



JUL 11 2013

Adele Lagomarsino
State of California Dept. of Conservation
Division of Oil, Gas, and Geothermal Resources
801 "K" Street, MS 20-20
Sacramento, CA 95814-3530

Subject: Initial Study/Mitigated Negative Declaration (MND) – Rancho Grande Project

District CEQA Reference No: 20130528

Dear Ms. Lagomarsino:

The San Joaquin Valley Air Pollution Control District (District) has reviewed the project referenced above consisting of a project to drill eight (8) exploratory oil wells over a three-year period located 7 miles southeast of Mettler and 28 miles south of Bakersfield in Kern County, California. The District offers the following comments:

1. The project's emissions were calculated using SacMetro Roadway Construction Emissions Model, Version 6.3.2. The District recommends that the most current version be used to calculate project emissions. SacMetro Roadway Construction Model, Version 7.1.3 is now available for use and can be found at the following website: <http://airquality.org/ceqa/>
2. All project emissions were calculated using 2013 emission factors and assumes that as construction and operation is shifted to later years (2014 and 2015), the emission rates will decline by 5% per year since newer equipment and trucks typically have lower emissions. The assessment does not include supporting documentation for this statement; therefore, the District recommends that the project emissions be calculated for the year that construction and operation is expected to occur, as is accommodated with the current SacMetro Roadway Construction Emissions Model.
3. On page 30, the *Installation of Production Equipment* phase in *Table 12 Criteria Pollutant Emissions Calculations for Construction of a Single Well Site and Drilling of Single Exploratory Well* (Table 12) does not match the emission estimates in Attachment 5 of Attachment B. The District recommends reviewing and revising Table 12 to reflect the accurate emission estimates.

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4. In *Table 13 Criteria Pollutant Emissions Calculations for each Project Year* on page 30, the years (2012, 2013, and 2014) which project emissions will occur do not correlate with the years (2013, 2014, and 2015) stated on page 29. As such, the District recommends clarifying the text to reflect the correct construction and operational years.
5. In the MND (page 30), the project's construction and operational emissions were combined and compared to the District's thresholds of significance: 10 tons per year oxides of nitrogen (NOx), 10 tons per year reactive organic gases (ROG), or 15 tons per year particulate matter of 10 microns or less in size (PM10). The District recommends that the construction and operational emissions are evaluated separately against the District's thresholds of significance because the construction emissions are typically recognized to be short in duration and operational emissions are mainly related to the activities that will occur indefinitely as a result of project operations, but generally after construction is completed.
6. In the discussion on Cumulative Impacts from Criteria Air Pollutants on page 31, the document states that, "Current SJVAPCD CEQA Guidelines (Revised June 1, 1999) do not recommend a threshold of significance for cumulative impacts. Therefore, one must rely on the CEQA Guidelines Section 15064 to determine the significance of cumulative impacts." The District disagrees with this statement because the District's *Guide for Assessing and Mitigating Air Quality Impacts (GAMAQI)* revised in 2002, includes guidance on how to assess cumulative air quality impacts. As a result, the District recommends using the most current *GAMAQI* for guidance. It can be found on the District's website at: http://www.valleyair.org/transportation/ceqa_guidance_documents.htm
7. The MND (page 31) includes a discussion of the District's 2007 Ozone Plan to reduce emissions and bring the valley into compliance with ozone and PM10 standards. The District would like to clarify that although the valley is in non-attainment for ozone for Federal and State standards and PM10 for State standards, the District is in attainment with PM10 for Federal standards. As such, the District recommends including the San Joaquin Valley Air Basin's attainment status in the MND. More information on the District's attainment status can be found on the District's website at the following link: <http://www.valleyair.org/aqinfo/attainment.htm>.

Furthermore, the District has updated its ozone and/or PM plans. Details of the plans can be found on the District's website at: http://www.valleyair.org/Air_quality_Plans/Ozone_Plans.htm and http://www.valleyair.org/Air_Quality_Plans/PM_Plans.htm.

8. A screening Health Risk Assessment (HRA) of toxic air contaminants (TACs) was performed using the California Air Pollution Control Officers' Association's (CAPCOA's) prioritization score methodology. The following are comments regarding this analysis:
- a. The MND estimated the prioritization score based on one well although it is possible that all eight wells could be producing at the same time. For purposes of estimating risk, a worst-case scenario would be that all eight wells produce gas or oil; therefore the prioritization score should have been based on a worst-case scenario.
 - b. Risk from only diesel particulate matter (DPM) emissions were analyzed. The analysis should have included oilfield fugitive emissions based on emission factors available from the District.
 - c. The procedure used (i.e., estimation of a prioritization score) is an acceptable screen procedure for this type of project. If the prioritization score exceeds 10 for either carcinogens or non-carcinogens, a more detailed HRA that includes air dispersion modeling with AERMOD model and 5-years of meteorological data should be completed.

After updating the prioritization score as recommended in the comments above, the facility risk prioritization score is likely to be greater than 1.0 for carcinogens. However, the prioritization score may still be less than 10.0 for carcinogens, in which case, the project would still not be significant.

The District recommends that a copy of the District's comments be provided to the project proponent. District staff is available to meet with you and/or the applicant to further discuss the regulatory requirements that are associated with this project. If you have any questions or require further information, please call Angel Lor at (559) 230-5808.

Sincerely,

David Warner
Director of Permit Services

for: 
Arnaud Marjolle
Permit Services Manager

DW:al

**Sojitz Rancho Grande I Project
Response to San Joaquin Valley Air Pollution Control District
Comment Letter dated July 11, 2013**

Response to SJVAPCD Comment 1

Emissions were updated using the ROADWAY Model Version 7.1.3 and the updated emissions are in the following table. Copies of the ROADWAY Model Version 7.1.3 outputs are attached. As shown in the table below, use of the updated version of the ROADWAY model does not significantly change the impacts associated with the project or the conclusions presented in the ISMND. Impacts to air quality, public health and global warming remain less-than-significant. Table 12 Criteria Pollutant Emissions Calculations for Construction of Single Well Site and Drilling of Single Exploratory Well in the ISMND will be revised with updated emission calculation results.

**Table 12
Comparison of Criteria Pollutant Emissions Calculated with ROADWAY Version
6.3.2 vs. 7.1.3 for Construction
of Single Well Site and Drilling of Single Exploratory Well**

Project Phase	ROG (6.3.2) (ton/yr)	ROG (7.1.3) (ton/yr)	NOX (6.3.2) (ton/yr)	NOX (7.1.3) (ton/yr)	PM-10 (6.3.2) (ton/yr)	PM-10 (7.1.3) (ton/yr)
Site Prep¹	0.04	0.04	0.04	0.04	0.04	0.04
Drilling Phase	0.1	0.1	1.1	1.2	0.04	0.04
Testing Phase¹	0.04	0.04	0.04	0.04	0.04	0.04
Completion Phase¹	0.04	0.04	0.04	0.04	0.04	0.04
Installation of Production Equipment¹	0.04	0.04	0.1	0.1	0.04	0.04
Production	0.30	0.4	1.0	1.4	0.1	0.1
Plugging and Abandonment Phase¹	0.04	0.04	0.04	0.04	0.04	0.04

1 – Emissions reported as 0.0 tons/year by the RCM Model are assumed to equal a maximum of 0.04 tons/yr

Response to SJVAPCD Comment 2

Rather than underestimate emissions and associated air quality impacts, use of 2013 emissions rates for 2014 and 2015 activities conservatively overestimates actual anticipated future emissions. It is a well documented fact that newer vehicles and equipment have been for some time and continue to be less polluting than older equipment. Even the emission factors in the ROADWAY 7.1.3 model reflect the expectation that emissions will decline in the future. The decline is from two (2) sets of statewide regulations:

1. Decrease in tailpipe emissions from cars and trucks due to federal and state regulations. This is codified in on-road new vehicle and engine certification programs (as discussed, e.g., in *Poet, LLC v. CARB* (2013) Cal.App.4th; 2013 WL 3821605).
2. Decrease in emissions from off-road in-use diesel equipment as required under the DOORS and other state programs. Future equipment must use higher Tier diesel engines that show declining emissions.

CARB has developed a series of tools such as the EMFAC 2011 and OFFROAD 2011 emission models. The ROADWAY 7.1.3 referenced in the comment uses the emission factors from these two models and a cursory review of the emission factors in ROADWAY 7.1.3 demonstrates the understanding that emissions will decline in the future. Accordingly, the use of estimates of 2013 emissions as the basis for estimated emissions in later years (2014 and 2015) results in later emissions being conservatively overestimated rather than underestimated.

For example, based on emission factors in ROADWAY 7.1.3, a 1,000 hp drill rig would emit 1.742 grams of NOx/hp-hr in 2013. The same equipment using 2014 emission factors would release 1.500 grams of NOx/hp-hr. This is a 14% decline in emissions.

Response to SJVAPCD Comment 3

Emissions were re-calculated using the ROADWAY Model Version 7.1.3 and copies of the ROADWAY Model Version 7.1.3 outputs are attached. Emissions updated with Version 7.1.3 did not significantly change the impacts associated with the project or the conclusions presented in the ISMND. Impacts to air quality, public health and global warming remain less-than-significant.

Response to SJVAPCD Comment 4

Table 13 in the ISMND did list ‘2012’ as the first year of drilling in error. The following tables present the calculated emissions that would occur from 2013 to 2015 and compares the re-calculated annual emission rates of criteria air pollutants with SJVAPCD Significance Thresholds. As the tables show, project emissions are expected to be below the thresholds of significance. Consequently, the proposed project would still have less-than-significant air quality impacts.

**Table 13
Criteria Pollutant Emissions Calculations for each Project Year**

Project Emissions Estimate	ROG (ton/yr)	NOX (ton/yr)	PM-10 (ton/yr)
2013 (2 wells)	1.4	5.72	0.68
2014 (3 wells)	2.1	8.58	1.02
2015 (3 wells)	2.1	8.58	1.02

Table 14
Comparison of Annual Emission Rates of Criteria Air
Pollutants with SJVAPCD Significance Thresholds

Air Pollutant	Significance Criteria Tons/Year	Maximum Annual Project Emissions 2013	Maximum Annual Project Emissions 2014 & 2015
Reactive Organic Gas (ROG)	10	1.4	2.1
Nitrogen Oxides (NO _x)	10	5.72	8.58
Particulates (PM ₁₀)	15	0.68	1.02

Response to SJVAPCD Comment 5

Comment noted. As currently presented, the criteria pollutant emission for each project year does provide a basis for impact analysis. In this case, separating the construction and operation emissions would not change the impact conclusions in the ISMND.

Response to Comment 6

Comment noted. The ISMND text will be revised to add reference the SJVAPCD's Guide for Assessing and Mitigating Air Quality Impacts revised 2002 as the guidance for evaluating cumulative air quality impacts.

Response to SJVAPCD Comment 7

Comment noted. The District's attainment status will be corrected in the ISMND. Based on a review of the status of ozone and particulate plans on the SJVAPCD website, the 2007 Ozone Plan and the 2007 PM10 Maintenance Plan used in the analyzes are still in effect.

Response to SJVAPCD Comment 8a

The long term facility prioritization score calculation assuming all eight (8) wells are producing has been updated and the results indicate a facility score of 1.63 which is considered "Medium" at the nearest residence. This is still well below the threshold of 10 for a detailed risk analysis. Accordingly, this analysis does not change the conclusions presented in the original analysis. A copy of the updated risk score calculation with oil field fugitive emission factors included is attached and data on short- and long-term emissions in the ISMND have been revised to include fugitive organics emissions.

Response to SJVAPCD Comment 8b

Fugitive emissions based on oil field fugitive emission factors have been included in the revised short-term and long- term facility risk prioritizations. The risk remained "**Low**" for short term facility risk and are "Medium" for long term facility risk at the nearest residence. See attached prioritization score spreadsheet; the results and fugitive emissions are highlighted in yellow. Inclusion of fugitive emissions does not change the significance of public health risk calculated previously. The impacts to public health remained "**Low**" for short term facility risk and are "Medium" for long term facility

risk and this analysis does not change the impacts associated with the project or the conclusions presented in the original analysis.

Comment 8c

Risk Analysis - Detailed Risk Assessment

Comment noted.



