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DEPARTMENT OF THE INTERIOR

BUREAU OF LAND MANAGEMENT

HOLLISTER FIELD OFFICE

ENVIRONMENTAL ASSESSMENT

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Oil & Gas Competitive Lease Sale

December 12, 2012

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Chapter 1. Introduction

I. Oil and Gas Leasing of Federal Mineral Estate

The BLM periodically conducts mineral estate lease auctions for lands that are managed by the Federal government, whether managed by the Department of Interior (BLM, Bureau of Indian Affairs, Fish and Wildlife Service, Park Service), Department of Agriculture (Forest Service), or other Departments. As a land management agency with a multiple-use mission, the BLM must make land use decisions that sustain the health and productivity of the public lands for the use and enjoyment of present and future generations. The BLM recognizes that, in some cases, leasing of oil and gas resources may not be consistent with protection of other important resources and values, including units of the National Park System; national wildlife refuges; other specially designated areas; wildlife; and cultural, historic, and paleontological values. Under applicable laws and policies, there is no presumed preference for oil and gas development over other uses. In making its oil and gas leasing and development decisions, the BLM will consult and coordinate with other land and resource managers (Federal and non-Federal), as appropriate.

Per 43 CFR 3100.0-3, BLM policy is to offer, as expeditiously as possible, public lands subject to leasing, i.e., lands considered not to be excluded from leasing by a statutory or regulatory prohibition, consistent with the Federal Land Policy and Management Act (FLPMA) of 1976, and other applicable laws, regulations, and policies. The BLM objective is to place reliance on land-use planning and associated NEPA analyses, conducted in accordance with the supplemental program guidance for energy and mineral resources (see Manual Section 1624.2 and Handbook 1624-1), to support oil and gas leasing decisions.

On May 17, 2010, BLM announced a new policy titled "Oil and Gas Leasing Reform – Land Use Planning and Lease Parcel Reviews" in BLM Washington Office (WO) Instruction Memorandum (IM) 2010-117 that (1) addresses land use plan review, state office standardization of lease stipulations, and adaptive management; (2) introduces the Master Leasing Plan concept; and (3) identifies process requirements for reviewing oil and gas leasing expressions of interest. This new policy directs each BLM State Office to continue to respond to expressions of interest (EOI's) from industry in leasing particular parcels, and to take the initiative to strategically plan for leasing and development in areas that have the potential for oil and gas development but have not been fully leased. The purpose of lease parcel review by the field offices is to determine the conditions under which leasing and eventual development should occur if allowed to proceed.

As described in BLM WO IM 2010-117 (Section III. Lease Parcel Review and Lease Issuance Process), "Lease parcel reviews for expressions of interest will be conducted and documented simultaneously with the NEPA compliance process. The goal of the parcel review and NEPA

compliance process is to (1) determine parcel availability; (2) evaluate existing stipulations; (3) identify new stipulations, if applicable; (4) provide for public involvement; and (5) develop detailed background information for the NEPA compliance process." More information about the BLM oil and gas leasing reform policy is included in Chapter 1, Section IV (D) of this EA.

A. Tiering to Existing Environmental Documents

In accordance with 40 CFR 1502.20 this Environmental Assessment (EA) is tiered to the Proposed Resource Management Plan and Final Environmental Impact Statement (PRMP/FEIS) for the Southern Diablo Mountain Range and Central Coast of California, published by the BLM Hollister Field Office in June 2006 (this document is referred to as the 2006 PRMP/FEIS throughout the rest of this EA). The Record of Decision (ROD) for the Hollister Field Office RMP for the Southern Diablo Mountain Range and Central Coast of California was approved in September 2007, and is referred to as the 2007 ROD throughout the rest of this EA. Both of these documents are available for review upon request from the Hollister Field Office, and on-line at the website linked here: http://www.blm.gov/ca/st/en/fo/hollister/sdmr-ccrmp.html

A description of potential activities and impacts related to oil and gas leasing, development, production, etc. can be found in Chapter 3 (pg. 3.12-1) and Chapter 4 (pg. 4.12-1) of the 2006 PRMP/FEIS. Each individual resource section in the EIS further describes the potential impacts of these activities, and Appendix D identifies stipulations and conditions that would apply to new leases and to new operations on existing leases as conditions of approval for Applications for Permit to Drill (APD) or geophysical exploration permits. This information is incorporated into this EA by reference here and in other relevant resources sections within the document.

II. PURPOSE AND NEED STATEMENT

In accordance with Section 5102(2)(1)(A) of the Reform Act, BLM has the responsibility to conduct quarterly competitive oil and gas lease auctions within each state whenever eligible lands are available for leasing. BLM Handbook H-3101-1: ISSUANCE OF LEASES describes adjudication-related procedures and requirements for availability of public lands for oil and gas leasing. Eligible lands are available for leasing when all statutory requirements and reviews, including compliance with the National Environmental Policy Act (NEPA) of 1970, have been met.

The Hollister Field Office (HFO) is considering a competitive oil and gas lease sale that would take place at the BLM California State Office in Sacramento, CA on December 12, 2012. The proposed action is to offer approximately 17,847 acres of Federal mineral estate for competitive oil and gas leasing. The need for the proposed action is to respond to expressions of interest (EOI's) that were submitted to the California State Office from industry interested in leasing particular parcels in Monterey, San Benito, and Fresno counties, and to meet BLM's

responsibilities under the Mineral Leasing Act of 1920, as amended, the Mining and Minerals Policy Act of 1980, and the Federal Onshore Oil and Gas Leasing Reform Act of 1987 (Reform Act), to conduct competitive oil and gas lease auctions within the state of California.

The purpose for conducting lease auctions of the Federal mineral estate is to increase energy reserves for the U.S., provide a steady source of significant income, and at the same time meet the requirements identified in the Energy Policy Act, Sec. 362(2), the Reform Act, and the Mineral Leasing Act of 1920, Sec. 17.

A legal description of the parcels considered for the BLM's December 12, 2012 competitive oil and gas lease sale is detailed in Table(s) 1 -- 3 of this EA. Of the approximately 17,847 acres of Federal mineral estate land that are considered for leasing, approximately 3,755 acres are public surface with Federal mineral estate and approximately 14,091 acres are split-estate (private surface with Federal subsurface minerals).

III. CONFORMANCE WITH BLM LAND USE PLANS

The proposed action is in conformance with the 2007 ROD for the Hollister RMP, which identifies all of these lands as available (i.e. open) to oil and gas leasing. Many of the public lands available for oil and gas leasing that are administered by the Hollister Field Office are subject to certain environment controls indicated in the 2007 ROD (ref. Section 3.12.2 pp. 3-28 and 3-29). For example, some of the lands being considered for potential oil and gas leasing in this EA are designated as Areas of Critical Environmental Concern (ACEC's) in the 2007 ROD, and management action ENERG-C1 requires oil and gas leases in ACECs to include a "No Surface Occupancy" stipulation to protect the values for which the ACEC's were established.

Regardless of area designation, management action ENERG-C4 says that all potential leases on public lands would be subject to standard stipulations and mitigation measures for special status species. These stipulations provide notification to the lessee that additional mitigation measures may be necessary prior to authorization of surface disturbance within the lease, and that all special status species issues (including consultation with the USFWS pursuant to Section 7 of the Endangered Species Act) are addressed prior to the authorization of any surface disturbance.

In accordance with the 2007 ROD for the Hollister RMP, BLM reserves the authority to preclude all activities pending submission of site-specific proposals and the authority to prohibit surface disturbing activities on a portion of, or even all of an oil and gas lease, unless an alternative is available that meets specific criteria. Refer to Chapter 2 of this EA for more information BLM's Standard Oil and Gas Lease Stipulations and the Hollister Field Office Endangered Species Stipulation identified in Appendix D of the 2007 ROD.

Oil and gas leasing and development have been previously addressed in detail in the 2006 PRMP/FEIS. All the lands evaluated for competitive oil and gas lease auction in this EA are already currently classified as available for leasing in the 2007 ROD; therefore, no new land use allocations are proposed within this EA. All reasonable foreseeable oil and gas related activities contemplated on lands identified in this EA are within the scope of those actions previously analyzed in the 2006 PRMP/FEIS. This document is issued in conformance with the 2007 ROD for the Hollister RMP and no decisions made as a result of this EA will change or modify the decisions of the 2007 ROD.

IV. RELATIONSHIP TO STATUTES, REGULATIONS AND OTHER PLANS

A. National Environmental Policy Act of 1979 (NEPA)

The phased approach for NEPA compliance has been determined by the Ninth Circuit Court of Appeals to be a valid method to comply with applicable laws and regulations (Northern Alaska Environmental Center v. Kempthorne, ___ F.3d ___, 2006 WL 2061246 (9th Cir. July 26, 2006) ("NAEC ")). In that decision, the Court recognized that in order to open the land for development, as Congress requires, a multi-stage lease process would be necessary; it would frustrate development, and therefore the wishes of Congress, if the court required BLM to determine the environmental impact of all stages of development at the exploration stage, during which it is impossible to determine future impact on specific parcels. The court distinguished Conner v. Burford, (848 F.2d 1441 (9th Cir. 1988)) which did not discuss the requisite degree of specificity in an EIS, only whether one needed to be done at all. The court also noted the inherent uncertainty in multi-stage projects.(See N. Slope Borough v. Andrus, 642 F.2d 589, 605-06 (1980)) The court stressed that NEPA would apply to all future stages of development, so that later development plans would be subject to further review.(See 43 C.F.R. § 3162.3-1(c) (2006).) As a result, a more generalized study is appropriate at the leasing stage because it is not yet known which, if any, of the parcels will actually be developed, and the site specific analysis is more appropriately deferred to when development is proposed. For more information on the review process required before oil and gas drilling can occur, refer to Title 43 Code of Federal Regulations Part 3100 and BLM Manual 3100.

B. Endangered Species Act of 1973 (ESA)

Pursuant to Section 7(a) of the ESA, the BLM's Hollister Field Office formally consulted the Sacramento Branch of the US Fish and Wildlife Service (FWS) on oil and gas leasing and development on BLM public lands and split-estate mineral lands in Fresno, Madera, Merced, San Benito, and Monterey counties in 1994. The resulting Biological Opinion (1-1-94-F-47), prepared by the FWS, considered the effects of mineral leasing on the suite of plant and animal species included in the FWS Recovery Plan for Upland Species of the San Joaquin Valley, California (1998), as well as vernal pool fairy shrimp and the California red-legged frog.

In 2006, the Hollister Field Office again requested formal consultation with the FWS Ventura Field Office to consider the effects of BLM's land use decisions in the 2006 PRMP/FEIS to Federally-listed species that are known or have potential to occur on BLM public lands and split-estate mineral lands within the boundary of the Hollister Field Office. The resulting Biological Opinion (1-8-07-F-19), prepared by the FWS, considered the effects of mineral leasing on the suite of species that were addressed in previous consultations, as well as other plant and animal species, including the California condor and the California tiger salamander.

Both of the FWS Biological Opinions (BO) referenced above concluded that oil and gas leasing and development on BLM public lands and split-estate mineral lands in Fresno and Monterey counties is not likely to jeopardize the continued existence of Federally-listed species. Development of the parcels being considered for leasing in this EA would be subject to the reasonable and prudent measures and the reinitiation notices outlined in the BO's referenced above to avoid and minimize effects to species listed under the ESA.

C. National Historic Preservation Act of 1966 (NHPA)

In order to comply with Section 106 of the National Historic Preservation Act of 1966 (as amended), a set of Supplemental Procedures for Fluid Minerals Leasing were created. The Supplemental Procedures are an amendment to the "State Protocol Agreement between California Bureau of Land Management and the California State Preservation Officer and the Nevada State Historic Preservation Officer Regarding the Manner in which the Bureau of Land Management will meet its Responsibilities Under the National Historic Preservation Act and the National Programmatic Agreement among the BLM, the Advisory Council on Historic Preservation (ACHP), and the National Conference of State Historic Preservation Officers (SHPOs)." These Supplemental Procedures state that a Class I record search and Tribal consultation will be considered adequate inventory and identification methodology for the purposes of Fluid Minerals decisions at the leasing stage.

This proposal and analysis deal only with the action of leasing, and does not consider ground disturbing activities. Any subsequent realty or oil and gas projects or development will be subject to a separate NEPA document and compliance with Section 106 of the National Historic Preservation Act. As oil and gas development actions or associated realty actions are proposed, the areas of potential effect (APE) will be defined and assessments of the impacts upon cultural resources will be undertaken. NEPA and Sec. 106 compliance will be completed on all undertakings. Prior to any future development within the lease parcels listed, a Class III complete field inventory within the project APE(s) will be completed for those areas not previously inventoried.

In the event that cultural resources are identified within a proposed project area, an evaluation of significance will occur and steps will be taken to mitigate impacts to that resource. Mitigation most frequently involves site avoidance, but may include data recovery though excavation. It should be noted that BLM has discretionary control over mitigation stipulations and/or avoidance measures imposed on a project. Although a lessee has a right to develop a lease, BLM may require development activities to be moved up to 200 meters in any direction in accordance with the 2007 ROD for the Hollister RMP. This should allow nearly all archeological sites or other cultural resources to be avoided. Sites or resources that cannot be avoided will be evaluated for listing to the National Register and mitigation measures will be instituted if the site is found eligible. Should development reveal or uncover subsurface archeological sites not previously identified, the lessee is required to halt all work until the site can be evaluated and proper mitigation measures be developed and executed.

D. Oil and Gas Lease Reform Policy - Land Use Planning and Lease Parcel Reviews

BLM's Washington Office Instruction Memorandum (IM) No. 2010-117 establishes a process for ensuring orderly, effective, timely, and environmentally responsible leasing of oil and gas resources on Federal lands. This policy (1) addresses land use plan review, state office standardization of lease stipulations, and adaptive management; (2) introduces the Master Leasing Plan concept; and (3) identifies process requirements for reviewing oil and gas leasing expressions of interest.

The Master Leasing Plan (MLP) concept is a mechanism for completing additional planning, analysis, and decision-making that may be necessary for areas meeting the listed criteria.

The Hollister Field Office has reviewed the Reasonable Foreseeable Development (RFD) scenario and the analysis of impacts from oil and gas exploration and development identified in the 2006 PRMP/FEIS to consider whether they are consistent with the intent of the Master Leasing Plan concept.

The Hollister Field Office determined that the area considered in this EA does not meet the criteria for an MLP and that an MLP is not necessary based on the following rationale:

1. BLM anticipates that the likely outcome of the MLP would not result in the creation of new lease stipulations or changes to existing RMP decisions.
2. Stipulations for No Surface Occupancy and Controlled Surface Use are already incorporated in areas where major or moderate constraints are necessary for protecting resource values.
3. Under the new policy, only parcels with an expression of interest would be offered during competitive oil and gas lease sales. This type of approach to leasing would ensure that important resource values warranting protection in an area where the mineral

development potential and the mode of development are presently unknown would be considered. This approach to leasing could also provide the opportunity to lease a limited and less sensitive portion of the area for development. If oil and gas are successfully discovered and produced, there would then be the opportunity to analyze the impact of additional leasing.

4. Planned or required unitization of Federal lands might be considered in areas where working with only one operator, rather than many, would increase the opportunity for eliminating redundant infrastructure and thereby reduce habitat fragmentation.
5. Phased development may be required where it is important to leave areas of habitat undisturbed by construction and drilling traffic while other areas are developed. Developed areas would be put into interim reclamation before drilling would move on to the next area.
6. Caps or limits on new surface disturbance (pending acceptable interim/final reclamation) could be enforced on the percent of bare ground allowed in a developed area at any one time in order to preserve habitat or reduce erosion in areas with highly erosive soils.
7. Use of existing infrastructure would be emphasized to consolidate facilities and avoid redundant and unnecessary disturbance.
8. Operators would be encouraged to develop multiple wells per well pad to limit the number of surface locations in scenic areas, fragile soil areas, or important wildlife habitat while still allowing the necessary number of downhole locations.
9. Operators could reduce/capture emissions to ensure that development does not contribute to eventual non-attainment of air quality standards.
10. Liquids gathering systems could be developed to centralized offsite production facilities and greatly reduce traffic during the life of the field in areas of important wildlife habitat or fragile soils.
11. Placement of all linear disturbances (e.g., powerlines, pipelines) in corridors would be designed to eliminate unnecessary cross-country fragmentation of habitat.
12. Interim reclamation of roadway disturbance up to or including the road surface and reclamation of pads to the well head would reduce vegetative loss, reduce opportunity for invasive species, stabilize soils, protect water and air quality, and maintain visual resources.
13. Final reclamation would be required to fully restore important ecosystems, wildlife habitat, scenic resources, and re-establish the native plant community.

E. Title 43 Code of Federal Regulations Part 3100 and BLM Manual 3100

1. Federal Lands

BLM administers public land in accordance with the Federal Land Policy and Management Act (FLPMA) of 1976 and other laws. Sometimes public land includes the surface estate and the subsurface mineral estate, and sometimes it involves split estate where BLM controls either the

surface or subsurface mineral estate but not both. BLM can lease Federal mineral interests including leases involving split estate lands where the surface estate is owned by another party. For parcels considered in this EA that are split estate, the lessee and/or operator would be responsible not only for adhering to BLM requirements, but also for reaching an agreement with the private surface landowner regarding access, surface disturbance and reclamation.

Parcels proposed for oil and gas leasing with private surface overlying Federal mineral estate are referred to as 'split estate' lands. Pursuant to BLM Instruction Memorandum No. 2009-184, "Courtesy Notification of Surface Owners When Split Estate Lands are Included in an Oil and Gas Notice of Competitive Lease Sale", the Hollister Field Office is required to notify surface owners, as a courtesy, when their lands are included in a list of lands to be offered for competitive sale.

Parties filing an Expression of Interest (EOI) to offer lands at a competitive oil and gas lease sale are required to provide the BLM with names and addresses of any surface owners where split estate lands are included in their EOI.

2. Directional drilling from adjacent land to a Federal lease

On occasion, it may be desirable or necessary to drill a well from a surface location that is not directly above the drilling target. This is known as directional drilling. Even though the surface location may not be within the Federal mineral lease, BLM has the authority to regulate drilling from adjacent, non-Federal land if Federal minerals are involved by requiring a drilling application. Such directional drilling is subject to applicable environmental laws, including National Environmental Policy Act (NEPA) of 1969 and the Endangered Species Act (ESA) of 1973, as amended. BLM will process this type of application in the same manner as an application on leased lands. On split estate lands where the surface is not federally owned, the surface owner may allow other activities to occur that are not related to the Federal mineral estate. Those activities are not a direct or indirect result of the Federal lease sale, nor are they reasonably foreseeable, and therefore are not part of this analysis.

3. Lease terms and stipulations

A lease for oil and gas gives a lessee (holder of the lease) the right to drill and produce, subject to the lease terms, any special stipulations, other reasonable conditions, and approval of an Application for Permit to Drill (APD). The regulations at 43 CFR 3101.1-2 define the reasonable measures which BLM can require of a lessee. These include, but are not limited to, moving the proposed drilling site up to 200 meters, delaying surface disturbance or drilling up to 60 days, or requiring special reclamation measures. Generally, the BLM cannot deny a lessee the right to drill once a lease is issued unless the action is in direct conflict with another existing

law. Stipulations such as the Endangered Species Stipulation in Appendix D of the 2007 ROD are appropriate where sensitive and significant values exist which could be impacted by development of the oil and gas lease.

Any surface disturbing activity requires prior approval of the BLM. Such approval would include a site-specific evaluation and compliance with NEPA requirements. Routine activities including, but not limited to, cleaning out wells, well tests, monitoring activities, repairing and maintenance of equipment, and routine workovers do not require BLM approval, but would require adherence to all applicable laws and regulations.

For those parcels that are "split-estate" (private surface overlying Federal minerals), the BLM requires the lessee/operator to make a good faith effort to obtain an agreement with the private surface owner prior to access on the leased land issued through competitive bid. Where the lessee/operator is unable to reach a surface use agreement with the private surface owner, the lessee/operator can file a surface owner protection bond. This bond should be in an amount sufficient to protect against damages to the surface as allowed in the statute that reserved the mineral rights to the Federal government. However, the minimum of the surface owner protection bond is $1,000.00.

4. Restoration Measures and Clean up Costs

All lessees/operators of an oil and gas lease are required to submit to the BLM proper bonding prior to any application for permit to drill (APD) approval. The range of the bond amount varies from $20,000 to $300,000. The bond serves to plug and abandon wells, clean up the leased area, restore the surface, and also to pay for any outstanding rentals or royalties due on the lease should the lessee/operator default on those obligations.

The BLM has a mechanism for tracking operations of oil and gas leases, including an inspection and enforcement team that frequently inspects leases and is effective in assuring that the operations of lessees are in compliance. These inspections include review on all well abandonments for proper reclamation.

The BLM is partnered with California Division of Oil, Gas, and Geothermal Resources (CDOGGR) for orphaned and idle wells. A 2008 Memorandum of Understanding (MOU) is in place that addresses these types of wells and what the obligations are of the BLM and the State Division of Oil and Gas.

The BLM currently has only one orphan well on Federal lands in California. The BLM and CDOGGR have a very active and successful Idle Well Management Plan which prevents idle wells from being orphaned. The CDOGGR has an orphan well abatement fund which replenishes each year, and also has an acute well abatement fund for emergency purposes. The

CDOGGR is working on an orphan facilities fund. The BLM appropriates funds as required to perform work on idle and orphaned wells. In the past, BLM has partnered with CDOGGR to abandon Federal orphan wells. The results of these programs have been very successful.

F. County General Plans

Pursuant to 40 CFR 1502.16(c) and 1506.2(d), Section 1.6.3 on page 1-13 of the 2006 PRMP/FEIS provides a list of county General Plans that define open space and conservation policy of the counties located in the Hollister Field Office. BLM coordination with local governments allows regulators to identify potential co-permitting agencies for oil and gas related activities on split-estate lands, including the County of Monterey, County of Fresno, Monterey Bay Unified Air Pollution Control District, and the San Joaquin Valley Unified Air Pollution Control District. Therefore, information from the Monterey County and Fresno County General Plans is provided below to identify existing land uses within the regions being considered for potential oil and gas leasing. Potential lessees and the public should contact potential co-permitting agencies for more information on local rules and regulations requirements because they are not further addressed in this EA.

Monterey County General Plan

The Monterey County General Plan was originally approved in 1982. An update to the General Plan has been underway since 1999, with the most recent iteration of the Draft General Plan released on October 26, 2010. Accordingly, BLM has drawn upon both the original General Plan and the 2010 Draft General Plan to determine the consistency of the proposed action with the existing (and proposed) decisions in the Monterey "South County Area Plan", as identified in these documents. The South County Area Plan (SCAP) was approved by the Monterey County Planning Commission on October 28, 1987 and adopted by the Monterey County Board of Supervisors December 15, 1987

South County land use is characterized by extensive areas of low intensity uses, dominated by grazing, dryland and irrigated farming, watershed, recreation, and small communities. The bulk of the industrial use in South County is due to the presence of extensive oil extraction operations near San Ardo. Much of this area is used in conjunction with grazing (SCAP, pg. 72).

The South County planning area is the largest of eight planning areas identified in the Monterey County General Plan. The South County planning area also has the lowest population density: 2.8 persons per square mile in 1980, compared with 87 persons per square mile countywide. It should be noted that 68 percent of South County is devoted to agriculture and 28 percent is under public land ownership. Thus, the density throughout South County is not uniform (SCAP, pg. 27).

Approximately 28% of South County is publicly owned and is generally not subject to private development. Most of South County's public lands are in Federal ownership -- 212,089 acres out of 225,519. The remainder is owned by the Monterey County Flood Control and Water Conservation District; these 13,430 acres includes San Antonio Reservoir and a large area around the reservoir (SCAP, pg. 32). It should also be noted that due to the presence of military installations, leasing arrangements, and other access restrictions, not all land in public ownership is available for use by the general public.

Both the 1982 and 2010 General Plan(s) identify the split-estate parcels proposed for oil and gas leasing as unincorporated lands in South County. The BLM-administered lands in the region are officially designated as "Unimproved lands and watershed areas" in both documents. The County describes them as lands which are generally vacant and which may serve as valuable watershed. Unimproved lands and watershed areas total 38,217 acres or almost 5% of South County. Watershed uses are particularly important in this region due to the location of San Antonio Reservoir. This water body is the fourth largest land use in the area, totaling 5,687 acres or about 15% of the unimproved lands and watershed areas.

Monterey County General Plan Goal #35 recognizes the significance of unimproved lands and watershed areas in protecting and maintaining the County's natural resources and rural character and places emphasis on protection of the County's critical watersheds. As such, the General Plan states that the County shall ensure that land uses in and surrounding critical watershed areas will not compromise the important resource value of these areas; and any development in critical watershed areas shall be designed, sited, and constructed in a manner which minimizes negative effects on the watershed.

San Benito County General Plan

San Benito County is updating the 1995 General Plan to meet the changing housing, environmental, economic, and growth needs of the county and to incorporate the community's vision for the future in the new General Plan. The General Plan Update is scheduled to take approximately three years, starting in 2009 and concluding with adoption of an updated General Plan in 2012.

The existing (1994) General Plan includes no specific goals and policies pertaining to oil and natural gas resources. However, goals and policies related to mineral resources are applicable. The following oil and gas information and energy resource-related policies are from the General Plan Update's Open Space and Conservation Element. This section provides an assessment of the existing (2010) oil, gas, and geothermal resources within San Benito County.

Oil and gas exploration within the County is governed by San Benito County Code Title 19: Land Use and Environmental Regulations. Chapter 19.21 deals specifically with oil and gas wells, and establishes requirements for oil and gas well drilling.

San Benito County is not a major oil-producing region in California compared to other counties. There are currently (2010) three known oil and gas fields (Bitterwater, Hollister, and Vallecitos) and 92 production and injection oil and/or gas wells within the county. Of these wells 32 are active, 14 are idle, two are new, 40 are plugged, and four have been cancelled. A total of 7,142 barrels of oil and 28,559 million cubic feet of natural gas were produced in the county in 2008. There is an estimated 2008 reserve of 101 Mbbl of oil and 63 MMcf of natural gas in the county.

Fresno County General Plan

The Fresno County General Plan (2000) is a comprehensive, long-term framework for the protection of the county's agricultural, natural, and cultural resources and for development in the county. The Plan sets out a vision reflected in goals, policies, programs, and diagrams for Fresno County for the period 2000 to 2020 and beyond. In 2006, the County embarked on its first review and revision of the 2000 General Plan.

To implement the elements described above, the Fresno County General Plan includes regional plans and community plans. The Coalinga Regional Plan (1996) covers the area where the Federal mineral estate being considered for oil and gas leasing is located. The Fresno County General Plan carries forward major policies in the Coalinga Regional Plan that have been in place since the mid-1970s.

The Coalinga Region contains a wide range of physiographic features and natural resources. It includes a city containing about 11,217 inhabitants situated within an agricultural valley. Most of the area is comprised of vast expanses of undeveloped lands with environmental resources important to the County. Limited quantities of high quality water are available, yet some areas are subject to seasonal flooding. It is the County's major petroleum-extraction area and holds other valuable mineral resource mining sites. The area also offers scenic recreation areas, some with varied collections of fossils and gemstones (Fresno County, Coalinga Regional Plan, 1980, at p. 1).

The Coalinga Region is a significant oil and gas resource area. Productive oil and gas fields are scattered throughout Jacalitos Canyon and the Kreyenhagen Hills. County policy seeks to protect these oil and gas resource areas from incompatible land uses which would preclude resource extraction (Coalinga Regional Plan, at p. 5).

These General Plans establish broad goals, policies and thresholds of significance that guide countywide development. Additionally, they provide policies, tailored specifically to address

local conditions and community concerns, and zoning ordinance, which are the primary tools used to implement the goals and policies contained in the General Plans and the Area Plans. These are typically technical in nature and provide specific project level standards for development.

This EA focuses on proposed oil and gas leasing of Federal mineral estate and consistency with land use policies and compatibility with surrounding uses. The proposed lease sale is consistent with the General Plans referenced above because BLM's standard lease stipulations and other mitigation measures identified in the EA would prevent adverse impacts to watershed areas and other sensitive resources. The reasonable foreseeable development of Federal mineral estate described in Chapter 4 of this EA would not compromise the important resource value of these areas. Additionally, upon issuance of the lease, BLM maintains the authority to preclude surface disturbance and site specific reviews of applications for permits to drill (APD's) are required to ensure that developments shall be designed, sited, and constructed in a manner which minimizes negative effects on special status species habitat, critical watershed areas, or other resource values.

V. ISSUES AND SCOPING

BLM conducted a competitive lease sale for federal mineral estate in Monterey and Fresno counties in 2011 that is currently being litigated by the Sierra Club and Center for Biological Diversity. All of the parcels being considered for the proposed 2012 oil and gas lease sale are in the same region and have similar existing resources conditions.

These organizations formally protested the 2011 competitive oil and gas lease sale because they believe the development of oil and gas leases will seriously impact special status species habitat, water quality, air quality, and rural lifestyles.

They urged BLM to conduct additional environmental review prior to conducting any further lease sales The following issues are incorporated by reference and analyzed in this EA in Chapters 3 & 4.

a. Inventory of potentially impacted endangered species
b. Adverse consequences for farming and grazing activities.
c. Conflicts with the County's General Plan, and other long term land use guidance
e. Effects of the project on climate change.
f. Address the issue of deep horizontal drilling and [hydraulic fracturing]
g. Evaluate "environmental justice" issues associated with this project

Chapter 2. Proposed Action and Alternatives

NOTE TO READER: To facilitate the analysis, each parcel of land being considered for oil and gas leasing in this EA is identified by a Unit number and a Parcel number. Map(s) 1 - 3 in Appendix A show the general location of each Unit and Parcel. For the actual competitive oil and gas lease auction, new parcel numbers will be generated that are different from the parcel number used in this EA.

LEASING STIPULATIONS COMMON TO ALL ACTION ALTERNATIVES

Oil and Gas Lease Stipulations

All of the parcels would have the BLM Standard Lease Stipulations (BLM Form 3100-11) and all parcels would be subject to special leasing stipulations that would (1) protect special status species and their habitat, including but not limited to the "Endangered Species Stipulation" outlined in the 2007 ROD, Appendix D (pg. D-9), which would be attached to each lease upon issuance; and (2) protect cultural resources under "Stipulation #4: Cultural Resource Stipulation" of the Lease Sale Notice which states if any lease is found to contain historic properties and/or resources protected under the National Historic Preservation Act (NHPA), American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, or other statutes and executive orders, the "BLM will not approve any ground disturbing activities that may affect any such properties or resources until it completes its obligations under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized or mitigated."

All the parcels in western Fresno County (Unit 3) are within the Panoche-Coalinga Area of Critical Environmental Concern (ACEC). In conformance with the existing land use plan decision ENERG-C1 (ref. 2007 ROD), all parcels in Unit 3 that are in the ACEC would stipulate "No Surface Occupancy" in special status species habitat.

Furthermore, BLM reserves both the authority to preclude all activities pending submission of site-specific proposals and the authority to prevent proposed activities if the environmental consequences are unacceptable. As stated in the Endangered Species Stipulation described in Appendix D of the 2006 PRMP/FEIS, "the lessee is hereby notified that, if T&E species are found during the inventories, the surface disturbing activities may be prohibited on portions of, or even all of the lease, unless an alternative is available that meets all of the following criteria: (a) the proposed action is not likely to jeopardize the continued existence of the T&E species, (b) the proposed action is not likely to destroy or adversely modify critical habitat for the T&E

species, and (c) the proposed actions are consistent with USFWS recovery plans and/or BLM resource management plans. This denial authority will also apply to directional drilling proposals which require Federal approval to drill into the leased mineral estate from adjacent lands."

ALTERNATIVE 1 (PROPOSED ACTION)

The Bureau of Land Management (BLM) proposes to conduct a quarterly competitive oil and gas lease sale of the unleased Federal mineral estate in Monterey, San Benito, and Fresno counties. The proposed action is to offer 17,847 acres of unleased Federal mineral estate identified by the parcel numbers referenced on Map(s) 1 - 3 in Appendix A for oil and gas competitive auction to develop the Federal mineral estate. Under Alternative 1, all the parcels in Unit 3 that are within the Panoche-Coalinga Area of Critical Environmental would be offered with a No Surface Occupancy Stipulation in the December 12, 2012 competitive oil and gas lease sale.

Of the approximately 17,847 acres of Federal mineral estate land that are considered for leasing, only 3,755 acres are public surface with Federal mineral estate and approximately 14,091 acres are "split-estate" (private surface with Federal subsurface minerals). The BLM's guidance on "split-estate" (Instruction Memorandum No. 2003-131) effective April 2003, addresses the purpose and the action that must be completed prior to any approval for new drilling. It also explains the rights, responsibilities, and opportunities of the BLM, lessee/operator, and the private surface owner. In addition, the recently revised Onshore Order No. 1 also contains details about permits issued on split estate lands.

All of the Federal interests (surface and minerals) are within the jurisdiction of the BLM's Hollister Field Office, Hollister, California. There are 12 parcels in Unit 2 that are partly within the administrative boundary of existing oilfields; however, all parcels being considered under the proposed action are within 0.5-5 miles of the administrative boundaries of an existing oilfield.

The locations of these parcels are identified in Table(s) 1 – 3 below.

