goals, and incorporate protections and plans for the Anza Trail consistent with the BLM's National Scenic and Historic Trails Manual (No. 6250 & 6280). For further information about Anza Trail cultural and natural resources and visitor recreational opportunities, please contact Naomi Torres, Superintendent, Juan Bautista de Anza National Historic Trail, 333 Bush St., Ste.500, San Francisco, CA 94104 (415) 623-2340.
Ohlone/Costanoan-Esselen Nation is the legal tribal government representative for over 600 enrolled members of Esselen, Carmeleno, Monterey Band, Rumsen, Chalon, San Carlos Mission and/or Costanoan Mission Indian descent. Though other indigenous people may have lived in the area, the area is the indigenous homeland of our people. Included with this letter please find a territorial map by Taylor 1856; Levy 1973; and Milliken 1990, indentifying Tribal areas. At this time are unable to provide you with cultural resource information but ask that OCEN be contacted upon any findings on this project
Ohlone/Costanoan-Esselen Nation objects to all excavation in known cultural lands, even when they are described as previously disturbed, and of no significant archaeological value. Please be advised that it is our first priority that our ancestor's remains be protected and undisturbed. We desire that all cultural and sacred items be left with our ancestors on site or where they are discovered. We ask for the respect that is afforded all of our current day deceased, by no other word these burial sites are cemeteries, respect for our ancestors as you would expect respect for your deceased family members in today's cemeteries. Our definition of respect is no disturbance.
Special Management Areas
The Juan Bautista de Anza National Historic Trail (Anza Trail) is located within the Hollister RMP project area. Oil and gas leasing and development has the potential for negative effects on the Anza Trail, including, but not limited to, archaeological resources, visual resources, recreation, and noise. NPS is the overall administrator and coordinator for implementation and interpretation of the Anza Trail, and we request the opportunity to review and comment on the EIS for the RMP amendment when it is available for review. The RMP amendment should identify the Anza Trail corridor, recognize our planning goals, and incorporate protections and plans for the Anza Trail consistent with the BLM's National Scenic and Historic Trails Manual (No. 6250 & 6280). For further information about Anza Trail cultural and natural resources and visitor recreational opportunities, please contact Naomi Torres, Superintendent, Juan Bautista de

Table C-15
Issue No. 10: Tribal and Cultural Resources

Anza National Historic Trail, 333 Bush St., Ste.500, San Francisco, CA 94104 (415) 623-2340.
Tribal Interests and Native American Religious Concerns
The DEIS should address the potential existence of Indian sacred sites in the project areas. It should address Executive Order 13007, distinguish it from Section 106 of the NHPA, and discuss how the BLM will avoid adversely affecting the physical integrity, accessibility, or use of sacred sites, if they exist.
The DEIS should provide a summary of all coordination with Tribes and with the State Historic Preservation Officer/Tribal Historic Preservation Officer, including identification of NRHP eligible sites, and development of a Cultural Resource Management Plan.

Table C-16
Issue No. 11: Environmental Justice

The EIS and Statewide Study must include an analysis of environmental justice impacts, that is, the potential for increased oil and gas production activity to disproportionately affect poor, minority, or underrepresented communities. The analysis focus not only on such communities that are proximate to well sites, but also to communities that will be affected by (1) air pollution because they are located downwind from the site, (2) water pollution from being downstream, (3) groundwater contamination from using underground sources that are exposed to fluid migration, and (4) communities disproportionately affected by the impact of climate change.
Many BLM lands are located near environmental justice communities throughout the nation. In California, the BLM manages land in Kern County above the Monterey Shale. Kern is home to many low income communities, communities of color, and Spanish speaking communities. These communities already bear disproportionate burdens from air, water, and pesticide pollution. These communities are consistently ranked as having the worst air pollution in the country. It is critical that the EIS and Statewide Study analyze the impacts increased oil and gas production has on communities like those found in Kern County.
When examining the increased oil and gas production activity's effect on communities disproportionately impacted by climate change, communities far from the drilling need to be considered, communities such as the Native Village of Kivalina in Alaska. The small Inupiaq village north of the Arctic Circle, which will be forced to relocate due to the melting ice pack, and many like it, are feeling the effects of global warming first and worst. Any analysis of the environmental justice impacts of increased oil and gas production must look at the effect of that increased production on climate change, and the corresponding disproportionate effects on environmental justice communities.
Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," applies to federal agencies that conduct activities that substantially affect human health or the environment. Consistent with this order, the EPA recommends the NEPA analysis disclose and evaluate any environmental justice concerns associated with impacts to minority and low- income communities from the potential build-out for the reasonably foreseeable development scenario.
A general evaluation of the geographic scope of the impact area and identification of minority, low-income, and tribal communities within that scope.
A determination of whether there may be disproportionately high and adverse impacts, including cumulative impacts, on the identified communities.
If there are no applicable Environmental Justice considerations, then that should be disclosed.
Disclosure of EJ communities in the impact area, including a description ofthe methodology and criteria utilized for identifying low income and minority communities, the sources of data used for these analyses, and the references used for establishing the criteria.
The EPA recommends comparing census block group percentages (if available, or, at a minimum, census tract data) for below poverty and minority populations with the state average. If a block group percentage is greater than the state average, we recommend further analysis regarding the potential for disproportionate adverse impacts. The EPA does not recommend use of higher thresholds, which may fail to identify an EJ community in the situation where the minority or low income population percentage of the affected area is meaningfully greater than the corresponding population percentage in the state (but less than the specific ratio selected).
To the extent information is available, perform a detailed assessment of environmental justice and other socioeconomic concerns for any communities that have. below poverty or minority populations greater than the state average. We recommend the assessment include the following information: o A discussion of the potential direct, indirect and cumulative environmental impacts of oil and gas development on the health of these communities, including air quality and water quality impacts. o An evaluation of the socio-economic impacts to the local communities, including the potential for any additional loading placed on local communities' abilities to provide necessary public services and amenities resulting from implementation of mineral development activities (e.g., housing, recreation, tourism, transportation, emergency response, etc.).
If any disproportionate adverse impacts are identified, we recommend that the BLM consider mitigation measures to reduce those impacts and involve the affected communities in developing the measures. The EPA recognizes the need for early involvement of the local communities, and supports the meaningful participation of community

Table C-16
Issue No. 11: Environmental Justice

representatives in the NEPA process. We encourage the BLM to thoroughly disclose all efforts taken to ensure effective public participation. For additional information, please consult the EPA's website on NEPA and environmental justice at: http://www.epa.gov/compliance/nepa/nepaej/index.html
Lastly, fracking is most likely to take place near disadvantaged communities. The social justice implications of this are unfair. As many limitations as possible should be placed on fracking. The environmental, health, and socioeconomic impacts aren't worth it.
Scoping and other key decisions on the EIS and RMP will have a substantial effect on the final assessment on environmental impacts. The public's heightened interest in this issue and the enormous potential effect that oil and gas development will have on the environment and public health mandate that the public be given a full and fair opportunity to provide its input through several public hearings. People throughout California live amongst and neighboring public lands and will be directly affected by any oil and gas development on them.
BLM should also study the disproportionate impact of oil, gas and geothermal leases on communities already overburdened with these extractive industries and other forms of pollution.