July 12, 2013

Via Federal Express

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Contact: Adele Lagomarsino
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Re: Rancho Grande Project Initial Study and Mitigated Negative Declaration

Dear Ms. Lagomarsino:

The Center for Biological Diversity (the "Center") submits the following comments concerning the Initial Study and Proposed Mitigated Negative Declaration (collectively "MND") prepared by the California Department of Conservation, Division of Oil, Gas, and Geothermal Resources ("DOGGR") for the Rancho Grande Project ("Project"). The Center is a non-profit environmental organization dedicated to the protection of native species and their habitats through science, policy, and environmental law. The Center also works to reduce greenhouse gas emissions to protect biological diversity, our environment, and public health. The Center has more than 500,000 members and online activists, including some who live in Kern County. Center members have recreational, scientific, and educational interests in the region at issue, and are particularly interested in protecting the native, imperiled, and sensitive species and their habitats that may be affected by the Project.

The MND for the Project states that Sojitz Energy Venture, Inc. ("Sojitz") is proposing to drill eight oil wells over a three-year period and to convert the wells to production wells if it finds economical quantities of oil or natural gas.¹ The Project would involve undertaking extensive industrial activity on a ranch that supports a wide range of wildlife, cattle ranching, orchards, vineyards, an equestrian center, and hunting.

The Project could foreseeably harm the ranch, the environment, or public health in numerous important ways that the MND does not analyze, as the California Environmental Quality Act ("CEQA") requires. Of great importance is the fact that DOGGR has largely refused to consider the potential impacts of enhanced oil recovery techniques that the Project could

¹ California Division of Oil, Gas, and Geothermal Resources, Initial Study/Mitigated Negative Declaration for the Rancho Grande Project at 1 (May 28, 2013) ("MND").

employ. It is essential that DOGGR, as the agency responsible for regulating enhanced oil recovery activities, analyze and disclose how the Project may use such techniques and the potential impacts that could foreseeably result from such activities. This type of analysis is so essential in large part because effects from these enhanced oil recovery techniques can be severe and bear on essentially all the factors agencies consider as part of a CEQA analysis.

However, regardless of whether these enhanced oil recovery techniques are considered, it is clear that there is substantial evidence in the record supporting a fair argument that not only may the Project have significant adverse effects on the environment, but also that the Project would have significant impacts on the environment, if approved. In particular, the MND fails to disclose, analyze, or propose measures to avoid or mitigate significant impacts to, among other things, water, the climate, air quality, imperiled species, and seismicity. Thus, we ask that DOGGR deny the Project application at issue. However, if DOGGR wishes to move forward with approval, it must prepare a full Environmental Impact Report ("EIR") pursuant to CEQA, Public Resources Code § 21000 et seq., and the CEQA Guidelines, title 14, California Code of Regulations, § 15000 et seq.

Discussion

I. Legal Background

The Legislature enacted CEQA to "[e]nsure that the long-term protection of the environment shall be the guiding criterion in public decisions." *No Oil, Inc. v. City of Los Angeles*, 13 Cal. 3d 68, 74 (1974). The Supreme Court has repeatedly held that CEQA must be interpreted to "afford the fullest possible protection to the environment." *Wildlife Alive v. Chickering*, 18 Cal. 3d 190, 206 (1976) (quotation omitted). CEQA also serves "to demonstrate to an apprehensive citizenry that the agency has, in fact, analyzed and considered the ecological implications of its action." *Laurel Heights Improvement Ass'n v. Regents of Univ. of Cal.*, 47 Cal. 3d 376, 392 (1988) ("*Laurel Heights I*"). If CEQA is "scrupulously followed," the public will know the basis for the agency's action and "being duly informed, can respond accordingly to action with which it disagrees." *Id.* Accordingly, CEQA "protects not only the environment but also informed self-government." *Id.*

CEQA applies to all "discretionary projects proposed to be carried out or approved by public agencies." Pub. Res. Code § 21080(a). Before taking any action, a public agency must conduct a "preliminary review" to determine whether the action is a "project" subject to CEQA. See *Muzzy Ranch Co. v. Solano County Airport Land Use Comm'n*, 41 Cal. 4th 372, 380 (2007). A "project" is "the whole of an action" directly undertaken, supported, or authorized by a public agency "which may cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment." Pub. Res. Code § 21065; CEQA Guidelines § 15378(a). Under CEQA, "the term 'project' refers to the underlying activity and not the governmental approval process." *California Unions for Reliable Energy v. Mojave Desert Air Quality Mgmt. Dist.*, 178 Cal. App. 4th 1225, 1241 (2009) (quoting *Orinda Ass'n v. Bd. of Supervisors*, 182 Cal. App. 3d 1145, 1171-72 (1986)). The definition of "project" is "given a broad interpretation in order to maximize protection of the environment." *Lighthouse Field*

Beach Rescue v. City of Santa Cruz, 131 Cal. App. 4th 1170, 1180 (2005) (internal quotation omitted).

Where, as here, there is substantial evidence in the record supporting a fair argument that the proposed project may have a significant adverse impact on the environment the preparation of an EIR is required. Pub. Res. Code §§ 21100, 21151; CEQA Guidelines § 15064(a)(1), (f)(1); *Communities for a Better Env't v. South Coast Air Quality Mgmt. Dist.*, 48 Cal. 4th 310, 319 (2010); *No Oil, Inc.*, 13 Cal. 3d at 82. This “fair argument” test “establishes a low threshold for initial preparation of an EIR, which reflects a preference for resolving doubts in favor of environmental review.” *Architectural Heritage Assn. v. County of Monterey*, 122 Cal. App. 4th 1095 (2004).

By contrast, a negative declaration is appropriate only when there is no substantial evidence in light of the whole record before the public agency that the project may have a significant effect on the environment. Pub. Res. Code §§ 21064.5, 21080(c); CEQA Guidelines §§ 15006(h), 15064(f)(2), 15070(b), 15369.5. If evidence demonstrating a significant impact exists, an EIR must be prepared, even if the lead agency also can point to substantial evidence in the record supporting its determination that no significant effect will occur. *Architectural Heritage*, 122 Cal. App. 4th at 1109-10. The lead agency may not dismiss evidence because it believes that there is contrary evidence that is more credible. *Pocket Protectors v. City of Sacramento*, 124 Cal. App. 4th 903, 935 (2005).

II. DOGGR’s Unsupported Designation of the Wells as Confidential Renders the Entire Project Description and Impacts Analysis Inadequate

The MND states that DOGGR has granted the Project’s proposed wells confidential status; however, the agency does not provide the basis for its grant of confidential well status or detail the information it is withholding as a result.² This unsupported designation renders the entire project description and impacts analysis inadequate, incomplete, and non-objective. Specifically, while it is clear it has had *some* effect on DOGGR’s analysis, DOGGR’s failure to explain its actions makes it impossible to determine the extent to which DOGGR’s failure to disclose the supposedly confidential information has affected the agency’s CEQA analysis. This hinders the public’s ability to comment on the proposed Project and its potential impacts, in violation of CEQA. If it insists on moving forward with the Project, DOGGR must disclose its basis for granting the wells confidential status, provide at minimum a general description of the information that the agency has withheld, and detail the extent to which DOGGR has limited its CEQA analysis in any way and why it nevertheless believes the analysis is adequately supported. After disclosing this information, DOGGR should reopen the comment period on the Project so that the public is not unlawfully limited in its ability to review the Project’s potential impacts. Further, for future CEQA analyses involving a well claimed as confidential, DOGGR should prepare and circulate information on the process, procedures, and criteria for designation on one or more wells as confidential.

² MND at 3.

III. DOGGR has Failed to Consider the Impacts of Enhanced Oil Recovery Techniques

An overarching problem with the MND is its failure to consider the reasonably foreseeable potential impacts of the Project's use of enhanced oil recovery techniques. This includes impacts flowing directly from the techniques themselves and impacts flowing from operations associated with or supporting such techniques.

The Project is likely to employ enhanced oil recovery. As a general matter, the oil and gas industry relies heavily on enhanced oil recovery techniques to produce oil and gas in California, with DOGGR's state oil and gas supervisor, Tim Kustic, indicating enhanced oil recovery accounts for around 20 percent of the state's production.³ Compounding the chance that the Project will use enhanced oil recovery are indications that the target formation for the Project is an unconventional play. For instance, the MND states that the target formation includes shale and is located over 7000 feet below ground.⁴ This is consistent with the target formation being the Monterey Shale, which is resistant to development using conventional means.⁵ Further, while California wells typically produce much more water than oil,⁶ the MND indicates that the wells here will produce only two barrels of water for every 25 barrels of oil.⁷ This implies that the Project may not be pursuing what in the past has been a typical California play, but is instead after oil in an unconventional deposit requiring the use of enhanced oil recovery.

Commonly used enhanced oil recovery techniques include, *inter alia*, hydraulic fracturing ("fracking"), acidization, and steam injection. For some wells, these techniques may be used alone; however, industry will also use multiple techniques on a single well, sometimes at the same time, such as in acid fracking, making it difficult to place particular industry practices in specific categories of enhanced oil recovery techniques.⁸

Even though the MND states that the Project will not involve fracking, DOGGR does not indicate this will be a condition of approval.⁹ Unless the Project approval is expressly conditioned upon a prohibition of fracking through well abandonment, DOGGR must disclose and analyze the impacts of this dangerous oil and gas extraction technique. According to the Bureau of Land Management, 90 percent of oil and gas wells drilled on public lands today are fracked.¹⁰ While complete information on California wells is not available since DOGGR does not currently track or monitor the practice, the voluntary reporting site FracFocus indicates that

³ Brown, David, *The Monterey Shale: Big Deal, or Big Bust?* at 2 (2012) ("Brown Monterey Shale").

⁴ MND at 70.

⁵ *Brown Monterey Shale* at 2 (2012) ("The active Monterey/Santos shale play area is about 1,750 square miles in the San Joaquin and L.A. basins, the EIA reported. In the play area, the shale is 1,000-3,000 feet thick at depths ranging from 8,000-14,000 feet.").

⁶ Division of Oil, Gas, and Geothermal Resources, 2012 Preliminary Report of California Oil and Gas Production Statistics at 3 (Apr. 2013).

⁷ MND at 78.

⁸ See, e.g., Venoco, Inc., *Monterey Shale Focused Analyst Day Slide Show* at 10 (May 26, 2010) ("Venoco Monterey Slide Show").

⁹ MND at 1.

¹⁰ U.S. Department of the Interior Bureau of Land Management, *Proposed Rule - Oil and Gas; Well Stimulation, Including Hydraulic Fracturing, on Federal and Indian Lands*, 77 Fed. Reg. 27691 (May 11, 2012).

over 1,000 wells have been fracked in California since January 2, 2011.¹¹ This figure is by definition an underestimate since reporting is entirely voluntary. Thus, in the absence of an express prohibition, DOGGR must assume, despite the applicant's statements to the contrary, that fracking will occur and must fully analyze the impacts of fracking including impacts to air,¹² the climate,¹³ water supply,¹⁴ water quality,¹⁵ public health,¹⁶ and wildlife;¹⁷ and the risk of inducing earthquakes from the fracking itself and from the disposal of the fracking wastewater.¹⁸

The Project may also employ acidization, involves the injection of large amounts of acid – usually hot solutions of hydrochloric acid – into the well.¹⁹ A concern with acidization is that it “may induce severe corrosion attack on production tubing, downhole tools and casing,” which can ultimately lead to well failure.²⁰ Companies attempt to control this corrosion by using corrosion inhibitors, such as “acetylenic alcohols, alkenyl phenones, aromatic aldehydes, nitrogen containing heterocyclics, quaternary salts and condensation products of carbonyls and amines.”²¹ However, dependence on these corrosion inhibitors is problematic because “they are effective only at high concentrations and they are harmful to the environment due to their toxicity.”²² Acidization also involves other potentially hazardous chemicals, including surfactants, solvents, iron control agents, and non-emulsifiers.²³ All of these dangerous acids and other chemicals can spill or leak into the environment. In Pennsylvania, an oil and gas company spilled 4,700 gallons of hydrochloric acid, with some of the acid breaching containment, reaching a creek tributary and killing fish.²⁴ Exposure to hydrochloric acid can be harmful. It is corrosive to the eyes, skin, and mucous membranes.²⁵ It is also listed as a hazardous air pollutant

¹¹ FracFocus, Home Search Page, www.fracfocus.org (last visited July 11, 2013).

¹² Colborn, Theo et al., Natural Gas Operations for a Public Health Perspective, 17 Human and Ecological Risk Assessment 1039 (2011) (“Colborn 2011”); McKenzie, Lisa et al., Human Health Risk Assessment of Air Emissions from Development of Unconventional Natural Gas Resources, *Sci Total Environ* at 5 (2012), doi:10.1016/j.scitotenv.2012.02.018 (“McKenzie 2012”).