Table 1: Lease Parcels in Units 1 (Monterey County)

Township.	Range	Sec.	Subdivision	Acres	Split Estate	Public Domain
0220S	0090E	6	Lot 7;	49.68	49.68	
0220S	0090E	6	SESW;	40.00	40.00	
0220S	0090E	8	NWNE, S2NE;	120.00	120.00	
0220S	0090E	8	Lots 1, 3-7,9, 10,11;	366.64	366.64	
0220S	0090E	15	Lot 3, SW;	200.38	200.38	
0220S	0090E	17	Lots 1-4;	166.24	166.24	
0220S	0090E	17	SENE, SENW, N2S2;	240.00	240.00	
0220S	0090E	18	NENE;	40.00	40.00	
0220S	0090E	19	Lots 3, 4;	85.27	85.27	
0220S	0090E	19	E2SW;	80.00	80.00	
0220S	0090E	20	S2NE,N2SE, SESE;	200.00	200.00	
0220S	0090E	21	E2NE, NWNW, S2NW, SW;	360.00	360.00	
0220S	0090E	22	Lot 1;	40.13	40.13	
0220S	0090E	22	E2NE, NWNW, NESW, SWSW;	200.00	200.00	
0220S	0090E	23	NW;	160.00	160.00	
0220S	0090E	28	NE,SENW,NESW;	240.00	240.00	
0220S	0090E	29	SENW, N2SW, SWSE;	160.00	160.00	
0220S	0090E	30	Lots 1, 2;	82.12	41.31	40.81
0220S	0090E	30	NWNE, E2NW, E2SW, NESE, SESE;	240.00	240.00	
0220S	0090E	31	Lots 3, 6;	72.85	72.85	
0220S	0090E	31	E2NE, NESW, NWSE;	80.00	80.00	
0220S	0090E	32	NE, E2NW;	240.00	240.00	
0220S	0090E	34	N2SW;	80.00	80.00	
0230S	0090E	1	S2NE, S2NW, SW, SWSE;	360.00	360.00	
0230S	0090E	1	Lots 1-4;	161.96	161.96	
0230S	0090E	2	S2N2, S2;	480.00	320.00	160.00
0230S	0090E	2	Lots 1-4;	163.28		163.28
0230S	0090E	5	Lots 1,2,3;	121.48	121.48	
0230S	0090E	5	S2NE, SENW;	120.00	120.00	
0230S	0090E	9	SWSW;	40.00	40.00	
0230S	0090E	10	ALL;	640.00		640.00
0230S	0090E	11	NWNW, W2SW, E2SE;	200.00		200.00
0230S	0090E	12	SENE, N2NW, SWNW, E2SE;	240.00	240.00	
0230S	0090E	13	NENE;	40.00	40.00	
0230S	0090E	14	NWNW;	40.00	40.00	

Table 2: Lease Parcels in Unit 2 (San Benito County)

Township	Range	Sec.	Subdivision	Acres	Split Estate	Public Domain
0160S	0100E	15	ALL;	640.00	400.00	240.00
0160S	0100E	21	NWNW;	40.00	40.00	
0160S	0100E	21	NWSE	40.00	40.00	
0160S	0100E	22	N2, N2S2;	480.00	440.00	40.00
0160S	0110E	19	NE, E2SE;	240.00	160.00	80.00
0160S	0110E	20	ALL;	640.00	440.00	200.00
0160S	0110E	25	S2;	320.00	40.00	280.00
0160S	0110E	26	S2SW, SE;	240.00		240.00
0160S	0110E	27	NENW;	40.00	40.00	
0160S	0110E	29	SWNE;	40.00	40.00	
0160S	0110E	34	NE, N2NW, SENW;	280.00	280.00	
0160S	0110E	35	N2NE, SW;	240.00	240.00	
0170S	0110E	7	Lots 3-10, 14-23;	754.67	754.67	
0170S	0110E	8	NW, SE;	320.00	320.00	
0170S	0110E	9	NW;	160.00	160.00	
0170S	0110E	17	Lots 2-9, 11-16;	545.11	545.11	
0170S	0110E	22	Lots 1-15;	712.62	712.62	
0170S	0110E	23	Lots 5, 6, 8;	152.18	152.18	
0170S	0110E	24	Lots 8-16;	378.93	378.93	
0160S	0120E	33	NE, N2NW;	240.00		240.00
0160S	0120E	34	N2;	320.00		320.00
0160S	0120E	35	W2SW;	80.00		80.00
0170S	0120E	3	Lots 1-8;	463.60	463.60	
0170S	0120E	3	S2;	320.00	320.00	
0170S	0120E	10	E2,E2W2;	480.00	480.00	
0170S	0120E	15	ALL;	640.00	600.00	40.00
0170S	0120E	18	Lots 1, 12;	91.10	50.84	40.26
0170S	0120E	19	Lots 1-20;	716.00	716.00	
0170S	0120E	20	Lots 11-15;	197.61	197.61	
0170S	0120E	21	Lot 5;	53.20	53.20	
0170S	0120E	22	W2NE, NW, NWSE;	280.00	280.00	

Table 3: Lease Parcels in Units 3 (Fresno County)

Township	Range	Sec.	Subdivision	Acres	Split Estate	Public Domain
0220S	0150E	24	Lot 1, 4;	80.70	80.70	
0220S	0150E	24	W2NE, NW;	240.00	240.00	
0220S	0160E	18	Lots 1, 2, 3, 9, 10;	257.58		257.58
0220S	0160E	18	SENE, NESE,S2SE;	160.00	160.00	
0220S	0160E	20	NENE, S2NE, SW;	280.00	280.00	
0220S	0160E	24	E2SW;	80.00		80.00
0220S	0160E	30	Lots 1-6, 11;	333.60		333.60
0220S	0160E	30	SENE;	40.00	40.00	
0220S	0160E	32	SWNW;	40.00		40.00
0220S	0160E	34	NENW;	40.00		40.00

ALTERNATIVE 2: NO ACTION

Under the No Action alternative, none of the 17,847 acres of Federal mineral estate from the parcels identified in Monterey, San Benito, and Fresno counties would be offered for competitive oil and gas leasing. Under this alternative, BLM would not meet the requirement to offer lands available for oil and gas auction under the Federal Onshore Oil and Gas Leasing Reform Act of 1987 (Reform Act) and Energy Policy Act of August 5, 2005, Section 362(a)(1). In addition, the potential reserves that might be recovered and the potential income that might be generated would not be realized if the lands were not leased.

ALTERNATIVES CONSIDERED BUT NOT ANALYZED:

Pursuant to 40 CFR 1502.14, BLM's NEPA Handbook (H-1790-1) directs Field Offices to identify alternatives considered during the EA process but not analyzed in detail and briefly explain they were eliminated.

BLM considered an alternative to lease parcels that have known and/or potential habitat for the species identified in the Recovery Plan for the Upland Species of the San Joaquin Valley (USFWS 1998) with a stipulation that would limit development of a lease to somewhere between 10% – 20% in the December 12, 2012 competitive oil and gas lease sale. The rationale for this alternative is based on the recovery tasks identified in the Recovery Plan for the Upland Species of the San Joaquin Valley (USFWS 1998).

The Hollister Field Office IDPR team decided to eliminate such an alternative from detailed analysis because it is not in conformance with the Hollister RMP Record of Decision (2007).

Also, the Hollister Field Office Endangered Species Stipulation identified in Appendix D of the 2007 ROD provides adequate protection for the threatened and endangered species with potential to occur on the parcels being considered for oil and gas leasing in this EA, as summarized below.

Under the Endangered Species Stipulation described in Appendix D of the 2007 ROD, BLM reserves the authority to preclude all activities on an oil and gas lease pending submission of site-specific proposals, and the authority to prohibit surface disturbing activities on a portion of, or even all of an oil and gas lease, unless an alternative is available that meets all of the following criteria: (a) the proposed action is not likely to jeopardize the continued existence of the T&E species, (b) the proposed action is not likely to destroy or adversely modify critical habitat for the T&E species, and (c) the proposed actions are consistent with USFWS recovery plans and/or BLM resource management plans. This denial authority will also apply to directional drilling proposals which require federal approval to drill into the leased mineral estate from adjacent lands.

Chapter 3. Affected Environment

This chapter describes the existing conditions of elements of the human environment that may be affected by oil and gas leasing. Only information relevant to understanding the potential effects of the range of alternatives is included in the affected environment sections of this EA. Refer to the 2006 PRMP/FEIS for additional information about existing conditions of resources on BLM public lands.

The descriptions of the resource conditions are quantitative where possible, and of sufficient detail to serve as a baseline against which to measure the potential effects of the range of alternatives being considered in this EA.

The affected environment sections of the EA are defined and limited to issues identified internally and externally through public scoping. The following resource elements are not addressed in this EA because they are not present within the area potentially affected by the proposed leasing of Federal mineral estate in Monterey, San Benito, and Fresno counties: wilderness, wild and scenic rivers, wild horses and burros, fish habitat, and floodplains.

The affected environment also identifies past and present (i.e. ongoing) actions that contribute to existing conditions and provides a baseline for the analysis of direct, indirect, and cumulative effects of potential oil and gas leasing being considered in this EA.

A. Oil and Gas Resources

Hollister Field Office Areawide

The 2006 PRMP/FEIS briefly describes oil and gas development in the areas of high, moderate, and low-to-none development potential on private and Federal mineral estate, regardless of ownership. The size of each category is shown in Table 3.12-1 of the 2006 PRMP/FEIS and illustrated on Figure 15 in Appendix A of the 2007 ROD.

Table 3.12-1 Areas of Oil and Gas Development Potential (*)

Category	Total Acres
High	1,883,449
Moderate	2,402,432
Low to None	2,529,259
Total	6,815,140

(*) Includes all private and Federal mineral estate within the Hollister Field Office boundary, including 588, 197 acres of "split-estate" administered by the HFO

The HFO is subdivided into four management areas (MAs): San Joaquin, Salinas, Central Coast, and San Benito (see Figure 1 in Appendix A of the 2006 PRMP/FEIS). Most of the existing oil and gas production within the HFO occurs within the oil fields near Coalinga and the Jacalitos Valley in the San Joaquin Management Area (MA). There is also some historic production in the San Ardo oil fields located within the Salinas MA; however, little of this area is on Federal mineral estate. Likewise, the Vallecitos oil fields are in the San Benito MA, but, again, little of the production is on Federal mineral estate.

The 2006 PRMP/FEIS reports that exploratory oil wells have historically been drilled on less than 5 percent of the leases issued on Federal mineral estate, and only one of 15 to 20 exploratory wells actually results in the discovery of oil. The U.S. Geological Survey estimates that there are more than two billion barrels of undiscovered recoverable reserves in the 30 oil and gas fields throughout the 588,197 acres of split estate administered by the HFO. However, based on studies and evaluations of historic trends prior to 2005, BLM geologists have projected that the probability of a new field discovery on Federal mineral estate in the Hollister Field Office over the next 15 years is less than 5 percent.

Historically, both oil and gas and mineral development have been low on Federal mineral estate managed by the HFO. More recently, natural gas reserves have gained interest nationally and in California with the possibility of expanding production capacity on public lands using hydraulic fracturing technology. Notably, the parcels being considered for potential oil and gas leasing in

this EA are located in areas of high importance for energy and mineral resources development (i.e. Salinas and San Joaquin MA's). However, the southern portion of the HFO only has moderate potential with several wells that "show" or produce oil. To date, the majority of the Federal mineral estate in these areas has not shown economic quantities to develop the resource.

Monterey County

There are eight (8) existing oil and gas leases on approximately 9,469 acres of Federal mineral estate in Monterey County. None of these existing leases have been developed since their effective authorization dates, and no applications for permits to drill have been submitted to BLM for entry into Federal mineral estate in Monterey County for over 20 years.

Pursuant to Section 3108, Division 3 of the Public Resources Code, each year the California Department of Conservation's Oil and Gas Division makes the total amount of oil and gas produced in each county public for the benefit of all interested persons. According to the information available from the 2009 Annual Report of the State Oil & Gas Supervisor, there are no existing natural gas wells in Monterey County.

The South County Area Plan (1987) provides the following description of oil production and extraction of mineral resources in the region on page 9:

> The most notable examples of mineral extraction in South County are the oil fields located in the San Ardo area. In fact, almost all of the oil production in Monterey County is from the San Ardo fields. Known reserves, as of 1978, totaled 203 million barrels. Production at the San Ardo field totaled 12.7 million barrels in 1978, from 930 active wells. Oil exploration throughout South County is on the increase.

San Benito County

There are thirteen (13) existing oil and gas leases on approximately 17,867 acres of Federal mineral estate in San Benito County. None of these existing leases have been developed since their effective authorization dates, and no applications for permits to drill have been submitted to BLM for entry into Federal mineral estate in San Benito County for over 20 years. The energy resources assessment provided below is based on the information reported in the San Benito County General Plan Update (2010), Section 8.4.

There are currently (2008) three known oil and gas fields (Bitterwater, Hollister, and Vallecitos) with a total of 92 production and injection wells in the county. Of these 92 production wells, 32 are listed as active, 14 as idle, two as new, 40 as plugged, and four have been cancelled. The DOGGR 2008 annual report showed wells within the county produced 7,142 oil barrels (bbl) and 28,559 Mcf (Million cubic feet) of natural gas. The BLM's proposed lease sale would include federal mineral estate in and around the Vallecitios field, which extends west from the Fresno/ San Benito county line and covers over 35 square miles adjacent to the Vallecitos and Griswold hills areas. Table 4 provides a summary of oil and gas production in the county.

Table 4. Oil and Gas Production in San Benito County

Field Name	Production	Shut-in	Oil & Condensate (bbl)	Cumulative Oil & Condensate (Mbbl)	Estimated Oil Reserves (Mbbl)	Net Gas (Mcf)	Cumulative Gas (MMcf)	Estimated gas reserves (MMcf)
Bitterwater	11	0	1,953	334	<0.01	0	0	0
Hollister	2	3	--	9	--	26,526	8,435	63
Vallecitos	12	15	5,189	5,384	101	2,033	3,898	<0.01
TOTAL	25	18	7,142	5,727	101	28,559	12,333	63

Sources: California Department of Conservation, Division of Oil, Gas & Geothermal Resources, 2008 Annual Report of the State Oil & Gas Supervisor.

Pacific Gas and Electric (PG&E), one of the five largest utilities in the state, is the only purveyor of natural gas in the county. PG&E also has several major pipe lines running west to east (and north) across the county to substations in Santa Clara, Fresno and Merced Counties. There are currently (2010) no renewable energy production facilities within the county.

Fresno County

There are a total of forty-seven (47) existing oil and gas leases on approximately 23,835 acres of Federal mineral estate administered by the BLM's Hollister Field Office in Fresno County.

The Coalinga Regional Plan (CRP) describes this portion of the Hollister Field Office as the County's major petroleum extraction area. The existing conditions of oil and gas resources in the region are described as follows on page 17 of the CRP (1996):

> Petroleum is one of the most valuable natural resources in Fresno County. Most of the existing oil and gas fields are location in the Coalinga Region. Petroleum production has long provided a major livelihood for the Region. The fields have been in production for over 60 years.
>
> In recent years, production in the Coalinga area has been declining as the more easily extractable oil has been depleted. These fields include the Guijarral Hills, Pleasant Valley, and Coalinga east Extension. In an attempt to recover the heavier oils, the oil companies are turning to secondary methods of oil recovery, such as steam injection.

In light of this information, the CRP provides the following "Management Consideration" for oil and gas resources on page 17, "Secondary methods of oil recovery should be encouraged".

B. Socioeconomic Conditions & Environmental Justice

Social and Economic Values

This section provides a context for the types of socioeconomic values (farming, mining, accommodation and food services, and retail trade) to analyze the effects of past and present oil and gas exploration and development on the sectors of the economy potentially impacted by the proposed oil and gas lease sale.

The Federal mineral estate in the southern portion of the HFO has historically been a source of both oil and natural gas. Production has declined in the recent past, and potential appears to be limited. In 2004, annual production in the HFO stood at 585 million cubic feet of natural gas and 50,500 barrels of oil. Both of these figures were less than 2/100 of a percent of the total production of natural gas and oil in California that year.

Federal oil and gas leases in California produced more than 20 million barrels of oil and 5 billion cubic feet of gas in 2008. According to Minerals Management Service statistics, the value of

these products was nearly $2 billion, generating royalties and other related revenue of more than $175 million. This revenue was split 50:50 with the State of California.

No economic data is available for oil and gas production on existing leases on Federal mineral estate administered by the Hollister Field Office. According to the economic data provided by the industries in Monterey, San Benito, and Fresno counties that may potentially be affected by the proposed oil and gas lease sale, employee compensation and employment by industry in everything except mining have increased since 2001. This suggests that there has been no adverse effect from existing oil and gas leases on the local economy, including ranching and agricultural uses.

In 2001, of the major industry sectors, Government and Government Enterprises provided the greatest value of compensation in Monterey, San Benito, and Fresno counties. Contributions from other public land management activities and resource uses represent only marginal revenues to local and State governments, based on the very limited Federal revenue from grazing fees, and fees for recreation special use permits. Payment in Lieu of Taxes (PILT) based on BLM land ownership in the HFO contributed about $225,000 to local government revenues in 2004, a very small portion of total government revenues. As with other quantifiable economic indicators such as personal income, the public land resources in the HFO are simply too small relative to other public revenue generators to make a significant contribution (2006 PRMP/FEIS). Nonetheless, the functionality of public lands as an energy resource does play a role in the local economy by creating jobs and increasing local revenues.

In addition to the contribution of public land resources to local income and employment, other socioeconomic elements that are more difficult to quantify are affected. These social values often emphasize the importance of public lands as scenic or visual resources, traditional use areas, and reservoirs of wildlife habitat in areas where these values are rapidly being lost to development and where population growth in the area would only increase these values on public lands into the future. Additionally, potential increases in traffic and noise associated with oil and gas exploration and development may impact private property residents and/or conflict with other existing land use activities.

Environmental Justice

The requirements for environmental justice review during the environmental analysis process were established by EO 12898 (February 11, 1994). That order declares that each Federal agency is to identify "disproportionately high and adverse human health or environment effects of its programs, policies, and activities on minority populations and low-income populations."

BLM's 2006 PRMP/FEIS describes the results of the 2000 U.S. Census with regard to ethnicity and poverty in the counties that make up the Central Coast and Diablo Range analysis areas.

Most of the counties share the same general ethnic patterns that the State of California exhibits with Caucasians/whites in the majority, a very large Hispanic community, ranging from 25 to 50 percent of the population; distinct minority populations of African Americans, generally comprising less than 5 percent of the population; Asian/Pacific Islanders, comprising between 5 and 10 percent of the population; and a very small Native American population.

The 2006 PRMP/FEIS also provides additional data regarding ethnicity and poverty levels in Monterey, San Benito, and Fresno counties. The percent of the population with personal income below the poverty level is extremely high in Fresno County, over 20 percent of the population. Whereas, the percent of the minority populations with personal income below the poverty level in Monterey County and San Benito County is approximately 13.5 percent and 10 percent, respectively. With the very low and declining real per capita income shown in 2006 PRMP/FEIS, these poverty levels are not surprising.

C. Visual Resource Management

Only a few areas of the Hollister Field Office (HFO) public lands have outstanding scenic quality, including the Ventana Wilderness Additions and the public lands highly visible from U.S. Interstate 5 (Panoche Hills Wilderness Study Areas (WSAs), and the Joaquin Ridge/Rocks).

The parcels being considered for leasing under the proposed action consist of non-contiguous lands and isolated parcels spread across three counties, so the landscape varies greatly, from nearly level in some areas to rugged, mountainous terrain, generally located in rural ranching areas. Elevations range from 1,000 feet to more than 3,000 feet. Modifications of public lands typically consist of range management projects such as fence lines and livestock and wildlife water developments. Electrical transmission lines, radio communication towers, water storage tanks, and oil and gas facilities are also located on some BLM lands.

Salinas Management Area

All the parcels being considered for leasing in Monterey County are within the BLM's Salinas Management Area and are designated VRM Class III. The management objective of this VRM class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate and may attract the attention but should not dominate the view of the casual observer.

Vegetation includes forested areas, chaparral, and open grassland. About two-thirds of the public lands managed by the HFO consist of chaparral and oak woodland vegetation. Approximately one-third of the parcels being considered for leasing under the proposed action (primarily on the eastern slopes of the Diablo Range and the southern Salinas Valley) consist of annual grassland and half-shrub vegetation.

BLM-administered lands in Monterey County that are visible from U.S. Highway 101 include the large tracts within the Sierra de Salinas and Gabilan Mountain Range, which are generally visible from U.S. Highway 101, from the Pinnacles National Monument, and from BLM lands adjacent to the Ventana Wilderness. A few other isolated BLM parcels lie in eastern Monterey County at the San Benito County line, about 5 miles west of Pinnacles National Monument.

The scattered parcels being considered for leasing under the proposed action are a small portion of the overall landscape and are not highly visible from any key observation points. BLM lands in this area are not of outstanding visual quality and are typical of the region.

San Benito Management Area

All the parcels being considered for leasing in San Benito County are within the BLM's San Benito Management Area (MA), and are designated VRM Class IV. The management objective of this VRM class is to address management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

San Joaquin Management Area

All the parcels being considered for leasing in Fresno County are within the BLM's San Joaquin Management Area (MA), and are designated VRM Class IV. The management objective of this VRM class is to address management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

BLM public lands in this MA are highly visible from U.S. Interstate 5. In the southern portion of the San Joaquin MA lie the Coalinga oilfields. The predominant features in the area are the low, rolling foothills and valley grasslands along the western edge of the San Joaquin Valley. Significant topographic features include the Kettleman Hills, the Kreyenhagen Hills, the Alcalde Hills, and Anticline Ridge. This very arid area lies in the rain shadow of the Diablo Range to the west. BLM lands in this area are not of outstanding visual quality and are typical of the region.

D. Air and Atmospheric Values

1. Air Quality

At the Federal level, regulatory responsibilities for air quality lie with the U.S. Environmental Protection Agency (EPA), Region 9. At the state level, regulatory responsibility is delegated to the California Air Resources Board (CARB). Oversight authority for air quality matters rest at the county level(s) with the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) and the Monterey Bay Unified Air Pollution Control District (MBUAPCD).

EPA uses six "criteria pollutants" as indicators of air quality, and has established for each of them a maximum concentration above which adverse effects on human health may occur. These threshold concentrations are called National Ambient Air Quality Standards (NAAQS). One set of limits (primary standard) protects health; another set of limits (secondary standard) is intended to prevent environmental and property damage. States may have standards that are more restrictive than the Federal thresholds, but they cannot be less restrictive. A geographic area that meets or exceeds the primary standard is called an attainment area; areas that do not meet the primary standard are called non-attainment areas (http://www.epa.gov/air/caa/peg/).

Designations in relation to the State standards are made by the CARB while designations in relation to the National standards are made by EPA. State designations are reviewed annually while the National designations are reviewed when either the standards change or when an area requests that they be re-designated due to changes in the area's air quality. Designations are made by air basin and in some cases designations are made at the county level. Designations are made by pollutant according to the following categories:

Attainment – Air quality in the area meets the standard.
Non-attainment Transitional – Air quality is approaching the standard (State only).
Non-attainment – Air quality in the area fails to meet the applicable standard.
Unclassified – Insufficient data to designate area or designations have yet to be made.

Non-attainment designations are of most concern because they indicate that unhealthy levels of the pollutant exist in the area, which typically triggers a need to develop a plan to achieve the applicable standard.

As a Federal agency, BLM is required to comply with all applicable air quality laws, regulations, standards and implementation plans. The BLM Manual 7300-Air Resource Program Management indicates responsibilities and requirements to analyze all actions for conformity to air quality plans through its permitting programs under the Clean Air Act, as amended (42 USC 7401 et seq.). For the purpose of monitoring and regulating air quality, the State of California has been divided into 15 air basins based on meteorological and geographic similarities. The parcels being considered for oil and gas leasing under the proposed action are in two of these air basins. Fresno County is in the San Joaquin Valley Air Basin, and Monterey County is in the North Central Coast Air Basin.

As recognized by the California Air Resources Board (2007), California's climate and geography are conducive to the formation and accumulation of air pollution (especially in the Central Valley) where some of the parcels proposed for leasing are located. Although air pollution levels in the state have improved significantly in the past few decades, Californians currently experience the worst air quality in the Nation (U.S. Global Change Research Program 2009).

San Joaquin Valley Air Basin

The state attainment status reported for any given year is based on the previous three years of data. The attainment status of the San Joaquin Valley Air Basin is shown in the table below, according to State Ambient Air Quality Standards and National Ambient Air Quality Standards (NAAQ's). Several criteria pollutant concentrations currently meet NAAQS in the San Joaquin Valley Air Basin. However, based on the current EPA standards and designations, the primary pollutants of concern in the southern San Joaquin Valley are 8-hour Ozone and $PM_{2.5}$ (Table 5). Kern County (San Joaquin Valley portion) is classified as non-attainment for 8-hour Ozone and $PM_{2.5}$ under federal standards. The area is also designated as maintenance for PM_{10} and carbon monoxide (CO).

Table 5. Attainment status of the San Joaquin Valley Air Basin

POLLUTANT	FEDERAL DESIGNATION
Ozone (8-hour)	Nonattainment[1] Extreme[2]
$PM_{2.5}$	Nonattainment[3]
PM_{10}	Attainment[4]
CO	Maintenance[5]

[1]On April 30, 2007 the Governing Board of the San Joaquin Valley Air Pollution Control District voted to request EPA to reclassify the San Joaquin Valley Air Basin as extreme nonattainment for the federal 8-hour ozone standard. The California Air Resources Board, on June 14, 2007, approved this request. This request must be forwarded to EPA by the California Air Resources Board and would become effective upon EPA final rulemaking after a notice and comment process; it is not yet in effect.

[2]EPA classification (e.g. Moderate Extreme, or Severe,) establishes the required attainment date of the federal standard for Ozone and PM_{10}.

[3]The Valley is designated non-attainment for the 1997 federal $PM_{2.5}$ standards. EPA released final designations for the 2006 $PM_{2.5}$ standards in December 2008 (effective in 2009), designating the Valley as non-attainment for the 2006 $PM_{2.5}$ standards.

[4] On September 25, 2008, EPA redesignated the San Joaquin Valley to attainment for the PM_{10} National Ambient Air Quality Standard (NAAQS) and approved the PM_{10} maintenance plan. For purposes of general conformity, the area is treated as a Maintenance Area.

[5] All CO areas were redesignated as Maintenance Areas by the EPA, September 29, 2010.

Within the San Joaquin Valley Air Basin, Kern County's exceedances of the NAAQ's for 8-hour ozone have been episodic in nature; the numbers of violations of the NAAQS for ozone has continued to decline. According to the SJVAPCD Annual Report to the Community (2011), the summer of 2011 was one of the cleanest on record in the Valley, continuing the 20 plus year trend. Exceedances of the ozone standard set in 1997 (84 parts per billion) have been reduced by 62 percent over the last decade alone; exceedances of the 2008 ozone standard (75 ppb) have been reduced by 42 percent over the last decade. Rules establishing controls for ozone precursor emissions have been implemented but the air basin continues to be impacted by mobile source emissions, primarily from vehicle use.

In 2007, CARB adopted the State Strategy for achieving emissions reductions toward bringing these areas into attainment with federal standards for ozone and $PM_{2.5}$. CARB's strategy was updated in the 2009 State Strategy Progress Report, using revised emissions inventories reflecting recent economic downturn.

California employs a comprehensive strategy aimed at reducing pollutants from a variety of sources of air pollution. Reactive Organic Gases (ROG) and oxides of nitrogen (NOx) from all sources have been reduced by 68 percent and 39 percent, respectively since 1980 (CAPCOA 2011). These emissions reductions have resulted in significant improvements in ambient concentrations of ozone and particulate matter, in spite of dramatic increases in population, vehicles, and the number of miles driven.

State Implementation Plans (SIPs) for reducing pollutants mainly address stationary sources that have been identified as major contributors affecting regional air quality, such as power plants, facilities, etc. District air quality plans outline the strategy for achieving federal air quality standards and identify control measures to reduce criteria pollutant emissions and are included in the SIP. The applicable implementation plans include: the San Joaquin Valley Air Pollution Control District 2007 Ozone Plan, the San Joaquin Valley Air Pollution Control District 2007 PM_{10} Maintenance Plan and Request for Redesignation, and the San Joaquin Valley Air Pollution Control District 2008 $PM_{2.5}$ Plan.

Non-attainment area designations were made for the new 8-hour ozone standard in April 2004 and the San Joaquin Valley 2007 8-hour Ozone Plan was approved by the CARB in June 2007. The 8-hour Ozone Plan calls for a 75% reduction of NOx (already reduced by 50% as of plan date) and full plan implementation will reduce Volatile Organic Compounds (VOCs) by 25% as a result of regulatory measures. All of the proposed local measures in this plan were proposed for adoption by 2012. However, since 80% of the Valley's total NOx emissions are from mobile sources, the bulk of necessary reductions must come from state and federal control measures for mobile sources, such as land use and transportation policies that reduce the number of vehicle miles traveled.

PM_{10} levels in the Valley have declined, since all control measure commitments have been adopted by the SJVAPCD and CARB. The Valley's improvement in PM10 air quality was due to permanent and enforceable emission reductions achieved through District and CARB rules and regulations. The EPA re-designated the San Joaquin Valley to attainment of the NAAQS for PM_{10} and approved the 2007 PM_{10} Maintenance Plan. The PM_{10} Maintenance Plan includes an attainment emissions inventory, detailed conformity calculations, and demonstrates maintenance and verification of continued attainment by modeling. In addition, the plan evaluates future emissions growth and control up to 2020.

In 1997, the EPA set two $PM_{2.5}$ standards, a 24-hour standard and an annual standard. Based on data from 2004 to 2006, the San Joaquin Valley complied with the 24-hour standard. In 2006, EPA revised the 24-hour standard to a lower level. Attainment plans for this new standard will be required; however, the 2008 $PM_{2.5}$ Plan focuses on the strategy to attain the 1997 annual standard. The 2008 $PM_{2.5}$ Plan (proposed March 13, 2008) builds upon the strategy adopted in the 2007 8-Hour Ozone Plan to bring the Valley into attainment of the 1997 NAAQS. A SIP for the 2006 $PM_{2.5}$ standard is due to the EPA 2012-2013. Based on the $PM_{2.5}$ Plan, $PM_{2.5}$ levels have decreased nearly 20% in the Valley from 1999-2007. The plan outlines a strategy that includes a comprehensive and exhaustive list of regulatory and incentive-based measures to further reduce direct $PM_{2.5}$ emissions and ozone precursor emissions (NO_x and SO_x). Confirmed by CARB modeling, analysis shows that the Valley can attain the annual $PM_{2.5}$ NAAQS by 2014.

Applicable SJVAPCD Rules to Implement Air Quality Plans

Once air quality attainment demonstration Plans are adopted, the reductions necessary to meet the respective reduction mandates contained in the Plan(s) are achieved through prohibitory rules created and enforced by the local air quality board. Compliance with applicable Rules, Regulations, and land use and zoning requirements ensures continued movement towards achieving the SJVAPCD attainment goals.

Comprehensive lists of local air district rules and regulations are located on the California Air Resources Board district database (http://www.arb.ca.gov/drdb/drdb.htm). The following section describes several of the pertinent SJVAPCD rules that may apply to oil and gas development subsequent to leasing.

Rule 2010 (Permits Required): This rule requires that any project constructing, altering, replacing, or operating any source operation, the use of which emits, may emit, or may reduce emissions, to obtain an Authority to Construct (ATC) and a Permit to Operate (PTO). This rule applies to the construction of the proposed renovations and operation of the new processes and equipment to be installed.

Rule 2201 (New and Modified Stationary Source Review): This rule applies to all new and modified stationary sources that would emit, after construction, a criteria pollutant for which there is an established federal or state AAQS. The rule provides mechanisms including emission trade-offs by which an ATC can be granted without interfering with the Basin's attainment with ambient air quality standards. These mechanisms offer methods to generate no net increases in emissions of nonattainment pollutants and their precursors over specific thresholds as detailed in the rule and the imposition of best available control technology for all emission increases.

Rule 2280 (Portable Equipment Registration): Certain portable emissions units would be required for well drilling, service or workover rigs, pumps, compressors, generators and field flares.

Rule 4101 (Visible Emissions): The purpose of this rule is to prohibit the emissions of visible air contaminants to the atmosphere.

Rule 4401 (Steam-Enhanced Crude Oil Production Well Vents): The purpose of this rule is to limit the volatile organic compound (VOC) emissions from steam-enhanced crude oil production wells.

Rule 4623 (Storage of Organic Liquids): The purpose of this rule is to limit VOC emissions from the storage of organic liquids.

Regulation VIII (Fugitive PM_{10} Prohibitions): The purpose of Regulation VIII is to reduce ambient concentrations of particulate matter (PM_{10}) by requiring actions to prevent, reduce, or mitigate anthropogenic fugitive dust emissions. Regulation VIII rules pertinent to the proposed

Project include, but are not limited to, the following:

Rule 8021 (Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities): This rule limits fugitive dust emissions (PM_{10}) from construction, demolition, excavation, extraction, and other earthmoving activities. This rule applies to any such activity and other earthmoving activities, including, but not limited to, land clearing, grubbing, scraping, travel on-site, and travel on access roads to and from the site.

Rule 8031 (Bulk Materials): The purpose of this rule is to limit fugitive dust emissions from the outdoor handling, storage, and transport of bulk materials.

Rule 4305 (Boilers, Steam Generators, and Process Heaters – Phase 2): The purpose of this rule is to limit emissions of oxides of nitrogen (NO_x), and carbon monoxide (CO) from boilers, steam generators, and process heaters with a rated heat input of greater than 5 million Btu per hour.

Rule 4306 (Boilers, Steam Generators, and Process Heaters – Phase 3): The purpose of this rule is to limit emissions of oxides of nitrogen (NO_x), and carbon monoxide (CO) from boilers, steam generators, and process heaters with a rated heat input of greater than 5 million Btu per hour.

