

McDonald Anticline Project

Comment from Center for Biological Diversity August 14, 2014



CENTER *for* BIOLOGICAL DIVERSITY

August 14, 2013

Via Federal Express Overnight Mail

Adele Lagomarsino
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801 K Street, MS18-05
Sacramento, CA 95814-3530

Re: Comments on the Initial Study and Mitigated Negative Declaration for the McDonald Anticline Project

Dear Ms. Lagomarsino:

The Center for Biological Diversity (the “Center”) submits the following comments concerning the Initial Study and Proposed Mitigated Negative Declaration (“MND”) prepared by the California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (“DOGGR”) for the McDonald Anticline Project (“Project”) proposed by applicant E&B Natural Resources Management Corporation (“Applicant”). 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 625,000 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 the Project may affect.

The Applicant proposes to drill ten oil wells in the McDonald Anticline Oil Field. If the Applicant finds economical quantities of oil in a well, then it will install production equipment and produce oil from that well. The Project’s target formation is relatively shallow; the MND states that the depths of the oil wells will not exceed 1,400 feet.

We ask that DOGGR deny the Project application and use permit at issue. However, if DOGGR wishes to move forward with approval, it should prepare a full Environmental Impact Report (“EIR”) pursuant to the California Environmental Quality Act (“CEQA”), Public Resources Code § 21000 et seq., and the CEQA Guidelines, title 14, California Code of Regulations, § 15000 et seq. The Project could result in numerous significant environmental impacts. In particular, the MND fails to disclose, analyze, or propose measures to avoid or mitigate impacts resulting from the enhanced recovery techniques the Project may employ or to, among other things, water, the climate, air quality, threatened and endangered species, and

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seismicity. Because it is clear that the Project not only “may” have a significant impacts on the environment, but would certainly do so, DOGGR cannot lawfully approve the Project without preparing an Environmental Impact Report (“EIR”) addressing all of the Project’s potentially significant environmental impacts.

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 to support a fair argument that the proposed project may have a significant effect on the environment, 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).

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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 Must Consider the Methods the Operator Will Use to Produce Oil

While, the MND indicates that the depths of the Project's wells will range from 900 to 1,400 feet and that the Project will not involve hydraulic fracturing, it does not appear to specifically state what the target formation is or analyze what other enhanced oil recovery techniques the Applicant may employ.¹ The use of enhanced oil recovery techniques is becoming increasingly common, and in the absence of specific provisions in the conditions of approval for the Project barring the use of enhanced oil recovery techniques, DOGGR must assume that the Project will employ such techniques and analyze the potential impacts associated with the different practices. Among other enhanced oil recovery techniques, DOGGR must analyze potential impacts associated with fracking, cyclic steam injection, steam flooding, fracture acidizing, matrix acidizing, frac packing, enzyme enhanced recovery, and gas lifting.

Acidizing involves the injection of large amounts of acid – commonly hydrochloric acid – into the well. This acid 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.² Exposure to hydrochloric acid can be harmful. It is corrosive to the eyes, skin, and mucous membranes.³ It is also listed as a hazardous air pollutant under the Clean Air Act,⁴ and exposure to hydrochloric acid fumes can cause irritation of the respiratory system and pulmonary edema in humans.⁵ In addition, acid treatments, just like hydraulic fracturing, can contain other hazardous additives, including *inter alia* corrosion inhibitors, surfactants, solvents, iron control agents, and non-emulsifiers,⁶ creating the risk that these substances could escape into the environment.

Cyclic steam injection is also dangerous, with use of the technique associated with the creation of “large temperature variations and formation movements,” putting extreme pressure

¹ California Division of Oil, Gas, and Geothermal Resources, McDonald Anticline Project Initial Study and Mitigated Negative Declarations at 68 (July 12, 2013) (“MND”).

² Detrow, Scott, 4,700 Gallons Of Acid Spill At Bradford County Drilling Site (July 5, 2012), available at <http://stateimpact.npr.org/pennsylvania/2012/07/05/4700-gallons-of-acid-spill-at-bradford-county-drilling-site/>; see also Schlumberger, Glossary Search Results for Acidizing.

³ U.S. Environmental Protection Agency, Hydrochloric Acid (Hydrogen Chloride) (Jan. 2000) (“EPA Hydrochloric Acid”).

⁴ U.S. Environmental Protection Agency, The Clean Air Act Amendments of 1990 List of Hazardous Air Pollutants.

⁵ EPA Hydrochloric Acid.

⁶ Frenier, Wayne W. et al., Abstract: Effect of Acidizing Additives on Formation Permeability During Matrix Treatments, Society of Petroleum Engineers (Feb. 2002).

on the ground and well, and sometimes resulting in well failure or the migration of fluids and steam.⁷ In fact, the practice can deform the ground so much as to result in “surface expressions,” which is another way of saying that the steam, oil, gas, and whatever else might be mixed in underground have come bubbling to, or even exploding out of the surface of the ground.⁸ Such a surface expression formed in Kern County’s Midway-Sunset oil field as a result of cyclic steam injection and killed a Chevron worker who went to investigate steam coming from the surface expression.⁹ The worker fell into a sinkhole while approaching the plume of steam when the ground gave way.¹⁰ It is also important for DOGGR to analyze ahead of time whether the Project will employ steam injection because the process of creating the steam for injection is energy and water intensive and results in large amounts of air pollution emissions. Thus, such activities are necessary to a consideration of impacts to air and water quality and the climate.

Thus, the MND’s environmental analysis is inadequate because it fails to consider the techniques the Project will or may employ to produce oil. The impacts from unconventional techniques such as steam injection or matrix acidizing clearly may have a significant impact on the environment and therefore 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. This renders the MND deficient as an informational document. The MND must specify what will be authorized by the project approval, and what will not. For example, without a definition of what hydraulic fracturing is, the Project Applicant might later argue that other activities are 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). The MND and Project approval documents must provide clear and accurate information.

Also, although the MND states that the Project will not employ fracking, DOGGR does not indicate this will be a condition of approval.¹¹ Unless the Project approval is expressly conditioned upon a permanent prohibition on fracking, 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.¹² 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 over 1000 wells

⁷ See, e.g., Xie, Jueren, Analysis of Casing Deformations in Thermal Wells (2008) (“Xie 2008”); Kulakofsky, David, Achieving Long-Term Zonal Isolation in Heavy-Oil Steam Injection Wells, a Case History (2008) (“Kulakofsky”).

⁸ 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 (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”).

⁹ 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). (“Accident Report ES”); Accident Report at 2.

¹⁰ Accident Report at 2.

¹¹ MND at 1.

¹² 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).

have been fracked in California since January 2, 2011.¹³ 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,¹⁴ water supply,¹⁵ water quality,¹⁶ public health,¹⁷ and wildlife; and the risk of inducing earthquakes from the fracking itself and from the disposal of the fracking wastewater.¹⁸

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

The Project could 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 in large part because the waste these operations produce are highly hazardous. The Project could cause spills or discharges in numerous ways and as a result there is a high likelihood such occurrences would result in the release of 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.¹⁹ Produced water can contain harmful substances like benzene, arsenic, lead, hexavalent chromium, barium, chloride, sodium, sulfates, and boron.²⁰ It is well known that produced water contains substances that are toxic to marine life. For instance, in 1987, EPA acknowledged that polycyclic aromatic hydrocarbons ("PAHs") are a typical component of some produced waters, and that very low concentrations of PAHs are lethal to some forms of aquatic wildlife.²¹ Additionally, produced water can be radioactive.²² Produced water from the Marcellus Shale contains dangerous amounts of radium.²³

¹³ FracFocus, Home Search Page, www.fracfocus.org (last visited August 13, 2013).

¹⁴ Colborn, Theo et al., *Natural Gas Operations from a Public Health Perspective*, 17 *Human and Ecological Risk Assessment* 1047 (2011).

¹⁵ U.S. Government Accountability Office, *Information on Shale Resources, Development, and Environmental and Public Health Risks* GAO-12-732 (Sep. 2012).