¹³ Howarth, Robert, et al., Methane and the greenhouse-gas footprint of natural gas from shale formations, *Climatic Change* (Mar. 31, 2011) (“Howarth 2011”); Tolefson, Jeff, Methane leaks erode green credentials of natural gas (Jan. 2, 2013).

¹⁴ United States Government Accountability Office, Unconventional Oil and Gas Development – Key Environmental and Public Health Requirements at 37 (Sep. 2012) (“US GAO Unconventional Oil and Gas”); New York State Department of Environmental Conservation, *Revised Draft Supplemental Generic Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program, Well Permit Issuance for Horizontal Drilling and High-Volume Hydraulic Fracturing to Develop the Marcellus Shale and Other Low-Permeability Gas Reservoirs* at 5-93 (Sep. 7, 2011)

¹⁵ US GAO Unconventional Oil and Gas at 39-50.

¹⁶ Colborn 2011; McKenzie 2012.

¹⁷ US GAO Unconventional Oil and Gas at 51-52.

¹⁸ Keranen, Katie, Potentially induced earthquakes in Oklahoma, USA: Links between wastewater injection and the 2011 M_w 5.7 earthquake sequence (2013); BC Oil and Gas Commission, *Investigation of Observed Seismicity in the Horn River Basin* (Aug. 2012) (“BC Oil and Gas Commission”).

¹⁹ Rajeev, P., Corrosion mitigation of the oil well steels using organic inhibitors – A review, *J. Mater. Environ. Sci.* 3 (5) 856-869 (2012).

²⁰ *Id.*

²¹ *Id.*

²² *Id.*

²³ Frenier, Wayne W. et al., Effect of Acidizing Additives on Formation Permeability During Matrix Treatments, *Society of Petroleum Engineers* (Feb. 2002).

²⁴ Detrow, Scott, 4,700 Gallons Of Acid Spill At Bradford County Drilling Site (Jul. 5, 2012).

²⁵ U.S. Environmental Protection Agency, Hydrochloric Acid (Hydrogen Chloride) (Jan. 2000).

under the Clean Air Act,²⁶ and exposure to hydrochloric acid fumes can cause irritation of the respiratory system and pulmonary edema in humans.²⁷

Another common form of enhanced oil recovery in California is steam injection, which companies commonly use to help produce heavy oil. In steam injection techniques, hot steam is injected into the oil-bearing formation in order to make the oil more viscous, so that it can more easily be produced. In cyclic steam injection, steam is injected for a period of time and then locked in to soak the formation, thinning the oil so that it can flow to, through, and out of the well.²⁸ Usually with cyclic steam injection, the well used for injection is also used for production.²⁹ On the other hand, during steam flooding, a company will pump a continuous supply of steam into a well in order to both thin the oil and push the oil toward production wells.³⁰ Because one of the usual intended purposes of steam flooding is to push oil toward a production well, it is usually employed as part of a multi-well configuration.³¹ Such “thermal recovery applications have experienced numerous well casing failures around the world,”³² threatening the environment and public health. Indeed, cyclic steam injection has caused major problems in Kern County. The practice “presents some of the harshest conditions” under which a well can be placed,³³ resulting in high rates of casing failure from “excessive deformation, buckling, and collapse.”³⁴ In one instance, on June 21, 2011, a Chevron worker was killed when investigating steam coming from a surface expression caused by cyclic steaming in Kern County’s Midway-Sunset oil field.³⁵ When approaching the plume of steam, the ground gave way, and the worker fell into a sinkhole.³⁶

Industry practice is ever-changing, and DOGGR must be fluid in its analysis of impacts from these practices if it is to fulfill its duty to protect public and environmental health. It is unacceptable for the agency to be miles behind industry in this respect, and plainly unlawful under CEQA for DOGGR to completely ignore the issue of enhanced oil recovery as it has done in the MND at issue here. Thus, the MND’s environmental analysis is arbitrary because it fails to consider the enhanced oil recovery techniques the Project may employ to produce oil. Since the

²⁶ U.S. Environmental Protection Agency, The Clean Air Act Amendments of 1990 List of Hazardous Air Pollutants.

²⁷ EPA Hydrochloric Acid.

²⁸ Xie, Jueren, Analysis of Casing Deformations in Thermal Wells (2008).

²⁹ *Id.*

³⁰ Department of Energy, National Energy Technology Laboratory, Steamflooding.

³¹ Xie 2008.

³² *Id.*

³³ Kulakofsky, David, Achieving Long-Term Zonal Isolation in Heavy-Oil Steam Injection Wells, a Case History (2008).

³⁴ Wu, Jiang, Casing Temperature and Stress Analysis in Steam-Injection Wells (2006); *see also* Wu, Jiang, Casing Failures in Cyclic Steam Injection Wells (2008).

³⁵ Department of Conservation Division of Oil, Gas and Geothermal Resources, Executive Summary of Report of Occurrences: The Chevron Fatality Accident June 21, 2011 and Area Surface Expression Activity Pre and Post Accident – Sections 21 & 22 T.32S./R.23E., Midway-Sunset Oil Field Kern County (May 2012). (aka “Accident Report ES”); California Department of Conservation, Division of Oil, Gas, and Geothermal Resources, Report of Occurrences, The Chevron Fatality Accident, June 21, 2011, and Area Surface Expression Activity, Pre and Post Accident, Sections 21 & 22 T.32S./R.23E., Midway-Sunset Oil Field, Kern County at 2 (May 2012) (“Accident Report”); California Department of Conservation, Division of Oil, Gas, and Geothermal Resources, Reports of Occurrence: Surface Expressions in Bakersfield (2011) (“Spill Binder”).

³⁶ Accident Report at 2.

Project will likely involve unconventional techniques such as acidization, it is clear that the Project may have a significant impact on the environment and an EIR is required.

Also, in determining which techniques to include in the impacts analysis, DOGGR must clearly define what activities are prohibited. Importantly, while the MND states that the Project will not employ hydraulic fracturing, the term is not defined. Depending on how specific the MND's definition of hydraulic fracturing is, other activities could be allowed that inject fluid above the formation fracture pressure, but that do not employ all of the elements of what is commonly understood to constitute fracking (for instance, the inclusion of a proppant).

IV. There is Substantial Evidence that the Project Could Result in Significant Effects to Water Resources

The Project may result in significant impacts to water resources. DOGGR must analyze these effects in an EIR.

a. Oil and Gas Operations are Significant Sources of Hazardous Waste

Oil and gas activities in general are significant threats to water because the wastes these operations produce are hazardous. The Project here could spill or discharge hazardous fluids in numerous ways, introducing carcinogens, toxins, or otherwise harmful substances into the environment.

Solid and fluid oil exploration wastes can generally be placed into three categories: produced water, drilling fluids and cuttings, and associated wastes.³⁷ Produced water is a serious concern. Importantly, oil and gas operations generate *a lot* of produced water. Onshore oil and gas operations in the United States create about 56 million barrels of produced water per day,³⁸ and California operations produce a bit less than three billion barrels per year.³⁹ This produced water can contain harmful substances like benzene, arsenic, lead, hexavalent chromium, barium, chloride, sodium, sulfates, and boron.⁴⁰ Also, it is well known that produced water contains substances that are toxic to marine life,⁴¹ and that it can even be radioactive as a result of the formation holding the water being radioactive.⁴²

³⁷ Mall, Amy, Petition for Rulemaking Pursuant to Section 6974(a) of the Resource Conservation and Recovery Act Concerning the Regulation of Wastes Associated with the Exploration, Development, or Production of Crude Oil or Natural Gas or Geothermal Energy at 7 (Sep. 8, 2010).

³⁸ U.S. Government Accountability Office, Energy-Water Nexus: Information on the Quantity, Quality, and Management of Water Produced during Oil and Gas Production, Report to the Ranking Member, Committee on Science, Space and Technology, House of Representatives at 13, January 2012.

³⁹ DOGGR 2012 Preliminary Report of Oil and Gas Statistics at 3.

⁴⁰ Mall at 8.

⁴¹ *Id.* (quoting U.S. EPA, Report to Congress, Management of Wastes from the Exploration, Development, and Production of Crude oil, Natural Gas, and Geothermal Energy, Vols. 1-3 EPA530-SW-88-003 (1987)).

⁴² White, Ivan E., Consideration of radiation in hazardous waste produced from horizontal hydrofracking, National Council on Radiation Protection (2012).

Drilling fluids and drill cuttings account for about two to four percent of oil and gas waste.⁴³ They include rock removed during drilling (cuttings) and water- or oil-based drilling fluids, also called drilling muds, which often contain additives.⁴⁴ Drilling fluids in reserve pits have been found to contain chromium, lead, and pentachlorophenol at hazardous levels, and oil-based drilling fluids can also contain benzene.⁴⁵ Drilling fluids may contain numerous carcinogenic and toxic substances, including:

potentially hazardous substances including . . . cadmium, arsenic . . . mercury, copper . . . diesel oil; grease; and various other hydrocarbons and organic compounds (e.g., methanol, chlorinated phenols, formaldehyde, benzene, toluene, ethyl benzene, xylene, and acrylamide), as well as additives including acids and caustics, corrosion inhibitors, bactericides and biocides, surfactants, defoamers, emulsifiers, filtrate reducers, shale control inhibitors, thinners and dispersants, weighing materials, bentonite clay, and acrylamide.⁴⁶

Associated wastes include, among other things, oily sludges, workover wastes, and well completion and abandonment wastes.⁴⁷ These wastes are generally the lowest in volume, but are nevertheless of great concern because they can contain a range of chemicals and naturally occurring materials that are threats to health and safety.⁴⁸ For example, some associated wastes have been found to potentially be ignitable and others can contain toxic heavy metals, such as lead.⁴⁹

These hazardous wastes from oil operations regularly pollute the environment and can reach aquifers and surface waters.⁵⁰ Surface pits in particular are a major hazard, with leaking pits causing numerous instances of contamination.⁵¹ In one instance, a person became sick after drinking tap water drawn from a spring that had been contaminated when the liner of a surface pit leaked, leading to the release of waste.⁵² The state investigated the contamination and found benzene in the groundwater that exceeded standards by 32 times and benzene in faucet water that exceeded standards by 13 times, as well as elevated levels of toluene and xylenes.⁵³ The injection of waste into disposal wells also can cause contamination of the environment. For instance, in the late 1980s, the U.S. Government Accountability Office reported that although it was likely that more incidents had occurred, the U.S. Environmental Protection Agency was aware of at least 23 cases across the country where Class II injection wells had contaminated drinking water supplies.⁵⁴ The risk of contamination of drinking water is of particular concern today because

⁴³ U.S. Congress, Office of Technology Assessment, *Managing Industrial Solid Wastes from Manufacturing, Mining, Oil and Gas Production, and Utility Coal Combustion – Background Paper* at 67 (1992).

⁴⁴ *Id.*

⁴⁵ *Mall* at 10.

⁴⁶ *Id.* at 10-11.

⁴⁷ *Mall* at 11.

⁴⁸ *Id.*

⁴⁹ *Id.*

⁵⁰ *Id.* at 17.

⁵¹ *Mall* at 18-19.

⁵² Colorado Oil and Gas Conservation Commission, Cause No. 1V, Order No. 1V, Docket No. 1008-OV-06.

⁵³ *Mall* at 19.

⁵⁴ U.S. General Accounting Office, *Safeguards are not Preventing Contamination from Injected Oil and Gas Wastes* (Jul. 1989).

