Environmental Assessment (EA)
For
Oil & Gas Competitive Leasing
Certain Parcels within the
Bakersfield Field Office
December 9, 2009
DOI-BLM-CA-C060-2009-0135-EA

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Environmental Assessment (EA) for Leasing Certain Parcels within the Bakersfield Field Office for the December 9, 2009 Oil and Gas Lease Sale

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I. PROPOSED ACTION PURPOSE AND NEED

A. Introduction and Background

The proposed action is to offer approximately 8,587.42 acres of Federal mineral estate for competitive oil and gas leasing. This action is intended to meet Bureau of Land Management (BLM) responsibilities under the Mineral Leasing Act of 1920, as amended, 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.

BLM has the responsibility to conduct quarterly competitive oil and gas lease auctions in accordance with Section 5102(2)(1)(A) of the Reform Act. The Reform Act directs the BLM to conduct quarterly oil and gas lease auction within each state whenever eligible lands are available for leasing. BLM policy is to offer, as expeditiously as possible, those lands available for oil and gas exploration and possible development, consistent with the Federal Land Policy and Management Act (FLPMA) of 1976, National Environmental Policy Act (NEPA) of 1969, and other applicable laws, regulations, and policies.

The parcel descriptions in Appendix A will be re-parcelized for the Lease Sale Notice, which will create additional parcels. Of the approximately 8,587.42 acres of Federal mineral estate land that are considered for leasing, approximately 1,688.20 acres are public surface with Federal mineral estate and approximately 6,899.22 are split-estate (private surface with Federal subsurface minerals). All parcels would be subject to special leasing stipulations that would protect both endangered species and sensitive species and their habitat.

This Environmental Assessment (EA) is tiered to the Caliente Resource Management Plan/Environmental Impact Statement (RMP/EIS) dated May 5, 1997. The RMP/EIS is the most current land use plan located in the BLM Bakersfield Field Office. A more complete description of activities and impacts related to oil and gas leasing, development, production, etc. can be found in Chapter 5, page 33 of the RMP. Whether specifically mentioned or not, standard operating practices in the oilfield include measures to protect the environment and resources such as groundwater, air, wildlife, historical and prehistoric concerns, and others (Appendix C).

B. Purpose and Need for Action

This action is to conduct a competitive oil and gas lease auction. 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.

Federal Onshore Oil and Gas Leasing Reform Act of 1987 Sec. 5102(a)(b)(1)(A) (Reform Act) directs the BLM to conduct quarterly oil and gas lease auctions with each state whenever eligible lands are available for leasing. By conducting a lease auction of the Federal mineral estate, it provides for a potential increase of energy reserves for the U.S., it provides a steady source of significant income, and at the same time meets the requirements identified in the Energy Policy Act, Sec. 362(2), Federal Onshore Oil and Gas Leasing Reform Act of 1987, and The Mineral Leasing Act of 1920, Sec. 17.

C. BLM Oil & Gas Leasing and Lease Management

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 public land including 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.

2. Review process

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 (Ninth Circuit Court of Appeals, Northern Alaska Environmental Center et al *vs.* Kempthorne, 2006). In that decision, the Court said "Uncertainty is inherent in multi-staged projects and a phased analysis for both environmental and cultural (is appropriate)." At the leasing stage, a more generalized study is appropriate 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.

The Secretary of the Interior is responsible under the Mineral Leasing Act of 1920, as amended, for leasing and managing Federal oil and gas resources on public land. Acting for the Secretary, BLM has conducted ongoing oil and gas leasing activities for many years in the Bakersfield Field Office and throughout California.

The review process required before oil and gas drilling can occur is described in detail in Title 43 Code of Federal Regulations Part 3100 and BLM Manual 3100. In summary, BLM offers lands for oil and gas lease to the highest qualified bidder in a competitive auction. The lease term is 10 years, and for as long thereafter as oil and gas can be produced in paying quantities, and the maximum lease size offered by BLM is 2,560 acres, (see FOGRA of 1987 Sec. 5102(b)(1)(A)). BLM conducts and documents an environmental analysis at the lease issuance stage, unless an adequate analysis was included in an existing environmental document. Although most of the issues regarding oil and gas leasing on the lands covered by this document were addressed in previous documents, there are a few areas where either conditions have changed or else BLM policy has been modified, or both. Hence, this EA is tiered to the existing document previously discussed.

After obtaining a lease and prior to drilling any well, a lessee and/or operator submits an Application for Permit to Drill (APD), indicating the specific location of the drilling site. BLM conducts and documents additional environmental analysis at the APD stage. BLM may require reasonable mitigation measures in the APD, consistent with the lease terms and stipulations.

3. Directional drilling from adjacent land to a federal 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 for an application on leased lands.

4. 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 Limited Surface Use – Protected Species, Limited Surface Use – Sensitive Species and No Surface Use (Appendix B) 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.

5. 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, surface restoration, and also to pay for any outstanding rentals or royalties due on the lease should the lessee/operator default on those obligations.

The Bakersfield BLM has a mechanism for tracking operations of oil and gas leases. The BLM has an inspection and enforcement team that frequently inspect leases and is effective in assuring that the operations of leases 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 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 the work. In the past, BLM has partnered with CDOGGR to abandon Federal orphan wells. The results of these programs have been very successful.

D. Conformance with the Existing Land Use Plans

The 1997 Caliente Resource Management Plan RMP identifies all of these lands as open to oil and gas leasing, subject to certain environment controls indicated in the plan, Ch. 5 page 34. Consequently, this action is in conformance with the Plan. Most importantly, because every parcel is within potential threatened and endangered species and sensitive species habitat, all parcels would contain both Limited Surface Use –Protected Species, and Limited Surface Use – Sensitive Species stipulations. These stipulations would ensure through a site specific biota survey and NEPA analysis that all protected or sensitive species issues were addressed prior to any surface disturbance. This would ensure protection of the resources and also provide notification to the lessee that further consultation and mitigation/compensation might be necessary prior to authorization of surface disturbance.

E. Management Area General Objectives

The following objectives from the Caliente RMP will apply to all oil and gas related activities within the subject parcels:

• manage public lands to provide healthy, sustainable, biologically diverse ecosystems contributing goods, services and other social and cultural needs for local communities, the region and nation;

• manage public lands to meet the following minimum Standards of Ecosystem Health (See Chapter 6 Pg. 49 of the 1997 Caliente RMP for further explanation and indicators used to determine whether or not these standards are being met):

Soils exhibit functional biological and physical characteristics that are appropriate to soil type, climate, and land form.

Healthy, productive and diverse populations of native species, including special status species (Federal T&E, Federal proposed, BLM sensitive, or Calif. State T&E) are maintained or enhanced where appropriate.

Riparian/wetland vegetation, structure and diversity and stream channels and floodplains are functioning properly and achieving advanced ecological status.

Surface and groundwater quality complies with California or other appropriate water quality standards.

• provide a leadership role in developing and implementing regional conservation strategies,

• dedicate public lands to meet San Joaquin Valley conservation goals,

• integrate management objectives with and assist local county governments, private organizations, and state agencies in the development and implementation of local management plans (e.g. Habitat Conservation Plans, mitigation banks, county general plans, and air and water quality plans), and

• collaborate with the oil and gas industry in meeting mutually beneficial management objectives.

F. Allocations

All lands evaluated for competitive oil and gas lease auction in this EA are already currently classified as available for leasing; therefore, no special allocations are proposed within this EA.

II. ALTERNATIVES

To facilitate discussion, each parcel of land is identified by a number beginning with Parcel number 1.

Map 1 in Appendix A shows the general location of each parcel and more details can be found on the website: http://www.blm.gov/ca/st/en/fo/bakersfield. 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. BLM will provide a crosswalk between the parcel numbers used in this EA and the parcel number actually used in the oil and gas lease auction.

A. Proposed Action

The proposed action is that of the Bureau of Land Management (BLM) to conduct a quarterly competitive oil and gas lease sale of the unleased federal mineral estate. A total of 16,339.28 acres of federal minerals were analyzed for competitive lease. After a review of the 16,339.28 acres, BLM determined that 8,587.42 acres of those 16,339.28 would be offered. Out of the total acreage submitted, 6,472.04 acres were within California condor range. BLM does not have a current land use plan that addresses the California condor species in Kern and Kings Counties. The parcels within the California condor range have been deferred until after completion of the Bakersfield Resource Management Plan. Additionally, 1,279.82 acres are currently leased.

The proposed action is to offer 8,587.42 acres of unleased federal minerals estate identified by the Parcel number referenced on Appendix A for oil and gas competitive auction to develop the federal mineral estate. Of the approximately 8,587.42 acres of Federal mineral estate land that are considered for leasing, approximately 1,688.20 acres are public surface with federal mineral estate and approximately 6,899.22 acres are split-estate (private surface with Federal subsurface minerals). All parcels would be subject to special leasing stipulations that would protect both endangered species and sensitive species and their habitat with one Limited Surface Use Raptor stipulation and one parcel with the No Surface Use stipulation. All of the federal interests (surface and minerals) are within the jurisdiction of the Bureau of Land Management, Bakersfield, California. All parcels are within Kern and Kings Counties. There are four parcels that are partly within the administrative boundary of existing oilfields; however, all parcels are within 0.5-5 miles of the administrative boundaries of existing oilfields. All of the parcels would have the Limited Surface Use – Protected Species and Limited Surface Use – Sensitive Species stipulations attached to each lease Form 3100-11 upon lease issuance. See attached Appendix B for the text of these stipulations. Parcel 22, a 40 acre parcel is within the Alkali sink Area of Critical Environmental Concern and will have the additional No Surface Use stipulation per the Caliente RMP ACEC objective.

A number of parcels are private surface overlying federal minerals, known as “split-estate.” The BLM has split estate guidance, (Washington Instruction Memorandum No. 2003-131) effective April 2003. The guidance 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.

B. No Action

Under the No Action alternative, the proposed parcels identified on Appendix A would not be offered for competitive oil and gas lease auction. In this option, 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 would not be recovered if the lands were not leased.

C. Preferred Alternative

The preferred alternative is to offer 8,587.422 acres in Kern and Kings County of unleased Federal mineral estate competitively for oil and gas lease on December 9, 2009.

D. Alternatives Considered but Not Further Analyzed - Exchange or Sale

In lieu of leasing, the surface and mineral estate (split estate lands) under BLM jurisdiction could be considered potentially suitable for disposal through exchange under Section 206 of FLPMA. The mineral estate could also be considered for sale under Section 209 of FLPMA. Either of these actions would privatize the mineral rights, as opposed to merely leasing them for a set period of time, as in the proposed action. Analyzing the potential sale or exchange of these nominated lands and the associated policy implications are beyond the scope of this document. Therefore, an exchange or sale alternative will not be further analyzed. This option will be more fully addressed in the new Caliente RMP, slated for completion in 2011.

E. Alternatives Reviewed but Deferred

A total of 16,339.28 acres of federal minerals were nominated by the public (34) and (11) BLM for competitive lease. After a review of the 16,339.28 acres, BLM determined that 8,587.42 acres of those 16,339.28 would be offered.

A total of 6,472.04 acres that were nominated for competitive lease are within California condor range. Two parcels in San Luis Obispo County located in Sec. 9 and 15, T. 27 S., R. 16 E., MD Mer. (120.00 acres) one parcel in Kings County located in Section 20 (440.00 acres) T. 24 S., R. 17 E., MD Mer. and eighteen parcels in Kern County located in Sections 19, 29, 30 thru 35, (2,836.52 acres) T. 11 N., R. 23 W., SB Mer., and Sections 5, 9, 10, 11, 14, 15, 23, 24, 26, and 27, T. 11 N., R. 24 W., SB Mer. (3,075.52 acres). These parcels were reviewed and BLM decided to defer until completion of the Bakersfield Resource Management Plan (RMP) and EIS.

An additional acreage of 1,279.82 in Kern County, two in Sections 5 and 34, T. 24 S., R. 18 E., MD Mer., one in Section 1, T. 25 S., R. 18 E., MD Mer., one in Section 12, T. 27 S., R. 18 E., MD Mer., and two in sections 33 and 35, T. 24 S., R. 19 E., MD Mer. are currently leased for oil and gas, BLM deferred these parcels to a future lease sale.

A list of these parcels is made a part of this EA document as Appendix E.

F. Oil and Gas Leasing and Development

Oil and gas leasing and development have been previously addressed in more detail in the 1997 Caliente RMP/EIS beginning in Chapter 2, page 68. All future oil and gas related activities contemplated on lands offered in the proposed action are within the scope of those actions previously analyzed in the RMP EIS document, and no decisions made as a result of this EA will change or modify the decisions of the existing document.

Final Caliente RMP/EIS dated May 5, 1997

This action is also within the scope of the Caliente RMP Biological Opinion dated March 31, 1997 (101-97-F-64).

III. AFFECTED ENVIRONMENT

RESOURCE AREAS

A. Socio-Economic

The current 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. Approximately 80-90% of this production comes from Kern County.

B. Visual Resource Management

Parcels 1 thru 23 are in Visual Resource Management Class IV areas. This classification means that the characteristic landscape has had major modifications and such modifications may continue. The level of change in the basic landscape elements due to management activities can be high. Such activities may dominate the landscape and be the major focus of viewer's attention.

Parcels 24 thru 29 are within an area where federal surface has been inventoried as VRM Class II. This classification retains the existing characteristic landscape. The level of change in any of the basic landscape elements due to management activities should be low or none evident. These parcels have no federal surface ownership; therefore visual resources cannot be managed.

C. Recreation

A significant portion of the acres proposed for lease 8,587.42 (approximately 6,899.22) acres have a split estate surface ownership (private surface overlying federal minerals) and do not provide for public recreation opportunities. Parcels that have both federal surface and mineral estates (approximately 1,688.20 acres) are scattered and have limited public access. The lack of public access limits use of the parcels for recreation to only those individuals able to secure access across adjacent ownerships. The limited public use on these lands includes hiking, hunting, recreational shooting and off highway vehicle use.

D. Air and Atmospheric Values

1. Air Quality

The parcels proposed for lease are located in Kern and Kings Counties, California, and within the San Joaquin Valley Air Basin. At the federal level, regulatory duties lie with the U.S. Environmental Protection Agency (EPA), Region IX. At the state level, regulatory duties are delegated to the California Air Resources Board (CARB). Oversight authority for air quality matters rest at the county level with the San Joaquin Valley Unified Air Pollution Control District (*SJVUAPCD*).

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 nonattainment areas. (http://www.epa.gov/air/caa/peg/).

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). There are no federal nonattainment listings for nitrogen dioxide or sulfur dioxide; however, the EPA has identified nitrogen oxides (NOx) and sulfur dioxide (SO2) as precursors that must be addressed in air quality plans for the 1997 PM2.5 standards (SJVUAPCD 2008).

Table 1. Attainment status of the San Joaquin Valley Air Basin

Standard	**National Ambient Air Quality Standard**[a]	**State Ambient Air Quality Standard**[b]
1-hour Ozone	No federal standard[f]	Nonattainment/Severe
8-hour Ozone	Nonattainment/Serious[e]	Nonattainment
Carbon Monoxide	Attainment/Unclassified[g]	Attainment/Unclassified[g]
PM10	Attainment[c]	Non-attainment
PM2.5	Nonattainment[d]	Nonattainment
Nitrogen Dioxide	Attainment/Unclassified	Attainment
Sulfur Dioxide	Attainment/Unclassified	Attainment
Lead (Particulate)	No Designation/Classification	Attainment

[a]See 40 CFR Part 81
[b] See CCR Title 17 Sections 60200-60210
[c] On September 25, 2008, EPA redesignated the San Joaquin Valley to attainment for the PM10 National Ambient Air Quality Standard (NAAQS) and approved the PM10 maintenance plan.
[d] The Valley is designated nonattainment for the 1997 federal PM2.5 standards. EPA released final designations for the 2006 PM2.5 standards in December 2008 (effective in 2009), designating the Valley as nonattainment for the 2006 PM 2.5 standards.
[e]. On April 30, 2007 the Governing Board of the San Joaquin Valley Air Polution 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.
[f]Effective June 15, 2005, the U.S. Environmental Protection Agency (EPA) revoked the federal 1-hour ozone standard, including associated designations and classifications. However, EPA had previously classified the SJAVB as extreme nonattainment for this standard. Many applicable requirements for extreme 1-hour ozone nonattainment areas continue to apply to the SJVAB.
[g]Kern County is classified as Attainment for CO while Kings County is designated Unclassified.

Nonattainment 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 EPA recently re-designated the San Joaquin Valley to attainment of the NAAQS for PM10 and approved the *2007 PM10 Maintenance Plan*. In doing so, the EPA first approved the state's request to change the boundary of the SJV nonattainment area into two separate areas based on natural geographical and jurisdictional divisions: San Joaquin Valley air basin PM10 area and East Kern PM10 area.

In 1997, the EPA set two PM2.5 standards, a 24-hour standard and an annual standard. In 2006, EPA revised the 24-hour standard to a lower level (35 micrograms per cubic meter). EPA issued final area designations for the24-hour standard for PM2.5 on October 8, 2009, based on air monitoring data from 2006 to 2008. Attainment plans for this new standard will be required; however, the 2008 PM2.5 Plan focuses on the strategy to attain the 1997 annual standard.

Emissions, in general, are emitted from large stationary fuel combustion sources (such as electric utilities and industrial boilers), industrial and other processes (such as metal smelters, petroleum refineries, manufacturing facilities, and solvent utilization), and mobile sources including highway vehicles and non-road sources (such as mobile equipment, marine vessels, aircraft, and locomotives). The EPA figure below indicates national total emissions by source category for the year 2007.

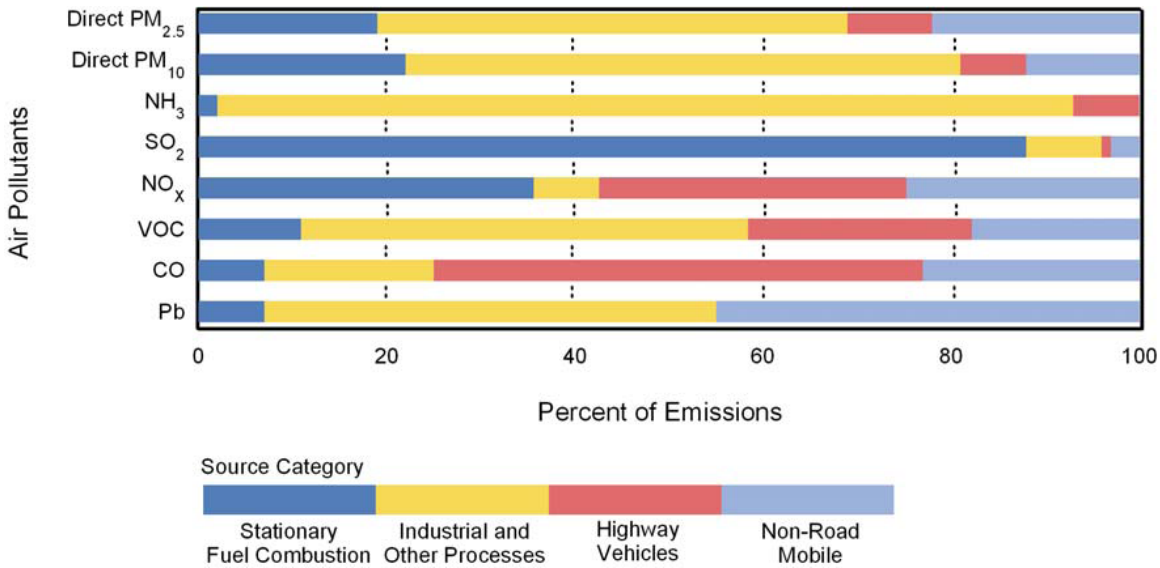

Figure 1. Distribution of national total emissions by source category for specific pollutants, 2007.[1]

[1]U.S. Environmental Protection Agency. November 2008. National Air Quality Status and Trends. Office of Air Quality Planning and Standards, Air Quality Assessment Division Research Triangle Park, North Carolina.

Currently there are a number of emission sources in the air basin which affect pollution levels. The Districts have documented these in their air plan inventories. The *SJVUAPCD* shows the baseline (1990) emissions for NOx at 787 tons per day in the summer time. Of that total, 165.1 tons (21%) were from oil and gas production. Kern County oil and gas activities accounted for approximately 15% of the NOx emissions (117.3 tons per day). Kern County has 1,500-2,600 new oil and gas wells drilled every year. In addition, emissions from hundreds of thousands of automobiles and trucks and significant other industrial and agricultural sources accounted for another 147 tons of NOx per day in Kern County in 1990.

The *SJVUAPCD* has prepared air quality plans for PM10, PM2.5, and ozone for inclusion in the State Implementation Plan. The San Joaquin Valley has the following plans in place to address air quality: *Best Available Control Measures/Technology and Reasonable Available Control Measures/Technology Demonstration for Sources of PM10 and PM2.5 precursors in the San Joaquin Valley Air Basin*, *San Joaquin Valley 2007 8-hour Ozone Plan*, and *2008 PM2.5 Plan*. The *2008 PM2.5 Plan* builds upon the strategy adopted in the *2007 8-Hour Ozone Plan* to bring the Valley into attainment of the 1997 NAAQS.

These 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. The air plans are implemented through rule making which include a number of

categories including permitting, equipment requirements and performance standards, dust and precursor emissions (NOx and SO_2) and several others. Any oil and gas and lands activities authorized by BLM, including oil and gas leasing and rights-of-way, would also have 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.

As a federal agency, BLM is required to comply with all applicable air quality laws, regulations, standards and implementation plans (Section 118). 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 and Clean Air Act as amended (42 USC 7401 et seq.). SJVUAPCD Rule 9110 (adopted October 20, 1994) specifies the criteria and procedures for determining the conformity of federal actions with the District's air quality implementation plan. Rule 9110 indicates general conformity applies to federal actions except actions with emissions less than the de minimis levels and actions exempt or presumed to conform.

2. Climate and Meteorology

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. At the south end of the Valley, Bakersfield is approximately 400 feet in elevation. 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 (www.valleyair.org). As a result, these areas have some of the worst air quality in the nation.

The northern Central Valley has a hot Mediterranean climate while the southern portions in rainshadow 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 F range, and heat waves may bring temperatures in excess of 104 ºF. 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. Last year's annual precipitation for Bakersfield was 4.68 inches, considerably lower than the normal. (mhtml:file://F:\Climate info/Climate Data SummaryBakersfield, CA.mht). The region is seasonably dry, as are most parts of the West. However, a large portion

of California is at half the normal amount of precipitation for the last 12 months (Apr 2008 - Apr 2009).

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

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 CO2e concentrations to increase dramatically, and are likely to contribute to overall global climatic changes. The Intergovernmental Panel on Climate Change (IPCC) 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."

Several activities contribute to the phenomena of climate change, including emissions of GHGs (especially carbon dioxide and methane) from fossil fuel development, large wildfires and activities using combustion engines; changes to the natural carbon cycle; and changes to radiative forces and reflectivity (albedo). It is important to note that GHGs will have a sustained climatic impact over different temporal scales. For example, recent emissions of carbon dioxide can influence climate for 100 years. In contrast, black carbon is a relatively short-lived pollutant, as it remains in the atmosphere for only about a week. It is estimated that black carbon is the second greatest contributor to global warming behind CO_2 (Ramanathan and Carmichael, 2008).

Global mean surface temperatures have increased nearly 1.8°F from 1890 to 2006. 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. 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.

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). Annual precipitation

will decrease and most areas will have fewer heavy precipitation events. Overall, snow depth will decrease as a result of delayed autumn snowfall and earlier spring snowmelt. There will be increases in extreme hot temperature events, more prolonged hot spells, an increased diurnal temperature range, and a concurrent decrease in extreme cold events. This prediction is the most current and thorough analysis of expected global climate change and is based on information from four sources: Atmosphere-Ocean General Circulation Model (AOGCM) simulations, downscaling of AOGCM-simulated data using techniques to enhance regional detail, physical understanding of the processes governing regional responses, and recent historical climate change.

It is often difficult to discern just how global climate change is affecting resources; there is a lot of new information indicating the type and nature of impacts on particular biological resources. In many cases however, there is only information about potential or projected effects of global climate change on resources. Existing and anticipated effects of climate change on resources and resource uses are incorporated into the relevant sections below and discussed in cumulative impacts. With enactment of the California Global Warming Solutions Act of 2006 (AB 32; Stats. 2006, chapter 488), the California Air Resources Board (ARB) was tasked with several new responsibilities to help address the threat of global warming. Two of these new responsibilities, greenhouse gas emissions inventory and mandatory reporting, are complementary efforts 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 ARB of a regulation to require the mandatory reporting and verification of greenhouse gas.

To improve ARB's estimates of GHG emissions in California, they designed an Oil and Gas Industry Survey to accurately quantify equipment and operation processes for the 2007 calendar year. The ARB Stationary Source Division is conducting studies aimed at reducing GHG emissions of carbon dioxide and fugitive methane from oil and natural gas productions, and the Oil & Natural Gas Production, Processing, and Storage (Extraction) measure is scheduled to be adopted in early 2010 (http://www. arb.ca.gov/cc/oil-gas/oil-gas.htm). A number of scoping plan measures have already been approved and/or adopted, 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 (http://www.arb.ca.gov/cc/scopingplan/sp_measures_implementation_timeline.pdf).

E. Soil Quality

A soil map unit represents a delineated area dominated by one or more (complex) type of soil. Soils are identified and named according to taxonomic classification; types are based on defined properties and characteristics. The Natural Resource Conservation Service (NRCS) soil surveys provide maps and detailed map unit descriptions that are useful tools for land management. Soils within the parcels proposed for leasing are described according to the NRCS Soil Surveys for Kern County, California (Northwestern Part and Southwestern Part) and Kings County, California.

Many soils on these properties are typical of those developed from relatively fine-grained residual or alluvial materials derived from shale and/or sandstone, under semi-arid to arid conditions. A characteristic soil tends to be deep, well-drained, light colored, and loamy in texture with some rock fragments. These soils are generally characterized by moderate permeability, medium to rapid surface runoff and moderate to high erosion hazards on slopes. Where slopes are greater than 30%, surface runoff is high to rapid and erosion hazard is high to severe. In uncultivated areas, these soils typically support annual grasses, forbs, and scattered shrubs. These soil map

units are primarily used for livestock grazing, wildlife habitat and various irrigated and/or nonirrigated crops.

Kettleman Hills Unit (Parcels 1 -14)

Twelve soil map units occur on Parcels 1-14. These include Cantua coarse sandy loam (5 to 15 percent and 15 to 30 percent slopes), Kettleman loam (5 to 15 percent and 15 to 30 percent slopes), Kettleman-Cantua complex (30 to 50 percent slopes), Kimberlina fine sandy loam, sandy substratum, Mercey loam (5 to 15, 15 to 30, and 30 to 50 percent slopes), Wasco sandy loam, (0 to 5 percent slopes), and Westcamp loam, partially drained.