Table C-17
Issue No. 12: Land Use

The DEIS should describe the selected methods for protecting air quality (which can include emission standards or limitations, best management practices, control technologies, and considerations of the pace of development) and the regulatory mechanisms the BLM will use to ensure their implementation (including lease stipulations and conditions of approval, notices to lessees, and permit terms and conditions). We look forward to participating in the technical workgroup to help identify reasonable mitigation measures once more is known about potential future mineral development.
We also recommend that the DEIS analyze methods for restricting actions in these important resource areas and developing and enforcing BMPs to mitigate the potential impacts of the project. More specifically, the EPA suggests that the DEIS: - Include a development buffer to protect wetlands, riparian areas and floodplains. A buffer will help to prevent erosion and sedimentation impacts in sensitive soils, possible spills or leaks from reaching surface water resources, impacts to wetland plants in unique wetlands such as springs and seeps, which can be difficult to replace (e.g., compensatory mitigation through restoration or creation may not be feasible), or disturbance to surface or groundwater hydrology which could impact the viability of wetlands. - Identify specific mitigation requirements and BMPs applicable to the operator for all phases and actions involved in drilling and production to prevent direct and/or indirect impacts that may exist despite the No Surface Occupancy stipulation (e.g., water quality or hydrologic impacts). - As future development proceeds, the EPA encourages the BLM to require delineation and marking of perennial seeps, springs and wetlands on maps and on the ground before development so operators can avoid impacts to them.
(9) The impact of the conversion of land use from its present condition to that of oil and gas production, is a major issue that needs to be thoroughly addressed in the EIS. Oil and gas production on public lands has the potential to fundamentally and permanently change the landscape of California. Thousands of acres of public land may be tractor leveled for the construction and operation of well pads, wastewater pits and other uses. Roads will be constructed to accommodate heavy trucks. Major negative impacts upon wildlife, wildlife habitats and scenic landscapes are inevitable. Streams and springs will dry up or be severely diminished and or polluted. The manner in which BLM makes decisions about which areas of land to offer for oil and gas leasing and the criterion for how these lands are selected must be laid out in clear and unequivocal terms. The conservation of wildlife and their habitats must be a fundamental condition of any decision regarding what lands may be leased. The protection of wildlife is a major issue for every member of the Sierra Club. The EIS will be insufficient if it does not address these matters of wildlife habitats with full candor and clarity.
Specifically, the first step of the mitigation hierarchy- avoidance- is critical to achieving a number of objectives, including protecting nature, maintaining the benefits that ecosystems provide, promoting the sustainable yield and management of natural resources, and conserving species. Avoidance is the principle that development (in this case oil and gas development) occur in locations that entirely avoid the most ecologically important and/or sensitive habitats. As part of the oil and gas EIS, it is particularly important that the BLM identify landscapes that are not appropriate for oil and gas development. This evaluation requires criteria that reach beyond those that have been used for current protective designations1. These areas should be identified as oil and gas lease avoidance areas, and permanently withdrawn from leasing consideration. Master Leasing Plans, very recently endorsed by Secretary Jewell as planning pathways to implement oil and gas leasing while avoiding conflicts with ecological resources across a landscape, should be considered as one option to establish avoidance areas, supplementing, on a finer scale, the agency's resource management plan toolbox.

Table C-18
Issue No. 13: Livestock Grazing

As a bigger umbrella agency BLM must discourage and reject any request for stimulation well. California senate districts (illegible) count on Livestock, agricultural to water storage are lifeline in those counties. No fracking there.

Table C-19
Issue No. 14: Recreation

Surface water contamination Surface waters can be contaminated in many ways from unconventional well stimulation. In addition to storm water runoff, described above, surface water contamination may also occur from chemical and waste transport, chemical storage leaks, and breaches in pit liners. As described below, contaminated surface water can result in many adverse effects to wildlife, agriculture, and human health and safety. It may make waters unsafe for drinking, fishing, swimming and other activities. The EIS and Statewide Study should fully assess the risk of harm to surface waters as well as the feasibility of restoring the original water quality once surface water is contaminated.
Aesthetic impacts: Monterey County is known for its beautiful landscapes and has worked to protect them through General Plan policies. Tourism is an important part of the county economy and the views and aesthetic that visitors come from around the world to enjoy is critical to the tourism industry. Analysis of the visual/aesthetic impacts from new industrial development in open lands should be included in the EIS as well as an economic analysis of the potential impacts to tourism.
The Juan Bautista de Anza National Historic Trail (Anza Trail) is located within the Hollister RMP project area. Oil and gas leasing and development has the potential for negative effects on the Anza Trail, including, but not limited to, archaeological resources, visual resources, recreation, and noise. NPS is the overall administrator and coordinator for implementation and interpretation of the Anza Trail, and we request the opportunity to review and comment on the EIS for the RMP amendment when it is available for review. The RMP amendment should identify the Anza Trail corridor, recognize our planning goals, and incorporate protections and plans for the Anza Trail consistent with the BLM's National Scenic and Historic Trails Manual (No. 6250 & 6280). For further information about Anza Trail cultural and natural resources and visitor recreational opportunities, please contact Naomi Torres, Superintendent, Juan Bautista de Anza National Historic Trail, 333 Bush St., Ste.500, San Francisco, CA 94104 (415) 623-2340.
The Pinnacles National Park provides significant resources for San Benito County, the State of California and the nation. It offers a wealth of biodiversity, recreational and educational opportunities and generates income for local businesses as well as state and federal agencies. The eastern side of the park is located in a fairly remote location and served by a single two lane highway. Tracts of land administered by the Bureau surround the park and the access highway. Significant oil and gas development within sight of the park and/or the highway would ruin the rural landscape and potentially impact visitation to the park and the influx of tourist dollars into the area and should be prohibited. An example of this is seen in New Mexico around the Carlsbad Caverns NP where oil and gas development have created a wasteland. Significant truck traffic associated with oil and gas development would pose a danger to wildlife and the public on rural Highway 25.

Table C-20
Issue No. 15: Visual Resources

In addition, the EIS and Statewide Study should study the human health and safety impacts of noise pollution, light pollution, and traffic accidents resulting from oil and gas leases on federal land.
Aesthetic impacts: Monterey County is known for its beautiful landscapes and has worked to protect them through General Plan policies. Tourism is an important part of the county economy and the views and aesthetic that visitors come from around the world to enjoy is critical to the tourism industry. Analysis of the visual/aesthetic impacts from new industrial development in open lands should be included in the EIS as well as an economic analysis of the potential impacts to tourism.
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Appendix D

Verbal Comments From Scoping Meetings

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APPENDIX D
VERBAL COMMENTS FROM SCOPING MEETINGS

Verbal Comments from Scoping Meetings
January 2014 to February 2014

Hollister, CA – January 29, 2014

Attendees expressed concern about impacts from hydraulic fracturing on geology, including the potential for induced seismicity and the creation of sinkholes.

Attendees expressed concern about oil and gas leasing and development as it relates to air quality, climate change, and drought.

Attendees expressed concern about the impacts from hydraulic fracturing on both water quality and water supply, including potential damage to aquifers.

Attendees expressed concern about the safety of chemicals involved in the hydraulic fracturing process and the public health and environmental risks if these chemicals contaminated groundwater.

Attendees expressed concern about hydraulic fracturing contaminating air, water, and soils.

Attendees expressed a desire for the BLM to consider the impacts that oil and gas development and hydraulic fracturing have had in other parts of the state, country, and world.

Attendees had questions about how the BLM and its decisions will work with other agencies such as the Division of Oil, Gas and Geothermal Resources (DOGGR) for consistent management of oil and gas development and hydraulic fracturing.

Attendees opposed any additional oil and gas development in California.

Attendees supported bans on hydraulic fracturing.

Attendees expressed concern about the BLM paying attention to public comment and public interests in conservation.

Attendees offered reference material to encourage the BLM to limit the scope of the analysis to the suggested data source.

A single attendee expressed concern about the environmental justice impacts of the BLM allowing hydraulic fracturing and oil and gas development.

A single attendee stated that they are involved in a lawsuit to stop hydraulic fracturing.

A single attendee supported the effort to facilitate oil and gas lease sales.

A single attendee requested that the BLM narrow the scope of the project to oil and gas leasing and exclude analysis of other resources.

Sacramento, CA – February 4, 2014

Attendees expressed concern about California's drought and the impacts from oil and gas development and hydraulic fracturing on water supply, especially drinking water.

Attendees expressed concern about chemicals from hydraulic fracturing contaminating groundwater and the resulting impact on public and environmental health.

Attendees expressed concern about oil and gas development contributing to the release of greenhouse gases such as methane and the subsequent impact on air quality and climate change.

Attendees had questions and concerns about hydraulic fracturing causing induced seismicity and triggering earthquakes.

Attendees expressed concern about the oil and gas development infrastructure (such as well casings) failing and contributing to pollution.