U.S. EPA has found the DOGGR's Class II underground injection well program to be insufficiently protective of groundwater resources.⁵⁵ In particular, U.S. EPA's report noted a number of instances where UIC well operations or construction practices result in the contamination of underground sources of drinking water in California.⁵⁶

Finally, well failure can allow fluids to escape into the environment and contaminate water. Although it is unclear how often wells in California fail because DOGGR asserts it does not track this data, industry reports elsewhere indicate that the failure rate could be high. For instance, statistics from the U.S. Minerals Management Service – now the Bureau of Ocean Energy Management, Regulation and Enforcement – indicate that after thirty years, up to sixty percent of offshore wells in the Gulf of Mexico experience sustained casing pressure, which is a significant problem indicating that there is communication to the annulus from a sustained pressure source due to inadequate zonal isolation.⁵⁷ This rate is so high that even if California wells are significantly less likely to experience well integrity problems, a serious threat would still exist.

b. There is a Significant Chance that Hazardous Wastes from the Project Will Contaminate Water Resources

The Project constitutes a serious threat to water. The Project site is within the Arvin-Wheeler Ridge Watershed, which supports a variety of uses, such as municipal and agricultural supply systems and recreation.⁵⁸ Further, surface water in many areas is "intimately connected with the ground water, thereby having a profound effect on local groundwater supplies,"⁵⁹ and the Project site is largely located within a 100-year floodplain.⁶⁰

The Project will be situation only about 550 feet above a groundwater aquifer, which is of concern because the Project will store drilling muds and cuttings in a sump.⁶¹ Thus, especially due to the presence of shallow groundwater at the Project site, there is a significant chance that the operations could contaminate water resources in one of the ways described above. Unfortunately, the MND largely ignores this fact, instead determining that state and federal standards somehow make the hazardous nature of the waste streams irrelevant.⁶² Recent experience demonstrates this to be a mistake. In particular, the Central Valley Regional Water Quality Control Board has reported that Vintage Production California LLC dumped waste from operations into an unlined sump above a shallow aquifer.⁶³ According to an engineer from the Water Board, while Vintage was authorized to dump drilling mud into an unlined pit, it was not

⁵⁵ Walker, James, California Class II UIC Program Review at 119 (Jun. 2011) ("Walker 2011").

⁵⁶ Walker at 51, 155, 190

⁵⁷ Brufatto, Claudio et al., From Mud to Cement – Building Gas Wells (2003).

⁵⁸ MND at 84.

⁵⁹ *Id.*

⁶⁰ *Id.* at 86.

⁶¹ *Id.* at 84

⁶² *Id.* at 84-87.

⁶³ Central Valley Regional Water Quality Control Board, Letter to Alan E. White, President and General Manager, Vintage Production California LLC, Re: California Water Code Directive Pursuant to Section 13267 (Apr. 4, 2013) ("CVRWQCB").

authorized to dump other fluids the company discharged into the sump.⁶⁴ Thus, it is clear that DOGGR's pronouncements that companies will comply with the law cannot and should not render unnecessary an analysis of impacts if something goes wrong.

In providing additional analysis of potential impacts to water quality, DOGGR must further describe the Project site's groundwater resources. The MND states that the "base of freshwater" is between 900 and 1800 feet and that the top of the groundwater formation is at roughly 550 feet. DOGGR gives no references or citations for this information, even though this information cannot be considered confidential for wells pursuing a formation more than 7,000 feet underground. Also, DOGGR provides no information as to the uses and quality of the resources or to the protection provided to this water by the surface casings and cementing. Any approval must provide for a full demonstration of the protection of fresh water resources, for example, through the disclosure of well integrity logs for all surface and intermediate casings before and after any enhanced oil recovery techniques.

The location of the Project in a floodplain is cause for concern. DOGGR states that "[a] project specific emergency response plan would be prepared for each well site that addresses evacuation of equipment and personnel in the event of a threat of flooding";⁶⁵ however, this does not indicate that the response plan would prevent flooding from causing sumps to overflow, releasing pollution into the environment.

In addition, DOGGR's statement that the Project will comply with the requirements of the Central Valley Regional Water Quality Control Board ("CVRWQCB") and the CVRWQCB's Resolution No. R5-2008-0182 ("Resolution") does not excuse the agency from analyzing the potential impacts to water.⁶⁶ DOGGR states that the Resolution "waives the requirement to file a Report of Waste Discharge and/or issue Waste Discharge Requirements for the temporary discharge of drilling mud to a sump (pit)" and includes several conditions regarding the use of a sump.⁶⁷ However, as DOGGR acknowledges, it is unclear that the Project would qualify for a waiver under the resolution, since several factors can prevent a project from qualifying, including if operations are conducted in contaminated soil.⁶⁸ Here, there is a significant probability that the earth drilled into will be contaminated because the target is a shale formation (or at least partially a shale formation), and shale formations and drill cuttings coming from such formations can contain radioactive materials.⁶⁹ Moreover, because the Resolution covers only "those instances which represent the lowest threat to water quality," it appears inapplicable to this Project on its face.⁷⁰

Further, even if the Resolution does apply it does not excuse DOGGR from analyzing the potential impacts of the Project under CEQA. First, the Resolution does not declare that drilling

⁶⁴ Knudson, Tom, Fracking near Shafter raises questions about drilling practices (Jun. 30, 2013)

⁶⁵ MND at 86.

⁶⁶ *Id.* at 84.

⁶⁷ *Id.*

⁶⁸ California Central Valley Regional Water Quality Control Board, Resolution No. R5-2008-0182, Approving Waiver of Reports of Waste Discharge and Waste Discharge Requirements for Specific Types of Discharge within the Central Valley Region at 4-5 (2008) ("CVRWQCB Resolution").

⁶⁹ See White 2012.

⁷⁰ CVRWQCB Resolution at 2.

muds and boring waste are safe. Instead, the Resolution indicates that these wastes can pose a threat to water quality, but that CVRWQCB review is not necessary because DOGGR and local agencies will provide the necessary oversight of operations generating such waste.⁷¹ It is therefore circular reasoning for DOGGR to rely on the Resolution to eliminate its own duty to consider the potential environmental impacts of the Project under CEQA. Second, the Resolution covers drilling muds and boring waste, but does not cover other wastes that the Project potentially will generate, including produced water and fracking fluid. Thus, the Resolution cannot ensure an absence of significant impacts from these other wastes. The potential impact to water quality and to the environment from the Project's drilling cuttings, mud, and produced water is clearly significant. Mere reference to the CVRWQCB's Resolution No. R5-2008-0182 cannot cure the MND's utter failure to disclose, analyze, and mitigate these impacts.

Finally, DOGGR should provide the basis for the prediction that the Project will produce so little water, as compared to the amount of oil produced. As noted above, the ratio is uncharacteristic of California wells. Especially because of the harms that can result from oil operations generating, handling, and disposing of wastewater, the public should be given an opportunity to check the accuracy of the MND's estimate of how much wastewater the Project will produce.

c. DOGGR Failed to Consider the Effects of Water Withdrawals

DOGGR states that each well will consume about 52,000 gallons of water during its drilling phase.⁷² However, it does not appear that the MND discusses water consumption during other phases of the Project, which is a major oversight because the MND claims to be analyzing the effects of production as well. Additionally, while the MND indicates that "water for the proposed project will be purchased from Tejon Ranch surface water entitlements,"⁷³ the MND does not analyze the effect of these withdrawals. This analysis does not meet the requirements of CEQA. DOGGR must analyze fully the potential volumes of water withdrawals, where the Project may obtain its water, and the effects of such withdrawals. Because the effects of such water use may be significant, DOGGR must do so in an EIR.

V. There is Substantial Evidence that the Project Could Generate a Significant Amount of Greenhouse Gases

Oil and gas operations are a major cause of climate change. Emissions result from oil and gas exploration, development, and production operations and the combustion of oil or gas for energy. Of great concern are methane emissions. Natural gas emissions are generally about 84 percent methane.⁷⁴ Methane is a potent greenhouse gas that contributes substantially to global climate change. Its global warming potential is approximately 33 times that of carbon dioxide

⁷¹ CVRWQCB Resolution at 9.

⁷² MND at 4.

⁷³ *Id.* at 70.

⁷⁴ Brown, Heather, Memorandum to Bruce Moore, USEPA/OAQPS/SPPD re Composition of Natural Gas for Use in the Oil and Natural Gas Sector Rulemaking at 3 (Jul. 28, 2011) ("Brown Memo").

over a 100-year time frame and up to 105 times that of carbon dioxide over a 20-year time frame.⁷⁵

Oil and gas operations release large amounts of methane.⁷⁶ While the exact amount is not clear, EPA has estimated that “oil and gas systems are the largest human-made source of methane emissions and account for 37 percent of methane emissions in the United States or 3.8 percent of the total greenhouse gas emissions in the United States.”⁷⁷ For the oil industry, emissions result “primarily from field production operations . . . , oil storage tanks, and production-related equipment”⁷⁸ Emissions are released as planned, during normal operations and unexpectedly due to leaks and system upsets.⁷⁹ Significant sources of emissions include well venting and flaring.⁸⁰ California is no exception with regard to problematic methane emissions. A recent study found that the methane leak rate from Los Angeles-area oil and gas operations was an astounding 17 percent.⁸¹

Other pollutants that will be emitted by the Project also warm the climate. In particular, oil and gas operations result in the emission of large amounts of nitrogen oxides (“NO_x”) and volatile organic compounds (“VOCs”). Both of these pollutants are precursors of tropospheric ozone,⁸² which is an important contributor to climate change.⁸³ Further, oil operations result in significant carbon dioxide emissions from the combustion of fossil fuels through the operation of engines or through flaring.⁸⁴

Also, the burning of any oil that the Project produces will generate greenhouse gas emissions. Of great importance here is that the produced oil could come from the Monterey Shale, which the U.S. Energy Information Administration has estimated contains 15.4 billion barrels of technically recoverable oil, or 64 percent of all the technically recoverable shale oil in the lower 48 states.⁸⁵ Oil companies are just now beginning to figure out how to economically produce oil from the Monterey Shale, and the Project at issue could be an early indication that a boom in Monterey Shale oil production that would have major consequences for the climate could be imminent.

DOGGR’s brief review of the impacts of the Project’s greenhouse gas emissions falls far short of the requirements of CEQA. DOGGR indicates that it is not relying on a particular significance threshold, but that it is comparing projected emissions to a performance based

⁷⁵ Howarth 2011.

⁷⁶ Natural Resources Defense Council, *Leaking Profits* (2012) (“NRDC, *Leaking Profits*”).

⁷⁷ U.S. Environmental Protection Agency, *Natural Gas STAR Program, Basic Information, Major Methane Emission Sources and Opportunities to Reduce Methane Emissions* (2012) (“USEPA, *Basic Information*”).

⁷⁸ Megan Williams & Cindy Copeland, *Earthjustice, Methane Controls for the Oil and Gas Production Sector* (2010) at 6 (“Williams & Copeland”).

⁷⁹ *Id.*

⁸⁰ USEPA, *Basic Information*.

⁸¹ Peischl, J., *Quantifying sources of methane using light alkanes in the Los Angeles basin* (2013).

⁸² Earthworks, *Oil and Gas Air Pollution Factsheet* (2006).

⁸³ Shindell, Drew, *Improved Attribution of Climate Forcing to Emissions*, 326 *Science* 716 (2009) (“Shindell 2009”).

⁸⁴ Zahniser, Angela, *Characterization of Greenhouse Gas Emissions Involved in Oil and Gas Exploration and Production Operations* (2007).

⁸⁵ United States Energy Information Administration, *Review of Emerging Resources: U.S. Shale Gas and Shale Oil Plays* at 4 (Jul. 2011).

standard requiring a 29 percent reduction in emissions from stationary sources, as compared to standard sources.⁸⁶ In analyzing whether this standard is met, DOGGR only considers emissions from the well head/pumping unit, and indicates that emissions will be less than significant because the applicant will purchase greenhouse gas credits sufficient to shrink total emissions from this unit to 29 percent below business-as-usual emissions.⁸⁷ This does not meet the requirements of CEQA.

DOGGR may not rely on the purchase of greenhouse gas credits to avoid its obligation to analyze the potential impacts of the Project's greenhouse gas emissions. There is no guarantee that the claimed reductions will be achieved. Even if DOGGR could rely on carbon credits, which it cannot, it must at least indicate which market will supply the credits.

Also, again assuming DOGGR could rely on such credits, the agency's reliance on the San Joaquin Valley Air Pollution Control District ("SJVAPCD")'s performance based standard for stationary sources is arbitrary. The agency states that this standard defines a project's greenhouse gas emissions as not significant if emissions from a source are cut to 29 percent below "business as usual" emissions levels.⁸⁸ As an initial matter, this threshold employs a legally impermissible baseline. SJVAPCD's threshold necessarily requires a comparison between the project and a purely hypothetical future "business as usual" trajectory that may not ever occur. CEQA, in contrast, clearly requires significance to be evaluated in terms of a comparison between the project and existing environmental conditions. This threshold is therefore invalid as a matter of law. DOGGR's reliance on this standard is also arbitrary because the SJVAPCD's standard of performance is a standard for stationary sources, while the Project should not be characterized purely as a stationary source. The majority of the long-term emissions from the Project will come from the off-site refining and combustion of the oil the Project produces. Moreover, DOGGR should select a different standard for judging significance because the standard the agency has adopted here would lead to ridiculous results; there are many circumstances where it would be absurd to argue that a 29 percent reduction in emissions could support a finding of no significance under CEQA. For instance, a coal-fired power plant that reduced its emissions to 29 percent below "business as usual" would still undoubtedly emit greenhouse gases in significant quantities.