Cantua coarse sandy loams, on slopes ranging from 5 to 30 percent, are deep, excessively drained, moderately sloping to rolling soils that occurs on hills and hilly uplands. These soils have rapid permeability and a moderate potential hazard of erosion. Limitations on development of these map units include shallow depth to soft rock and steepness of slope. Caution should be exercised during development on these soils, as deep cuts needed to construct level sites can expose bedrock, increasing the risk of erosion if the soil is left exposed. These units occur on Parcels 4 (5 to 15 percent slopes), Parcels 10 and 11 (15 to 30 percent slopes).

Kettleman loam, 5 to 15 percent slopes, is also a moderately deep, well drained soil that is on hills. This unit occurs on Parcels 5, 6, and 14. Kettleman loam, 15 to 30 percent slopes, is on portions of Parcels 4 and 5. Steepness contributes to rapid runoff and high hazard of water erosion. Available water capacity and permeability of these units is moderate. These units appear sloping to rolling and were formed in residuum derived from sandstone or shale. Generally these soils are used as rangeland and for wildlife habitat. At these levels of steepness, soil disturbances should be minimized to protect soils from erosion.

The Kettleman-Cantua complex, 30 to 50 percent slopes, is on hills. This soil complex is represented on nearly all properties in the Kettleman Unit (Parcels 1-14), with the exception of Parcels 5, 9, and 13. The Kettleman soil is moderately deep and well drained, and has moderate permeability and available water capacity. The Cantua soil is deep and somewhat excessively drained and has rapid permeability and low available water capacity. These soils have moderate to rapid runoff and the hazard of water erosion is high, increasing with steepness. Uses include rangeland and wildlife habitat. The soil is suited for rangeland use, yet limited by steepness of slope and erosion hazard.

Mercey loams, ranging in slopes from 5 to 50 percent, are deep, well drained soils on hills and uplands that formed in residuum derived from shale or sandstone. These three units are characterized by slow permeability and low available water capacity. Rapid runoff and a high erosion hazard are characteristics which increase in intensity as slope increases. Uses of these units include rangeland and wildlife habitat; uses on these soils should be managed to protect them from erosion. Mercey loams occur on Parcels 9, 10, and 12.

Kimberlina fine sandy loam, sandy substratum formed in alluvium derived from sedimentary and igneous rock. This soil is used primarily for irrigated crops such as grapes, almonds, alfalfa, and cotton. Wasco sandy loam, 0 to 5 percent slopes, is derived from sandstone and occurs on alluvial fans. Both soils have rapid permeability and low to moderate available water capacity. These are very deep, well drained soils with low runoff. The Wasco loam is limited by a moderate hazard of erosion, while the Kimberlina soil has only slight hazard of water erosion. Kimberlina fine sandy loam, sandy substratum is on Parcel 13 only. Wasco sandy loam is represented on Parcels 4 and 13.

Westcamp loam, partially drained is only on Parcel 13. The unit is considered partially drained because of the use of drainage canals and the presence of reservoirs and dams in the Sierra Nevada that pump from the water table. It is a poorly drained, very deep saline-alkali soil on

basin rims and flood plains. Available water capacity is highly variable since soil salinity is unevenly distributed, and the soil is subject to long periods of flooding during winter and into early spring. This soil is limited by slow permeability, wetness, the hazard of flooding, and the saline-alkali condition. The saline-alkali condition is highly corrosive to concrete and steel; this risk can be reduced through the use of treated pipe and sulfate-resistant concrete. The risk of flooding can be reduced through the use of diversions.

Urban land also occurs on Parcel 13, which consists of land covered with parking lots, streets, buildings, and various other structures that obscure or alter soils beyond identification. Near Kettleman City there are inclusions of Kimberlina fine sandy loam that has a sandy substratum. Wasco sandy loam and Panoche loam are in the city of Avenal within the urban land unit.

South Dome Unit (Parcels 15-21)

Within the South Dome Unit (Parcels 15-21), there are eight soil map units: Avenal loam (0 to 5 percent slopes), Cantua coarse sandy loam (5 to 15 percent slopes), Carollo clay loam (5 to 20 percent slopes), Delgado sandy loam (5 to 15 percent slopes, Kettleman loam (5 to 15 and 15 to 30 percent slopes), Kimberlina fine sandy loam, sandy substratum, and Wasco sandy loam (0 to 5 percent slopes).

Avenal loam is a very deep, well drained, and nearly level to sloping (0 to 5 percent) soil which formed in alluvium derived mainly from sedimentary rock. These units are well suited for rangeland although the production of forage is limited by precipitation. Most areas of this unit are used for livestock grazing, and wildlife habitat, and irrigated crops. Slow permeability and the hazard of water erosion are limiting factors for various uses. Since the risk of erosion is increased if the soil is left exposed during site development, revegetation of disturbed sites should be done as soon as practicable to reduce the hazard of erosion.

Cantua coarse sandy loam is a deep, excessively drained, moderately sloping to rolling soil that occurs on hills. This soil has rapid permeability and a moderate potential hazard of erosion. Limitations on development of this map unit include shallow depth to soft rock and steepness of slope. Caution should be exercised during development on this soil type, as deep cuts needed to construct level sites can expose bedrock, increasing the risk of erosion if the soil is left exposed.

Carollo clay loam, 5 to 20 percent slopes, is a moderately deep, well drained, saline-alkali soil. . Kettleman loam, 5 to 15 percent slopes, is also a moderately deep, well drained soil that is on hills. Kettleman loam, 15 to 30 percent slopes, is on a portion of Parcel 18. Steepness results in rapid runoff and high hazard of water erosion. Delgado sandy loam, 5 to 15 percent slopes, is a shallow, excessively drained soil located on hills. Available water capacity and permeability of these units is moderate. These units appear sloping to rolling and were formed in residuum derived from sandstone or shale. Generally these soils are used as rangeland and for wildlife habitat. At these levels of steepness, soil disturbances should be minimized to protect soils from erosion.

Kimberlina fine sandy loam, sandy substratum formed in alluvium derived from sedimentary and igneous rock. This soil is used primarily for irrigated crops such as grapes, almonds, alfalfa, and cotton. Wasco sandy loam, 0 to 5 percent slopes, is derived from sandstone and occurs on alluvial fans. Both soils have rapid permeability and low to moderate available water capacity. These are very deep, well drained soils with low runoff. The Wasco loam is limited by a moderate hazard of erosion, while the Kimberlina soil has only slight hazard of water erosion. These two units occur only on Parcel 21.

Lost Hills Unit (Parcels 22-23)

Three soil map units occur on the Lost Hills Unit (Parcels 22 and 23). These include Kimberlina fine sandy loam, Twisselman sandy loam, saline-alkali, and Twisselman clay, saline-alkali (0 to 2 percent slopes). Kimberlina fine sandy loam is on alluvial fans and plains and formed in alluvium from granitic and sedimentary rock. Permeability of this soil is moderate, available water capacity is high. Runoff is slow and the hazard of water erosion is slight. Most areas of this unit are used for irrigated crops, irrigated pasture, limited livestock grazing, and urban development. This soil has few limitations.

Twisselman sandy loam and Twisselman clay, saline-alkali are deep, well drained soils on alluvial fans and basin rims. These soils are characterized by very slow permeability, low or very low available water capacity, slow runoff, and slight hazard of water erosion. Although utilized for livestock grazing, these units are poorly suited; vegetative production is limited by the saline-alkali condition of the soil. In uncultivated areas, these units typically support annual grasses, forbs, and a few scattered shrubs. The saline-alkali soils are more likely to support salt tolerant shrub species.

Maricopa Unit (Parcels 24-29)

Six soil map units are represented on Parcels 24-29. The dominant soil map units within the Maricopa Unit are Excelsior sandy loam and the Guijarral-Klipstein complex, 0 to 2 percent slopes. These soils occur on alluvial fans and fan remnants and are generally characterized as well drained with moderate to high available water capacity.

Other soils in the Maricopa Unit include Cerini loam (0 to 2 and 2 to 5 percent slopes), Guijarral sandy loam, and Tupman gravelly sandy loam (0 to 2 percent slopes). The Cerini loams formed in alluvium derived from granitoid rock and occur on alluvial fans. Guijarral sandy loam occurs on fan remnants (0 to 2 percent slopes) and is derived from calcareous sedimentary rock. Tupman gravelly sandy loam is on fan remnants and stream terraces, formed from granitoid and/or sedimentary rock. These units are generally well drained. While the Cerini and Guijarral sandy loams have moderate to high available water capacity, the Tupman gravelly sandy loam has low available water capacity.

http://soildatamart.nrcs.usda/gov (accessed 7/20/2009)
http://websoilsurvey.nrcs.usda.gov/app/ (accessed 7/20/2009)

F. Water Quality

The parcels are in areas where there are or may be fresh water aquifers. There are no rivers, lakes, or streams on the parcels that contain water year round. Blakely canal crosses Parcel 13 in the Kettleman Unit. The California Aqueduct crosses Parcel 15 in the South Dome Unit and the northeast corner of Parcel 24 in the Maricopa Unit. Santiago Creek, an ephemeral stream, crosses Parcel 24 and bisects Parcel 28. According to the NRCS Soil Survey maps for Kings County, California several named arroyos occur on Kettleman Unit parcels: Arroyo Somero is on Parcel 1; a portion of Arroyo Chico is on Parcel 2; Arroyo Mellado is on Parcel 3; Arroyo Robador is on Parcel 5; Arroyo Conchuso is on Parcel 6; Arroyo Raso is on Parcel 7; and Arroyo Escaso is on Parcel 8.

Parcels 8, 12, 15, 18, 19, and 29 contain unnamed ephemeral or intermittent creeks and/or drainages, based on the USGS 7.5 minute quadrangle maps. In the Maricopa Unit parcels, several unnamed ephemeral drainages and Santiago Creek have been altered and/or removed by agriculture and past construction of Highway 166.

All parcels are within watersheds governed by basin plans subject to federal and state Clean Water Acts. BLM will require full compliance with all applicable federal, State, and local laws, policies, and rules and regulations to protect both surface and groundwater.

G. Biological Resources Including Riparian and Wetlands

To facilitate discussion, the properties included in this action have been divided into four Biological Units, i.e., groupings of adjacent parcels with similar ecological values. Unit names reflect some aspect of local geography. Information presented for each Biological Unit includes general topography, notable disturbance, vegetation, common animals, and potential sensitive species. For some units, particular characteristics of individual parcels are also noted.

Special Status Species. Special Status Species includes federally listed, state listed and BLM California sensitive species. Each unit discussion includes a discussion of Special Status Species. Additional discussion regarding Federally listed species follows the Biological Unit descriptions.

Kettleman Hills Unit (Parcels 1 -14) The Kettleman Hills Unit consists of about 4,800 acres within and adjacent to the Kettleman Hills. Elevations range from 760 to 939 feet. Topography consists of flat plains and gently rolling to moderately steep hills. Parcel 13 contains Kettleman City and approximately 130 acres of agricultural lands. The remaining parcels contain native habitat. Dirt roads are common. Interstate 5 crosses Parcels 4 and 5, California Hwy 41 crosses Parcel 8, and the 5-41 interchange is within Parcel 14. Seven parcels (1, 2, 3, 6, 7, 8, and 9) lie within the Kettleman Hills ACEC. Most of the unit appears to be used for livestock grazing.

Vegetation in this unit is primarily non-native annual grassland. Scattered native shrubs, such as common saltbush (*Atriplex polycarpa*), alkali goldenbush (*Isocoma acradenia*), and snakeweed (*Gutierrezia californica*) are present in some locations. The grassland vegetation includes the usual assortment of non-native annual grasses and native wildflowers. Potential weeds in the unit include horehound (*Marrubium vulgare*) and Russian thistle (*Salsola tragus*). Saltcedar (*Tamarix* sp.) and tree tobacco (Nicotiana glauca) are also present in the Kettleman area, but are usually associated with oil operations or abandoned home sites.

Animals that may be present include coyote, badger, California ground squirrel, cottontail, black-tail jackrabbit, horned lark, common raven, mourning dove, sage sparrow, western meadowlark, red-tailed hawk, side-blotched lizard, western whiptail, western rattlesnake and gopher snake.

Special status animal species which may be present include San Joaquin kit fox, San Joaquin antelope squirrel, giant kangaroo rat, short-nosed kangaroo rat, San Joaquin pocket mouse, Tulare grasshopper mouse, burrowing owl and blunt-nosed leopard lizard.

Special status plant species which have been collected in the surrounding area and are expected to be present in at least some of the parcels include San Joaquin wooly-threads (*Monolopia congdonii*) , Hoover's woollystar (*Eriastrum hooveri*), and king's gold (*Tropidocarpum* [*Twisselmannia*] *californica*). CNPS list 4 plants collected in the surrounding Kettleman area include Ferris' goldfields (*Lasthenia ferrisiae*), crownscale (*Atriplex coronata* var. *coronata*), San Joaquin bluecurls (*Trichostema ovatum*), cottony buckwheat (*Eriogonum gossypinum*), and forked fiddleneck (*Amsinckia vernicosa* var. *furcata*).

South Dome Unit (Parcels 15-21).
The South Dome Unit consists of 1,360 acres located on the west side of the San Joaquin Valley, north of the town of Lost Hills, primarily in the South Dome of the Kettleman Hills. Elevation ranges from 350 to 600 feet. The area's topography consists of a flat, gentle alluvial fan draining

to the northeast or gently sloping hills. The California Aqueduct crosses parcel 15. Dirt roads are common and 25th Avenue crosses parcels 17 and 21. Lands within the unit appear to be used for livestock grazing.

The native vegetation appears to be primarily non-native annual grassland. Shrubs may be present in small patches or as scattered elements in the grassland. Shrubs likely to be present include common saltbush (*Atriplex polycarpa*), alkali goldenbush (*Isocoma acradenia* var. *bracteosa*), and snakeweed (*Gutierrezia californica*). Grassland species include the introduced bromes and Mediterranean grass (*Bromus* and *Schismus* spp.), as well as the typical grassland wildflower species such as gold fields (*Lasthenia* sp.), lupines (*Lupinus* spp.) and California poppies (*Eschscholtzia californica*).

Parcels 17 and 18 are located on the western ridges of South Dome, a geologic feature straddling the border of Kings and Kern counties. Vegetation appears to be sparse on the shale ridges and is most likely a combination of introduced grasses and various native forbs adapted to the xeric conditions of the site. Likely to be encountered are species such as bromes (*Bromus* spp.), buckwheats (*Eriogonum* spp.), and peppergrass (native *Lepidium* spp.), as well as occasional shrubs including common saltbush (*Atriplex polycarpa*), bladderpod (*Isomeris arborea*), and snakeweed (*Gutierrezia californica*).

Wildlife expected to be present include species such as Heerman's kangaroo rat, grasshopper mouse, California pocket-mouse, California ground squirrel, desert cottontail, black-tailed jackrabbit, short-eared owl, horned lark, sage sparrow, meadowlark, loggerhead shrike, and side-blotched lizard.

Special status animal species with the potential to occur in the general area include blunt-nosed leopard lizard, giant kangaroo rat, San Joaquin kit fox, San Joaquin antelope squirrel, burrowing owl, LeConte's thrasher, San Joaquin pocket mouse and Tulare grasshopper mouse.

Special status plant species which may be present include San Joaquin woolythreads (Monolopia congdonii), Munz's layia (*Layia munzii*), recurved larkspur (*Delphinium recurvatum*), California jewelflower (*Caulanthus californica*), Hoover's woollystar (*Eriastrum hooveri*), Horn's milk vetch (*Astragalus hornii* var. *hornii*), Lost Hills crownscale (*Atriplex vallicola*), king's gold (*Tropidocarpum* [*Twisselmannia*] *californica*) and Temblor buckwheat (*Eriogonum temblorense*). CNPS list 4 plants collected in the surrounding Kettleman area include Ferris' goldfields (*Lasthenia ferrisiae*), crownscale (*Atriplex coronata* var. *coronata*), San Joaquin bluecurls (*Trichostema ovatum*), cottony buckwheat (*Eriogonum gossypinum*), and forked fiddleneck (*Amsinckia vernicosa* var. *furcata*).

Lost Hills Unit (Parcels 22 and 23)
The Lost Hills Unit consists of 360 acres located on the west side of the San Joaquin Valley, between the Lost Hills and Kern Wildlife Refuge. Parcel 22 is east of Hwy 5 and Parcel 23 is west of Hwy 5. Elevation ranges from 260 to 320 feet. The topography is flat. Parcel 22 is 40 acres of native vegetation. Parcel 23 is entirely in cultivation, the 320 acres split between pistachios and row crops (fallow in 2008).

Parcel 22 is part of the Alkali Sink Area of Critical Environmental Concern (ACEC), established to protect rare valley sink scrub community and associated wildlife. Oil and gas leasing within the ACEC would be subject to the No Surface Use (NSU) stipulation. Characteristic plant species include iodine bush (*Allenrolfea occidentalis*), saltgrass (*Distichlis spicata*), kochia (*Kochia californica)*, goldfields (*Lasthenia* spp.), pickleweed (*Salicornia subterminalis*) and

seepweed (*Suaeda* sp.). Potential weeds include saltcedar (*Tamarix* sp.), horehound (*Marrubium vulgare*), Russian thistle (*Salsola tragus*) and perennial pepperweed (*Lepdium latifolium*).

Animals that may be present include cottontail, black-tailed jackrabbit, California ground squirrel, coyote, white-shouldered kite, red-tailed hawk, common raven, horned lark, side-blotched lizard and western rattlesnake.

Special status animal species which may be present include Western spadefoot, San Joaquin kit fox, Tipton kangaroo rat, San Joaquin pocket mouse, Tulare grasshopper mouse, mountain plover, and burrowing owl. Blunt-nosed leopard lizard may occur on the parcel while the Buena Vista Lake shrew is not expected to occur there.

Special status plant species which may be present on this parcel include Coulter's goldfields (*Lasthenia coulteri*), Munz's tidy tips (Layia munzii), recurved larkspur (*Delphinium recurvatum*), Lost Hills crownscale (*Atriplex vallicola*), brittlescale (*Atriplex depressa*), heartscale (*Atriplex cordulata*), Hoover's woollystar (*Eriastrum hooveri*), and Horn's milk vetch (*Astragalus hornii* var. *hornii*). The Federally Endangered California jewelflower (*Caulanthus californica*) was collected east of Lost Hills in 1935 and local populations are now considered extinct, however, the species may still be present in the seed bank. CNPS list 4 plants in the area include crownscale, (*Atriplex coronata* var. *coronata*), Ferris'goldfields (*Lasthenia ferrisiae*) and San Joaquin bluecurls (*Trichostema ovatum*).

The orchard and fields within Parcel 23 may be used by San Joaquin kit fox, burrowing owl, and mountain plover.

Maricopa Unit (Parcels 24-29) The Maricopa Unit consists of about 1,730 acres within the Maricopa Flat area at the southern end of the San Joaquin Valley, south of the California Aqueduct. The Unit is bisected by California Highway 166. Elevations range from 170 to 230 feet. Topography is generally flat, with a minor slope to the north towards the old Buena Vista Lakebed. Some relief is created by Santiago Creek which runs through Parcel 28. Several ephemeral drainages, including Santiago Creek in Parcel 24, have been altered or removed by past or current agricultural activities and the construction of Hwy 166. The majority of the unit has been converted to agriculture, primarily tree crops. Parcels 25, 26, and 27 contain no native habitat. A small corner of Parcel 24, about one third of Parcel 28, and all of Parcel 29 support native habitat. The northeast 40 acre portion of Parcel 27 contains a small tank farm.

About 10 acres of native saltbush scrub is present within the California Aqueduct right-of way in the Northeast corner of Parcel 24. There is also a small 10 acre patch of saltbush scrub in Parcel 28 at the northeast corner of the cleared area along Santiago Creek. Otherwise, vegetation in the native habitat areas of Parcels 28 and 29 is a mixture of non-native grassland and saltbush scrub. The area along the Santiago Creek drainage in Parcel 28 was previously cleared and leveled ostensively in preparation for agriculture; however, flow down the creek channel makes the area unsuitable for planting. Judging from recent air photos, there is some vegetation present within the creek channel, however, it is not known whether this consists of native species like mule fat (*Baccharis salicifolia*) or introduced weeds such as saltcedar. There are small patches of non-native grasses and saltbush plants on unused portions of the tank farm site within Parcel 27.

Animals that may be present in the native habitat include California ground squirrel, coyote, cottontail, black-tail jackrabbit, horned lark, sage sparrow, common raven, red-tailed hawk, side-blotched lizard and western rattlesnake. Special status animal species which may be present in the native habitat include San Joaquin kit fox, blunt-nosed leopard lizard, burrowing owl, short-nosed

kangaroo rat, San Joaquin pocket mouse, Tulare grasshopper mouse and possibly San Joaquin antelope squirrel. San Joaquin kit fox may be present within the agricultural lands and may also occur on the pipeline tank facility site.

Special status plant species potentially present on these parcels include Lost Hills crownscale (*Atriplex vallicola*), alkali mariposa lily (*Calochortus striatus*), and recurved larkspur (*Delphinium recurvatum*), the last having been collected nearby in the vicinity of San Emigdio Canyon.

Federally Listed Species

The lease parcels occur within the range of five federally listed species; San Joaquin kit fox, giant kangaroo rat, blunt-nosed leopard lizard, California jewelflower, and San Joaquin woolythreads. The primary challenge to conservation and recovery of these species is habitat loss and degradation of habitat, including fragmentation and loss of important habitat components, such as shrubs, or dens and burrows.

Climate change has also been of recent concern. Climate models predict for California an overall warming of 1.7°C – 5.8° C (3.0°F – 10.4°F) by 2100 (Cayan et al. 2006). The effect of climate change to Federally Listed Species is discussed below under Cumulative Impacts to Biological Resources from Climate Change.

The strategy for conservation and recovery of these species is a system of reserves and corridors (USFWS 1998). The reserve and corridor system is discussed below under Relationship to San Joaquin Valley Endangered Species Recovery.

Managing activities to minimize impacts to habitat and individuals is also an important component of the conservation and recovery program. Species and habitat surveys are undertaken to determine if an activity is within listed species habitat. Projects within listed species habitat utilize design criteria and mitigation measures to reduce or eliminate impacts to listed species and habitat. Loss of habitat is compensated for by securing additional listed species habitat. Typical survey requirements, project design criteria, mitigation and compensation requirements for BLM authorized projects are included in **Attachment Biology 1. Sample Oil and Gas Programmatic Biological Opinion Provisions**.

RIPARIAN AND WETLAND HABITAT

A small amount of ephemeral riparian habitat occurs within the Santiago Creek drainage in Parcel 28 of the Maricopa Unit. Most of the year, this area is dry, but water moves briefly through the system following winter storms. There appears to be a fair amount of migration of the channel between years. There is no riparian habitat associated with the sections of the California Aqueduct that cross Parcels 15 and 24.

H. Cultural Resources

The lease parcels identified in this document all fall within the prehistoric territories of the Tache, Tulumne and Tuhoumne Yokut Indians (Latta 1977: 201). These groups primarily inhabited the shores and sloughs of Tualre and Buena Vista Lakes. They also exploited specialized resources found in the foothills of the Temblor Mountains to the west. Prehistoric sites common to this region include pictograph sites, bedrock mortar and millingstone food processing stations, lithic scatters and quarries, and village sites. From historic to modern times, locations for all of the

lease parcels have been part of large-scale oil production development, as well as livestock and agricultural operations. Oil exploration became commercially productive in the area as early as the 1890s (Rintoul 1976: 4). Historical properties occurring in the area include facilities associated with the early phases of this agricultural and oil field development. A record search for the occurrence of any known prehistoric or historical cultural sites was completed for all twenty-nine of the lease parcels. Parcels 4, 5, 7, 13 and 14 within the Kettlemen Hills Unit, have all been partially to fully surveyed for the presence of cultural sites. No sites were found during the course of these inventories. Parcels 16, 17, 18, 20 and 21 within the South Dome Unit have also all been partially to fully surveyed for the presence of cultural sites. No sites were found during the course of these inventories. Parcels 25 and 28 of the Maricopa Unit have also been partially surveyed. No cultural sites were found. The remaining parcels, parcel numbers 1, 2, 3, 6, 8, 9, 10, 11, 12, 15, 19, 22, 23, 24, 26, 27, and 29 have not been surveyed. Prior to any future development at these locations, cultural resource surveys for those areas which have not been previously inventoried, or those identified above which are judged to have been inadequately surveyed in the past, will be completed.

I. Paleontological Resources

A paleontological locality record search was conducted for all of the lease parcels in order to assess potential sensitivity for the presence of paleontological resources. Parcels 1, 2, 3, and 6 are located within an area of the Kettlemen Hills known to have high sensitivity for the potential presence of significant paleontological resources. Prior to ground surface disturbing activities at these parcels, paleontological field survey will be required in order to determine if paleontological deposits are present. The remaining parcels in this lease sale are in areas with no known sensitivity for the presence of paleontological deposits.

J. Livestock Grazing

The public lands in Parcels 3, 6, 8 and 9 proposed for oil and gas leasing for which BLM owns the surface estate, are also leased by the BLM for livestock grazing. The federal surface lands in these parcels make up a portion of grazing allotment #00028 (Kettleman Hills). The land in this allotment is authorized for grazing of cattle annually as resource conditions allow.

K. Lands

The lands proposed for competitive leasing of the federal mineral estate are mainly scattered split estate mineral parcels (private surface overlying federal minerals) under the jurisdiction of BLM. There are six parcels with full fee estate (surface + mineral estate) under the jurisdiction of BLM. For the split estate parcels, the United States not only owns any minerals in the land, but also surface entry rights that ‘float’ over the entire parcel.

Parcels 1 and 2 are split estate parcels (private surface overlying the Federal minerals) located in the Kettleman Hills area. There appears to be dirt roads in and around these parcels; however, the U.S. Government has no legal access.

Parcel 3 is a Federal surface and subsurface parcel located south of Kettleman Hills in El Pajaro and El Dumbo area. There are a few dirt roads to this parcel from private land and adjacent federal land. The surrounding lands are private. The U.S. Government has no legal access.

Parcels 4 and 5 are split estate lands adjacent to Kettleman Hills. Interstate 5 crosses both parcels. Both parcels are surrounded by private lands. There appears to be dirt roads to both parcels; however, the U.S. Government has no legal access.

Parcel 6 is a Federal surface and subsurface parcel within the Kettleman Hills area. There are a few dirt roads that go through the parcel

Parcel 7 is a split estate parcel within the Kettleman area. There a few roads through the parcel and adjacent private lands. The U.S. Government has no legal access.