¹⁶ Fontenot, Brian E. *et al.*, *An evaluation of water quality in private drinking water wells near natural gas extraction sites in the Barnett Shale Formation*, *Environmental Science & Technology* at 4 (2013).

¹⁷ McKenzie, Lisa et al., *Human Health Risk Assessment of Air Emissions from Development of Unconventional Natural Gas Resources*, *Sci Total Environ* (2012), doi:10.1016/j.scitotenv.2012.02.018

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

¹⁹ 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).

²⁰ *Id.* at 8.

²¹ *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)).

²² See E&ENews, *Proposed law would force drillers to test waste for radiation* (Feb. 14, 2013).

²³ White, Ivan E., *Consideration of radiation in hazardous waste produced from horizontal hydrofracking*, *National Council on Radiation Protection* (2012).

One study found levels of radium 226 as high as 267 times the limit safe for discharge into the environment and thousands of times the limit safe for people to drink.²⁴

Also, 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*,²⁵ and California operations produce a bit less than three billion barrels per year.²⁶ In fact, California wells produce almost fifteen times as much water as oil.²⁷

Drilling fluids and drill cuttings account for about two to four percent of oil and gas waste.²⁸ They include rock removed during drilling (cuttings) and water- or oil-based drilling fluids, also called drilling muds, which often contain additives.²⁹ 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.³⁰ 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, filtrater reducers, shale control inhibitors, thinners and dispersants, weighing materials, bentonite clay, and acrylamide.³¹

Associated wastes include, among other things, oily sludges, workover wastes, and well completion and abandonment wastes.³² 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.³³ For example, some associated wastes

²⁴ Davies, Peter J., Radioactivity: A Description of its Nature, Dangers, Presence in the Marcellus Shale and Recommendations by The Town Of Dryden to The New York State Department of Environmental Conservation for Handling and Disposal of such Radioactive Materials at 3, available at <http://www.tcgasmap.org/media/Radioactivity%20from%20Gas%20Drilling%20SGEIS%20Comments%20by%20Peter%20Davies.pdf>; Lustgarten, Abraham, Natural Gas Drilling Produces Radioactive Wastewater, ProPublica (Nov. 9, 2009).

²⁵ 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.

²⁶ California Division of Oil, Gas and Geothermal Resources, 2011 Preliminary Report of California Oil and Gas Production Statistics at 3 (Apr. 2012).

²⁷ *Id.*

²⁸ 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).

²⁹ *Id.*

³⁰ Mall at 10.

³¹ *Id.* at 10-11 (quoting Oil & Gas Accountability Project, Pit Pollution – Backgrounder on the Issues, with a New Mexico Case Study (2004)) (internal quotation marks omitted).

³² Mall at 11.

³³ *Id.*

have been found to potentially be ignitable and others can contain toxic heavy metals, such as lead.³⁴

Many of the substances identified in oil exploration waste are known carcinogens. The “most prevalent contaminants” found in exploration and production wastes are the BTEX chemicals: benzene, toluene, ethylbenzene, and xylene.³⁵ Exposure to benzene has been associated with increased incidence of leukemia and other serious health conditions; exposure to toluene can damage the nervous system; and xylenes can cause dizziness, headaches, and loss of balance.³⁶ Human exposure to radiation is also extremely dangerous. For instance, exposure to radium can result in an increase risk of bone, liver, and breast cancer.³⁷ Further, radiation contamination can cause health problems for many generations. Land contaminated by radium 226 can remain hazardous for a period covering up to 20,000 years.³⁸

These hazardous wastes from oil operations regularly contaminate the environment and can reach aquifers and surface waters.³⁹ Every year, thousands of spills of oil or other fluids are reported to the California Office of Spill Prevention and Response.⁴⁰ Surface pits in particular are a major hazard. For instance, New Mexico data shows 743 instances of groundwater contamination due to surface pits, almost entirely over the last three decades.⁴¹ Pits have resulted in numerous instances of contamination in Colorado as well.⁴² In one instance, an individual 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.⁴³ 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.⁴⁴

The injection of waste into disposal wells also can cause contamination of the environment. 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

³⁴ *Id.*

³⁵ *Id.* at 13.

³⁶ *Id.*

³⁷ *Id.* at 15.

³⁸ *Id.*

³⁹ Natural Resources Defense Council, 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 17 (Sep. 8, 2010) (“NRDC Petition for Rulemaking”).

⁴⁰ California Office of Spill Prevention and Response, California Spills Reported to OSPR, by Year (March 19, 2013).

⁴¹ New Mexico Oil and Conservation Division, OGAP Analysis of data provided in New Mexico Energy, Minerals and Natural Resources Dep’t, Oil and Conservation Div., Cases Where Pit Substances Contaminated New Mexico’s Ground Water (2008).

⁴² Mall at 18-19.

⁴³ Colorado Oil and Gas Conservation Commission, Cause No. 1V, Order No. 1V, Docket No. 1008-OV-06, available at http://cogcc.state.co.us/Hearings/Notices/2010/10_August/1008-OV-06.AOC.Notice.pdf.

⁴⁴ Mall at 19.

contaminated drinking water supplies.⁴⁵ The risk of contamination of drinking water is of particular concern today because U.S. EPA has found DOGGR's Class II underground injection well program to be insufficiently protective of groundwater resources.⁴⁶ In particular, 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.⁴⁷

Also, many other extremely harmful spills and releases occur before wastes can reach storage or disposal sites, including spills from equipment failures, accidents, negligence, or dumping.⁴⁸ There are numerous instances of such spills occurring across the country.⁴⁹ U.S. EPA has found that multiple spills have occurred in the San Ardo Oil Field over the last few years, including spills from leaking tanks, and a spill of 1,700 barrels of an unspecified fluid.⁵⁰

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.⁵¹ 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 threat to water resources. The Project site falls within the Tulare Lake-South Valley-Antelope Plain Watershed, which supports a variety of water uses including municipal and agricultural supply systems and recreation.⁵² The Project will be situated only 135 to 150 feet above a groundwater aquifer, and although the MND states that this water is not freshwater, that does not mean that the water is not otherwise useful or that the aquifer is unconnected to other aquifers.⁵³ Also, the Project will likely store drilling muds and cuttings in

⁴⁵ U.S. General Accounting Office, *Drinking Water: Safeguards are not Preventing Contamination from Injected Oil and Gas Wastes* (Jul. 1989), available at <http://www.gao.gov/assets/150/147952.pdf>; Mall at 25.

⁴⁶ Walker, James, *California Class II UIC Program Review* at 119 (Jun. 2011) (“Walker 2011”); *see also* U.S. Environmental Protection Agency, *Letter to California Division of Oil, Gas, and Geothermal Resources* (Jul. 18, 2011); Miller, Elena, *Letter from Elena Miller, State Oil and Gas Supervisor, to Fran Pavley, California State Senator* (Feb 16, 2011).

⁴⁷ Walker at 51, 155, 190

⁴⁸ California Dept. of Fish and Game, *Environmental Incident Report: Vintage Production California LLC Tar Creek Crude Oil and Produced Water Spills*, January 30, 2007 and February 6, 2007.

⁴⁹ Mall at 28-30.

⁵⁰ Walker 2011 at 107.

⁵¹ Brufatto, Claudio et al., *From Mud to Cement – Building Gas Wells* (2003).

⁵² MND at 86.

⁵³ *Id.*

an unlined sump, and will generate produced water, although it remains unclear how the Project will store the produced water before it is trucked off site for disposal.⁵⁴

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 ignores this, instead determining that state and federal standards somehow make the hazardous nature of the waste streams irrelevant.⁵⁵ In addition to failing to comply with CEQA, this is unwise. Recently, the Central Valley Regional Water Quality Control Board (“CVRWQCB”) began an investigation into Vintage Production California’s apparently unpermitted discharge of fracking related fluid into an unlined pit near the City of Shafter lying a short distance above an aquifer.⁵⁶ In a letter to Vintage, the CVRWQCB stated that “[t]he discharge of wastewater to an unlined sump could have water quality impacts, or may threaten waters of the State.”⁵⁷ The use of an unlined pit as part of the Project here could raise similar risks, which CEQA does not allow DOGGR to ignore. DOGGR must consider fully the types of waste that may be produced, and the characteristics and potential environmental impacts of those wastes streams.