In addition, the SJVAPCD document Best Available Control Measures/Technology and Reasonable Available Control Measures/Technology Demonstration for Sources of PM_{10} and $PM_{2.5}$ Precursors in the San Joaquin Valley Air Basin indicates current control measures recognized by SJVAPCD. These attainment demonstration and maintenance plans include sections on emissions inventory and control strategies and include discussions on oil and gas development. The oil and gas industry is highly regulated by the Districts; air plans are implemented through rule making which include a number of categories including permitting, equipment requirements and performance standards, dust and precursor emissions (NO_x and SO_2) control, and several others. Any oil and gas activities authorized by the BLM would be required to comply with all of the applicable air quality rules and regulations, and air permit requirements. Nearly all activities that have the potential to emit criteria pollutants are regulated by local, state, and federal air regulatory agencies.

General Conformity

As a federal agency, BLM is required to comply with all applicable air quality laws, regulations, standards and implementation plans (Section 118). The classification of any area as a federal nonattainment or maintenance area brings an additional requirement for federal agencies. Section 176(c) of the CAA, as amended (42 U.S.C. 7401 et seq.), and regulations under 40 CFR, part 93, subpart W, state that "no department, agency or instrumentality of the federal Government shall engage in, support in any way or provide financial assistance for, license or permit, or approve any activity which does not conform to an applicable implementation plan." This means that under the CAA 176(c) and 40 CFR, part 93, subpart W (conformity rules), federal agencies must make a determination that proposed actions in federal non-attainment areas conform to the applicable EPA approved State Implementation Plans (if pertinent) before the action is taken. Geographic areas that meet the NAAQS are exempt from determining conformity with SIPs.

Because the parcels proposed for competitive leasing occur within a designated non-attainment area, general conformity regulations are applicable. However, since the proposed action to lease parcels for fluid mineral development does not represent a project, a conformity determination will not be completed at the leasing stage. Appropriately, a conformity determination will be made at the project level.

North Central Coast Air Basin

Current State and National designations shown in Table 6 (below) were reported by the Monterey Bay Unified Air Pollution Control District for the North Central Coast Air Basin in January 2009.

Table 6. Attainment status of the North Central Coast Air Basin

Pollutant	State Standards	National Standards
Ozone (O_3)	Non-attainment[1]	Attainment[2]
Inhalable Particulates (PM_{10})	Non-attainment	Attainment
Fine Particulates ($PM_{2.5}$)	Attainment	Unclassified/Attainment[3]
Carbon Monoxide (CO)	Monterey Co. – Attainment San Benito Co. – Unclassified Santa Cruz Co. – Unclassified	Attainment
Nitrogen Dioxide (NO_2)	Attainment	Attainment
Sulfur Dioxide (SO_2)	Attainment	Attainment
Lead	Attainment	Unclassified/Attainment[4]

Foot Notes:

[1] Effective July 26, 2007, the CARB designated the NCCAB a non-attainment area for the State ozone standard, which was revised in 2006 to include an 8-hour standard of 0.070 ppm.

[2] On March 12, 2008, EPA adopted a new 8-hour ozone standard of 0.075 ppm, while temporarily retaining the existing 8-hour standard of 0.08 ppm. EPA is expected to issue new designations by March 2010.

[3] In 2006, the Federal 24-hour standard for $PM_{2.5}$ was revised from 65 to 35 $\mu g/m^3$. Although final designations have yet to be made, it is expected that the NCCAB will remain designated unclassified/attainment.

[4] On October 15, 2008 EPA substantially strengthened the national ambient air quality standard for lead by lowering the level of the primary standard from 1.5 $\mu g/m^3$ to 0.15 $\mu g/m^3$. Initial recommendations for designations are to be made by October 2009 with final designations by January 2012

Violations of ambient air quality standards are determined through data collected at air quality monitoring stations located throughout the air basin, including a monitoring station located in King City. This station measures regional pollution levels such as dust (PM_{10}) and photochemical smog (ozone). The station also monitors nitrogen dioxide (NO_2), carbon monoxide (CO) and ultra-fine particulate matter ($PM_{2.5}$). Because of the relatively short distance of the parcels proposed for oil and gas leasing to the King City monitoring station, the pollution levels in King City are considered representative of baseline conditions.

Table 7 (below) shows the exceedances and design values for State standards based on the North Central Coast Air Basin Air Monitoring Stations from 2006-2008.

Table 7. Station Specific Exceedances and Design Values for the State 8-Hour Ozone Standard and the State 24-Hour PM_{10} Standard

Station	2006		2007		2008		3-Yr Totals		Design Value	
	O_3	PM_{10}	O_3	PM_{10}	O_3	PM_{10}	O_3	PM_{10}	O_3	PM_{10}
Pinnacles	18	- -	17	- -	26	- -	61	- -	0.089 ppm	- -
King City	1	0	0	0	0	5	1	5	0.068 ppm	NA
Air Basin	20	4	17	1	26	10	63	15	0.089 ppm	88.3 $\mu g/m^3$

Notes: Dated 9/24/2009
1) The 2008 State 8-hour ozone standard is 0.070 ppm. The State 24-hour PM_{10} standard is 50 $\mu g/m^3$.
2) Many of the 2008 exceedances of the National ozone standard were affected by smoke from the 2008 California Wildfire Siege, whereby over 1,000,000 acres of wildland vegetation burned statewide including over 250,000 acres in Monterey County alone.
3) Three-year PM_{10} Design Values are not yet available for King City due to a change in the site location from 750 Metz Road to 415 Pearl Street in May 2007.
4) On a day when more than one station exceeds the standard, only one air basin exceedance day is counted. For this reason, the number of air basin exceedance days can be less than the sum of the number of station exceedance days.
5) Abbreviations: NA: Not Available; - - : Pollutant not monitored
6) Source: CARB California Air Quality Data

Planning for attainment of state standards is embodied in the 1991 AQMP. The 1997 update demonstrates that the 20 percent reduction target in ozone precursor emissions from the 1987 baseline has been met and that no new control measures (contingency measures) are needed beyond those already in the plan. The 2000 AQMP update for state standards concluded that the NCCAB will remain on the borderline between attainment and non-attainment of the state 1-hour ozone standard. A combination of meteorological variability, pollution transport from outside the air basin and local sources will all contribute to a continuing small, but non-zero, number of violations.

Planning for PM_{10} attainment is conducted separately from ozone planning. Reports by the MBUAPCD indicate that basin-wide attainment of the PM_{10} standard due to in-basin sources was likely within this decade. The effects of local contamination and "natural" sources such as sea salt or smoke from wildfires may maintain isolated PM_{10} "hot spots" beyond 2010.

2. Climate and Meteorology

San Joaquin Valley Air Basin

The Central Valley is one of the dominant features in the California landscape. The valley extends nearly 500 miles in length, while the width of the floor is approximately 45 miles. The

San Joaquin Valley is surrounded by the Sierra Nevada Mountains to the east, the Pacific Coast range to the west, and the Tehachapi Mountains to the south.

California lies within the zone of prevailing westerlies and on the east side of the semi-permanent high pressure area of the northeast Pacific Ocean. The basic flow in the free air above the State, therefore, is from the west or northwest during most of the year. Within the State, several mountain chains are responsible for deflecting these winds and wind direction is likely to be more a product of local terrain than it is of prevailing circulation.

Isotherms run mostly north-south, parallel to the contours of the mountains, instead of east-west as is common in most parts of the temperate zone. The climate and geography of the Valley create optimal conditions for forming and trapping air pollution. The San Joaquin Valley is particularly vulnerable to air pollution formation because of its topography, climate, and growing population. Surrounding mountains trap airborne pollutants near the Valley floor where people live and breathe. In addition, the Valley's hot summer temperatures promote the formation of harmful ground-level ozone, a major component of smog (http://www.valleyair.org).

The northern Central Valley has a hot Mediterranean climate while the southern portions in rain shadow zones are dry enough to be considered low-latitude desert. It is hot and dry during the summer and cool and damp in the winter, when frequent ground fog known regionally as "tule fog" can obscure visibility. Summer daytime temperatures are generally in the 90 degree (ºF) range, and heat waves may bring temperatures in excess of 104º F. The rainy season occurs mid-autumn to spring and the northern half of the Valley receives greater precipitation than the arid southern half. Normal annual precipitation in this area is 5.72 inches, based on the 1961-1990 record period.

North Central Coast Air Basin

The Monterey Bay and Salinas Valley area is characterized by a "Mediterranean" climate with warm, dry summers and cool, moist winters. Daily variations in the valley climate are influenced by the interaction between ocean and land air masses that create on-shore (up-valley) winds in the daytime and weak offshore (down-valley) breezes at night. Inversion layers, which tend to aggravate pollution problems created by automobile emissions, are present in the valley a significant part of the year. However, meteorological conditions in Monterey County are generally favorable in terms of maintaining relatively good air quality because onshore winds across Monterey Bay normally bring clean air into the region. Nonetheless, degraded air quality may sometimes be experienced due to the dust and odor may be experienced around agricultural operations or other localized sources.

At the National Climate Data Center (NCDC) station in Monterey, on the basis of a 50-year record, the average annual temperature is 57º F, and the average annual precipitation is 20 in.,

occurring as rain during the winter and early spring. However, the distribution of precipitation across the area is dependent on the topography and the prevailing winds, with an increase in precipitation concomitant to an increase in altitude. Precipitation also decreases with latitude from north to south in the study unit. Fifty-year climate records from NCDC stations from Santa Cruz to Paso Robles show that the mean annual precipitation decreases from 31 in. in Santa Cruz in the north, to 13 in. in Paso Robles in the south (USGS 2005).

Annual precipitation for Central California from 2007-2008 was considerably lower than the normal at 66%. Whereas, annual precipitation from 2008-2009 was about 95% of the normal average rainfall.

3. Climate Change

Climate change refers to any significant change in measures of climate (e.g., temperature or precipitation) lasting for an extended period of time (decades or longer). Climate change may result from natural processes, such as changes in the sun's intensity; natural processes within the climate system (such as changes in ocean circulation); and/or human activities that change the atmosphere's composition (such as burning fossil fuels) and the land surface (such as urbanization) (IPCC 2007).

Some greenhouse gases (GHGs), such as carbon dioxide, occur naturally and are emitted to the atmosphere through natural processes and human activities. Other GHGs (e.g., fluorinated gases) are created and emitted solely through human activities. The primary GHGs that enter the atmosphere as a result of anthropogenic activities include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_20), and fluorinated gases such as hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. These synthetic gases are powerful GHGs that are emitted from a variety of industrial processes. The major GHG compounds emitted from the oil and gas sector are carbon dioxide, methane, and nitrous oxide (CARB 2011).

Ongoing scientific research has identified the potential impacts of anthropogenic greenhouse gas (GHG) emissions and changes in biological sequestration due to land management activities on global climate. Through complex interactions on a regional and global scale, these GHG emissions and net losses of biological carbon sinks cause a net warming effect of the atmosphere, primarily by decreasing the amount of heat energy radiated by the earth back into space. Although GHG levels have varied for millennia, recent industrialization and burning of fossil carbon sources have caused CO_2e concentrations to increase dramatically, and are likely to contribute to overall global climatic changes. The Intergovernmental Panel on Climate Change (IPCC 2007) recently concluded that "warming of the climate system is unequivocal" and "most of the observed increase in globally average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations."

Global mean surface temperatures have increased nearly 1.8°F from 1890 to 2006. Average temperatures in the United States have risen 1.5 F over the last 50 years (USGRCP 2009). Without additional meteorological monitoring systems, it is difficult to determine the spatial and temporal variability and change of climatic conditions, but increasing concentrations of GHGs are likely to accelerate the rate of climate change. Models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Northern latitudes (above 24°N) have exhibited temperature increases of nearly 2.1° F since 1900, with nearly a 1.8° F increase since 1970 alone. If emissions proceed at a medium to high rate, temperatures in California are expected to rise 4.7 to 10.5° F by the end of the century; a lower emissions rate would keep the projected warming of the State to 3 to 5.6° F (Luers et al. 2006).

In 2001, the IPCC indicated that by the year 2100, global average surface temperatures would increase 2.5° to 10.4° F above 1990 levels. The National Academy of Sciences has confirmed these findings, but also has indicated there are uncertainties regarding how climate change may affect different regions. Recent analyses of global climate model predictions indicate that southern California will become hotter and drier (Christensen et al. 2007). Higher temperatures are projected to increase the frequency, intensity, and duration of conditions conducive to air pollution formation, potentially increasing the number of days conducive to air pollution by 75 to 85 percent in the San Joaquin Valley, under a higher emissions scenario, and by 25 to 35 percent under a lower emissions scenario (California Climate Action Team 2006). Based on the California Climate Action Team "Climate Scenarios" analysis, the projected temperature increases in California would result in widespread consequences including:

- A 70-90 percent reduction of Sierra Nevada snowpack;
- Range expansion in many species, range contractions in other species with significant populations already established;
- A likely shift in the ranges of existing invasive plants and weeds; and
- Up to a 55 percent increased risk of large wildfires.

In light of these projections, the DOI is taking the lead in protecting our nation's resources from these impacts and in managing our public lands to mitigate the effects of climate change. Secretarial Order 3289 addresses the impacts of climate change on America's water, land, wildlife, and cultural heritage resources. The Climate Change Response Council, eight DOI Regional Climate Science Centers, and a network of Landscape Conservation Cooperatives (including Interior and other agencies) are working to communicate data and coordinate our response to the impacts of climate change within and among our bureaus. The BLM recognizes that the public lands are facing increasingly complex and widespread environmental challenges that transcend traditional management boundaries. Therefore, BLM is developing a landscape-scale management approach that offers a way to integrate the BLM's conservation, restoration, and development programs.

The first draft national strategy was released in January 2012 to aid decision makers and resource managers in preparing for and reducing the impacts of climate change on species, ecosystems, and the people and economies that depend on them. The draft National Fish, Wildlife and Plants Climate Adaptation Strategy represents a framework that will guide the nation's efforts during the next five years to respond to current and future climate change impacts including species distributions and migration patterns, the spread of invasive species and wildlife diseases, changes in sea level, changes in freshwater availability, etc. (www.wildlifeadaptationstrategy.gov). The strategy is intended to provide a roadmap for use in considering climate change implications to their ongoing wildlife and habitat management activities. It does not prescribe mandatory activities that agencies must take nor suggest regulatory actions; the Strategy is expected to become final May/June 2012.

With enactment of the California Global Warming Solutions Act of 2006 (AB 32; Stats. 2006, chapter 488), the California Air Resources Board (CARB) was tasked with several new responsibilities to help address the threat of global warming. AB 32 requires that California's greenhouse gas emissions be reduced to 1990 levels by 2020, which represents a 25% reduction under a business as usual scenario. Pursuant to AB 32, the CARB adopted their Climate Change Scoping Plan to reduce the State's GHG emissions to 1990 levels by 2020 (CARB 2008). The Scoping Plan will guide the CARB in developing detailed strategies to implement all of the recommended measures that must be in place by 2012 to reduce GHG emissions by 2020. Two of these new responsibilities, greenhouse gas emissions inventory and mandatory reporting, are complementary efforts undertaken by CARB to assess and monitor California's progress toward greenhouse gas (GHG) emissions quantification and mitigation. The first effort established the California 1990 Greenhouse Gas Emissions Level and 2020 Emissions Limit. The second effort led to the adoption by the CARB of a regulation to require the mandatory reporting and verification of greenhouse gas.

On October 30, 2009, the U.S. EPA published a rule for the mandatory reporting of greenhouse gases from large GHG emissions sources in the United States. Implementation of 40 CFR Part 98 is referred to as the Greenhouse Gas Reporting Program (GHGRP). In general, the threshold for reporting is 25,000 metric tons or more of carbon dioxide equivalent (CO_2e) per year, at the facility level. This rule was revised November 30, 2010 to include the requirement to report fugitive and vented GHG emissions from crude petroleum and natural gas systems. Comprehensive, nationwide emissions data will provide a better understanding of GHG sources and will guide development of the policies and programs to reduce emissions (http://www.epa.gov/climatechange/emissions/ghgrulemaking.html).

To improve CARB's estimates of GHG emissions in California, they conducted an Oil and Gas Industry Survey in 2009 to accurately quantify equipment and operation processes for the 2007 calendar year. The 2007 Oil and Gas Industry Survey Results, Draft Report was posted for

public review and comment in August 2011 (http://www.arb.ca.gov/cc/oil-gas/oil-gas.htm). The survey was completed by 325 companies, representing approximately 97% of the crude oil and gas production in California. Total emissions for equipment covered under this survey are estimated to be 18.8 million metric tons of CO_2e; combustion sources (equipment burning fuel for energy) account for 87 percent of the total CO_2e emissions, while the remaining 13 percent of the CO_2e emissions come from vented and fugitive sources (CARB 2011). Based on this survey, nearly 76% of the statewide total CO_2e emissions for these operations occur in the San Joaquin Valley APCD.

The emissions data will be used to create a sector specific baseline inventory and to develop a control measure to reduce GHG emissions from the crude oil and natural gas production, processing, and storage sector (http://www.arb.ca.gov/cc/ghgsectors/ghgsectors.htm). Furthermore, CARB is in the process of developing protocols to quantify fugitive and vented emissions from upstream oil and gas operations. The two protocols under development are 1) quantification of methane, carbon dioxide, and VOC emissions from crude oil and produced water separation and storage tank systems; and 2) quantification of fugitive and vented carbon dioxide and VOC emissions from crude oil and natural gas processes and equipment.

A number of other Scoping Plan measures have already been approved and/or adopted by CARB, including the Heavy-Duty Vehicle GHG Emission Reduction, Low Carbon Fuel Standard, Landfill Methane Control Measure, Tire Pressure and Tread Programs, Cool Car Standards and Test Procedures, and Port Ship Electrification. These measures and efforts will contribute to the goal of achieving emissions reductions, as outlined in the AB 32 Implementation Timeline:
(http://www.arb.ca.gov/cc/scopingplan/sp_measures_implementation_timeline.pdf).

Specific emission limits have not yet been established; there are no federal significance thresholds for carbon dioxide equivalent (CO_2e) emissions. Additionally, there is no technically defensible methodology for predicting potential climate changes from GHG emissions. As a result, GHG emissions that may occur subsequent to leasing as a result of the RFD scenario cannot be determined at this time. Consequently, climate change analysis for the purpose of this document is limited to accounting and disclosing of factors that contribute to climate change and the anticipated regional effects. Quantitative evaluation is included where appropriate and practicable.

E. Soils

Soils of parcels in Monterey County are derived from Miocene-aged marine sedimentary rocks including sandstone, shale, and conglomerate (Cook 1978). Slopes range from 0 – 75% with the majority of the area of most parcels being on steeper slopes (15 – 75%). Soil textural class of

most soil types within the parcels ranges from clay loam to loam, resulting in slow to moderate permeability (infiltration rate). The combination of relatively slow permeability and steep slopes results in medium to very rapid surface runoff, resulting in an erosion hazard rating of high to very high for large areas of the parcels (Tables 8 and 9). Erosion hazard is a relative rating of the susceptibility of a soil type to erosion.

Soils of parcels in San Benito County are derived from Cretaceous, Eocene, Miocene, and Pliocene-aged marine sedimentary rocks including sandstone, shale, siltstone, and conglomerate (Isgrig 1969). Slopes range from 0 – 75% with the majority of the area of most parcels being on steeper slopes (15 – 75%). Soil textural class of most soil types within the parcels ranges from clay loam to sandy loam, resulting in slow to moderate permeability. The combination of relatively slow permeability and steep slopes results in medium to very rapid surface runoff, resulting in an erosion hazard rating of very high to very severe for large areas of the parcels (Tables 10 and 11).

Soils of parcels in Fresno County are derived from Eocene, Miocene, and Pliocene -aged marine sedimentary rocks including sandstone, shale, siltstone, and conglomerate (Arroues 2006). Slopes range from 0 – 50% with the majority of the area of most parcels being on steeper slopes (15 – 50%), Soil textural class of most soil types within the parcels ranges from clay loam to sandy loam, resulting in moderately slow to moderately rapid permeability. The combination of moderate permeability and steep slopes results in medium to very high surface runoff, resulting in an erosion hazard rating of high for large areas of the parcels (Tables 12 and 13).

Table 8. Soil unit, corresponding soil series, and soil erosion hazard rating for parcels in Monterey County. Data follows Cook (1978).

Unit	Soil series	Erosion hazard
AgD	Arbuckle gravelly loam, 9 to 15 percent slopes	Moderate
Ba	Badland	Very High
CaD	Chamise shaly loam, 9 to 15 percent slopes	Moderate
CaF	Chamise shaly loam, 30 to 50 percent slopes	High
LeC	Lockwood shaly loam, 2 to 9 percent slopes	Slight to Moderate
LeD	Lockwood shaly loam, 9 to 15 percent slopes	Moderate
LhE	Lopez shaly loam, 15 to 30 percent slopes	High
Rc	Rock outcrop-Xerothents association	Very High
SfE	Santa Lucia shaly clay loam, 15 to 30 percent slopes	Moderate
SfF	Santa Lucia shaly clay loam, 30 to 50 percent slopes	High
Sg	Santa Lucia-Reliz association	Very High

Table 9. Percentage of soil series by area present within parcels in Monterey County and their soil erosion hazard rating. Data follows Cook (1978).

	Soil unit										
Parcel	AgD	Ba	CaD	CaF	LeC	LeD	LhE	Rc	SfE	SfF	Sg
1	-	-	-	-	9%	-	-	-	-	47%	44%
2	-	-	1%	3%	-	4%	-	-	2%	21%	69%
3	-	-	-	-	1%	-	-	-	-	-	99%
4	-	-	-	-	9%	-	-	-	-	-	91%
5	-	-	-	-	-	-	-	-	-	-	100%
6	-	-	-	-	-	-	-	-	-	-	100%
7	-	-	-	-	3%	-	-	3%	-	-	94%
8	-	-	-	-	2%	-	-	-	-	-	98%
9	-	-	-	-	4%	-	-	-	-	-	96%
10	-	-	-	-	1%	-	-	-	-	-	99%
11	-	-	-	-	4%	-	-	-	-	-	96%
12	-	-	-	-	5%	-	-	-	-	-	95%
13	-	-	-	-	-	-	-	-	-	-	100%
14	-	-	-	-	-	-	-	-	-	-	100%
15	-	-	-	-	-	1%	-	-	-	-	99%
16	-	-	-	-	-	1%	-	2%	-	-	97%
17	-	-	-	-	-	-	-	-	-	-	100%
18	-	-	-	-	-	8%	1%	21%	-	-	70%
19	-	-	-	-	-	15%	-	13%	-	-	72%
20	-	-	-	-	-	15%	-	1%	-	-	84%
21	-	-	-	-	2%	1%	-	-	-	-	97%
22	-	-	-	-	-	16%	-	-	-	-	84%
23	-	-	-	-	-	-	-	-	-	15%	85%
24	-	-	-	-	-	2%	-	11%	-	-	87%
25	-	-	-	-	-	6%	-	92%	-	-	**2%**
26	-	-	-	-	-	7%	-	-	-	-	93%
27	47%	16%	-	-	-	-	-	-	-	-	37%
28	-	1%	-	-	-	12%	-	45%	-	-	42%
29	-	-	-	-	-	3%	-	-	-	20%	77%
30	-	-	-	-	-	-	-	1%	-	2%	97%
31	-	-	-	-	-	1%	-	-	-	-	99%
32	-	-	-	-	2%	3%	-	-	-	5%	90%
33	-	-	-	-	-	3%	-	-	-	33%	64%
34	-	-	-	-	-	-	-	-	-	74%	26%
35	-	-	-	-	-	-	-	-	-	-	100%

Soil erosion hazard	
Very severe -----	
Severe ----------	
Very high --------	
High ----------	
Moderate -------	
Not specified ---	

Table 10. Soil unit, corresponding soil series, and soil erosion hazard rating for parcels in San Benito County. Data follows Isgrig (1969).

Unit	Soil series	Erosion hazard
BaG	Badland	Very High
DoC	Docas silt loam, 2 to 9 percent slopes	Slight to Moderate
DsA	Docas clay loam, 0 to 2 percent slopes	Slight to Moderate
DsC	Docas clay loam, 2 to 9 percent slopes	Slight to Moderate
GuE	Gullied land	Very High
KeD	Kettleman loam, 5 to 15 percent slopes	Slight to Moderate
KeF2	Kettleman loam, 15 to 50 percent slopes, eroded	Severe to Very Severe
KmF2	Kettleman soils, 15 to 50 percent slopes, eroded	Severe to Very Severe
LdF	Landslides	Severe to Very Severe
LnE2	Linne clay loam, 15 to 30 percent slopes, eroded	Severe
NaD	Nacimiento clay loam, 9 to 15 percent slopes	Moderate
NaE	Nacimiento clay loam, 15 to 30 percent slopes	Moderate to Severe
NaF2	Nacimiento clay loam, 30 to 50 percent slopes, eroded	Severe to Very Severe
NaG2	Nacimiento clay loam, 50 to 75 percent slopes, eroded	Very Severe
PhC	Panhill loam, 2 to 9 percent slopes	Slight to Moderate
PkC	Panoche sandy loam, 2 to 9 percent slopes	Slight to Moderate
RsC	Rincon silty clay loam, 2 to 9 percent slopes	Slight to Moderate
SbF2	San Benito clay loam, 30 to 50 percent slopes, eroded	Severe to Very Severe
SbF3	San Benito clay loam, 30 to 50 percent slopes, severely eroded	Very Severe
SeG	Sedimentary rock land	Not Specified

Table 11. Percentage of soil series by area present within parcels in San Benito County and their soil erosion hazard rating. Data follows Isgrig (1969).

	Soil unit																			
Parcel	BaG	DoC	DsA	DsC	GuE	KeD	KeF2	KmF2	LdF	LnE2	NaD	NaE	NaF2	NaG2	PhC	PkC	RsC	SbF2	SbF3	SeG
36	-	-	-	-	-	-	39%	-	-	-	-	-	-	-	-	-	-	-	-	61%
37	-	-	-	-	-	-	-	-	-	-	-	-	1%	-	-	-	-	-	-	99%
38	-	-	-	-	-	-	-	14%	-	-	-	-	85%	-	-	-	-	-	-	1%
39	-	-	-	-	-	-	-	59%	5%	-	-	-	7%	-	-	-	-	-	-	29%
40	18%	-	-	-	-	-	-	68%	-	-	-	-	-	-	-	-	-	-	-	14%
41	53%	-	-	-	-	-	11%	32%	-	-	-	-	-	-	-	-	-	-	-	4%
42	19%	-	-	-	-	-	-	79%	-	-	-	-	-	-	-	-	-	-	-	2%
43	13%	-	-	-	-	9%	22%	56%	-	-	-	-	-	-	-	-	-	-	-	-
44	-	-	-	-	-	-	85%	15%	-	-	-	-	-	-	-	-	-	-	-	-
45	77%	-	-	-	-	-	-	23%	-	-	-	-	-	-	-	-	-	-	-	-
46	78%	-	-	-	-	-	12%	2%	-	-	-	-	-	-	-	8%	-	-	-	-
47	45%	-	-	-	-	-	8%	47%	-	-	-	-	-	-	-	-	-	-	-	-
48	-	-	-	-	-	-	-	-	4%	-	-	-	29%	32%	-	-	-	7%	5%	23%
49	39%	-	-	-	-	-	3%	-	-	2%	3%	2%	51%	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	10%	-	13%	13%	57%	-	-	-	-	-	7%
51	3%	2%	11%	-	9%	-	-	-	-	68%	2%	5%	-	-	-	-	-	-	-	-
52	2%	-	-	-	-	-	-	-	-	-	3%	4%	7%	70%	-	-	-	-	-	14%
53	-	-	-	-	-	-	-	-	6%	-	-	5%	22%	1%	-	-	-	-	-	66%
54	-	-	-	-	-	-	-	-	2%	-	-	-	23%	-	-	-	-	-	-	75%
55	-	-	-	-	-	-	-	-	-	-	-	7%	-	-	-	-	-	-	-	93%
56	-	-	-	-	-	-	-	-	-	-	-	2%	45%	-	-	-	-	-	-	53%
57	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
58	73%	-	-	-	-	-	-	27%	-	-	-	-	-	-	-	-	-	-	-	-
59	74%	-	-	-	-	-	-	26%	-	-	-	-	-	-	-	-	-	-	-	-
60	93%	-	-	-	-	-	-	6%	-	-	-	-	-	-	-	-	-	-	-	1%
61	17%	-	-	-	-	26%	4%	3%	-	-	-	-	-	-	-	-	-	-	-	50%
62	2%	-	1%	-	-	10%	4%	13%	-	-	-	-	-	-	-	-	-	-	-	70%
63	-	-	-	44%	-	17%	35%	4%	-	-	-	-	-	-	-	-	-	-	-	-
64	-	-	2%	11%	-	-	48%	-	-	-	-	-	-	-	13%	-	26%	-	-	-
65	5%	-	1%	-	-	-	4%	35%	-	-	-	11%	7%	-	-	-	-	-	-	37%
66	-	-	-	-	-	-	-	10%	-	-	-	-	-	-	-	-	-	-	-	90%
67	-	-	-	-	-	-	-	59%	-	-	-	-	-	-	-	-	-	-	-	41%
68	16%	-	-	-	-	1%	-	11%	-	-	-	-	-	-	-	-	-	-	-	72%

Soil erosion hazard	
Very severe -----	
Severe ----------	
Very high --------	
High ----------	
Moderate -------	
Not specified ---	

Table 12. Soil unit, corresponding soil series, and soil erosion hazard rating for parcels in Fresno County. Data follows Arroues (2006).

Unit	Soil series	Erosion hazard
452	Milham sandy loam, 2 to 5 percent slopes	Moderate
641	Mercey-Delgado-Kettleman association, 5 to 15 percent slopes	Very high
643	Mercey-Delgado-Kettleman association, 15 to 30 percent slopes	Very high
709	Sagaser-Gaviota-Borreguero association, 50 to 75 percent slopes	Very high
711	Currymountain-Wisflat-Borreguero association, 30 to 75 percent slopes	Very high
714	Gaviota-Borreguero-Rock outcrop complex, 40 to 75 percent slopes	Very high
783	Vaquero-Altamont complex, 50 to 75 percent slopes	Very high

Table 13. Percentage of soil series by area present within parcels in San Benito County and their soil erosion hazard rating. Data follows Arroues (2006).

	---------- Soil unit ----------						
Parcel	452	641	643	709	711	714	783
69	-	-	-	-	99%	1%	-
70	-	-	-	-	100%	-	-
71	1%	-	18%	-	81%	-	-
72	-	-	60%	-	40%	-	-
73	-	-	78%	-	22%	-	-
74	-	-	1%	-	99%	-	-
75	-	100%	-	-	-	-	-
76	-	-	-	-	96%	4%	-
77	-	-	-	1%	18%	58%	23%
78	-	-	-	-	-	23%	77%
79	-	-	100%	-	-	-	-

Soil erosion hazard	
Very severe -----	
Severe ----------	
Very high --------	
High ----------	
Moderate -------	
Not specified ---	

F. Water Quality

Based on United States hydrography data, there are thirteen segments of named streams that intersect with the parcels of federal mineral estate that are proposed for competitive oil and gas leasing. As illustrated on Maps 1 - 3 in Appendix A, Units 1, 2 and 3 also contain numerous unnamed intermittent creeks and/or drainages. However, none of the parcels with unnamed intermittent creeks and/or drainages contain surface water year round. A spring is mapped on Parcel #53. There are also records of two wells on Parcel #53 and there are other springs (i.e. Larious Springs) in the area adjacent to Parcels #53 and #55.

All parcels are within watersheds governed by basin plans subject to Federal and state clean water acts. As such, potential lessees would be required to comply with all applicable Federal, State, and local laws, policies, and rules and regulations to protect both surface and groundwater.

Monterey County

As shown on Map 1 in Appendix A, four (4) segments of Hames Creek (intermittent) overlie the federal mineral estate proposed for competitive oil and gas lease sale. Two of these segments flow across Parcel #24, totaling 0.23 miles; and the other two segments cross Parcel #34, totaling 0.22 miles. The parcels in southern Monterey County are in the Salinas River watershed and play an important role in recharging fresh water aquifers. The watershed also supplies San Antonio Reservoir.

The United States Geologic Survey (USGS) investigated ground-water quality in the Monterey Bay and Salinas Valley from July through October 2005 as part of the California Ground-Water Ambient Monitoring and Assessment (GAMA) program. The USGS study focused on the Salinas Valley ground-water basin as defined by the California Department of Water Resources (DWR), and includes information from the Paso Robles Area Subbasin, as defined by the DWR Bulletin 118 (2003).

The USGS study analyzed ground-water samples for 270 constituents and water-quality indicators, including volatile organic compounds (VOCs), pesticides, pesticide degradates, and nutrients. The USGS study concluded that the greatest source of groundwater contamination comes from agriculture in the region.

San Benito County

As shown on Map 2 in Appendix A and Table 14 (below), eight (8) segments of named streams (or creeks) overlie the federal mineral estate proposed for competitive oil and gas lease sale in San Benito County. The East Fork of San Carlos Creek comprises four of the eight segments overlying proposed oil and gas leases in San Benito County. The named streams identified in Table 14 are in the San Carlos Creek and Vallecitos Creek watersheds.

Table 14 Named Streams on Proposed O&G Leases in San Benito County.

Parcel #	Stream Name	Status	Length (Miles)
48	Pinos Creek, Los	Intermittent	0.35
49	Vallecitos Creek	Intermittent	0.09
49	Pinos Creek, Los	Intermittent	0.44
55	Larious Creek	Perennial	0.34
68	East Fork San Carlos Creek	Perennial	0.95

Fresno County

As shown on Map 3 in Appendix A, one (1) segment of Beltran Creek (intermittent), totaling 0.7 miles, overlies the federal mineral estate proposed for competitive oil and gas lease sale.