Parcel 8 is both federal and private surface located in the Kettleman Hills area. Highway 41 crosses this parcel. There are a few roads through this parcel from the private land. The U.S. Government has no legal access to the private surface.

Parcel 9 is a federal surface and subsurface parcel located within the Kettleman area and Kettleman Hills ACEC surrounded by private land. There appears to be minimal access to this parcel.

Parcels 10, 11, and 12 are split estate lands (private surface overlying federal minerals) located in Kettleman Hills. The parcels appear to have minimal access through adjacent private lands. The U.S. Government has no legal access to this parcel.

Parcel 13 is split estate parcel in Kettleman City. The parcel is surrounded by private land. The U.S. Government has no legal access.

Parcel 14 is a split estate parcel located in Kettleman area. California Highway 41 and Interstate 5 cross the parcel. The private lands surround this parcel. The U.S. Government has no legal access.

Parcels 15 and 16 are split estate parcels located on the west side of San Joaquin Valley in Badger Hill. The CA aqueduct crosses parcel 15. The parcels are surrounded by private lands with minimal access. The U.S. Government has no legal access.

Parcel 17 is a split estate parcel located on the west side of the San Joaquin Valley South Dome area. The parcel is surrounded by private land with minimal access. The U.S. Government has no legal access.

Parcel 18 is a Federal surface and subsurface parcel located near Las Colinas (west side of San Joaquin Valley). There appears to be a dirt road that crosses easterly through the parcel. The parcel is surrounded by private land. The U.S. Government has no legal access through the private land.

Parcel 19 through 21 are split estate parcels (private surface overlying Federal subsurface) located on the west side of the San Joaquin Valley, primarily in the South Dome of the Kettleman Hills. They appear to have roads through these parcels. They are surrounded by private land. The U.S. Government has no legal access.

Parcel 22 is a 40-acre Federal surface and subsurface located on the west side of San Joaquin Valley between Lost Hills and kern National Wildlife Refuge; east of Hwy. 5. This parcel is within the Alkali Sink ACEC and will be subject to No Surface Use if it gets a winning bid and leased.

Parcel 23 is a split estate parcel located on the west side of San Joaquin Valley east of Lost Hills and west of Hwy. 5. The parcel is surrounded by private land. The U.S. Government has no legal access.

Parcels 24 through 29 are split estate lands (private surface overlying the federal subsurface) located in the Maricopa Flat area south of the CA Aqueduct. The parcels are bisected by Hwy. 166. All parcels are surrounded by private land with some dirt roads. The U.S. Government has no legal access.

L. Farmland

There are seven parcels (Parcel 13, 23 thru 24) identified for leasing the federal mineral estate that is located on acreage designated as farmland, or are currently under production as farmland. These parcels are on split estate lands that appear to be cultivated Parcels 13, 23 thru 28 are identified as agriculture land.

M. Oil and Gas Resources

All parcels are in Kern and Kings Counties. The parcels in Kern County are classified as having high potential for occurrence of hydrocarbons. This is one of the oldest oil districts in the United States, and has been extensively developed in the anticlinal trends along the east and west sides of the Valley since the 1870's.

Most reservoirs in the area are sandstones which have adequate porosity and permeability for the migration of oil and gas. Some reservoirs in the area are fractured siliceous organic shales of the Monterey formation. The Monterey formation is both the source and reservoir rock. Compression and diagenesis severely degrade reservoir quality at depths exceeding 12,000 feet to the extent that only dry gas is produced from greater depths.

The following statistics are from the California Division of Oil, Gas, and Geothermal Resources (CDOGGR) website shown below. There are over 75 oil and gas fields in the Valley, including several giant fields (more than 100 million barrels of oil each) and supergiants (more than 1 billion barrels each). As of 2006, cumulative production in the area was about 12 billion barrels of oil equivalent. In recent years, the Valley has accounted for about 85-90% of California's development completions. Over 90% of the wells are on private leases. Between 2003 and 2007, there were a total of 11,071 wells drilled in DOGGR District 4, which is mainly Kern County. In the same 5 years, there were a total of 807 permits issued to drill wells on federal lands throughout California. Approximately 90% of those wells were in Kern County (720+ wells). The ratio of 720 federal vs. 10,873 total wells (6.6% federal) has remained relatively constant throughout time, although the exact numbers are not readily available.

The San Joaquin Valley is expected to continue as the primary source of oil in California's oil and gas development. Additional information such as the number of existing wells and expected drilling, completion and abandonment rates is in the section on Environmental Consequences.

Sources: ftp://ftp.consrv.ca.gov/pub/oil/annual_reports/2007/PR06_Annual_2007.pdf for 2007

Similar for other years 2003 - 2006.

IV. ENVIRONMENTAL IMPACTS

Proposed Action Alternative – Direct and Indirect Impacts

Analysis Assumptions – Reasonable Foreseeable Oil and Gas Development (RFD) Scenario

General Discussion

Exploration activities within the area will generally focus on oil and not natural gas. The mid to southern San Joaquin Basin is primarily an oil province with small amounts of natural gas as an associated product. Less commonly, non-associated gas is also found. Exploration will 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 *IV. Conformance with Existing Land Use Plans)*. Detailed descriptions of typical oil and gas activities may be found in the Caliente Resource Management Plan, December 1996, Ch. 5 page 45.

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.

Exploration Activities

After seismic and/or detailed stratigraphic basin studies are made, an APD may be submitted. Because of the location of nearly all of the lands within this EA, any APDs would likely be for exploration drilling, which includes drilling to discover entirely new fields, or discovery of previously untapped reservoirs within existing fields. Drilling to discover new fields is of greatest concern in this EA because in most cases it would be more likely to involve disturbances of previously undisturbed lands. Historically in the San Joaquin Valley, only about 10-15% of wildcat wells have been successfully completed as producers. 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.[1] The remaining 85-90% of the wells are non-producers 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. It should be noted that only two exploratory wells have been drilled on federal leases issued in the last ten years.

Development Drilling

Development wells include step-out or field extension wells, enhanced oil recovery wells, or other infield wells. Even though the drilling of development wells will be adjacent to or actually within areas of current production, it still may require some disturbance on previously undisturbed lands.

Based on the data for the past 10 years, up to 26,000 wells are projected to be drilled on Federal, state and private lands in the San Joaquin Valley in the next 10 years. If historical trends continue, (and there is no data to suggest otherwise), about 1,500-2,800 of those will be on federal mineral estate. Nearly all of these will be within the same general area of the state as lands covered by this EA. The vast majority (up to 90% or more) of these wells will be on private mineral estate.

Approximately 95-97% of the wells projected to be drilled during the next ten years will be development wells (as opposed to exploratory wells). An estimated 95+% of the development wells will be successful, while the remainder will be unsuccessful and will be plugged and abandoned upon completion of drilling.

[1] A new field discovery, reportedly near the Elk Hills field in Kern County, was reported by Oxy in July 2009. No further details are available as of press date.

Most new leases in California are never drilled, and only a very few result in producing wells. In fact, from lease sales in this general area (including western Kern and San Luis Obispo counties) in the past 10 years (June 25, 1999, through June 25, 2009) only 4% of all leases issued have had any wells drilled (9 out of 222). The average number of wells drilled was 1 well per 5255 acres (23 wells on 120,865 acres). See **Table 1 – Activity on New Leases from Past 10 Years Lease Sales**.

TABLE 1 - Activity on New Leases from Past 10 Years Lease Sales (Sales 6-25-1999 through 6-25-2009)	
	Kern / San Luis Obispo County
Number of Lease Sales since 6-25-99	16
Leases Issued	222
Total Wells Drilled	23 (17 productive)
Acres Leased	120,865
Leases w/ Wells Drilled	9 of 222
Leases with Successful Producing Wells	4 of 222
Lease Sales w/ at Least 1 Well Drilled on New Leases	6 of 16
Total New Surface Disturbance for all wells, including roads (acres)	17.5
Avg. Disturbance per Well (acres)	<1

The total number of acres of Federal mineral estate in the San Joaquin Valley is about 440,000 acres. The total number of acres in the parcels to be offered in this lease auction is about 2,096.59 acres, or less than one half of 1% of the total. From the 16 lease sales conducted in this general area (mostly Kern, but including the northeast portion of San Luis Obispo adjacent to Kern County) during the past 10 years, (6-25-99 through 6-25-09), BLM has issued 222 leases covering approximately 120,865 acres. Only 9 of the leases have had any wells drilled on them. Eight leases had 1-2 wells and 1 lease had 11 wells, for a total of 23 wells. Approximately ¾ of the wells were productive. Nearly all of the dry holes and several that were productive only for a short time have already been plugged, and the well sites are in various states of reclamation, depending on how long it has been since abandonment.

Six of the 16 lease sales had at least one lease that had drilling. Of those, 3 years had a sale with at least one successful well drilled, and 3 years had no leases with any successful drilling.

The most wells drilled on any parcel were eleven, on a lease in the Edison Field on the eastern edge of Bakersfield. See Appendix D – Oil and Gas Activity on Leases from Recent Lease Sales.

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 most 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, so we do not expect these particular parcels to see anomalous levels of drilling. Data to suggest otherwise is not available. As mentioned earlier, only one new lease within the past 10 years has had more than 2 wells drilled on it, and there is no data to suggest that these parcels are likely to have more wells than that. Based on the historic levels of activity on new federal leases in California within the last 10 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. All parcels are within 0.5-5 miles of the administrative boundaries of existing oilfields. In addition, there are four parcels either partly or totally within the administrative boundaries of existing oilfields, with a total of 800 acres within those boundaries. Parcels 1-3 are totally or partly within the boundaries of the Kettleman North Dome Field, and parcel 27 is totally within the Midway Sunset Field. Two dry holes were drilled in the NE/4 of parcel 3, one dry hole in parcel 17, four dry holes in parcel 21, one dry hole in parcel 24, two wells that were originally productive but are now plugged and abandoned in parcels 26 and 27 (one per parcel), and two dry holes in parcel 28.

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.

Although the range of wells drilled per lease sale during the last ten years has ranged from none to 11, nearly all of the leases issued in the past 10 years have not seen any drilling (213 out of 222). In addition, the average density of wells per acre was 1 well per 5,255 acres (23 wells on 120,865 acres). Therefore, it is reasonable to project one well for this 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 Caliente Resource Management Plan and the Reasonable Foreseeable Oil and Gas Development. The total expected number of wells expected on these parcels, 1, is insignificant in comparison to the total number of wells and other activities expected in the area.

For details on the projected disturbance, see Table 2 below.

Table 2. Expected new surface disturbance on December 9, 2009 lease auction tracts with Preferred Alternative Lease with Limited Surface Use - Protected Species (LSU - Protected Species) and Limited Surface Use – Sensitive Species (LSU – Sensitive Species) Stipulations - Proposed Action).

SURFACE ACTIVITY	NUMBER	ACRES			
		PERMANENT	TEMPORARY	TRANSIENT	TOTAL
Wells Drilled, incl. roads and facilities	1well	<1			<1

The acres of disturbance were based on the total new disturbance of 17.5 acres for the 23 wells drilled on leases issued at the last 10 years of lease sales. See Appendix D – "Oil and Gas Activity on Leases from Recent Lease Sales" for details on previous disturbance. Significant efforts will be made to use existing roads, rights of way, and to minimize disturbance wherever possible. In addition, no seismic exploration (vibroseis/shot holes, roads, etc.) were projected as there has been no exploration on leases issued in the past 10 years.

Ongoing Reclamation of Existing Disturbed Surfaces

The potential disturbance of less than 1 acre will be considered to be permanent disturbance. Although new wells continue to cause surface disturbance, recent trends have shown that the total acres of newly disturbed land are being significantly offset by the large numbers of wells that are being abandoned in this area. According to the CDOGGR, during the last 5 years for which records are available (2003-2007), there were 11,071 wells drilled in Kern County, of which

approximately 10,900 were completed. However, during that same period, 8,600 wells were abandoned (nearly 80% of the number of newly completed wells.). It is reasonable to assume that this trend will continue. (Data from the California Department of Conservation, Division of Oil and Gas – see below, and personal phone conversation between Dan Tuttle, CDOGGR, and Jeff Prude, BLM, dated 4-24-08).

Source: ftp://ftp.consrv.ca.gov/pub/oil/annual_reports/2006/0101summary3_06.pdf.

A. Social-Economic

The proposed action will 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.

B. Visual Resources

All new development will take BLM Best Management Practices into consideration. This includes, but is not limited to, proper site selection, minimizing disturbance, selecting colors that blend with the background, and reclaiming areas that are not in active use. Wherever practical, no new development will be allowed on ridges or mountain tops. Overall, the goal is to not reduce the visual qualities that currently exist.

C. Recreation

There will be no impacts on the limited recreation opportunities as a result of this action. The parcels with federal surface ownership have limited or no legal public access.

Proposed Action Alternative – Impacts on Critical Elements

Resources in addition to those discussed below were considered as a part of the scoping process. Resources were dropped from further consideration once it was determined that there was minimal potential for them to sustain significant impacts. The following elements of the human environment are subject to requirements specified in statute, regulation, or executive order, and must be considered in all environmental assessments. Those elements that are affected are discussed in the table and detailed in the narratives below.

Table 3. Critical elements of the human environment subject to requirements specified in statute, regulation, or executive order, and must be considered in all environmental assessments.

CRITICAL ELEMENT	AFFECTED		CRITICAL ELEMENT	AFFECTED	
	YES	NO		YES	NO
Air Quality	X		T & E Species	X	
ACEC's*	X		Wastes, Hazard/ Solid		X
Cultural Resources		X	Water Quality		X
Floodplains	X		Wetlands/Riparian		X
Environmental Justice		X	Wild and Scenic Rivers		X

Farmland	X		Wilderness		X
Native American Concerns		X	Weeds		X

*ACEC's (Area of Critical Environmental Concern) and other Special Management Areas. There are eight parcels within or near ACECs.

D. Air and Atmospheric Values

Planning Assumptions for Air Quality: State Implementation Plans (SIPs) are prepared for most of the federal nonattainment areas. These SIPs are designed to result in compliance with the NAAQS by federal deadlines. The SIPs are implemented through a series of rules. 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. These activities would be required to be conducted in compliance with the SJVAPCD Rules and Regulations. As new air plans are developed, or existing plans are updated, activities would be conducted in compliance with those plans also. A degree of uncertainty exists as to the exact development schedules, location of wells, which wells would produce, and a number of other factors which are addressed in the RFD. This analysis is based on the same assumptions discussed in the RFD.

1. Impacts to Air Quality

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. All of the pollutants subject to analysis are addressed in federal, state and local laws, statutes, regulations and rules. The federal and state ambient air quality standards define the criteria pollutants that are part of the emissions that are typically analyzed. In addition to the criteria pollutants, there are criteria for air toxics, hazardous air pollutants (HAPs), Prevention of Significant Deterioration (PSD), fugitive dust and regional haze.

The proposed action could result in a number of activities which generate emissions. Project emissions include direct emissions of nitrogen oxides (NOx), sulfur oxides (SOx), and Volatile organic compounds (VOC) (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 and temporary and permanent production facilities.

In addition, PM10 will be released during the drill pad construction phase and from the daily ingress and egress of vehicles on the unpaved access roads. The primary emission sources during any new construction at the drill sites and on rights-of-way would be from heavy equipment exhaust and fugitive dust. Other emission sources will occur during the operation and maintenance of these leases and rights-of-way. These sources include oil facilities, gas facilities, operator vehicle traffic, and gas powered oil well pumping units.

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.

According to the California Air Resources Board emission factors for VOCs (volatile organic compounds), NOx (nitrogen dioxide), SOx (sulfur dioxide), PM10 and PM 2.5 are not available for individual wells, but can be calculated using total emission per day calculations that have been attained from the California Air Resources Board website. These emissions totals are shown in the following table, for 2006.

Table 4. Estimated Statewide Annual Emissions from Oil and Gas Production, 2006

SOURCE	VOC (TONS/DAY)	NOX (TONS/DAY)	SOX (TONS/DAY)	PM10 (TONS/DAY)	PM2.5 (TONS/DAY)
Oil and Gas Production	47.87	2.77	0.28	0.06	0.06
Oil and Gas Production (combustion)	26.32	20.39	1.95	1.76	1.81
Total (tons/day)	74.19	23.16	2.23	1.82	1.87

This table illustrates the projected emissions for oil and gas production sources 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 our analysis, these numbers are summed together to get the total amount of pollutants emitted by oil and gas production statewide.

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). 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. Based on the Estimated Statewide Annual Emissions from Oil and Gas Production (2006) estimated emissions were calculated for one well. These calculations are included in Appendix F.

For one well, estimated emissions of PM2.5, PM10, and SOx range from approximately 30-36 lbs/year. Per well, NOx emissions are estimated at 375 lbs/year and 1,200 lbs/year of VOCs. This range of pollutant emissions represents 0.002% of the total emissions from oil and gas production, statewide. The expected emissions from the proposed action would be low both in relation to the overall activity in the region, and by itself. 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).

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. In order to complete a more thorough analysis of emissions and impacts, details on fleet will be obtained at the application stage. Vehicle and equipment make, model, engine size, etc., trip length, project acreage, construction schedule are among several variables required to generate emissions estimates. Combined, these factors determine the intensity, duration, and characteristics of associated pollutants.

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. Wells in California are subject to Fugitive Inspection and Maintenance, Rule 4409.

Indirect effects of point source emissions from legal and illegal motorized vehicle and off highway vehicle use associated with these lease offerings as proposed would be negligible. As detailed in the current conditions, the San Joaquin Valley Air Basin is in nonattainment for ozone, and PM2.5. The District's adopted ozone and PM10 plans are already providing benefits for PM2.5 levels. The District attributes the Valley reaching attainment of PM10 standards ahead of schedule to the control strategies set forth in the 2003 PM10 Plan and the 2006 PM10 Plan (SJVAPCD 2008).

BLM requires that the lessee/operator take on the 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, SJVAPCD). 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 would also lead to the loss of the BLM and air district authorizations.

The State and local air districts have air quality primacy; BLM may however choose to implement emissions control measures to reduce effects on air quality. BLM may apply emission control measures, 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. Water is cheap but temporary; magnesium chloride (a common surfactant) is more expensive and lasts about one year; and paving is the most expensive but it is long-term. 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 PM10, PM2.5, and fugitive dust minimization. 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 PM10 and PM2.5 emissions. According to the RFD associated with the proposed action, total disturbance will be less than or equal to 1.0 acre for one well; therefore the proposed action will not result in significant particulate emissions that impact air quality.

2. Climate Change

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 moves 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.

The Department of the Interior is exploring whether global and regional climate modeling can be scaled to the point that it can be used to manage parks and refuges.[2] A new Secretarial order was issued earlier this year[3] 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."

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 NOx 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.

The primary sources of greenhouse gases associated with oil and gas exploration and production are carbon dioxide (CO_2) and methane (CH_4). 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. 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 classifications[4]:

Direct Emissions

a. 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.)

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[2]GAO-07-863, 2007

[2] Secretary of the Interior Order 3226, Amendment 1; January 16, 2009

[3]CD-1; California Oil & Gas Fields, Volume I: Central California, 1998; Volume II: Southern, Central Coastal, and Offshore California, 1992; and Volume III: Northern California, 1982; California Department of Conservation, Division of Oil, Gas, and Geothermal Resources; Sacramento, CA. (Publications TR10, TR11, and TR12 in PDF Format.)

[4] American Petroleum Institute, Compendium of Greenhouse Gas Emissions Methodologies For The Oil and Natural Gas Industry; August 2009.

b. 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.

c. 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 CO2 emissions from fuel in internal combustion engines of diesel trucks, equipment, and rigs. 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.

Nearly 87% of U.S. greenhouse gas emissions come from energy production and use (Karl et al. 2009). In California, oil and gas production contributed a total of 18.64 million tons of CO2 equivalent in the year 2006 (California Greenhouse Gas Inventory, 2000-2006). Of this total, 17.88 million tons of CO2 equivalent were from fuel use associated with oil and gas extraction (CARB 2008). Oil and gas extraction/supply accounted for 3% of existing 1990 emissions estimates (total gross emissions of 433.28 MMT CO2e) (CARB 2007).

Only rough estimates of the amount of greenhouse gasses produced by one well is possible since greenhouse gas emissions are based on the amount of oil produced (EPA 1999). If we assume that a new well produces an average of 4,000 barrels per year, annual methane emissions would be 25 lbs (.01 tons) per well (see EPA 1999 for formulas). In 2007, approximately 1,500 new oil and gas wells were drilled in the San Joaquin Valley, District 4[3].

While global and national GHG inventories are established, regional and state specific inventories are in varying levels of development. Quantification techniques are in development – for example, there is a good understanding of climate change emissions related to fuel usage. Analytical tools necessary to quantify climatic impacts at the project level are presently unavailable. As a consequence, impact assessments of specific effects of anthropogenic activities are difficult to determine. 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).

The current leasing proposal represents less than 0.06 percent of the annual new well activity for the area and a much smaller fraction of the existing well population. For this analysis, the RFD predicts that one well will be drilled as a result of the proposed action. 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 (Best Performance Standards) 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 APCD's best approach in addressing cumulative impacts would be to require all projects to reduce their GHG emissions, through project design elements or mitigation. The proposed District 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.

There is no generally accepted guidance for determining significance of project specific GHG impacts (SJVAPCD, 2009a). 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 Proposal includes the requirement 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. Draft guidance is available on the APCD website (www.valleyair.org) and will be subject to public hearing scheduled for November 5, 2009. The proposed District 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.

There is no reliable methodology to assess the relationship between the decision to lease and the ultimate consumption of the resources produced as a result of production from these lease(s). An attempt to analyze the impacts of GHG emissions and other climate change factors from the ultimate consumption of the resources produced from these leases would be a highly speculative exercise. The BLM does not dictate the destination of the resource produced from federal lands. The effects from consumption resulting from the proposed action are not only speculative, but are beyond the scope of BLM authority or control.

Conformity:

The USEPA rules require federal agencies to determine whether a proposal conforms to the existing SIP. USEPA rules state that an analysis is not necessary when the total emissions do not exceed de minimis levels, comply with the SIP and do not exceed 10% of the regional emissions. As the emissions are well below de minimis levels, comply with the SIP and are well below 10% of regional emissions, no further conformity analysis is necessary.

E. Impacts to Soil Quality

The parcels associated with the proposed action are on both disturbed and undisturbed surface.

Existing land uses in the Kettleman Hills Unit (Parcels 1-14) include Interstate-5 which crosses Parcels 4 and 5, State Highway 41 that crosses Parcel 8, and the Interstate-5/Highway 41 interchange is on Parcel 14. Kettleman City and approximately 130 acres of agriculture and occur on Parcel 13. Based on aerial photos, most of the remaining properties in the Kettleman Hills Unit (Parcels 1-14) support native habitat and appear to be used for livestock grazing.

The California Aqueduct crosses Parcel 15 of the South Dome Unit (Parcels 15-21) and 25th Avenue crosses Parcel 17 and 21. Based on aerial photos, most of the remaining properties in the South Dome Unit (Parcels 15-21) support native habitat and appear to be used for livestock grazing.

In the Lost Hills Unit (Parcels 22-23), Parcel 22 occurs in the Alkali Sink ACEC; leasing is therefore is subject to the No Surface Use (NSU) stipulation. As a result of the NSU stipulation, no surface disturbance or soil disturbing activities would occur on Parcel 22. Parcel 23 is under past and current cultivation of pistachios and row crops. Based on recent aerial photos, this parcel appeared fallow in 2008.

The Maricopa Unit (Parcels 24-29) is bisected by State Highway 166 and the majority of the unit is dedicated to agricultural production, primarily tree crops. An existing tank farm occurs on Parcel 27. No information regarding past spills, if any, at this location has been obtained. Prior to application stage, BLM will conduct a records search of AFMSS and OES to determine if any reportable spills have occurred on the property.

We are projecting one well will be drilled on these parcels as a result of the lease sale, resulting in surface disturbance of approximately one acre. This RFD is based on actual oil and gas drilling activities that resulted from new leasing actions that have occurred over the past 10 years. Impacts to soils will include direct effects from grading, compaction, and exposure from vehicles and heavy equipment used for well development. In addition, impacts may include on/offsite erosion due to the development of well pads and/or access roads on slopes and other unstable geography. The risk of erosion is of greatest concern in the Kettleman Hills Unit, where slopes range from 5 to 50 percent and the potential hazard of erosion is increased as slope increases. Such impacts will be considered and mitigated on a site-specific basis using proper well placement and implementing BLM and other best management practices (BMPs) for fluid minerals

As described above, existing disturbances and land uses that have altered and continue to alter soils occur on many of the parcels associated with 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. Soil impacts will be further reduced by identifying and protecting biological soil crusts; when soil crusts are present these may be conserved and stockpiled to encourage interim restoration subsequent to drilling. Regardless of crust presence or absence, topsoil conservation and replacement is generally used as mitigation for impacts to soil and habitat, which increases the timing and efficiency of site reclamation.

Any disturbances 1.0 acre or greater that result from the proposed leasing action will likely be subject to the California Regional Water Quality Control Board Storm Water Prevention and Protection plan (SWPPs). In 2010, a former Clean Water Act exemption under the 2005 Energy Policy Act for oilfield construction will expire; therefore, all oil and gas construction projects will be subject to these permitting requirements, in compliance with state and federal Clean Water Acts.

Impacts to soil resources from the proposed action are not considered to be significant based on thresholds of percent development. Within a two-mile radius of each parcel proposed for leasing, development does not exceed 10% in areas designated as Red zone, or 25% developed in Green zone. These development/significance thresholds are consistent with BLM Land Use and Management objectives, and support strategies for the conservation and recovery of San Joaquin Valley upland species and their habitat.

Impacts to soils from spills/contamination are expected to be very localized because all activities will be subject to spill prevention plans. 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/mitigated upon discovery and as required in those plans. Clean up may follow the *Guidelines for Clean Up of Heavy Crude on Federal Leases*.

F. Impacts to Water Quality

Although there are no rivers, lakes, or streams on the parcels that contain water year round. Blakely canal crosses Parcel 13 in the Kettleman Unit. The California Aqueduct crosses Parcel 15 in the South Dome Unit and the northeast corner of Parcel 24 in the Maricopa Unit. Santiago Creek, an ephemeral stream, crosses Parcel 24 and bisects Parcel 28. According to the NRCS Soil Survey maps for Kings County, California several named arroyos occur on Kettleman Unit parcels: Arroyo Somero is on Parcel 1; a portion of Arroyo Chico is on Parcel 2; Arroyo Mellado is on Parcel 3; Arroyo Robador is on Parcel 5; Arroyo Conchuso is on Parcel 6; Arroyo Raso is on Parcel 7; and Arroyo Escaso is on Parcel 8. Parcels 8, 12, 15, 18, 19, and 29 contain unnamed ephemeral or intermittent creeks and/or drainages, based on the USGS 7.5 minute quadrangle maps. In the Maricopa Unit parcels, several unnamed ephemeral drainages and Santiago Creek have been altered and/or removed by agriculture and past construction of Highway 166.