Also, DOGGR’s statement that the Project will comply with the requirements of the CVRWQCB and the CVRWQCB’s Resolution No. R5-2008-0182 (“Resolution”) does not excuse the agency from analyzing the potential impacts to water. 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.⁵⁸ However, the Project would not qualify for a waiver under the resolution. As DOGGR acknowledges, several factors can prevent a project from qualifying, including if operations are conducted in contaminated soil.⁵⁹ Here, there is a significant probability that the earth drilled into will be contaminated because the target is a shale formation, and shale formations and drill cuttings coming from such formations can contain radioactive materials.⁶⁰ 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.⁶¹

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 muds and boring waste are safe. Instead, the Resolution indicates that these wastes can pose a

⁵⁴ MND at 74,80.

⁵⁵ *Id.* at 85-88.

⁵⁶ Letter from Pamela C. Creedon, Executive Officer, Central Valley Regional Water Control District to Alan E. White, President and General Manager, Vintage Production California LLC, Re CALIFORNIA WATER CODE DIRECTIVE PURSUANT TO SECTION 13267.

⁵⁷ *Id.*

⁵⁸ MND at 86.

⁵⁹ 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”).

⁶⁰ U.S. GAO, Information on Shale Resources; McMahon, Jeff, Fracking Truck Sets Off Radiation Alarm At Landfill, *Forbes* (April 24 2013), available at <http://www.forbes.com/sites/jeffmcmahon/2013/04/24/fracking-truck-sets-off-radiation-alarm-at-landfill/>.

⁶¹ CVRWQCB Resolution at 2.

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.⁶² 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.

See Response to
CBD IIIc

c. DOGGR Failed to Consider the Effects of Water Withdrawals

The MND states that the drilling stage for each well will require about 21,000 gallons of water.⁶³ However, the MND does not indicate how much water other stages of the Project will consume, even though other stages of the Project could consume large amounts of water; for instance, if steam injection is employed to enhance production, the Project will need much more water to make the steam. In addition, it appears the MND does not reveal where the Applicant intends to obtain the water, and thus, it is nearly impossible to determine what the effects of the water withdrawals will be. DOGGR's failure to consider these issues sufficient violates CEQA.

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

See Response to
CBD IVa

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.⁶⁴ 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 over a 100 year time frame and 105 times that of carbon dioxide over a 20 year time frame.⁶⁵

Oil and gas operations release large amounts of methane.⁶⁶ 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."⁶⁷ In some fields, methane

⁶² CVRWQCB Resolution at 9.

⁶³ MND at 4

⁶⁴ 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); Power, Thomas, *The Local Impacts of Natural Gas Development in Valle Vidal, New Mexico*, University of Montana (2005).

⁶⁵ Howarth, Robert, et al., Methane and the greenhouse-gas footprint of natural gas from shale formations, *Climatic Change*, doi 10.1007/s10584-011-0061-5 (Mar. 31, 2011) ("Howarth 2011"); Shindell, Drew, *Improved Attribution of Climate Forcing to Emissions*, 326 *Science* 716 (2009) ("Shindell 2009")

⁶⁶ Natural Resources Defense Council, *Leaking Profits* (2012) ("NRDC, Leaking Profits").

⁶⁷ 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"); *see also* Petron, Gabrielle, et al., *Hydrocarbon emissions characterization in the Colorado Front Range: A pilot study*, 117 *Journal of Geophysical Research* (2012).

emissions rates are startlingly high. One recent of a field in Uintah County, Utah, found huge amounts of produced natural gas – perhaps as much as 11.7 percent – leaking into the atmosphere.⁶⁸ Another study found methane emissions in an area of northeastern Colorado “corresponding to between 2.3% and 7.7% of the annual production being lost to the atmosphere through venting”⁶⁹ Moreover, a study of methane emissions in Los Angeles County found a striking 17 percent of total produced methane for the year had been leaked to the atmosphere.⁷⁰ For the oil industry, emissions result “primarily from field production operations . . . , oil storage tanks, and production-related equipment”⁷¹ Emissions are released as planned, during normal operations and unexpectedly due to leaks and system upsets.⁷² Significant sources of emissions include well venting and flaring.⁷³

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,⁷⁴ which is an important contributor to climate change.⁷⁵ Further, oil operations result in significant carbon dioxide emissions from the combustion of fossil fuels through the operation of engines or through flaring.⁷⁶

Also, the refining and burning of any oil that the Project produces will generate greenhouse gas emissions. For instance, the MND estimates that each well will produce 15 barrels of oil per day, or 54,750 barrels per year. According to the U.S. Environmental Protection Agency, combusting a barrel of oil results in the emission of 0.43 metric tons of carbon dioxide equivalent⁷⁷. Thus, the combustion of the Project’s produced oil could result in the emission of about 23,543 metric tons of carbon dioxide equivalent per year.

DOGGR’s brief review of the impacts of the Project’s greenhouse gas emissions falls far short of the requirements of CEQA. The agency appears to restrict its analysis to combustion emissions and ignores fugitive emissions, such as natural gas leakage.⁷⁸ However, as described above, it is undeniable that oil and gas operations result in substantial fugitive emissions of methane and other greenhouse gases. Further, the MND ignores the Project’s overall potential impact on the climate by refusing to consider the refining or the combustion of the oil the Project

⁶⁸ See, e.g., Karion, Anna *et al.*, Methane emissions estimate from airborne measurements over a western United States natural gas field, doi: 10.1002/grl.50811 (2013).

⁶⁹ Petron 2012.

⁷⁰ Peischl, J. *et al.*, Quantifying sources of methane using light alkanes in the Los Angeles basin, California (2013).

⁷¹ Megan Williams & Cindy Copeland, Earthjustice, Methane Controls for the Oil and Gas Production Sector (2010) at 6 (“Williams & Copeland”).

⁷² *Id.*

⁷³ USEPA, Basic Information.

⁷⁴ Earthworks, Oil and Gas Air Pollution Factsheet (2006), available at http://www.earthworksaction.org/library/detail/oil_and_gas_pollution_fact_sheet/.

⁷⁵ Shindell 2009

⁷⁶ Zahniser, Angela, Characterization of Greenhouse Gas Emissions Involved in Oil and Gas Exploration and Production Operations (2007).

⁷⁷ U.S. Environmental Protection Agency, Green Power Equivalency Calculator Methodologies (2013), <http://www.epa.gov/greenpower/pubs/calcmeth.htm>

⁷⁸ MND at 76-78.

See Response to
CBD IVd

might produce.⁷⁹ Additionally, DOGGR appears to argue that because the Project will comply with California's cap and trade program, the Project's greenhouse gas emissions cannot be significant.⁸⁰ DOGGR's reliance on the California cap and trade program violates the CEQA. Compliance with a regulation or rule does not automatically mean an impact is less than significant. *Californians for Alternatives to Toxics v. Department of Food & Agriculture*, 136 Cal. App. 4th 1 (Cal. App. 1st Dist. 2005). CEQA requires that DOGGR actually consider the Project's emissions and their effects on the environment. DOGGR's reliance on the cap and trade program is also unlawful because it is unclear that all of the emissions from the Project will be subject to the cap and trade program.

See Response to
CBD IVe

The MND's analysis is clearly insufficient. DOGGR must consider all reasonably foreseeable greenhouse gas emissions that could result from the Project, including methane emissions due to leakage or venting, emission due to electricity used by the Project, emissions from the refining and combustion of the oil potentially produced, and emissions from flaring.

Taken as a whole, the Project's emissions are clearly significant and require the preparation of 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.