G. Biological Resources Including Riparian and Wetlands

1. Vegetation Communities

Parcels in Monterey County contain a mosaic of dry upland vegetation communities including tall shrubland (chaparral), low shrubland (chaparral), grassland, and oak woodland, in decreasing order of abundance (Table 15). Parcels in San Benito County contain vegetation communities including grassland, low shrubland, tall shrubland, oak-conifer woodland, and saltbrush, in decreasing order of abundance (Table 16). Parcels in Fresno County contain vegetation communities including grassland, oak-conifer woodland, low shrubland, tall shrubland, and saltbrush (Table 17). Most parcels in Monterey, San Benito, and Fresno Counties are well-vegetated; however, some parcels in San Benito County have significant areas that are poorly-vegetated or have actively eroding badlands. Those parcels include 41, 45, 46, 47, 51. 57, 58, 60, 61, and 62.

Table 15. Primary vegetation types and their percentage of cover on parcels in Monterey County. Vegetation series follow Sawyer and Keeler-Wolf (1995). Percentage cover estimated from Google Earth (2012) imagery.

	Grassland	Oak woodland	Low shrubland	Tall shrubland
VEGETATION SERIES	California annual grassland	Blue oak	California sagebrush	Chamise
		Valley oak	California buckwheat	Eastwood manzanita
			California sagebrush-California buckwheat	Chamise-Eastwood manzanita
			Black sage	Scrub oak
			Chamise-black sage	Scrub oak - chamise
				Knobcone pine
				Foothill pine
PARCEL				
1	5%	5%	25%	65%
2	5%	·	55%	40%
3	5%	·	80%	15%
4	15%	10%	25%	50%
5	5%	·	70%	25%
6	·	5%	50%	45%
7	·	·	30%	70%
8	·	·	60%	40%
9	·	·	70%	30%
10	·	·	40%	60%
11	60%	·	·	40%
12	·	5%	85%	10%
13	·	·	40%	60%
14	·	·	30%	70%
15	·	·	65%	35%
16	·	15%	15%	70%
17	·	·	10%	90%
18	·	·	10%	90%
19	·	·	40%	60%
20	30%	·	35%	35%
21	·	·	30%	70%
22	·	10%	45%	45%
23	·	·	40%	60%
24	·	·	20%	80%
25	25%	·	40%	35%
26	15%	10%	·	75%
27	25%	·	25%	50%
28	·	·	70%	30%
29	15%	·	·	85%
30	5%	·	15%	80%
31	5%	·	·	95%
32	20%	·	25%	55%
33	50%	·	20%	30%
34	75%	·	5%	20%
35	10%	·	10%	80%

Table 16. Primary vegetation types and their percentage of cover on parcels in San Benito County. Vegetation series follow Sawyer and Keeler-Wolf (1995). Percentage cover estimated from Google Earth (2012) imagery.

	Grassland	Oak - Conifer woodland	Low shrubland	Tall shrubland	Saltbrush
VEGETATION SERIES	California annual grassland	Blue oak	California buckwheat	Chamise	Shadscale
		California juniper	California sagebrush	Chamise-wedgeleaf ceanothus	
		Foothill pine	California sagebrush-California buckwheat	Scrub oak	
				Scrub oak - chamise	
				Foothill pine	
PARCEL					
36	30%	20%	20%	30%	·
37	10%	·		90%	·
38	80%	20%	·	·	·
39	65%	·	20%	15%	·
40	45%	40%	15%	·	·
41	70%	15%	10%	5%	·
42	70%	·	30%	·	·
43	70%	10%	20%	·	·
44	90%	5%	5%	·	·
45	80%	5%	15%	·	·
46	85%	·	15%	·	·
47	90%	·	10%	·	·
48	10%	10%	·	80%	·
49	60%	30%	5%	5%	·
50	40%	45%	10%	5%	·
51	100%	·	·	·	·
52	20%	·	·	80%	·
53	20%	·	10%	70%	·
54	30%	5%	5%	60%	·
55	10%	·	40%	50%	·
56	25%	10%	·	65%	·
57	80%	·	10%	·	10%
58	70%	·	10%	·	20%
59	80%	·	10%	·	10%
60	80%	5%	10%	·	5%
61	60%	25%	5%	·	10%
62	40%	30%	20%	·	10%
63	100%	·	·	·	·
64	100%	·	·	·	·
65	50%	10%	·	40%	·
66	20%	5%	5%	70%	·
67	30%	20%	20%	30%	·
68	20%	·	30%	50%	·

Table 17. Primary vegetation types and their percentage of cover on parcels in Fresno County. Vegetation series follow Sawyer and Keeler-Wolf (1995). Percentage cover estimated from Google Earth (2012) imagery.

VEGETATION SERIES / PARCEL	Grassland	Oak - Conifer woodland	Low shrubland	Tall shrubland	Saltbrush/
	California annual grassland	Blue oak	California buckwheat	Chamise	Shadscale
		California juniper	California sagebrush	Chamise-wedgeleaf ceanothus	
		Foothill pine	California sagebrush-California buckwheat	Scrub oak	
				Scrub oak - chamise	
				Foothill pine	
69	30%	·	50%	·	20%
70	30%	40%	30%	·	·
71	65%	20%	15%	·	·
72	75%	25%	·	·	·
73	90%	10%	·	·	·
74	40%	30%	20%	·	10%
75	100%	·	·	·	·
76	40%	20%	40%	·	·
77	25%	10%	40%	25%	·
78	60%	10%	·	30%	·
79	95%	5%	·	·	·

2. Special Status Species

This section briefly describes all the species listed under the Federal or California State Endangered Species Acts, as well as BLM sensitive species and other species considered by the State of California to have heightened conservation status that are known or have potential to occur on the parcels being considered for oil and gas leasing in this EA.

Special status species with potential to occur on the parcels being considered for oil and gas leasing in Monterey County are identified first (Table 18), followed by accounts of species with potential to occur on the parcels being considered for oil and gas leasing in San Benito County (Table 19) and Fresno County (Table 20). Past and present actions that effect Federally-listed species identified in Tables 18-20 are described under the accounts for Federally threatened and endangered species that are known or likely present on the parcels being considered for oil and gas leasing in this EA.

Table 18. Special Status Animal Species -- Monterey County (Unit 1)

Species	Occurrence	Federal status	State status	BLM status
Invertebrates				
Vernal Pool fairy shrimp (*Branchinecta lynchi*)	potential	T	-	-
Amphibians				
Arroyo toad (*Anaxyrus californicus*)	potential	T	SSC	-
California Tiger Salamander (*Ambystoma californiense*)	potential	T	T	-
California red-legged frog (*Rana draytonii*)	potential	T	SSC	-
Western spadefoot toad (*Spea hammondii*)	potential	-	SSC	S
Reptiles				
San Joaquin coachwhip (*Masticophis flagellum ruddocki*)	likely present	-	SSC	-
Blainville's horned lizard (*Phrynosoma blainvillii)*	likely present	-	SSC	-
Southwestern pond turtle (*Actinemys marmorata pallida*)	potential	-	SSC	S
Silvery legless lizard (*Anniella pulchra pulchra*)	likely present	-	SSC	
Two-striped garter snake (*Thamnophis hammondii*)	potential	-	SSC	S
Birds				
Burrowing owl (*Athene cunicularia*)	likely present	-	SSC	S
Least Bell's vireo (*Vireo bellii*)	potential	E	E	-
California condor (*Gymnogyps californianus*)	potential	E	E	
Tricolored blackbird (*Agelaius tricolor*)	potential	-	SSC	S
Golden eagle (*Aquila chrysaetos*)	potential	-	-	S
Bald eagle (*Haliaeetus leucocephalus*)	potential	delisted	E,FP	
American peregrine falcon (*Falco peregrinus anatum*)	potential	delisted	E,FP	

Species	Occurrence	Federal status	State status	BLM status
Mammals				
San Joaquin Kit fox (*Vulpes macrotis*)	potential	E	E	-
American badger (*Taxidea taxa*)	potential	-	SSC	-
Yuma Myotis (*Myotis yumanensis*)	potential	-	-	S
Western Small-footed Myotis (*Myotis ciliolabrum*)	potential	-	-	S
Long-eared Myotis (*Myotis evotis*)	potential	-	-	S
Fringed Myotis (*Myotis thysanodes*)	potential	-	-	S
Western mastiff-bat (*Eumops perotis californicus*)	potential	-	-	S
Townsend's western big-eared bat (*Plecotus townsendii*)	potential	-	SSC	S
Pallid bat (*Antrozous pallidus*)	potential	-	SSC	S

Key: Status:
T = threatened
E = endangered

SSC = state species of concern
FP = fully protected
S = sensitive

Occurrence:
Potential = within range of species.
Likely present = 'Potential' AND suitable habitat conditions are present AND EITHER historically documented on site (> 10 ya) OR known occurrence near (< 2 miles) site.

Known = CNDDB and/or other BLM record of recent (<10 ya) occurrence on site.

San Joaquin kit fox (*Vulpes macrotis mutica*) was historically widespread in the Salinas Valley but documented sightings have decreased over the past five decades such that virtually no individuals have been observed outside of Camp Roberts since the 1970's. The California Natural Diversity Database (CNDDB) also shows two records of sightings near the Salinas River from the early 1970's. The CNDDB shows two additional occurrences near the Salinas River from 1999 and 2002 that are approximately 5 miles east of US Highway 101. Within Camp Roberts, no kit foxes have been observed since 2007 (M. Moore, Camp Roberts biologist, pers. comm.. to BLM, 2011).

The San Joaquin kit fox was listed as Federally Endangered without critical habitat designation in 1967 and is listed under the CESA as Threatened. Loss of native habitat to various kinds of agriculture (especially irrigated, row-cropping), and residential and commercial developments remain the principal threats to this species. A recovery plan for the species was approved in 1983, and it is further addressed in the 1998 Recovery Plan for Upland Species of the San Joaquin Valley (USRP). Within Table 5 and on p. 133 of the USRP, the Salinas Valley is identified as a satellite population.

Any kit foxes associated with the Salinas Valley satellite population would be most likely to inhabit grazed, non-irrigated grasslands, agricultural fields, orchards, or vineyards and remnant portions of native grasslands in the region. Although kit fox dens are typically found in loose-textured soils, it is not uncommon to find dens in nearly every soil type, particularly when interspersed with sandy-gravelly substrate.

All energy or other development proposals are infrequent and closely scrutinized by BLM's environmental review process to ensure protections for the San Joaquin kit fox are consulted upon with the USFWS and implemented as appropriate.

California condors (*Gymnogpys californianus*) was listed as Endangered on March 11, 1967; the California condor is critical habitat designated and listed by the State of California as Endangered. The California condor declined quickly over the past century; the last wild condor was captured in 1987 and the United States Fish and Wildlife Service (USFWS) has raised young birds in captivity and reintroduced them into the wild in western Monterey County, eastern San Luis Obispo County, and eastern Santa Barbara County in California.

This species occurred historically in the San Joaquin, Central Coast, San Benito, and Salinas management areas. The variety of threats faced by these birds included collection by Native Americans, shooting by later settlers, collisions with power lines, incidental poisoning (from coyote control programs) and other threats created by humans. In recent years, the leading threat appears to be from lead poisoning. The source of this toxin is from animal carcasses (such as dear and feral pigs) shot with lead bullets. Condors feeding on animals wounded by hunters ingest these lead bullets and are subsequently poisoned.

As noted above, the USFWS and the National Park Service have established condor release sites at the Pinnacles National Monument and the Los Padres National Forest in Monterey County. The condors released from these sites tend to concentrate their activities in the local region, but are gradually increasing their range throughout the central and southern California. All the proposed lease sale units in Monterey County are within the current range of the California condor.

Habitat for the California condor consists of arid foothills and mountains of southern and central California, and formerly included the San Joaquin Valley. Potential condor foraging and nesting habitat exists within and around the CCMA within the serpentine foothill pine-chaparral woodlands, southern ultramafic Jeffery pine forest, and non-serpentine areas. Recent deaths in the wild in California and Arizona were due to predation, collisions with wires, and unknown causes. Also, several of the California birds were treated for lead poisoning and were released.

The Joaquin Rocks have been reportedly used as perches, historically. Elsewhere on BLM-managed lands, considering the reintroduction efforts occurring within the planning area (Big Sur and Pinnacles National Monument) this species may forage, or much less likely, nest on BLM-administered lands.

California red-legged frogs (*Rana aurora draytonii)* were Federally listed as Threatened on May 23, 1996. The historic range of this species extended along the coast from the vicinity of Point Reyes National Seashore, Marin County, California, and inland from the vicinity of Redding, Shasta County, California, southward to northwestern Baja California, Mexico. Within the remaining distribution of the species, only isolated populations have been documented in the Sierra Nevada, northern Coast, and northern Transverse ranges. The species is believed to be extirpated from the southern Transverse and Peninsular ranges, but is still present in Baja California, Mexico.

California red-legged frogs occupy generalized slow-water habitats, including slow-moving streams, stock ponds and reservoirs.

The California red-legged frog has sustained a restriction in its geographic range in California as a result of several factors acting singly or in combination. Habitat loss and alteration, combined with over-exploitation and the introduction of exotic predators, were significant factors in its decline in the early to mid-1900s. It is threatened within its remaining range by a wide variety of human impacts, including urban encroachment, construction of reservoirs and water diversions, land conversions, industrial and non-industrial forest practices, introduction of exotic predators and competitors, livestock grazing, and habitat fragmentation.

The California red-legged frog was likely common in low-gradient riparian habitat throughout the Salinas Valley and surrounding hills. Red-legged frogs are known to occur in the Salinas River watershed and could be present on parcels in Unit 1 and Unit 3 that contain minor intermittent creeks and drainages. Although recent sightings of red-legged frogs in the vicinity of the proposed units are sparse or absent, red-legged frogs or their habitat are potentially present on or near the proposed units. Given the paucity of known occurrences in the region, the probability that red-legged frogs are actually present on or near the parcels is low.

The red-legged frog has limited potential to occur on the remaining parcels being considered for oil and gas leasing in this EA because ponds are not common in this rugged, stream-dominated terrain. There are, however, occasional stock ponds that have not been inventoried.

California tiger salamanders (*Ambystoma californiense*) was Federally listed throughout its range on August 4, 2004 as a Threatened species and is also listed as a California Species of Special Concern. The range is restricted to California in disjunct remnant vernal pool complexes in Sonoma and Santa Barbara counties, in vernal pool complexes and isolated ponds scattered mainly along narrow strips of rangeland on each side of the Central Valley from southern Colusa County south to northern Kern County, and in sag ponds and human-maintained stock ponds in the coast ranges from Suisun Bay south to the Temblor Range. It has been eliminated from an estimated 55 to 58 percent of its historic breeding sites and has lost an estimated 75 percent of its habitat.

The primary cause of the decline of California tiger salamander populations is the loss and fragmentation of habitat from human activities and the encroachment of non-native predators. Federal, State and local laws have not prevented past and ongoing losses of habitat. All of the estimated seven genetic populations of this species have been significantly reduced because of urban and agricultural development, land conversion, and other human-caused factors.

CTS are not documented in the lease sale area, although the units broadly fall within the range of the species. Populations in the north Salinas Valley have been compromised by the introduction of nonnative Eastern tiger salamanders, which hybridize with natives. The nearest known populations are in the rift valley to the east of the project area, which probably constitute the southwestern most populations of salamanders in the region (excepting the disjunct population near Santa Maria far to the south.

Least Bell's Vireos (*Vireo bellii pusillus*) was listed as Federally Endangered in 1986 and State Endangered in 1980. Federal "Critical Habitat" has been designated for upper Sweetwater Reservoir and immediately upstream habitat. The Least Bell's vireo primarily inhabits riparian woodlands, scrub, and thickets for breeding.

Population declines are due to urban and agricultural development, habitat alteration, and brood parasitism by the brown-headed cowbird. Rangewide, brown-headed cowbird control (trapping and nest monitoring) have resulted in a nearly 10-fold population expansion over the last decade.

The species is not present in the project area but the Draft Recovery Plan for the species includes a Salinas River population as a necessary criterion for delisting.

Table 19. Special Status Animal Species – San Benito County (Unit 2)

Species	Occurrence	Federal status	State status	BLM status
Invertebrates				
Vernal Pool fairy shrimp (*Branchinecta lynchi*)	potential	T	-	-
Amphibians				
Arroyo toad (*Anaxyrus californicus*)	potential	T	SSC	-
California Tiger Salamander (*Ambystoma californiense*)	potential	T	T	-
California red-legged frog (*Rana draytonii*)	potential	T	SSC	-
Reptiles				
Blunt-nosed leopard lizard (*Gambelia sila*)	likely present	E	E,FP	-
San Joaquin coachwhip (*Masticophis flagellum ruddocki*)	likely present	-	SSC	-
Blainville's horned lizard (*Phrynosoma blainvillii)*	likely present	-	SSC	-
Southwestern pond turtle (*Actinemys marmorata pallida*)	potential	-	SSC	S
Silvery legless lizard (*Anniella pulchra pulchra*)	likely present	-	SSC	
Two-striped garter snake (*Thamnophis hammondii*)	potential	-	SSC	S
Birds				
Burrowing owl (*Athene cunicularia*)	likely present	-	SSC	S
Least Bell's vireo (*Vireo bellii*)	potential	E	E	-
California condor (*Gymnogyps californianus*)	potential	E	E	
Tricolored blackbird (*Agelaius tricolor*)	potential	-	SSC	S
Golden eagle (*Aquila chrysaetos*)	potential	-	-	S
Bald eagle (*Haliaeetus leucocephalus*)	potential	delisted	E,FP	
American peregrine falcon (*Falco peregrinus anatum*)	potential	delisted	E,FP	

Species	Occurrence	Federal status	State status	BLM status
Mammals				
San Joaquin Kit fox (*Vulpes macrotis*)	potential	E	E	-
San Joaquin antelope squirrel (*Ammospermophilus nelson*)	likely present	-	T	-
Giant kangaroo rat (*Dipodomys ingens*)	likely present	E	E	-
San Joaquin pocket mouse (*Perognathus inornatus inornatus*)	potential	-	-	S
Short-nosed kangaroo rat (*Dipodomys nitratoides*)	likely present	-	SSC	S
American badger (*Taxidea taxa*)	potential	-	SSC	-
Yuma Myotis (*Myotis yumanensis*)	potential	-	-	S
Western Small-footed Myotis (*Myotis ciliolabrum*)	potential	-	-	S
Long-eared Myotis (*Myotis evotis*)	potential	-	-	S
Fringed Myotis (*Myotis thysanodes*)	potential	-	-	S
Western mastiff-bat (*Eumops perotis californicus*)	potential	-	-	S
Townsend's western big-eared bat (*Plecotus townsendii*)	potential	-	SSC	S
Pallid bat (*Antrozous pallidus*)	potential	-	SSC	S

San Joaquin kit fox foraging or dispersal habitat is widespread throughout the San Joaquin Management Area and the CNDDB shows records of multiple sightings near the Unit 2 parcels in San Benito County. Historically, San Joaquin kit foxes occurred throughout the San Joaquin Valley in several native plant communities including: Valley Sink Scrub, Valley Saltbush Scrub, Upper Sonoran Subshrub Scrub, and annual non-native and native grasslands.

Unit 2 falls completely within the Ciervo-Panoche Natural Area (CPNA) core recovery area identified in the USRP. Therefore conservation of fox populations and fox habitat in the area is a key requirement for downlisting, and eventually delisting, the species. USRP requires protection of 90% of existing potential habitat in the CPNA area for downlisting to occur.

The majority of habitat for the San Joaquin kit fox within the planning area does not have motorized public access and is “landlocked” by private lands. Motorized public access is extremely limited in the remainder of the planning area’s San Joaquin kit fox habitat of the

Panoche and Tumey Hills. This very limited motorized public access severely limits the number of human visitors to San Joaquin kit fox habitat within the planning area and greatly aids the protection of this species and conservation of its habitat.

Giant kangaroo rat (*Dipodomys ingens*) was listed as Federally Endangered in 1987 without critical habitat. They prefer annual grassland on gentle slopes of generally less than 10°, with friable, sandy-loam soils. However, most remaining populations are in poorer, marginal habitats, which include shrub communities on a variety of soil types and on slopes up to about 22°.

The population is currently fragmented into six major geographic units. The units located in the southern San Joaquin Valley are: the Panoche Hills in western Fresno County, the Kettleman Hills in Kings County; and western Kern County in the area of the Lokern, Elk Hills, and other uplands around McKittrick, Taft, and Maricopa. The major units are fragmented into more than 100 smaller populations, many of which are isolated by several miles of barriers such as steep terrain with plant communities unsuitable as habitat, or agricultural, industrial, or urban land without habitat for this species. Extant habitat is estimated to be 27,540 acres, about 2 percent of historical habitat.

Completion of Federal and State water projects resulted in rapid cultivation and irrigation of giant kangaroo rat habitat. Urban and industrial developments, petroleum and mineral exploration and extraction, new energy and water conveyance facilities, and construction of communication and transportation infrastructures continue to destroy habitat for giant kangaroo rats and increase the threats to the species by reducing and further fragmenting populations. Use of rodenticide-treated grain to control ground squirrels and kangaroo rats also may have contributed to the decline of giant kangaroo rats.

This species occurs on BLM-managed lands along the eastern margin of the Hollister Field Office from Panoche Hills on the north, south in scattered locations to the Kettleman Hills. GKR habitat is widespread throughout the San Joaquin Management Area and the CNDDB shows records of multiple sightings near the Unit 2 parcels in San Benito County. Unit 2 falls completely within the Ciervo-Panoche Natural Area (CPNA) core recovery area identified in the USRP. Therefore conservation of fox populations and fox habitat in the area is a key requirement for downlisting, and eventually delisting, the species. USRP requires protection of 90% of existing potential habitat in the CPNA area for downlisting to occur.

The majority of habitat for the giant kangaroo rat within the planning area does not have motorized public access and is “landlocked” by private lands such as those surrounding BLM-administered. Motorized public access is extremely limited in the remainder of the planning area’s giant kangaroo rat habitat of the Panoche and Tumey Hills. This very limited motorized public access severely limits the number of human visitors to giant kangaroo rat habitat within the planning area and greatly aids the protection of this species and conservation of its habitat.

All energy or other development proposals are infrequent and closely scrutinized by BLM's environmental review process to ensure protections for the giant kangaroo rat are consulted upon with the USFWS and implemented as appropriate.

BLM received a biological opinion from the USFWS requiring BLM to monitor this species' habitat to ensure that favorable conditions continue and to monitor for any significant adverse impacts due to livestock grazing or other land use activities.

Blunt-nosed leopard lizard (*Gambelia sila)* was Federally listed as an Endangered species on March 11, 1967. They inhabit semiarid grasslands, alkali flats, and washes and soils may be sandy, gravelly, loamy, or occasionally hardpan. Vegetation in which it occurs includes annual and perennial grasslands, and saltbush.

Loss of habitat to cultivation, petroleum and mineral extraction, ORV use, and construction of transportation, communications, and irrigation infrastructures has resulted in the endangerment of blunt-nosed leopard lizard populations. The main loss was due to farming. Collectively, development of former habitat has reduced and isolated the species into many small populations, scattered throughout portions of their historical geographic range. Existing threats to remaining populations include habitat disturbance, destruction, and fragmentation. Further decline may or may not result from insecticide and rodenticide spraying and drift.

The Blunt-Nosed leopard lizard (BNLL) is known to occur on BLM-administered lands in the San Joaquin MA. It occupies relatively level shrublands and grasslands, primarily from Panoche Hills southward. It can even be found on relatively level swales and ridgelines surrounded by much steeper ground. BNLL has been documented through multiple observances in the immediate area of the parcels in Unit 2.

The majority of habitat for the blunt nosed leopard lizard on Federal mineral estate does not have motorized public access and is "landlocked" by private lands such as those surrounding BLM-administered. Motorized public access is extremely limited in the remainder of the planning area's blunt nosed leopard lizard habitat of the Panoche and Tumey Hills. This very limited motorized public access severely limits the number of human visitors to blunt nosed leopard lizard habitat within the planning area and greatly aids the protection of this species and conservation of its habitat. All energy or other development proposals are infrequent and closely scrutinized by BLM's environmental review process to ensure protections for the blunt nosed leopard lizard are consulted upon with the USFWS and implemented as appropriate.

California red-legged frogs are broadly distributed in the Coast Ranges but sparse to nonexistent in San Joaquin Valley draining watersheds. No sightings are known from the region of any of these parcels and red-legged frogs are not considered likely to occur there.

California tiger salamanders were not historically known to occur in the Fresno County portion of the proposed lease sale area, although the parcels broadly fall within the range of the species. The species has been documented in the general region of Unit 2 in Panoche Valley to the north but has never been recorded in Vallecitos.

Table 20. Special Status Animal Species -- Fresno County (Unit 3)

Species	Occurrence	Federal status	State status	BLM status
Invertebrates				
Vernal Pool fairy shrimp (*Branchinecta lynchi*)	potential	T	-	-
Amphibians				
California Tiger Salamander (*Ambystoma californiense*)	potential	T	T	-
California red-legged frog (*Rana draytonii*)	potential	T	SSC	-
Western spadefoot toad (*Spea hammondii*)	potential	-	SSC	S
Reptiles				
Blunt-nosed leopard lizard (*Gambelia sila*)	likely present	E	E,FP	-
San Joaquin coachwhip (*Masticophis flagellum ruddocki*)	likely present	-	SSC	-
Blainville's horned lizard (*Phrynosoma blainvillii)*	likely present	-	SSC	-
Silvery legless lizard (*Anniella pulchra pulchra*)	likely present	-	SSC	-
Southwestern pond turtle (*Emys marmorata*)	potential	-	SSC	S
Birds				
Burrowing owl (*Athene cunicularia*)	likely present	-	SSC	S
Mountain plover (*Charadrius montanus*)	potential	proposed	SSC	S
Mammals				
San Joaquin Kit fox (*Vulpes macrotis*)	likely present	E	T	-
American badger (*Taxidea taxus*)	likely present	-	SSC	-

Species	Occurrence	Federal status	State status	BLM status
San Joaquin antelope squirrel (*Ammospermophilus nelson*)	likely present	-	T	-
Giant kangaroo rat (*Dipodomys ingens*)	likely present	E	E	-
San Joaquin pocket mouse (*Perognathus inornatus inornatus*)	potential	-	-	S
Short-nosed kangaroo rat (*Dipodomys nitratoides*)	likely present	-	SSC	S
Yuma Myotis (*Myotis yumanensis*)	potential	-	-	S
Western Small-footed Myotis (*Myotis ciliolabrum*)	potential	-	-	S
Long-eared Myotis (*Myotis evotis*)	potential	-	-	S
Fringed Myotis (*Myotis thysanodes*)	potential	-	-	S
Western mastiff-bat (*Eumops perotis californicus*)	potential	-	-	S
Townsend's western big-eared bat (*Plecotus townsendii*)	potential	-	SSC	S
Pallid bat (*Antrozous pallidus*)	potential	-	SSC	S

Key:

Status:
T = threatened
E = endangered

Occurrence:
Potential = within range of species.
Likely present = 'Potential' AND suitable habitat conditions are present AND EITHER historically documented on site (> 10 ya) OR known occurrence near (< 2 miles) site.

Known = CNDDB and/or other BLM record of recent (<10 ya) occurrence on site.

SSC = state species of concern
FP = fully protected
S = sensitive

San Joaquin kit fox foraging or dispersal habitat is widespread throughout the San Joaquin Management Area and the CNDDB shows records of multiple sightings near the Unit 3 parcels in Fresno County. Historically, San Joaquin kit foxes occurred throughout the San Joaquin Valley in several native plant communities including: Valley Sink Scrub, Valley Saltbush Scrub, Upper Sonoran Subshrub Scrub, and annual non-native and native grasslands.

Unit 3 falls loosely within the Kettleman Hills satellite recovery area identified in the USRP. Therefore conservation of fox populations and fox habitat in the area is a key requirement for

delisting the species. USRP requires protection of 80% of existing potential habitat in the Kettleman Hills area for delisting to occur.

The majority of habitat for the San Joaquin kit fox within the planning area does not have motorized public access and is "landlocked" by private lands such as those surrounding BLM-administered lands in the Ciervo Hills, Monocline Ridge, Cantua Creek watershed, Jacalitos Hills, Kettlemen Hills, and Kreyenhagen Hills. Motorized public access is extremely limited in the remainder of the planning area's San Joaquin kit fox habitat of the Panoche and Tumey Hills. This very limited motorized public access severely limits the number of human visitors to San Joaquin kit fox habitat within the planning area and greatly aids the protection of this species and conservation of its habitat.

Giant kangaroo rat (*Dipodomys ingens*) was listed as Federally Endangered in 1987 without critical habitat. They prefer annual grassland on gentle slopes of generally less than 10°, with friable, sandy-loam soils. However, most remaining populations are in poorer, marginal habitats, which include shrub communities on a variety of soil types and on slopes up to about 22°.

The population is currently fragmented into six major geographic units. The units located in the southern San Joaquin Valley are: the Panoche Hills in western Fresno County, the Kettleman Hills in Kings County; and western Kern County in the area of the Lokern, Elk Hills, and other uplands around McKittrick, Taft, and Maricopa. The major units are fragmented into more than 100 smaller populations, many of which are isolated by several miles of barriers such as steep terrain with plant communities unsuitable as habitat, or agricultural, industrial, or urban land without habitat for this species. Extant habitat is estimated to be 27,540 acres, about 2 percent of historical habitat.

Completion of Federal and State water projects resulted in rapid cultivation and irrigation of giant kangaroo rat habitat. Urban and industrial developments, petroleum and mineral exploration and extraction, new energy and water conveyance facilities, and construction of communication and transportation infrastructures continue to destroy habitat for giant kangaroo rats and increase the threats to the species by reducing and further fragmenting populations. Use of rodenticide-treated grain to control ground squirrels and kangaroo rats also may have contributed to the decline of giant kangaroo rats.

This species occurs on BLM-managed lands along the eastern margin of the Hollister Field Office from Panoche Hills on the north, south in scattered locations to the Kettleman Hills. GKR is potentially in Unit 4, although it appears to fall into a large gap in the known distribution of the species, rendering its presence unlikely. The CNDDB records do not show any occurrences of the species within 10 miles of the parcels being considered for oil and gas leasing.

The majority of habitat for the giant kangaroo rat within the planning area does not have motorized public access and is "landlocked" by private lands such as those surrounding BLM-administered lands in the Ciervo Hills, Monocline Ridge, Cantua Creek watershed, Jacalitos Hills, Kettlemen Hills, and Kreyenhagen Hills. Motorized public access is extremely limited in the remainder of the planning area's giant kangaroo rat habitat of the Panoche and Tumey Hills. This very limited motorized public access severely limits the number of human visitors to giant kangaroo rat habitat within the planning area and greatly aids the protection of this species and conservation of its habitat. All energy or other development proposals are infrequent and closely scrutinized by BLM's environmental review process to ensure protections for the giant kangaroo rat are consulted upon with the USFWS and implemented as appropriate.

BLM received a biological opinion from the USFWS requiring BLM to monitor this species' habitat to ensure that favorable conditions continue and to monitor for any significant adverse impacts due to livestock grazing or other land use activities.

Blunt-nosed leopard lizard (*Gambelia sila)* was Federally listed as an Endangered species on March 11, 1967. They inhabit semiarid grasslands, alkali flats, and washes and soils may be sandy, gravelly, loamy, or occasionally hardpan. Vegetation in which it occurs includes annual and perennial grasslands, and saltbush.

Loss of habitat to cultivation, petroleum and mineral extraction, ORV use, and construction of transportation, communications, and irrigation infrastructures has resulted in the endangerment of blunt-nosed leopard lizard populations. The main loss was due to farming. Collectively, development of former habitat has reduced and isolated the species into many small populations, scattered throughout portions of their historical geographic range. Existing threats to remaining populations include habitat disturbance, destruction, and fragmentation. Further decline may or may not result from insecticide and rodenticide spraying and drift.

The Blunt-Nosed leopard lizard (BNLL) is known to occur on BLM-administered lands in the San Joaquin MA. It occupies relatively level shrublands and grasslands, primarily from Panoche Hills southward. It can even be found on relatively level swales and ridgelines surrounded by much steeper ground.

BNLL has been documented through multiple observances in the immediate area of all the parcels in Unit 3. The majority of habitat for the blunt nosed leopard lizard on Federal mineral estate does not have motorized public access and is "landlocked" by private lands such as those surrounding BLM-administered lands in the Ciervo Hills, Monocline Ridge, Cantua Creek watershed, Jacalitos Hills, Kettlemen Hills, and Kreyenhagen Hills. Motorized public access is extremely limited in the remainder of the planning area's blunt nosed leopard lizard habitat of the Panoche and Tumey Hills. This very limited motorized public access severely limits the number of human visitors to blunt nosed leopard lizard habitat within the planning area and greatly aids the protection of this species and conservation of its habitat. All energy or other

development proposals are infrequent and closely scrutinized by BLM's environmental review process to ensure protections for the blunt nosed leopard lizard are consulted upon with the USFWS and implemented as appropriate.

California red-legged frogs are broadly distributed in the Coast Ranges but sparse to nonexistent in San Joaquin Valley draining watersheds. No sightings are known from the region of these parcels and red-legged frogs are not considered likely to occur there.

California tiger salamanders were not historically known to occur in Fresno County portion of the proposed lease sale area, although the parcels broadly fall within the range of the species.

Special Status Plant Species – Monterey County (Unit 1)

Listed Plant Species. No federally-listed plant species are known or suspected to have the potential to occur on Parcels 1 - 34 in Monterey County based upon CNDDB data and proximity of previously recorded occurrences of the species to the parcels. No surveys have been conducted for Federally-listed plant species on the parcels being considered for oil and gas leasing in this EA.