Attendees requested analysis of the impact of oil and gas development on California wildlife species and special examination of special status species.

Attendees expressed support for banning hydraulic fracturing specifically and oil and gas development in general.

Attendees expressed support for analysis of No Hydraulic Fracturing and No Action alternatives.

Attendees were interested in the BLM's multiple use and sustained yield mandates and how the BLM will balance oil and gas development with conservation.

Attendees encouraged the BLM to coordinate with other agencies.

Attendees requested that the BLM focus only on oil and gas leasing for federal mineral estate.

Attendees had questions about earthquakes, the location of the Monterey Shale, and the application of other federal policies such as the Clean Water Act and Clean Air Act.

Attendees expressed concern about where the BLM would source its information.

Attendees requested that the BLM pay attention to public opinion on hydraulic fracturing.

A single attendee recommended that the BLM build off of the 2007 RMP.

A single attendee expressed concern about the impact of oil and gas leasing and development on farmlands and other lands across the state.

A single attendee stated that current regulation and information supports oil and gas leasing.

A single attendee expressed concern about the transportation of chemicals and fuels for oil and gas development through communities and the impact of accidents.

A single attendee asked the BLM to halt oil and gas leasing until the EIS is completed.

A single attendee expressed concern about the impacts from oil and gas leasing on historic sites and cultural resources.

A single attendee encouraged the BLM to complete the EIS quickly.

Salinas, CA – February 11, 2014

Attendees expressed support for oil and gas development and its positive impacts on employment.

Attendees expressed concern oil and gas development and the resulting impacts on agriculture-related jobs and the quality and supply of water resources for agriculture.

Attendees expressed concerns about the impacts of oil and gas development, including hydraulic fracturing, on public health.

Attendees expressed concerns about the impacts of hydraulic fracturing on water quality and supply.

Attendees expressed concerns about oil and gas development contributing to climate change.

Attendees expressed concerns about the impacts of oil and gas development on geology and soils, including the potential for acidization of soils, induced seismicity, and sinkholes.

Attendees requested that the BLM promote renewable energy development instead of oil and gas.

Attendees requested that the BLM narrow the scope of the project to oil and gas leasing and exclude analysis of other resources.

Attendees encouraged the BLM to work with DOGGR.

Attendees encouraged the BLM to observe its public mandates.

Attendees supported the BLM allowing oil and gas leases for hydraulic fracturing.

Attendees supported a ban on hydraulic fracturing.

A single attendee expressed concern about the transportation of chemicals and fuels for oil and gas development through communities and the impact of accidents.

A single attendee asked who will be responsible for cleaning up spills and contamination resulting from oil and gas development.

A single attendee stated that hydraulic fracturing has not been shown to impact groundwater.

A single attendee offered references to the BLM.

A single attendee supported the effort to facilitate oil and gas lease sales.

Coalinga, CA – February 12, 2014

A single attendee had questions about other meetings and expressed appreciation for the public scoping meeting and process.

A single attendee expressed support for the EIS.

A single attendee encouraged the BLM to work with DOGGR.

A single attendee requested that the BLM limit the scope of the EIS to changes in oil and gas development since the 2007 RMP.

A single attendee offered references to the BLM.

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Appendix E

References Substantially Discussed in Comments

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APPENDIX E
REFERENCES SUBSTANTIALLY DISCUSSED IN COMMENTS

Below is a list of literature cited or suggested for BLM review in comments. This list includes substantively discussed, peer-reviewed literature, as well as government reports and records, web-based databases, and analogues from locations outside California.

1. Ackerman, F., E. A. Stanton, S. J. Decanio, E. Goodstein, R. B. Howarth, R. B. Norgaard, C. S. Norman, and K. A. Sheeran. 2009. The Economics of 350: The Benefits and Costs of Climate Stabilization.

2. Adams, Mary Beth. 2011. Land Application of Hydrofracturing Fluids Damages a Deciduous Forest Stand in West Virginia. Journal of Environmental Quality 40: 1340-1344.

3. Adams, M.B., P.J. Edwards, W.M. Ford, J.B. Johnson, T.M. Schuler, M. Thomas-Van Gundy, and F. Wood. 2011. Effects of development of a natural gas well and associated pipeline on the natural and scientific resources of the Fernow Experimental Forest. US Department of Agriculture Forest Service, Northern Research Station. General Technical Report NRS-76. Newtown Square, PA.

4. American Lung Association. 2013. State of the Air 2013. Internet web site: http://www.lung.org/associations/states/california/advocacy/fight-for-air-quality/sota-2013/state-of-the-air-2013.html.

5. Anderson, K., and A. Bows. 2011. Beyond "dangerous" climate change: emission scenarios for a new world. Philosophical Transactions. Series A, Mathematical, Physical, and Engineering Sciences 369:20–44.

6. Archer, D., and V. Brovkin. 2008. The millennial atmospheric lifetime of anthropogenic CO2. Climatic Change 90:283–297.

7. BC Oil and Gas Commission. 2012. Investigation of observed seismicity in the Horn River Basin.

8. Baer, Paul et al., S. K. 2009. A 350 ppm Emergency Pathway, EcoEquity and Stockholm Environment Institute.\

9. Bamberger, M. and Oswald, R.E. 2012. Impacts of gas drilling on human and animal health. New Solutions 22(1):51-77.

10. Barnosky, A.D. et al. 2012. Approaching a state shift in Earth's biosphere. Nature 486:52.

11. Barton, A., B. Hales, G. G. Waldbusser, C. Langdon, and R. A. Feely. 2012. The Pacific oyster, *Crassostrea gigas*, shows negative correlation to naturally elevated carbon dioxide levels: Implications for near-term ocean acidification effects. Limnology and Oceanography 57:698–710.

12. Bates, N., A. Amat, and A. Andersson. 2010. Feedbacks and responses of coral calcification on the Bermuda reef system to seasonal changes in biological processes and ocean acidification. Biogeosciences 7:2509–2530.

13. Bayne E.M., Habib, L., and Boutin, S. 2008. Impacts of Chronic Anthropogenic Noise from Energy-sector Activity on the abundance of songbirds in the boreal forest. Conservation Biology 22(5):1186-93

14. Beckmann, J.P., Murray, K., Seidler, R.G., and Berger, J. 2012. Human-mediated shifts in animal habitat use: Sequential changes in pronghorn use of a natural gas field in Greater Yellowstone. Biological Conservation, 147(1):222-3.

15. Bender, M. A., T. R. Knutson, R. E. Tuleya, J. J. Sirutis, G. A. Vecchi, S. T. Garner, and I. M. Held. 2010. Modeled impact of anthropogenic warming on the frequency of intense Atlantic hurricanes. Science 327:454–8.

16. Bergquist, E., Evangelista, P., Stohlgren, T.J., and Alley, N. 2007. Invasive species and coal bed methane development in the Powder River Basin, Wyoming. Environ Monit Assess 128:381-394.

17. Blok, K., N. Höhne, K. van der Leun, and N. Harrison. Bridging the greenhouse-gas emissions gap. Nature Climate Change 2: 471-474.

18. British Geological Society. 2011. Blackpool Earthquake. Internet web site: http://www.bgs.ac.uk/research/earthquakes/BlackpoolMay2011.html. Accessed Oct 4, 2013.

19. Bureau of Land Management (BLM). 2003. Final environmental impact statement and proposed plan amendment for the Powder River Basin oil and gas project. Volume 1 of 4.WY-070-02-065. US Department of the Interior, Bureau of Land Management, Buffalo Field Office.

20. Bureau of Land Management. 2007. BLM Hollister Field Office RMP Record of Decision.

21. Bureau of Land Management. 2013. BLM Proposed Rule: Oil and Gas; Hydraulic Fracturing on Federal and Indian Lands, 78 Fed. Reg. 31636 (May 24, 2013) (BLM-2012-0001) and Center Comments, submitted Aug. 8, 2013.

22. Bureau of Land Management. 2013. BLM California Launches Planning and Science Review Regarding Oil and Gas Development on Public Lands, New Release No. CA-CC-13-64, Internet web site: http://www.blm.gov/ca/st/en/info/newsroom/2013/august/oilandgas.html. Accessed Sept. 19, 2013.