V. DOGGR Fails to Consider Significant Impacts to Air Quality

See Response to
CBD Va

Oil and gas operations emit numerous air pollutants, including VOCs, NO_x, particulate matter, hydrogen sulfide, and methane. This is of particular concern here because the Project site is within an area that is listed as non-attainment for particulate matter and ozone standards.⁸¹ However, while DOGGR provides some mitigation measures for particulate matter emissions, the MND fails to analyze sufficiently potential impacts to air quality. In particular, DOGGR fails to consider potential impacts to ozone levels, and completely ignores potential VOC emissions.

See Response to
CBD Vb

Oil and gas operations emit large amounts of VOCs, NO_x, and non-methane hydrocarbons ("NMHCs"). Both VOCs and NO_x are ozone precursors, and thus, due to emissions of these pollutants, many regions around the country with substantial oil and gas operations are now suffering from extreme ozone levels.⁸² NMHCs are also known ozone precursors.⁸³ The primary sources of NO_x are engines used in drilling and flaring.⁸⁴

⁷⁹ *Id.*

⁸⁰ *Id.* at 78.

⁸¹ U.S. Environmental Protection Agency, Currently Designated Nonattainment Areas for All Criteria Pollutants (Dec. 14, 2012), available at <http://www.epa.gov/oaqps001/greenbk/anc1.html>.

⁸² Armendariz, AI, 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); Craft, Elena, Environmental Defense Fund, *Do Shale Gas*

See Response to
CBD Vc

VOC emissions, which make up about 3.5 percent of the gases emitted by oil or gas operations,⁸⁵ are particularly hazardous.⁸⁶ VOCs emissions include the BTEX compounds – benzene, toluene, ethyl benzene, and xylene – which are Hazardous Air Pollutants.⁸⁷ 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.”⁸⁸ 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.⁸⁹ 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.⁹⁰ Also, a recent study sampling air quality near Colorado gas wells found additional cause for concern regarding VOC emissions: among other things, it found methylene chloride in high concentrations.⁹¹ The study states that for the wells tested “[m]ethylene chloride, a toxic solvent not reported in products used in drilling or hydraulic fracturing, was detected 73% of the time; several times in high concentrations,” including one reading of 1730 ppbv.⁹² While the source of the methylene chloride was not entirely clear, the study reported that it is stored on well pads for cleaning purposes.

See Response to
CBD Vd

In addition, the study of Colorado gas wells also found high levels of multiple NMHCs, which can be associated with multiple health effects, including potentially effects to the endocrine system at very low concentrations.⁹³ NMHCs generally make up almost 18 percent of produced natural gas, and operations ultimately emit large amounts of these pollutants. Moreover, like VOCs and NO_x, NMHCs are ozone precursors.

See Response to
CBD Ve

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.⁹⁴ The particulate matter emitted by diesel engines is a particularly harmful.⁹⁵ Vehicles

Activities Play a Role in Rising Ozone Levels? (2012); Streater, Scott, Air Quality Concerns May Dictate Uintah Basin's Natural Gas Drilling Future, N.Y. Times, (Oct. 1, 2010); Colorado Dept. of Public Health and Environment, Conservation Commission, Colorado Weekly and Monthly Oil and Gas Statistics (July 6, 2012) at 12; Four Corners Air Quality Group, Four Corners Air Quality Task Force Report – Report of Mitigation Options (2007) at vii.

⁸³ Colborn, Theo, *et al.*, An Exploratory Study of Air Quality near Natural Gas Operations (2012) (“Colborn 2012”).

⁸⁴ 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.

⁸⁵ Brown Memo at 3.

⁸⁶ McKenzie 2012; Food & Water Watch, The Case for a Ban on Fracking (2012).

⁸⁷ 42 U.S.C. § 7412(b).

⁸⁸ McKenzie 2012 at 2.

⁸⁹ *Id.*

⁹⁰ Colborn 2011.

⁹¹ Colborn 2012.

⁹² *Id.*

⁹³ Colborn 2012.

⁹⁴ Earthworks, Sources of Oil and Gas Pollution (2011),

http://www.earthworksaction.org/issues/detail/sources_of_oil_and_gas_air_pollution (last visited Feb 19, 2013).

⁹⁵ Bay Area Air Quality Management District, Particulate Matter Overview, Particulate Matter and Human Health (2012).

also kick up fugitive dust, which is particulate matter, by traveling on unpaved roads.⁹⁶ Further, both NO_x and VOCs, which are heavily emitted by the oil and gas industry, are particulate matter precursors.⁹⁷ Some of the health effects associated with particulate matter exposure are “premature mortality, increased hospital admissions and emergency department visits, and development of chronic respiratory disease.”⁹⁸

See Response to
CBD Vf

Oil and gas operations can also emit hydrogen sulfide. The hydrogen sulfide is contained in the natural gas and makes that gas “sour.”⁹⁹ 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 as areas where natural gas tends to contain hydrogen sulfide.¹⁰⁰ Long-term exposure to hydrogen sulfide is linked to respiratory infections, eye, nose, and throat irritation, breathlessness, nausea, dizziness, confusion, and headaches.¹⁰¹

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.¹⁰² 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”¹⁰³

DOGGR fails to consider most of these issues. The agency refuses to consider the actual *impacts* of the Project’s potential emissions on air quality and provides no analysis of potential impacts on ozone concentrations. Instead, DOGGR estimates how much pollution the operations will emit;¹⁰⁴ however, even these calculations are arbitrary and inadequate because the agency fails to consider all sources of emissions and relies on assumptions that understate the impacts to air quality. For instance, DOGGR considers only diesel combustion when analyzing the impacts of toxic air contaminants,¹⁰⁵ and therefore completely ignores VOC emissions from the considerable amount of natural gas that the Project could emit. Furthermore, the analysis ignores potential emissions of methylene chloride, even though as noted above high concentrations of the pollutant have been found in air samples near wells. If DOGGR does not prohibit the use of

⁹⁶ 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”)

⁹⁷ EPA RIA at 2-2.

⁹⁸ 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).

⁹⁹ Sierra Club, Comments on New Source Performance Standards: Oil and Natural Gas Sector: Review and Proposed Rule for Subpart 0000, Docket No. EPA-HQ-2010-0505 (Nov 30, 2011).

¹⁰⁰ 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”).

¹⁰¹ *Id.* at i.

¹⁰² 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”).

¹⁰³ Fiore, Arlene et al., Linking ozone pollution and climate change: The case for controlling methane, 29 *Geophys. Res Letters* 19 (2002); *see also* Martin, Randal et al., Final Report: Uinta Basin Winter Ozone and Air Quality Study Dec 2010 - March 2011 (2011) at 7.

¹⁰⁴ MND at 25-36.

¹⁰⁵ MND at 34.

methylene chloride as part of the Project, it must analyze the potential impacts of methylene chloride emissions. It should perform a similar analysis for other chemicals that may be used at the Project site for cleaning purposes. Lastly, DOGGR's analysis relies on relatively limited usage of equipment, even though the permits will not restrict use to these levels.¹⁰⁶ This analysis does not satisfy CEQA's requirements. DOGGR must, at minimum, consider all sources of emissions and the Project's potential impact on air quality.¹⁰⁷

See Response to
CBD Vg

Further, even though the area is not in compliance with state ozone standards, DOGGR never considers ways to mitigate impacts on ozone concentrations. There are numerous ways that oil exploration operations can mitigate emissions of ozone precursors, such as by limiting VOC and methane emissions.¹⁰⁸ 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.¹⁰⁹ DOGGR must consider such mitigation measures.

See Response to
CBD Vh

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.¹¹⁰

See Response to
CBD Vi

In addition, 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 must be disclosed and analyzed. Air pollution from fracking is highly hazardous.¹¹¹ 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.¹¹² 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.¹¹³ Further, these proppants often include silica sand, which increases the risk of lung

See Response to
CBD Vj

¹⁰⁶ Compare MND at 28-31 with Silva, Lisa & Rose Waldman, Oil & Gas - Related Vehicle Traffic and Emissions Inventories at 9 (Oct. 31, 2011), available at <http://www.epa.gov/region8/air/rmcde/pdf/OilandGasVehicleEmissionInventories.pdf>.