Additionally, the agency's analysis of whether the Project satisfies the SJVAPCD's standard is otherwise fatally flawed. Importantly, the agency is wrong that well head/pumping units would be the only long-term sources of greenhouse gas emissions, and thus, its claimed 29 percent reduction is overestimates actual reductions. As noted above, methane leakage is a major problem for oil and gas operations, and DOGGR has completely ignored such emissions here even though there can be almost no doubt that such emissions would occur. DOGGR must also consider emissions from the vehicles the operations will use over the long-term, such as trucks used to carry oil or wastewater. Further, CEQA requires that the agency consider the greenhouse gas emissions that could foreseeably result from the sale of the oil the Project produces, including emissions resulting from the refining and ultimate combustion of the oil, as well as emissions that could result from reasonably foreseeable yet more carbon-intensive activities. It is

⁸⁶ MND at 74.

⁸⁷ *Id.*

⁸⁸ *Id.*

particularly important to consider the emissions from the refining and combustion of the produced oil because California oil – especially California heavy oil – can be carbon intensive compared to other forms of energy. This is not only true with respect to renewable energy sources like solar, but also with respect to other sources of oil.⁸⁹

Finally, it is clear that taking into account these other emissions, there can be no doubt that the Project's greenhouse gas emissions would be significant under any reasonable standard, whether a significance threshold of 2,500 metric tons per year of carbon dioxide equivalent ("CO₂e") is used or a threshold of 10,000 metric tons per year of CO₂e. According to the U.S. EPA, the combustion of a single barrel of oil results in emissions of 0.43 metric tons of carbon dioxide.⁹⁰ The MND estimates that each well will produce 25 barrels of oil per day.⁹¹ This yields a greenhouse gas emissions rate *for the combustion of the produced oil alone* of over 30,000 metric tons of carbon dioxide per year.

Thus, it is clear that DOGGR's analysis of climate impacts is arbitrary because it applies an unlawful standard and fails to account for numerous sources of foreseeable greenhouse gas emissions. Further, considering the all reasonably foreseeable Project emissions, it is clear that the Project's emissions will be significant under any significance threshold or standard of performance, and DOGGR must prepare an EIR. Further, one of the fundamental elements of CEQA review is a consideration of alternatives, including a no action alternative, and mitigation measures. Pub. Res. Code § 21002 ("The Legislature finds and declares that it is the policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects . . ."). Especially where, as is the case here, the Project conflicts with the state's greenhouse gas reduction goals, DOGGR should consider alternatives to additional oil development, and if it nevertheless decides to move forward with the Project, must consider additional mitigation measures to limit greenhouse gas emissions.

VI. DOGGR Failed to Consider Significant Impacts to Air Quality

Oil and gas operations emit numerous air pollutants, including VOCs, polycyclic aromatic hydrocarbons ("PAHs"), NO_x, particulate matter, hydrogen sulfide, and methane. This is of concern here because the Project site is in an area with poor air quality. In particular, the area is listed as non-attainment for particulate matter and ozone standards.⁹² However, DOGGR does not provide a full analysis of air quality impacts as CEQA requires. Also, the agency ignores potentially significant impacts that require it to prepare an EIR.

Oil and gas operations emit large amounts of VOCs and NO_x.⁹³ Both VOCs and NO_x are ozone precursors, and due to emissions of these pollutants, many regions around the country with

⁸⁹ California Air Resources Board, Calculation of Baseline Crude Average Carbon Intensity Value (2011).

⁹⁰ U.S. Environmental Protection Agency, Green Power Equivalency Calculator Methodologies.

⁹¹ MND at 5.

⁹² U.S. Environmental Protection Agency, Currently Designated Nonattainment Areas for All Criteria Pollutants (Dec. 14, 2012).

⁹³ Sierra Club et al. Comments on New Source Performance Standards: Oil and Natural Gas Sector; Review and Proposed Rule for Subpart OOOO (Nov. 30, 2011) ("Sierra Club Comments") at 13.

substantial oil and gas operations are now suffering from extreme ozone levels.⁹⁴ The primary sources of NO_x are engines used in drilling and flaring.⁹⁵

VOC emissions, which make up about 3.5 percent of the gases emitted by oil or gas operations,⁹⁶ are particularly hazardous.⁹⁷ VOCs emissions include the BTEX compounds – benzene, toluene, ethyl benzene, and xylene – which are Hazardous Air Pollutants.⁹⁸ Health effects associated with benzene include “acute and chronic nonlymphocytic leukemia, acute myeloid leukemia, chronic lymphocytic leukemia, anemia, and other blood disorders and immunological effects.”⁹⁹ Further, maternal exposure to benzene has been associated with an increase in birth prevalence of neural tube defects; and xylene exposure can cause eye, nose, and throat irritation, difficulty in breathing, impaired lung function, and nervous system impairment.¹⁰⁰ In fact, many of the volatile chemicals associated with drilling and oil and gas waste are associated with serious effects to the respiratory, nervous, or circulatory systems.¹⁰¹

A substantial amount of the gas leaked from oil and gas operations can also be PAHs.¹⁰² One study of air pollution emissions from natural gas operations found PAHs at concentrations greater than those at which prenatally exposed children in urban studies had lower developmental and IQ scores.¹⁰³

Particulate matter is another pollutant the oil and gas industry emits in significant quantities. The heavy equipment regularly used burns diesel fuel, generating fine particulate matter.¹⁰⁴ The particulate matter emitted by diesel engines is a particularly harmful.¹⁰⁵ Vehicles also kick up fugitive dust, which is particulate matter, by traveling on unpaved roads.¹⁰⁶ Further, both NO_x and VOCs, which are heavily emitted by the oil and gas industry, are particulate matter precursors.¹⁰⁷ Some of the health effects associated with particulate matter exposure are

⁹⁴ Olague, Eduardo P., The potential near-source ozone impacts of upstream oil and gas industry emissions, *Journal of the Air & Waste Management Association*, 62:8, 966-977 (2012); Armendariz, Al, Emissions for Natural Gas Production in the Barnett Shale Area and Opportunities for Cost-Effective Improvements (2009) (“Armendariz”) at 1, 3, 25-26; Wendy Koch, *Wyoming’s Smog Exceeds Los Angeles’ Due to Gas Drilling*, USA Today (May 9, 2011).
⁹⁵ See, e.g., U.S. Environmental Protection Agency, Oil and Natural Gas Sector: Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution, Background Technical Support Document for the Proposed Rules, 76 Fed Reg 52738 (2011); Armendariz at 24.

⁹⁶ Brown Memo at 3.

⁹⁷ McKenzie 2012.

⁹⁸ 42 U.S.C. § 7412(b).

⁹⁹ McKenzie 2012 at 2.

¹⁰⁰ *Id.*

¹⁰¹ Colborn 2011;

¹⁰² Colborn, Theo, An Exploratory Study of Air Quality near Natural Gas Operations (2013).

¹⁰³ *Id.*

¹⁰⁴ Earthworks, Sources of Oil and Gas Pollution.

¹⁰⁵ Bay Area Air Quality Management District, Particulate Matter Overview, Particulate Matter and Human Health (2012).

¹⁰⁶ U.S. Environmental Protection Agency, Regulatory Impact Analysis for the Proposed Revisions to the National Ambient Air Quality Standards for Particulate Matter (June 2012), http://www.epa.gov/ttnecas1/regdata/RIAs/PMRIACombinedFile_Bookmarked.pdf at 2-2, (“EPA RIA”)

¹⁰⁷ EPA RIA at 2-2.

“premature mortality, increased hospital admissions and emergency department visits, and development of chronic respiratory disease.”¹⁰⁸

See Response
to CBD VIg

Oil and gas operations can also emit hydrogen sulfide. The hydrogen sulfide is contained in the natural gas and makes that gas “sour.”¹⁰⁹ Hydrogen sulfide may be emitted during all stages of operation, including exploration, extraction, treatment and storage, transportation, and refining. EPA has identified large parts of California—including the region at issue—as areas where natural gas tends to contain hydrogen sulfide.¹¹⁰ Long-term exposure to hydrogen sulfide is linked to respiratory infections, eye, nose, and throat irritation, breathlessness, nausea, dizziness, confusion, and headaches.¹¹¹

Further, oil and gas operations emit significant amounts of methane. In addition to its role as a greenhouse gas, methane contributes to increased concentrations of ground-level ozone, the primary component of smog, because it is an ozone precursor.¹¹² This effect can be substantial. One paper found that “[r]educing anthropogenic CH₄ emissions by 50% nearly halves the incidence of U.S. high-O₃ events”¹¹³

See Response
to CBD VIg

One problem with DOGGR’s analysis of air quality impacts is that it assumes that two wells will be drilled in 2013, and three wells in each of 2014 and 2015. This spreads the emissions out, reducing short term impacts. However, it does not appear that there is any permit condition prohibiting operations from occurring over a shorter period, and in the absence of such a permit term, it is reasonably foreseeable that this could occur, increasing impacts. DOGGR must account for such scenarios. Moreover, especially with respect to NO_x emissions, which even the agency estimates may approach significant levels,¹¹⁴ activities happening over an accelerated timetable clearly could result in significant impacts to air quality, requiring an EIR.

See Response
to CBD VIg

DOGGR also appears to totally ignore air pollution emissions that may result from the leakage of natural gas. For instance, DOGGR considers only diesel combustion when analyzing the impacts of toxic air contaminants,¹¹⁵ and therefore completely ignores VOC emissions from the considerable amount of natural gas that the Project could emit. Because oil and gas operations emit so much natural gas, and because of the extreme harms associated with exposure to VOCs and PAHs, it is arbitrary for DOGGR to fail entirely to account for such emissions.

¹⁰⁸ U.S. Environmental Protection Agency, National Ambient Air Quality Standards for Particulate Matter Proposed Rule, 77 Fed. Reg. 38,890, 38,893 (June 29, 2012).

¹⁰⁹ Sierra Club Comments.

¹¹⁰ U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Report to Congress on Hydrogen Sulfide Air Emissions Associated with the Extraction of Oil and Natural Gas (EPA - 453/R - 93 - 045), at III-68 (Oct. 1993) (“USEPA 1993”).

¹¹¹ *Id.* at i.

¹¹² U.S. Environmental Protection Agency, Oil and Natural Gas Sector: NSPS and NESHAP for Air Pollutants Reviews, 76 Fed. Reg. 52738 (2011). (“76 Fed Reg 52738”).

¹¹³ Fiore, Arlene et al., Linking ozone pollution and climate change: The case for controlling methane, 29 *Geophys. Res Letters* 19 (2002).

¹¹⁴ MND at 30.

¹¹⁵ MND at 32-33.

See Response
to CBD VIh

Also unlawful is DOGGR's refusal to provide a real analysis of actual impacts to ozone concentrations. While the agency estimates yearly ozone emissions, it refuses to actually analyze the potential impacts of those emissions, instead declaring without further analysis that those emissions are not significant because the emissions comply with the 2007 Ozone Plan and other rules.¹¹⁶ DOGGR must explain its basis for concluding that ozone emissions comply with the 2007 Ozone Plan and other rules. This explanation alone, however, would not fulfill the agency's obligations under CEQA. DOGGR must consider all reasonably foreseeable emissions, for instance, emissions for natural gas leakage, which the agency has not done. Also, DOGGR's analysis relies on relatively limited usage of equipment, even though the permits will not restrict use to these levels.¹¹⁷

See Response
to CBD VII

Further, while DOGGR acknowledges that significant impacts could occur without mitigation measures, and even though the area is not in compliance with state ozone standards, DOGGR never considers ways to mitigate impacts on ozone concentrations.¹¹⁸ There are numerous ways that oil exploration operations can mitigate emissions of ozone precursors, such as by limiting VOC and methane emissions.¹¹⁹ Mitigation measures for VOCs and methane include green completions, TEG dehydrator emission controls, dry seal systems, no-bleed pneumatic controls, tank vapor recovery units, and leak monitoring and repair.¹²⁰ DOGGR must consider such mitigation measures.