23. Cahill, A.E. et al. 2012. How does climate change cause extinction? Proceedings of the Royal Society B, doi:10.1098/rspb.2012.1890.

24. California Department of Public Health. 2013. Coccidioidomycosis Fact Sheet, Internet web site: http://www.cdph.ca.gov/HealthInfo/discond/Pages/Coccidioidomycosis.aspx. Accessed June 12, 2013.

25. Cardno ENTRIX. 2012. Hydraulic Fracturing Study PXP Inglewood Oil Field.

26. Center for Biological Diversity. 2013. The Dirty Dozen: The 12 Most Commonly Used Air Toxics in Unconventional Oil Development in the Los Angeles Basin. Internet web site: http://www.biologicaldiversity.org/news/press_releases/2013/los-angeles-air-toxics-09-05-2013.html.

27. Center for Biological Diversity. 2013. Impacts of Fracking on Wildlife: A Review, Updated September 30, 2013.

28. Centers for Disease Control and Prevention. 2008. Coccidioidornycosis. Technical information.

29. Centers for Disease Control and Prevention. 2012. Fungal pneumonia: a silent epidemic Coccidioidomycosis (valley fever) Fact Sheet. Internet web site: http://www.cdc.gov/fungallpdf7cocci-fact-sheet-sw-us-508c.pdf. Accessed June 12, 2013.

30. Centers for Disease Control and Prevention. 2013. Increase in Reported Coccidioidomycosis — United States. 1998-2011. MMWR 2013 ;62: 217-221. Internet web site: http://www.cdc.gov/mmwr/pdf'wk/mm6212.pdf. Accessed June 12, 2013.

31. The Center for Food Security and Public Health. 2010. Coccidioidomycosis, Technical Fact Sheet. Internet web site: http://www.cfsph.iastate.edu/Factsheets/pdfs/coccidioidomycosis.pdf. Accessed June 12, 2013.

32. Chen, I., J. K. Hill, R. Ohlemuller, D. B. Roy, and C. D. Thomas. 2011. Rapid range shifts of species associated with high levels of climate warming. Science 333:1024–1026.

33. Climate Action Tracker Update. 2012. Climate Analytics, Ecofys, and Potsdam Institute for Climate Impacts Research.

34. Colborn, Theo et al. 2012. An exploratory study of air quality near natural gas operations, Human and Ecological Risk Assessment: An International Journal, DOI: 10.1080/10807039.2012.749447 (2012).

35. Colborn, Theo, et al. 2011. Natural Gas Operations from a Public Health Perspective, Human and Ecological Risk Assessment, 17:1039 (2011).

36. Collier, Robert. 2013. A New California Oil Boom? Drilling the Monterey Shale Part 4: Monterey Shale: Twice as polluting as Keystone XL? Internet web site: http://thenextgeneration.org/files/Monterey_Shale_Part_4v5.pdf. Accessed September 19, 2013.

37. Cooper, T. F., G. De'Ath, K. E. Fabricius, and J. M. Lough. 2008. Declining coral calcification in massive Porites in two nearshore regions of the northern Great Barrier Reef. Global Change Biology 14:529–538.

38. Coumou, D., and S. Rahmstorf. 2012. A decade of weather extremes. Nature Climate Change 2:491–496.

39. Council on Environmental Quality. 1981. Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, 46 Fed. Reg. 18026 (Mar 23, 1981), Question 6a.

40. Davies, Peter J., Radioactivity: A Description of its Nature, Dangers, Presence in the Marcellus Shale and Recommendations by The Town Of Dryden to The New York State Department of Environmental Conservation for Handling and Disposal of such Radioactive Materials at 3 (2009)

41. De'ath, G., J. M. Lough, and K. E. Fabricius. 2009. Declining coral calcification on the Great Barrier Reef. Science 323:116–119.

42. Department of Environmental Protection, Commonwealth of Pennsylvania. May 27, 2009. Inspection Report. Internet web site: www.marcellus-shale.us/pdf/CC-Spill_DEP-Insp-Rpt.pdf Accessed on June 26, 2012.

43. EIS Solutions. 2012. Employment, Government Revenue, and Energy Security Impacts of Current Federal Lands Policy in the Western US Grand Junction, Colorado. January 2012. Prepared for Western Energy Alliance by EIS Solutions (Data Projections by ICF International), Grand Junction, Colorado. July 2011. The Blueprint for Western Energy Prosperity.

44. Ellsworth, William. 2013. Injection-Induced Earthquakes, 341 Science 1225942. DOI: 10.1126/science/1225942, Science 341, (2013).

45. Elsner, J. B., J. P. Kossin, and T. H. Jagger. 2008. The increasing intensity of the strongest tropical cyclones. Nature 455:92–5.

46. Entrekin, Sally, et al. 2011. Rapid Expansion of Natural Gas Development Poses a Threat to Surface Waters, Front Ecol. Environ. (Oct. 2011)

47. Fabry, V., B. Seibel, R. Feely, and J. Orr. 2008. Impacts of ocean acidification on marine fauna and ecosystem processes. ICES Journal of Marine Science 65:414–432.

48. Feely, R., S. Doney, and S. Cooley. 2009. Ocean acidification: Present conditions and future changes in a high CO2 world. Oceanography 22:36–47.

49. Fiore, Arlene et al. 2002. Linking ozone pollution and climate change: The case for controlling methane, 29 Geophys. Res Letters 19.

50. Flewelling, S. A., M. P. Tymchak, N. Warpinski. 2013. Hydraulic Fracturing Height Limits and Fault Interactions in Tight Oil and Gas Formations.

51. Fontenot, Brian et al. 2013. An evaluation of water quality in private drinking water wells near natural gas extraction sites in the Barnett Shale Formation, Environ. Sco. Technol., DOI: 10.1021/es4011724 (published online July 25, 2013).

52. Fracfocus Hydraulic Fracturing Fluid Product Component Information Disclosure for Occidental Petroleum Corp well API Number 04-030-43767 and fracture date of 7/27/2011, www.fracfocus.org (last retrieved Oct 2, 2013).

53. Francis, J.A. and S.J. Vavrus. 2012. Evidence linking Arctic amplification to extreme weather in mid-latitudes. Geophysical Research Letters 39: L06801.

54. Freyman, Monika. 2013. Hydraulic Fracturing and Water Stress: Growing Competitive Pressures for Water, Ceres.

55. Friedlingstein, P., R. Houghton, G. Marland, J. Hackler, T. Boden, T. J. Conway, J. G. Canadell, M. R. Raupach, P. Ciais, and C. Le Quéré. 2010. Update on CO2 emissions. Nature Geoscience 3:811–812.

56. Frieler, K., M. Meinshausen, A. Golly, M. Mengel, K. Lebek, S.D. Donner, and O. Hoegh-Guldberg. Limiting global warming to 2°C is unlikely to save most coral reefs. Nature Climate Change. Published Online. doi: 10.1038/NCLIMATE1674.

57. Gilbert, M.M. and Chalfoun, A.D. 2011. Energy Development Affects Populations of Sagebrush Songbirds in Wyoming. The Journal of Wildlife Management, 75(4):816-824.

58. Gillett, N. P., V. K. Arora, K. Zickfeld, S. J. Marshall, and W. J. Merryfield. 2011. Ongoing climate change following a complete cessation of carbon dioxide emissions. Nature Geoscience 4:83–87.

59. Gledhill, D. K., R. Wanninkhof, F. J. Millero, and M. Eakin. 2008. Ocean acidification of the greater Caribbean region 1996–2006. Journal of Geophysical Research 113:C10031.

60. Global Carbon Project. 2011. Carbon Budget 2010.

61. Grinsted, A. et al. 2013. Projected hurricane surge threat from rising temperatures. PNAS doi:10.1073/pnas.1209980110.

62. Grinsted, A., J. C. Moore, and S. Jevrejeva. 2009. Reconstructing sea level from paleo and projected temperatures 200 to 2100 ad. Climate Dynamics 34:461–472.