¹⁰⁷ Additionally, DOGGR's analysis of air pollution emissions from the Project appears to be inconsistent with its analysis of air pollution emissions for the Patricia McKellar et al No. 2 Exploratory Oil and Gas Well Project. For example, for the McKellar project, DOGGR estimates the drilling phase for a single well will result in 5.5 metric tons per year of NO_x emissions, but for the McDonald Anticline Oil Project it estimates only 0.4 metric tons per year of NO_x emissions. Compare MND at 31 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). At minimum, DOGGR must explain this substantial difference in emissions.

¹⁰⁸ See Williams & Copeland; NRDC, Leaking Profits.

¹⁰⁹ Leaking Profits at 5-7.

¹¹⁰ MND at 36.

¹¹¹ Colborn 2011.

¹¹² South Coast Air Quality Management District, Revised Draft Staff Report PR1148-2 (2013) at 15.

¹¹³ *Id.*

disease and silicosis when inhaled.¹¹⁴ 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.¹¹⁵ These and all other air quality impacts must be addressed. Because of their significance, and EIR is the proper tool for this analysis.

VI. DOGGR Fails to Consider Significant Impacts to Threatened and Endangered Species

The MND does not provide a sufficient analysis of potential impacts to threatened and endangered species. The failure to include an analysis of impacts violates CEQA.

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.¹¹⁶ 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.¹¹⁷ 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.¹¹⁸

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 food sources.¹¹⁹ 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.¹²⁰ 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.¹²¹ 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.¹²²

¹¹⁴ South Coast Air Quality Management District, Submission to Joint Senate Hearing (2013) at 3.

¹¹⁵ SCAQMD Revised Draft Staff Report PR1148-2 at 15.

¹¹⁶ U.S. Fish and Wildlife Service, California Condor Recovery Program Overview Page (May 31, 2013).

¹¹⁷ Meretsky, Vicky J. et al., Demography of the California Condor: Implication for Reestablishment, *Conservation Biology* 14(4): 957-967 (2000).

¹¹⁸ California Department of Justice, Comments on Oil and Gas Leasing Proposal for the Los Padres National Forest. (April 19, 2002).

¹¹⁹ 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).

¹²⁰ Cohn, J. P., The Flight of the California Condor, *BioScience*. 43 (4): 206-209 (1993).

¹²¹ 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).

¹²² 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, A., J. A. Hamber, and J. Sinclair. "California Condors in the 21st Century - conservation problems and solutions." *California Condors in the 21st Century*. 243-279 (2007) at 269 ("one pair [of condors] that nested within 1 km of an

Moreover, 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.¹²³ 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.¹²⁴ Further, ingesting toxic fluid mistaken for water from oil operations can cause great harm to condors.¹²⁵ 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.¹²⁶ DOGGR never analyzed potential impacts to the California condor, and because the potential impacts to the condor are significant, it must prepare an EIR.

See Response to
CBD VIb

The Project could have a significant impact on the kit fox. Despite years of conservation efforts, kit fox populations and habitat continue to decline.¹²⁷ The loss of kit fox habitat due to oil and gas development remains a threat to the species.¹²⁸ 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.¹²⁹ Further, historical records show that kit foxes have lived in the area.¹³⁰ However, DOGGR never provides an analysis of potential impacts. DOGGR should have discussed issues such as the potential for vehicle strikes, exposure to toxic substances, and the elimination and fragmentation of habitat. Moreover, because the potential impacts to the kit fox are significant, DOGGR must prepare an EIR.

See Response to
CBD VIc

The Project could have a significant impact on the San Joaquin antelope squirrel. "Historically, the San Joaquin antelope squirrel ranged from northwestern Merced and eastern San Benito counties south to the northern border of Santa Barbara County."¹³¹ Distributional records for the species show that it has been noted in both San Benito and Fresno counties.¹³² Today, one of the biggest threats to the survival of the species is the loss of habitat due to petroleum activities.¹³³ DOGGR has violated CEQA by failing to analyze the potential impacts to the San Joaquin antelope squirrel and by failing to prepare an EIR analyzing such impacts.

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").

¹²³ Meretsky, Vicky and Noel Snyder, Range Use and Movements of California Condors, 94 *The Condor* 2 (1992).

¹²⁴ Los Padres Forest Watch, Comments on Environmental Assessment for Two APDs Near Sespe Condor Sanctuary and Hopper Mountain National Wildlife Refuge at 5 (2007)

¹²⁵ 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).

¹²⁶ *Id.*

¹²⁷ McDonald-Madden, Eve, et al., Subpopulation triage: How to allocate conservation effort among populations. *Conservation Biology* 22(3): 656-665 (2008).

¹²⁸ U.S. Fish and Wildlife Service, Recovery Plan for the Upland Species of the San Joaquin Valley, California.130 (1998) ("USFWS Recovery Plan").

¹²⁹ U.S. Fish and Wildlife Service, San Joaquin Kit Fox – 5 year review (2010).

¹³⁰ MND at 33-34.

¹³¹ CSU Stanislaus Endangered Species Recovery Program, Recovery Plan for Upland Species of the San Joaquin Valley, California Species Accounts: San Joaquin Antelope Squirrel (2006), ("CSU Antelope Squirrel").

¹³² *Id.*

¹³³ *Id.*

See Response to
CBD VI d

The Project could also result in significant impacts to the blunt-nosed leopard lizard. This endangered species has been under state and federal endangered species act protections for over 40 years; it is a fully protected species under California law and cannot be taken. U.S. Fish and Wildlife Service's recent five-year review for the species recognizes the need for affirmative steps to be taken for the recovery of the blunt-nosed leopard lizard.¹³⁴ Oil and gas activities threaten the recovery of the species, and affirmative steps must be taken to prevent these activities from causing further harm. As FWS has noted: "Construction of facilities related to oil and natural gas production, such as well pads, wells, storage tanks, sumps, pipelines, and their associated service roads degrade habitat and cause direct mortality to leopard lizards, as do leakage of oil from pumps and transport pipes and storage facilities . . . [d]umping of waste oil and highly saline wastewater into natural drainage systems also degrades habitat and causes direct mortality."¹³⁵ DOGGR has violated CEQA by failing to analyze such potential impacts to the blunt-nosed leopard lizard and by failing to prepare an EIR analyzing such impacts.

See Response to
CBD VI e

In addition, the Project could result in significant impacts to the San Joaquin woollythreads, which has been documented only a short distance from the Project site.¹³⁶ The San Joaquin woollythreads is a federally endangered species and is a California Rare Plant Rank 1B. DOGGR has violated CEQA by failing to analyze potential impacts to the species and by failing to prepare an EIR analyzing such impacts.

See Response to
CBD VI f

Additionally, DOGGR's mitigation measures 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 mitigation measures do not designate an individual as responsible for enforcement of the mitigation measures.

See Response to
CBD VII

VII. DOGGR Fails 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.¹³⁷ In California, oil and gas extraction has in the past likely induced strong earthquakes, including two over 6.0 in magnitude.¹³⁸

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,¹³⁹ and such wastewater injection is associated with earthquakes.¹⁴⁰ Recently, wastewater injection has increased around the country, and this increase has been accompanied

¹³⁴ U. S. Fish and Wildlife Service, Blunt-nosed leopard lizard – 5 year review (2010), *available at* http://www.fws.gov/ecos/ajax/docs/five_year_review/doc3209.pdf

¹³⁵ USFWS Recovery Plan.

¹³⁶ MND at 18.

¹³⁷ National Research Council, *Induced Seismicity Potential in Energy Technologies* (2012) ("NRC 2012") at 3.

¹³⁸ NRC 2012 at 28.

¹³⁹ MND at 81.