Many of the parcels are in areas where there are or may be fresh water aquifers. All such aquifers will be fully protected by using standard oilfield practices and BLM BMPs, such as requiring a string of casing to be cemented across all fresh water aquifers and by requiring compliance with all appropriate laws, regulation, and BLM policies, including, but not limited to, state and federal Clean Water Act(s), Memoranda of Understanding (MOUs) between BLM, EPA, CDF&G, and CDOGGR, and compliance with Regional Water Quality Control Board requirements.

Where there is a threat to water quality or where water quality does not meet state standards, coordination must occur with the regional water quality control board(s). Where aquatic or riparian habitat may be impacted, coordination with CDF&G must occur, even for ephemeral or intermittent drainages. All parcels that contain any water bodies (streams, lakes, springs, etc.) must have adopted Best Management Practices (BMP) for all activities associated with oil and gas operations that could affect water quality. A list of areas where there are aquifers that are considered to be fresh can be found in Volumes I, II, and/or III of California Oil and Gas Fields, published by the California Conservation Division[4].

No direct impacts to ephemeral or intermittent streams, creeks or dry drainages are anticipated because a well location and/or access road would be sited in a manner that avoids direct impact or alteration. Furthermore, conditions of approval would be attached to permit approvals that require protective measures to be taken where spills or other contamination are potentially a concern to surface or ground water.

G. Floodplains

Parcel numbers 1 thru 5, 7, and 13 thru 21 are an unincorporated area in Kings County. There is no floodplain data available.

Parcel 6, 8, 10, 11, and 12 are within Zone X; an area determined to be outside of 500 year floodplain.

Parcel 9 is within Zone A; a special flood hazard area inundated by 100 year floodplain.

Parcel 22, 23 (N2), 24 (E2), 26 (portion of W2), and 27 (E2SE/4) are within Zone C; area of minimal flooding.

Regardless of where on the parcel development may be proposed, site-specific NEPA analysis would identify measures to minimize the risk of flood damage to oil and gas facilities/wells and oil spills or other contaminations entering any streams.

H. Biological Resources Including Riparian and Wetlands

There will be no direct effects to biological resources from offering the parcels for lease.

If a parcel is leased and developed, there could be indirect effects to biological resources from offering the parcels for lease. From the 286 parcels offered in the past 10 years, 222 parcels have been leased. Of the 222 parcels leased, 23 wells have been drilled on 9 leases. Of the 23 wells drilled, 21 wells on 7 leases were drilled in native habitat. It is estimated that one well could be drilled as a result of offering the parcels for lease. Development of a lease can result in impacts to habitat and 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, similar to those detailed in **Attachment Biology 1. Sample Oil and Gas Programmatic Biological Opinion Provisions** will be required. The LSU Sensitive Species and LSU Protected Species stipulations reserve to BLM the right to delay processing; move, modify or seasonally restrict activities; or prohibit surface disturbing activities on all or a portion of the lease to protect biological resources. In addition to project specific measures to avoid or minimize impacts to biological resources, BLM has established landscape safeguards for BLM surface. BLM land within reserves would be managed to maintain 90% of the habitat, and BLM land within corridors would be managed to maintain 75% of the habitat.

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. BLM and FWS meet annually to review the effectiveness of project design criteria, mitigation and compensation associated with the BLM administered oil and gas leases. Based on these meetings, changes are made to the BLM program. FWS remains satisfied that BLM is meeting its obligation under the Caliente RMP Biological Opinion and Section 7 of the ESA.

Impacts to Habitat from Oil and Gas Activities

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 permanent impacts to 1 acre of habitat (Table 2). This potential loss of habitat amounts to 2.5% of the smallest parcel (Parcel #9 with 40 acres of BLM surface) and 0.14% of the largest parcel (Parcel #6 with 648 acres of BLM surface). These estimates of habitat loss or alteration are within the range expected and analyzed in the Caliente RMP, EIS Ch. 4 and Biological Opinion.

Of the 8,587.42 acres, 1,949 acres 7,139 are presently native or recovered lands and 1,448 acres are under active cultivation. If the potential well was developed on native lands this would amount to less than 1% of the native lands offered under this lease auction.

Impacts to habitat on cultivated lands would depend on whether the lands are under active cultivation or are fallowed at the time of any development. If the land is under active cultivation, impacts to native vegetation and wildlife are likely to be minimal. If the lands are fallow, the area may be a bare area of cultivated soil or a weedy field of non-native plants. If wildlife (such as

burrowing mammals or birds) reoccupies fallow fields, their habitat could be impacted by oil development and exploration activities.

Measures to minimize impacts, such as those contained in Attachment Biology 1. Sample Oil and Gas Programmatic Biological Opinion Provisions 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. For new leases offered in the past 10 years of lease sales, 23 wells have been drilled. Twenty-one of these wells were located in native habitat and resulted in 17.5 acres of disturbance. The 17.5 acres of disturbance was compensated with 53.63 acres of compensation habitat.

Impacts to habitat on native lands 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. 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.

There are 130 acres of flat cultivated lands in the Kettleman Unit (Parcel 13), 320 acres cultivated within the Lost Hills Unit (Parcel 23) and 1,128 acres of flat cultivated lands in the Maricopa Unit (Parcels 24, 25, 26, 27, and 28). The cultivated lands have relatively good access with existing roads in the interior or on the edge of the parcels. Well pad and road construction on these cultivated parcels will result in minimal impacts to biological resources due to the presence of existing roads and the currently disturbed nature of the parcels.

The majority to the parcels, in native habitat, 6,458 acres, range from gently sloping to moderately steep hills. These 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. 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 Southern San Joaquin Valley.

Impacts to Species from Oil and Gas Activities

If a well is developed on the offered lease parcels, impacts to plant and animal species may occur. Measures to minimize impacts, such as those contained in Attachment Biology 1. Sample Oil and Gas Programmatic Biological Opinion Provisions would be employed to reduce the amount of impact, but not all impacts would be avoided.

Potential impacts to plants include direct mortality from earth excavation or crushing by vehicles. Adverse impacts could also result from soil erosion resulting in loss of the supporting substrate for plants, or from soil compaction resulting in reduced germination rates. Impacts to plants occurring after seed germination but prior to seed set could be particularly harmful as both current and future generations would be adversely affected. Weeds which are introduced and/or promoted by soil disturbing activities compete against and displace native vegetation.

Development associated with oil and gas activities has the potential to affect rare plants. Soil disturbing activities directly affect species by destroying habitat, churning soils, impacting biological crusts, disrupting seedbanks, burying individual plants, and generating sites for undesirable weedy species. Weeds may be introduced during construction and operation of the lease. Roads generate weedy habitat along their edges, as well as avenues for weed invasion into unoccupied territory. Dust generated by construction activities and travel along dirt roads can affect nearby plants by depressing photosynthesis, disrupting pollination, and reducing reproductive success. Oil or other chemical spills could contaminate soils as to render them temporarily unsuitable for plant growth until cleanup measures were fully implemented. If cleanup measures were less successful, longer term impacts could be expected.

A variety of project design features and minimization measures are typically employed to reduce impacts to plant species and populations. Typical measures are contained in Attachment Biology 1. Sample Oil and Gas Programmatic Biological Opinion Provisions. Previously disturbed lands are used as much as possible and the project footprint is minimized. Shrubs and sensitive plant species populations are avoided whenever possible. If sensitive areas cannot be avoided, work is completed after seed set and before germination.

Potential impacts to animals, including listed species, include direct mortality or injury, loss of dens or burrows, displacement, and human disturbance. 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 Attachment Biology 1. Sample Oil and Gas Programmatic Biological Opinion Provisions. 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.

Roads and large areas of disturbance can be a barrier to movement for some animal species. Animals in the San Joaquin Valley suite of sensitive animal species, however, generally do not have difficulty crossing roads or disturbed areas. It is not unusual to observe kangaroo rats, kit foxes, antelope squirrels or blunt-nosed leopard lizards using and- crossing roads. This tendency does expose these animals to vehicle strikes, especially on paved roads with higher vehicle speeds. The impact of roads, large areas of disturbance, barriers and vehicle strikes is within the range analyzed in the Caliente RMP, EIS Ch. 4 and the Caliente RMP Biological Opinion.

Structures such as utility poles, buildings, and pumping units may provide perches for raptors. Addition of such structures in flat terrain may increase predation rates on small mammals and other prey species. The types of structures typically found in oilfields, however, do not tend to provide nesting structures for raptors, including ravens. Introducing nesting structures can have a greater impact on prey species since much more prey is taken by raptors that are rearing young, and the nest site is continuously occupied for the season increasing the duration and frequency of the predation effect. The effect of introducing structures that will only serve as perches is not expected to be significant as such perches are likely to only occasionally be used for hunting.

BLM utilizes a double review process for leasing and development of oil and gas. At the leasing stage a comprehensive NEPA and Biological Opinion addresses leasing and potential development. The March 31, 1997 Caliente RMP Biological Opinion serves as the comprehensive Biological Opinion for leasing, including the proposed action. Should a development proposal actually be submitted, BLM then completes a site specific NEPA and ESA review. If the development proposal may affect listed species, a secondary formal consultation is completed before approving the development.

If a project may affect listed species, a secondary consultation will be required. In 2001 BLM completed the Oil and Gas Programmatic Biological Opinion (O&G Programmatic BO). Development projects which meet certain criteria may be authorized under the O&G Programmatic BO. If the project does not meet the O&G Programmatic BO criteria, a separate consultation will be completed. The requirements of the separate consultation are likely to be similar to those contained in the O&G Programmatic BO.

Under the Oil and Gas Programmatic Biological Opinion, listed species and habitat surveys are required prior to BLM authorizations and surface disturbing activities. Habitat features used by listed plants and animals, special status plant populations, and important habitats are avoided as required in the O&G Programmatic BO. Direct incidental take is avoided for San Joaquin kit fox and blunt-nosed leopard lizards, and direct take is avoided to the greatest extent practicable for the other listed animals species (rarely resulting in direct take). Impacts to the habitats supporting these species are mitigated through the O&G Programmatic BO's requirement that "compensation habitat" be acquired and managed as habitat in perpetuity in an agency-approved off-site location. The O&G Programmatic BO requires that three acres be acquired for each acre subject to permanent disturbance and 1.1 acres be acquired for each acre of temporary disturbance. Beginning in October 2008, BLM also agreed to require a 4:1 compensation ratio for permanent habitat disturbance within the Western Kern County Kit Fox Core Area. The O&G Programmatic BO also requires that each acre of BLM listed species habitat on federally owned

surface be "replaced," acre for acre, since the BLM lands are considered conserved lands by the Recovery Plan and Draft Kern Valley Floor Habitat Conservation Plan. Typical survey requirements, project design criteria, mitigation and compensations requirements for BLM authorized projects are included in **Attachment Biology 1. Sample Oil and Gas Programmatic Biological Opinion Provisions**.

In addition to site- specific NEPA and ESA review, all new oil and gas leases would be subject to the "Limited Surface Use – Protected Species" and "Limited Surface Use – Sensitive Species" stipulations. The LSU Sensitive Species and LSU Protected Species stipulations reserve to BLM the right to delay processing; move, modify or seasonally restrict activities; or prohibit surface disturbing activities on all or a portion of the lease to protect biological resources. Leasing of lands under these constraints will provide strong protection for protected species and special status species.

Although the impacts described above can occur as a result of oil and gas development, it is estimated that indirect effects will be limited to 1 well with 1 acre of habitat loss. This would have a localized, moderate effect on individual animals in the immediate vicinity of the well and access road, but a negligible to minor impact on populations within the Southern San Joaquin Valley. These potential impacts are within the range analyzed in the Caliente RMP, EIS Ch. 4 and the Caliente RMP Biological Opinion.

Effects to Federally Listed and Proposed Species, and Critical Habitat

Several federally listed species (San Joaquin woollythreads, California jewelflower, blunt-nosed leopard lizard, giant kangaroo rat, and San Joaquin kit fox) may occur on or in the vicinity of nearly all of the parcels. In addition, the recently delisted Hoover's woollystar may occur on or in the vicinity of several of the parcels. If exploration or development occurs on one of these parcels, the proposed action may affect listed species.

Section 7 of the Endangered Species Act requires a federal agency to complete Formal Consultation with the USFWS prior to undertaking an action which may affect a listed species. Formal Consultation addressing the impacts of oil and gas leasing, exploration and development, to these species, was completed on March 31, 1997 (Caliente RMP Biological Opinion 1-1-97-F-64). The U.S. Fish and Wildlife Service concluded that oil and gas leasing, exploration and development, as proposed by the Caliente RMP, was not likely to jeopardize the continued existence of these species. As a condition of the Caliente RMP and other biological opinions, BLM and FWS meet annually. Based on these meetings, changes are made to how BLM administered its programs to comply with the various biological programs and its responsibilities under the Endangered Species Act. FWS remains satisfied that BLM is meeting its obligation under the Caliente RMP Biological Opinion and Section 7 of the ESA.

The proposed action is in compliance with the Caliente RMP, and thus, is consistent with the March 31, 1997 Caliente RMP BO. Should an exploration or development proposal be submitted for any of these leases, it will be subject to additional site specific ESA review as described above.

There will be no effect to critical habitat as none of the parcels include designated or proposed critical habitat.

Relationship to San Joaquin Valley Endangered Species Recovery

The conservation and recovery strategy outlined in the *Recovery Plan for Upland Species of the San Joaquin Valley* (USFWS 1998) defines a system of reserves and corridors. In the Caliente RMP, BLM committed to managing all BLM lands within these reserves and corridors as part of

the conservation and recovery system. These lands are managed to maintain 90% of the habitat in reserves and 75% of the habitat in the corridors. Restoration is undertaken on lands that do not meet the habitat maintenance goal before new development is authorized. BLM also requires mitigation and compensation for development activities. Disturbance of habitat is compensated at a rate of 1.1 acre for every acre temporarily disturbed, and 3 acres for every acre permanently disturbed. In addition, disturbance to BLM surface requires an additional replacement factor of 1 acre for every acre disturbed and disturbance within the Western Kern County Kit Fox Core Area requires a 4:1 compensation ratio. Species surveys, avoidance of habitat features and implementation of measures to minimize take are also standard requirements. These requirements were put in place to implement the Recovery Plan and to meet the BLM's obligation under Sections 7(a) 1 and 2(c) of the Endangered Species Act to conserve listed species.

BLM's program for the management of reserve and corridor lands has been reviewed and approved by the USFWS as part the Caliente RMP Biological Opinion 1-1-97-F-64 and more recently in the Oil and Gas Programmatic Biological Opinion 1-1-01-F-0063. In these Biological Opinions, the Service concluded that the BLM's program was not likely to jeopardize the continued existence of a listed species and is in compliance with Section 7(a) 2 of the Endangered Species Act.

Of the lands offered in this sale none of the lands are within reserves (red zone), 6,740 acres are within corridors (green zone) and 1,847 acres (Parcels 4, 13, 19, 24, 25, 26, 28)) are not part of the San Joaquin Valley strategy. The RFD estimates that 1 well with 1 acre of habitat disturbance could result from this lease sale. Any disturbance would be subject to the survey, avoidance, mitigation, compensation and replacement requirements described above. Any disturbance within corridors would be subject to the 75% habitat maintenance objective. Given these restrictions, the limited amount of habitat that will be disturbed (1 acre), and the localized nature of the impact (immediate vicinity of one well and access road), indirect effects associated with this lease sale are expected to be compatible with the Recovery Plan and conservation and recovery strategy.

Species Specific Impacts

Table Biology 1 and Table Biology 2 lists the Federally listed, state listed and BLM sensitive species with the potential to occur on the offered lease parcels.

Federally and State Listed Species

San Joaquin woolythreads. There is potential for woolythreads to be found within the Carneros Rocks and McKittrick Units. To the greatest extent possible, BLM would require populations to be avoided. Otherwise, measures, such as delaying surface disturbance until after seed set, collection of seed, reseeding, and stockpiling of topsoil, may be required to minimize impacts. This is currently required by the O&G Programmatic BO and would likely be required in any separate consultation.

Hoover's woollystar. Hoover's woollystar may be found on the Carneros Rocks and McKittrick Units. Hoover's woollystar could be adversely impacted by earth excavation, off-road vehicle traffic, erosion and spills. It is projected that the post-leasing activities will result in temporary or transient habitat disturbance. Hoover's woollystar can quickly colonize disturbed areas and is expected to re-colonize temporary or transient disturbance areas. Survey and avoidance measures will also be implemented for Hoover's woolly-star to further minimize impacts to this species.

Blunt-nosed leopard lizard. . Blunt-nosed leopard lizards may occur on natural lands within within the Kettleman Hills, South Dome, Lost Hills and Maricopa Units. Potential impacts to

blunt-nosed leopard lizards include direct mortality, loss or alteration of habitat, and harassment. Blunt-nosed leopard lizards are active during the day, which enhances the threat of some impacts, such as vehicle strikes. Project activities could destroy burrows used by blunt-nosed leopard lizards. Lizards can become entrapped or buried inside destroyed burrows as well. Discharge of waste water could drown lizards using drainages. Lizards can become entrapped or drown in oil or tarry substances. Improperly covered well cellars, buried valve boxes, buckets and vertical pipe sections can act as pitfall traps and entrap lizards. BLM would require pre-construction surveys and implementation of mitigation measures to reduce the potential for these impacts. Example measures include, installing flashing around the project footprint, protocol level survey prior to habitat disturbance and burrow destructions, escorting vehicles through blunt- nosed leopard lizard activity areas, and scheduling activities for time periods when blunt-nosed leopard lizards are not active. Such measures are currently required by the O&G Programmatic BO and would likely be required in any separate consultation. BLM lease operating standards (e.g. waste water discharge policies, proper maintenance of equipment and facilities, etc) will also reduce the potential for these impacts.

Giant kangaroo rat. Potential impacts to giant kangaroo rats include direct mortality, loss of burrow systems, loss or alteration of habitat, and harassment. The construction and maintenance of wells pads, access roads, pipelines, and other oil field structures may trap or bury kangaroo rats in their burrows. Kangaroo rats can also drown or become entrapped in spilled oil or tarry substances. Kangaroo rats may also be killed by vehicles. Burrows can also be damaged or destroyed by project activities. Some habitat may also be lost or altered. Studies conducted by Spiegel (1996) indicated that kangaroo rat abundance was lower in oilfield-developed sites compared to undeveloped sites. This was attributed to lower carrying capacity due to habitat alteration and fragmentation. However, the amount of oilfield habitat disturbance was much greater (in excess of 70%) than is expected to result from the leasing of these parcels (less than 1% surface disturbance).

Giant kangaroo rats have the potential to occur in the Kettleman Hills and South Dome Units. BLM would require pre-construction surveys and implementation of mitigation measures to reduce the potential for these impacts. Examples include, trapping to temporarily remove animals from the construction site, and designing project footprints to avoid burrows when possible. Such measures are currently required by the O&G Programmatic BO and would likely be required in any separate consultation. Pre-construction surveys and implementation of mitigation measures that are part of the Oil and Gas Programmatic Biological Opinion will reduce the potential for impacts. Giant kangaroo rats are mostly active at night and most vehicle traffic is expected during daylight hours. This combination will reduce the chances of a vehicle strike. Giant kangaroo rats would be avoided and the low amount of habitat disturbance would have negligible affects to any kangaroo rat species inhabiting the area.

Tipton kangaroo rat. Tipton kangaroo rats have the potential to occur on Parcel 22. This is a 40 acre parcel within the Lost Hills Unit and is part of the Alkali Sink ACEC. This parcel would have a “No Surface Use” stipulation attached to this lease so that no habitat would be disturbed on the BLM lands. However, an oil well and associated facilities could be constructed on the adjacent private lands, which are either natural land habitat, previously cultivated, or currently cultivated lands. Potential impacts to Tipton kangaroo rats that may occur on the adjacent private lands are the same as those described for the giant kangaroo rat. Survey, take avoidance, mitigation, and compensation measures would be required at the site-specific project stage under the programmatic biological opinion and would be similarly required for any separate biological opinion. Thus, Tipton kangaroo rats would be avoided and the low amount of habitat disturbance would have negligible to minor affects to any Tipton kangaroo rats inhabiting the area.

San Joaquin kit fox. San Joaquin kit fox may occur within all units. Potential impacts to San Joaquin kit fox include direct mortality from vehicle strikes, accidental entombment, drowning or entrapment in spilled oil or sumps, entrapment in pipes, and entrapment in old well cellars. Construction of well pads, roads, pipelines, and facilities result in alteration and fragmentation of habitat, loss of den sites and features, and loss of habitat to support prey species. Oilfields are often places of continual human disturbance from well drilling, maintenance, and monitoring, operation of production facilities, transportation of produced oil, and associated industrial activities. There is also exposure to oil field chemicals around production facilities and from unintentional events (e.g., spills, well head and pipeline leaks, well blow-outs). However, the incidence of these causes of mortality, sickness, and habitat loss are avoided and ameliorated by the implementation of biological surveys prior to new authorizations, take avoidance, project mitigation, terms and conditions of biological opinions, best management practices, spill avoidance and cleanup measures, and habitat restoration of disturbed sites. For example, new well pads, roads and pipelines locations and routes are surveyed for kit fox dens and these projects may be moved to a distance approved by the FWS and CDFG to preserve the den site and minimize disturbance to foxes that may be present. The projects may be relocated onto previously disturbed sites to minimize habitat alteration. Facilities are inspected to ensure that oil leaks are remediated, well cellars are covered, and sumps are covered or removed. Speed limits are posted, and enforced under company health and safety standards. Employee training of endangered species features, habitat, avoidance and mitigation measures, required conservation measures, and reporting are included in employee and contractor project orientation.

Studies of San Joaquin kit fox in oilfield landscapes in western Kern County have evaluated the effects of oil and gas land uses on this species. Spiegel (1996) compared several life history traits of San Joaquin kit fox (e.g., den characteristics, diet, spatial ecology and habitat use, reproduction, mortality, relative abundance, and prey relative abundance) in undeveloped, moderately developed and intensively developed oil fields. The moderately developed site was had variable amounts of disturbance from 0% to 50% disturbance, with the intensively disturbed site having >70% disturbance. This study, conducted between 1989 and 1993, found that the abundance of San Joaquin kit fox was 50% higher in undeveloped areas compared to the moderate development and high intensity oilfield sites. The relative abundance and biomass of prey species was also greater in the undeveloped site. Within the oilfield sites, prey species were more diverse than in the undeveloped site. Kangaroo rats were more frequently used in undeveloped sites but rabbits/hares, pocket mice, deer mice, and house mice were used more frequently in the developed sites. The diets were reflective of prey availability of the different areas. Atypical dens (pipes, culverts, woodpiles) accounted for 50% of the den sites in the developed sites, while only 15% were atypical dens in the undeveloped site. Dens in developed sites were usually <5 meters from a human-related disturbance. Habitat features associated with den locations were typical of those most available. Activities associated with oilfield production did not appear to affect kit fox survivorship or reproduction. Reproductive success and litter sizes did not differ between developed and the undeveloped sites. However, the cumulative survivorship of young foxes was higher in the undeveloped area. Predation accounted for 88.9% of deaths during this study, with only one death attributable to oil-related activities. The mortality risk to kit foxes from exposure to oil in the developed area was considered minimal. There was a lack of vehicle-related mortality during the study which was attributed to reduced speed limits in the developed area. This study also found that foxes in the developed areas were able to maintain smaller home ranges than foxes from the undeveloped site, presumably due to the availability of human-derived food sources widely dispersed throughout the oilfield. Disturbed sites were used in proportion to that available which was attributed to the presence of prey adapted to disturbed sites. Denning ranges and high activity areas in the developed site contained disturbed habitat in amounts greater to that available, which was likely related to the extensive use of pipe dens. This

study concluded that the opportunistic nature of kit foxes allows them to persist in oil-developed areas, provided that adequate foraging resources and denning opportunities exist. The most significant effect of oil development on kit fox populations appears to be lower carrying capacity for populations of both foxes and their prey from reduction of habitat (about 28% vegetative cover) and fragmentation of habitat caused by oilfield-related construction and maintenance activities.

A more extensive and longer term kit fox study in an oilfield landscape was conducted at the Naval Petroleum Reserves, California (NPRC) from 1980 to 1985. At this study, a site was considered developed if disturbance was >15%; the undeveloped sites averaged 7.8% disturbance and the developed sites averaged 25.8% disturbance. Cypher et. al. (2000) found that kit fox capture rates were higher in the undeveloped areas than in the developed area, but these rates exhibited similar trends and were related. Survival rates were higher in developed areas during 1980 -1986, but rates declined in both areas during that period. Deaths attributed to various causes were similar in developed and undeveloped areas. Juvenile survival rates were similar in developed and undeveloped areas as were the causes of deaths. Of 712 dead foxes, 43 died from oilfield-related causes; of these 35 hit by vehicles, 1 accidentally entombed, 3 drowned in spilled oil, 1 drowned in an oil sump, 2 entrapped in pipes, and 2 died entrapped in a well cellar. Reproductive success among adult and juvenile kit fox and litter size did not differ between developed and undeveloped areas. The abundance of rabbits and hares (leporids) was always lower in the undeveloped areas while the mean capture of all rodents and kangaroo rats was higher in the undeveloped areas. In both the developed and undeveloped areas the kit fox use of leporids declined while the use of kangaroo rats increased. The use of leporids was higher in developed areas with the use of kangaroo rats higher in undeveloped areas. Predators were the primary cause of mortality at NPRC. Vehicles did not appear to be a significant source of mortality due to the relatively low percentage of occurrence. Oilfield activities did not appear to significantly affect the population dynamics of kit foxes at NPRC. Fox abundance was usually lower in developed areas, but trends in developed and undeveloped areas were similar, indicating that the same factors were influencing population dynamics in both areas. Relatively few foxes died on NPRC as a direct result of oilfield activities. The majority of these animals were accidentally hit by vehicles, but the frequency is probably similar to that on roads off-site and was possibly lower due to reduced speed limits. The exposure to toxic chemicals was detected among some kit foxes, but levels and occurrence rates were not considered to negatively impact the population. Hematological values did not differ between foxes in developed and undeveloped areas. Individual foxes used an average of 11.8 dens each year and over 1,000 dens were located on NPRC, so den availability is probably not a limiting factor. Den use patterns were similar among developed and undeveloped areas. Space-use patterns of foxes were not affected by oilfield activities. Nightly movements and home range patterns were similar in developed and undeveloped areas. Disturbances associated with oilfield activities did not appear to affect kit foxes which were observed around facilities and frequently man-made structures as dens. Dens were frequently located near disturbances (roads, pipelines, disturbed habitat). This study concluded that in general, kit foxes appear to be tolerant of human activity and exhibit an ability to coexist with humans, even in areas of intense disturbance. The most significant impact to foxes from oilfield activities probably is habitat loss associated with facility construction and concomitant reduction in carrying capacity. Based on results from NPRC and elsewhere, kit foxes are able to adapt to oilfield activities and persist in areas of oil development.