63. Grinsted, A., J. C. Moore, and S. Jevrejeva. 2012. Homogeneous record of Atlantic hurricane surge threat since 1923. PNAS 109:19601-19605.

64. Groundwater Protection Council. 2011. State Oil and Gas Agency Groundwater Investigations and their Role in Advancing Regulatory Reform; a Two-State Review: Ohio and Texas.

65. Habib, L., Bayne E.M., and Boutin, S. 2007. Chronic industrial noise affects pairing success and age structure of ovenbirds Seiurus aurocapilla. Journal of Applied Ecology, 44(1):176-184.

66. Hansen, J. M., M. Sato, and R. Ruedy. 2012. Perception of climate change. Proceedings of the National Academy of Sciences. Early online edition: doi: 10.1073/pnas.1205276109.

67. Hansen, J., M. Sato, P. Kharecha, D. Beerling, R. Berner, V. Masson-Delmotte, M. Pagani, M. Raymo, D. L. Royer, and J. C. Zachos. 2008. Target Atmospheric CO2: Where Should Humanity Aim? The Open Atmospheric Science Journal 2:217–231.

68. Hansen, J. et al. 2007. Climate Change and Trace Gases, Phil. Trans. R. Soc. A 2007 365, doi: 10.1098/rsta.2007.2052.

69. Hansen, J. and M. Sato. 2004. Greenhouse Gas Growth Rates, 101 Proc. Natl. Acad. Sciences 46.

70. Hare, W., W. Cramer, M. Schaeffer, A. Battaglini, and C. C. Jaeger. 2011. Climate hotspots: key vulnerable regions, climate change and limits to warming. Regional Environmental Change 11:1–13.

71. Hare, W. and M. Schaeffer. 2009. Low mitigation scenarios since the AR4 – Global emission pathways and climate consequences. Climate Analytics and Potsdam Institute. Presentation at the UNFCCC Bonn meeting, March 30, 2009.

72. Hein, C. D. 2012. Potential impacts of shale gas development on bat populations in the northeastern United States. An unpublished report submit ted to the Delaware Riverkeeper Network, Bristol, Pennsylvania by Bat Conservation International, Austin, Texas.

73. Höhne, N., B. Hare, M. Vieweg, M. Schaeffer, C. Chen, M. Rocha, and H. Fekete. 2012. Reality gap: Some countries progress in national polices, but many risk failing to meet pledges.

74. Höhne, N., C. Ellerman, and R. de Vos. 2009. Emission pathways towards 2°C, Ecofys.

75. Holland, A. 2011. Examination of possibly induced seismicity from hydraulic fracturing in the Eola Field, Garvin County, Oklahoma, Oklahoma Geological Survey Open-File Report OF1-2011. Internet web site: http://www.ogs.ou.edu/pubsscanned/openfile/OF1_2011.pdf.

76. Holloran, M.J., Kaiser, R.C., and Hubert, W.A. 2010. Yearling Greater Sage-Grouse Response to Energy Development in Wyoming. Journal of Wildlife Management, 74(1):65-72.

77. Hönisch, B., A. Ridgwell, D. N. Schmidt, E. Thomas, S. J. Gibbs, A. Sluijs, R. Zeebe, L. Kump, R. C. Martindale, S. E. Greene, W. Kiessling, J. Ries, J. C. Zachos, D. L. Royer, S. Barker, T. M. Marchitto, R. Moyer, C. Pelejero, P. Ziveri, G. L. Foster, and B. Williams. 2012. The geological record of ocean acidification. Science 335:1058–63.

78. Horton, S. 2012. Disposal of hydrofracking waste fluid by injection into subsurface aquifers triggers earthquake swarm in central Arkansas with potential for damaging earthquake, 83 Seismol. Res. Lett. 250 (2012).

79. Howarth, R. et al. 2011. Methane and the Greenhouse Gas Footprint of Natural Gas from Shale Formations, Climate Change

80. Ingraffea, A. 2013. Fluid Migration Mechanisms due to Faulty Well Design and/or Construction: An Overview and Recent Experiences in the Pennsylvania Marcellus Play.

81. Intergovernmental Panel on Climate Change. 2007. Climate Change 2007: Synthesis Report: An Assessment of the Intergovernmental Panel on Climate Change. Internet web site: www.ipcc.ch.

82. Intergovernmental Panel on Climate Change (IPCC). 2013. Chapter 8: Anthropogenic and Natural Radiative Forcing – Final Draft Underlying Scientific-Technical Assessment, Working Group I Contribution to the IPCC Fifth Assessment Report (AR5), Climate Change 2013: The Physical Science Basis (2013), Table 8.7, pg. 8-58, available at: http://www.climatechange2013.org/images/uploads/WGIAR5_WGI_12Doc2b_FinalDraft_Chapter08.pdf

83. Institutional Investors Group on Climate Change et al. 2012. Controlling Fugitive Methane Emissions in the Oil and Gas Sector. Internet web site: http://www.ceres.org/files/methane-emissions/investor-joint-statement-on-methaneemissions.

84. Jackson et al. 2013. Increased Stray Gas Abundance in a Subset of Drinking Water Wells near Marcellus Shale Gas Extraction, Proc. Natl. Acad. of Sciences, doi: 10.1073/pnas.1221635110/-/DCSupplemental (2013).

85. Jevrejeva, S., J. C. Moore, and A. Grinsted. 2010. How will sea level respond to changes in natural and anthropogenic forcings by 2100? Geophysical Research Letters 37:1–5.

86. Johnson, N. 2010. Pennsylvania energy impacts assessment: Report 1: Marcellus shale natural gas and wind, Nature Conservancy – Pennsylvania Chapter. Internet web site: http://www.tcgasmap.org/media/PA%20Assessment%20of%20Gas%20Impacts%20TNC.pdf. Accessed June 26, 2012.

87. Jones, C., J. Lowe, S. Liddicoat, and R. Betts. 2009. Committed terrestrial ecosystem changes due to climate change. Nature Geoscience 2:484–487.

88. Karl, T. R. et al. 2009. Global Climate Change Impacts in the United States. US Global Change Research Program. Thomas R. Karl, Jerry M. Melillo, and Thomas C. Peterson, (eds.). Cambridge University Press, 2009.

89. Kassotis, D. C., D. E. Tillitt, J. W. Davis, A. M. Hormann, and S. C. Nagel. 2013. Endocrine Society, Estrogen and Androgen Receptor Activities of Hydraulic Fracturing Chemicals and Surface and Groundwater in a Drilling-Dense Region.

90. Keranen, Katie et al. 2013. Potentially induced earthquakes in Oklahoma, USA: Links between wastewater injection and the 2011 Mw5.7 earthquake sequence, Geology (March 26, 2013).

91. Kim, Won-Young. 2013. Induced seismicity associated with fluid injection into a deep well in Youngstown, Ohio, 118 Journal of Geophysical Research: Solid Earth 3506 (February 1, 2013).

92. Kishtawal, C. M., N. Jaiswal, R. Singh, and D. Niyogi. 2012. Tropical Cyclone Intensification Trends during Satellite Era (1986-2010). Geophysical Research Letter 39: L10810.

93. Kiviat, E. and Schneller-McDonald, K. 2011. Fracking and Biodiversity: Unaddressed issues in the New York debate. News from Hudsonia, 25(1&2).

94. Koven, C. D., B. Ringeval, P. Friedlingstein, P. Ciais, P. Cadule, D. Khvorostyanov, G. Krinner, and C. Tarnocai. 2011. Permafrost carbon-climate feedbacks accelerate global warming. Proceedings of the National Academy of Sciences of the United States of America 108:14769–74.

95. Kroeker, K.J, R.L. Kordas, R. Crim, I.E. Hendriks, L. Ramajo, G.S. Singh, C.M. Duarte, and J-P Gattuso. 2013. Impacts of ocean acidification on marine organisms: quantifying sensitivities and interactions with warming. Global Change Biology 19: 1884-1896.

96. Kwok, R., and D. Rothrock. 2009. Decline in Arctic sea ice thickness from submarine and ICESat records: 1958–2008. Geophysical Research Letters 36: L15501.