¹⁴⁰ van der Elst, Nicholas J. *et al.*, Enhanced Remote Earthquake Triggering at Fluid-Injection Sites in the Midwestern United States, 341 *SCIENCE* 164 (2013).

by a startling rise in earthquake activity.¹⁴¹ For instance, wastewater injection is likely to have caused seismic events in Ohio,¹⁴² Oklahoma,¹⁴³ and Texas.¹⁴⁴ This raises serious concerns for seismically active California.¹⁴⁵

The MND completely ignores this risk. 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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Encl:

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¹⁴² Ohio Department of Natural Resources, Executive Summary: Preliminary Report on the Northstar 1 Class II Injection Well and the Seismic Events in the Youngstown, Ohio, Area (2012) ("Ohio DNR Northstar"); Fountain, Henry, *Disposal Halted at Well After New Quake in Ohio*, New York Times (January 1, 2012).

¹⁴³ Keranen 2013; Holland, Austin, Examination of possibly induced seismicity from hydraulic fracturing in the Eola Field, Garvin County, Oklahoma, Oklahoma Geological Survey Open-File Report OF1-2011 (2011) ("Holland").

¹⁴⁴ 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).

¹⁴⁵ See Mulkern, Anne C., Calif. drilling will trigger temblors -- industry expert, E&E News (Dec. 10, 2012).

Attachment 1

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**E&B Natural Resources Management Corporation
McDonald Anticline Project
Response to the Center for Biological Diversity
Comment Letter dated August 14, 2013**

Response to Comment CBD II

No enhanced oil recovery techniques including hydraulic fracturing are proposed nor are they reasonably foreseeable at this time. Accordingly, the Division did not consider impacts associated with enhanced oil recovery techniques. The proposed wells will be drilled to target the McDonald shale formation at a depth of 1,400 feet.

Response to Comment CBD IIIa

The Division 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, E&B anticipates 15 barrels of oil and 15 barrels of production water will be produced daily from each well. More importantly—and to the point of the present discussion, and as stated in the ISMND, all produced water in whatever amounts will be transported offsite from the existing E&B Production Facility by truck for disposal at the Central Valley Waste Water LLC Class II Disposal Well, the SWCC-1 well located in the South Belridge Oil Field.

As stated in the ISMND, unless shallow ground water is encountered, a reserve pit will be excavated during site preparation for the temporary storage and handling of drilling mud and cuttings during the drilling process within the boundaries of each proposed project site. The use of reserve pits is regulated by the Central Valley Regional Water Quality Control Board (CVRWQCB) in accordance with section 20090(g) of Title 27, CCR, section 2205 et. seq. and CVRWQCB Waiver Resolution No. R5-2008-0182. The waiver expires 4 December 2013. Prior to drilling, E&B will contact the CVRWQCB to inquire on the status of the waiver and any new and/or additional requirements.

The ISMND addressed potential hazardous wastes that could be generated as a result of the project. Hazardous wastes would be handled and 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 fresh water. The estimated base of freshwater for the proposed wells is 5,500 feet. Zonal isolation also means that the fluids that are put down a well for any purpose will stay in that 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 standards, the Division requires the oil or gas operator to remediate the cement barrier. Metal casings, which can be several layers 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, Sections 1722.2 through – 1722.4.

Response to Comment CBD IIIb

It is unclear the basis for CBD's comment (CBD IIIb paragraph 3 line 6) that '...the Project would not qualify for a waiver under the resolution.' The proposed project's use of reserve pits/sumps to temporarily store drilling mud during drilling does meet with categories listed in CVRWQCB's Waiver Resolution No R5-2008-0182.

Produced water will be stored temporary in existing tanks located at the existing E&B Production Facility. The ISMND text will be clarified with the following in the project description:

In the production phase, oil and production water from each well would be transported together to the existing E&B Production Facility through a combination of existing and proposed flowlines. Oil and produced water would be separated at the existing production facility, stored in existing tanks at the production facility, and separately trucked offsite.

CBD takes issue with the ISMND statements that "The project will comply with all requirements established by the CVRWQCB." and "CVRWQCB Waiver Resolution No. R5-2008-0182 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)." CBD claims there is a "significant probability" that the drilling operations will be in contaminated soil because "shale...formations can contain radioactive materials." For CEQA purposes, the fact that shale formations or drilling cuttings can, under some circumstance, contain radioactive materials does not necessarily translate to a 'significant probability' that this will be the case under the present circumstances. More importantly, the ISMND acknowledges that materials contained in the sump have the potential to be hazardous. As a result, the ISMND states "If any waste tests positive as a hazardous waste it will be disposed of at the Clean Harbors Buttonwillow, LLC, located at 2500 West Lokern Road, Buttonwillow, CA, 93206. The Clean Harbors Buttonwillow, LLC is a licensed Class 1, 2 and 3 disposal site. This facility is permitted to receive up to 10,482 tons/day.

Potential project related impacts from drilling have been evaluated in Section VIII Hazards and Hazardous Materials and IX Hydrology and Water Quality.

The treatment of produced water has been addressed above. No hydraulic fracturing is proposed or reasonably foreseen as part of the project to evaluate.

Response to Comment CBD IIIc

The ISMND addressed all water requirements associated with the project. No water would be required during the production phase. As stated is the ISMND “all water required will be obtained from Randy’s Trucking meter located at Blackwells Corner located 9.3 miles north of the proposed project sites and no new entitlements will be required.” As water used for the proposed project will be from existing entitlements, there is no need to analyze effects of water withdrawal. If water used was to be secured from a new entitlement, the analysis would be applicable.

Response to Comment CBD IVa

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 this project is limited to drilling and testing ten (10) wells to assess if there are sufficient quantities of oil in order for these wells to become oil producing wells. If it is determined that there are sufficient reserves of oil, then the wells will go into sustained production.

Drilling fluids used during the drilling process exert a greater hydrostatic pressure than the reservoir pressure. As stated in the ISMND, sufficient weighted drilling fluid would be used to prevent any uncontrolled flow, including natural gas, from each well and additional quantities of drilling fluid would be available at each site (Title 14, CCR section 1722.6).

Once drilling is complete, a given well is tested to determine the amount of oil that is present and if there are sufficient quantities of oil to support a producing well. The project would not release “large amounts” of methane gas as stated in the comment.

The combustion of natural gas will release greenhouse gases and the amount of such gases (NOx and VOCs) has been quantified in the ISMND Section VII Greenhouse Gas. The analysis included in the ISMND includes emissions of methane and nitrous oxides and their contribution to the overall GHG emissions. The amount of methane and nitrous oxide associated with the combustion of gases was calculated at less than 0.1% to the total GHG emissions (Emission Factors from Appendix A, Subchapter 10 (Climate Change), Article 2, Sections 951000 to 95133, California Code of Regulations (CCR) Title 17).

Response to Comment CBD IVb

As previously addressed in response to Comment CBD IVa, the proposed project is limited to drilling and testing of ten wells that may be converted to production wells. The ultimate use of the potentially produced oil is beyond the scope of this analysis and would be, as recognized by the commenter, a highly speculative endeavor.

Response to Comment CBD IVc

Fugitive emissions would be negligible in comparison with combustion emissions. Fugitive emissions are primarily associated with the production phase from pumps, valves, connectors, etc. The current project must comply with stringent inspection and maintenance requirements under SJVAPCD Rule 4409 Prohibitions for Components at Light Crude Oil Production Facilities, Natural Gas Production Facilities, and Natural Gas Processing Facilities. This rule limits VOC emissions from leaking components at the listed facilities. As a result, the emission rates for the proposed production equipment subject to Rule 4409 are of the order of 0.000024 kg/hr or 0.0000528 lbs/hr. For a typical well with one pump and four (4) connectors, this results in a total annual emission rate of 1 pound/year/well.