See Response
to CBD VIj

Also, the mitigation measures DOGGR provides for particulate matter are not fully enforceable through permit conditions and improperly defer mitigation to a later time. CEQA Guidelines § 15126.4(a)(1), (a)(2). For instance, the MND states that dust from various sources must be "effectively stabilized," but there appear to be no permit provisions establishing what this means or who will judge and enforce compliance.¹²¹

See Response
to CBD VIk

Additionally, there is evidence that DOGGR has underestimated emissions for the Project. For the Patricia McKellar et al No. 2 Exploratory Oil and Gas Well Project, DOGGR estimates much greater emissions rates for NO_x and particulate matter emissions. For example, for the McKellar project, DOGGR estimates the drilling phase will result in 5.5 metric tons per year of NO_x emissions, yet for the Rancho Grande Project it estimates only 1.1 metric tons per year of NO_x emissions.¹²² At minimum, DOGGR must explain this substantial difference in emissions rates.

See Response
to CBD VII

Finally, although the MND states that fracking would not be used in the Project, nothing in the MND indicates the fracking technology would not eventually be deployed if the exploratory wells indicate the resource is viable. Failing any express prohibition, it is likely fracking would in fact be utilized, so air pollution from this process and the chemicals it involves

¹¹⁶ MND at 32.

¹¹⁷ Compare MND at 26-29 with Silva, Lisa & Rose Waldman, Oil & Gas - Related Vehicle Traffic and Emissions Inventories at 9 (Oct. 31, 2011).

¹¹⁸ MND at 35.

¹¹⁹ See Williams & Copeland; NRDC, Leaking Profits.

¹²⁰ Leaking Profits at 5-7.

¹²¹ MND at 35.

¹²² Compare MND at 30 with California Division of Oil, Gas, and Geothermal Resources, Patricia McKellar et al No. 2 Exploratory Oil and Gas Well Project Initial Study/Mitigated Negative Declaration at 25 (Feb. 20, 2013).

must be disclosed and analyzed. Air pollution from fracking is highly hazardous.¹²³ The South Coast Air Quality Management District (SCAQMD) has identified several areas of dangerous and unregulated air emissions from fracking: the use of the silica as a proppant, which causes the deadly disease silicosis, and the storage of fracking fluid once it comes back to the surface.¹²⁴ Preparation of the fluids used for well completion often involves onsite mixing of gravel or proppants with fluid, a process which potentially results in major amounts of particulate matter emissions.¹²⁵ Further, these proppants often include silica sand, which increases the risk of lung disease and silicosis when inhaled.¹²⁶ Finally, as flowback returns to the surface and is deposited in pits or tanks that are open to the atmosphere, there is the potential for organic compounds and toxic air pollutants to be emitted, which are harmful to human health as described above.¹²⁷ These and all other air quality impacts must be addressed. Because of their significance, an EIR is the proper tool for this analysis.

VII. DOGGR Failed to Consider Significant Impacts to Threatened and Endangered Species

While the MND provides some background information on imperiled species, the MND largely fails to provide any actual analysis of potential impacts to those species. This lack of analysis violates CEQA. Further, because it is clear that significant impacts to imperiled or sensitive species may result from the Project, DOGGR must prepare an EIR analyzing potential impacts.

The MND ignores and fails to provide mitigation for potential impacts to California condors. Because it is clear that the Project could result in significant impacts to the California condor, DOGGR must prepare an EIR. Today, there are only about 430 California condors alive, either in captivity or in the wild.¹²⁸ However, due to the persistence of human-induced threats, the condor's increased population is almost entirely due to intensive conservation efforts, and scientists do not consider the species to be self-sustaining.¹²⁹ Threats to the California condor's survival can be generally placed into two categories: activities causing habitat destruction or degradation, and activities that can directly harm or kill condors. Oil exploration results in both categories of harm, and can put the future success of condor conservation efforts in jeopardy.¹³⁰

Oil and gas activities destroy or degrade condor habitat in numerous ways. Not only will the actual exploration or production facilities eliminate habitat acreage, but so will road and powerline construction. The existence of such infrastructure will cause problems by eliminating

¹²³ Colborn 2011.

¹²⁴ South Coast Air Quality Management District, Revised Draft Staff Report PR1148-2 (2013) at 15.

¹²⁵ *Id.*

¹²⁶ South Coast Air Quality Management District, Submission to Joint Senate Hearing (2013) at 3.

¹²⁷ SCAQMD Revised Draft Staff Report PR1148-2 at 15.

¹²⁸ U.S. Fish and Wildlife Service, California Condor Recovery Program Overview Page (May 31, 2013).

¹²⁹ Meretsky, Vicky J. et al., Demography of the California Condor: Implication for Reestablishment, *Conservation Biology* 14(4): 957-967 (2000).

¹³⁰ California Department of Justice, Comments on Oil and Gas Leasing Proposal for the Los Padres National Forest, (April 19, 2002).

food sources.¹³¹ This habitat loss will also fragment the remaining habitat, which is a significant concern for California condors because of the species's limited genetic variability in the remaining population.¹³² In addition to infrastructure destroying habitat, the activity associated with oil and gas extraction can discourage condor use of habitat that may otherwise be suitable for nesting, perching, roosting, or foraging.¹³³ For example, project-related noise can cause adult birds to repeatedly flush from, or eventually abandon, active nests, or prevent them from choosing otherwise suitable habitat as a nest site.¹³⁴

In addition to destroying habitat, oil operations can directly harm or kill condors. Condors have been documented landing on oil pads and other production equipment, presenting a threat to their health and safety and reducing their fear of humans.¹³⁵ Once near oil activities, there are numerous ways a condor can be harmed. One serious risk is that of a bird becoming oiled, which can result in death.¹³⁶ Further, ingesting toxic fluid mistaken for water from oil operations can cause great harm to condors.¹³⁷ An additional major threat from oil operations is the creation of microtrash, meaning small pieces of trash that condors will consume or feed to their young. This practice can result in the death of condor chicks.¹³⁸

The MND also ignores potential impacts to the San Joaquin kit fox, which could be present at the Project site.¹³⁹ Because these potential impacts are significant, the agency must prepare an EIR. Despite years of conservation efforts, kit fox populations and habitat continue to decline.¹⁴⁰ The loss of kit fox habitat due to oil and gas development remains a threat to the species.¹⁴¹ The U.S. Fish and Wildlife Service's recent 5-year review highlighted this, stating that the most significant effect of oil-field development appears to be lowered carrying capacity for populations of both kit fox and their prey species due to loss or fragmentation of habitat.¹⁴² However, despite the potential for the Project to harm kit foxes, DOGGR never provides an analysis of potential impacts. DOGGR should have discussed issues such as the potential for

¹³¹ U.S. General Accounting Office, National Wildlife Refuges: Opportunities to Improve the Management and Oversight of Oil and Gas Activities on Federal Lands (GAO-03-517) at 22 (2003).

¹³² Cohn, J. P., The Flight of the California Condor, *BioScience*. 43 (4): 206-209 (1993).

¹³³ U.S. Fish and Wildlife Service & U.S. Department of the Interior, Biological Opinion on the Proposal to Lease Oil and Gas Resources within the Boundaries of the Los Padres National Forest, California (February 23, 2005).

¹³⁴ Mee, Allan, Comments from Dr. Allan Mee on Environmental Assessment for two APDs near Sespe Condor Sanctuary and Hopper Mountain National Wildlife Refuge (June 5, 2007) ("Mee Two APDs"); see also Mee Conservation Problems at 269 ("one pair [of condors] that nested within 1 km of an active oil pad in 2004 may have been directly disturbed at the nest by extremely loud and constant noise from drilling over a period of 1-2 weeks").

¹³⁵ Meretsky 1992.

¹³⁶ Los Padres Forest Watch, Comments on Environmental Assessment for Two APDs Near Sespe Condor Sanctuary and Hopper Mountain National Wildlife Refuge at 5 (2007)

¹³⁷ Kirkpatrick, Lisa, Letter from Lisa Kirkpatrick, Conservation Services Division Dept of Fish and Game, to New Mexico Oil and Conservation Division, Environmental Bureau re OCD Rule "Pits and Below-Grade Tanks" NMAC 19.15.2.40; NMGF Project No. 11251 (Feb 2, 2007).

¹³⁸ *Id.*

¹³⁹ MND at 46.

¹⁴⁰ McDonald-Madden, Eve, et al., Subpopulation triage: How to allocate conservation effort among populations. *Conservation Biology* 22(3): 656-665 (2008).

¹⁴¹ U.S. Fish and Wildlife Service, Recovery Plan for the Upland Species of the San Joaquin Valley, California.130 (1998) ("USFWS Recovery Plan").

¹⁴² U.S. Fish and Wildlife Service, San Joaquin Kit Fox – 5 year review (2010).

vehicle strikes, exposure to toxic substances, and the elimination and fragmentation of habitat. Further, the agency's mitigation measures defer mitigation or are unenforceable.

See Response
to CBD VIIc

Additionally, the MND ignores significant potential impacts to the blunt-nosed leopard lizard. DOGGR must prepare an EIR analyzing these potential impacts. The blunt-nosed leopard lizard can occur on the Project site.¹⁴³ Affirmative steps are needed for the recovery of the blunt-nosed leopard lizard.¹⁴⁴ Oil and gas activities are a particularly large threat. Infrastructure degrades habitat and causes direct mortality.¹⁴⁵ Also harmful are oil leaks and the dumping of waste oil and highly saline wastewater into natural drainage systems.¹⁴⁶ DOGGR did not adequately address potential impacts to the blunt-nosed leopard lizard. In fact, the agency never actually analyzed potential impact, or mitigated impacts to the species. This does not satisfy CEQA's requirements.

See Response
to CBD VIId

Other imperiled species that could be on the Project site, but that DOGGR failed to analyze impacts to include: the San Joaquin antelope squirrel, the pallid bat, the giant kangaroo rat, the Tipton kangaroo rat, the American badger, the grasshopper sparrow, the burrowing owl, the round-leaved filaree, the Lemmon's jewelflower, the Tejon poppy, the Comanche Point layia, the Piute Mountains navarretia, the Robbin's nemacladus, the Bakersfield cactus, and the San Bernardino aster. DOGGR's failure to analyze the reasonably foreseeable impacts to these species violates CEQA. Also, because the potential impacts to these species are serious, DOGGR must prepare an EIR.

See Response
to CBD VIII

VIII. DOGGR Failed to Consider Significant Impacts to Seismicity

Scientists have long known that oil and gas activities are capable of triggering earthquakes, with records of the connection going back to the 1920s.¹⁴⁷ In California, oil and gas extraction has in the past likely induced strong earthquakes, including two over 6.0 in magnitude.¹⁴⁸

Here, if approved, the Project could induce seismic events. In particular, the Project will generate wastewater that will be disposed of at the Central Valley Waste Water LLC Class II Disposal Well, in the South Belridge Oil Field.¹⁴⁹ Recently, wastewater injection has increased around the country due to the fracking boom, and this increase has been accompanied by a startling increase in earthquake activity.¹⁵⁰ For instance, wastewater injection is likely to have

¹⁴³ MND at 47-48.

¹⁴⁴ U. S. Fish and Wildlife Service, Blunt-nosed leopard lizard – 5 year review (2010).

¹⁴⁵ USFWS Recovery Plan.

¹⁴⁶ *Id.*

¹⁴⁷ National Research Council, Induced Seismicity Potential in Energy Technologies (2012) ("NRC 2012") at 3; Grasso, J.-R., Mechanics of Seismic Instabilities Induced by the Recovery of Hydrocarbons, 139 PAGEOPH 507 (1992); Kerr, Richard, Learning How to NOT Make Your Own Earthquakes, 335 Science 1436 (March 23, 2012).

¹⁴⁸ NRC 2012 at 28.

¹⁴⁹ MND at 78.

¹⁵⁰ NRC 2012 at 3, 5; Ellsworth, William et al., Abstract: Are Seismicity Rate Changes in the Mid-continent Natural or Man-made? Seismological Society of America (2012); *see also* Van der Elst, Nicholas J., Enhanced Remote Earthquake Triggering at Fluid-Injection Sites in the Midwestern United States, 341 SCIENCE 164 (2013) ("areas with suspected anthropogenic earthquakes are also more susceptible to earthquake-triggering from natural transient stresses generated by the seismic waves of large remote earthquakes"); Kerr, Richard A., Some Earthquakes Warn

caused seismic events in Ohio,¹⁵¹ Oklahoma,¹⁵² and Texas.¹⁵³ This raises serious concerns that wastewater injection could cause a large earthquake in seismically-active California.¹⁵⁴

The MND completely ignores the risk of induced seismicity, even though the Project will involve the injection of wastewater into the ground and appears to involve drilling either very near or directly into the Pleito Trust Fault,¹⁵⁵ which is capable of producing an earthquake up to a magnitude of 7.3.¹⁵⁶ Due to the potential for the Project to trigger earthquakes and the devastation that could result from an earthquake, DOGGR must analyze the potential for induced seismicity in an EIR.