97. Law, Adam and Jake Hays. 2013. Insights on Unconventional Natural Gas Development from Shale: An Interview with Anthony R. Ingraffea. 23 New Solutions: A Journal of Environmental and Occupational Health Policy 203 (2013).

98. Lenton, T. M., H. Held, E. Kriegler, J. W. Hall, W. Lucht, S. Rahmstorf, and H. J. Schellnhuber. 2008. Tipping elements in the Earth's climate system. Proceedings of the National Academy of Sciences of the United States of America 105:1786–93.

99. Lustgarten, Abraham. 2009. Is New York's Marcellus Shale Too Hot to Handle? ProPublica (Nov. 9, 2009). Internet web site: http://www.propublica.org/article/is-the-marcellus-shale-too-hot-to-handle-1109.

100. Maclean, I. M. D., and R. J. Wilson. 2011. Recent ecological responses to climate change support predictions of high extinction risk. Proceedings of the National Academy of Sciences of the United States of America 108: 12337-12342.

101. McCawley, Michael et al. 2013. Air, Noise, and Light Monitoring Results for Assessing Environmental Impacts of Horizontal Gas Well Drilling Operations (ETD-10 Project), Report prepared for West Virginia Department of Environmental Protection Division of Air Quality

102. McKenzie et al. 2012. Human health risk assessment of air emissions from development of unconventional natural gas resources.

103. McKenzie, Lisa et al. 2010. Garfield County, Health Impact Assessment for Battlement Mesa, Garfield County, Colorado 1st draft.

104. McMahon, P. B., Thomas, J. C., & Hunt, A. G. 2009. Use of diverse geochemical data sets to determine sources and sinks of nitrate and methane in groundwater, Garfield County, Colorado.

105. Meehl, G., T. Stocker, W. D. Collins, and P. Friedlingstein. 2007. Global Climate Projections. Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change.

106. Meinshausen, M., N. Meinshausen, W. Hare, S. C. B. Raper, K. Frieler, R. Knutti, D. J. Frame, and M. R. Allen. 2009. Greenhouse-gas emission targets for limiting global warming to 2 degrees C. Nature 458:1158–62.

107. Michaels, C., Simpson, J.L, and Wegner, W. Riverkeeper. 2010. Fracture Communities, Case studies of the environmental impacts of industrial gas drilling. Internet web site: www.riverkeeper.org/wpcontent/uploads/2010/09/Fractured-Communities-FINAL-September-2010.pdf. Accessed June 26, 2012.

108. Milne, G. A., W. R. Gehrels, C. W. Hughes, and M. E. Tamisiea. 2009. Identifying the causes of sea-level change. Nature Geoscience 2:471–478.

109. MIT Energy Initiative. 2011. The future of Natural Gas, An Interdisciplinary MIT Study. Internet web site: http://web.mit.edu/mitei/research/studies/natural-gas-2011.shtml. Accessed June 26, 2012.

110. Molina, M., D. Zaelke, K. M. Sarma, S. O. Andersen, V. Ramanathan, and D. Kaniaru. 2009. Reducing abrupt climate change risk using the Montreal Protocol and other regulatory actions to complement cuts in CO2 emissions. Proceedings of the National Academy of Sciences of the United States of America 106:20616–21.

111. Moy, A. D., W. R. Howard, S. G. Bray, and T. W. Trull. 2009. Reduced calcification in modern Southern Ocean planktonic foraminifera. Nature Geoscience 2: 276-280.

112. Myers, Tom. 2012. Potential Contamination Pathways from Hydraulically Fractured Shale to Aquifers. National Groundwater Association (2012).

113. National Aeronautics and Space Administration (NASA). 2012. NASA Research finds last decade was warmest on record, 2009 one of warmest years, available at http://www.nasa.gov/home/hqnews/2010/jan/HQ_10-017_Warmest_temps.html.

114. National Oceanic and Atmospheric Administration (NOAA). 2012. NOAA : Extreme Weather 2011. Internet web site: http://www.noaa.gov/extreme2011/.

115. National Oceanic and Atmospheric Administration (NOAA). 2012. NOAA : 2010 Tied For Warmest Year on Record. Internet web site: http://www.noaanews.noaa.gov/stories2011/20110112_globalstats.html.

116. National Oceanic and Atmospheric Administration (NOAA). 2013. Trends in Atmospheric CO2. Internet web site: http://www.esrl.noaa.gov/gmd/ccgg/trends/.

117. National Research Council (NRC). 2010. Advancing the Science of Climate Change, National Research Council. Internet web site: www.nap.edu.

118. National Research Council (NRC). 2010. Ocean Acidification: A National Strategy to Meet the Challenges of a Changing Ocean. National Academies Press.

119. National Research Council (NRC). 2011. Climate Stabilization Targets: Emissions, Concentrations, and Impacts over Decades to Millennia. Washington, DC: National Academies Press. Internet web site: http://www.nap.edu/catalog/12877.html.

120. National Research Council (NRC). 2011. Warming World: Impacts by Degree, National Research Council. Internet web site: dels.nas.edu/materials/booklets/warming-world.

121. National Research Council. 2012. Induced Seismicity Potential in Energy Technologies. National Academies Press.

122. National Research Council (NRC). 2012. Sea-level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future. National Research Council. National Academies Press, Washington, D.C.

123. National Snow and Ice Data Center (NSIDC). 2012. Arctic sea ice settles at new record seasonal minimum. Internet web site: http://nsidc.org/arcticseaicenews.

124. New York Department of Conservation. 2011. Revised Draft Supplemental General Environmental Impact Statement--Well Permit Issuance for Horizontal Drilling and High-Volume Hydraulic Fracturing in the Marcellus Shale and Other Low-Permeability Gas Reservoirs (September 2011), p. 6-80.

125. New York Department of Environmental Conservation. 2011. Revised Draft Supplemental Generic Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program. ("NYSGEIS") (2011) Ch. 6.11.1.1 p. 810. Internet web site: http://www.dec.ny.gov/energy/75370.htm.

126. Ohio Department of Natural Resources (ODNR). 2008. Report on the Investigation of the Natural Gas Invasion of Aquifers in Bainbridge Township of Geauga County, Ohio (Sept. 2008)

127. Orr, J. C., V. J. Fabry, O. Aumont, L. Bopp, S. C. Doney, R. a Feely, A. Gnanadesikan, N. Gruber, A. Ishida, F. Joos, R. M. Key, K. Lindsay, E. Maier-Reimer, R. Matear, P. Monfray, A. Mouchet, R. G. Najjar, G.-K. Plattner, K. B. Rodgers, C. L. Sabine, J. L. Sarmiento, R. Schlitzer, R. D. Slater, I. J. Totterdell, M.-F. Weirig, Y. Yamanaka, and A. Yool. 2005. Anthropogenic ocean acidification over the twenty-first century and its impact on calcifying organisms. Nature 437:681–6.

128. Ostero, Bart et al. 2010. Long-term Exposure to Constituents of Fine Particulate Air Pollution and Mortality: Results from the California Teachers Study, 118 Environmental Health Perspectives 3 (2010).

129. Overland, J.E. and M. Wang. 2013. When will the summer Arctic be nearly sea ice free? Geophysical Research Letters. DOI: 10.1002/grl.50316.

130. Papadopulos & Associates, Inc. 2008. Phase II hydrogeologic characterization of the Mamm Creek Field area, Garfield County, Colorado: Prepared for the Board of County Commissioners, Garfield County, Colorado.

131. Papoulias, D.M. and A.L. Velasco. 2013. Histopathological analysis of fish from Acorn Fork Creek, Kentucky, exposed to hydraulic fracturing fluid releases. Southwestern Naturalist 12 (Special Issue 4): 92-111.

132. Pappagianis, D. & H. Einstein. 1978. Tempest from Tehachapi takes toll or Coccidioides immitis conveyed aloft and afar. West J. Med. 129: 527—530. Internet web site: http://www.ncbi.nlm.nih.gov/pmc/articles!PMC 123 8466/pdf/westjmed00256-0079.pdf. Accessed on September 6, 2013.