Both studies indicated that while many of the kit fox population and life history characteristics were similar between areas developed for oil and gas and those undeveloped, there were fewer foxes or captures in the developed areas. This is likely due to reduced carrying capacity that is the result of habitat alteration and fragmentation. Both of the oil and gas developed study sites were at levels of disturbance far in excess of what is projected to result from this lease sale.

Considering the small amount of habitat disturbance projected to occur as a result of leasing these parcels and the site-specific NEPA analysis and ESA compliance measures, the risk of impacts to an individual San Joaquin kit fox is very unlikely. BLM would require pre-construction surveys and implementation of mitigation measures to reduce the potential for these impacts. Example measures include monitoring of potential dens prior to excavation, complete avoidance of natal dens during the pupping season, speed limits to avoid vehicles hitting foxes, trash containment and removal, and checking pipes and culverts prior to moving. Such measures are currently required by the O&G Programmatic BO and would likely be required in any separate consultation. Thus, with implementation of avoidance and mitigation measures required at the site-specific project stage, little impact is likely to occur to individual kit foxes and no effects would be likely at the population level as a result from the oil and gas activities on these leases.

Approximately 1,728 acres on parcels 24 -29 of the Maricopa are within the Western Kern County core kit fox population. The U.S. Fish and Wildlife Service identified three core populations as important for kit fox recovery. One goal for the core populations is to protect natural lands with appropriate land use and management. The U.S. Fish and Wildlife Service has indicated that they are concerned about the low amount of habitat conserved within the Western Kern County core population. Of the 1,728 acres, 560 acres are native lands and the remaining parcels are on cultivated farm land. It is estimated that 1 well and 1 acre could be developed. This could result in localized and limited disturbance to kit fox habitat. As described above, disturbance to kit fox habitat is compensated at a rate of 1.1 acre for every acre temporarily disturbed, and 3 acres for every acre permanently disturbed. In addition, disturbance to BLM surface requires an additional replacement factor of 1 acre for every acre disturbed and disturbance within the Western Kern County Kit Fox Core Area requires a 4:1 compensation ratio. Compensation would not be required for the cultivated farm lands. Species surveys, standard kit fox mitigation measures, avoidance of habitat features are also standard requirements. Survey and take avoidance measures would be implemented on the farm lands to ensure that kit fox dens that may occur on the margins of the farm fields or within fallowed farm fields would be avoided. The habitat loss of one acre is not expected to conflict with recovery plan goals with these requirements. In addition, individual projects are expected to be relatively small (less than one acre on average) compared to the home range of a kit fox (average 1144 acres) and widely dispersed over space and time.

San Joaquin Antelope Squirrel. San Joaquin antelope squirrel have the potential to occur in the Kettleman Hills, South Dome, Lost Hills, and Maricopa Units. Impacts to the San Joaquin antelope squirrel would be similar to those described for the giant kangaroo rat. Antelope squirrels are, however, more widely distributed and are more likely to occur on or near a project site than giant kangaroo rats. BLM would require pre-construction surveys and implementation of mitigation measures to reduce the potential for these impacts. Example measures include monitoring for antelope squirrel activity patterns, avoidance of potential burrows, had removal of shrubs to increase visibility, checking below vehicles and equipment, destruction of potential burrow only when animals are observed to be away from the burrow. Such measures are currently recommended to operator as part of the O&G Programmatic BO. These measures are currently being reviewed by the California Department of Fish and Game (CDF&G). Compliance with these measures will minimize impacts to antelope squirrel.

BLM Sensitive Animal Species

Mountain Plover. Wintering mountain plovers have the potential to make use of fallow agricultural lands in the Kettleman Hills, Lost Hills and Maricopa Units. Potential impacts to mountain plover include temporary displacement by human activities associated with oilfield

construction. Plovers are opportunistic in their foraging and would likely make use of some other foraging area. Any development would have a negligible impact on mountain plovers.

Burrowing Owl. The burrowing owl has the potential to occur in all units. Potential impacts to burrowing owls include loss of burrows, entrapment in burrows, and collision with vehicles. Burrowing owl burrows would be treated like potential kit fox dens. Such dens would be monitored for use before destruction or plugging, allowing detection of burrowing owl use. If owl use if detected and the burrow cannot be avoided, burrow destruction or plugging would occur only after the owl has vacated the site. As a result some burrows sites may be lost, but individual owls should avoid becoming entrapped inside burrows.

LeConte's thrasher. LeConte's thrasher has the potential to occur in the Kettleman Hills, South Dome, and Maricopa Units. Light and moderate oilfield development that maintains saltbush between wells and facilities, and tall saltbush along drainages provides suitable habitat for LeConte's thrasher. Measures to retain saltbush stringers and minimize the removal of saltbush are typically included in BLM oil authorizations. Such measures are currently required under the O&G Programmatic BO. The combination of the development limits within corridors (green zone) and saltbush conservation measures are expected to maintain LeConte's thrasher habitat.

Short-nosed kangaroo rat. Impacts to short-nosed kangaroo rats would be similar to those described for the giant kangaroo rat. Short-nosed kangaroo rats are also widely distributed, and like the antelope squirrel, are more likely to occur on or near a project site than giant kangaroo rats. Short-nosed kangaroo rats have the potential to occur in the Kettleman Hills, South Dome, and Maricopa Units.

San Joaquin pocket mouse and Tulare grasshopper mouse. The San Joaquin pocket mouse and the Tulare grasshopper mouse have the potential to occur on natural lands in the Kettleman Hills, South Dome, and Maricopa Units. Tulare grasshopper mouse has the potential to occur in all units. Impacts to these species would be similar to those described for the giant kangaroo rat. Burrows of small mammals would be avoided to the extent practicable, but some impacts to these two species would likely occur. Considering the small amount of habitat expected to be disturbed during the construction of one well, the site-specific impacts would be minor and the impacts to populations would be negligible.

Pallid bat. The pallid bat has the potential to occur in the Kettleman Hills and South Dome, Units. Impacts to the pallid bat are not expected as roost sites (rocky grottos, buildings, mines) are not expected to be impacted by development activities and very little foraging habitat would be altered.

BLM Sensitive Plant Species.

Eight of the ten BLM sensitive plants identified as having the potential to occur are annual species. As such, populations are not always easy to identify, especially given the high yearly variation in precipitation and the annual plants' response. Because of this, a single year's survey may not adequately identify existing population boundaries and, thus, development may inadvertently destroy existing, but unidentified sensitive plant habitat and populations (i.e., seed banks). Impacts would be dependent on the location of the disturbance relative to populations of the species in question. The construction of roads, well pads, and similar development could destroy plants or disrupt continuity between populations. New weedy species could be introduced and weeds would benefit from the additional moisture generated by runoff from roads and pads. To minimize impacts to BLM sensitive species, mitigation measures would consider the type of impact, the rareness of the species, the population size and distribution, and the

species' response to disturbance. Heavy grazing on some parcels may further complicate the identification of rare plant population boundaries

Indirect Effects to Biological Resources as a result of Climate Change

Since the level of greenhouse gas associated with the proposed action (possible 1 well) is not expected to detectably influence climate change, indirect effects to biological resources are not expected. The effects to biological resources from climate change are discussed instead under cumulative effects.

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 the ephemeral stream channel on Santiago Creek in parcel 28. There are no other riparian habitats within the lease parcels.

I. Cultural Resources

Approval of this document will have no adverse effect upon cultural resources (per compliance with Section 106 of the National Historic Preservation Act). 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. Native American consultation was completed for the parcels proposed for leasing in this document, and no traditional cultural properties or heritage related issues were identified. The potential exists for the Native American community to identify heritage related issues in the future as specific actions are proposed.

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. In the event that cultural resources are identified within a 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 or compensation. It should be noted that BLM has discretional 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. This should allow nearly all sites to be avoided. Sites that cannot be avoided will be evaluated for listing on the National Register and mitigation measures will be instituted if the site is found eligible. Should development uncover subsurface sites, the lessee is required to halt all work until the site can be evaluated and proper mitigation and avoidance measures identified.

J. Paleontological Resources

There will no direct or indirect impacts to paleontological resources from the proposed action. This proposal and analysis deal only with the action of leasing, and does not consider ground surface disturbing activities. Prior to ground surface disturbance at those parcels previously identified as sensitive for the presence of paleontological resources, field survey will be required in order to determine if significant paleontological deposits are present. If as a result of field survey , it is determined that potential impacts will be made to significant paleontological deposits, project plans may be adjusted to avoid impacts or mitigation measures such as excavation and specimen recovery may be required.

K. 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.

L. Lands

Leasing BLM lands for oil/gas exploration and production does not typically impact land uses in this area, because the chances of a successful new find are so slim. However, leasing can sometimes cause conflicts with other surface uses that may be taking place on the lands. This is especially possible if the leased lands are split estate, where the surface estate is privately owned and the mineral estate is federally owned and under the jurisdiction of BLM. Surface owners are often not aware of the Federal ownership of the mineral estate, or are not aware of the implications of the Federal ownership. Along with the ownership of the minerals the Federal government retains the right to use any part of the surface for exploration or development. These "surface entry rights" can cause distress for private surface owners who do not wish to see new roads and well pads on their land. Adjacent private lands can also be impacted due to leasing, in that new road access to the leased areas is sometimes necessary. Although the responsibility for obtaining access to leased areas is the lessee's and not BLM's, leasing can sometimes cause an indirect impact to adjacent lands due to the need for road access.

Any surface disturbing activity requires BLM approval. 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 an 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 amount of the surface owner protection bond is $1,000.00. More information regarding the rights and responsibilities of the landowner, the BLM, and the mineral lessee is covered in a pamphlet available on the internet, and in selected local BLM Field Offices.[5]

Oil and Gas and Other Mineral Exploration and Development

This alternative will have a beneficial effect on mineral exploration and development, since the land will be offered for competitive auction. The practical utilization of the lands will have a positive local effect in the generation of long term jobs and revenues to the State and county. The royalties and rentals from competitive auctions are also a dependable source of long term income for the Federal government. The impacts from this particular auction may be small, including an unknown (but probably relatively small) amount of new reserves, due to the small amount of acreage offered. However, the positive action of the auction would provide the industry with increased opportunity for exploration, potentially resulting in increased stability and profitability of domestic companies.

In most instances, application of the LSU – Protected Species and LSU – Sensitive Species stipulations would not prevent surface occupancy for the entire lease. That is, an alternative site

[5] http://www.blm.gov/wo/st/en/prog/energy/oil_and_gas/best_management_practices/split_estate.html

or other mitigation or compensation measure would probably be available that would still allow the lessee to drill and develop the lease.

J. Farmland

Parcels 13, 23 thru 28 are located on acreage designated as farmland. The parcels are on split-estate lands that appear to have some agriculture rows of crops and land that has been cultivated for planting. Although there may be local or state laws that require the lease holder (lessee) to compensate the landowner for any crop loss or damage caused by the development of the leased lands, the only compensation provided by federal law on these split estate lands is the value of loss of crops and tangible improvements that are related to stock-raising; such as corn, hay, barn and fences for livestock. Crops include those for feeding domestic animals, such as grasses, hay, and corn, but not plants unrelated to stockraising. Tangible improvements include those relating to domestic, agriculture and stockraising uses, such as barns, fences, ponds or other works to improve the utilization of water, but not those associated with nonagricultural development.

Proposed Action Alternative – Cumulative Impacts

In the Caliente Resource Management Plan and EIS, published December 1996, BLM analyzed the overall effects of oil and gas activities in the area. The analyses and conclusions contained in those documents are still valid and, to date, impacts from oil and gas leasing and development are still significantly under the level of cumulative impacts that were projected/analyzed in those documents. See Table 2 - Oil and Gas Surface Disturbance Projected in Existing Caliente RMP/EIS, below.

TABLE 2 –Oil and Gas Surface Disturbance Projected in Existing Caliente RMP/EIS (acres) (Valley Planning area, 10 years)

	Projected	Actual
Total Fed Wells Drilled (All leases, new + existing)	1459-2200	1564
Habitat Disturbance	147 acres/year	38
Total Habitat Disturbance Projected on New Lease Sales EAs Past 10 Years	>500	23

The existing RMP/EIS projected and analyzed the impacts from permanent new disturbance in habitat of up to 147 acres per year. In fact, between July 99 and October 2008, a total of only 352 acres was disturbed throughout the entire Bakersfield Field Office area, a larger area than considered in this sale. This amounts to only 38 acres per year, not the 147 acres that was analyzed. There have not been and are not expected to be any additional impacts in the parcels covered in this EA that would change those conclusions. In addition, as mentioned previously, there have been 16 lease sales in this area in the past 10 years (since 6-25-99), each of which projected various numbers of wells, both exploratory and development, as well as other types of activities that would cause surface disturbance. However, out of 222 leases that have been issued in this area since June 25, 1999, only 9 leases have seen any drilling at all. Only 17.5 acres of temporary or permanent disturbance has occurred, which means nearly of all the projected disturbance on those leases never occurred. In addition, as shown elsewhere in this document, nearly all of the other impacts (air, soil, etc.) also never occurred.

Cumulative Impacts to Minerals

Only a small portion of the land in the project area is managed by the BLM (less than 10%). Nearly all of the minerals that are managed by the BLM that is most prospective for oil and gas (i.e., within the boundaries of existing producing areas) is already leased. In addition, all (or virtually all) of the private minerals within the project area where there is likelihood for development is already leased. There are many opportunities for development both on private and public minerals and more than 11,000 wells have been drilled in western Kern County in the past 5 years alone. Since the Caliente RMP/EIS was completed, permitting requirements have become increasingly stringent, especially regarding minimizing impacts to air quality and endangered species habitat. This has resulted in an unknown (probably small to moderate) number of wells not being drilled. However, the significant rise in oil prices since then has resulted in an increase in the number of wells drilled. In any event, the extremely small amount of development projected for this sale, although positive for oil and gas development, is considered to be negligible from a cumulative impact viewpoint.

For a more complete discussion of the types of activities associated with exploration, drilling, and production, in addition to the environmental consequences to Minerals and the cumulative impacts on Minerals see the Caliente RMP/EIS, Ch. 5 Pg. 33 to which this document is tiered. These discussions include Reasonable Foreseeable Development scenarios (RFDs) and impacts, both general and cumulative. Many of these activities are also described in Appendix C.

Cumulative Impacts to Air Quality

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.

The cumulative impacts area of analysis is the San Joaquin Valley air basin. The expected emissions from the proposed action would be low both in relation to the overall activity in the region, and by itself. 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).

Cumulative Impacts to Soil Resources

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 localized region of the reasonably foreseeable development scenario, which equates to approximately 1 acre of soil that may be permanently impacted. The cumulative effects analysis area includes each parcel proposed for leasing, and a 2-mile radius surrounding each parcel. Based on significance thresholds of percent developed, development does not exceed 10% in areas designated as Red zone, or 25% developed in Green zone. These thresholds are consistent with BLM Land Use and Management objectives, and support strategies for the conservation and recovery of San Joaquin Valley upland species and their habitat.

In 2010, a former Clean Water Act exemption under the 2005 Energy Policy Act for oilfield construction expires; therefore, *all* oil and gas construction projects measuring 1.0 acres in size or greater would be 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. 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.

Cumulative Impacts to Water Resources

In the Maricopa unit, several unnamed ephemeral drainages and Santiago Creek have been altered and/or removed by agriculture and past construction of Highway 166. The direct and indirect effects of the proposed action are limited to the localized area of the reasonably foreseeable development scenario (one well approximately 1.0 acre in size). 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 or indirect 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 for the proposed action would be subject to these requirements.

Cumulative Impacts to Climate Change

Direct and indirect 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 APCD's best approach in addressing cumulative impacts would be to require all projects to reduce their GHG emissions, through project design elements or mitigation. The proposed District 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.

Cumulative Impacts to Biological Resources

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.

The conservation and recovery strategy for San Joaquin Valley species is a system of reserves and corridors. In the Caliente RMP, BLM committed to managing all BLM lands within reserves and corridors as part of the conservation and recovery system. The Bakersfield RMP is likely to do the same. These lands are managed to maintain 90% of the habitat in reserves and 75% of the habitat in the corridors. Restoration is undertaken on lands that do not meet the habitat maintenance goal before new development is authorized.

Beginning in about the early 1990's, compensation has been required for most new development. For every acre permanently disturbed, 3 acres must be set aside, and for every acre temporarily disturbed 1.1 acres must be set aside. In addition, if the land being disturbed is already part of the conservation and recovery system, an additional acre must be set-aside to replace the conserved

acre. This increases the ratio to 4:1 or 2.1 to 1 for lands that are already part of the reserve and corridor system. This compensation requirement helped to establish large mitigation banks, such as Coles Levee, Semitropic Ridge and Kern Water Bank. Numerous other entities have also secured or pledged lands in various locations to the reserve and corridor system. Energy companies and conservation organizations have added reserve and corridor 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 the reserve and corridor system. Through the requirement for compensation and replacement acres,

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 the 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 are cumulatively significant if the amount of habitat disturbance exceeds the conservation objectives of the San Joaquin Valley reserve and corridor strategy. Impacts to listed species conservation and recovery would be significant if habitat disturbance exceeds 90% of a reserve area, excluding those lands within the reserve areas that were identified as agricultural or non-habitat in the 1990 baseline studies. Habitat disturbance would also be significant in a habitat corridor if the cumulative habitat disturbance adjacent to the lease parcel decreases habitat connectivity below one mile in width across the corridor or if the habitat within two miles of a lease parcel exceeds 75% of the corridor lands. Impacts to BLM ACEC lands within a reserve or corridor would be cumulatively significant if the individual parcel or adjacent parcels joined along a parcel line (excluding a contiguous corner) exceeds these habitat disturbance thresholds. The cumulative effects analysis areas for this lease sale parcels was conducted to see if the current and reasonably foreseeable habitat disturbance for each lease parcel in a reserve area or habitat corridor reduced corridor connectivity or exceeded the 90% or 75% criteria.

Lease Parcel 22 is located within the Semitropic reserve area and would be leased with the No Surface Use stipulation. No other parcels are located within the reserve areas identified in the Recovery Plan for Upland Species of the San Joaquin Valley. Parcels 1- 12, 14, 15-21, 27, and 29 are located within the corridor areas. The development of the leases would not be authorized if the habitat disturbance does not meet the 90% or 75% habitat objectives in reserves and corridors, respectively, on the BLM surface lands (Parcels 3, 6, 8, 9, 18). An analysis of the cumulative effects of one well (one acre of habitat impact), combined with past, present, and future actions that are reasonably certain to occur, did not identify any of the lease parcels where the cumulative impact of habitat disturbance exceeded the threshold criteria. The 90% threshold was maintained in the Semitropic reserve area, none of the habitat corridors were reduced to less than one mile of width, and at least 75% habitat was maintained within two miles of a lease parcel in a habitat corridor. In addition, the habitat disturbance of one well and one acre of habitat would not be less than the 75% habitat threshold in the Kettleman Hills ACEC. Therefore, the limited effects of the proposed action (1 acre of habitat loss, and a localized, moderate effect to individual plants and animals, but a minor effect to populations), taken within the context of the cumulative effects of other past, present and future actions, are not expected to have a significant effect on San Joaquin Valley species conservation or recovery.

Cumulative Impacts to Biological Resources from Climate Change

Climate models predict that, as a result of global warming, Southern California will tend to be hotter and drier in the future, with an increase in the frequency and duration of drought (Christensen et al. 2007). Drier conditions for the San Joaquin Valley means that overall, there will be less vegetative growth. A shift in vegetation zones is also expected. Oak and Juniper woodlands will give way to scrublands, and scrublands to grasslands. Future grasslands will have more areas of bare soil and vegetation will be sparser. Woodlands may disappear from some portions of the San Joaquin Valley and become restricted to the higher elevations of the San Joaquin Valley and surrounding foothills. Plant communities and animal guilds may migrate upward or northward in elevation, as the general area becomes drier. With a slight drying, the wild oat grasslands in the northern part of the San Joaquin Valley would be expected to shift to brome-dominated grasslands. As precipitation levels and recharge decline, some springs will dry up, while others will diminish in flow. This may have consequences for those plants and animals depending on these water sources.

The result of this change in the southern San Joaquin Valley may result in conditions that are similar to those currently experienced during a series of drought years when very little rain falls in the region. During current drought conditions, herbaceous vegetation cover and production decreases, while the amount of bare ground increases. In some locations, individual plants and stands of perennial shrubs become dormant or even die due to increased stress.

A more arid environment would have varied effects on the San Joaquin Valley suite of species. Currently, during a series of extremely low rainfall years when annual plant production is reduced or absent and food resources become scarce, populations of blunt-nosed leopard lizards and small mammals, including giant kangaroo rat, Tipton kangaroo rat and San Joaquin antelope squirrel, tend to decline (Germano and Williams 2005, Rathbun 1998, Williams et. al. 1993). The decline continues until more widespread germination of annual plants resumes (Germano and Williams 2005, Rathbun 1998, Williams et. al. 1993). In the predicted more arid climate, during years with a low to average rainfall, herbaceous plant production would be reduced, and grass cover would be sparser and less persistent than what currently occurs during average rainfall years. Annual vegetation that is lower and sparser may partially benefit the small mammals and lizards of the San Joaquin Valley since persistent non-native plant cover reduces habitat suitability for these species (Germano et. al. 2001). Population levels of these species will reflect the benefits of a more open structure versus the liabilities of decreased food resources.

Since San Joaquin Valley animal species have evolved under desert conditions they may be better able to persist in a more arid climate than other species. During drought conditions, populations decline but do not completely disappear. Populations recover once rainfall sufficient for germination occurs. So long as future drought periods do not exceed the time period that source animals can persist, the San Joaquin Valley suite of species are expected to persist. A more arid climate may also promote a more open and sparser vegetation pattern that these species favor. The non-native grasses and filaree that have invaded the region over the past two hundred years may become less persistent and dense, favoring a habitat structure the San Joaquin Valley species prefer.

No Action Alternative – Direct, Indirect and Cumulative Impacts

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.

Socio-Economic **–** No additional impacts would occur.

Visual Resources **–** No additional impacts would occur.

Recreation – No additional impacts would occur.

Air, Soil, and Water **–** There would be no additional impacts to air, soil, and water since these leases would not be offered.

Biological Resources **–** No additional impacts would occur.

Cultural Resources **–** No additional impacts would occur.

Livestock Grazing **–** No additional impacts would occur.

Lands and Farmland **–** No additional impacts would occur.

Oil and Gas – The no action alternative would represent a fundamental change in the decisions of the Caliente RMP 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 reserves of oil and/or gas. The amount and value of lost reserves would be difficult to predict at this time without additional data.

V. MITIGATION

Appropriate mitigation measures are incorporated into the proposed action and no additional mitigation should be necessary.

VI. CONSULTATION AND COORDINATION

Native American Contacts

Mr. Neil Peyron, Chairperson - Tule River Reservation

Mr. Clarence Atwell, Chairperson - Santa Rosa Rancheria

Mr. Hector Franco – Santa Rosa Rancheria

Ms. Gloria Morgan – Tejon Indian Tribe

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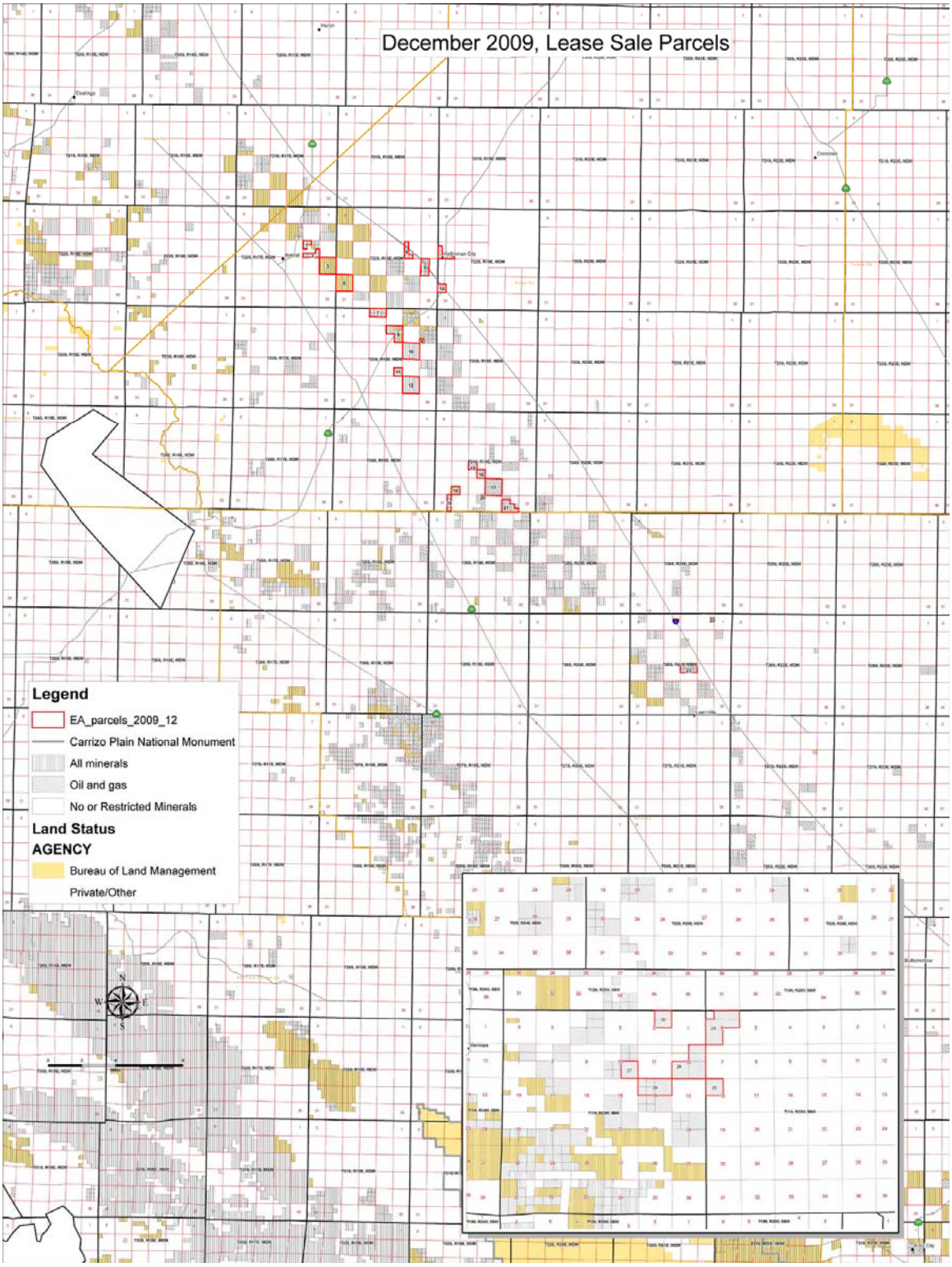
APPENDIX A - Description of Lease Sale Parcels

Following is a map showing the general location of the parcels analyzed in this EA. A more detailed map can be found at http://www.blm.gov/ca/st/en/fo/bakersfield.html



The following public domain lands all located within the Bakersfield Field Office administered lands, are subject to filings in the manner specified in the applicable portions of the regulations at 43 CFR, Subpart 3120. These parcel numbers will be different from those on the actual Lease Sale Notice, and officially parcelized for the day of the auction.