Conclusion

For the reasons stated above, DOGGR should not issue the MND, but should deny the permit. If DOGGR insists upon moving forward with the permit, it must prepare an EIR. If you have any questions, please contact David Hobstetter, (415) 632-5321, dhobstetter@biologicaldiversity.org.

Respectfully submitted,

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¹⁵² Keranen 2013.

¹⁵³ Frohlich, Cliff, Two-year survey comparing earthquake activity and injection-well locations in the Barnett Shale, Texas, Proceedings of the National Academy of Sciences (2012).

¹⁵⁴ See Mulkern, Anne C., Calif. drilling will trigger temblors -- industry expert, E&E News (Dec. 10, 2012).

¹⁵⁵ MND at 68, 78;

¹⁵⁶ Southern California Earthquake Data Center, Significant Earthquakes and Faults, Pleito Fault.

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**Sojitz Rancho Grande I Project
Response to the Center for Biological Diversity
Comment Letter dated July 12, 2013**

Response to Comment CBD II

The proposed wells are considered exploratory and were granted confidential status consistent with Public Resources Code section 3234 and 14 Cal Code of Regulations, § 1997.1, et seq. Page 3 of the ISMND describes the records maintained by the Division as confidential and the basis for the Division granting confidential status. Confidential status has no bearing on the scope or results of the environmental impact assessment. Material maintained in the Division's files as confidential includes records concerning the actual drilling, testing, completion and operation of a well.

Response to Comment CBD III

No enhanced oil recovery techniques including hydraulic fracturing are proposed or reasonably foreseeable at this time. Accordingly, the Division did not evaluate impacts associated with enhanced oil recovery techniques.

Response to Comment CBD IVa

The ISMND has adequately addressed both hazardous and non-hazardous wastes that would be generated as a result of the proposed project.

As stated in the ISMND, Sojitz anticipates that 25 barrels of oil and 2 barrels of production water would be produced daily from each well. All produced water would be transported offsite by truck for disposal at the Central Valley Waste Water LLC Class II Disposal Well, the separately permitted SWCC-1 well located in the South Belridge Oil Field.

The ISMND stated a reserve pit would be constructed unless shallow groundwater was encountered. However, Sojitz has decided to modify the proposed project to contain drilling mud and cuttings in above ground tanks in place of using a reserve pit.

The solids that accumulate in the tanks would be reused, if they are demonstrated to be nonhazardous. If any wastes test positive as a hazardous material, they would be disposed of at the North Star Energy's disposal site in Bakersfield, CA operated by Southern California Waste Water (SCWW), which has a permitted capacity of 5,000 barrels per day (data obtained from SCWW on May 25, 2012).

The ISMND addressed potential hazardous wastes that could be generated as a result of the proposed project. Hazardous wastes are stored according to applicable federal, state, and local regulations designed to protect people and the environment. Additionally hazardous wastes are to be disposed of at facilities permitted to dispose of such wastes.

With respect to concerns regarding well failure, the Division's well construction standards have the fundamental purpose to ensure zonal isolation. Zonal isolation means that oil and gas coming up a well from the productive, underground geologic zone will

not escape the well and migrate into other geologic zones, including zones that might contain freshwater. The estimated base of freshwater for the proposed wells range between 900 to 1,800 feet. Zonal isolation also means that fluids that are put down a well for any purpose will stay in the intended zone and not migrate to another zone. To achieve zonal isolation, Division regulations require that a cement barrier be placed between the well and surrounding geologic strata or stratum. The cement bonds to the surrounding rock and well casing and forms a barrier against fluid migration. Cement barriers are tested to ensure that they meet or exceed specified standards for strength and integrity. If these cement barriers do not meet the Division's well casing standards, the Division requires the oil or gas operator to remediate the cement barrier. Metal casings, which can be several layers thick depending on the depth of a well, also separate the fluids going up and down a well bore from the surrounding geology. If the integrity of a well is compromised by ground movement or other mechanisms, the well operator must remediate the well to ensure zonal isolation. Well casing standards are prescribed in Title 14 CCR, Division 2, Chapter 4, Subchapter 1, Article 3, and Sections 1722.2 through 1722.4.

Response to Comment CBD IVb

CBD questions references the Division relied on in finding the "base of freshwater" as being located between 900 and 1,800 feet and that the top of groundwater formation is at roughly 550 feet. The reference for the top of groundwater was provided by the California Department of Water Resources in the ISMND on page 3. The reference for the "base of freshwater" is *California Oil and Gas Fields, Volume 1 – Central California Report 1998*. Additionally, further information concerning the use and quality of ground water would have no bearing on impacts of the proposed project and thus would not change the results of the environmental assessment in the ISMND.

The ISMND states that implementation of the emergency response plan would reduce potential impacts to less-than-significant. Sojitz has decided to modify its project not to include the use of sumps.

Response to Comment CBD IVc

The ISMND addressed all water requirements associated with the proposed project. As stated in the ISMND water would be produced during production. However, no water would be required during the production phase. As stated in the ISMND, "water will be purchased from Tejon Ranch surface water entitlements." Because water used for the proposed project would be supplied from existing entitlements, there is no need to analyze effects of water withdrawal. If water used was to be secured from a new entitlement, analysis would be applicable.

Response to Comment CBD Va

CBD's reference to emissions from "oil and gas operations" extends beyond this project to include refining, distribution and final usage of the finished products. The scope of the proposed project is limited to drilling and testing eight (8) wells in order to determine whether sufficient quantities of oil and natural gas exists to complete the wells to produce

oil and natural gas. If sufficient reserves of oil and natural gas are found, then the wells would go into sustained production.

Drilling fluids used during the drilling process exert a greater hydrostatic pressure than the reservoir pressure. Accordingly there would not be a release of natural gas during the drilling process. As stated in the ISMND, sufficient weighted drilling fluid would be used to prevent any uncontrolled flow from each well and additional quantities of drilling fluid would be available at each site (Title 14, CCR section 1722.6). It should also be noted that Sojitz is drilling an oil well, not a natural gas well. The analysis included in the ISMND includes emissions of methane and nitrous oxides and their contribution to the overall GHG emissions.

Response to Comment CBD Vb

As stated in the previous response, the scope of the current proposed project is limited to the drilling and testing of eight (8) wells and possibly recovering the crude oil from these wells, if sufficient quantities of oil are discovered. Refining, distributing, or use of petroleum products is beyond the scope of the current project and related discussion of these processes or their impacts would be speculative. The CBD comment suggests that the specific ultimate use or disposition of the crude oil that the proposed project wells might produce is highly speculative given the incredibly diverse use and application for petroleum in the global economy. Assuming that crude oil is produced from this project, the specific use—and therefore specific foreseeable effects—of such production are unknown and unknowable. Indirect impacts of the kind anticipated in the CBD comment need be considered only if they are reasonably foreseeable. In addition, the activities identified in the CBD comment, and their impacts, are not merely speculative, but also causally and jurisdictionally remote from this specific project.

Response to Comment CBD Vc and Vd

CBD expresses concern regarding the proposed project's use of GHG gas credits to offset emissions. However, such use of credits lies at the heart of California AB 32's Cap-and-Trade Program for reducing GHGs in part through incentivizing innovation and rewarding efficiencies.

CBD also expresses concern regarding the application of SJVAPCD's best performance standards (BPS), which SJVAPCD adopted through a formal rulemaking process that was open to the public and approved by SJVAPCD's governing board. The specifics of CBD's concern with the BPS are not entirely clear. To the extent CBD takes issue with the BPS on their face, the time to have questioned or challenged those standards was within the SJVAPCD's rulemaking process and corresponding statute of limitations. To the extent CBD questions the proposed project's reliance on the BPS, Section 15064.4(a)(2) of the CEQA Guidelines specifically allows lead agencies to rely on a quantitative analysis or standards that are performance-based. Therefore, the proposed project's reliance on complying with SJVAPCD's BPS is a legally permissible and otherwise appropriate means to demonstrate that the project's GHG emissions would be less-than-significant.

Comment CBD Ve

Long-term (operation) emissions were evaluated from the head/pump unit for each of the eight (8) wells. While there is a possibility of gas releases during the production phase, fugitive emissions from well components such as, tanks, valves, flanges, pumps, etc. are subject to SJVAPCD's Rule 4409. This Rule requires regular inspection and maintenance of well components. The fugitive emissions rate is extremely low and therefore, is not a significant contributor to GHG impacts. Typical fugitive emission rates from equipment for VOCs are 0.00000005 kg/hour as noted in the EPA guidance for leak detection and repair. Available at:
<http://www.epa.gov/ttnchie1/efdocs/equipltks.pdf>

As mentioned in the response to comment CBD Vb, refining, distributing or using petroleum products is beyond the scope of the proposed project.

Response to Comment CBD VIa

Potential air quality impacts were evaluated using a two-step procedure. First, annual emission rates of NO_x, VOCs (ROG) and PM₁₀ were calculated for each phase of the proposed project. Next, annual emission rates were compared with thresholds of significance established by SJVAPCD.

Reliance on thresholds of significance to determine the significance of impacts is consistent with Section 21082 of CEQA providing such thresholds have been adopted through ordinance, rule, resolution, or regulation. The thresholds used to determine significance were adopted by the governing board of the SJVAPCD issued on August 20, 1998 and revised in June 1, 1999. As a result, use of quantitative thresholds of significance for evaluating significance is appropriate for the proposed project.

Response to Comment CBD VIb

The analysis presented in the ISMND confirms that higher NO_x and VOC emissions are associated with drilling as compared to site preparation, testing, or other phases. As demonstrated in the ISMND, project-related NO_x and VOC emissions are less-than-significant.

Response to Comment CBD VIc

The composition of VOCs was determined based on specification data for oil field fugitive emissions. The data were prepared by Prof. Albert C. Censullo, PhD at California Polytechnic State University, San Luis Obispo, CA in 1991, and are available at the SJVAPCD website.

The emissions of various VOCs were used to calculate potential risks to the public. The analysis, included in the updated air quality analysis, demonstrate that emissions of VOCs would not pose any significant health risk to the public.

Response to Comment CBD VI d

Emission rates of particulate from diesel combustion and fugitive emissions from site work were quantified (using the ROADWAY model) and compared with thresholds of

significance. In addition, the diesel particulate emissions were used to calculate risk scores using AB 2588 Air Toxics “Hot Spots” Information and Assessment Act of 1987 procedures. On the basis of this calculation, it was demonstrated that emissions of diesel particulate and fugitive VOC emissions would not lead to any significant risk to public health.

Response to Comment CBD VIe

See response to comments CBD Va and VIc.

Release of either hydrogen sulfide or methane will be prevented by the use of drilling fluids in the drilling process that will exert a greater hydrostatic pressure than the reservoir pressure. Accordingly there would be no release of natural gas (or associated gaseous substances) during the drilling process. As stated in the ISMND, sufficient weighted drilling fluid would be used to prevent any uncontrolled flow from each well and additional quantities of drilling fluid would be available at each site (Cal. Code Regs., tit. 14 §1722.6). Further, Sojitz is proposing to drill oil wells and not natural gas wells.

Response to Comment CBD VIf

The ISMND evaluated the project as proposed. Subsequently deviation from the project as proposed, either in the manner stated in the comment or otherwise, would require further consideration of potential impacts of such proposed deviation.

Response to Comment CBD VIg

See response to Comment CBD VIc and CBD VIId.

Response to Comment CBD VIh

Ozone is a secondary air pollutant formed in the atmosphere from NOx and VOC emissions in the presence of sunlight. Ozone is formed over a period of 4 to 6 hours and occurs over tens of kilometers.

Ozone would not be released from the proposed project. Furthermore, there are no reliable methods yet available for calculating the concentration of ozone as a result of NOx and VOC emissions from a given project. Instead of modeling ozone from a single source, the SJVAPCD has adopted a series of numerical thresholds for ozone precursors. These ozone precursor thresholds are discussed in terms of annual emission rates (tons/yr). Emissions above these thresholds are deemed to lead to significant ozone impacts.

The air quality analysis included in the ISMND presents annual emission rates of NOx and VOCs and demonstrates that the annual emission rates would be below the thresholds of significance set by the SJVAPCD. As a result, it is reasonable to conclude that the project would have a less-than-significant impact for criteria pollutants, which includes NOx and VOCs.