133. Parmesan, C. 2006. Ecological and evolutionary responses to recent climate change. Annual Review of Ecology Evolution and Systematics 37:637–669.

134. Parmesan, C., and G. Yohe. 2003. A globally coherent fingerprint of climate change impacts across natural systems. Nature 421:37–42.

135. Pennsylvania Department of Environmental Protection. 2009. Consent Order and Agreement between Cabot Oil and Gas Corporation and the Pennsylvania Department of Environmental Protection, November 4, 2009. Internet web site: http://loggerhead.epa.gov/arweb/public/pdf/2141700.pdf. Accessed on August 30, 2012.

136. Pennsylvania Fish & Boat Commission. 2012. Ongoing problems with the Susquehanna River smallmouth bass, A case for impairment. Internet web site: www.fish.state.pa.us/newsreleases/2012press/senate_susq/SMB_ConservationIssuesForum_Lycoming.pdf. Accessed June 26, 2012).

137. Peters, G.P. et al. The challenge to keep global warming below 2°C. Nature Climate Change 3:4-6.

138. Petron et al. 2012. Hydrocarbon Emissions Characterization in the Colorado Front Range: A Pilot Study, 117 J. of Geophysical Research 4304.

139. Pfeffer, W. T., J. T. Harper, and S. O'Neel. 2008. Kinematic constraints on glacier contributions to 21st-century sea-level rise. Science 321:1340–3.

140. Physicians Scientist & Engineers for Healthy Energy, Letter from Robert Howarth Ph.D. and 58 other scientists to Andrew M. Cuomo, Governor of New York State, re: municipal drinking water filtration systems and hydraulic fracturing fluid (Sept 15, 2011), available at http://www.psehealthyenergy.org/data/Cuomo_ScientistsLetter_15Sep20112.pdf.

141. Rahmstorf, S. 2007. A semi-empirical approach to projecting future sea-level rise. Science 315:368-370.

142. Ramirez, P. Jr. 2010. Bird Mortality in Oil Field Wastewater Disposal Facilities Environ Management 46(5):820-6.

143. Raupach, M. R., G. Marland, P. Ciais, C. Le Quéré, J. G. Canadell, G. Klepper, and C. B. Field. 2007. Global and regional drivers of accelerating CO2 emissions. Proceedings of the National Academy of Sciences of the United States of America 104:10288–10293.

144. Rockström, J. et al. 2009. A safe operating space for humanity. Nature 461: 472-475.

145. Rogelj, J., J. Nabel, C. Chen, W. Hare, K. Markmann, and M. Meinshausen. 2010. Copenhagen Accord pledges are paltry. Nature Climate Change 464: 1126-1128.

146. Rogers, A. D., and D. d'A. Laffoley. 2011. International Earth system expert workshop on ocean stresses and impacts Summary Report. IPSO Oxford.

147. Root, T. L., J. T. Price, K. R. Hall, S. H. Schneider, C. Rosenzweig, and J. A. Pounds. 2003. Fingerprints of global warming on wild animals and plants. Nature 421:57–60.

148. Samuel Flewelling and Manu Sharma. 2013. Constraints on Upward Migration of Hydraulic Fracturing Fluid and Brine. Groundwater 52(1): 9-19.

149. Saunders, M. A., and A. S. Lea. 2008. Large contribution of sea surface warming to recent increase in Atlantic hurricane activity. Nature 451:557-561.

150. Sawyer, H., Nielson, R.M., Lindzey, F., and McDonald, L.L. 2006. Winter Habitat Selection of Mule Deer Before and During Development of a Natural Gas Field. Journal of Wildlife Management, 70(2):396–403.

151. Schellnhuber, H. J. 2009. Tipping elements in the Earth System. Proceedings of the National Academy of Sciences of the United States of America 106:20561–3.

152. Schmidt, C.W. 2011. "Blind Rush?: Shale Gas Boom Proceeds amid Human Health Questions, published in Environmental Health Perspectives."

153. Schweiger, A., J. Zhang, R. Lindsay, M. Steele, and H. Stern. 2012. Arctic Sea Ice Volume Anomaly, version 2, Polar Science Center. Internet web site: http://psc.apl.washington.edu/wordpress/research/projects/arctic-sea-ice-volume-anomaly/.

154. Shindell, Drew et al. 2009. Improved Attribution of Climate Forcing to Emissions, 326 Science 716 (2009) at 717.

155. Shindell, Drew et al. 2012. Simultaneously Mitigating Near-Term Climate Change and Improving Human Health and Food Security, 335 Science 183.

156. Smith, J. B., S. H. Schneider, M. Oppenheimer, G. W. Yohe, W. Hare, M. D. Mastrandrea, A. Patwardhan, I. Burton, J. Corfee-Morlot, C. H. D. Magadza, H.-M. Füssel, A. B. Pittock, A. Rahman, A. Suarez, and J.-P. van Ypersele. 2009. Assessing dangerous climate change through an update of the Intergovernmental Panel on Climate Change (IPCC) "reasons for concern". Proceedings of the National Academy of Sciences of the United States of America 106:4133–7.

157. Solomon, S., G.-K. Plattner, R. Knutti, and P. Friedlingstein. 2009. Irreversible climate change due to carbon dioxide emissions. Proceedings of the National Academy of Sciences of the United States of America 106:1704–9.

158. South Coast Air Quality Management District. 2013. Revised Draft Staff Report PR1148-2, Adopted April 2013 ("SCAQMD Revised Draft PR1148-2").

159. Sriver, R.L. et al. 2012. Toward a physically plausible upper bound of sea-level rise projections. Climatic Change 115:893-902.

160. Stroeve, J., M. Serreze, S. Drobot, and S. Gearheard. 2008. Arctic Sea Ice Extent Plummets in 2007. EOS 89.

161. SWCA Environmental Consultants. 2011. Economic Impacts of Oil and Gas Development on BLM Lands in Wyoming.

162. Tebaldi, C., B.H. Strauss, and C.E. Zervas. 2012. Modeling sea level rise impacts on storm surges along US coasts. Environmental Research Letters 7: 104032.

163. Ted Williams, "The Mad Gas Rush," March 2004, Audubon, http://archive.audubonmagazine.org/incite/incite0403.html (accessed June 26, 2012).

164. Thomas, C. D., A. Cameron, R. E. Green, M. Bakkenes, L. J. Beaumont, Y. C. Collingham, B. F. N. Erasmus, M. F. De Siqueira, A. Grainger, L. Hannah, L. Hughes, B. Huntley, A. S. Van Jaarsveld, G. F. Midgley, L. Miles, M. a Ortega-Huerta, a T. Peterson, O. L. Phillips, and S. E. Williams. 2004. Extinction risk from climate change. Nature 427:145–8.

165. Thyne, G. 2008. Review of Phase II Hydrogeologic Study prepared for Garfield County: Prepared for Garfield County.

166. Tollefson, J. 2013. Methane Leaks Erode Green Credentials of Natural Gas, Nature. Internet web site: http://www.nature.com/news/methane-leaks-erode-greencredentials-of-natural-gas-1.12123#/b1. Accessed on Jan. 2, 2013.

167. Trenberth, K. E., P. D. Jones, P. Ambenje, and R. Bojariu. 2007. Observations: Surface and Atmospheric Climate. Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Susan Solomon et al. eds., Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

168. Tripati, A. K., C. D. Roberts, and R. A. Eagle. 2009. Coupling of CO2 and ice sheet stability over major climate transitions of the last 20 million years. Science 326:1394–7. Thomas, C.D. et al. 2004. Extinction risk from climate change, 427 Nature 145–8 (2004).

169. United Nations Environment Programme (UNEP). 2010. The Emissions Gap Report: Are the Copenhagen Accord pledges sufficient to limit global warming to 2°C or 1.5°C? United Nations Environment Programme.

170. United Nations Environment Programme (UNEP). 2010. UNEP Emerging Issues: Environmental Consequences of Ocean Acidification: A Threat to Food Security.

171. United Nations Environment Programme (UNEP). 2011. Bridging the Emissions Gap. United Nations Environment Programme (UNEP).