	How Many?	VOCs EF (kg/hr/source)	VOCs lbs/yr
Pumps	1	2.40E-05	4.63E-01
Flanges/Connectors	4	7.50E-06	5.78E-01
TOTAL VOCs			1.041
<i>Reference: VOC Fugitive Emission Factor (EF) for crude oil based on EPA Document # EPA-453/R-95-017, Nov. 1995, Table C-3.</i>			

Response to Comment CBD IVd

The SJVAPCD Policy of December 17, 2009 provides a detailed roadmap of how to determine the significance of GHG emissions from stationary sources. This Policy is directed at lead agencies addressing GHG emission impacts under CEQA. The Division is serving as the Lead Agency for this project and is adhering to this policy in assessing GHG impacts.

District policy clearly states that compliance with an adopted statewide, regional or local plan aimed at curbing GHG emissions is sufficient for the Lead Agency to conclude that impacts are less than significant. We note that while GHG emissions from the project were quantified in the ISMND, there is no requirement under District Policy that the applicant quantify such emissions. Presumably this is because no single project, no matter how large, would by itself alter the earth's climate. Therefore, the policy focuses on collective (statewide and across the District) emissions. AB-32 and other District adopted policies implement this broad policy.

Response to Comment CBD IVe

See response to comment CBD IVa, IVb and IVc regarding greenhouse gas emission considerations. As no flare use is proposed, no flare related emissions will be emitted. The electricity that will be used during the production phase can come from a variety of sources, including, hydroelectric power, solar, wind, nuclear, and natural gas power plants.

Response to Comment CBD Va

Potential air quality impacts were evaluated using a two-step procedure. First, the annual emission rates of NOx, VOCs (ROG) and PM-10 were calculated using the SacMetro Roadway Construction Model 7.1.3 for each phase of the proposed project. Next, the 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 statutes, 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 and issued on August 20, 1998 and subsequently revised in June 1, 1999.

Response to Comment CBD Vb

The analysis presented in the ISMND did find that higher NOx and VOC emissions are associated with drilling as compared to site preparation, production, testing, or other phases. The proposed project does not include flaring. As indicated in Table 14 of the ISMND, project related maximum annual NOx and VOC emissions are well below the threshold of significance set by the SJVAPCD.

Response to Comment CBD Vc

The composition of VOCs was determined based on specification data for oil field fugitive emissions. This data was prepared by Prof. Albert C. Censullo, PhD at California Polytechnic State University, San Luis Obispo, CA in 1991. This data is available at the SJVAPCD web site and includes speciation of the VOCs into individual compounds such as ethyl benzene, benzene, xylene, toluene and n-hexane.

The emissions of these specific VOCs were quantified and their emission rates were used to calculate potential short- and long-term risks to the public. The analysis (ISMND Section III. Air Quality, Response IIIId.) demonstrated that emissions of VOCs would not pose a significant health risk to the public.

It should also be noted, the project as proposed would not use methylene chloride.

Response to Comment CBD Vd

The main NMHC emissions considered as toxic were identified and discussed in response to comment Vc.

Response to Comment CBD Ve

Project related emission rates of particulates from diesel combustion and fugitive emissions from site preparation work were quantified (using the SacMetro ROADWAY Construction Model 7.1.3) and these emission rates were compared with the SJVAPCD 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 these calculations and comparison with the thresholds, it was demonstrated that project related emissions of diesel particulates and fugitive VOC emissions would not lead to significant risks to public health.

Response to Comment CBD Vf

See response to comment CBD Vc.

Also, as stated in the response to comment CBD IVa “Drilling fluids used during the drilling process exert a greater hydrostatic pressure than the reservoir pressure. Accordingly there is no 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 (including natural gas) from each well and additional quantities of drilling fluid would be available at each site (Title 14, CCR section 1722.6).”

Methane does not contribute to ozone formation. Only volatile organic compounds or reactive organic gases are considered precursors of ozone. For this reason, methane is excluded from the definition of VOC and ROG by the EPA, ARB and all the Air Districts in California.

As VOCs, hydrogen sulfide and methane would be components of natural gas, the Division has addressed potential releases of VOC’s, hydrogen sulfide and methane. The project as proposed would not use methylene chloride.

Response to Comment CBD Vg

The ISMND analysis was based on equipment that would be used to implement the proposed project related activities. As such, the Divisions analysis included all sources of emissions.

Response to Comment CBD Vh

See response to Comment CBD Vb 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 and are not appropriate for use for this project.

The main source of VOC emissions at the proposed project are fugitive emissions from leaking pumps, valves and flanges. However, 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>

We note that methane does not contribute to ozone formation. Only volatile organic compounds or reactive organic gases are considered precursors of ozone. For this reason, methane is excluded from the definition of VOC and ROG by the EPA, ARB and all the Air Districts in California.

Response to Comment CBD Vi

The project is subject to SJVAPCD Regulation VIII, Tables 6-2 and 6-3, (Guide for Assessing and Mitigating Air Quality Impacts, SJVAPCD 2002). These requirements are enforceable.

Response to Comment CBD Vj

Hydraulic fracturing is not part of the proposed project nor is it reasonably foreseeable at this time.

Response to Comment CBD VI

The Division has considered the potential project related impacts to threatened and endangered species. As stated in the ISMND, a biological assessment was prepared for the project. Biological surveys of the proposed project sites and buffer areas on November 9 and 13, 2012 were conducted to identify known or potential habitat for special-status wildlife and plant species. Biological surveys were completed on January 16 and 22, 2013 for the proposed flow lines and along existing access routes. Additional surveys were conducted February 25, 2013 and March 5, 2013 targeting special-status plant species and to detect special-status wildlife. 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 within the boundaries of the proposed project sites during biological 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 VIa

*The CBD states that “oil and gas extraction can discourage condor use of habitat that may otherwise be suitable for nesting, perching, roosting, or foraging.” As indicated in the ISMND, a biological assessment report was prepared for the project. The Biological Assessment Report described the habitat requirements of the California condor and stated that California condors require suitable habitat for nesting, roosting, and foraging. As indicated in the Biological Assessment report, the proposed project sites do contain habitat that is suitable for roosting or nesting by the California condor. Traditional roosting sites are on cliffs or large trees, and are often near feeding 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 documented. 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 sites or vicinity. Therefore, there is no substantial evidence that the proposed project would impact nesting activities of the California condor. No California condors have been documented in the project vicinity and no condors were observed during the course of biological surveys for the proposed project. The Biological Assessment report acknowledged that potential foraging habitat (annual grassland) is present in the proposed project sites and buffer areas (Biological Assessment p. 16, 18).*

Avoidance and mitigation measures intended to avoid or reduce these potential impacts to a less-than-significant level were included in both the ISMND and biological assessment report. Avoidance and mitigation measures in the Biological Assessment

report for California condor included conducting pre-construction surveys, migratory (and nesting) bird surveys, and implementing an environmental awareness program. Other protective measures were included in the biological assessment (p. 33-37) and in the Biological Resource Section of the ISMND. The Biological Assessment report adequately disclosed potential impacts to California condors (p. 31), and the recommended avoidance and mitigation measures that are appropriate to reduce potential impacts and consistent with California Department of Fish and Wildlife (CDFW) recommendations.

Response to Comment CBD VIb

RAB Consulting conducted biological surveys of the proposed project site locations, the proposed access roads, the proposed flowlines and a buffer area of 500 feet around the proposed project sites, flowlines and access roads for sensitive wildlife and special-status plant species, their habitats, and other sensitive habitats. These site visits included surveys to detect San Joaquin kit fox and sign (e.g., potential dens, scat, tracks, prey remains, etc.) 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.” Surveys were conducted 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). 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).*

The findings of the biological surveys were discussed in the Biological Assessment report (pages 21-22) and potential impacts in the ISMND.

Response to Comment CBD VIc

Biological surveys were conducted at proposed project site locations, proposed access roads, proposed flowlines and a buffer area of 500 feet around the proposed project sites, flowlines and access roads for sensitive wildlife and special-status plant species, their habitats, and other sensitive habitats. These site visits included surveys for the San Joaquin antelope squirrel and signs of their activity. An adequate amount of time was spent at the proposed project sites during our surveys to determine the presence or absence of special-status species within the project sites. These surveys were conducted in accordance with standard survey protocol established by regulatory agencies such as the CDFW. Emphasis was placed on the identification of small mammal burrows that may serve as potential for this species.