Sensitive Plant Species. Six BLM sensitive plant species have been identified as having potential to occur on Parcels 1 - 34 based upon CNDDB (2012) data and proximity of previously recorded occurrences of the species to the parcels (Table 21). Those species include Carmel Valley bush mallow (*Malacothamnus palmeri* var. *involucratus*), San Antonio collinsia (*Collinsia antonina*), prickly spineflower (*Chorizanthe rectispina*), Hardham's evening primrose (*Camissoniopsis hardhamiae*), Jolon clarkia (*Clarkia jolonensis*), and pale yellow layia (*Layia heterotricha*). Parcel 15 is known to contain Carmel Valley bush mallow (CNDDB 2012). Parcel 16 is known to contain San Antonio collinsia (CNDDB 2012). Although each parcel contains habitat with the range of conditions required to support most or all of the identified BLM sensitive plant species, no surveys been conducted for BLM sensitive plant species on the parcels being considered for oil and gas leasing in this EA.

Table 21. BLM sensitive plant species that are known to occur or may occur on the Monterey County parcels.

Species	Common name	Family	Status	Habitat
Malacothamnus palmeri var. *involucratus*	Carmel Valley bush mallow	Malvaceae	CRPR 1B.2	Grasslands
Collinsia antonina	San Antonio collinsia	Plantaginaceae	CRPR 1B.2	Open chaparral, woodland
Chorizanthe rectispina	prickly spineflower	Polygonaceae	CRPR 1B.3	Chaparral, woodland
Camissoniopsis hardhamiae	Hardham's evening primrose	Onagraceae	CRPR 1B.2	Woodland; Sandy soils
Clarkia jolonensis	Jolon clarkia	Onagraceae	CRPR 1B.2	Woodland
Layia heterotricha	pale yellow layia	Asteraceae	CRPR 1B.1	Grasslands; Clay soils

Special Status Plant Species – San Benito County (Unit 2)

Listed Plant Species. No federally-listed plant species are known to occur on Parcels 36 – 68 in San Benito County based upon CNDDB data and proximity of previously recorded occurrences of the species to the parcels.

San Joaquin woolly-threads (*Monolopia congdonii*) is a woolly, multi-branched, annual forb in the sunflower (Asteraceae) family (USFWS 1998). The species consists of a rosette of trailing stems up to 18 inches long bearing densely matted hairs. Numerous tiny yellow flower heads occur clustered at stem tips. San Joaquin woolly-threads is endemic to the San Joaquin Valley. The species is known to occur in the foothills and associated local valleys at the western margin of the San Joaquin Valley from Panoche Hills (Fresno County) to Carrizo Plain (San Luis Obispo County) and Cuyama Valley (Santa Barbara County), as well as the very southern end of the San Joaquin valley floor between the cities of Taft and Bakersfield (Kern County). The species was Federally-listed Endangered in 1990 with primary threats cited as habitat loss due to agriculture, oil development, and urban development. San Joaquin woolly-threads grows in open grassland, usually where invasive annual grassland cover is reduced. Soils are typically silty or sandy loam.

San Joaquin woolly threads (*Monolopia congdonii*) has low to moderate potential to occur on the parcels due to the presence of potential habitat (grassland; sandy soils) and close proximity of the parcels to the current known range (San Joaquin Valley) of the species. Although each parcel contains habitat with the range of conditions required to support San Joaquin woolly threads, no surveys have been conducted for that species or other federally-listed plant species on the parcels being considered for oil and gas leasing in this EA.

Sensitive Plant Species. Five BLM sensitive plant species have been identified as having potential to occur on Parcels 36 - 38 based upon CNDDB (2012) data and proximity of previously recorded occurrences of the species to the parcels **(**Table 22). Those species include pale yellow layia (*Layia heterotricha*), round leaved filaree (*California macrophylla*), Hall's tarplant (*Deinandra halliana*), golden madia (*Madia radiata*), and Panoche pepper grass (*Lepidium jaredii* ssp. *album*). Round leaved filaree is known to occur on Parcel 43 (CNDDB 2012). Panoche pepper grass is known to occur on Parcel 65 (CNDDB 2012). Although each parcel contains habitat with the range of conditions required to support BLM sensitive plant species, no surveys been conducted for BLM sensitive plant species on the parcels being considered for oil and gas leasing in this EA.

Table 22. Federally-listed and BLM sensitive plant species that are known to occur or may occur on the San Benito County parcels.

Species	Common name	Family	Status	Habitat
Monolopia congdonii	San Joaquin woolly threads	Asteraceae	Fed.-listed Endangered	Grasslands; Sandy soils
Layia heterotricha	pale yellow layia	Asteraceae	CRPR 1B.1	Grasslands; Clay soils
California macrophylla	round leaved filaree	Geraniaceae	CRPR 1B.1	Grasslands; Clay soils
Deinandra halliana	Hall's tarplant	Asteraceae	CRPR 1B.1	Grasslands; Floodplains; Clay soils
Madia radiata	golden madia	Asteraceae	CRPR 1B.1	Grasslands; Slopes
Lepidium jaredii ssp. *album*	Panoche pepper grass	Brassicaceae	CRPR 1B.2	Grasslands; Clay soils

Special Status Plant Species – Fresno County (Unit 3)

Listed Plant Species. California jewelflower (*Caulanthus californicus*) is a rosetted, annual forb in the mustard (Brassicaceae) family (USFWS 1998). The species consists of a basal rosette of leaves bearing a multi-branched inflorescence up to 20 inches tall bearing many white flowers with maroon tips. California jewelflower is endemic to the San Joaquin Valley. The species is known to occur at the western margin of the San Joaquin valley at Kreyenhagen Hills (Fresno County), Carrizo Plain (San Luis Obispo County), and Santa Barbara Canyon/Cuyama Valley (Santa Barbara County). The species was Federally-listed Endangered in 1990 with primary threats cited as habitat loss due to agriculture, oil development, and urban development. California jewelflower grows in open grassland, usually where invasive annual grassland cover is locally reduced. Soils are typically silty or sandy loam.

An extant population of California jewelflower is known to occur on the southern, central portion of Parcel 72 in Fresno County. This population was discovered by the BLM in 1992 and is referred to as the "Weather Station" population and is currently designated occurrence number 1 (suboccurrences 1.1, 1.2, 1,3, and 1.4) within the BLM Hollister Field Office Area. Plant numbers at occurrence 1 have fluctuated between 0 (severe drought) and 1150 plants since its discovery. In recent years, less than 100 plants per year have been observed. It is believed that livestock grazing suppression may be adversely impacting the species and at present, appears to be the greatest threat to this occurrence. All other parcels (69 - 71 and 73 – 79) have moderate to high potential to contain habitat for California jewelflower. Surveys have been conducted for California jewelflower on some, but not all of the parcels being considered for oil and gas leasing in this EA.

San Joaquin woolly-threads (*Monolopia congdonii*) is a woolly, multi-branched, annual forb in the sunflower (Asteraceae) family (USFWS 1998). The species consists of a rosette of trailing stems up to 18 inches long bearing densely matted hairs. Numerous tiny yellow flower heads occur clustered at stem tips. San Joaquin woolly-threads is endemic to the San Joaquin Valley.

The species is known to occur in the foothills and associated local valleys at the western margin of the San Joaquin Valley from Panoche Hills (Fresno County) to Carrizo Plain (San Luis Obispo County) and Cuyama Valley (Santa Barbara County), as well as the very southern end of the San Joaquin valley floor between the cities of Taft and Bakersfield (Kern County). The species was Federally-listed Endangered in 1990 with primary threats cited as habitat loss due to agriculture, oil development, and urban development. San Joaquin woolly-threads grows in open grassland, usually where invasive annual grassland cover is reduced. Soils are typically silty or sandy loam.

San Joaquin woolly threads (*Monolopia congdonii*) has low to moderate potential to occur on the parcels due to the presence of potential habitat (grassland; sandy soils) and close proximity of the parcels to the current known range (San Joaquin Valley) of the species. Surveys have been conducted for San Joaquin woolly threads on some, but not all of the parcels being considered for oil and gas leasing in this EA.

Sensitive Plant Species. Five BLM sensitive plant species have been identified as having potential to occur on Parcels 69 - 79 based upon CNDDB (2012) data and proximity of previously recorded occurrences of the species to the parcels (Table 23). Those species include pale yellow layia (*Layia heterotricha*), round leaved filaree (*California macrophylla*), Hall's tarplant (*Deinandra halliana*), golden madia (*Madia radiata*), and Panoche pepper grass (*Lepidium jaredii* ssp. *album*). Surveys have been conducted for BLM sensitive plant species on some, but not all of the parcels being considered for oil and gas leasing in this EA.

Table 23. Federally-listed and BLM sensitive plant species that are known to occur or may occur on the Fresno County parcels.

Species	Common name	Family	Status	Habitat
Caulanthus californicus	California jewelflower	Brassicaceae	Fed.-listed Endangered	Grasslands; Sandy soils
Monolopia congdonii	San Joaquin woolly threads	Asteraceae	Fed.-listed Endangered	Grasslands; Sandy soils
Layia heterotricha	pale yellow layia	Asteraceae	CRPR 1B.1	Grasslands; Clay soils
California macrophylla	round leaved filaree	Geraniaceae	CRPR 1B.1	Grasslands; Clay soils
Deinandra halliana	Hall's tarplant	Asteraceae	CRPR 1B.1	Grasslands; Floodplains; Clay soils
Madia radiata	golden madia	Asteraceae	CRPR 1B.1	Grasslands; Slopes
Lepidium jaredii ssp. *album*	Panoche pepper grass	Brassicaceae	CRPR 1B.2	Grasslands; Clay soils

3. Riparian and Wetland Habitat

In the Monterey County parcels, the only perennial or major intermittent creek on any of the parcels is Hames Creek. The named streams overlying proposed oil and gas leases in San Benito County are in the San Carlos Creek and Vallecitos Creek watersheds. A spring is mapped on Parcel 53 in San Benito County. The Fresno County Parcel #77 includes a small reach of Beltran

Creek. Although many of the parcels contain minor intermittent creeks and/or drainages. Habitat in these drainages is composed of seasonally dry creek bed interspersed with seasonal instream pools. No permanent pooling is likely to occur in any of these drainages. No significant presence of vegetation specific to riparian zones is expected to occur in any of the drainages. The main access to the parcels would be expected to stem from existing roads.

H. Cultural Resources & Native American Values

The lease parcels within the Units identified for the proposed action fall within three culturally and archeologically distinct territories: the Salinan Indians for southern Monterey County, the Ohlone/Coastanoan Indians for San Benito County, and the Southern San Joaquin Valley Yokuts Indians for Fresno County (Heizer 1978). Prehistoric archeological sites to be expected in these regions include: bedrock mortar and millingstone food processing stations, lithic scatters and quarries, camp or village sites, and cemeteries or burial sites. From the historic era to modern times, locations of the proposed lease parcels have been subject to oil field production as well as livestock and agricultural operations. Historic properties occurring in the area may include facilities associated with the early phases of agricultural and/or oil field development.

In Monterey County, approximately 440 acres of BLM surface estate ("Public Domain" from Table 1, Alternative 1) within the APE have been inventoried for cultural resources with negative findings.

In San Benito County, approximately 790 acres BLM surface estate ("Public Domain" from Table 2, Alternative 1) within the APE has been inventoried for cultural resources. An additional 1000 acres was also inventoried and disposed of by the BLM while retaining subsurface minerals interests. All survey findings were negative save one recorded archeological site (CA-SBn-196) within the APE located in Unit 52; a possible prehistoric-era rockshelter with no observed cultural or artifactual material.

In Fresno County, none of the Units selected for the proposed action have been inventoried for cultural resources and there are no known or previously recorded archeological resources within the APE (Table 3, Alternative 1). There are 6 reported prehistoric archeological resources within ½ mile of the selected Units but occur along creek or stream channels outside and away from the proposed APE.

Previous tribal consultation efforts for proposed oil and gas lease sales in Monterey, San Benito, and Fresno Counties have occurred on a sale-by-sale basis. For example, the proposed June 2009 oil and gas lease sale consultation was completed for locations in Monterey County (similar to the this years' proposed action), including email, phone calls, and certified letters containing a description and map showing proposed oil and gas lease sale parcel locations. In the certified

letters, the BLM requested information regarding sites of traditional cultural value which may lie within the boundaries of the listed lease sale parcels. No concerns were expressed by these groups or individuals as a result of this consultation except for the Salinan Tribe of Monterey, San Luis Obispo, and San Benito Counties. Primary consultation dialogue occurred through the tribe's Traditional Lead which identified several areas that were sacred or were known to contain cultural and/or archeological resources. Prior to the proposed sale, the Hollister Field Office recommended certain areas of the proposed lease sale be withheld, however the BLM decided to not move forward with any lease sale for those proposed lands that fiscal year.

In Fresno County, the Federally-recognized Santa Rosa Rancheria Tachi Yokuts Tribe is familiar with oil and gas lease sale actions having worked with the Hollister Field Office in prior proposed lease sales and the BLM Bakersfield Field Office as well; consultation relative to oil and gas development or management occurs on an annual basis. In San Benito County, during 2008 a large 3-D seismic survey for oil and gas resources in the Vallecitos Valley generated some cultural resources inventory data (Jackson and Armstrong 2009) as well as stimulate renewed tribal interest in the area from the Costanoan/Ohlone Indians, in particular the Amah Mutsun Tribe. Consultation for proposed oil and gas lease sales or any other proposed related actions will occur with the Amah Mutsun and Tachi Yokuts together as this region is an ethnographically - and perhaps archaeologically - shared region.

I. Paleontological Resources

Paleontological resources are the fossilized remains, traces, or imprints of organisms, preserved in or on the earth's crust, that are of paleontological interest and that provide information about the history of life on earth. Paleontological resources on Federal lands are protected by the Paleontological Resources Preservation Act of 2009.

Parcels in Monterey County are located upon the Miocene-aged (5.3 – 20.0 MYA) Monterey Shale Formation (Dibblee and Minch 2007a, 2006a). The Monterey Shale consists of siliceous shale and chert that originated from a shallow marine environment. Monterey Shale is rich in fossils of marine-dwelling organisms including diatoms (Bacillariophyta), multicellular algae (Phaeophyta), mollusks (Mollusca), bivalves (Bivalvia), gastropods (Gastropoda), arthropods (Arthropoda, Crustacea), and vertebrates (Vertebrata; UCMP 2012). Vertebrates recovered from the Monterey Shale have included sharks (Chondrichthyes), birds (Aves), and whales and porpoises (Cetacea).

Parcels in San Benito County are located upon the Pliocene-aged (2.7 – 5.3 MYA) Oro Loma Formation, Miocene-aged (5.3 – 20.0 MYA) Monterey Shale Formation, Eocene-aged (33.9 – 55.8 MYA) Kreyenhagen Shale Formation, Eocene-aged (33.9 – 55.8 MYA) Domengine Formation, Paleocene-aged (55.8 – 65.5 MYA) Lodo Formation, and Paleocene-aged (55.8 –

65.5 MYA) Cantua Formation (Dibblee and Minch 2007b). These strata capture fossil records of 40 million years of shallow marine ecosystems and 20 million years of marine-terrestrial ecosystem interface. Fossils are primarily from marine-dwelling organisms and include diatoms (Bacillariophyta), mollusks (Mollusca), bivalves (Bivalvia), and gastropods (Gastropoda; UCMP 2012). Specimens of vertebrates including extinct prehistoric horses (*Hipparion*), rhinoceros (*Telocerus*), and other large land-dwelling mammals have been recovered from the Kreyenhagen shale in the region where the parcels are located.

Parcels in Fresno County are located upon the Pliocene-aged (2.7 – 5.3 MYA) Etchegoin Formation, Miocene-aged (5.3 – 20.0 MYA) Reef Ridge Formation, and Miocene-aged (5.3 – 20.0 MYA) Monterey Shale Formation (Dibblee and Minch 2005, 2006b). The Etchegoin Formation consists of sedimentary rocks that originated from a shallow, marine (tidal) environment. The sedimentary rocks are dominated by fine to medium-grained sandstone which can be interbedded with clay shale and/or mudstone. Due to the formation having formed within a marine- terrestrial interface, the formation contains fossils of both marine and terrestrial-dwelling organisms. Marine organism fossils include diatoms (Bacillariophyta), sea urchins (Echinoidea), bivalves (Bivalvia), gastropods (Gastropoda), and arthropods (Arthropoda, Crustacea; UCMP 2012). Terrestrial-dwelling organism fossils include both plants and animals. Plant fossils consist of woody plant leaf impressions and fossilized wood. Vertebrate fossils recovered from the Etchegoin Formation include horses (Equidae), camels (Camelidae), deer (Cervidae), peccary (Tayassuidae), and mastodon (Mammutidae).

J. Livestock Grazing

Only a small portion of the parcels in Monterey County are in a BLM grazing allotment. However, almost all of the public lands in Units 2 and 3 are leased by the BLM for livestock grazing of cattle annually as resource conditions allow. Refer to Tables 24- 26 for details on the proposed federal mineral estate in the grazing allotments.

Table 24. Livestock Grazing Statistics -- Monterey County (Unit 1)

EOI_Parcel	Township	Range	Section	Allotment Number (#)	Allotment Name	BLM Surface	Split Estate	Total Acres included in Proposed O&G Lease Sale
16	0220S	0090E	29.00	04373	Roth	0.00	120	120
17	0220S	0090E	29.00	04373	Roth	0.00	40	3.33
18	0220S	0090E	30.00	04373	Roth	40	240	120
19	0220S	0090E	30.00	04373	Roth	0.00	40	40
20	0220S	0090E	31.00	04373	Roth	0.00	152	77
21	0220S	0090E	32.00	04373	Roth	0.00	240	230
23	0230S	0090E	1.00	04306	Aurignac	80	440	240
26	0230S	0090E	5.00	04373	Roth	0.00	240	240
32	0230S	0090E	12.00	04306	Aurignac	0.00	120	1.10
33	0230S	0090E	12.00	04306	Aurignac	0.00	120	120
34	0230S	0090E	13.00	04306	Aurignac	0.00	40	40

Table 25. Livestock Grazing Statistics – San Benito County (Unit 2)

EOI_Parcel	Township	Range	Section	Allotment Number (#)	Allotment Name	BLM Surface	Split Estate	Total Acres included in Proposed O&G Lease Sale
36	0160S	0100E	15.00	04465	Buck's Peak	240.00	400	474.64
40	0160S	0110E	19.00	04351	Cedar Flt	80.00	160	233.59

EOI_Parcel	Township	Range	Section	Allotment Number (#)	Allotment Name	BLM Surface	Split Estate	Total Acres included in Proposed O&G Lease Sale
41	0160S	0110E	20.00	04351	Cedar Flt	200.00	440	545.08
41	0160S	0110E	20.00	04411	Ashurst Ranch	200.00	440	76.83
42	0160S	0110E	25.00	04411	Ashurst Ranch	280.00	40	317.60
43	0160S	0110E	26.00	04411	Ashurst Ranch	240.00		238.85
44	0160S	0110E	27.00	04411	Ashurst Ranch	0.00	40	39.48
45	0160S	0110E	29.00	04333	Frusetta	0.00	40	40.45
46	0160S	0110E	34.00	04411	Ashurst Ranch	0.00	280	277.30
47	0160S	0110E	35.00	04411	Ashurst Ranch	0.00	240	237.98
48	0170S	0110E	7.00	04411	Ashurst Ranch	0.00	754.67	170.95
49	0170S	0110E	8.00	04411	Ashurst Ranch	0.00	160	167.87
50	0170S	0110E	8.00	04411	Ashurst Ranch	0.00	160	168.97
51	0170S	0110E	9.00	04411	Ashurst Ranch	0.00	160	164.42
52	0170S	0110E	17.00	04411	Ashurst Ranch	0.00	737.79	747.00
53	0170S	0110E	22.00	04411	Ashurst Ranch	0.00	712.62	723.53
54	0170S	0110E	23.00	04411	Ashurst Ranch	0.00	50.48	46.46

EOI_Parcel	Township	Range	Section	Allotment Number (#)	Allotment Name	BLM Surface	Split Estate	Total Acres included in Proposed O&G Lease Sale
55	0170S	0110E	23.00	04411	Ashurst Ranch	0.00	101.70	92.51
56	0170S	0110E	24.00	04411	Ashurst Ranch	0.00	378.93	401.78
57	0160S	0120E	33.00	04411	Ashurst Ranch	240.00		222.99
58	0160S	0120E	34.00	04426	Silver Creek	320.00		211.70
58	0160S	0120E	34.00	04411	Ashurst Ranch	320.00		94.93
59	0160S	0120E	35.00	04426	Silver Creek	80.00		76.59
60	0170S	0120E	3.00	04398	El Adobe	151.50	632.10	609.58
60	0170S	0120E	3.00	04411	Ashurst Ranch	151.50	632.10	197.45
61	0170S	0120E	10.00	04398	El Adobe	0.00	480	479.99
62	0170S	0120E	15.00	04399	Adobe Ranch	40.00	600	497.49
62	0170S	0120E	15.00	04398	El Adobe	40.00	600	131.55
63	0170S	0120E	18.00	04411	Ashurst Ranch	0.00	50.84	66.30
64	0170S	0120E	18.00	04411	Ashurst Ranch	40.26		44.84
65	0170S	0120E	19.00	04411	Ashurst Ranch	280.40	435.62	732.86
66	0170S	0120E	20.00	04411	Ashurst Ranch	197.61		208.58
67	0170S	0120E	21.00	04411	Ashurst Ranch	0.00	53.2	46.88
68	0170S	0120E	22.00	04399	Adobe Ranch	0.00	280	276.26

Table 26. Livestock Grazing Statistics -- Fresno County (Unit 3)

EOI_Parcel	Township	Range	Section	Allotment Number (#)	Allotment Name	BLM Surface	Split Estate	Total Acres included in Proposed O&G Lease Sale
69	0220S	0150E	24.00	04316	Kreyenhagen	0.00	280.39	311.71
70	0220S	0150E	24.00	04316	Kreyenhagen	0.00	40.31	41.32
71	0220S	0160E	18.00	04316	Kreyenhagen	0.00	160	161.84
72	0220S	0160E	18.00	04316	Kreyenhagen	257.58		245.52
73	0220S	0160E	20.00	04316	Kreyenhagen	0.00	120	120.33
74	0220S	0160E	20.00	04316	Kreyenhagen	0.00	160	161.14
76	0220S	0160E	30.00	04316	Kreyenhagen	0.00	40	39.84
77	0220S	0160E	30.00	04316	Kreyenhagen	0.00	333.6	328.44
78	0220S	0160E	32.00	04316	Kreyenhagen	40.00		40.09
79	0220S	0160E	34.00	04316	Kreyenhagen	27.00		33.18

K. Lands

The lands and realty program can be divided between land tenure adjustments and land use authorizations. Land tenure adjustments focus primarily on land acquisition and disposal, while land use authorizations consist of Bureau of Land Management (BLM) approvals of rights-of-ways (ROWs), utility corridors and communication sites, and other leases or permits. Scattered tracts of public lands are present throughout the Planning Area, complicating BLM's ability to manage or control access or provide opportunity for enjoyment by the public.

The 2006 PRMP/FEIS includes Table 3.18-1, which provides a summary of land status in Monterey, San Benito, and Fresno counties that are administered by the Hollister Field Office.

Table 3.18-1 Land Status in the Planning Area by County (Exclusive of Clear Creek Management Area)

County	Total Area in County (acres)	BLM Managed Lands (acres)	BLM Managed Lands in County (percent)	U.S. Mineral Interests (acres)
Monterey	2,120,881	37,672	1.8	30,445
San Benito	889,346	81,662	9.2	71,328
Fresno	3,856,317	147,899	3.8	116,746

Land Tenure Adjustments

Acquisition of lands in the past decade have been along the west side of the San Joaquin MA (Ciervo Hills – Joaquin Rocks) and were considered the highest priority action needed to implement a recovery strategy for the rare complex of San Joaquin endemic species in the northern sector of their range.

Since the release of the 1984 Hollister Resource Management Plan (RMP), the BLM has pursued an aggressive land exchange program to consolidate public lands in the San Joaquin and San Benito Management Areas (MAs) surrounding Clear Creek, Condon Peak, Panoche Hills, Ciervo Hills, and Tumey Hills. Land tenure adjustments have resulted in the disposal of approximately 2 acres for every acre acquired.

The trend in land exchanges have allowed for more efficient and better management of resource values on BLM lands with contiguous ownership. For example, acquisition of non-Federal lands has improved public access, provided additional protection for threatened and endangered species habitat, reduced the potential for trespass, and improved the management and protection of cultural and rangeland resources.

Most of the BLM public lands (i.e. BLM administers surface) in Monterey County that are being considered for oil and gas leasing in this EA are identified as scattered parcels that are currently available for disposal because they are difficult and uneconomic to manage based on the lack of legal public access or administrative access to the parcels.

Some of the BLM public lands (i.e. BLM administers surface) in Fresno County that are being considered for oil and gas leasing in this EA, are identified as scattered parcels that are currently available for disposal in exchange for high quality habitat for the suite of special status species identified in the U.S. Fish and Wildlife's Recovery Plan for Upland Species of the San Joaquin Valley (1998).

Some of the BLM public lands (i.e. BLM administers surface) in San Benito County that are being considered for oil and gas leasing in this EA are identified as scattered parcels that are currently available for disposal because they are difficult and uneconomic to manage based on the lack of legal public access or administrative access to the parcels.

Land use Authorizations

Pursuant to Title V of FLPMA, communication sites, apiaries, pipelines, and many other common public land uses are authorized under BLM's right-of way (ROW) policy. There are currently three communication facilities sites located at Parsons Hill in the Salinas MA which includes: Radio Bilingue, California Highway Patrol and Union Pacific Railroad. There are currently two communication facilities sites located at Williams Hill in the Salinas MA which includes: American Tower and Union Pacific Railroad. There are no existing land use authorizations on any of the parcels in Monterey County that are being considered for oil and gas leasing in this EA.

Within the San Benito MA there are seven communication facilities: Pinnacles Telephone has a site on Willow Creek Peak and a site on Sampson Ridge, PG&E and Kings County are located on Santa Rita Ridge, American Tower has two sites on San Benito Mountain and one site on Call Mountain.

There are currently five communication facilities located in the San Joaquin MA; Federal Aviation Administration (FAA), American Tower, Cooks Communication, and CHP in the Panoche Hills. Verizon Communication has a site north of Coalinga off Hwy 33. There are currently two land right-of-way authorizations located on parcel #72 in Fresno County that is being considered for oil and gas leasing in this EA. Two data collection sites are present: California Department of Water Resources has a precipitation station and UNAVCO, Inc. has a GPS monument station that monitors earth moving activities.

L. Farmland

Prime farmland is of major importance in meeting our Nation's short and long term needs for food and fiber. The United States Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) distinguishes four categories of farmlands, each with specific criteria. The categories are "prime farmlands," "farmlands of statewide importance," "unique farmlands," and "farmlands of local importance." As defined by the USDA, this land has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and is available for these uses. However, the USDA farmland classifications only apply to split-estate parcels.

None of the parcels being considered for oil and gas leasing under the proposed action are currently being cultivated, and none have soil map units that are identified by the USDA-NRCS (2008) as important (or prime) farmlands.

Monterey County

Farmlands in south Monterey County are in the "local importance" category. Soils in this category have prime characteristics but are not irrigated. Much of the farming in South County is non-irrigated, or "dryland" farming. This includes crops such as barley, oats, wheat and grains. Irrigated croplands in the "prime" and "statewide" categories are only found along Highway 101 to Sargents Road and in the Lockwood and Hames Valleys. Irrigated row crops in South County include sugar beets, tomatoes, lettuce, peppers, grapes, broccoli, alfalfa and beans."

The Monterey County Water Resources Agency (MCWRA) 2009 Ground Water Summary Report presents a synopsis of current water extraction within the Salinas Valley that is summarized by hydrologic subarea and type of use. According to the MCWRA, agricultural pumping in the Upper Valley accounted for 138,972 acre-feet[1] of groundwater extraction in 2009, which represents almost 30% of the agricultural water use in the Salinas Valley Ground Water Basin.

The MCWRA report notes that "changing weather patterns, variable soils, and crop types affect the amount of water needed for efficient irrigation. Even during a normal rain year, pumping rates will vary from one area to another and crop types will vary depending on economic demand". The report also includes a summary of agricultural and urban water conservation improvements reported to be adopted, to reduce the total amount of water pumped.

[1] An acre-foot is a common unit to measure volumes of water, typically for use in irrigation. One acre-foot is the volume of water sufficient to cover an acre of land to a depth of 1 foot (43,560 cubic feet, approximately 325,851 U.S. gallons, or approximately 1,233.48 cubic meters). On average, 1 acre-foot of water is enough to meet the demands of 4 people for a year.

San Benito County

Agriculture is the dominant land use in San Benito County, accounting for about 75 percent of the total land area. Approximately 91 percent of the agricultural acreage is grazing land and 4 percent is prime farmland. Agriculture is also a major part of the local economy because work on farms, ranches, and other businesses give value to the commodities produced by the land and the services that support agricultural enterprises. Agriculture is the county's largest industry with a 2007 gross value of agricultural commodity sales totaling $293 million (SBC 2010).

M. Recreation

Unit 1 contains the only BLM public land parcels with legal public access for non-motorized recreation activities like hunting. None of the other lands in public ownership that are being considered for oil and gas leasing in Unit 2 .or Unit 3 are available for recreational use because there is no legal public access to these lands.

N. Special Designations - Area of Critical Environmental Concern

Most of the parcels in Unit 3 that are being considered for leasing in Fresno County are located within the Panoche-Coalinga Area of Critical Environmental Concern (ACEC). None of the other parcels being considered for oil and gas leasing are included in a special designation area.

The Panoche-Coalinga ACEC was originally designated in 1984 and included 43,357 acres of BLM public land known to provide special status species habitat, cultural resources and/or paleontological resources associated with the Moreno shale formation. Under the 2007 ROD, the Panoche-Coalinga ACEC boundary was expanded to include 12,772 acres of additional BLM-managed lands that also contain the values for which the ACEC was established.

Chapter 4. Environmental Impacts

This chapter analyzes the environmental consequences, or impacts, that are expected to occur as a result of implementing the range of alternatives described in Chapter 2. The depth and breadth of the impact analyses presented in this chapter is commensurate with the level of detail provided for the Federal mineral estate identified in Chapter 2 and Chapter 3, and on the availability and/or quality of data necessary to assess impacts at the leasing stage. The baseline used for expected impacts is the current resources conditions in Monterey, San Benito, and Fresno counties described in Chapter 3.

Impact Analysis Methodology

In general, impacts to resources are analyzed by determining the effects on a given resource from the RFD scenario for oil and gas described in the 2006 PRMP/FEIS and this EA. Potential impacts from implementation of the proposed oil and gas lease sale are compared to desired future resources conditions based on the goals and objectives specified for each resource/resource program in the 2007 ROD and to the existing environmental conditions described in Chapter 3 of the 2006 PRMP/FEIS and this EA. If there is not enough specificity to determine whether a management action would achieve the goals and objectives, the impact can only be described in general terms.

Incomplete or Unavailable Information

Impacts are quantified where possible. Impacts are sometimes described using ranges of potential impacts or in qualitative terms. In the absence of quantitative data, impacts are described based on the professional judgment of the interdisciplinary team of technical specialists using the best available information. Impacts analysis based on incomplete or unavailable information is identified where applicable in this chapter.

Assumptions

Several general assumptions were made to facilitate the analysis of potential impacts. The assumptions listed in this chapter are common to all resources. Other assumptions specific to a particular resource are listed under that resource.

I. Incomplete and/or Unavailable Information

Statement of Reason

The incomplete or unavailable information related to site-specific lease development, hydraulic fracturing, and climate change described below is not relevant to the analysis of impacts from BLM's competitive oil and gas lease sale because the reasonable foreseeable development

scenario anticipates very little (if any) disturbance to the human environment as a result of the alternatives analyzed in this EA. Additionally, information related to site-specific lease development, hydraulic fracturing, and climate change cannot be obtained because the overall costs of obtaining it are exorbitant or the means to obtain it are not known.

Summaries of existing credible scientific evidence which is relevant to evaluating the "reasonably foreseeable" impacts on the human environment from site-specific oil and gas drilling, hydraulic fracturing, and greenhouse gas emissions have been included in the appropriate sections of this EA. As a result, the agency's evaluation of such impacts is based upon theoretical approaches or research methods generally accepted in the scientific community.

A. Site Specific Analysis of Future Lease Development

The BLM's commitment is to find the proper balance between public use and the protection of sensitive resources. However, the site-specific analysis of impacts from oil and gas development is constrained at the leasing stage because there is no reliable information available on where and how these resources would be developed. Actually, withholding analysis of impacts until an application for a permit to drill (APD) has been submitted is the only meaningful way to analyze such issues as air quality impacts, water quality impacts, infrastructure extensions, because analyzing site-specific impacts across large tracts of lands that may or may not be developed is not feasible. Subsequent analysis of site-specific impacts also provides an opportunity for public comment on the process of authorizing new oil and gas developments, as well as compatibility with other land use issues in the County.

B. Hydraulic Fracturing Technology

The geologic formation in the areas being considered under the proposed lease sale is the Monterey Shale, and residents are concerned about the impacts to local ranching and agricultural operations from the amount of water needed for this type of drilling. These residents are also concerned about the potential risk of groundwater contamination associated with hydraulic fracturing of the Monterey Shale.

The U.S. Environmental Protection Agency (EPA) hosts a website (http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/wells_hydrowhat.cfm) that describes the process of hydraulic fracturing. Due to the expansion of HF over a wider diversity of geographic regions and geologic formations and increasing public concerns, in 2010 the U.S. House of Representatives Appropriation Conference Committee identified the need for a focused study of hydraulic fracturing's potential impact on drinking water, human health, and the environment.

Accordingly, EPA's Office of Research and Development (ORD) announced in March 2010 that it will study the potential adverse impact that hydraulic fracturing may have on drinking water. EPA will use the results from the study to help evaluate potential risks associated with hydraulic fracturing in an effort to protect America's communities and resources.

Hydraulic fracturing technology has been in use in California for over thirty years in the Monterey Shale formation located on-shore in Kern County and off-shore in Santa Barbara County. In response to a 2011 inquiry from the Ranking Member of the House of Representatives' Committee on Natural Resources regarding the use of hydraulic fracturing on Federal lands, BLM's Bakersfield Field Office generated the following information.