Response to Comment CBD VIi

As discussed in response to Comment CBD VIc and CBD VIId above, oil drilling/testing is not a significant source of VOC emissions. The mitigation measures suggested in the comment are typical for what is used at oil storage areas and at oil refineries rather than drilling and testing. As stated in the ISMND, the project is subject to SJVAPCD permit requirements, including satisfying the requirements of New Source Review and Rules 4311, 4624 and 4702, all aimed at reducing emissions of VOCs.

The main source of VOC emissions at the proposed project are fugitive emissions from leaking pumps, valves and flanges. The emission rate of fugitive emissions is extremely low and therefore, is not a significant contributor to GHG impacts. Typically, the emission rates of VOCs are 0.00000005 kg/hour as noted in the EPA guidance leak detection and repair. Available at: <http://www.epa.gov/ttnchie1/efdocs/equiplks.pdf>.

Response to Comment CBD VIj

The proposed project is subject to SJVAPCD enforcement of Regulation VIII – Fugitive PM10 Prohibitions. Mitigation measures and control measures are listed in Table 6-1 Mitigation Measures by Project Type, Table 6-2 Regulation VIII Control Measures for Construction Emissions of PM-10, and Table 6-3 Enhanced and Additional Control Measures for Construction Emissions of PM-10 (Guide for Assessing and Mitigating Air Quality Impacts, rev. 2002 pages 57, 65, and 66) (Accessible from website: <http://www.valleyair.org/transportation/CEQA%20Rules/GAMAQI%20Jan%202002%20Rev.pdf>.)

Response to Comment CBD VIk

Drilling operation related emissions depend on the size (HP) of the drill rig, the duration of drilling, and load factors. Collectively, these variables can result in NOx emissions that can vary by a factor of 2 or 3 between projects.

Response to Comment CBD VII

Sojitz has stated that hydraulic fracturing is not part of the proposed project. See response to comment CBD III.

Response to Comment CBD VII

The Division has considered project related impacts to threatened and endangered species. As stated in the ISMND, a biological assessment was prepared for the proposed project. Biological surveys were conducted on September 14 and 15, 2011, and botanical surveys were conducted on April 10 and 11, 2012 during the appropriate blooming periods for special-status plant species. Surveys were conducted in accordance with standard survey protocol established by regulatory agencies such as the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS). No special status plant or animal species were observed during biological or botanical surveys. The biological assessment and ISMND included mitigation measures intended to ensure potential impacts to special-status species and sensitive habitats are reduced to a less-than-significant level.

Response to Comment CBD VIIa

The Division acknowledges that 7.86 acres of foraging habitat would be impacted by the project. As stated in the Biological Assessment, California condors are opportunistic scavengers, feeding exclusively on the carcasses of dead animals. Typical foraging behavior includes long-distance reconnaissance flights, lengthy circling flights over a carcass, and hours of waiting at a roost or on the ground near a carcass. California condors travel up to 150 miles in a single day to forage for food. The proposed project sites are located near existing roadways, where human activities are already present. Existing human activity is likely to exclude this species from the proposed project sites—which may contribute to the reasons why no condors were observed during the biological field surveys.

The CBD states on page 19 of their letter: “In addition to destroying habitat, oil operations can directly harm or kill condors. Condors have been documented landing on oil pads and other production equipment, presenting a threat to their health and safety and reducing their fear of humans.” The CBD discusses a number of ways that this species can be affected, including being coated by oil and ingesting toxic fluids and microtrash. Mitigation measures intended to avoid or reduce these potential impacts to a less-than-significant level were included in the Biological Resources mitigation measures (Biological 11-13 and Biological 16-18) and in the Hazards and Hazardous Materials mitigation measures (Hazards 1, 3-5) of the ISMND.

The CBD also states that the proposed project has the potential to affect California condor nesting sites. The California condor typically nests in chaparral, conifer forest, or oak woodland communities. Historically, condors nest on bare ground in caves and crevices, behind rock slabs, or on large ledges or potholes on high sandstone cliffs in isolated, extremely steep, rugged areas. Cavities in giant sequoia (*Sequoiadendron giganteum*) and redwood (*Sequoia sempervirens*) have also been used for nesting. Nest sites are often surrounded by dense brush. No potential nesting habitat (cliffs at higher elevations or old growth forest) was observed during field surveys in the project vicinity. Therefore, there is no evidence that the proposed project would impact California condor nesting habitat.

Response to Comment CBD VIIIb

RAB Consulting conducted biological surveys of the proposed well site locations, the proposed access roads to Rancho Grande 1-16 and 1-22, and a buffer area of 250 feet around the proposed well sites and access roads for sensitive wildlife and special-status plant species, their habitats, and other sensitive habitats on September 14 and 15, 2011. These site visits included surveys for the San Joaquin kit fox and signs of their activity. An adequate amount of time was spent at the proposed project sites to determine the presence or absence of special-status species within the areas at the time of our surveys, and these surveys were conducted in accordance with standard survey protocol established by regulatory agencies such as the CDFW and the USFWS.

RAB Consulting conducted diurnal surveys for San Joaquin kit fox dens and their “sign.” Scats measuring 15 to 20 millimeter in diameter of appropriate canid shape are attributed to kit fox. No other vulpid is known to inhabit the project sites, and scats larger than 20 millimeter in diameter probably belong to coyote (*Canis latrans*) or domestic dog (*Canis familiaris*). Canid tracks up to 45 by 38 millimeter in size are attributed to kit fox. Tracks larger than this are probably attributable to coyote or domestic dog (Murie 1974).

RAB Consulting conducted surveys along transects spaced 30 to 50 feet apart following CDFW Approved Survey Methodologies for Sensitive Species (CDFG 1990) and by USFWS guidelines (USFWS 1989, 1995, 1999, and 2011).

The findings of biological surveys were discussed in the ISMND on pages 37-52, RAB Consulting observed no burrows that were of adequate size for potential use by San Joaquin kit foxes during our survey. No “active signs” (i.e., adult and puppy scat, prey remains, tracks, fur, etc.) of use by San Joaquin kit fox observed during surveys, and no individuals of this species were observed during surveys.

Even though no signs of this species were observed during biological surveys, mitigation measures from the USFWS Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance (2011) have been incorporated in the biological assessment and the ISMND mitigation measures (Biological 4a-4e). These protection measures have been successfully applied throughout California.

Response to Comment CBD VIIc

Biological surveys were conducted on September 14 and 15, 2011, and botanical surveys were conducted on April 10 and 11, 2012. These site visits included surveys for the blunt-nosed leopard lizards and signs of their activity. An adequate amount of time was spent at the proposed project sites to determine the presence or absence of special-status species within the areas at the time of our surveys, and these surveys were conducted in accordance with standard survey protocol established by regulatory agencies such as the CDFW and the USFWS. Emphasis was placed on the identification of small mammal burrows that may serve as refugia for this species.

We observed potential habitat for this species within annual grassland habitat in the proposed project sites and buffer areas during biological surveys. No burrows were observed within any of the proposed project sites. We evaluated the proposed project sites as being unsuitable in their current state for BNLLs, because of a lack of small mammal burrows. No burrows were observed within 50 feet of the proposed project sites; as such protocol surveys for this species are not required.

Response to Comment CBD VIIId

The San Joaquin antelope squirrel, pallid bat, giant kangaroo rat, Tipton kangaroo rat, American badger, grasshopper sparrow, burrowing owl, round-leaved filaree, Lemmon’s jewelflower, Tejon poppy, Comanche Point layia, Piute Mountains navarretia, Robbin’s nemacladus, Bakersfield Cactus, and San Bernardino aster were addressed in the

biological assessment and summarized in the Table 17 Special-Status Species Potentially Occurring in the Project Area and on pages 46-52 of the ISMND.

Response to Comment CBD VIII

The Division acknowledges that, as CBD states, “oil and gas activities are capable of triggering” seismic activity, whether or not that activity specifically rises to the level of “earthquakes.” However, induced seismicity is associated with activities that are not included in this specific project. The Division also acknowledges that an association exists between oil and gas production and seismic activity for the simple reason that the same geologic structures and activities that yield seismic activity at depth also contribute to the conditions in which commercially valuable petroleum reserves may form and accumulate at depths nearer to the surface. The fact that the two conditions frequently coincide does not suggest that the mere production of oil and gas “causes” earthquakes any more than that earthquakes cause oil and gas to be produced. The Division acknowledges that specific induced seismic events have been attributed to enhanced oil recovery techniques and water injection wells. However, as previously stated, enhanced oil recovery and water injection are not proposed as part of the project. For that reason, the ISMND need not and does not address potential impacts associated enhanced oil recovery and/or water injection.

Production water would be transported for disposal in the Central Valley Waste Water LLC Class II Disposal Well, the SWCC-1 located in the South Belridge Oil Field. This is a permitted disposal well separate from the proposed project and as such the ISMND is not required to analyze its activities.

The CBD cites the National Research Council, *Induced Seismicity Potential in Energy Technologies* (2012) as the source for the following statement; “In California, oil and gas extraction has in the past likely induced strong earthquakes, including two over 6.0 in magnitude.” CBD concludes that “if approved, the Project could induce seismic events.” However, the following is in the same paragraph that mentions the historic seismic events:

“Although seismic deformation (uplift) observed during such earthquakes has been suggested to have a correlation to removal of hydrocarbon mass (McGarr, 1991), well-documented and ongoing uplift and seismicity over the entire region, related to natural adjustments of the Earth’s crust, make it difficult to determine unequivocally if these were induced seismic events.” (Id., at p. 28.)

The NRC (2012) report contends that multiple factors are in play in the associative relationship between extraction/injection activities and seismic events rather than a simple direct causal relationship as asserted in the comment.

Central Valley Regional Water Quality Control Board

26 June 2013

Adele Lagomarsino
California Department of Conservation
Division of Oil, Gas, and Geothermal Resources
801 K Street, MS 20-20
Sacramento, CA 95814-3530

COMMENTS – INITIAL STUDY/MITIGATED NEGATIVE DECLARATION, RANCHO GRANDE PROJECT, PROPOSED OIL WELLS, KERN COUNTY [SCH # 2012061074]

On 12 June 2013, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) received the subject initial study from the Division of Oil, Gas, and Geothermal Resources. The document describes a proposal by Sojitz Energy Venture, Inc. to drill eight exploratory oil wells in Kern County over a three year period.

The proposed wells are to the south of the Tejon Oil Field and to the east and northeast of the Grapevine on Interstate 5 (Sections 3, 4, 9, 11, 15, and 22 in Township 10 North, Range 19 West, SBB&M). The proposed wells are on annual grassland owned by the Tejon Ranch Corporation. The project includes three phases: preparation of the drill sites, drilling and testing of the wells, and the completion and production of the wells.

The site preparation phase includes the excavation of an unlined “reserve pit” (sump) for storage of drilling fluids and cuttings. The temporary use and closure of the drilling sump would be in accordance with section 20090(g) of Title 27, California Code of Regulations, section 20005 et seq. and Central Valley Water Board Waiver Resolution No. R5-2008-0182 (Waiver).

Comments

1. The Waiver only authorizes the temporary discharge of drilling fluids and cuttings to a sump during well drilling and when displacing drilling fluids from a new well prior to production testing. The discharge of potassium chloride water and/or production test fluids, even with commingled residual drilling fluids, is not authorized by the Waiver after the drilling is completed. The discharge of fluid, other than fresh water, to a sump from surface flow lines after pressure testing for leaks is not authorized by the Waiver. The discharge of well stimulation fluids or flowback fluids to a sump is not authorized by the Waiver.
2. The Waiver expires on 4 December 2013 and may or may not be renewed, or may be modified for oil and gas well drilling fluids. After 4 December 2013, the proponent will need to contact the Central Valley Water Board prior to drilling to check on the status of the Waiver, and to inquire whether an additional form (i.e., Report of Waste Discharge) needs to be submitted.

If there are any questions, please contact Douglas Wachtell at dwachtell@waterboards.ca.gov or at (559) 445-5114.



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cc: Burton Ellison, California Division of Oil, Gas, and Geothermal Resources, Bakersfield
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Alan Rimel, Sojitz Energy Venture, Inc., Houston, TX

Sojitz Rancho Grande I Project
Response to Central Valley Regional Water Quality Control Board
Comment Letter dated June 26, 2013

Response to CVRWQCB Comment 1

The Division has provided a copy of CVRWQCB's comments to Sojitz. The Division appreciates the CVRWQCB's clarification of authorized fluids covered under the Waiver.

Response to CVRWQCB Comment 2

The Division and the applicant understand that the Waiver will expire on December 4, 2013. However, the applicant has decided to modify the project and not include the use of sumps.