



July 23, 2015

Honorable Mark Ridley-Thomas
Board of Supervisors
County of Los Angeles
500 W. Temple Street Room 866
Los Angeles, CA 90012

Dear Supervisor Ridley-Thomas,

Thank you for your letter. We agree with your statements and offer the following explanations to clarify the findings in our report.

Let us first describe how the California Council on Science and Technology (CCST) organized and led the team that prepared the report, and some of the constraints that we applied to the scope of our study. We will then respond to the substance of your letter.

CCST's steering committee members, who had overall project oversight, were appointed based on technical expertise and a balance of viewpoints. One member was the principal investigator for the Inglewood Oil Field Hydraulic Fracturing Study (Dan Tormey, Ramboll Environ Corporation). A science team composed of staff at Lawrence Berkeley National Lab and a number of other research institutions studied each topic required by SB 4 and wrote Volumes I-III of the report, with final approval from the steering committee. The steering committee and science team then collaborated to develop a series of conclusions and recommendations that are provided in the Summary Report.

As specified in the contract between the California Natural Resources Agency and CCST, the report assesses environmental and public health issues associated with well stimulation in California from a scientific perspective. The report makes reference to regulations, but the authors did not perform a comprehensive analysis of regulatory adequacy. Specifically, you are correct that we did not describe the local regulatory framework that governs oil and gas development beneath the Baldwin Hills community, nor did we consider its ability to protect human health and the environment in that area.

We do appreciate that you spoke out on this important issue. We agree with you that the Inglewood field has more protections than other oil fields in the State. Our summary report cited the Inglewood Oil Field Hydraulic Fracturing Study as one study that already addresses some of the questions identified in our report pertaining to emissions during a hydraulic fracturing operation, but not the suite of emissions that may be emitted during the whole oil and gas development process.

Most of the material in our report that concerns the Inglewood Oil Field can be found in the Summary Report and the Los Angeles Basin Case Study, with some discussion in other sections as well. We agree with the most recent dates that you cite in your letter for both hydraulic fracturing and frack-packing operations at Inglewood Oil Field.¹ For our report, we compiled a master list of reported cases of hydraulic fracturing in California from seven publicly available data sets.² Our master list included 120 records of hydraulic fracturing and frac-packing operations in the Inglewood Oil Field between March 2002 and August 2013. Based upon this list, we estimated 219 hydraulic fracturing and frac-packing operations occurred in the field during this period. This number of operations is larger than the number for which we have a record in order to account for our estimate of underreporting prior to the implementation of mandatory reporting required by SB 4 starting January 1, 2014.³ As you note, the most recent hydraulic fracture was reported on January 5, 2012; the most recent frac-pack was reported on August 1, 2013.

Our report primarily discusses past operations at the Inglewood Oil Field in two respects: impacts to groundwater and to air quality. For potential impacts to groundwater, we compared the depth of usable groundwater and water wells with the depth of the treatment interval in hydraulically fractured oil wells. We identified records of one frac-pack and one hydraulic fracturing operation

¹ For the purposes of our report, we grouped frac-packs and high rate gravel packs and refer to them collectively as frac-packs.

² This master list of reported hydraulic fractures is given in Volume I, Appendix M; more detail on how the list was compiled is in Volume I, Chapter 3.

³ Our method of extrapolating from a limited sample of records to an estimate of total hydraulic fractures within a pool is explained in detail in Volume II, Appendix 5.E.

that occurred less than 100 meters (some 300 feet) below protected groundwater in the Inglewood Oil Field. We also identified two operations in which the top of the perforated interval was 360 to 370 meters (approximately 1,200 feet) deeper than a nearby water well. Since hydraulic fractures often travel upward from their point of origin at the perforated interval, the depth separation between the base of this water well and the top of the resulting fractures is likely less than 370 meters. Available statistics on fracturing height in other operations suggest that a depth separation of 370 meters is too small to assume the fractures did not intersect protected groundwater. An intersection of a fracture with protected groundwater could cause an impact on its quality or availability.⁴ However, we agree that groundwater monitoring at the field is a good step towards evaluating this connection. In addition, we address not just the direct impacts of hydraulic fracturing, but also of the oil and gas production it enables. In particular, emissions of toxic air contaminants are associated with the development of oil and gas in general.⁵ These impacts continue long after the relatively brief hydraulic fracturing operation has ended.

We agree that the Los Angeles County Department of Public Health (LACDPH) study of public health effects around the Inglewood Oil Field did not show differences in prevalence of adverse health outcomes compared to prevalence of these health outcomes in Los Angeles as a whole. However, the study design employed by the LACDPH had important limitations that may have obscured associations between exposure to environmental stressors from oil and gas development and health outcomes.⁶

Our study evaluated available information that suggests the potential for, but does not confirm with certainty, risks to human health from well stimulation specifically, and from oil and gas production in general. There are a number of risks that have not been sufficiently investigated to say conclusively whether or not there has been harm caused to human health.

The scientists involved with writing the report and with determining the recommendations are more than pleased to meet with you and your team in person, or by phone, to discuss in detail the issues you raise and the work we did to create this extensive report.

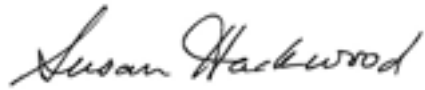
⁴ Please refer to the Summary Report, Conclusion 5.1, and specifically Figure S.3-10, as well as the Los Angeles Basin Case Study, Section 4.3.4 for more detail.

⁵ Please see the Summary Report, Conclusions 6.1 and 6.2.

⁶ Please see Volume III, the Los Angeles Basin Case Study, Section 4.3.3.2 for more detail.

Please let us know if you would like to schedule a meeting, and thank you for reaching out to us to discuss these important issues.

Yours sincerely,



Susan Hackwood
Executive Director
Report

California Council on Science and Technology



Jane Long
Steering Committee Chair, Well Stimulation

California Council on Science and Technology

cc:

Members of the Los Angeles County Board of Supervisors

United States Congressmember Karen Bass

California State Senator Holly Mitchell

California State Assemblymember Sebastian Ridley-Thomas

Los Angeles City Councilmember Herb Wesson, President

Los Angeles City Councilmember Marqueece Harris-Dawson

Members of the Culver City Council