Virtually all of the HF jobs on Federal mineral estate from 2000-2010 were on oil wells. Nearly all of the HF jobs on Federal mineral estate in California were on one of the following leases: CAS 19376, CAS 19636, CAS 19314, and CAS 19314A for a total 355 wells fractured out of 2056 drilled on federal mineral estate in the state in the last 10 years, which equals about 17%. To date, there is no evidence of adverse effects on water quality and/or availability of groundwater for ranching and agriculture in communities where hydraulic fracturing of the Monterey shale has occurred.

Water is needed to complete the hydraulic fracturing process, and it is a central component of the waste products (approx. 99%). The volume of water needed for hydraulic fracturing varies by site and type of formation, but estimates provided by EPA suggest two to five million gallons of water may be necessary to fracture one horizontal well in a shale formation, and it's reasonable to assume that water used for fracturing fluids would be acquired from surface water or groundwater in the local area.

On April 16, 2011, the Energy and Commerce Committee Ranking Member Henry A. Waxman, Natural Resources Committee Ranking Member Edward J. Markey, and Oversight and Investigations Subcommittee Ranking Member Diana DeGette released a new report that summarizes the types, volumes, and chemical contents of the hydraulic fracturing products used by the 14 leading oil and gas service companies. The report contains the first comprehensive national inventory of chemicals used by hydraulic fracturing companies during the drilling process. The report, titled "Chemicals Used in Hydraulic Fracturing" is available to download on-line at the following website:
http://democrats.energycommerce.house.gov/index.php?q=news/committee-democrats-release-new-report-detailing-hydraulic-fracturing-products

C. Greenhouse Gas (GHG) Emissions

Climate change analyses are comprised of several factors, including greenhouse gases (GHGs), land use management practices, the albedo effect, etc. The tools necessary to quantify climatic impacts are presently unavailable. As a consequence, impact assessment of specific effects of anthropogenic activities cannot be determined. Additionally, specific levels of significance have not yet been established. Therefore, climate change analysis for the purpose of this document is limited to accounting and disclosing of factors that contribute to climate change. Qualitative or quantitative evaluation of potential contributing factors are included where appropriate and practicable.

II. Assumptions Incorporated into the Analysis:

A. Hollister Field Office Reasonable Foreseeable Oil and Gas Development Scenario (RFD)

Appendix F of the 2006 PRMP/FEIS contains the BLM's Hollister Field Office Reasonable Foreseeable Oil and Gas Development (RFD) Scenario. The RFD scenario estimates the level and type of future oil and gas activity on BLM public lands and split-estate within the entire Field Office boundary, and provides a basis for the analysis of direct, indirect, and cumulative effects.

The scenario first describes the steps involved in exploring for and developing deposits of oil and gas. Trends and assumptions affecting oil and gas activity are discussed, followed by estimates for future oil and gas exploration and development. The scenario for reasonably foreseeable development is based on known or inferred oil and gas potential, and applies the conditions and assumptions discussed below.

General Discussion

Based on an analysis of past oil and gas related activities within the boundaries of the Hollister Field Office (HFO) and the very small amount of Federal mineral estate within areas of high development potential, BLM projects that oil and gas activities on Federal mineral estate within the Hollister Field Office area boundary will continue at a relatively minimal level. Overall, within the next 15-20 years, total surface disturbance due to all oil and gas activities on Federal mineral estate is estimated to be no more than 74 acres. This estimate includes geophysical exploration (seismic), 5 exploration wells, 10 development wells and associated facilities, roads, and a transmission pipeline that could be linked to existing transmission lines within the area. One third of this disturbance, 26 acres, will be temporary, and would be mostly to totally reclaimed within a few months to a couple of years. Over the long term, both new and existing

oil and gas related activities would eventually be abandoned, the lands would be reclaimed, and the sites would be restored to as near a natural condition as practical.

The total surface disturbance for up to 10 development wells would be 10 acres for well pads, 12 acres for roads, and 24 acres for a single transmission line 10 miles long. No more than 1 acre would be required for the small facility (meter, separator) on each of two parcels, for a total of 2 acres. The total surface disturbance caused by seismic operations, exploration drilling, and development would be 74 acres, as shown in the table below.

Table 27. RFD Scenario Estimates of Surface Disturbance on Federal Mineral Estate

Description	**Number**	**Unit Surface Disturbance (acres)**	**Total Surface Disturbance (acres)**
Exploratory Wells Well Pads Roads (40' wide)	 5 wells 5 x 0.5 miles	 1 acre/well 4.8 acre/mile	 5 12
Development Well Pads Roads (40' wide) Facilities	 10 10 x 0.25 mi 4	 1 acre/well 4.8 acre/mile 1 acre/facility	 10 12 4
Seismic (2 track x 18")	25 miles	0.36 acre/mi	9
Pipeline (20 ' wide)	10 miles	2.4 acres/mi	24
		Total:	74

Exploration Activities

Exploration activities within the area would generally focus on oil and not natural gas.

Exploration for subsurface hydrocarbon deposits would use such tools as geophysical surveys (usually this means running seismic lines), and drilling exploration wells. A brief summary of these activities follows. In all cases, a site specific EA would be prepared prior to approval of any application to conduct surface disturbing activities (see previous discussion under Conformance with BLM Land Use Plans).

Geophysical exploration: Geophysical exploration is conducted to determine the subsurface structure of an area and the potential for mineral resources. There are three geophysical survey techniques that are generally used to define subsurface characteristics through measurements of the gravitational field, magnetic field, and seismic reflections.

Gravity and magnetic field surveys—involve small, portable measuring units that are easily transported by light off-highway vehicles, such as 4-wheel drive pickup trucks and jeeps, or aircraft. Both off and on-highway travel may be necessary. Although these two survey methods can take measurements along defined lines, it is more common to have a grid of distinct measurement stations. Surface disturbance resulting from these surveys is negligible, consisting almost exclusively of soil or vegetation compaction that persists no more than a few months.

Seismic reflection surveys—are the most common of the geophysical methods, and they produce the most detailed subsurface information. Seismic surveys are conducted by sending shock waves, generated by a small explosion or by mechanically beating the ground with a thumping or vibrating platform.

In the **explosive method**, small charges are detonated on the surface or in a shallow drill hole. The surface charge method uses 1 to 5-pound charges attached to wooden laths 3 to 8 feet above the ground. Placing charges lower than 6 feet usually results in destruction of vegetation, whereas placing the charges higher, or on the surface of deep snow, results in little visible surface disturbance. In the drill hole method, holes for the charges are drilled using truck-mounted or portable air drills. In general, this method uses 4 to 12 holes per mile of line, and a 5 to 50-pound explosive charge is placed in each hole, covered, and detonated. The shock wave created is recorded by geophones placed in a line on the surface. In rugged terrain, a portable drill carried by helicopter can sometimes be used. The vehicles used for a drilling program may include heavy truck-mounted drill rigs, track-mounted drill rigs, water trucks, a computer recording truck, and a light pickup.

In the **mechanical method**, four large trucks are usually used, each equipped with pads about 4-feet square. The pads are lowered to the ground, and the vibrations are electronically triggered from the recording truck. Once information is recorded, the trucks move forward a short distance and the process is repeated. Surface disturbance includes flattening of vegetation and compaction of soils.

In either type of seismic reflection surveys, existing roads and trails are used where possible. However, off-road travel is necessary in some cases. Several trips per day are made along a seismograph line, usually resulting in a well defined two-track trail.

Exploration Drilling

After a parcel is leased, there may or may not be any actual disturbance. In fact, historically, a large majority of leases are relinquished without ever having any actual surface disturbance. In the event that an Application for Permit to Drill (APD) is submitted, a site specific evaluation will be made by the BLM to ensure compliance with NEPA requirements. Based on the results of that evaluation, additional Conditions of Approval may be added, and the operator may only

begin construction after complying with lease stipulations and Conditions of Approval of the drilling permit. When a site requires construction of an access road, the shortest feasible route is usually selected to reduce the haul distance and construction costs. Environmental factors or a landowner's wishes may dictate a longer route in some cases. Drilling in the planning area is expected to be done using existing roads and construction of only short (approximately 0.5 mile) roads to access drill site locations.

During the first phase of exploration drilling, the operator would move construction equipment over existing maintained roads to the point where the access road begins. Less than 0.5 mile of moderate duty access road per well with a gravel surface 20 feet wide is expected for construction. With ditches, cuts, and fill, the total width of surface disturbance would average 40 feet. The second part of the drilling phase is the construction of a drill pad up to 1 acre in size. The likely duration of well drilling, testing, and abandonment is 3 or 4 months per site. The total disturbance for each exploratory well and any new road is estimated to be 3.4 acres. The total surface disturbance caused by exploratory drilling of 3-5 wells as described in the RFD scenario is expected to be no more than 10-17 acres.

The total number of acres of Federal mineral estate in the Hollister Field Office is about 872,000 acres, including the 588,197 acres of split estate administered by the HFO, where BLM administers the subsurface mineral rights and the surface land is owned by private entity. The total number of acres in the parcels to be offered in this lease auction is about 2,605 acres or less than 1% of the total. From the lease sales conducted in the HFO boundary during the past 20 years, none of the leases have had any wells drilled on them.

Lands considered in this EA are all within 5 miles of existing oil fields, and they are all in areas classified as "high potential." However, virtually all of the lands that were leased in the past also met the same criteria, and yet were never developed.

This 10 year time frame includes periods with both very high and very low oil and gas prices: on average, it is a relevant base period from which reasonable projections can be made. Because prices are significantly higher now than in the past, there is a possibility that drilling on new leases will increase. However, the new leases offered herein still represent only a small fraction of lands already leased and available for drilling. As mentioned earlier, only one new lease within the past 20 years had more than 1 well drilled on it. Based on the historic levels of activity on new Federal leases in California within the last 20 years, during a wide range of product prices, we would expect no more than one well total on all of these parcels, with no particular area being more likely than another to be drilled.

Location of Parcels and Past Drilling Activity

Even though there are 30 active oil fields and gas fields that are partly or totally within the HFO boundary, only 9% land within the productive boundaries of those fields contains Federal minerals (5400 Federal acres out of a total of more than 58,000 acres). In the past ten years, 1030 wells have been drilled on private land in the HFO boundary, but no wells have been drilled on Federal minerals within the entire HFO boundary. Consequently, based on the history of oil and gas exploration in the planning area, it is projected that no more than three to five exploratory wildcat wells (wells outside of the productive boundary of existing oil and gas fields) would be drilled on Federal mineral estate in the planning area during the life of this plan. Although the success rate for wildcat wells has improved markedly during the past decade, largely due to improved seismic data, it is still unlikely that any new fields would be discovered by drilling on Federal minerals because there is so little activity in areas with significant amount of Federal mineral estate.

Most drilling is expected to occur in areas of land designated as high development potential, which are depicted in Appendix A (Figure 15) of the 2006 PRMP/FEIS. Although there is a low probability that a field will be discovered on Federal land, if a field containing Federal mineral estate were to be discovered in the northern portion of HFO boundary, it is likely that the discovery would be gas because all of the occurrences in that area are gas. Conversely, if a field containing Federal mineral estate were to be discovered in the southern portion of HFO boundary, it is likely that the discovery would be oil because all of the occurrences in that area are oil.

Although it could be argued that some areas are closer to known production, and therefore more likely to see development, it is also possible that those areas have been more effectively "condemned" by the unsuccessful exploratory wells that were drilled in the past. Overall, there is not enough data to make more accurate projections of where activity might occur, and whether it would be successful.

Field Development and Production

Exploratory drilling is not expected to lead to the development of a producing field in the planning area due to the low probability of success statewide with oil and gas statistics. Nonetheless, the following scenario describes the operations and effects associated with field development.

The minimum size considered economically feasible would depend mainly on its proximity to existing infrastructure. There are 30 fields within the HFO boundary, mostly in the extreme southern and extreme northern portions of the area, and it is likely that any pipelines from a new field would be relatively short. The wells within the actual productive boundaries (smaller than

the administrative boundaries) of gas fields are spaced on average at 80-160 acres. For oil fields in the HFO area, spacing is much closer. In the larger oilfields, usual development spacing is typically at 5-7 acres per well. However, spacing can be as close as one well per acre in areas with heavy oil. Although it is unlikely that a new field will be discovered on Federal minerals, for planning purposes we will assume a fairly small to mid size oil field may be discovered somewhere within the planning area. The average field size in the FO area is over 1900 acres, but that is significantly skewed by the presence of a few very large fields. The bottom 80% of the active fields in the FO area average 650 acres, about one square mile. If a single oilfield of that size was discovered, on average it would contain 9.1% Federal mineral estate, about 60 acres. At 5-7 acres per well, it would take approximately 10 wells to fully develop the parcel. Each development well would require an estimated 0.25 mile of road, which would have a surface of crushed aggregate or gravel approximately 20 feet wide (total disturbed width of 40 feet). Well pads would be no more than 1 acre in size. Oil/gas produced would be carried by pipelines that could be linked to existing and proposed transmission lines in the planning area. Average infield pipeline length is estimated to be 0.25 mile per well, which could probably be largely contained within the road right of way and little new surface disturbance would be required. The total distance from a new field to an existing transmission pipeline is likely to be less than 10 miles. The width of the surface disturbance for pipelines would average 20 feet.

The total surface disturbance for up to 10 development wells would be 10 acres for well pads, 12 acres for roads, and 24 acres for a single transmission line 10 miles long. No more than 1 acre would be required for the small facility (meter, separator) on each parcel. For planning purposes, we will assume that the wells may be on two separate parcels, so there would be a total of 2 acres for facilities. The total surface disturbance caused by seismic operations, exploration drilling, and development would be 74 acres.

Plugging and Abandonment

Wells that are drilled and determined to be dry holes are plugged according to a plan designed for the condition of each well. Plugging involves placing cement plugs at strategic locations in the hole. Drilling mud is used as a spacer between the plugs to prevent communication between fluid-bearing zones. The drill casing is cut off at least 5 feet below ground level and capped by welding a steel plate on the casing stub. After plugging, all equipment and debris would be removed and the site restored as near as reasonably possible to its original condition. It is projected that much of the surface disturbance from exploratory activities and all of the seismic activities would be of short duration (between a few months and a couple of years). The impacts from the successful development wells would last longer, but it would still be completely reclaimed eventually.

Conclusion

Based on the historic levels of oil and gas development in the region and the current trends in energy and mineral extraction described above, it is reasonable to project that only one exploration well would result from the proposed lease sale. Any future development on parcels in this lease auction would therefore represent only a very small portion of the total wells drilled on the Federal mineral estate, and is well within the scope of activities which have been previously analyzed in the Hollister Field Office RFD scenario (2005).

During the past 10 years, more than 1000 wells have been drilled within the HFO area, 93% of which were within field boundaries, with only 7% being classified as wildcats (outside administrative field boundaries). Although there are nearly 5400 acres of Federal mineral estate within these productive boundaries (9% of the total), there was not a single well on Federal mineral estate. It is reasonable to assume that this trend will continue.

B. Direct Effects of the Proposed Action

There would be no direct effects from the proposed competitive oil and gas lease sale because this is primarily an administrative action that only conveys the mineral rights to the potential lessee. As described in the previous sections, lease-holders are required to submit plans for any exploration or development that may occur and a site specific EA would be prepared to identify mitigation measures necessary to avoid undue degradation to the environment prior to approval of surface disturbing activities.

When BLM is considering a mere leasing proposal, the analysis of effects is only based on the reasonable foreseeable development scenario because there is no information available to determine when or where any actual disturbance would occur on any of the proposed leases, or if any disturbance would occur at all. When an application for a permit to drill is submitted, BLM then has a concrete, site-specific proposal that can be analyzed for direct impacts to the human environment and identify any mitigation measures necessary to avoid or minimize those effects. Therefore, the following analysis of impacts on the human environment does identify potential direct effects of future oil and gas exploration and development activities; however, BLM reserves both the authority to preclude all activities pending submission of site-specific proposals and the authority to prevent proposed activities if the environmental consequences are unacceptable.

III. Impacts of Alternative 1 (Proposed Action)

A. Oil and Gas Resources

Potential indirect impacts of the proposed lease sale on natural resources that may result from future energy and minerals exploration and development could include disturbed land, increased vehicular traffic, decreased scenic opportunities and visual quality, impacts on habitat, noise, air emissions (dust and pollutant air quality), and increased erosion resulting in additional sediment loading to area watersheds. These impacts are analyzed in the respective resource sections of Chapter 4 of the 2006 PRMP/FEIS and this EA.

Historically in the San Joaquin Valley, only about 10-15% of wildcat wells have been successful in finding commercial quantities of oil and gas. In fact, between 1990 and 2007, 64 total exploratory wells were drilled, both Federal and private (source: personal email from Mark Gamache, CDOGGR, to Jeff Prude, BLM, dated 3-27-07), and only one relatively small field (Rose field, discovered July 2000) was discovered.[2] The remaining 85-90% of the wells are non-commercial which are immediately plugged and abandoned (P&A'd), so any disturbance associated with the drilling of these P&A'd wells would be temporary.

Most drilling is expected to occur in areas of land designated as high development potential, which are depicted in the HFO's 2006 FEIS (Appendix A, Figure 15). Although there is a low probability that a new commercial oil or gas field will be discovered on Federal land, if a field containing Federal land were to be discovered in the northern portion of HFO boundary, it is likely that the discovery would be gas because all of the occurrences in that area are gas. Conversely, if a field containing Federal land were to be discovered in the southern portion of HFO boundary, it is likely that the discovery would be oil because all of the occurrences in that area are oil.

After seismic and/or detailed stratigraphic basin studies are made, an application for a permit to drill (APD) may be submitted. Any APDs submitted for parcels in Monterey or Fresno counties would likely be for exploration drilling, because of the location the lands being considered for oil and gas leasing, and due to the characterization of these lands as "rank wildcat territory". "Exploration drilling" includes drilling to discover entirely new fields, or discovery of previously untapped reservoirs within existing fields. Drilling to discover new fields has the greatest potential to impacts the human environment because it would be more likely to involve disturbances of undisturbed lands.

[2] A new field discovery, reportedly near the Elk Hills field in Kern County, was reported by Oxy in July 2009.

BLM's RFD scenario for oil and gas estimates that over the next 15 to 20 years, no more than 15 wells will be drilled on BLM-managed land. Based on the estimates identified under the "Assumptions Incorporated into the Analysis" (Chapter 4, Section II), these activities combined would not disturb more than 74 acres of Federal lands within the HFO. This includes the construction of some associated roads and facilities and installation of pipelines to existing infrastructure. There may also be geophysical exploration associated with oil and gas.

Based on the conclusion that only one exploration well would result from the proposed lease sale, any future development on parcels in the proposed lease sale would represent a minor long-term benefits to development of oil and gas resources on Federal mineral estate.

B. Social and Economic Conditions

The proposed action would potentially allow new development of these parcels for oil and gas production. Due to the very small amount of development expected on these lands, it is not likely that there will be any measurable impact to the local economy. Nevertheless, there would be some minor benefits to the local economy through potential jobs, sales, and revenue to local governments. The Mineral Leasing Act, as amended provides rights to private landowners prior to development and requires compensation and reclamation bonds.

BLM Standard Lease Terms require operations to be conducted in a manner that minimizes adverse impacts to other land uses or users. Therefore, prior to authorization of any surface disturbing activities, BLM would consider potential conflicts between other current and future uses of the proposed lease areas. Based on the reasonable foreseeable development of the proposed leases, the proposed action would have negligible effects on the Lockwood-Jolon community plans for the development of an intensified rural community and agricultural activities.

Environmental Justice

The proposed action would not have disproportionate adverse impacts on low-income or minority communities based on the same rationale for social and economic effects.

C. Visual Resource Management

The proposed action is consistent with the designated VRM Class III because the level of change to the landscape of southern Monterey County and the scenic values of Lockwood Valley, Hames Valley, and the U.S. Hwy 101 corridor from the reasonable foreseeable development of the proposed oil and gas leases would be minor and may attract the attention but would not dominate the view of the casual observer.

The effects of the proposed action on visual resources in San Benito County and Fresno County would be negligible because of the discrete location of the proposed leases and the amount of surface disturbance associated with the RFD scenario is consistent with Class IV visual resource management objectives.

D. Air and Atmospheric Values

Planning Assumptions for Air Quality

Although the proposed action to offer parcels for competitive oil and gas leasing does not in itself result in emissions that effect air quality or climate change, the BLM acknowledges that emissions may result as in indirect effect of development subsequent to leasing. Emissions associated with fluid mineral development (direct, indirect, and cumulative effects) on the proposed lease sale parcels would be considered at the project level in a subsequent NEPA analysis. In spite of this, criteria pollutant emissions are estimated based on the RFD scenario. A degree of uncertainty exists as to the exact development schedules, well location, the number of wells that would be drilled, and a number of other factors which are addressed in the RFD. This analysis is based on the same assumptions discussed in the RFD.

State Implementation Plans (SIPs) are prepared (and adopted) for most of the federal nonattainment areas. These SIPs are implemented through a series of rules and regulations and are designed to result in compliance with the NAAQS by federally imposed deadlines. Provisions and commitments in SIPs are federally enforceable. In addition, air quality is highly regulated by a number of additional federal, state and regional rules and regulations. These rules and regulations apply to many of the activities that may occur as a result of the proposed action. Any lease development activities would be required to be conducted in compliance with current and future SJVAPCD, CARB, and US EPA Rules and Regulations. As new air plans are developed, or existing plans are updated, activities would be conducted in compliance with those plans also. In accordance with BLM fluid mineral lease requirements, a federal oil and gas lessee and/or operator is responsible for obtaining required air permits and compliance with permit and emissions reporting requirements of air regulatory agencies.

Climate Change Analysis Assumptions

No GHG emissions will result from the proposed action; however, the BLM recognizes that GHG emissions are a potential indirect effect of fluid mineral development subsequent to leasing. As a result, the analysis includes a qualitative description of pollutants associated with oil and gas development and production and describes how the proposed action potentially contributes to climate change through the release of GHGs. There are currently no established thresholds of significance for GHG, but the EPA has used a reporting threshold of direct GHG emissions of 25,000 tons per year of carbon dioxide equivalent (74 FR 56260, October 30, 2009).

1. Air Quality, Climate, & Meteorology

The 2006 PRMP/FEIS describes the following effects of energy and mineral development on public lands being considered for oil and gas leasing under the proposed action on page 4.1-2.

> Energy and mineral development involves extracting materials from the earth using various methods, which depend on the type of material being extracted. Extraction of petroleum resources generally requires preparing the site, drilling, installing well equipment, and storing or transporting the resource off-site. Mineral extraction involves mechanical removal of minerals via heavy equipment and transport off-site via truck.
>
> These processes produce air pollution in the form of engine exhaust emissions and fugitive dust from the transport of materials and the movement of vehicles over unpaved areas. Additional air pollution may be produced at extraction sites where a facility for processing the extracted material is located.

Before initiating any type of energy or mineral development, the entity proposing the development would need to apply for and obtain approval for air permits from the air district where the activity would be located. The permit rules provide for an evaluation of air quality impacts for the proposed activity and must be deemed acceptable by the administering APCD before air permit would be approved.

Impacts to Air Quality

At the leasing stage, it is extremely difficult to generate a meaningful estimate of emissions associated with an unknown well type, target depth, in an unknown location, with an unknown lessee, operator, drilling contractor, etc. Since current federal oil and gas operators utilize various drilling contractors and construction companies, modeling at this time would be hypothetical. Details on fleet (vehicle and equipment make, model, engine size, etc.), trip length, project acreage, and the construction schedule are among several variables required to generate emissions estimates. Combined, these factors determine the intensity, duration, and characteristics of associated pollutants.

The proposed action could ultimately result in a number of activities which generate criteria pollutant emissions at the development stage. Impacts would be in the form of gaseous and particulate matter that is emitted into the air as a result of the activities associated with oil and gas lease development and production. Project emissions include direct emissions of nitrogen oxides (NOx), sulfur oxides (SOx), and Volatile organic compounds (VOCs) (which are precursor emissions for ozone and PM2.5), carbon monoxide (CO), particulate matter smaller than 10 microns (PM10), and particulate matter smaller than 2.5 microns (PM2.5). These emissions are associated with combustion sources and fugitive sources associated with exploration, drilling, production and abandonment such as seismic exploration/diesel drill rig

engines, drill pad construction equipment (e.g., dozers, backhoe, grader, etc.), temporary production flares, remedial well work, equipment trucks, hauling of liquids, drill rig crew trucks/vehicles, portable lift equipment, portable testing equipment, temporary and permanent production facilities.

In addition, PM_{10} will be released during the drill pad construction phase, and from the daily ingress and egress of vehicles on any unpaved access roads. The primary emission sources during any new construction would be from heavy equipment exhaust and fugitive dust. Other emission sources will occur during lease operation and maintenance. These sources include oil facilities, gas facilities, operator vehicle traffic, and gas powered oil well pumping units.

According to the CARB, emission factors for VOCs (volatile organic compounds), NOx (nitrogen dioxide), SOx (sulfur dioxide), PM_{10} and $PM_{2.5}$ are not available for individual wells, but can be calculated using total emission per day calculations that have been obtained from the California Air Resources Board website (http://www.arb.ca.gov/app/emsinv/emssumcat_query). These emissions totals for the San Joaquin Valley Unified APCD are included in Table 28.

Table 28. 2010 Estimated Annual Average Emissions from Oil and Gas Production, San Joaquin Valley Unified APCD and Statewide

SOURCE	TOG (TONS/DAY)	ROG (TONS/DAY)	CO (TONS/DAY)	NO_x (TONS/DAY)	SO_x (TONS/DAY)	PM_{10} (TONS/DAY)	$PM_{2.5}$ (TONS/DAY)
Oil and Gas Production	46.28	26.65	0.73	0.33	0.07	0.02	0.02
Oil and Gas Production (combustion)	20.19	6.97	11.46	11.23	1.87	1.75	1.75
Total Oil and Gas(tons/day) SJVUAPCD	66.47	33.62	12.19	11.56	1.94	1.77	1.77
TOTAL Oil and Gas (tons/day) Statewide	119.88	51.50	21.73	23.79	2.61	2.30	2.28

This table illustrates the emissions for oil and gas production sources reported by the SJVUAPCD relative to the statewide totals, in tons of pollutants per day. Oil and gas production is defined as any source used in the production of oil and gas, including but not limited to wells, pumps, tanks, roads, maintenance traffic, and heaters. Steam generators are calculated separately and are represented on the table as oil and gas production (combustion). For purposes of this analysis, these numbers are summed to get the total amount of pollutants emitted by oil and gas production in the SJVUAPCD.

In regards to both PM10 and PM2.5, the SJVUAPCD does not have a standard for calculating emissions for individual wells (source: conversation 2007 with Leonard Scandura, SJVUAPCD). The SJVAPCD does not permit individual wells; generally a facility such as a tank setting that serves a number of wells is the permitted stationary source. However, wells in California are subject to Fugitive Inspection and Maintenance, Rule 4409.

An emission formula and emission factor was provided by Air Quality Engineer Leonard Scandura of the SJVAPCD. The formula is E = A x EF where E= emissions, A= activity or source, and EF is the constant emission factor. Criteria pollutant emissions were calculated for one well based on the 2010 SJVUAPCD Annual Emissions from Oil and Gas Production; these calculations are included in Appendix F.

For one well, estimated emissions of PM2.5, PM10, and SO_x range from approximately 29-32 pounds (lbs.) per year per well, NO_x emissions are estimated at 187 lbs./year and 543lbs/year of VOCs. Based on the RFD scenario of four wells, these estimated emissions would be multiplied by a factor of four. It is important to note the difference in unit of measurement; the statewide and air district emission inventory data are indicated in tons per day, while the emissions estimates for the proposed action are expressed in pounds per year. This range of pollutant emissions represents 0.005% - 0.02% of the total emissions from oil and gas production in the San Joaquin Valley air basin and 0.002% - 0.02% of the total emissions from oil and gas production statewide. The expected emissions from development based on the RFD scenario incidental to the proposed action would be low both in relation to the overall activity in the region, and by itself.

As detailed in the affected environment, the San Joaquin Valley Air Basin is designated nonattainment for ozone and $PM_{2.5}$. The District's adopted ozone and PM_{10} plans are already providing benefits for $PM_{2.5}$ and ozone levels. The District attributes the Valley reaching attainment of PM_{10} standards ahead of schedule to the control strategies set forth in the 2003 PM_{10} Plan and the 2006 PM_{10} Plan (SJVAPCD 2008).

BLM requires that the lessee/operator assume responsibility for ensuring that all operations are properly permitted with the appropriate agencies, and that the operations are in compliance with all mobile and stationary source guidelines. This is consistent with the SJVUAPCD requirements; the District holds the owner/operator responsible for obtaining permits, or ensuring that the proper permits are in place for their contractors (Personal communication, Homero Ramirez, SJVUAPCD). Mitigation measures are imposed by the air permitting authority and would include such items as use of low-emission construction equipment, use of low sulfur fuel, and/or use of the existing power transmission facilities, where available, rather than temporary power generators. The failure of the lessee/operator to follow the air quality rules and permit

requirements will result in penalties and potentially lead to the loss of and air district and the BLM authorizations.

The State and local air districts have air quality primacy; BLM may however choose to implement control measures to reduce effects on air quality. BLM may apply Best Management Practices (BMPs) and implement adaptive management practices to reduce particulate matter emissions even though air quality standards would not be violated without implementation of such measures. BLM Best Management Practices and Options for Air Quality Control for Specific Activities would be applied. For oil and gas activities, BLM may impose controls on engines (drilling rigs), roads, monitoring devices, haul vehicles, noise, and sources of VOCs (condensate tanks, dehydrators, separators). Controls on engines can directly impact (lower) visibility impacts, which are often a leading concern. To reduce fugitive dust on roads, watering, graveling, applying surfactants, paving, inducing speed limits, and/or restricting vehicle access are control measures commonly implemented by BLM. Graveling can provide up to 85% reduction in fugitive dust; paving can provide even more. A reduction in levels of fugitive dust, particulate and combustion emissions can be achieved by imposing a combination of control measures and technologies.

The SJVUAPCD requires all construction work (earth moving) to follow rule eight which details requirements for PM_{10}, $PM_{2.5}$, and fugitive dust minimization. Dust control measures discussed in Regulation VIII Rules, include (but are not limited to) frequent watering, paving of access roads, and periodic road washing in construction areas. More specifically under rule 8021, any project that is over 5 acres in non-residential areas will need to have a dust control plan that details particulate matter minimization (www.valleyair.org).

Projects less than 5 acres are considered by the SJVUAPCD as insignificant in regards to PM_{10} and $PM_{2.5}$ emissions. Based on the RFD associated with the proposed action, total disturbance will be approximately 1.0 acre for one well; therefore the proposed action will not result in particulate emissions levels that substantially impact air quality. According to the SJVAPCD, implementation of and compliance with Regulation VIII will effectively reduce emissions and air quality impacts from the project. In addition, implementation of existing regulatory requirements (SJVAPCD Rule 2201) requires any emission increases above specified levels to be offset. Therefore, by complying with existing regulatory requirements and implementing BMPs to reduce emissions, the decision to lease the proposed parcels would not result in a substantial increase in emissions. Potential impacts to air quality subsequent to leasing are not expected to prevent timely attainment of federal air quality standards.

Climate Change Impacts

As described in Chapter 3, the DOI is exploring whether global and regional climate modeling can be scaled to the point that it can be used to manage parks and refuges.3 Secretarial Order 3289 was issued in 20094 which directs each bureau to:

"consider and analyze potential climate change impacts when undertaking long-range planning exercises, setting priorities for scientific research and investigations, and/or when making major decisions affecting DOI resources."

The California Global Warming Solutions Act of 2006 (AB 32) is one of the first laws in the United States that mandates regulation of greenhouse gases at a state level. In April 2009, the U.S. Supreme Court ruled that the EPA has the authority to regulate GHGs under the Clean Air Act (Massachusetts vs. EPA, 05-1120). It is anticipated that, as more information becomes available, and as California continues to implement the greenhouse gas regulations under the California Global Warming Solutions Act of 2006 (AB-32), additional restrictions will be placed on all activities, including those associated with the drilling and production of oil wells in the Southern San Joaquin Valley. All current and future operations on federal lands will be subject to those requirements.

As described in Chapter 3, greenhouse gases include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_20), and fluorinated gases such as hydrofluorocarbons, per fluorocarbons, and sulfur hexafluoride. The primary sources of greenhouse gases associated with oil and gas exploration and production are carbon dioxide, methane, and nitrous oxide. In addition, nitrous oxide (N_2O) and VOCs are indirect air pollutants that contribute to ozone production and aid in prolonging the life of methane in the atmosphere. With respect to climate change, climate plays a significant role in the production of ozone. Sunlight and high temperatures are a major catalyst in reactions between VOCs and NO_x in the production of ozone. With an increase in overall temperature, we can expect to have more hot days and less precipitation that will lead to a higher production of ozone.

GHGs are generally discussed in terms of their global warming potential (GWP), which is used as a means of comparing the effects of greenhouse gases to trap heat in the atmosphere relative to another gas. By definition, GWP time horizon is 100 years and emissions are presented in terms of carbon dioxide (CO_2) equivalents, using units of million metric tons of carbon dioxide equivalents (MMT CO_2e). The GWP of carbon dioxide is 1; the GWP value of methane and nitrous oxide are 21 and 305, respectively.

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[3] GAO-07-863, 2007

[4] Secretary of the Interior Order 3289, September 14, 2009

GHGs are produced and emitted by various sources during phases of oil and gas exploration, well development, production, and site abandonment. The American Petroleum Institute (API) categorizes sources of emissions from all oil and gas operations into the following classifications5:

Direct Emissions

Combustion Sources – includes stationary devices (boilers, heaters, internal combustion engines, flares, burners) and mobile devices (barges, railcars, and trucks for material transport; vehicles for personnel transport; forklifts, construction equipment, etc.)