The findings of biological surveys were discussed in the Biological Assessment report (pages 22-23) and potential impacts in the ISMND. The Biological Assessment report states that potential habitat for San Joaquin antelope squirrels was observed in the proposed project sites and buffer areas. No burrows were observed in the boundaries of or within 50 feet of the proposed project sites. One individual San Joaquin antelope squirrel was observed approximately 0.2 miles north of a proposed project site. However, no individual San Joaquin antelope squirrels were observed within the proposed project sites. The recommended avoidance and mitigation measures included in the Biological Assessment report and the ISMND are feasible and appropriate to reduce impacts to less-than-significant and consistent with CDFW recommendations.

Response to Comment CBD VI d

Biological surveys were conducted at the proposed project site locations, the proposed access roads, the proposed flowlines and a buffer area of 500 feet around the proposed project sites, flowlines and access roads for sensitive wildlife and special-status plant species, their habitats, and other sensitive habitats. These site visits included surveys for the blunt-nosed leopard lizards and signs of their activity. Emphasis was placed on the identification of small mammal burrows that may serve as potential refuge for this species. An adequate amount of time was spent at the proposed project sites during our surveys to assess the suitability of the habitat present to potentially support blunt-nosed leopard lizards. These surveys were conducted in accordance with standard survey guidance established by regulatory agencies such as the CDFW and the USFWS.

The findings of biological surveys were discussed in the Biological Assessment report (pages 24-25) and potential impacts in the ISMND. RAB Consulting 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 blunt-nosed leopard lizards 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 were not conducted as it was not necessary. The CDFW recommended avoidance and mitigation measures included in the Biological Assessment report and the ISMND are appropriate to reduce impacts to a less-than-significant level under CEQA.

Response to Comment CBD VI e

Biological surveys were conducted at the proposed project site locations, the proposed access roads, the proposed flowlines and a buffer area of 500 feet around the proposed project sites, flowlines and access roads for sensitive wildlife and special-status plant species, their habitats, and other sensitive habitats. These surveys were timed during the appropriate blooming period to detect presence of San Joaquin woollythreads. An adequate amount of time was spent at the proposed project sites during our surveys to detect the presence of this species. As stated in the Biological Assessment report, these surveys were conducted in accordance with the USFWS Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants (USFWS 2000) and the CDFW Protocols for Surveying and evaluating impacts to

special-status native plant populations and natural communities (CDFG 2009). Rare plant surveys were also performed using demographic survey techniques derived from the CNPS rare plant monitoring guidelines (CNPS 2011). These guidelines include conducting floristically based surveys, identifying all plants encountered to the species level, or identifying to the level necessary to detect rare plants if present.

The findings of biological surveys were discussed in the Biological Assessment report (pages 28-29) and potential impacts discussed in the ISMND. RAB Consulting observed potential habitat for this species within annual grassland habitat in the proposed project sites and buffer areas during biological surveys. No San Joaquin woollythreads were observed in the proposed project sites or buffer areas during biological surveys.

Response to Comment CBD VI

The mitigation measures presented in the discussion of biological resources are also included in the Mitigation Monitoring and Reporting Plan. As stated in the Mitigation Monitoring and Reporting Plan the Division is responsible for compliance. Compliance with the mitigation measures specified in this ISMND will be a condition on the well permits issued for the wells specified in this ISMND. Accordingly, the mitigation measures are enforceable.

Response to Comment CBD VII

The Division acknowledges that certain oil and gas activities are capable of triggering seismic activity. The Division also acknowledges that specific induced seismic events have been attributed to water disposal wells. However, induced seismicity is associated with activities that are not included in this specific project.

As stated in the IS/MND, produced water will be transported for disposal to the Central Valley Waste Water LLC Class II Disposal Well, the SWCC-1 located in the South Belridge Oil Field. The use of a commercially permitted facility to dispose of produced water is an accepted disposal method for oil and gas operations. Concerns regarding the environmental impact of such a facility are best addressed during the facility's permitting process.

McDonald Anticline Project

Comment from San Joaquin Valley Air Pollution Control District

August 6, 2013

August 6, 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

Project: McDonald Anticline Project

District CEQA Reference No: 20130605

Dear Ms Lagomarsino:

The San Joaquin Valley Unified Air Pollution Control District (District) has reviewed the project referenced above consisting of a project to drill ten (10) oil wells to depths not exceeding 1,400 feet subsurface and if economic quantities of oil are discovered in a well, install necessary production equipment for production, located 12 miles southwest of Lost Hills in Kern County, CA. 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 would like to note that 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. The MND (page 25) 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.

3. In the discussion on Cumulative Impacts from Criteria Air Pollutants on page 116, 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*

Seyed Sadredin
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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

4. 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 ten wells could be producing at the same time. For purposes of estimating risk, a worst-case scenario would be that all ten wells produce 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 prioritization score may still be less than 10.0 for carcinogens, in which case, the project would still not be significant.

5. The District recommends that a copy of the District's comments be provided to the project proponent.

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 Marjollet
Permit Services Manager

DW: al

**E&B Natural Resources Management Corporation
McDonald Anticline Project
Response to the SJVAPCD Comment Letter dated August 6, 2013**

Response to SJVAPCD Comment 1

Use ROADWAY Model Version 7.1.3 to calculate project emissions

Emissions were re-calculated using the ROADWAY Model Version 7.1.3 and the emission results are summarized in the following table. Copies of the ROADWAY Model Version 7.1.3 outputs are attached. As a result, Tables 12, 13, and 14 in the ISMND will be updated. Project related impacts to air quality, public health and global warming remain less-than-significant.

**Criteria Pollutant Emissions Calculations for Construction
of Ten (10) Well Sites and Drilling of Ten (10) Exploratory Wells**

Project Phase	ROADWAY Version 6.3.2			ROADWAY Version 7.1.3		
	ROG (ton/yr)	NOx (ton/yr)	PM-10 (ton/yr)	ROG (ton/yr)	NOx (ton/yr)	PM-10 (ton/yr)
Site Prep	0.40	0.40	0.40	0.40	0.40	0.40
Drilling Phase	0.40	4.0	0.40	0.40	5.0	0.40
Testing and Completion Phase	0.40	0.40	0.40	0.40	0.40	0.40
Install Production Equipment	0.40	0.40	0.40	0.40	0.40	0.40
Production	0.40	1.0	0.40	1.0	2.0	0.40
Plugging and Abandonment Phase ¹	0.40	0.40	0.40	0.40	0.40	0.40

Response to SJVAPCD Comment 2

Comment noted. The District's attainment status will be included in the ISMND. The ISMND will acknowledge the ozone plan update in process. However, the 2007 Ozone Plan and PM plans used in the analysis remains in effect.

Response to SJVAPCD Comment 3

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 4 (a)

The worst case scenario of all ten (10) wells producing at the same time at one (1) well site was calculated at the nearest residence located 2.27 miles south of the proposed Theta 264C-20

project site. A copy of the risk score calculation including fugitive emissions is attached. Project related impacts to public health are 0.0 or “Low,” which did not change the conclusions in the original analysis.

Response to SJVAPCD Comment 4 (b)

Fugitive hydrocarbon emissions occur from production equipment such as pumps, valves and connectors. The amounts of such emissions are very low, typically in the range of 0.5 to 1.5 lbs/year. The risk from fugitive hydrocarbon emissions was calculated to be 0.0 or “Low” at the nearest residence. See attached Facility Prioritization Score spreadsheet. The results and fugitive emissions are highlighted in yellow. . Project related impacts to public health remain “Low” and does not change the conclusions in the original analysis.

Response to SJVAPCD Comment 4 (c)

Comment noted.

Response to SJVAPCD Comment 5

A copy of the District’s comments was provided to the project proponent.