



January 16, 2014

*Via Electronic and U.S. Mail*

Ms. Adele Lagomarsino  
California Department of Conservation  
Division of Oil, Gas and Geothermal Resources  
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Sacramento, CA 95814-3530

Email: SB4EIR@conservation.ca.gov

**Re: Comments on Notice of Preparation of a Draft Environmental Impact Report to evaluate the impacts of existing and potential future oil and gas well stimulation treatments occurring within California (California SB4)**

Dear Ms. Lagomarsino:

On behalf of the Natural Resources Defense Council, Clean Water Action, Environmental Working Group, Earthworks, Los Padres ForestWatch, Environmental Defense Center, Los Angeles Waterkeeper, and our over one million members and online activists, we write to submit the following comments on the Notice of Preparation (NOP) of a Draft Environmental Impact Report (DEIR) to evaluate the impacts of existing and potential future oil and gas well stimulation treatments<sup>1</sup> occurring within California, pursuant to California Senate Bill 4 (or SB4).

Senate Bill 4 requires that an EIR be conducted:

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<sup>1</sup> In this letter, we refer to hydraulic fracturing, acidizing and related techniques as “well stimulation.”

[I]n order to provide the public with detailed information regarding any potential environmental impacts of well stimulation in the state. Any environmental review conducted by the division shall fully comply with all of the following requirements:

- (A) The EIR shall be certified by the division as the lead agency, no later than July 1, 2015.
- (B) The EIR shall address the issue of activities that may be conducted as defined in Section 3157 and that may occur at oil wells in the state existing prior to, and after, the effective date of this section.

In addition, Senate Bill 4 requires conducting a scientific study that addresses the following:

Identify areas with existing and potential conventional and unconventional oil and gas reserves where well stimulation treatments are likely to spur or enable oil and gas exploration and production.

Evaluate all aspects and effects of well stimulation treatments, including, but not limited to, the well stimulation treatment, additive and water transportation to and from the well site, mixing and handling of the well stimulation treatment fluids and additives onsite, the use and potential for use of nontoxic additives and the use or reuse of treated or produced water in well stimulation treatment fluids, flowback fluids and handling, treatment, and disposal of flowback fluids and other materials, if any, generated by the treatment. Specifically, the potential for the use of recycled water in well stimulation treatments, including appropriate water quality requirements and available treatment technologies, shall be evaluated. Well stimulation treatments include, but are not limited to, hydraulic fracturing and acid well stimulation treatments.

Review and evaluate acid matrix stimulation treatments, including the range of acid volumes applied per treated foot and total acid volumes used in treatments, types of acids, acid concentration, and other chemicals used in the treatments.

Consider, at a minimum, atmospheric emissions, including potential greenhouse gas emissions, the potential degradation of air quality, potential impacts on wildlife, native plants, and habitat, including habitat fragmentation, potential water and surface contamination, potential noise pollution, induced seismicity, and the ultimate disposition, transport, transformation, and toxicology of well stimulation treatments, including acid well stimulation fluids, hydraulic fracturing fluids, and waste hydraulic fracturing fluids and acid well stimulation in the environment.

Identify and evaluate the geologic features present in the vicinity of a well, including the well bore, that should be taken into consideration in the design of a proposed well stimulation treatment.

Include a hazard assessment and risk analysis addressing occupational and environmental exposures to well stimulation treatments, including hydraulic fracturing treatments,

hydraulic fracturing treatment-related processes, acid well stimulation treatments, acid well stimulation treatment-related processes, and the corresponding impacts on public health and safety with the participation of the Office of Environmental Health Hazard Assessment.

Each of the subject areas specified for the scientific study in Senate Bill 4 should be analyzed in the EIR. In addition to the foregoing, our specific concerns include the following:

## **I. DEFINITION OF THE PROJECT**

California Environmental Quality Act (CEQA) Guidelines Section 15124 provides in part that a project definition must include:

(b) A statement of objectives sought by the proposed project. A clearly written statement of objectives will help the lead agency develop a reasonable range of alternatives to evaluate in the EIR and will aid the decision makers in preparing findings or a statement of overriding considerations, if necessary. The statement of objectives should include the underlying purpose of the project.

(c) A general description of the project's technical, economic, and environmental characteristics, considering the principal engineering proposals if any and supporting public service facilities.

(d) A statement briefly describing the intended uses of the EIR.

As noted above, Senate Bill 4 requires the DEIR to “provide the public with detailed information regarding *any* potential environmental impacts of well stimulation in the state” [emphasis supplied]. Also, the DEIR must “address the issue of activities that *may* be conducted as defined in Section 3157 and that *may* occur at oil wells in the state existing prior to, and after, the effective date of this section” [emphasis supplied]. This is a very broad scope of analysis and the project definition should reflect this broad scope.