Table 1. December 9, 2009 Oil and Gas Competitive Lease Auction Parcels

NO.	LOCATION	COUNTY	ACRES	TYPE
1	T. 22 S., R. 17 E., MD Mer., Sec. 14, N2NW/4, SW/4NW/4;	Kings	120..00	Split Estate Lands Subject to Special Stipulations
2	T. 22 S., R. 17 E., MD Mer., Sec. 14, NE/4SE/4, S2S2;	Kings	200.00	Split Estate Land Subject to Special Stipulations
3	T. 22 S., R. 17 E., MD Mer., Sec. 24, All;	Kings	640.00	Public Land Subject to Special Stipulations
4	T. 22 S., R. 18 E., MD Mer., Sec. 14, W2W2, SE/4SW/4;	Kings	200.00	Split Estate Land Subject to Special Stipulations
5	T. 22 S., R. 18 E., MD Mer., Sec. 24, Lot 1-4, 7-10;	Kings	330.18	Split Estate Land Subject to Special Stipulations
6	T. 22 S., R. 18 E., MD Mer., Sec. 30, Lots 1, 2 FRAC W2SW/4, E2, E2W2;	Kings	648.25	Public Land Subject to Special Stipulations
7	T. 23 S., R. 18 E., MD Mer., Sec. 4, FRAC. N2;	Kings	321.12	Split Estate Land Subject to Special Stipulations
8	T. 23 S., R. 18 E., MD Mer., Sec. 10 N2, SE/4;	Kings	480.00	Public and Split Estate Land Subject to Special Stipulations
9	T. 23 S., R. 18 E., MD Mer., Sec. 12, SW/4SW/4;	Kings	40.00	Public Land Subject to Special Stipulations
10	T. 23 S., R. 18 E., MD Mer., Sec. 14, All;	Kings	640.00	Split Estate Land Subject to Special Stipulations
11	T. 23 S., R. 18 E., MD Mer., Sec. 22, SE/4;	Kings	160.00	Split Estate Land Subject to Special Stipulations
12	T. 23 S., R. 18 E., MD Mer., Sec. 26, All;	Kings	640.00	Split Estate Land Subject to Special Stipulations
13	T. 22 S., R. 19 E., MD Mer., Sec. 18, Lots 4,5, SW/4NW/4, NW/4SW/4, S2SW/4;	Kings	239.64	Split Estate Land Subject to Special Stipulations
14	T. 22 S., R. 19 E., MD Mer., Sec. 30, Lot 2, E2SW/4;	Kings	159.16	Split Estate Land Subject to Special Stipulations
15	T. 24 S., R. 19 E., MD Mer., Sec. 21, NW/4;	Kings	160.00	Split Estate Land Subject to Special Stipulations
16	T. 24 S., R. 19 E., MD Mer., Sec. 21, SE/4;	Kings	160.00	Split Estate Land Subject to Special Stipulations
17	T. 24 S., R. 19 E., MD Mer., Sec. 27, All;	Kings	640.00	Split Estate Land Subject to Special Stipulations
18	T. 24 S., R. 19 E., MD Mer., Sec. 29, SW/4;	Kings	160.00	Public Land Subject to Special Stipulations
19	T. 24 S., R. 19 E., MD Mer., Sec. 31, E2E2;	Kings	160.00	Split Estate Land Subject to Special Stipulations
20	T. 24 S., R. 19 E., MD Mer., Sec. 33, NE/4NE/4;	Kings	40.00	Split Estate Land Subject to Special Stipulations
21	T. 24 S., R. 19 E., MD Mer., Sec. 35, S2NW/4, SW/4, W2SE/4, SE/4SE/4;	Kings	360.00	Split Estate Land Subject to Special Stipulations
22	T. 26 S., R. 21 E., MD Mer., Sec. 2, Lot 6;	Kern	39.95	Public Land Subject to Special Stipulations

23	T. 26 S., R. 21 E., MD Mer., Sec. 22, N2;	Kern	320.00	Split Estate Land Subject to Special Stipulations
24	T. 11 N., R. 22 W., SB Mer., Sec. 6, Lots 1 & 2 of NE/4, Lot 1 of NW/4, E2 Lot 2 of NW/4, Lots 1 & 2 of SW/4;	Kern	443.82	Split Estate Land Subject to Special Stipulations
25	T. 11 N., R. 22 W., SB Mer., Sec. 18, Lots 1 & 2 of NW/4;	Kern	163.49	Split Estate Land Subject to Special Stipulations
26	T. 11 N., R. 23 W., SB Mer., Sec. 2, Lots 1 & 2 of NE/4;	Kern	161.81	Split Estate Land Subject to Special Stipulations
27	T. 11 N., R. 23 W., SB Mer., Sec. 10, SE/4;	Kern	160.00	Split Estate Land Subject to Special Stipulations
28	T. 11 N., R. 23 W., SB Mer., Sec. 12, NE/4, S2;	Kern	480.00	Split Estate Land Subject to Special Stipulations
29	T. 11 N., R. 23 W., SB Mer., Sec. 14, N2;	Kern	320.00	Split Estate Land Subject to Special Stipulations

APPENDIX B - Special Lease Stipulations

Stipulation No. 1 - Limited Surface Use - Protected Species: All or a portion of this lease is within the range of one or more plant or animal species that are either listed as threatened or endangered, or are proposed for such listing by the U.S. Fish and Wildlife Service (USFWS).

The lessee is notified that time frames for processing applications may be delayed beyond established standards to allow for species surveys, and consultation or conferencing with the USFWS. Notice is also given that surface-disturbing activities may be moved or modified, and that some activities may be prohibited during seasonal time periods. Surface-disturbing activities will be prohibited on the lease only where:

a. The proposed action is likely to jeopardize the continued existence of a listed or proposed species, or

b. The proposed action is inconsistent with the recovery needs of a listed species as identified in an approved USFWS Recovery Plan.

Prior to the authorization of any surface-disturbing activities, a preliminary environmental review will be conducted to identify the potential presence of habitat for these species. Authorizations may be delayed until completion of the necessary surveys during the appropriate time period for these species. The lessee should be aware that the timing of the surveys is critical, in that some species can only be surveyed during a brief period each year.

The Bureau of Land Management (BLM) may need to initiate consultation or conference with the USFWS if the site inspection concludes that a listed or proposed species may be affected by the proposed activity. The lessee should be aware that the USFWS has up to 135 days to render their biological opinion, and that there are provisions for an additional 60-day extension. Offsite habitat protection or enhancement for wildlife or vegetation (compensation) may be required by the USFWS when habitat is disturbed. The consultation may also result in some restrictions to the lessee's plan of development, including movement or modification of activities, and seasonal restrictions. Surface-disturbing activities will be prohibited on the lease if the consultation or conference concludes that either of the conditions identified in a or b above exist.

Stipulation No. 2 - Limited Surface Use - Sensitive Species: All or a portion of this lease is within the range of one or more plant or animal species that are either Federal candidates for listing as threatened or endangered (Federal Candidate), or are listed by the State of California as threatened or endangered (State Listed), or are designated by the Bureau of Land Management (BLM) as Sensitive (Bureau Sensitive).

The lessee is notified that time frames for processing applications may be delayed beyond established standards to allow for species surveys and coordination with the USFWS and California Department of Fish and Game. Notice is also given that surface-disturbing activities may be relocated beyond the standard 200 meters but not more than 1/4 mile and that surface disturbing activities may be prohibited during seasonal time periods.

Prior to the authorization of any surface-disturbing activities, a preliminary environmental review will be conducted to identify the potential presence of habitat for these species. Authorizations may be delayed until completion of the necessary surveys during the appropriate time period for these species. The lessee should be aware that the timing of the surveys is critical, in that some species can only be surveyed during a brief period each year. The BLM may need to coordinate with the USFWS or the California Department of Fish and Game if the site inspection concludes that a Federal Candidate, State Listed, or Bureau Sensitive species may be affected by the proposed activity. Coordination may delay application processing beyond established time frames.

To prevent or reduce disturbance to Federal Candidate, State Listed, or Bureau Sensitive species, surface operations may be moved up to 1/4 mile and surface-disturbing activities may be prohibited during seasonal time periods.

Table Biology 1.

Federal & State Listed and BLM Sensitive animal species with potential to occur on the lease parcels.

Species	Blunt-nosed leopard lizard	Giant kangaroo rat	San Joaquin kit fox	Tipton kangaroo rat	San Joaquin antelope squirrel	Mountain Plover	Burrowing owl	Le Conte's thrasher	Short-nosed kangaroo rat	San Joaquin pocket mouse	Tulare grasshopper mouse	Pallid Bat
Status	**FE, SE**	**FE, SE**	**FE, ST**		**ST**	**BLM Sensitive**	**BLM Sensitive**	**BLM Sensitive**	**BLM Sensitive**	**BLM Sensitive**	**BLM Sensitive**	**BLM Sensitive**
Kettleman Hillls	P	P	P		P		P	P	P	P	P	P
South Dome	P	P	P		P		P	P	P	P	P	P
Lost Hills	P		P	P	P	P	P			P	P	P
Maricopa	P		P		P	P	P	P	P	P	P	P

Status

FE – Federally Endangered
FT – Federally Threatened
SE – State Endangered
ST – State Threatened
BLM Sensitive – BLM California Sensitive Species

Occurrence

Known – CNDDB or other record on parcel
Potential – parcel is within species range or known occurrence nearby

Table Biology 2.

Federally Listed & BLM sensitive plant species with potential to occur on the lease parcels.

Species	**status**	**Kettleman Hills**	**South Dome**	**Lost Hills**	**Maricopa**
San Joaquin woolythreads (*Monolopia congdonii*)	FE	X	X		
California jewelflower (*Caulanthus californica*)	FE		X	X	
Hoover's woollystar (*Eriastrum hooveri*)	FD	X	X	X	
king's gold (*Tropidocarpum* [*Twisselmannia*] *californica*)	BLM SS	X	X		
Temblor buckwheat (*Eriogonum temblorense*),	BLM SS		X		
recurved larkspur (*Delphinium recurvatum*)	BLM SS		X	X	X
alkali mariposa lily (*Calochortus striatus*)	BLM SS				X
Horn's milk vetch (*Astragalus hornii* var. *hornii*)	BLM SS		X	X	
Munz's tidy tips (*Layia munzii*)	BLM SS		X	X	
Coulter's goldfields (*Lasthenia coulteri*)	BLM SS			X	
Lost Hills crownscale (*Atriplex vallicola*)	BLM SS			X	X
brittlescale (*Atriplex depressa*)	BLM SS			X	
heartscale (*Atriplex cordulata*)	BLM SS			X	

Status

FE – Federally Endangered
FT – Federally Threatened
FD – Federally Delisted
BLM SS – BLM California Sensitive Species

Biology Table 3.

Federally Listed, Proposed and Candidate Species Designated and Proposed Critical Habitat Bakersfield Field Office

COMMON NAME	SCIENTIFIC NAME	Status 1		Occurrence 2,3				
		SP	CH	C	V	S	CPNM	FM
Snails								
MORRO SHOULDERBAND SNAIL	HELMINTHOGLYPA WALKERIANA	FE	CH	K	N3	N3		
Fairy Shrimp								
LONGHORN FAIRY SHRIMP	BRANCHINECTA LONGIANTENNA	FE	CH	N1	L1	N3	K	
VERNAL POOL FAIRY SHRIMP	BRANCHINECTA LYNCHI	FT	CH	N1	L1	N3	H	x
VERNAL POOL TADPOLE SHRIMP	LEPIDURUS PACKARDI	FT	CH	N3	N3	N3		x
Insects								
VALLEY ELDERBERRY LONGHORN BEETLE	DESMOCERUS DIMORPHUS	FT	CH	N	L	L		x
KERN PRIMROSE SPHINX MOTH	EUPROSERPINUS EUTERPE	FT		N	K?	L	K	
Fish								
LITTLE KERN GOLDEN TROUT	ONCORHYNCHUS AQUABONITA WHITEI	FT	CH	N3	N3	N1		
CA GOLDEN TROUT	ONCORHYNCHUS MYKISS AGUABONITA	90-day		N3	N3	N2?		
LAHONTAN CUTTHROAT TROUT	ONCORHYNCHUS CLARKI HENSHAWI	FT		N3	N3	N3		N1
PAIUTE CUTTHROAT TROUT	ONCORHYNCHUS CLARKI SELENIRIS	FT		N3	N3	N3		N1
UNARMORED THREESPINE STICKLEBACK	GASTEROSTEUS ACULEATUS WILLIAMSONI	FE	PCH	N1	N3	N3		
TIDEWATER GOBY	EUCYCLOGOBIUS NEWBERRYI	FE	CH	N1	N3	N3		
STEELHEAD (southern CA coast)*	ONCORHYNCHUS MYKISS	FE	CH	N1	N3	N3		
STEELHEAD (south central CA coast)*	ONCORHYNCHUS MYKISS	FT	CH	N1	N3	N3		
Amphibians								
CA TIGER SALAMANDER (SB DPS)	AMBYSTOMA CALIFORNIENSE	FEa	CH	H	N3	N3		
CA TIGER SALAMANDER (Cen CA DPS)	AMBYSTOMA CALIFORNIENSE	FT	CH	H	M1	H		K?
ARROYO SOUTHWESTERN TOAD	BUFO MICROSCAPHUS CALIFORNICUS	FE	CH	LI	LI	N3		
CALIFORNIA RED-LEGGED FROG	RANA AURORA DRAYTONI	FT	CH	M1	L1	L1		
MTN YELLOW-LEGGED FROG (So. CA DPS)	RANA MUSCOSA	FE		N3	N3	N3		
MTN YELLOW-LEGGED FROG (Sierran DPS)	RANA MUSCOSA	FC		N3	N3	N2		N1
Reptiles								
BLUNT-NOSED LEOPARD LIZARD	GAMBELIA SILA	FE		M1	K	K	K	x
ISLAND NIGHT LIZARD	XANTUSIA RIVERSIANA	FT		N1	N3	N3		
GIANT GARTER SNAKE	THAMNOPHIS GIGAS	FT		N3	L1	N3		x
Birds								
CALIFORNIA BROWN PELICAN	PELECANUS OCCIDENTALIS CALIFORNICUS	R		K	N1	N1		
ALEUTIAN CANADA GOOSE	BRANTA CANADENSIS LEUCOPAREIA	FT		N1	L1	N1		
CALIFORNIA CONDOR	GYMNOGYPS CALIFORNIANUS	FE	CH	K	K	K		
BALD EAGLE	HALIAEETUS LEUCOCEPHALUS	R		M2	H	M2	K	x
AMERICAN PEREGRINE FALCON	FALCO PEREGRINUS ANATUM	R		K	H	M2		
LIGHT-FOOTED CLAPPER RAIL	RALLUS LONGIROSTRIS LEVIPES	FE		N1	N3	N3		
CALIFORNIA CLAPPER RAIL	RALLUS LONGIROSTRIS OBSOLETUS	FE		N1	N3	N3		
WESTERN SNOWY PLOVER (COAST)	CHARADRIUS ALEXANDRINUS NIVOSUS	FT	CH	H	N3	N3		
MOUNTAIN PLOVER	CHARADRIUS MONTANUS	PT		M2	K	M1	K	x
CALIFORNIA LEAST TERN	STERNA ANTILLARUM BROWNI	FE		H	N3	N3		
MARBLED MURRELET	BRACHYRAMPHUS MARMORATUS	FT	CH	H	N3	N3		
WESTERN YELLOW-BILLED CUCKOO	COCCYZUZ AMERICANUS OCCIDENTALIS	FC		N3	L1	L1		
SOUTHWESTERN WILLOW	EMPIDONAX TRAILLII EXTERMIS	FE	CH	N1	N1	K		

FLYCATCHER								
LEAST BELL'S VIREO	VIREO BELLII PUSILLUS	FE	CH	N2	N2	N2		
Mammals								
BUENA VISTA LAKE SHREW	SOREX ORNATUS RELICTUS	FE		N3	K	N3		
PACIFIC LITTLE POCKET MOUSE	PEROGNATHUS LONGIMEMBRIS PACIFICUS	FE		N3	N3	N3		
MORRO BAY KANGAROO RAT	DIPODOMYS HEERMANNI MORROENSIS	FE	CH	L1	N3	N3		
GIANT KANGAROO RAT	DIPODOMYS INGENS	FE		L1	K	N3	K	x
TIPTON KANGAROO RAT	DIPODOMYS NITRATOIDES NITRTOIDES	FE		N3	K	N3		
FRESNO KANGAROO RAT	DIPODOMYS NITRATOIDES EXILIS	FE	CH	N3	L1	N3		x
SAN JOAQUIN VALLEY WOODRAT	NEOTOMA FUSCIPES RIPARIA	FC		N3	N3	N3		
SAN JOAQUIN KIT FOX	VULPES MACROTIS MUTICA	FE		K	K	K	K	x
FISHER (West Coast DPS)	MARTES PENNANTI	FC	PCH	N3	N3	K		?
CA BIGHORN SHEEP (Sierra Nevada pop.)	OVIS CANADENSIS CALIFORNIANA	FE		N3	N3	N2		N1
GUADALUPE FUR SEAL*	ARCTOCEPHALUS TOWNSENDI	FT		L1	N3	N3		
NORTHERN SEA LION (eastern pop.)*	EUMETOPIAS JUBATUS	FT	CH	K	N3	N3		
SOUTHERN SEA OTTER	ENHYDRA LUTRIS NEREIS	FT		H	N3	N3		
GRAY WHALE*	ESCHRICHTIUS ROBUSTUS	REC		K	N	N		
BLUE WHALE*	BALAENOPTERA MUSCULUS	FE		L	N	N		
HUMPBACK WHALE*	MEGAPTERA NOVAEANGLIAE	FE		H	N	N		

[1] **STATUS**

Species **(SP)**

FE	Endangered
FT	Threatened
FPE	Proposed endangered
FPT	Proposed threatened
FC	Candidate
REC	Recovered
90-day	90-day may be warranted finding
Not warr	Not warranted

Critical Habitat **(CH)**

CH	Designated Critical Habitat
PCH	Proposed Critical Habitat

a 8/19/05 vacated downlisting CBD & EDC vs. USFWS

[2] **OCCURRENCE** on public land

K	Known
H	Highly likely
M1	Likely but limited habitat
M2	Likely but localized species
L	Unlikely
L1	Unlikely – localized species and limited habitat
L2	Unlikely – very localized species
N	Very unlikely
N1	Very unlikely - no suitable habitat
N2	Very unlikely – limited suitable habitat exists but known not to be occupied
N3	Very unlikely – outside of normal range
U	Unknown

[3] Column headings referring to **Management Areas**

C	Coast
V	Valley
S	Sierra

CPNM	Carrizo
FM	Eastern Fresno and Madera counties

Biology Table 4.

California State Listed Only Animal Species

Species that are both federally listed and state listed are NOT repeated on this list

Tehachapi slender salamander - *Batrachoseps stebbinsi*
Kern Canyon slender salamander - *Batrachoseps simatus*
Southern rubber boa - *Charina bottae umbratica53*
Swainson's hawk - *Buteo swainsoni*
American peregrine falcon - *Falco peregrinus anatum*
Greater sandhill crane - *Grus Canadensis tabida*
Western yellow-billed cuckoo - *Coccyzus americanus occidentalis*
Willow flycatcher - *Empidonax traillii*
Belding's savannah sparrow - *Passerculus sandwichensis beldingi*
San Joaquin antelope squirrel - *Ammospermophilus nelsoni*

Biology Table 5.

Federally Listed Plant Species in the Bakersfield Field Office

FAMILY	GENUS	SPECIES	SSP/ VAR	SUB TAXON NAME	COMMON NAME	FEDERAL STATUS
Apiaceae	Lomatium	shevockii			Owens Peak lomatium	threatened
Asteraceae	Calycadenia	hooveri			Hoover's calycadenia	endangered
Asteraceae	Cirsium	crassicaule			slough thistle	endangered
Asteraceae	Cirsium	fontinale	var.	obispoense	Chorro creek bog thistle	endangered
Asteraceae	Cirsium	loncholepis			La Graciosa thistle	endangered
Asteraceae	Cirsium	rhothophilum			surf thistle	endangered
Asteraceae	Erigeron	multiceps			Kern River daisy	endangered
Asteraceae	Monolopia	congdonii			San Joaquin woollythreads	endangered
Asteraceae	Pseudobahia	peirsonii			Tulare pseudobahia	threatened
Brassicaceae	Caulanthus	californicus			California jewelflower	endangered
Cactaceae	Opuntia	basilaris	var.	treleasei	Bakersfield cactus	endangered
Ericaceae	Arctostaphylos	morroensis			Morro manzanita	threatened
Fabaceae	Lupinus	nipomensis			Nipomo mesa lupine	endangered
Hydrophyllaceae	Eriodictyon	altissimum			Indian Knob mountainbalm	threatened
Hydrophyllaceae	Eriodictyon	capitatum			Lompoc yerba santa	endangered
Liliaceae	Allium	shevockii			Spanish Needle onion	threatened
Liliaceae	Brodiaea	insignis			Kaweah brodiaea	endangered
Liliaceae	Fritillaria	striata			striped adobe-lily	endangered
Malvaceae	Eremalche	parryi	ssp.	kernensis	Kern mallow	endangered
Malvaceae	Sidalcea	hickmanii	ssp.	parishii	Parish's checkerbloom	candidate
Onagraceae	Clarkia	springvillensis			Springville clarkia	threatened
Polemoniaceae	Eriastrum	Hooveri			Hoover's eriastrum	delisted
Portulacaceae	Calyptridium	pulchellum			Mariposa pussypaws	threatened
Scrophulariaceae	Castilleja	campestris	var.	succulenta	succulent owl's-clover	threatened
Scrophulariaceae	Castilleja	mollis			soft-leaved Indian paintbrush	endangered
Scrophulariaceae	Mimulus	gracilipes			slender-stalked monkeyflower	threatened

Biology Table 6.

BLM Sensitive Plant Species in the Bakersfield Field Office

FAMILY	GENUS	SPECIES	SSP/VAR	SUB TAXON NAME	COMMON NAME
Alismataceae	Sagittaria	sanfordii			Sanford's arrowhead
Apiaceae	Cymopterus	deserticola			desert cymopterus
Apiaceae	Eryngium	aristulatum	var.	hooveri	Hoover's button-celery
Apiaceae	Eryngium	spinosepalum			spiny-sepaled button-celery
Apiaceae	Lomatium	shevockii			Owens Peak lomatium
Apiaceae	Sanicula	maritima			Adobe Sanicle
Asteraceae	Baccharis	plummerae	ssp.	glabrata	San Simeon baccharis
Asteraceae	Calycadenia	hooveri			Hoover's calycadenia
Asteraceae	Centromadia	parryi	ssp.	congdonii	Congdon's tarplant
Asteraceae	Centromadia	parryi	ssp.	australis	southern tarplant
Asteraceae	Cirsium	crassicaule			slough thistle
Asteraceae	Cirsium	occidentale	var.	compactum	compact cobwebby thistle
Asteraceae	Cirsium	rhothophilum			surf thistle
Asteraceae	Deinandra	arida			Red Rock tarplant
Asteraceae	Deinandra	halliana			Hall's tarplant
Asteraceae	Deinandra	increscens	ssp.	villosa	Gaviota tarplant
Asteraceae	Deinandra	minthornii			Santa Susana tarplant
Asteraceae	Ericameria	gilmanii			Gilman's goldenbush
Asteraceae	Erigeron	aequifolius			Hall's daisy
Asteraceae	Erigeron	blochmaniae			Blochman's leafy daisy
Asteraceae	Erigeron	inornatus	var.	keilii	Keil's daisy
Asteraceae	Erigeron	multiceps			Kern River daisy
Asteraceae	Eriophyllum	lanatum	var.	hallii	Fort Tejon woolly sunflower
Asteraceae	Grindelia	hirsutula	var.	maritima	San Francisco gumplant
Asteraceae	Heterotheca	shevockii			Shevock's golden-aster
Asteraceae	Lasthenia	conjugens			Contra Costa goldfields
Asteraceae	Lasthenia	glabrata	ssp.	coulteri	coulter's goldfields
Asteraceae	Layia	carnosa			beach layia
Asteraceae	Layia	heterotricha			pale-yellow layia
Asteraceae	Layia	jonesii			Jones' layia
Asteraceae	Layia	leucopappa			Comanche Point layia
Asteraceae	Layia	munzii			Munz' tidy tips
Asteraceae	Madia	radiata			Showy madia
Asteraceae	Malacothrix	saxatilis	var.	arachnoidea	Carmel Valley malacothrix
Asteraceae	Pentachaeta	lyonii			Lyon's pentachaeta
Asteraceae	Pseudobahia	bahiiafolia			Hartwig’s golden sunburst
Asteraceae	Stylocline	citroleum			Oil neststraw
Asteraceae	Stylocline	masonii			Mason neststraw