Process Emissions and Vented Sources - includes process emissions from glycol dehydrators, stacks, vents, ducts; maintenance/turnaround; and non-routine activities such as pressure relief valves, emergency shut-down devices, etc.

Fugitive Sources- includes fugitive emissions from valves, flanges, pumps, connectors, etc.; and other non-point sources from wastewater treatment

Indirect Emissions

Emissions associated with company operations, such as off-site generation of electricity, hot water or steam, and compression for on-site power, heat and cooling.

Direct and indirect GHG emissions may occur from various sources during each phase of exploration and development. During exploration and development, emissions are generated from well pad and access road construction, rigging up/down, drilling, well completion, and testing phases. GHG emissions for these phases are mainly CO_2 emissions from fuel in internal combustion engines of diesel trucks, equipment, and rigs. However, as Zahniser (date unknown) noted in the Characterization of Greenhouse Gas Emissions Involved in Oil and Gas Exploration and Production Operations, Review for the California Air Resources Board, an additional one-time and potentially long term effect could include carbon sinks lost due to surface and vegetation disturbance associated with well site development. In the first phase of a national assessment, USGS found that the conterminous U.S. presently stores an estimated 73 billion metric tons of carbon in soils (USGS 2009); soils could serve as a sink, by removing additional quantities of carbon dioxide (CO2) from the atmosphere, as a means to mitigate climate change.

Nearly 87% of U.S. greenhouse gas emissions come from energy production and use (Karl et al. 2009). Oil and gas extraction/supply accounted for 3% of existing 1990 emissions estimates (total gross emissions of 433.28 MMT CO2e) (CARB 2007). The total emissions for equipment

[5] American Petroleum Institute, Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry; August 2009.

covered under the CARB 2007 Oil and Gas Industry Survey are estimated to be 18.8 million metric tons of CO_2e. Combustion sources (equipment burning fuel for energy) account for 87 percent of the total CO_2e emissions, while the remaining 13 percent of the CO_2e emissions come from vented and fugitive sources (CARB 2011). Based on this industry survey, nearly 76% of the statewide total CO_2e emissions for these operations occur in the San Joaquin Valley APCD.

There is no generally accepted guidance for determining significance of project specific GHG impacts (SJVAPCD, 2009a). There are currently no federal or State thresholds adopted for GHG emissions. The SJVAPCD recognizes that project proponents, lead agencies, the District and the public need clear guidance; therefore, the District Board has recently directed staff to develop guidance for addressing GHG impacts. The District proposes that projects not implementing Best Performance Standards (BPS) must quantify GHG emissions and reduce or mitigate GHG emissions (by 29% to be less than significant). Developing Performance Based Standards will streamline the significance determination process. The policy for addressing GHG emissions impacts for stationary source projects indicates that the need to quantify project specific impacts is negated if emissions reductions are achieved by implementing BPS (SJVAPCD 2009b). This approach is based on the use of BPS and their associated, pre-quantified GHG emission reduction effectiveness.

As part of CARB's efforts to establish a baseline GHG emissions inventory, they are still in the process of developing protocols to quantify fugitive and vented emissions. GHG emissions can be calculated for well drilling and maintenance activities. At this time there are emissions calculations for CO_2 and CH_4 from well workovers and cleanups. However, there are currently no calculations or emissions factors for determining GHG emissions from new wells drilled or well completions (CARB 2011). Consequently, no estimates of GHG emissions are available for the proposed action based on the RFD.

For this analysis, the RFD predicts that up to four wells will be drilled as a result of the proposed action. The current leasing proposal represents less than 0.05 percent of the annual new well activity for the area and a much smaller fraction of the existing well population. Emissions from the construction of four new wells would be expected to be lower than the national average because of vapor recovery systems and other pollution controls (Best Performance Standards) mandated by the San Joaquin Valley APCD; values for GHG emissions are expected to follow a similar pattern. Thus, direct GHG emissions from the proposed action would be undetectable on a nationwide basis and would be expected to have a negligible influence on global climate change. This is consistent with the SJVAPCD conclusion that existing science is inadequate to support quantification of impacts that project level GHG emissions would have on global climate change (SJVAPCD 2009b).

Pursuant to Title 17 California Code of Regulations, Sections 95100-95133, an operator will be responsible for reporting its GHG emissions inventory annually to the state ARB to track progress in reaching statewide GHG emission reduction goals by 2020. A federal lessee will be responsible for implementation of a VOC Leak Standards program, pursuant to SJVAPCD Rule 4401. This Inspection and Maintenance (I&M) program is designed to control fugitive VOC emissions at components such as fittings and valves associated with production and processing equipment. In addition, a lessee is responsible for the operation of its steam generators in compliance with SJVAPCD Rules 4305 and 4306. Controlling fugitive VOC emissions and combustion generated VOC emissions will also control and reduce the amount of potential fugitive methane and combustion related methane emissions associated with the production streams, and thereby reduce potential GHG emissions.

In addition to the mandatory GHG reporting requirement and regulatory requirements to reduce GHGs, the BLM encourages federal oil and gas lessees and/or operators to implement BMPs to reduce GHG emissions. Measures to reduce GHG emissions include the EPA's Natural GasSTAR program and additional BMPs are located on the BLM Washington Office webpage (www.blm.gov/bmps).

E. Soils

Due to the abundance of soil types rated as having a high erosion hazard, there is high risk of soil erosion on all of the parcels. Under the leasing alternatives and the proposed action, oil exploration may result in minor, short-term, localized impacts to soil resources since the number of wells and associated roads would be few and any unproductive wells would be plugged and abandoned followed by restoration. Short-term adverse impacts to soils may include soil disturbance, compaction, and erosion, all of which would be alleviated with site restoration. Oil development may result in moderate, long-term, localized impacts associated with the construction phase and long-term maintenance of access roads, well-pads, wells, and oil pipelines. Most development disturbances associated with the short-term construction phase and not being subject to any further significant disturbance thereafter, would be expected to rapidly revegetate from soil seed bank. Long-term, localized disturbance of soils associated with the maintenance phase of development, however, could result in localized soil compaction and erosion.

Onsite impacts to soils as a subsequent result of leasing may include topsoil removal, grading, filling, and compaction; all of which reduce soil quality. Erosion is an offsite impact that presents potential water quality issues as a result of increased sediment and nutrients. Impacts associated with any lease development may include erosion subsequent to the construction of a well pad and/or access roads on slopes and/or other unstable geography. The risk of erosion on and adjacent to lease parcels is of greatest concern in areas where slopes exceed 30 percent, as the potential hazard of erosion increases as slope increases. Since many soils on these parcels

are described by NRCS as being susceptible to erosion in the absence of adequate (plant) cover, soil exposure should be minimized or reduced.

Existing land uses that have altered and continue to alter soils occur on many of the parcels associated with the alternatives and the proposed action. To minimize new or additional disturbance and impacts to soil quality, wells and access roads may be sited in areas that are disturbed by past land use. Topsoil conservation and replacement is generally used as mitigation to minimize impacts to soil and habitat, which contributes to the efficiency of site reclamation.

The intensity of both onsite and offsite effects of soil disturbance can also be minimized at the APD stage by implementing basic principles of erosion control on construction sites, such as EPA's Reasonable and Prudent Practices for Stabilization (RAPPS) of Oil and Gas Construction Sites (http://cfpub.epa.gov/npdes/stormwater/oilgas.cfm). These impacts would be considered and mitigated on a site-specific basis using proper well placement and implementing best management practices (BMPs) at the APD stage. Overall soil compaction may be reduced by restricting vehicle and equipment use to limited, perhaps previously disturbed areas. Simple erosion control practices that would be applied at the APD stage include minimizing slope gradient, clearing smaller areas of vegetation, and vigilant scheduling of any excavation to avoid rainfall periods. Any potential road construction or improvements that would be authorized at the APD stage would also be designed in accordance with BLM standards (Manual 9113) in order to decrease erosion effects.

Any disturbances 1.0 acre or greater that result from oil and gas leasing of Federal mineral estate would likely be subject to the California Regional Water Quality Control Board Storm Water Pollution Prevention Plan (SWPPP). Any disturbance that persists as unreclaimed for a period of more than two years would be considered a permanent impact with an associated long term effect. To be considered a temporary disturbance, reclamation is required within less than a two year timeframe; such temporary disturbances would be considered short term effects to soil resources.

Impacts to soils from spills/contamination could cause a long term reduction in site productivity. Some of these direct impacts can be minimized or avoided through proper design, construction and maintenance; and by implementing BMPs. In the state of California, oil and gas operators are required to comply with state spill reporting requirements, per the California Office of Emergency Services (OES) and the CDOGGR. In addition, Federal lessees are required to comply with BLM spill reporting and clean up requirements. Any soil contamination resulting from an undesirable event will be removed and mitigated upon discovery as required in those plans.

F. Water Quality

This section provides an estimate of effects to surface and ground water from the proposed oil and gas lease sale. The proposed action would have no effects on the quality of drinking water delivered to consumers; because after withdrawal from the ground, drinking water typically is treated, disinfected, and (or) blended with other waters to maintain water quality. In addition, regulatory thresholds apply to treated water that is served to the consumer, not to raw ground water.

Potential indirect impacts to water resources that could result from long-term operation are primarily the potential for spills and releases, increased erosion, and stream sedimentation. There also may be short-term high water demands, increased short-term erosion, and stream sedimentation due to new construction.

Other potential impacts to surface water include sediment loading of stream channels due to the earthwork associated with site construction; introduction of pollutants via spills and releases to surface water from oil and produced water treatment, storage and handling facilities, sanitary facilities; oil and produced water transportation facilities (trucks, pipelines); and oil, produced water, and drilling fluids. Furthermore, water used during the early development of a field could have a short-term adverse effect on local stream flow; and secondary effects on downstream water use due to changes in water quantity or quality.

Potential watershed impacts are avoided by applying current laws and regulations that require environmental protection measures to mitigate potential impacts to both ground and surface water quality and/or by restricting surface occupancy on portions of a lease. These include BLM's Standard Lease Stipulations, which have been designed to protect ground and surface water quality, and are expected to preserve ground water integrity in all cases. Additional site-specific mitigation measures and management restraints consistent with lease would be determined at the project-level if an application for a permit to drill is submitted on any of the leases included in the proposed action.

G. Biological Resources Including Riparian and Wetlands

1. Fish and Wildlife Habitat

For new leases offered in the past 20 years of lease sales, no new wells have been drilled on Federal mineral estate within the administrative boundary of the Hollister Field Office. It is estimated that one well may be developed on the offered lease parcels. Development of the well and any associated road and facilities could result in 10 acres of temporary disturbance and permanent impacts to 1 acre of habitat (refer to Chapter 4 of this EA, Section II, RFD scenario:

Conclusion). The estimated habitat losses or alterations are within the range expected and analyzed in the 2006 PRMP/FEIS and FWS Biological Opinion (BO) 1-8-07-F-19.

Measures to minimize impacts, such as those contained in BO 1-8-07-F-19, would be employed to reduce the amount of habitat impacted. In addition, compensation, in the form of additional habitat protected, would be required. The rate of compensation would range from 1.1 acre (temporary impact) to 4 acres (permanent impact) for every acre disturbed.

Impacts to habitat on federal mineral estate would depend on the native vegetation type and the topography of the lease parcels. The lease parcels contain a combination of grassland, shrubland and woodland vegetation communities. Habitat disturbance in grasslands generally has less of an impact than disturbance in shrublands and woodlands since shrubs and trees take longer to become re-established. Shrublands and woodlands also support a greater diversity and number of wildlife species as shrubs provide a high variety of food and cover. As the diversity of habitat structure increases from grassland to shrubland to woodland, so does the wildlife species richness. Thus, there is more potential for impacts to wildlife in shrubland and woodland communities, than in grassland communities. The impacts associated with well pads and roads, however, would be very site-specific and are not expected to significantly affect these habitats at the community scale because the footprint of the disturbance is also expected to be a small proportion of the habitat area.

Topography can play a role in the amount of surface disturbance that results from well and road construction. Flat areas will require little or no cut and fill, and road routes are not constrained by topography. In hilly areas, cut and fill may be required which disturbs additional land. Roads routes may have to travel longer distances to meet engineering requirements and may also require cut and fill. Areas lacking roads near potential drilling sites will have more disturbance, as the entire access route will need to be constructed rather than just a short spur route from an existing road.

The only relatively flat parcels being considered for oil and gas leasing are located in Unit 3, which is part of the Kreyenhagen Hills historic oilfields and nearly all parcels are previously disturbed habitat for native wildlife species. Many of the parcels in Monterey, San Benito, and Fresno counties have relatively good access with existing roads in the interior or on the edge of the parcels. Well pad and road construction on these parcels would result in minimal impacts to biological resources due to the presence of existing roads and the currently disturbed nature of the parcels.

The parcels in Units 1, 2, and 3 range from gently sloping to moderately steep hills. The hilly parcels are likely to require new road construction to access well pads unless the wells are located adjacent to an existing road. While many of these lease parcels have one or more

existing roads, it is likely that new roads would be required to reach the proposed well pad locations. As the terrain becomes steeper and hilly, more side slope, cut and fill construction may be required. Restoration of side slope, cut and fill pads and roads is more difficult. Impacts in such areas, even if the well is abandoned and the road restored, may persist as altered, but functional, habitat, for several decades.

Habitat restoration also takes longer in shrublands and woodlands as opposed to grasslands. Grassland habitats may resemble their pre-project conditions in 2 to 5 years. Shrublands may require 5 to 15 years and woodlands even longer as trees must be reestablished on the site. The parcels in this lease auction are generally grassland and shrubland habitats that return to their pre-project composition and structure relatively easily and quickly.

Certain type of soils and exposures may take longer to restore. Vegetation on exposed, dry shale areas may be slow to recover. Such areas, however, have naturally sparse vegetation and much exposed soil.

Although the impacts described above can occur as a result of oil and gas development, it is estimated that indirect effect will be limited to 1 well with 1 acre of habitat loss. This would have a localized, moderate effect on habitat in the immediate vicinity of the well and access road, but a negligible to minor impact on habitat within the parcels being considered for oil and gas leasing analyzed in this EA.

2. Vegetation

Under the proposed action, oil exploration may result in minor, short-term, localized impacts to vegetation resources since the number of wells and associated roads would be few and any unproductive wells would be plugged and abandoned followed by restoration. Short-term adverse impacts to vegetation may include physical damage or complete removal. Vegetation would be expected to recovery rapidly following restoration from existing soil seed bank. Oil development may result in moderate, long-term, localized impacts associated with the construction phase and long-term maintenance of access roads, well-pads, wells, and oil pipelines. Most development impacts associated with the short-term construction phase and not being subject to any further significant disturbance thereafter, would be expected to rapidly revegetate from soil seed bank. Long-term, localized impacts associated with the maintenance phase of development, however, could result in localized vegetation loss.

3. Special Status Animal Species

Since BLM would exercise its authority to preclude surface disturbance in the event that impacts to Federally listed species from oil and gas activities would exceed the thresholds identified in the incidental take statement included in FWS Biological Opinion 1-1-94-F-47, the proposed

lease sale would have no direct effects on Federally listed species when compared to the environmental baseline under current management.

If a parcel is leased and developed, there could be indirect effects to biological resources from offering the parcels for lease. These potential indirect effects would be minor, but long-term, because the RFD scenario for this EA estimates that one well could be drilled as a result of offering the parcels for lease. The 2006 PRMP/FEIS and the existing FWS BO's all acknowledge that development of a lease can result in impacts to habitat and species, but determined that the proposed oil and gas leasing activity would not jeopardize any listed species.

All development proposals will be subject to site specific NEPA and ESA review. Species and habitat surveys will be required. Project design criteria, mitigation measures and compensation, would be similar to those detailed in BO 1-8-07-F-19. Project design criteria, mitigation measures and compensation measures are applied at the time of the site-specific NEPA analysis and implementation of the ESA Section 7 biological opinion. BLM provides project-specific oversight of the implementation of all measures. The BLM requires post-project compliance reports to be submitted to document implementation of mitigation measures and their effectiveness. Although the effects disclosed below can result from oil and gas development, the likelihood and extent of such potential impacts from leasing the subject parcels would be reduced because of BLM's site specific NEPA and ESA review.

Potential impacts to animals, including listed species, include direct mortality or injury, loss of dens or burrows, displacement, and human disturbance. Roads and large areas of disturbance can also be a barrier to movement for some animal species. Direct mortality or injury could result from vehicle strikes, or from collapsed dens and burrows resulting in animals being crushed or entombed. Burrows and dens could be destroyed or damaged by vehicle traffic, particularly heavy equipment. Animals could be displaced during project activities. Such displacement of animals into unfamiliar areas could increase the risk of predation and increase the difficulty of finding required resources such as food and shelter. Human disturbance could result in displacement of animals, even though dens and burrows may not be directly impacted. Human disturbance also might alter the behavior of animals (e.g., activity periods, space use) resulting in increased predation risk, reduced access to resources, and reduced breeding success. Project activities during the spring breeding season could increase the potential for adverse impacts. Animals could also become entrapped in oil spills, leaks, sumps or improperly maintained well cellars or other facilities.

A variety of project design features and minimization measures are typically employed to reduce impacts to individual animals and populations. Typical measures are contained in BO 1-8-07-F-19. Speed limits and employee education are employed to reduce the likelihood of vehicle strikes. Dens are monitored and when vacant, excavated or temporarily blocked to prevent

entrapment of animals. Pipes and culverts are searched before being moved or sealed. Biological monitors are required to assist crews and trouble shoot unexpected situations.

The habitat impacts have been calculated as 10 acres of temporary disturbance and 1 acre of permanent disturbance at an indefinite site within the target parcels. The predicted disturbance is a small fraction of the total surface area of the project site. The probability of disturbing important habitat for any special status animal species is low throughout Units 1 due to the absence or sparse presence of the target species there. On Units 2 and 3, special status species have a higher likelihood of occurrence (particularly San Joaquin kit fox, GKR, and blunt-nosed leopard lizard) but once again, the total predicted disturbance represents only a small fraction of potential habitat.

Review of existing literature on threats to California condor from oil development revealed that recovery planners formally dismissed oil development as a source of condor mortality in the final Recovery Plan. Additionally, the most comprehensive study to date of condor mortality found no instances of any feature associated with oil development that caused mortality of California condors. One anecdotal report of condors associating with oil rigs and becoming coated with oil was found on the web (http://www.lpfw.org/about/critters/californiacondor.htm) but no mortality or lasting injury was noted. The Sespe Oil Field, which has 200 functional wells (Los Padres Forest Watch, "Notice of Intent to File Suit Against Vintage Production, Vintage Petroleum, and Occidental Petroleum for Violations of the Clean Water Act," January 25, 2008), is located in close proximity to the Sespe Condor Sanctuary, allowing ripe opportunity for interaction between condors and oil rigs. Condors are monitored intensely by radio and visual surveillance; any interaction with oil installations, and certainly any interaction that caused injury or mortality, would not go unnoticed. Therefore, it is unlikely the reasonable foreseeable development that may occur on the parcels being considered in this EA would have adverse effects on the California condor.

4. Special Status Plant Species

Several special status plant species are suspected or known to occur on most of the parcels. Federally-listed Endangered San Joaquin woolly threads may occur on parcels in San Benito County and Fresno County. Federally-listed California jewelflower is known to occur on parcel 72 in Fresno County and may occur on other parcels in Fresno County. Surveys need to be conducted during appropriate season (spring, summer) to identify sites where special status plant species occur (occupied habitat) or potential habitat where they could occur, prior to exploration or development.

If surveys successfully identify the locations of existing populations of Federally-listed plant species within the parcels, oil exploration and development activities can be planned to avoid

impacting them. Under the avoidance scenario, adverse impacts to known listed plant species populations from proposed oil exploration and development activities would be negligible.

Adverse impacts to potential habitat (areas between known populations) for the listed species from oil exploration would likely be minor, short-term, and localized since the number of wells and associated roads would be few and any unproductive wells would be plugged and abandoned followed by site restoration. Oil development may result in moderate, long-term, localized impacts to listed species potential habitat associated with the construction phase and long-term maintenance of access roads, well-pads, wells, and oil pipelines. Most development disturbances associated with the short-term construction phase and not being subject to any further disturbance thereafter would be expected to rapidly revegetate from soil seed bank. Long-term, localized disturbance of soils associated with the maintenance phase of development, however, could result in additional localized habitat impacts due to vegetation loss, soil compaction, and soil erosion.

5. Riparian and Wetland Habitat

Impacts to riparian habitat are not expected since the BLM would apply the Standard Lease Stipulation to move any proposed well pad location up to 200 meters in order to avoid riparian areas. Additionally, impacts would be avoided by applying current laws and regulations that require environmental protection measures to mitigate potential impacts to both ground and surface water quality and/or by restricting surface occupancy on portions of a lease.

These include BLM's Standard Lease Stipulations, which have been designed to protect ground and surface water quality. Additional site-specific mitigation measures and management restraints consistent with lease would be determined at the project-level if an application for a permit to drill is submitted on any of the leases included in the proposed action.

H. Cultural Resources & Native American Values

The proposed action will have no adverse effects upon cultural resources or Native American Values. In accordance with the State Protocol Agreement between the California BLM and California State Historic Preservation Officer (which addresses the responsibilities under Section 106 of the National Historic Preservation Act) and specific Supplemental Procedures for Fluid Minerals Leasing Amendment to the State Protocol Agreement, a Class I Records Search and Tribal consultation will be considered adequate for the purposes of fluid minerals lease sales. Any subsequent realty or oil and gas projects or development will be subject to a separate NEPA document and compliance with Section 106 of the National Historic Preservation Act. As oil and gas development actions or associated realty actions are proposed, the areas of potential effect (APE) will be defined and assessments of the impacts upon cultural resources will be

undertaken. In the event that cultural resources are identified within a project area, steps will be taken to mitigate impacts to that resource. Mitigation most frequently involves site avoidance but may include data recovery. Should development uncover subsurface archeological or cultural materials, the lessee is required to halt all work until the site can be evaluated and proper mitigation measures can be implemented.

BLM Oil and Gas Leasing Stipulation #4 is reiterated here: Cultural Resource Stipulation of Lease Sale Notices ensures if any lease is found to contain historic properties and/or resources protected under the National Historic Preservation Act (NHPA), American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, or other statutes and executive orders, the "BLM will not approve any ground disturbing activities that may affect any such properties or resources until it completes its obligations under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized or mitigated."

Tribal consultation for this proposed lease sale in December 2012 is being conducted with federally and non-federally recognized Native American tribes and individuals that the Hollister Field Office for areas in Monterey, San Benito, and Fresno Counties. There are no known adverse impacts to identified places of traditional cultural importance or value to Native Americans.

I. Paleontological Resources

Paleontological resources on Federal lands are protected by the Paleontological Resources Preservation Act of 2009. Adverse impacts (destruction or degradation) to fossils of scientific interest are effectively a loss of potential scientific knowledge. Exploration and development activities have the potential to adversely impact paleontological resources on all of the parcels being considered for oil and gas leasing because they are all known to be underlain by fossil-bearing rock formations. It is often difficult to predict what the impacts of excavation will be to fossil resources since fossils are often not visible on the ground surface and typically have a scattered distribution below ground. Due to the unpredictable nature of excavation impacts to scientifically-valuable fossil resources, it is beneficial to have a trained paleontologist on-site during excavation to identify potential paleontological resources as they are unearthed and assess their scientific value.

J. Livestock Grazing

There are no substantial direct or indirect impacts anticipated to livestock grazing operations or opportunities from the proposed action because such grazing use could occur concurrently. Should development activities on the surface lands leased under this action be proposed,

subsequent site-specific NEPA documentation will address any site specific impacts and affected Federal grazing lessees would be notified.

K. Lands

BLM does not administer land use authorizations on the surface of split-estate lands. All the parcels in Unit 3 located in the Panoche Coalinga ACEC would stipulate "No Surface Occupancy" in special status species habitat. There are currently two existing ROWs or other land use authorizations on Parcel #72. The reasonable foreseeable development would be less than 10 acres total if exploration drilling were to occur on BLM-administered lands. Therefore, the proposed action would have negligible long-term effects on land use authorizations on BLM public lands.

L. Farmland

The proposed action would have no effects on prime or unique farmlands because none of the parcels being considered for oil and gas leasing include the requisite soil types. Similarly, the effects of future oil and gas exploration activities on water resources that support agricultural uses in Monterey County and San Benito County are also negligible because the reasonable foreseeable development scenario would only require enough water supply to support one well. Based on the EPA estimates up to 5 million gallons per well, the proposed action may result in an additional 15.37 acre-feet of groundwater extraction from the (Upper) Salinas Valley Basin. This total represent less than one-hundredth of a percent (0.00011) of the existing agricultural water use in this subregion according to the MCWRA 2009 Summary Report. Furthermore, the impacts to local ranching and agricultural operations from the amount of water needed for this type of drilling (2-5 million gallons) could be mitigated by reusing flowback to conserve water and recycle the fluids.

M. Recreation

The proposed action would have no effects on recreation resources because most of the parcels being considered for oil and gas leasing are privately owned "split-estate". Based on the reasonable foreseeable development scenario, potential effects of oil and gas activities on BLM-administered lands in Unit 1 would be negligible because it would not disrupt legal public use of to the parcels in Unit 1, and these parcels are separated from the rest of the public lands in the Williams Hill area where the majority of recreational visitor use occurs.

N. Special Designations - Area of Critical Environmental Concern

The Panoche Coalinga ACEC is an important area identified in the Recovery Plan for the Upland Species of the San Joaquin Valley, California (FWS 1999). The suite of endemic species targeted in the Recovery Plan that occur on BLM public lands in the Panoche Coalinga ACEC include the

San Joaquin kit fox, the San Joaquin dune beetle, the giant kangaroo rat, and the blunt-nosed leopard lizard.

Given that this region of California is not well researched or described in archaeological and biological studies, the preservation of such resources is considered a priority for BLM management. Therefore, a No Surface Occupancy stipulation would be applied to all the parcels in Unit 4 that are included in the proposed oil and gas lease sale. As a result, there would be no direct impacts to values for which the Panoche-Coalinga ACEC was established. Based on the 2005 RFD scenario, the indirect effects of the proposed action would be minor and short-lived. These effects are analyzed in the appropriate resources sections for which the ACEC was established.

IV. Alternative 1 (Proposed Action) Cumulative Effects

The following sections briefly summarize the context for the cumulative effects analysis by describing the spatial and temporal setting for past, present, and reasonable foreseeable future actions that contribute to the current public lands resources conditions and trends that are identified in Chapter 3 of this EA and the 2006 PRMP/FEIS.

BLM resource management programs with the most potential to impact listed species and their habitats include: Lands & Realty, Livestock Grazing, Energy & Minerals, Recreation, and Fire Management. Impacts to listed species from these management programs are analyzed in the 2006 PRMP/FEIS. Past, present, and future state or private activities, not involving Federal activities that are reasonably certain to occur on or near the parcels being considered for oil and gas leasing in this EA may include unauthorized fires, unauthorized livestock grazing, and motorized vehicle access in sensitive habitat or outside of approved routes. Other past, present, and reasonable foreseeable future actions that contribute to the current resources conditions and trends (i.e. agriculture, urban development, and mineral extraction) are identified in Chapter 3 of this EA and the 2006 PRMP/FEIS.

The impact analysis in this EA only considers the lease sale outlined in the proposed action. Due to the speculative nature of a lease, BLM cannot anticipate the effects of all subsequent program-level or site-level actions that may occur associated with exploration and/or development of the mineral resources. Thus, all future actions carried out on any potential leases would be subject to an additional environmental review and consultation.

A. Oil and Gas Resources

The BLM manages 15 million acres of surface and 47 million acres of Federal mineral estate in California. Every day about 800,000 barrels of oil are produced in California. As a state California is the fourth largest oil producer, only Alaska, Texas, and Louisiana produce more.

Considering BLM administered leases nationwide, California BLM is the fourth largest producer. The highest producing Federal onshore lease is in the entire lower 48 states is in Kern County. Operated by Chevron on land in Midway-Sunset Oilfield, the "Section 22 lease" produces 8,000 barrels of oil per day, generating annual revenues of more than $175 million.

During the fiscal year 2008, production from Federal lands totaled more than 20.8 million barrels of oil, along with 5.3 billion cubic feet of natural gas. Total royalties paid to the United States treasury amounted to $169 million for oil, plus an additional $5.35 million for natural gas, an increase of nearly 80% when compared to the previous year. Half of all revenues generated are distributed to the State of California.

Most oil and gas leasing and development on public lands occur in the San Joaquin Valley of central California, on lands managed by the BLM's Bakersfield Field Office. Oil has been continuously produced in the state since the late 1800's, although only 39% of the oil used in California in 2006 was produced here (down from 42% in 2004.) For the past 10 years, that percentage has been decreasing by roughly 1.5% each year.

In addition to the past, present, and future activities of state or private entities, as well as other BLM authorizations, the reasonable foreseeable energy and mineral exploration and development of Federal mineral estate being considered in this EA would have minor cumulative impacts on social and economic conditions and public land resources such as wildlife habitat, air and water quality, and cultural and visual resources. Potential cumulative effects on local communities and private landowners include opportunities for employment and income, as well as increased vehicular traffic (including commercial vehicles), and increased noise and dust generation.

Potential cumulative effects on public land resources are described in the sections below. Based on the Hollister Field Office RFD scenario, most of the exploration and development areas are expected to be adjacent to existing disturbed private lands such as existing oil fields. Overall, the cumulative effects of the proposed action would be minor because it's unlikely that there would be more than 74 acres of surface disturbance as a result of oil and gas leasing throughout the entire Hollister Field Office.

B. Social and Economic Conditions

Since the impacts of reasonable foreseeable development of Federal mineral estate to the local economy would be negligible, there would be no adverse cumulative impacts on the socio-economic conditions in Monterey or Fresno counties.

C. Visual Resource Management

Cumulative effects on visual resources by energy and mineral development include decreased scenic opportunities, increased vehicular traffic, and access or viewing of areas that are disturbed by exploration or development activities. However, based on the Hollister Field Office RFD scenario, the cumulative effects of the proposed action would be minor because it's unlikely that there would be more than 74 acres of surface disturbance as a result of oil and gas leasing throughout the entire Hollister Field Office.

D. Air and Atmospheric Values

Cumulative Impacts to Air Quality

The cumulative impacts areas of analysis are the North Central Coast Air Basin and the San Joaquin Valley Air Basin. Energy and mineral extraction processes may impact air quality due to the production of air pollution including exhaust emissions and dust from ground disturbing activities. However, based on the 2005 RFD scenario, it's unlikely that there would be more than 74 acres of surface disturbance as a result of oil and gas leasing throughout the entire Hollister Field Office. Therefore, the expected emissions from drilling one well on one acre would be minimal and low in relation to the overall activity in the region. Small scale projects that have minimal impacts that are of short-duration would not likely contribute significantly to cumulative impacts (EPA 315-R-99-002; May 1999).

Providing a local source for oil production in an area with substantial infrastructure for refining and marketing the petroleum would serve to decrease the imports of gasoline and other refined fuel products into California, and would partially offset much larger emissions from long distance transportation of those products by ocean tankers, albeit by a very limited amount.

However, the effects of project specific GHG emissions are cumulative, and without mitigation their incremental contribution to global climatic change could be considered cumulatively considerable (SJVAPCD 2009a). The SJVAPCD's best approach in addressing cumulative impacts would be to require all projects to reduce their GHG emissions, through project design elements or mitigation. By reducing GHG emissions, project impacts are not anticipated to cumulatively influence climate on a global scale.

Cumulative Impacts to Climate Change

The assumptions incorporated into this EA suggest that one well would be drilled as a result of the proposed action. There is no generally accepted guidance for determining significance of project specific GHG impacts (SJVAPCD, 2009a). Emissions from the construction of one well would be expected to be lower than the national average because of vapor recovery systems and other pollution controls (i.e. Best Performance Standards [BPS]) mandated by the San Joaquin

Valley Air Pollution Control District. Values for GHG emissions are expected to follow a similar pattern. Thus, direct GHG emissions from the proposed action would be undetectable on a nationwide basis and would be expected to have a very minor influence on global climate change. This is consistent with the SJVAPCD conclusion that existing science is inadequate to support quantification of impacts that project level GHG emissions would have on global climate change (SJVAPCD 2009b).

However, the effects of project specific GHG emissions are cumulative, and without mitigation their incremental contribution to global climatic change could be considered cumulatively considerable (SJVAPCD 2009a). The U.S. Global Change Research Program recognizes that further work is needed on how to quantify cumulative uncertainties across spatial scales, and the uncertainties associated with complex intertwined natural and social systems (Karl et al. 2009).

E. Soils

There are a number of past and existing disturbances on the parcels proposed for leasing. The direct and indirect effects of the proposed action are limited to the local region, based on the 2005 RFD scenario, which anticipates up to 74 acres of soil that may be temporarily or permanently impacted. Thus, development of one well (one acre of habitat) would be negligible even if the disturbance is new and occurs on previously undisturbed lands.

In 2010, a former Clean Water Act exemption under the 2005 Energy Policy Act for oilfield construction expired; therefore, all oil and gas construction projects measuring 1.0 acres in size or greater are subject to the California Regional Water Quality Control Board Storm Water Prevention and Protection Plan (SWPPs) requirements, in compliance with state and Federal Clean Water Acts. As a result, there will be no cumulative effects to soil resources from the proposed action because all oil field construction projects 1.0 acres or greater in size would require storm water protection plans in 2010.