172. United Nations Framework Convention on Climate Change (UNFCCC). 2012. The Cancun Agreements - Key Steps of the United Nations Climate Change Conference, available at http://cancun.unfccc.int/cancun-agreements/main-objectives-ofthe- agreements/#c33; unfccc.int/resource/docs/2009/cop15/eng/11a01.pdf.USGS. 2011. Effects of Climate Change and Land Use on Water Resources in the Upper Colorado River Basin. US Geological Survey.

173. University of Southern California, Global Energy Network, USC Price School of Public Policy. 2013. The Monterey Shale & California's Economic Future.

174. URS Corporation. 2006. Phase I hydrogeologic characterization of the Mamm Creek Field area in Garfield County: Prepared for the Board of County Commissioners, Garfield County, Colorado.

175. US Geological Survey. 2014. Man-Made Earthquakes Update Internet web site: http://www.usgs.gov/blogs/features/usgs_top_story/man-made-earthquakes/

176. US Geological Survey and Duke University, *et al.* 2011. Shallow Groundwater Quality and Geochemistry in the Fayetteville Shale Gas-Production Area, North-Central Arkansas, 2011.

177. US Department of Energy. 2012. Protocol for Addressing Induced Seismicity Associated with Enhanced Geothermal Systems. January 2012. DOE/EE-0662

178. US Department of Energy. 2013. Best Practices for Addressing Induced Seismicity Associated with Enhanced Geothermal Systems. Draft May 23, 2013.

179. US Department of Energy, Office of Fossil Energy and National Technology Laboratory. 2009. Modern Shale Gas Development in the United States: A Primer, DE-FG26-04NT15455, April 2009, p. 66, Web July 26, 2013 <http://www.netl.doe.gov!technologies!oil-gas/publications/EPreports/Shale_Gas_Primer_2009.pdf

180. US Environmental Protection Agency. 2009. Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act; Final Rule, 74 Federal Register 66496 (2009).

181. US Environmental Protection Agency Office of Research and Development. 2010. Hydraulic Fracturing Research Study. Available at http://www.epa.gov/safewater/uic/pdfs/hfresearchstudyfs.pdf.

182. US Environmental Protection Agency. 2010. Particulate Matter (PM). Internet web site: http://www.epa.gov/airquality/particlepollution/health.html. Accessed on October 1, 2013.

183. US Environmental Protection Agency. 2011. US Greenhouse Gas Inventory Report. Internet web site: http ://www.epa.gov/climatechange!emissions/usinventoryreport.html

184. US Environmental Protection Agency. 2011. Draft Investigation of Ground Water Contamination near Pavillion, Wyoming. Internet web site: http://www.epa.gov/region8/superfund/wy/pavillion/EPA_ReportOnPavillion_Dec-8-2011.pdf. Accessed on August 30, 2012.

185. US Environmental Protection Agency. 2013. Wetlands and People. Internet web site: http://water.epa.gov/type/wetlands/people.cfm. Accessed on October 1, 2013)

186. US Environmental Protection Agency. 2013. Climate Change Overview of Greenhouse Gases. Internet web site: http://epa.gov/climatechange/ghgemissions/gases/ch4.html. Accessed on Oct 1, 2013.

187. US Environmental Protection Agency. 2013. The Clean Air Act Amendments of 1990 List of Hazardous Air Pollutants, Technology Transfer Network Air Toxics. Internet web site: http://www.epa.gov/ttnatw01/orig189.html.

188. US Environmental Protection Agency. 2013. Sulfur Dioxide. Internet web site: http://www.epa.gov/airquality/sulfurdioxide/health.html. Accessed on October 1, 2013.

189. US Environmental Protection Agency. 2013. Carbon Monoxide. Internet web site: http://www.epa.gov/airquality/carbonmonoxide/health.html. Accessed on October 1, 2013.

190. US Environmental Protection Agency. 2013. Ozone. Internet web site: http://www.epa.gov/airquality/ozonepollution/health.html. Accessed on October 1, 2013.

191. US Fish and Wildlife Service, Office of Law Enforcement. 2010. Case at a Glance: US v. Nami Resources Company, LLC. Internet web site: www.fws.gov/home/feature/2009/pdf/NamiInvestigation.pdf. Accessed on July 20, 2010.

192. US Geological Survey. 2010. US Geological Survey Scientific Investigations Report 2010–5215.

193. US Government Accountability Office. 2012. Oil and Gas: Information on Shale Resources, Development, and Environmental and Public Health Risks, GAO 12-732 (September 2012) at 33.

194. US House of Representatives members Henry Waxman et al. 2011. Chemicals Used in Hydraulic Fracturing, US House of Representatives Committee on Energy and Commerce Minority Staff Report (April 2011) Internet web site: http://democrats.energycommerce.house.gov/index.php?g=news/committee-democratsrelease-newreport-detailing-hydraulic-fracturing-products.

195. Vermeer, M., and S. Rahmstorf. 2009. Global sea level linked to global temperature. Proceedings of the National Academy of Sciences of the United States of America 106:21527–32.

196. Veron, J. E. N., O. Hoegh-Guldberg, T. M. Lenton, J. M. Lough, D. O. Obura, P. Pearce-Kelly, C. R. C. Sheppard, M. Spalding, M. G. Stafford-Smith, and A. D. Rogers. 2009. The coral reef crisis: the critical importance of<350 ppm CO2. Marine Pollution Bulletin 58:1428–36.

197. Vieweg, M., B. Hare, N. Höhne, M. Schaeffer, M. Rocha, J. Larkin, H. Fekete, K. Macey, and J. Cutschow. 2012. Governments still set on 3°C warming track, some progress, but many playing with numbers. Climate Action Tracker Update, 3 September 2012. Climate Analytics, Ecofys, and Potsdam Institute for Climate Impacts Research.

198. Walker, B.L., Naugle, D.E., and Doherty, K.E. 2007. Greater Sage-Grouse Population Response to Energy. Journal of Wildlife Management, 71(8):2644-54.

199. Warner, N. R. et al. 2013. Impacts of Shale Gas Wastewater Disposal on Water Quality in Western Pennsylvania, Environ. Sci. Technol. dx.doi.org/10.1021/es402165b (Sept 10, 2013)

200. Warren, R. et al. 2011. Increasing impacts of climate change upon ecosystems with increasing global mean temperature rise, 106 Climatic Change 141 (2011)

201. Warren, R. et al. 2013. Quantifying the benefit of early climate change mitigation in avoiding biodiversity loss, 3 Nature Climate Change 678 (2013).

202. Warren, R., J. Price, A. Fischlin, S. de la Nava Santos, and G. Midgley. 2011. Increasing impacts of climate change upon ecosystems with increasing global mean temperature rise. Climatic Change 106:141–177.

203. Weller, C., Thomson, J., and Aplet, G. 2002. Fragmenting Our Lands: The Ecological Footprint from Oil and Gas Development. The Wilderness Society, 80221(303):1-30.

204. White, Ivan E. 2012. Consideration of radiation in hazardous waste produced from horizontal hydrofracking, National Council on Radiation Protection

205. Whiteman G, et al. 2013. Climate Science: Vast Costs of Arctic Change, Nature 499, no. 7459: 401-403.

206. Williams, M. & C. Copeland, Earthjustice. 2010. Methane Controls for the Oil and Gas Production Sector.

207. WMO. 2012. World's 10th warmest year, warmest year with La Niña on record, second-lowest Arctic sea ice extent.

208. Wyoming Heritage Foundation. 2008. Wyoming Oil and Gas Economic Contribution Study. Casper, Wyoming. August 2008.

209. Zou, Li et al. 2006. Mosquito Larval Habitat Mapping Using Remote Sensing and GIS: Implications of Coalbed Methane Development and West Nile Virus, 43 J. Med. Entomol. 5 (2006).

210. Zou, L., Miller, S.N., and Schmidtmann, E.T. 2006. Mosquito Larval Habitat Mapping Using Remote Sensing and GIS: Implications of Coalbed Methane Development and West Nile Virus. J Med Entomol 43(5):1034:41.