FAMILY	GENUS	SPECIES	SSP/VAR	SUB TAXON NAME	COMMON NAME
Boraginaceae	Plagiobothrys	uncinatus			Hooked popcorn-flower
Brassicaceae	Caulanthus	amplexicaulis	var.	barbarae	Santa Barbara Jewelflower
Brassicaceae	Caulanthus	coulteri	var.	lemmonii	Lemmon's jewelflower
Brassicaceae	Dithyrea	maritima			Beach spectaclepod
Brassicaceae	Lepidium	jaredii	ssp.	album	Panchoe pepper-grass
Brassicaceae	Lepidium	jaredii	ssp.	jaredii	Jared's peppergrass
Brassicaceae	Lepidium	virginicum	var.	robinsonii	Robinson's pepper-grass
Brassicaceae	Rorippa	gambelii			Gambel's water cress
Brassicaceae	Streptanthus	cordatus	var.	piutensis	Piute Mtns. Jewel flower
Brassicaceae	Twisselmannia	californica			Kings gold
Campanulaceae	Nemacladus	twisselmannii			Twisselmann's nemacladus
Caryophyllaceae	Arenaria	paludicola			marsh sandwort
Chenopodiaceae	Aphanisma	blitoides			Aphanisma
Chenopodiaceae	Atriplex	cordulata			heartscale
Chenopodiaceae	Atriplex	coulteri			Coulter's saltbrush
Chenopodiaceae	Atriplex	depressa			brittlescale
Chenopodiaceae	Atriplex	erecticaulis			Earlimart orache
Chenopodiaceae	Atriplex	joaquiniana			San Joaquin spearscale
Chenopodiaceae	Atriplex	minuscula			lesser saltscale
Chenopodiaceae	Atriplex	pacifica			South Coast saltscale
Chenopodiaceae	Atriplex	serenana	var.	davidsonii	Davidson's saltscale
Chenopodiaceae	Atriplex	subtilis			subtle orache
Chenopodiaceae	Atriplex	tularensis			Bakersfield smallscale
Chenopodiaceae	Atriplex	vallicola			Lost Hills saltbush
Chenopodiaceae	Suaeda	californica			California seablite
Convolvulaceae	Calystegia	subacaulis	ssp.	episcopalis	Cambria morning-glory
Crassulaceae	Dudleya	abramsii	ssp.	bettinae	San Luis Obispo serpentine dudleya
Crassulaceae	Dudleya	abramsii	ssp.	murina	San Luis Obispo dudleya
Crassulaceae	Dudleya	blochmaniae	ssp.	blochmaniae	Blochman's dudleya
Crassulaceae	Dudleya	cymosa	ssp.	marcescens	marcescent dudleya
Crassulaceae	Dudleya	cymosa	ssp.	costafolia	Pierpoint Springs dudleya
Crassulaceae	Dudleya	parva			Conejo dudleya
Crassulaceae	Dudleya	verityi			Verity's dudleya
Cupressaceae	Cupressus	arizonica	ssp.	nevadensis	Arizona Cypress
Cyperaceae	Carex	obispoensis			San Luis Obispo Sedge
Ericaceae	Arctostaphylos	luciana			Santa Lucia manzanita
Ericaceae	Arctostaphylos	osoensis			Oso manzanita
Ericaceae	Arctostaphylos	pechoensis			Pecho manzanita
Ericaceae	Arctostaphylos	pilosula			Santa Margarita manzanita
Ericaceae	Arctostaphylos	purissima			La Purisima manzanita
Ericaceae	Arctostaphylos	refugioensis			Refugio manzanita
Ericaceae	Arctostaphylos	rudis			Sand mesa manzanita
Ericaceae	Arctostaphylos	tomentosa	ssp.	daciticola	dacite manzanita

FAMILY	GENUS	SPECIES	SSP/VAR	SUB TAXON NAME	COMMON NAME
Ericaceae	Arctostaphylos	tomentosa	ssp.	eastwoodiana	Eastwood's manzanita
Ericaceae	Arctostaphylos	wellsii			Wells' manzanita
Euphorbiaceae	Chamaesyce	hooveri			Hoover's spurge
Fabaceae	Astragalus	brauntonii			Braunton's milk-vetch
Fabaceae	Astragalus	ertterae			Walker Pass milkvetch
Fabaceae	Astragalus	pycnostachyus	var.	lanosissimus	Ventura marsh milk vetch
Fabaceae	Astragalus	shevockii			Shevock's milk-vetch
Fabaceae	Lupinus	citrinus	var.	citrinus	Orange lupine
Fabaceae	Lupinus	ludovicianus			San Luis Obispo County Lupine
Fabaceae	Lupinus	padre-crowleyi			Father Crowley's lupine
Fabaceae	Trifolium	macilentum	var.	dedeckerae	DeDecker's clover
Fagaceae	Quercus	dumosa			Nuttall's scrub oak
Grossulariaceae	Ribes	tularense			Sequoia gooseberry
Hydrophyllaceae	Phacelia	nashiana			Charlotte's phacelia
Hydrophyllaceae	Phacelia	novenmillensis			Nine-mile canyon phacelia
Iridaceae	Iris	munzii			Munz's iris
Lamiaceae	Monardella	crispa			Crisp monardella
Lamiaceae	Monardella	frutescens			San Luis Obispo monardella
Lamiaceae	Monardella	linoides	ssp.	oblonga	flax-like monardella
Liliaceae	Allium	hickmanii			Hickman's onion
Liliaceae	Allium	howellii	var.	clokeyi	Mt. Pinos onion
Liliaceae	Allium	shevockii			Spanish Needle onion
Liliaceae	Bloomeria	humilis			dwarf goldenstar
Liliaceae	Brodiaea	insignis			Kaweah brodiaea
Liliaceae	Calochortus	clavatus	ssp.	recurvifolius	Arroyo De La Cruz Mariposa Lily
Liliaceae	Calochortus	obispoensis			San Luis mariposa lily
Liliaceae	Calochortus	palmeri	var.	palmeri	Palmer's mariposa lily
Liliaceae	Calochortus	plummerae			Plummer's mariposa lily
Liliaceae	Calochortus	simulans			San Luis Obispo mariposa lily
Liliaceae	Calochortus	striatus			alkali mariposa lily
Liliaceae	Calochortus	weedii	var.	vestus	late-flowered mariposa lily
Liliaceae	Calochortus	westonii			Shirley Meadows star-tulip
Liliaceae	Chlorogalum	pomeridianum	var.	minus	Dwarf soaproot
Liliaceae	Chlorogalum	pomeridianum	var.	reductum	Camatta Canyon amole
Liliaceae	Fritillaria	brandegeei			Greenhorn fritillary
Liliaceae	Fritillaria	ojaiensis			Ojai fritillary
Liliaceae	Fritillaria	striata			striped adobe-lily
Liliaceae	Fritillaria	viridea			San Benito fritillary
Malvaceae	Malacothamnus	davidsonii			Davidson's bush mallow
Malvaceae	Malacothamnus	palmeri	var.	involucratus	Carmel Valley bushmallow
Malvaceae	Sidalcea	hickmanii	ssp.	anomala	Cuesta Pass Checkerbloom
Malvaceae	Sidalcea	keckii			Keck's checkerbloom
Onagraceae	Camissonia	hardhamiae			Hardham's evening primrose

FAMILY	GENUS	SPECIES	SSP/VAR	SUB TAXON NAME	COMMON NAME
Onagraceae	Camissonia	integrifolia			Kern River evening primrose
Onagraceae	Clarkia	australis			Small southern clarkia
Onagraceae	Clarkia	speciosa	ssp.	immaculata	Pismo clarkia
Onagraceae	Clarkia	tembloriensis	ssp.	calientensis	Caliente clarkia
Onagraceae	Clarkia	xantiana	ssp.	parviflora	Kern Canyon clarkia
Papaveraceae	Eschscholzia	lemmonii	ssp.	kernensis	Tejon Poppy
Papaveraceae	Eschscholzia	rhombipetala			diamond-petaled California poppy
Philadelphaceae	Carpenteria	californica			Tree anemone
Pinaceae	Pinus	radiata			Monteret pine
Poaceae	Agrostis	hooveri			Hoover's bent grass
Poaceae	Orcuttia	inaequalis			San Joaquin Valley orcutt grass
Poaceae	Tuctoria	greenei			Greene's tuctoria
Polemoniaceae	Eriastrum	luteum			Yellow-Flowered eriastrum
Polemoniaceae	Leptosiphon	serrulatus			Madera linanthus
Polemoniaceae	Navarretia	nigelliformis	ssp.	radians	shining navarretia
Polemoniaceae	Navarretia	peninsularis			Baja navarretia
Polemoniaceae	Navarretia	setiloba			Piute Mtns. Navaretia
Polygonaceae	Aristocapsa	insignis			Indian Valley spineflower
Polygonaceae	Chorizanthe	breweri			Brewer's spineflower
Polygonaceae	Chorizanthe	pungens	var.	pungens	Monterey spineflower
Polygonaceae	Chorizanthe	rectispina			Straight-awned spineflower
Polygonaceae	Eriogonum	breedlovei	var.	breedlovei	Breedlove's buckwheat
Polygonaceae	Eriogonum	crocatum			Conejo buckwheat
Polygonaceae	Eriogonum	kennedyi	var.	pinicola	Cache Peak buckwheat
Polygonaceae	Eriogonum	nudum	var.	murinum	Mouse Buckwheat
Polygonaceae	Eriogonum	temblorense			Temblor Buckwheat
Portulacaceae	Lewisia	disepala			Yosemite lewisia
Pottiaceae	Tortula	californica			California tortula moss
Ranunculaceae	Delphinium	inopinum			Unexpected larkspur
Ranunculaceae	Delphinium	parryi	ssp.	blochmaniae	Dune larkspur
Ranunculaceae	Delphinium	purpusii			Kern County larkspur
Ranunculaceae	Delphinium	recurvatum			Valley Larkspur
Ranunculaceae	Delphinium	umbraculorum			Umbrella larkspur
Rhamnaceae	Ceanothus	hearstiorum			Hearst's ceanothus
Rhamnaceae	Ceanothus	maritimus			Maritime ceanothus
Rosaceae	Horkelia	cuneata	ssp.	sericea	Kellogg's horkelia
Rosaceae	Horkelia	tularensis			Kern Plateau horkelia
Rubiaceae	Galium	angustifolium	ssp.	onycense	Onyx peak bedstraw
Rubiaceae	Galium	hardhamiae			Hardham's bedstraw
Scrophulariaceae	Castilleja	densiflora	ssp.	obispoensis	Obispo indian paintbrush
Scrophulariaceae	Cordylanthus	maritimus	ssp.	maritimus	salt marsh bird's-beak
Scrophulariaceae	Cordylanthus	mollis	ssp.	hispidus	hispid bird's beak
Scrophulariaceae	Cordylanthus	rigidus	ssp.	littoralis	Sea-side bird's beak

FAMILY	GENUS	SPECIES	SSP/VAR	SUB TAXON NAME	COMMON NAME
Scrophulariaceae	Gratiola	heterosepala			Bogg's lake hedge-hyssop
Scrophulariaceae	Mimulus	gracilipes			slender-stalked monkeyflower
Scrophulariaceae	Mimulus	norrisii			Kaweah monkeyflower
Scrophulariaceae	Mimulus	pictus			Calico monkeyflower
Scrophulariaceae	Mimulus	shevockii			Kelso Creek monkeyflower
Scrophulariaceae	Pedicularis	dudleyi			Dudley's lousewort
Scrophulariaceae	Scrophularia	atrata			Black Flowered figwort

APPENDIX C – Oil & Gas Management Guidelines

Oil and Gas Leasing Availability Categories

The Caliente Resource Management Plan describes the various categories of land availability for leasing for oil and gas. A determination has been made that the lands covered by this EA are open to leasing for oil and gas. In addition, the plan identifies the appropriate stipulations to be associated with each new lease.

Public lands that are closed to leasing separate into two groups. Tracts that have been closed by previous legislation or secretarial policy form one group of lands and are known as non-discretionary closures. The second group of closed lands, consisting of those that would possibly be proposed for closure under this plan, is called proposed discretionary closures.

Lands open to oil and gas leasing separate into the following groups: open to leasing under standard lease terms and conditions; open to leasing under a no surface use stipulation; and open to leasing under a limited surface use stipulation. The standard oil and gas lease form includes those preprinted lease terms and conditions that apply to all leases. Other stipulations developed in this plan are applied in lease areas with special resource concerns, and supersede any inconsistent provisions of the standard lease form. The special stipulations proposed in this plan address limited surface use for areas with resource protection needs slightly different from the standard lease stipulation. The Limited Surface Use (LSU) stipulation provides additional protection for Federally Proposed and Listed Species; Proposed and Designated Critical Threatened and Endangered Species Habitat; and Federal Candidate, State Listed and Bureau Sensitive Species. Three additional special stipulations were contained in the Caliente RMP that are not applicable to any of the land in the subject parcels. Those special stipulations are: No surface use for areas where very unique resources exist, LSU – Department of Defense lands, and LSU – Coast (for management of Coast Area ACEC's/SMA's).

Lands Open to Oil and Gas Leasing

All public land and federally reserved mineral estate within the area covered under this EA are open for oil and gas leasing activities.

The process of nominating a federal parcel for this lease sale was initiated when a letter of interest in oil and gas leasing was submitted to the Sacramento Office of the Bureau of Land Management. The RMP was used to determine the applicability of lease stipulations attached to the parcels in this sale. There are three categories of lease stipulations, described in detail below, and they are:

--Offer for lease with a Standard Lease stipulation
--Offer for lease with a No Surface Use stipulation
--Offer for lease with a Limited Surface Use stipulation

All new leases covered by this EA would be offered with Limited Surface Use Stipulation(s) (LSU). If new leases expire or terminate and the lands are re-leased, they will also be leased with Limited Surface Use Stipulation(s).

Leasing with Standard Lease Stipulation

The Standard Lease stipulation includes the terms and conditions that are the national standards printed on Bureau of Land Management lease forms (Form 3100-11, February 2003).

Under standard terms, a proposed exploration and development operation can be modified by the operator and Bureau to minimize impacts of the project's operation design. Modifications are limited to moving the proposed operation less than 200 meters and delaying the project less than 60 days in one lease year.

No lands covered by this EA are proposed to have this stipulation.

No Surface Use Stipulation

This lease is within an area that contains unique or significant natural or cultural values, or other uses preclude surface development over the entire leased area. To prevent or reduce disturbance to unique or significant natural or cultural values or other pre-existing uses that preclude surface development, No Surface Use is allowed on the lease.

Additional Information

Application. The No Surface Use stipulation is intended for use when adequate protection of surface resources cannot be provided through mitigation, and there are no suitable sites for development anywhere on the **entire** lease. Mineral development of the lease from an off-site location is recommended.

Review Process. If conditions change so that the NSU stipulation becomes necessary for lands to be leased at a future date, the No Surface Use stipulation would be applied at the time of a lease sale. An exception or modification to the stipulation may be approved if it can be demonstrated that operations can be conducted without causing unacceptable impacts to the critical cultural or natural values or to the other pre-existing use. Any decision to grant an exception or modification would be based on field inspection and inventory and the NEPA review process. The lessee should be aware that the timing of the surveys is critical, in that some species can only be surveyed during a brief period each year. The stipulation may be waived if a determination is made by the Bureau that the resource or other use no longer exists on the leased lands.

Although there may be specific discrete areas within the parcels under this EA where No Surface Use is allowed due to pre-existing conditions, there are no leases where the entire surface is precluded from development.

Leasing with the Limited Surface Use Stipulation

Special stipulations may be proposed for use to protect unique resources or values where it may be necessary to modify surface activities beyond authorities contained under the standard lease terms (43 CFR 3103.1-3). The Limited Surface Use Stipulation allows BLM, in consultation with the applicant, to extend modification of development proposals beyond the standard 200 meters and 60-day conditions. By reserving the additional leeway in siting facilities, the BLM and applicant can generally use the combination of increased siting and timing flexibility to modify development proposals to entirely avoid or significantly minimize surface-disturbing effects associated with lease development. The Limited Surface Use stipulation thus allows BLM to offer for lease parcels known to or suspected to contain unique resources or values and resolve any potential conflicts at the time when the lessee is prepared to design development proposals.

This stipulation also advises prospective lessees that they are considering the purchase of a lease in areas known or suspected to contain unique resources or values and advises them of potential constraints and development options available. Historically, the BLM in cooperation with the

lessee has been able to find sufficient flexibility in designing lease development proposals, even in the most sensitive of locations, to facilitate development without adversely affecting either the resource values of concern or the oil and gas lease.

Special conditions that may be attached to new leases issued in the area managed by the Bakersfield Field Office are collectively referred to as the Limited Surface Use stipulation (LSU) and supersede any inconsistent provisions of the standard lease form. The wording of the Limited Surface Use stipulation has been adjusted to address two differing resource concerns (there were six in the Caliente RMP, but four are not currently applicable because the resource values or other pertinent criteria do not exist in the subject parcels). The Limited Surface Use Stipulation would be applied at the lease sale, to parcels located as shown on the RMP map and as described below.

This stipulation has been developed to be utilized over the life of the plan without the need for further plan amendments. The LSU stipulation has been worded to allow for adjusting the geographic locations where they would be applied based on the resource condition at the time of the lease sale offering. The locations identified in this EA address 2007 resource conditions that will be updated and modified on an annual basis. Information on those updates will be available to those interested in potential lease sales.

Limited Surface Use Stipulations

a. Federally Proposed and Listed Species (LSU - Protected Species)

b. Federal Candidate, State Listed and Bureau Sensitive Species (LSU - Sensitive Species)

The following LSU categories from the Caliente RMP are shown for informational purposes only – there are currently no lands in the parcels covered by this EA area subject to these stipulations. However, if a determination is made in the future that one or more of the following stipulations would be appropriate, then the stipulation(s) would be applied according to the criteria in the Caliente RMP.

c. Proposed Critical Habitat and Designated Critical Habitat (LSU - Critical Habitat) N/A for the parcels in this EA

d. Raptor (LSU - Raptor) N/A for the parcels in this EA

e. Department of Defense lands (LSU – Defense) – N/A for the parcels in this EA

f. Coast Management Area (LSU – Coast, for management of Coast Area ACEC's/SMA's) – N/A for the parcels in this EA

Waivers, Modification, Exceptions and Deferral to Other Plans

The Authorized Officer may grant a waiver, modification, or exception to the Limited Surface Use stipulation if the factors leading to the stipulation's inclusion in the lease have changed or if new information has been made available. If the protection provided by the stipulation is no longer necessary or can be adequately mitigated and the proposed operation on a lease would not cause unacceptable impacts, a waiver would be evaluated (see 43 CFR 3101.1-4).

The Authorized Officer may also defer the addition of the Limited Surface Use stipulation referred to under b, c, and d above to requiring compliance with other existing approved plans. Those plans may include Habitat Conservation Plans, Programmatic Consultations, Conservation Agreements or others that provide for adequate protection and conservation of resources and compliance with all Federal and State laws.

As an example, once completed, the Kern County Valley Floor Habitat Conservation Plan and associated BLM Programmatic Section 7 Consultation on oil and gas development activities will

provide adequate protection for resources identified in b, c, and d above for lands within CDOG administrative boundaries and for all federally reserved mineral estate in Kern County. Future lease sales covering parcels in those areas would defer the addition of a Limited Use Stipulation to notation that compliance with the above approved programs or plans is required.

a. Limited Surface Use Stipulation - Federally Proposed and Listed Species (LSU - Protected Species)

All or a portion of this lease is within the range of one or more plant or animal species (a list of species would be included with the stipulation for each lease) that are either listed as threatened or endangered, or are proposed for such listing by the U.S. Fish and Wildlife Service.

The lessee is notified that time frames for processing applications may be delayed beyond established standards to allow for species surveys, and consultation or conferencing with the U.S. Fish and Wildlife Service. Notice is also given that surface-disturbing activities may be moved or modified, and that some activities may be prohibited during seasonal time periods. Surface disturbing activities will be prohibited on the lease only where:

1. the proposed action is likely to jeopardize the continued existence of a listed or proposed species, or

2. the proposed action is inconsistent with the recovery needs of a listed species as identified in an approved U.S. Fish and Wildlife Service Recovery Plan.

Prior to the authorization of any surface disturbing activities, a preliminary environmental review will be conducted to identify the potential presence of habitat for these species. Authorizations may be delayed until completion of the necessary surveys during the appropriate time period for these species. The lessee should be aware that the timing of the surveys is critical, in that some species can only be surveyed during a brief period each year.
The BLM may need to initiate consultation or conference with the U.S. Fish and Wildlife Service if the site inspection concludes that a listed or proposed species may be affected by the proposed activity. The lessee should be aware that the U.S. Fish and Wildlife Service has up to 135 days to render their biological opinion, and that there are provisions for an additional 60 day extension. Offsite habitat protection or enhancement for wildlife or vegetation (compensation) may be required by the U.S. Fish and Wildlife Service when habitat is disturbed. The consultation may also result in some restrictions to the lessee's plan of development, including movement or modification of activities, and seasonal restrictions. Surface disturbing activities will be prohibited on the lease if the consultation or conference concludes that either of the conditions identified in 1. or 2. above exists.

Additional Information

Application. The Limited Surface Use - Federally Proposed and Listed Species (LSU - Protected Species) stipulation would be attached, at the time of lease sale, to leases within the range of certain federally listed or proposed species, or to leases containing, or adjacent to, documented locations of certain federally listed or proposed species. (A list of species would be included with the stipulation for each lease.)

See BLM Biology Tables 4 and 6 for the Federally Proposed and Listed Species in the Bakersfield Field Office.

Documented locations for currently proposed species will be used to determine current applicability of the LSU - Protected Species stipulation for proposed species. If additional species become proposed, or new location information becomes available, the species and parcel lists will be modified and all subsequent lease sales will be evaluated against the modified parcel list.

Review Process. Generally, the following process will be used to approve surface disturbing activities on leases with the LSU - Protected Species stipulation. The proposed activity would be reviewed to determine if listed or proposed species would be affected. This review may involve site-specific surveys for plant and animal species, conducted according to established methodologies that may specify certain seasons or other conditions. In some cases, this may mean that a survey cannot be completed until the next growing season for some plant species or after seasonal appearance for some animal species.

If the review determines that listed or proposed species will not be affected, approval of the application will normally be granted within 30 days of the review.

If the review determines that listed or proposed species may be affected, but in a beneficial, insignificant or benign manner, and written concurrence is received from the U.S. Fish and Wildlife Service, approval of the application will normally be granted within 30 days of receiving U.S. Fish and Wildlife Service concurrence.

If it is determined that a listed or proposed species may be adversely affected, the BLM will work with the applicant to modify the proposal to minimize impacts. Modifications may include movement of activities, seasonal restrictions, mitigation and/or compensation. Modified proposals will be developed cooperatively with the applicant to ensure that the modified project still meets the applicant's objective. If the modified project may still adversely affect a listed or proposed species, BLM will initiate formal consultation or conference with the U.S. Fish and Wildlife Service.

Coordination with the U.S. Fish and Wildlife Service on Listed Species. Currently there are two options for meeting the formal consultation requirement. A new consultation may be initiated or a previously completed formal consultation may be utilized.

If a new consultation is initiated, the U.S. Fish and Wildlife Service will issue a document, called the Biological Opinion. The U.S. Fish and Wildlife Service has up to 135 days to complete a Biological Opinion and they may request an additional 60-day extension. Extensions beyond 195 days require the consent of any applicant.

A previously completed formal consultation may also be used to meet the formal consultation requirement. An example of a previously completed consultation that may be used is the **San Joaquin Valley Oil and Gas Programmatic Biological Opinion.**

Upon completion of a new consultation or determination that a previously completed consultation can be used, approval of the application will normally be granted within 30 days. If the new consultation concludes that a listed species may be jeopardized, then surface disturbance will be prohibited on the lease. Surface disturbance will also be prohibited if the consultation concludes that the proposed action is inconsistent with the recovery needs of the listed species as identified in an approved U.S. Fish and Wildlife Service Recovery Plan.

Coordination with the U.S. Fish and Wildlife Service on Proposed Species. Bureau policy requires a conferencing with the U.S. Fish and Wildlife Service on any action that may adversely affect proposed species. Depending on the complexity of the situation, a conference may be completed in a single telephone conversation or may require the time frames of a consultation. Generally, upon completion of the conference, approval of the application will be granted within 30 days. If the conference concludes that a proposed species may be jeopardized, surface-disturbing activities will be prohibited on the lease.

Final Approval. Final approval of applications that will have no effect on listed or proposed species will normally be granted within 30 days of the review.

Final approval for projects that may affect listed or proposed species in a beneficial, insignificant or benign manner will normally be granted within 30 days of receiving U.S. Fish and Wildlife Service written concurrence. The U.S. Fish and Wildlife Service generally responds to requests for concurrence in 30 days.

For projects that require consultation or conference with the U.S. Fish and Wildlife Service, final approval will normally be granted within 30 days of consultation or conference completion. Conditions of approval will include any conditions specified by the BLM or U.S. Fish and Wildlife Service for minimizing impacts.

b. Limited Surface Use - Federal Candidate, State Listed and Bureau Sensitive Species (LSU - Sensitive Species)

All or a portion of this lease is within the range of one or more plant or animal species (see attached list) that are either Federal candidates for listing as threatened or endangered (Federal Candidate), are listed by the State of California as threatened or endangered (State Listed), or are designated by the Bureau of Land Management as Sensitive (Bureau Sensitive).

The lessee is notified that time frames for processing applications may be delayed beyond established standards to allow for species surveys and coordination with the U.S. Fish and Wildlife Service and California Department of Fish and Game. Notice is also given that surface-disturbing activities may be relocated beyond the standard 200 meters but not more than 1/4 mile and that surface disturbing activities may be prohibited during seasonal time periods.

Prior to the authorization of any surface disturbing activities, a preliminary environmental review will be conducted to identify the potential presence of habitat for these species. Authorizations may be delayed until completion of the necessary surveys during the appropriate time period for these species. The lessee should be aware that the timing of the surveys is critical, in that some species can only be surveyed during a brief period each year.

The Bureau of Land Management may need to coordinate with the U.S. Fish and Wildlife Service or the California Department of Fish and Game if the site inspection concludes that a Federal Candidate, State Listed or Bureau Sensitive species may be affected by the proposed activity. Coordination may delay application processing beyond established time frames.

To prevent or reduce disturbance to Federal Candidate, State Listed or Bureau Sensitive species, surface operations may be moved up to 1/4 mile and surface disturbing activities may be prohibited during seasonal time periods.

Additional Information

The Limited Use - Federal Candidate, State Listed and Bureau Sensitive Species (LSU - Sensitive Species) stipulation would be attached to leases that are either within the range of certain species, or that contain or are adjacent to a documented location of a certain species. A list of species would be included with the stipulation for each lease.

See Biology Tables 4, 5, 7 for the Federal Candidate, State Listed and BLM Sensitive Species within the Bakersfield Field Office.

The current list of parcels or potential geographic area for each species will be maintained in the Bakersfield Field Office. As species are added or removed from special designation, or new location information becomes available, the species list, parcel lists and geographic area lists will be modified. All subsequent lease auctions will be evaluated against the modified species list, parcel list or geographic area list.

Generally the following process will be used to approve surface disturbing activities on leases with the LSU - Sensitive Species stipulation. The proposed activity would be reviewed to

determine if special status species would be affected. This review may involve site-specific surveys for plant and animal species, conducted according to established methodologies that may specify certain seasons or other conditions. In some cases this may mean that a survey cannot be completed until the next growing season for some plants or after seasonal appearance for some animal species.