F. Water Quality

Surface disturbance associated with energy and mineral extraction activities may impact water resources by increased sedimentation or accidental introduction of contaminants into ground- or surface water. By implementing standard operating procedures for oil field practices and BLM best management practices, direct impacts to water quality would be avoided. Since there would be no direct effects to water quality as a result of the proposed action, there will be no cumulative effects to water resources. Furthermore, any oil field construction project 1.0 acre or greater in size would be subject to the California Regional Water Quality Control Board Storm Water Prevention and Protection plan (SWPPs) in 2010; development associated with the RFD scenario for the proposed action would be subject to these requirements.

G. Biological Resources Including Riparian and Wetlands

Impacts on wildlife habitat and species include reduced habitat quality from clearing vegetation, increased potential for soil erosion and sediment transport to off-site streams, and altering topography. In addition, construction of new roads and increased vehicles may impact habitat continuity, increase wildlife disturbance, and increase the potential for human and wildlife interaction.

Loss, degradation and fragmentation of habitat have resulted in population declines for many San Joaquin Valley species. Development for agriculture, energy production, and urban areas, and recreational activities such as off-highway vehicles, has resulted in loss of habitat. Development at key locations, roads, trails and water canals have fragmented habitat. Incompatible land uses, such as trash dumping and heavy grazing has degraded habitat. Invasion of non-native weeds, and increases in predators, such as ravens and red fox, also contribute to habitat degradation. Large landscape fires have replaced mature shrub communities with non-native grasslands that can persist for one or more decades.

Based on the implementation of measures to protect species identified in BLM Standard Oil and Gas Stipulation #1, and the Hollister Field Office RFD scenario, the cumulative effects of the proposed action would be minor because it's unlikely that there would be more than 74 acres of surface disturbance as a result of oil and gas leasing throughout the entire Hollister Field Office

Special Status Species

This EA only analyzes cumulative effects for species listed under the Federal Endangered Species Acts that are known or are likely to occur on the parcels being considered for oil and gas leasing that are administered by the Hollister Field Office.

The intensity of off-site and cumulative impacts on Federally listed species would depend upon the species present within the area, the existing conditions of the habitat within the surrounding area, the type of activity proposed to occur, monitoring efforts, and existing or proposed management goals and objectives.

The conservation and recovery strategy for San Joaquin Valley species is a system of reserves and corridors. In the 2007 ROD, BLM committed to managing all BLM lands within the Panoche-Coalinga ACEC as part of the conservation and recovery system by requiring a "No Surface Occupancy" stipulation on all oil and gas leases in special status species habitat.

Since the early 1990's, compensation has been required for most new developments in Federally listed species habitat. For every acre permanently disturbed, 3 acres must be set aside, and for every acre temporarily disturbed 1.1 acres must be set aside. Numerous entities have secured or

pledged lands in various locations to be retained for conservation and mitigation banking. Energy companies and conservation organizations have added compensation lands to the system in such areas as Lokern, Kettleman Hills, Buena Vista Valley and Buena Vista Hills. Future development is likely to require compensation and more lands are likely to be added to conservation and mitigation banking system.

Habitat loss, fragmentation and degradation are likely to continue as a threat to species conservation and recovery in the San Joaquin Valley. However, the requirement for compensation and replacement acres will help secure lands for the reserve and corridor system. As habitat is incrementally disturbed, habitat will also be incrementally conserved, helping to prevent significant habitat losses. This will allow the conservation and recovery strategy for the San Joaquin Valley species to be implemented and offset impacts from development.

The BLM has determined that there would be adverse cumulative effects to San Joaquin kit fox, blunt-nosed leopard lizard, giant kangaroo rat, Tipton kangaroo rat, San Joaquin antelope squirrel, and the ACECs designated to conserve these species if the amount of habitat disturbance exceeds the conservation objectives of the Recovery Plan for Upland Species of the San Joaquin Valley (1998) reserve and corridor strategy. As identified in the Recovery Plan (FWS 1998), adverse impacts to listed species conservation and recovery would be considered major if habitat disturbance exceeds more than 20% of the Panoche-Coalinga ACEC in the Kettleman Hills area.

The cumulative effects analysis areas for this lease sale was conducted to see if the current and reasonable foreseeable habitat disturbance for each lease parcel in a reserve area or habitat corridor reduced corridor connectivity or exceeded the 90% criteria. However, based on the 2005 RFD scenario, the cumulative effects of the proposed action would be negligible because it's unlikely that there would be more than 74 acres (< 1% of ACEC) of surface disturbance as a result of oil and gas leasing throughout the entire Hollister Field Office.

H. Cultural Resources and Native American Values

Potential adverse effects on cultural resources include accidental impacts to unknown or undiscovered cultural resources by ground-disturbing activities or visual impacts to view-sheds or sound-sheds with sacred sites. Based on BLM Standard Oil and Gas Stipulation #4 and the Hollister Field Office RFD scenario, cumulative effects of the proposed action on a quantitative basis would be negligible given that it is unlikely there would be more than 74 acres of surface disturbance as a result of oil and gas leasing throughout the entire Hollister Field Office. However, qualitatively the cumulative effects of the proposed action may negatively impact cultural resources, e.g., sacred sites if not properly identified or mitigated during proposed development activities.

I. Paleontological Resources

Potential adverse effects on paleontological resources include accidental impacts to unknown or undiscovered fossil resources by ground-disturbing activities. However, based on the paleontological resources protection provided by BLM Standard Oil and Gas Stipulation #4 and the Hollister Field Office RFD scenario, the cumulative effects of the proposed action would be minor because it's unlikely that there would be more than 74 acres of surface disturbance as a result of oil and gas leasing throughout the entire Hollister Field Office.

J. Livestock Grazing

Based on the Hollister Field Office RFD scenario, the cumulative effects of the proposed action would be negligible because it's unlikely that there would be more than 74 acres of surface disturbance as a result of oil and gas leasing throughout the entire Hollister Field Office.

K. Lands

There would be no adverse cumulative effects on lands and realty actions because there are only two existing ROWs on the parcels being considered for oil and gas leasing in this EA, and it's unlikely that there would be more than 74 acres of surface disturbance as a result of oil and gas leasing throughout the entire Hollister Field Office.

L. Farmland

There would be no adverse cumulative effects on lands and realty actions because there are no prime farmlands on the parcels being considered for oil and gas leasing in this EA, and it's unlikely that there would be more than 74 acres of surface disturbance as a result of oil and gas leasing throughout the entire Hollister Field Office.

M. Recreation

In the past 10 years, more than 1,000 wells have been drilled on private lands within the Hollister Field Office, but no wells have been drilled on the Federal mineral estate. Potential impacts to recreation that are associated with energy and mineral exploration and development include decreased scenic quality, reduced solitude, increased vehicular traffic; and viewing or needing to access lands that are highly disturbed due to exploration, seismic testing, new roads, transmission pipes, metering stations, and well pads.

However, there would be no adverse cumulative effects on recreation resources under the proposed action because there is no legal public access to the parcels being considered for oil and gas leasing in this EA, and it's unlikely that there would be more than 74 acres of surface disturbance as a result of oil and gas leasing throughout the entire Hollister Field Office.

N. Special Designations - Area of Critical Environmental Concern

Based on the requirement for a "No Surface Occupancy" stipulation on oil and gas leases in the Panoche Coalinga ACEC, there would be no cumulative effects on the values for which the ACEC was established because the amount of habitat disturbance associated with the proposed action would not exceed resource management objectives in the 2006 ROD or 1998 USRP.

V. No Action Alternative – Direct, Indirect, and Cumulative Effects

Should the No Action alternative be selected, these lands would not be leased for oil and gas at the present time. They would remain available for competitive leasing in the future, should circumstances change to make that option worth re-considering. If these parcels are not leased, then foreseeable future resources and uses, as well as their current rates of change, would remain as described in the Affected Environment. Cumulative impacts of management activities with the no action alternative on public lands would remain as they exist presently and as described in the Affected Environment section of this document.

A. Oil and Gas Resources

The no action alternative would represent a fundamental change in the decisions of the Hollister 2007 ROD and would not comply with Mineral Leasing Act of 1920 and subsequent amendments, The Federal Oil and Gas Royalty Management Act of 1976 (Public Law 94-579), the Energy Policy Act of August 5, 2005, and current regulations and policies to manage lands for multiple uses. Failure to make these lands available for leasing and subsequent development would also result in the loss of potential additional revenue from oil and/or gas royalties. The amount and value of lost reserves would be difficult to predict at this time without additional data.

B. Social and Economic Conditions

There would be no effects on social and economic conditions because the leases would not be offered.

C. Visual Resource Management

There would be no effects on visual resources because the leases would not be offered.

D. Air and Atmospheric Values

There would be no effects on air quality because the leases would not be offered.

E. Soils

There would be no effects on soil quality because the leases would not be offered.

F. Water Quality

There would be no effects on water quality because the leases would not be offered.

G. Biological Resources Including Riparian and Wetlands

There would be no effects on biological resources because the leases would not be offered.

H. Cultural Resources and Native American Values

There would be no effects on cultural resources or Native American values because the leases would not be offered.

I. Paleontological Resources

There would be no effects on paleontological resources because the leases would not be offered.

J. Livestock Grazing

There would be no effects on livestock grazing because the leases would not be offered.

K. Lands

There would be no effects on land use authorizations because the leases would not be offered.

L. Farmland

There would be no effects on farmlands because the leases would not be offered.

M. Recreation

There would be no effects on recreation resources because the leases would not be offered.

N. Special Designations - Area of Critical Environmental Concern

There would be no effects on special designations because the leases would not be offered.

VI. MITIGATION

Mitigation measures are not applicable to issuance of a lease because this type of undertaking is administrative only, and no activities are approved on the lease without further review and approval by BLM officials.

Chapter 5. Consultation and Public Involvement

I. PERSONS, GROUPS, AND AGENCIES CONSULTED

To be determined.

II. SUMMARY OF PUBLIC PARTICIPATION

Private surface land owners with split-estate parcels that are being considered for oil and gas leasing in this EA have been notified that the subsurface rights under their properties are being offered for sale and future development. On July 6, 2012 BLM will publish a news release to announce the 30-day comment period for this EA. The Hollister Field Office also sent copies of this EA to request comments from the private spilt-estate landowners, adjacent landowners, individuals that identified themselves as interested parties, and the following agencies, organizations, and tribes.

AGENCIES

United States Fish & Wildlife Service
Ventura Field Office
Sacramento Fish and Wildlife Office
United States Army
Fort Hunter Liggett
Camp Roberts
California Natural Resources Agency
Department of Conservation
Division of Oil, Gas, & Geothermal Resources
Department of Fish & Game
Monterey Bay Unified Air Pollution Control District
Central Coast Regional Water Quality Control Board
County of Monterey
Board of Supervisors
Planning Department
Water Resources Agency
Environmental Health Bureau
Agricultural Commissioner
Fresno Co. Public Works & Planning

ORGANIZATIONS

Ventana Conservation and Land Trust

Los Padres Forest Watch

Center for Biological Diversity

Santa Lucia Chapter of the Sierra Club

TRIBES

Amah Mutsun Tribe
Santa Rosa Rancheria of Tachi Yokuts
Salinan Tribe of Monterey, San Luis Obispo, and San Benito Counties

Pursuant to NEPA, the Proposed Action analyzed in this EA meets the purpose and need, as identified in Chapter 1; is viable and reasonable; and provides a mix of resource protection, management use, and development that is responsive to issues identified in scoping and meets the established Federal laws and regulations, and the BLM planning policy described in Chapter 1 of this EA.

III. LIST OF PREPARERS

Sky Murphy – Visual Resources, Planning and Environmental Coordination (Point of Contact)
David Moore – GIS/Outdoor Recreation
Tim Moore – Minerals/HazMat
Ryan O'Dell – Natural Resource Specialist – Botany/Soils/Paleontology
Stacey Schmidt – Rangeland
Christine Sloand – Realty
Mike Westphal – Ecologist - Wildlife
Erik Zaborsky – Archeologist/Tribal Liaison

Chapter 6. References

Arroues, K.D. 2006. Soil survey of Fresno county, California, western part. United States Department of Agriculture, Natural Resources Conservation Service, Washington, DC, USA. 1144 pp. + maps.

Calflora. 2011. http://www.calflora.org (accessed 1/8/11).

California Environmental Protection Agency, Air Resources Board. Staff Report. Analysis of San Joaquin Valley 2007 PM10 Maintenance Plan. Release date: October 12, 2007.

CARB, May 23, 2007- Cal/EPA Headquarters. California Global Warming Solutions Act of 2006, Greenhouse Gas Inventory and Mandatory Reporting. Implementation of AB 32 Requirements. Microsoft PowerPoint Presentation.

California Air Resources Board. 2007. Recent Research Findings: Health Effects of Particulate Matter and Ozone Air Pollution. [Online fact sheet] California Air Resources Board, Sacramento, 7 pp. http://www.arb.ca.gov/research/health/fs/pm_ozone-fs.pdf.

California Climate Action Team. 2006. Climate Action Team Report to Governor Schwarzenegger and the Legislature. California Environmental Protection Agency, Sacramento, 107 pp.

CNDDB. 2012. California Natural Diversity Database GIS layer. California Department of Fish and Game, Sacramento, California, USA. http://www.dfg.ca.gov/biogeodata/cnddb/

Cook, T.D. 1978. Soil survey of Monterey County, California. United States Department of Agriculture, Soil Conservation Service, Washington, DC, USA. 228 pp. + maps.

Dibblee, T.W. and Minch, J.A. 2005. Geologic map of the Tent Hills quadrangle, San Luis Obispo, Monterey, Kings & Kern Counties, California. Santa Barbara Museum of Natural History, Santa Barbara, California, USA.

Dibblee, T.W. and Minch, J.A. 2006a. Geologic map of the Tierra Redonda Mountain quadrangle, Monterey & San Luis Obispo counties, California. Santa Barbara Museum of Natural History, Santa Barbara, California, USA.

Dibblee, T.W. and Minch, J.A. 2006b. Geologic map of the Kreyenhagen Hills quadrangle, Fresno County, California. Santa Barbara Museum of Natural History, Santa Barbara, California, USA.

Dibblee, T.W. and Minch, J.A. 2007a. Geologic map of the Espinosa Canyon quadrangle, Monterey County, California. Santa Barbara Museum of Natural History, Santa Barbara, California, USA.

Dibblee, T.W. and Minch, J.A. 2007b. Geologic map of the Dark Hole quadrangle, Monterey, Fresno, and Kings Counties, California. Santa Barbara Museum of Natural History, Santa Barbara, California, USA.

Fresno County; Fresno General Plan: Coalinga Regional Plan (1996)

Google Earth. 2012. Google Earth version 6.0.3.2197. Google, Inc., Mountain View, California, USA.

Heizer, Robert F., ed. 1978 Handbook of North American Indians: Volume 8 California. Washington: Smithsonian Institution.

Hickman, J.C. 1993. The Jepson Manual. University of California Press, Berkeley, California, USA. 1400 pp.

Sawyer, J.O. and Keeler-Wolf, T. 1995. A manual of California vegetation. First edition. California Native Plant Society Press, Sacramento, California, USA. 471 pp.

Isgrig, D. 1969. Soil Survey, San Benito County, California. United States Department of Agriculture, Soil Conservation Service.

IPCC. 2007: Synthesis Report. Contribution of Working Groups I, II, and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K. and Reisinger, A. (eds.)]. IPCC, Geneva, Switzerland, 104 pp.

Jackson, Thomas L., and Matthew Armstrong 2009 Archaeological Reconnaissance Report for the Vallecitos 3D Seismic Testing Project, San Benito County, California. Pacific Legacy, Inc., Santa Cruz, California.

Karl, T. P., J.M. Melillo, and T.C. Peterson, (eds.). 2009 Global Climate Change Impacts in the United States. Cambridge University Press.

Luers, A. et al. 2006. Our Changing Climate: Assessing the Risks to California. California Climate Change Center, a Summary Report.

McGinnis, S. 2009. Climate Change, What We Know And What We Can Do In Our NEPA Analyses, Microsoft PowerPoint Presentation.

Monterey County. Monterey General Plan: South County Area Plan (2010)

Monterey County Water Resources Agency. Ground Water Summary Report (2009)

Ramanathan V. and G. Carmichael, Global and Regional Climate Changes Due to Black Carbon, Nature Geoscience 1:221 (2008).

San Benito County. San Benito County General Plan Update (2010).

SJVAPCD a. Draft Staff Report –Climate Change Action Plan: Addressing GHG under CEQA. June 30, 2009.

SJVAPCD b. CEQA GHG Guidance, June 30, 2009. Microsoft PowerPoint Presentation.

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at http://websoilsurvey.nrcs.usda.gov/ accessed [12/30/10].

UCMP. 2011. http://www.ucmp.berkeley.edu/science/collections.php (accessed 1/9/11).

USFWS. 1998. Recovery plan for upland species of the San Joaquin Valley, California. United States Fish and Wildlife Service, Portland, Oregon, USA. 319 pp.

USFWS. 2008. Purple amole (*Chlorogalum purpureum*). Five-year review: Summary and evaluation. United States Fish and Wildlife Service, Ventura, California, USA. 27 pp.

U.S. Geologic Survey. Ground-Water Quality Data in the Monterey Bay and Salinas Valley Basins, California (2005)

U.S. Global Change Research Program. June 2009. Global Climate Change Impacts in the United States ("GCRP Report"). http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts.

Additional Internet References for Air and Atmospheric Values, Soil and Water Resources

http://www.epa.gov/region09/air/sips/index.html
http://www.arb.ca.gov/desig/desig.htm
www.arb.ca.gov/cc/scopingplan/scopingplan.htm
http://www.arb.ca.gov/cc/scopingplan/sp_measures_implementation_timeline.pdf
http://www.consrv.ca.gov/DOG
http://www.epa.gov/air/caa/peg/
http://www.epa.gov/air/oaqps/greenbk.html
http://www.epa.gov/climatechange/effects/forests.html
http://www.epa.gov/climatechange/emissions/
http://www.epa.gov/region09/air/sips/index.html
http://www.ipcc.ch/
http://soildatamart.nrcs.usda/gov
http://www.us-cap.org/
http://www.valleyair.org/
http://websoilsurvey.nrcs.usda.gov/app/
http://www.wrcc.dri.edu/monitor/cal-mon/frames_version.html
http://www.arb.ca.gov/desig/desig.htm

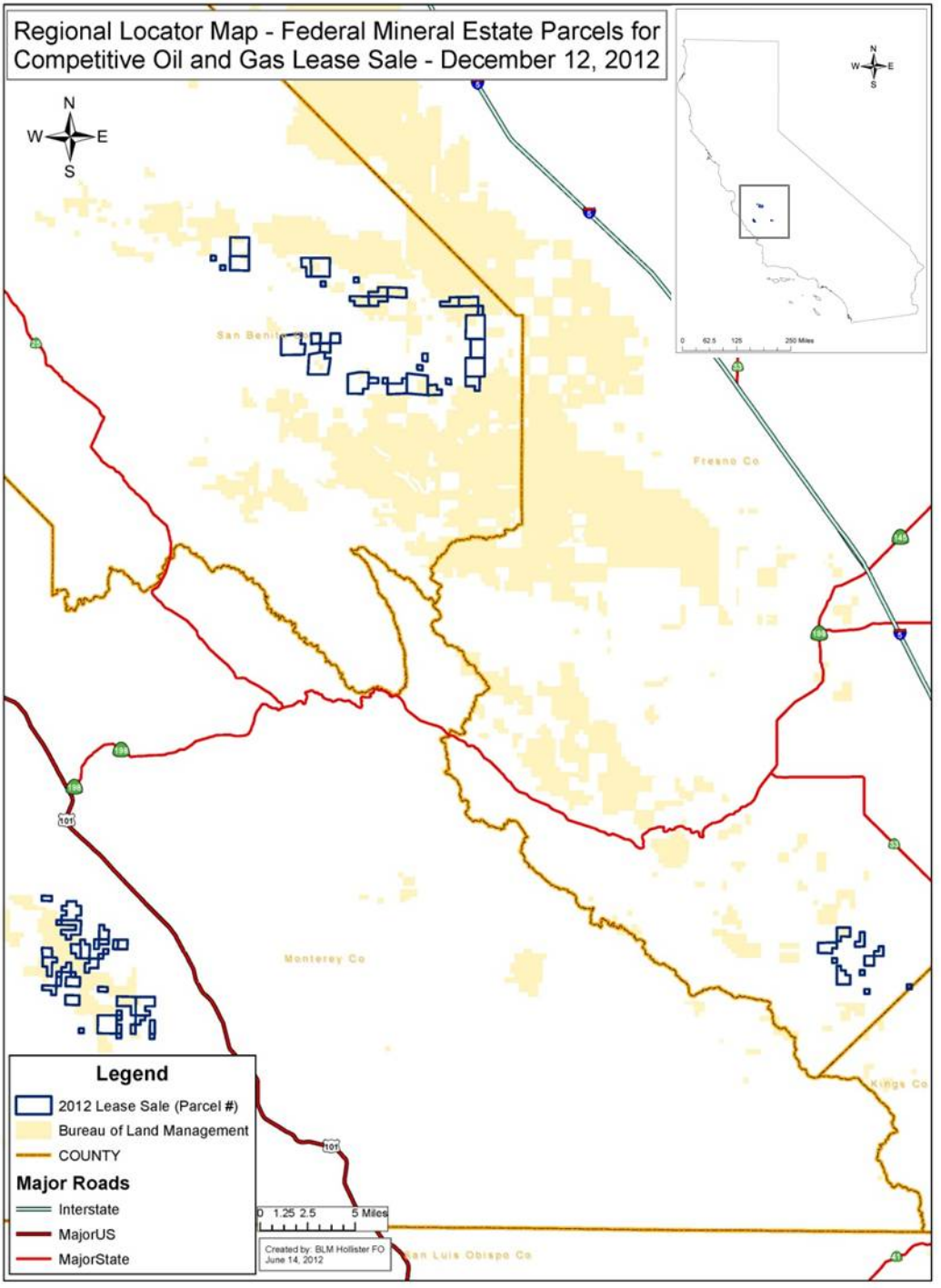
Appendix A – Proposed December 12, 2012 Oil and Gas Lease Sale Maps

Map 1 – Monterey County

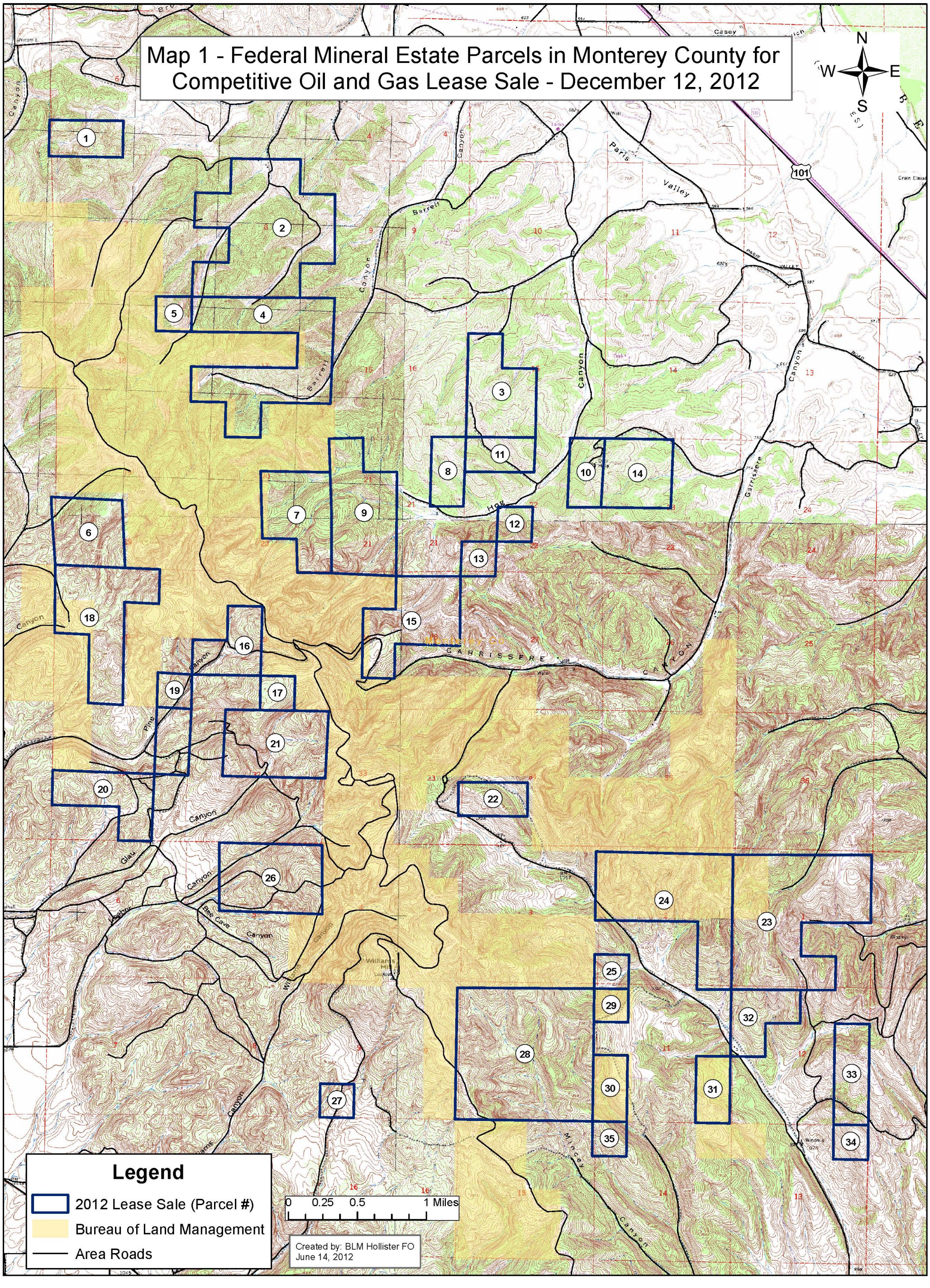
Map 2 – San Benito County

Map 3 - Fresno County

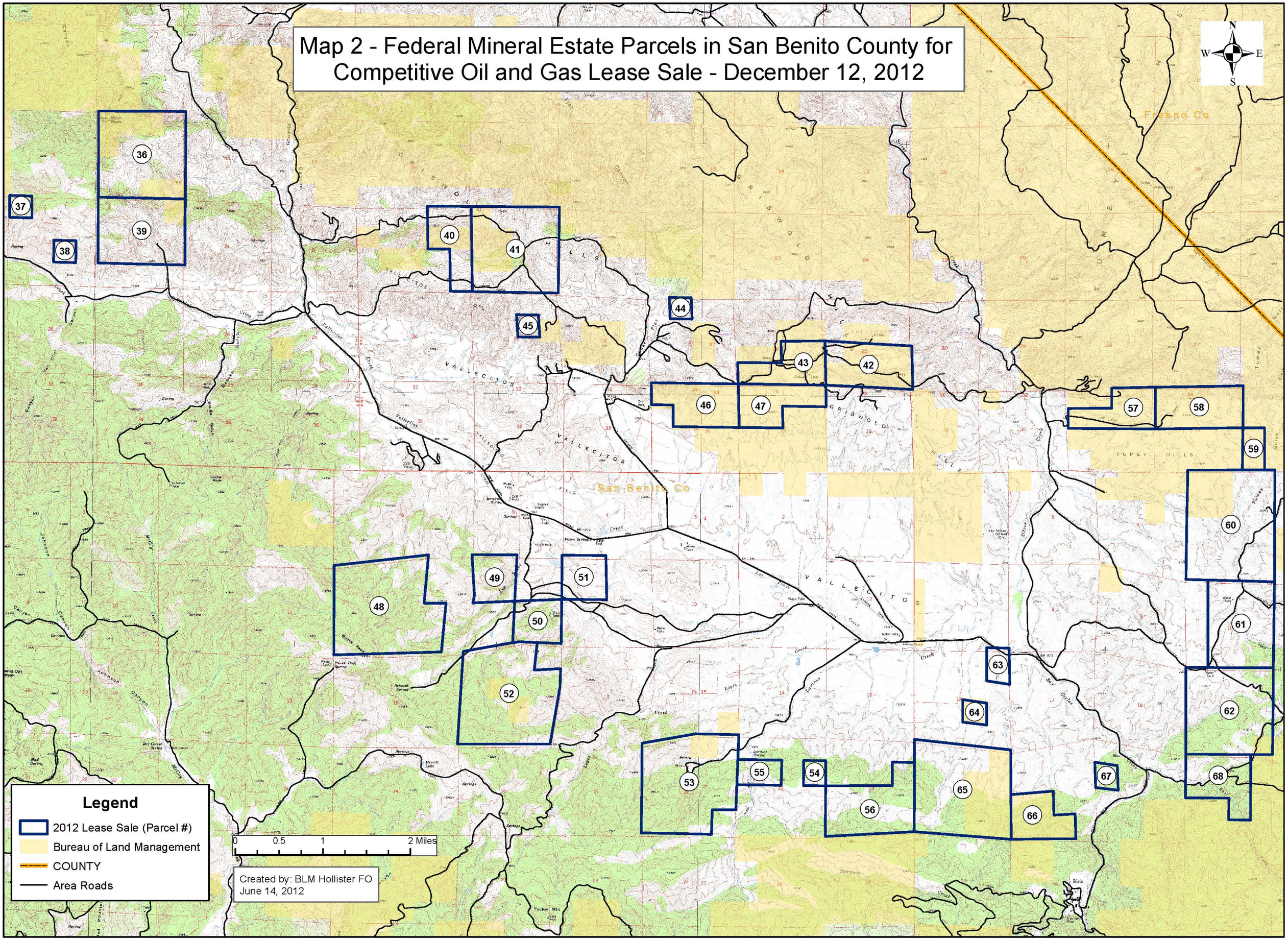
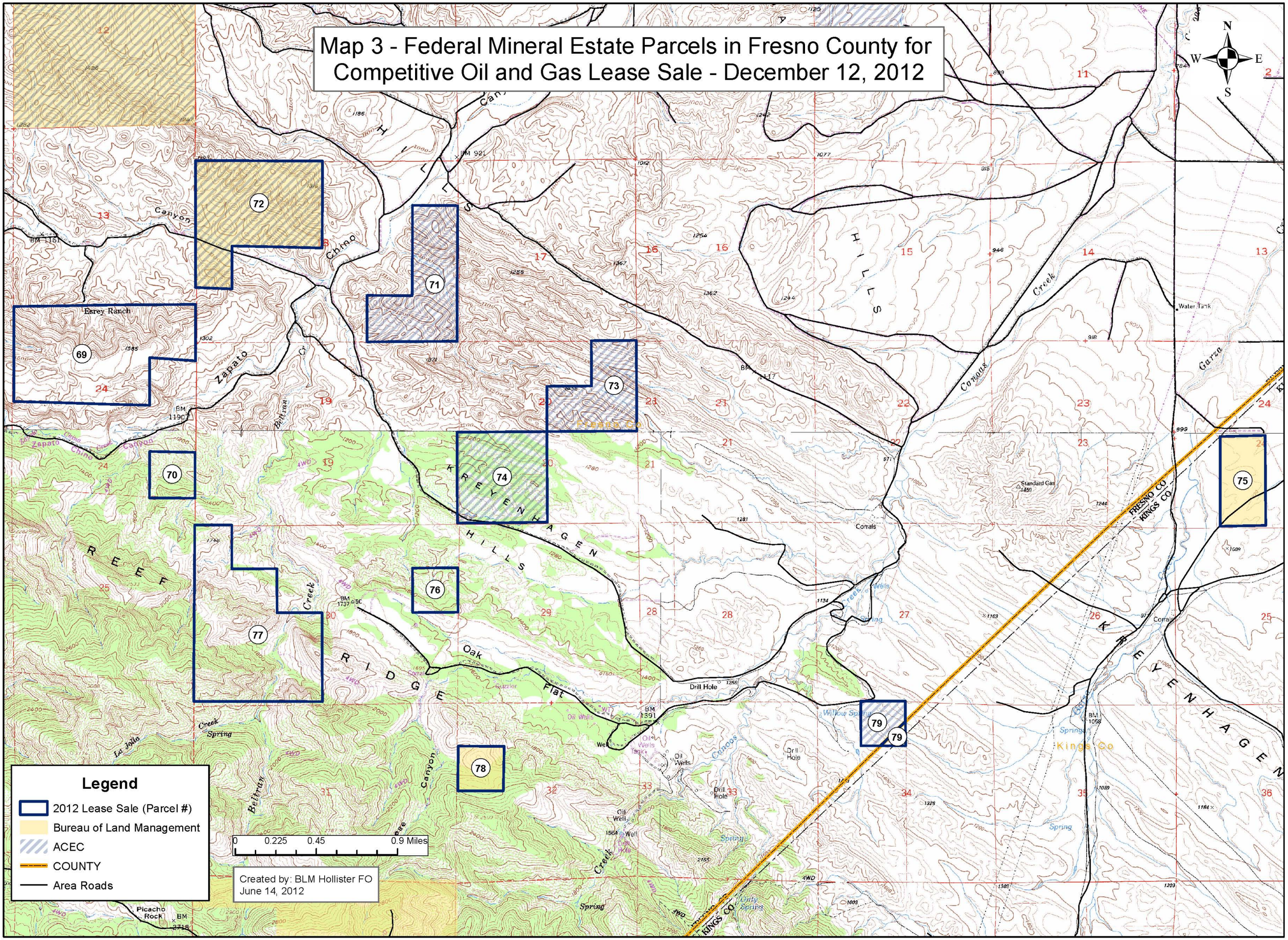
Regional Locator Map - Federal Mineral Estate Parcels for Competitive Oil and Gas Lease Sale - December 12, 2012



Map 1 - Federal Mineral Estate Parcels in Monterey County for Competitive Oil and Gas Lease Sale - December 12, 2012



Map 2 - Federal Mineral Estate Parcels in San Benito County for Competitive Oil and Gas Lease Sale - December 12, 2012



Map 3 - Federal Mineral Estate Parcels in Fresno County for Competitive Oil and Gas Lease Sale - December 12, 2012