If the review determines that a special status species may be adversely affected, then surface disturbing activities may be relocated up to 1/4 mile and certain surface disturbing activities may be prohibited during seasonal periods. Bureau policy may also require coordination with the U.S. Fish and Wildlife Service or California Department of Fish and Game.

c. Limited Surface Use Stipulation - Proposed Critical Habitat and Designated Critical Habitat (LSU - Critical Habitat) – Although there is not currently any Proposed or Designated Critical Habitat within the areas that are identified for lease in this sale, should Proposed or Critical Habitat be designated within these lands in the future, the following stipulation would apply:

All or a portion of this lease lies within an area that is designated as critical habitat, or is proposed for designation as critical habitat (see attached species and parcel list) by the U.S. Fish and Wildlife Service.

The lessee is notified that time frames for processing applications may be delayed beyond established standards to allow for species surveys, and consultation or conferencing with the U.S. Fish and Wildlife Service. Notice is also given that surface disturbing activities may be moved or modified and that some activities may be prohibited during seasonal time periods. Surface disturbing activities will be prohibited on the lease only where:

1. the proposed action is likely to destroy or adversely modify critical habitat or proposed critical habitat, or

2. the proposed action is inconsistent with the recovery needs of a listed species as identified in an approved U.S. Fish and Wildlife Service Recovery Plan.

Prior to the authorization of any surface disturbing activities, a preliminary environmental review will be conducted to identify the potential presence of habitat for these species. Authorizations may be delayed until completion of the necessary surveys during the appropriate time period for these species. The lessee should be aware that the timing of the surveys is critical, in that some species can only be surveyed during a brief period each year.

The Bureau of Land Management may need to initiate consultation or conference with the U.S. Fish and Wildlife Service if the site inspection concludes that designated or proposed critical habitat may be affected by the proposed activity. The lessee should be aware that the U.S. Fish and Wildlife Service has up to 135 days to render their biological opinion, and that there are provisions for an additional 60 day extension. Offsite habitat protection or enhancement for wildlife or vegetation (compensation) may be required by the U.S. Fish and Wildlife Service when designated or proposed critical habitat is disturbed. The consultation may also result in some restrictions to the lessee's plan of development, including movement or modification of activities, and seasonal restrictions. Surface disturbing activities will be prohibited on the lease only if the consultation or conference concludes that either of the conditions identified in 1. or 2. above exist.

Additional Information

Application. The Limited Surface Use - Designated and Proposed Critical Habitat (LSU - Critical Habitat) stipulation would be attached to leases within areas that are designated as critical habitat, or proposed for designation as critical habitat for certain species. A list of species and parcels would be included with the stipulation for each lease. Critical habitat is designated or

proposed by the U.S. Fish and Wildlife Service according to the regulations found in 50 CFR 424. Critical habitat means (1) the specific areas within geographical area currently occupied by a species, at the time it is listed in accordance with the Endangered Species Act, on which are found those physical or biological features (i) essential to the conservation of the species and (ii) that may require special management considerations or protection, and (2) specific areas outside the geographical area occupied by a species at the time it is listed upon a determination by the Secretary that such areas are essential for conservation of the species (50 CFR 424.02).

There is currently no designated or proposed critical habitat, or else the constituent elements do not exist, within the parcels covered by this EA. Consequently, no critical habitat would be affected by leasing and developing these parcels and none of the parcels would have this stipulation. If additional areas are designated within these parcels, future permit approvals would be evaluated using those criteria as appropriate

Review Process. Generally, the following process will be used to approve surface disturbing activities on leases with the LSU - Critical Habitat stipulation. The proposed activity would be reviewed to determine if designated or proposed critical habitat would be affected. This review may involve site specific surveys for plant and animal species, conducted according to established methodologies which may specify certain seasons or other conditions. In some cases this may mean that a survey cannot be completed until the next growing season for some plant species or after seasonal appearance for some animal species.

If the review determines that listed or proposed critical habitat will not be affected, approval of the application will normally be granted within 30 days of the review.

If the review determines that listed or proposed critical habitat may be affected, but in a beneficial, insignificant or benign manner, and written concurrence is received from the U.S. Fish and Wildlife Service, approval of the application will normally be granted within 30 days of receiving U.S. Fish and Wildlife Service concurrence.

If it is determined that a listed or proposed critical habitat may be adversely affected, the BLM will work with the applicant to modify the proposal to minimize impacts. Modifications may include movement of activities, seasonal restrictions, mitigation and compensation. Modified proposals will be developed cooperatively with the applicant to ensure that the modified project still meets the applicant's objective. If the modified project may still adversely affect designated or proposed critical habitat, BLM will initiate formal consultation or conference with the U.S. Fish and Wildlife Service.

Coordination with the U.S. Fish and Wildlife Service on Designated Critical Habitat. The BLM is required to initiate formal consultation with the U.S. Fish and Wildlife Service for any action that may adversely affect designated critical habitat. As a result of the consultation, the U.S. Fish and Wildlife Service issues a document, called the Biological Opinion. The U.S. Fish and Wildlife Service has up to 135 days to complete a Biological Opinion and they may request an additional 60 day extension. Extensions beyond 195 days require the consent of any applicant.

As part of the Biological Opinion, the U.S. Fish and Wildlife Service will determine if the proposed action is likely to destroy or adversely modify critical habitat. Destruction or adverse modification of critical habitat means a direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species. Such alterations include, but are not limited to, alterations adversely modifying any of those physical or biological features that were the basis for determining the habitat to be critical (50 CFR 402.02).

If consultation concludes that critical habitat will be destroyed or adversely modified, then surface disturbance will be prohibited on the affected portion of the lease. Surface disturbance will also be prohibited if the consultation concludes that the proposed action is inconsistent with

the recovery needs of the listed species as identified in an approved U.S. Fish and Wildlife Service Recovery Plan.

Coordination with the U.S. Fish and Wildlife Service on Proposed Critical Habitat. Bureau policy requires conferencing with the U.S. Fish and Wildlife Service on any action that may adversely affect proposed critical habitat. Depending on the complexity of the situation, a conference may be completed in a single telephone conversation or may require the time frames of a consultation. Generally, upon completion of the conference, approval of the application will be granted within 30 days. If the conference concludes that proposed critical habitat will be destroyed or adversely modified, then surface disturbance will be prohibited on the affected portion of the lease.

Final Approval. Final approval of applications that will have no effect on designated or proposed critical habitat will normally be granted within 30 days of the review.

Final approval for projects that may affect designated or proposed critical habitat in a beneficial, insignificant or benign manner will normally be granted within 30 days of receiving U.S. Fish and Wildlife Service written concurrence. The U.S. Fish and Wildlife Service generally responds to requests for concurrence in 30 days.

For projects that require consultation or conference with the U.S. Fish and Wildlife Service, final approval will normally be granted within 30 days of consultation or conference completion. Conditions of approval will include any conditions specified by the BLM or U.S. Fish and Wildlife Service for minimizing impacts.

d. Limited Surface Use - Raptor (LSU - Raptor) – This lease includes lands that have been identified as important raptor foraging, wintering or nesting areas. Notice is given that surface disturbing activities may be relocated beyond the standard 200 meters, but not more than ½ mile or that some activities may be prohibited during seasonal time periods to avoid unnecessary and undue disturbance to sensitive raptor foraging grounds, wintering areas or nest sites.

e. Department of Defense lands (LSU – Defense) – N/A

f. Coast Management Area (LSU – Coast, for management of Coast Area ACEC's/SMA's) – N/A

Standard Engineering Practices

Recognized engineering practices for the routine operation of oil and gas exploration and development are known as Conditions of Approval or COAs. These standard procedures are described in the Federal Onshore Orders and further clarified in the Code of Federal Regulations (CFR 43, October, 2005).

Standard regulations may be supplemented with additional COAs. The additional COAs address sensitive issues within the Area managed by the Bakersfield Field Office. Critical issues underlying the federal regulations and supplemental COAs are the protection of usable aquifers, mineral zones including hydrocarbons, surface environmental issues, site safety and well control, and site reclamation.

Bureau inspection and monitoring of oil field activity on public lands is discussed within the phases of oil and gas development:

Drilling a New Well

Temporary Abandonment of a Producing Well (Idle Well)

Plugging and Abandonment of a Well

Surface Reclamation

No special COAs are normally added for routine producing operations.

Drilling a New Well

After an Application for Permit to Drill (APD) has been received by the Bakersfield Office of the Bureau of Land Management, a review of engineering design as well as potential effects to sensitive resources is undertaken. Special conditions would be noted on the application at this review stage of an oil and gas project by either the operator or the Bureau of Land Management. Modified proposals would be developed cooperatively with the applicant to ensure that the modified project still meets the applicant's objective. Any special conditions would be attached to the APD by the Bureau and the applicant would be informed within seven days of receipt of the APD. In addition to Bureau-wide regulations, the Bakersfield Field Office has developed procedures - these may include but are not limited to:

Steam Injectors. All steam injection wells within a 300' radius of a new location must be shut-in a minimum of 3 days prior to the spudding of a new well.

Conductor Pipe. A minimum of 50' of conductor pipe is to be set and cemented to surface. The conductor pipe must be equivalent to or exceed the properties of A-25 grade line pipe.

Diverter. Prior to spud, a diverter system will be installed on the conductor pipe and function tested. The test will be recorded in the drilling log. The diverter system, at a minimum, will consist of an annular type preventer (minimum working pressure 1000 psi); 2" (minimum ID) kill line, and 6" (minimum ID) diverter line with no internal restrictions or turns. A full opening hydraulically-controlled valve will be installed in the diverter line which will automatically open when the annular preventer is closed. The accumulator system will have sufficient capacity to close the annular preventer and open the hydraulically-controlled valve.

Remote controls for the diverter system will be located on the rig floor and readily accessible to the driller. Remote controls will be capable of closing the annular preventer and opening the hydraulically-controlled valve. Master controls will be located at the accumulator and will be capable of closing and opening the annular preventer and opening the hydraulically-controlled valve. The diverter system will be function-tested daily and the test recorded in the drilling log.

General Casing and Cementing. A Subsequent Report (Form 3160-5) detailing the size, weight, and grade of the casing; the amount and type of cement, including additives; and a copy of the service company's materials ticket and job log will be submitted to the BLM within five (5) business days following the cementing of the casing string. Each casing string (except conductor pipe) will be pressure tested, prior to drilling out the casing shoe, to 0.22 psi/ft of casing string length or 1000 psi, whichever is greater, but not to exceed 70% of the internal yield pressure of the casing. The casing pressure test will be recorded in the drilling log. The wait-on-cement (WOC) time for each casing string will be adequate to achieve a minimum of 500 psi compressive strength at the casing shoe prior to drilling out.

Drilling Fluids. Sufficient quantities of drilling fluid (mud and water) will be maintained at the well site, at all times, for the purpose of controlling steam kicks.

Temporary Abandonment of a Producing Well (Idle Well)

Economic conditions often depress the California market for the typical heavy oil produced in the area managed by the Bakersfield Field Office. When the producing market is depressed, an operator may decide to shut-in his uneconomic, producing wells and wait for conditions to improve. The highly viscous nature of most Kern County crude oil, typical low well head pressures, and the relatively low corrosive properties of the fluids (low sulfur crude) make the known dangers of shutting in a well for long periods and then bringing it back on-line less of a

mechanical problem here in this Field Office Area than in other producing regions of the country. As a result, by 1990, a large number of wells were remaining idle for longer and longer periods. Monitoring and correction of the problem have been successfully undertaken by the California Division of Oil, Gas, and Geothermal Resources and the local BLM Field Office. The following additional conditions *may* be required as applicable prior to the temporary abandonment (TA) of a producing oil/gas well, service well, or an injection well.

Zone Isolation. The requirement to isolate the producing interval (General Requirement #4) is waived. This waiver is based on the information submitted with the application and the geologic data in Volume # 1 California Oil and Gas Fields, Central California, (Buena Vista Oil field) which indicates the absence of usable water aquifers above the producing horizon in (section in which well is located).

Mechanical Integrity of Casing. The mechanical integrity of the casing may be determined using the ADA pressure test method.

Fluid Surveys. A fluid level survey will be performed at 2-5 year intervals during the period the well is temporarily abandoned. A copy of the survey will be submitted to the BLM with the TA well request (sundry notice form 3160-5).

Monitoring of Wellhead Pressures and Temperatures. Wellhead pressure and temperature will be continuously monitored throughout the period the well is temporarily abandoned. Any pressure/temperature change will be promptly reported to the BLM.

Isolation of the Producing Interval. The producing interval will be isolated by setting a plug in the casing within 100' above the producing interval if a rising fluid level, an increasing wellhead pressure, or an increasing wellhead temperature is detected. The plug can be either a retrievable or drillable-type bridge plug or a cement plug of at least 100' in length.

Plugging and Abandonment of a Well

No additional conditions are typically attached to the abandonment of a well in California. Onshore Orders describe the plugging procedure. While final abandonment will normally be witnessed by the BLM, no final site marker is currently required by the Bakersfield field office.

Surface Reclamation

Conditions for the recovery of an oil well site are unique to each area's ecosystem and habitat. The following examples of Conditions of Approval have been developed for use within the Area managed by the Bakersfield Field Office. The applicability of any or all of these COAs will be determined based on site-specific conditions.

General. The operator (or holder) will prepare a seedbed by: a) scarifying the disturbed area, (b) distributing topsoil uniformly, or c) disking the topsoil, as directed by the BLM Authorized Officer (use one as appropriate).

The operator will recontour the disturbed area and obliterate all earthwork by removing embankments, backfilling excavations, and grading to re-establish the approximate original contours of the land in the area of operation.

The operator will uniformly spread topsoil over all unoccupied disturbed area (outside the ditch line, fence line, and work area). Spreading will not be done when the ground or topsoil is frozen or wet.

The operator will seed all disturbed area, using an agreed upon method suitable for the location. Seeding will be repeated if a satisfactory stand is not obtained as determined by the BLM Authorized Officer upon evaluation after the first growing season.

The operator will arrange to have a biologist available to assist the construction workers in the identification and avoidance of endangered species.

Producing Wells. Site reclamation for producing wells will be accomplished for portions of the site not required for continued operation of the well. The following measures are typical reclamation requirements, and any or all of these may be required on a site by site basis:

Reclamation of drilling fluid pit (mud pit). Polluting substances, contaminated materials moved offsite or buried.

Site fencing.
Berm removal and site grading.
Cut and fill slope vegetation.

Non-producing Wells. Rehabilitation on the entire site will be required and will commence as soon as practical, dependent upon prevailing weather conditions. Cut and fill slopes will be reduced and graded to blend to the adjacent terrain.

Drilling fluids held within pits may be allowed to dry. Fluids that will not dry must be removed. All polluting substances or contaminated materials such as oil, oil-saturated soils, and gravels will be buried with a minimum of 2 feet of clean soil as cover, or be removed to an approved site.

Drainages will be re-established and temporary measures will be required to prevent erosion to the site until vegetation is established.

After final grading and before replacement of topsoil, the entire surface of the site will be scarified to eliminate slippage surfaces and to promote root penetration. Topsoil will then be spread over the site to achieve an approximate uniform, stable thickness consistent with the established contours.

Permanent Well Abandonment. The surface management agency is responsible for establishing and approving methods for surface rehabilitation and determining when this rehabilitation has been satisfactorily accomplished. At this point, a Subsequent (Final) Report of Abandonment will be approved.

APPENDIX D – Oil & Gas Activity on Leases from Recent Lease Sales Conducted within the Past 10 Years (6-25-99 through 6-25-09)

CASE NUMBER	Lease Issue Date	OPERATOR	WELLNo.	WELL NAME	TWP	RGE	SEC	QTR SME	SPUDDED	*STATUS AS OF 6-25-09	**Notice of First Prod Rec'd	Wildcat ?	Total New Disturbance (acres)
CACA41637	5/11/2000	VENOCO INC	14-1	SEVIER	31S	21E	14	NESE BLM	6/12/2009	TA (not prod.)		Yes	1.19
CACA41637 Count			1								no		
CACA41638	5/11/2000	PLAINS EXPL & PROD CO LP	4A-667		31S	22E	4	SESE FEE	9/8/2005	TA		No	0.8
CACA41638 Count			1								no		
CACA43782	1/31/2002	OCCIDENTAL ELK HILLS INC	374X-6R		30S	23E	6	SENE BLM	6/29/2004	P+A		Yes	1.04
CACA43782 Count			1								no		
CACA46601	12/30/2004	NAFTEX OPERATING CO	1-3	USL	29S	29E	26	NWNW FEE	3/4/2007	POW		No	0.41
CACA46601	12/30/2004	NAFTEX OPERATING CO	1-4	USL	29S	29E	26	SWNW FEE	3/7/2007	POW		No	0.8
CACA46601	12/30/2004	NAFTEX OPERATING CO	1-4B	USL	29S	29E	26	SWNW FEE	7/3/2008	POW		No	3.52
CACA46601	12/30/2004	NAFTEX OPERATING CO	1-3B	USL	29S	29E	26	SWNW FEE	7/7/2008	POW		No	
CACA46601	12/30/2004	NAFTEX OPERATING CO	2-4	USL	29S	29E	26	SWNW FEE	7/10/2008	POW		No	
CACA46601	12/30/2004	NAFTEX OPERATING CO	2-6	USL	29S	29E	26	SWNW FEE	7/14/2008	POW		No	
CACA46601	12/30/2004	NAFTEX OPERATING CO	3-5	USL	29S	29E	26	SWNW FEE	7/16/2008	POW		No	
CACA46601	12/30/2004	NAFTEX OPERATING CO	4-5	USL	29S	29E	26	SENW FEE	7/19/2008	POW		No	
CACA46601	12/30/2004	NAFTEX OPERATING CO	2-5	USL	29S	29E	26	SWNW FEE	3/31/2009	POW		No	2.85
CACA46601	12/30/2004	NAFTEX OPERATING CO	2-4B	USL	29S	29E	26	SWNW FEE	4/3/2009	POW		No	
CACA46601	12/30/2004	NAFTEX OPERATING CO	2-3	USL	29S	29E	26	NWNW FEE	4/5/2009	POW		No	
CACA46601 Count			11								yes		
CACA47598	7/18/2006	NATIONS PETROLEUM USA	E-G15	USL	25S	20E	33	SWNE BLM	12/15/2007	DRG		No	1.7

		LTD											
CACA47598	7/18/2006	NATIONS PETROLEUM USA LTD	E-M20	USL	25S	20E	33	SWNE BLM	12/17/2007	DRG		No	
CACA47598 Count			2								no		
CACA47611	7/20/2006	SOLIMAR ENERGY LLC	6	WELLINGTON-MARI	11N	23W	8	SESE FEE	3/16/2008	POW		No	1.6
CACA47611	7/20/2006	SOLIMAR ENERGY LLC	7	WELLINGTON-MARI	11N	23W	8	SESE FEE	8/28/2008	POW		No	
CACA47611 Count			2								yes		
CACA48007	7/18/2006	PLAINS EXPL & PROD CO LP	340M	USL 34Z WEST	30S	22E	34	SWSW BLM	8/7/2007	POW		No	0.59
CACA48007	7/18/2006	PLAINS EXPL & PROD CO LP	338M	USL 34Z WEST	30S	22E	34	SESE BLM	8/8/2007	POW		No	
CACA48007 Count			2								yes		
CACA49192	9/27/2007	OCCIDENTAL ELK HILLS INC	581X-22Z		30S	22E	22	NENE BLM	12/7/2007	POW		No	2.59
CACA49192	9/27/2007	OCCIDENTAL ELK HILLS INC	371X-22Z		30S	22E	22	NENE BLM	7/13/2008	POW		No	0.415
CACA49192 Count			2								yes		
CACA50418	1/8/2003	VINTAGE PRODUCTION CA LLC	27-15	USL	25S	18E	15	SWSW BLM	4/23/2004	TA		No	
CACA50418 Count			1								no		
Grand Count			**23**										**17.505**

*All wells are included, but the current status may be outdated because records have not been received from the operator.
** Notice of first production rec'd means that at least one well on the lease was successful.

For the 9-09-09 lease sale analysis: A total of 23 wells have been drilled on leases issued from lease sales after 6-25-99, 10 years prior to the date of this analysis (6-25-09). A total of 9 leases have had at least one well. Eight leases have had 1-2 wells and 1 lease had 11 wells. Four leases have had at least 1 successful well, and five leases have not. A total of 6 lease sales had at least one lease that had drilling. Of those, 3 years had a sale with at least one successful well drilled, and 3 years had no leases with any successful drilling.
Total disturbance of 17.5 acres for all 23 wells = avg. of 3/4 acres per well.

APPENDIX E – Lands Deferred

Twn. Rng. Sec. Mer.	Acres	County	CPNM	Private Surface & Subsurface	No Mineral Ownership	Inaccurate Acreage	Currently Leased	No Land Use Plan
T. 27S., R. 16E., Sec. 9 MD Mer.	80.00	SLO						w/in California condor range
T. 27S., R. 16E., Sec. 15 MD Mer.	40.00	SLO						w/in California condor range
T. 24S., R. 20E., Sec. 20 MD Mer.	440.00	Kings						w/in California condor range
T. 24S., R. 18E., Sec. 5 MD Mer.	120.00	Kings						Currently leased
T. 24S., R. 18E., Sec. 34 MD Mer.	40.00	Kings						Currently leased
T. 25S., R. 18E., Sec. 1 MD Mer.	39.82	Kings						Currently leased
T. 27S., R. 18E. Sec. 12 MD Mer.	640.00	Kings						Currently leased
T. 24S., R.19E., Sec. 33 SB Mer.	320.00	Kings						Currently leased
T. 24S., R. 19S., Sec. 35 SB Mer.	120.00	Kings						Currently leased
T. 11N., R.23W., Sec. 19 SB Mer.	80.00	Kern						w/in California condor range
T. 11N., R.23W., Sec. 29 SB Mer.	440.00	Kern						w/in California condor range
T. 11N., R.23W., Sec. 30 SB Mer.	637.24	Kern						w/in California condor range
T. 11N., R.23W., Sec. 31 SB Mer.	239.28	Kern						w/in California condor range
T. 11N., R.23W., Sec. 32 SB Mer.	280.00	Kern						w/in California condor range
T. 11N., R.23W., Sec. 33 SB Mer.	520.00	Kern						w/in California condor range
T. 11N., R.23W., Sec. 34 SB Mer.	520.00	Kern						w/in California condor range
T. 11N., R. 23W., Sec. 35 SB Mer.	120.00	Kern						w/in California condor range
T.11N., R. 24W., Sec. 5 SB Mer.	315.52	Kern						w/in California condor range
T. 11N., R. 24W., Sec. 9 SB Mer.	320.00	Kern						w/in California condor range
T. 11N., R. 24W., Sec. 10 SB Mer.	640.00	Kern						w/in California condor range
T. 11N., R. 24W., Sec. 11 SB Mer.	120.00	Kern						w/in California condor range
T. 11N., R. 24W., Sec. 14 SB Mer.	160.00	Kern						w/in California condor range
T. 11N., R. 24W., Sec. 15 SB Mer.	400.00	Kern						w/in California condor

								range
T. 11N., R. 24W., Sec. 23 SB Mer.	480.00	Kern						w/in California condor range
T. 11N., R. 24W., Sec. 24 SB Mer.	520.00	Kern						w/in California condor range
T. 11N., R. 24W., Sec. 26 SB Mer.	40.00	Kern						
T. 11N., R. 24W., Sec. 27 SB Mer.	80.00	Kern						w/in California condor range

APPENDIX F - Air Emissions Calculations

For the purpose of this exercise, there are a number of assumptions. First, as a maximum, it is assumed that the emission numbers in the above table are for wells alone and not for all of the other equipment and sources previously described. In making this assumption, BLM is conceding that these estimates are above actual individual well emission factors, and the numbers calculated are higher than actual emission factors that would be found if the appropriate data were available. We are also using a 45,000 oil and gas well estimate gathered from the California Division of Oil and Gas (www.consrv.ca.gov/DOG) for the number of total oil and gas wells in the San Joaquin Valley. Furthermore, we are using the values for Kern County, CDOGGR District 4, and the San Joaquin Valley APCD in analyzing the environmental effects related to air quality under this EA. This is necessary because the data are not available on an individual field or well by well basis. This will not cause a statistically significant error because all of the parcels are in Kern County.

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. Using a derivative of the E= A x EF formula and the Estimated Statewide Annual Emissions from Oil and Gas Production, 2006, the emission calculations for VOCs, NOx, SOx, PM10 and PM 2.5 for one well are included below.

The emission calculation for VOCs is as follows:

74.19 tons VOCs/day = 148,380 lbs VOCs/day

EF = E/A

EF = 148,380 lbs VOCs/day / 45,000 total wells = 3.30 lbs VOCs /day/well

3.30 lbs VOCs/day/well x 365 days/year = 1,204.5 lbs VOCs/year/well

This is 0.002% (3.30 lbs/day/well / 148,380 lbs VOCs/day) of the total oil and gas production emissions for VOCs, and below the *de minimis* level for VOCs.

The emission calculation for NOx **is as follows:**

23.16 tons NOx/day = 46,320 lbs NOx/day

EF = E/A

EF = 46,320 lbs NOx/day / 45,000 total wells = 1.03 lbs NOx/day/well

1.03 lbs NOx/day/well x 365 days/year = 375.7lbs NOx/year/well

This is 0.002% (1.03 lbs/day / 46,320 lbs NOx/day) of the total oil and gas production emissions for NOx, and below the *de minimis* level for NOx of 10 tons/year/stationary source.

The emission calculations for SOx are as follows:

2.23 tons SOx/day = 4,460 lbs SOx/day

EF = E/A

EF = 4,460 lbs SOx/day / 45,000 total wells = 0.10 lbs SOx/day/well

0.10 lbs SOx/day/well x 365 days/year = 36.5 lbs SOx/year/well

This is 0.002% (0.10 lbs/day / 4,460 lbs SOx/day) of the total oil and gas production emissions for SOx, which is below the *de minimis* level for SOx of 10 tons/year/stationary source.

The emission calculations for PM10 are as follows:

1.82 tons PM10/day = 3,640 lbs PM10/day

EF = E/A

EF = 3,640 lbs PM10/day / 45,000 total wells = 0.081 lbs PM10/day/well

0.081 lbs PM10/day/well x 365 days/year = 29.565 lbs PM10/year/well

This is 0.002% (0.081 lbs/day / 3,640 lbs PM10/day)of the total oil and gas production emissions for PM10, which is below the *de minimis* level for PM10 of 15 tons/year/stationary source.

The emission calculations for PM2.5 are as follows:

1.87 tons PM2.5/day = 3,740 lbs PM2.5/day

EF = E/A

EF = 3,740 lbs PM2.5/day / 45,000 total wells = 0.083 lbs PM2.5/day/well

0.083 lbs PM2.5/day x 365 days/year = 30.30 lbs PM2.5/year/well

This is 0.002% (0.083 lbs/day / 3,740 lbs PM10/day) of the total oil and gas production emissions for PM2.5, which is below the *de minimis* level for PM2.5 of 15 tons/year/stationary source.