In particular, the project definition should include, among other topics: (1) offshore well stimulation within State and federal waters; (2) the Senate Bill 4 regulations proposed by DOGGR on November 15, 2013; (3) a broad definition of “well stimulation” that includes hydraulic fracturing, acidizing, underground injection that employs stimulation, and any treatments intended to modify the permeability of a formation to increase oil and gas recovery; (4) wastewater injection; (5) consideration of well stimulation of pre-existing or old wells; and (6) well stimulation substances in use or reasonably foreseeable to be in use for well stimulation purposes regardless of whether trade secret confidentiality is claimed. The EIR should not be limited to the arbitrary thresholds currently found in the proposed draft regulations released by the Department of Conservation’s Division of Oil, Gas, and Geothermal Resources (DOGGR or the Division). Specifically, the EIR should not exclude well stimulation treatments that penetrate a formation less than 36 inches from the well-bore, acid treatments using less

than 7 percent acid concentrations, or stimulation for the purpose of removal of formation damage due to drilling.

In addition, the required general description of the project's environmental characteristics should include a lifecycle analysis of the chemicals and other substances used or reasonably foreseeable to be used in well stimulation and of the petroleum hydrocarbons expected to be produced by well stimulation.

One of the key provisions of the draft proposed regulations is the requirement that oil and gas companies obtain a permit from the Division before engaging in hydraulic fracturing, acid matrix stimulation, or other well stimulation of new or existing wells. Since these permits are discretionary, they are subject to CEQA just like any other big, potentially polluting project. The statement of intended uses should clearly state whether the final EIR is intended to be used as a master or programmatic EIR for purposes of tiering EIRs for local or regional well stimulation wells or projects.

The EIR should also make clear that the statewide EIR cannot serve and does not serve as final CEQA review for an individual well subject to well stimulation. Rather, site-specific CEQA review and a final CEQA determination is required for each individual well—new or old—subject to well stimulation and this includes underground injection wells where stimulation is employed.

The statewide EIR required by Senate Bill 4 is an opportunity to consider cumulative impacts of increased hydraulic fracturing, acidizing, and well stimulation in California; viable statewide alternatives; and shared possible mitigation measures. The statewide EIR, however, cannot serve as complete and final environmental review under CEQA for all well stimulation projects going forward in California. Well-by-well and site-specific CEQA analysis is required because each location and each oil well in California has its own set of highly particular concerns and environmental considerations including: local water supply and hydrology, geology, faults and seismology, community and environmental justice concerns, neighboring wells (i.e. offset wells), and critical habitat and threatened or endangered species impacts. In order to ensure the full disclosure of a particular project's environmental impacts and to best adopt feasible measures to mitigate those local and regional impacts, full site-specific CEQA review at the well level is required in addition to the statewide EIR.

We understand that Kern County is currently conducting its own countywide EIR. Kern County is a current hotbed of hydraulic fracturing, acidizing, and other well stimulation here in California, and we are in full support of a localities right to conduct its own EIR, as confirmed in Senate Bill 4 section 3161, subsection (4)(C), which states that "nothing in this section shall prohibits a local lead agency from conducting its own EIR." However, as the state conducts its EIR, the geographic scope of its environmental review must be statewide: it must not exclude analysis of Kern County. This is because the activities in Kern County necessarily affect statewide resources such as water and air, are a substantial part of any cumulative analysis, impact the climate change analysis, and have impacts on wildlife and human health throughout the state. Exclusion of Kern County conflicts with case law and the spirit of CEQA.

We also note that the project should *not* be defined as the Division's preparation of an EIR. The NOP is vague and confusing on this point. For example, we disagree that one of the objectives of the project is to

“ensure DOGGR’s compliance with a requirement of SB 4.” Rather, the project definition should include all of the items outlined above.

Finally, we stress that DOGGR’s CEQA compliance cannot substitute for or preclude local lead agencies from conducting their own EIR in relation to discretionary approvals. *See* SB 4, § 3161(4)(C) (“Nothing in this section prohibits a local lead agency from conducting its own EIR.” It is particularly important that DOGGR specifically acknowledge this fact in the EIR given that local agencies will generally serve as lead agency under CEQA. *See* CEQA Guidelines § 15051(b)(the lead agency for projects carried out by nongovernmental entities “will normally be the agency with general governmental powers, such as a city or county, rather than an agency with a single or limited purpose [such as DOGGR]”).

## **II. PROJECT ALTERNATIVES**

CEQA Guidelines 15126, subsection (a) provides in part that:

An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives.

Section 15126, subsection (b) provides:

Because an EIR must identify ways to mitigate or avoid the significant effects that a project may have on the environment (Public Resources Code Section 21002.1), the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.

Because of the many risks inherent in well stimulation plus our lack of detailed knowledge of the extent of those risks, the alternatives considered should include: (1) a moratorium on all well stimulation activities until an adequate (and not time-limited) scientific study of the public health and safety issues has been completed; and (2) a moratorium on new well stimulation activities combined with a prohibition of well stimulation in or near sensitive areas such as urban areas, State parks, wetlands, stressed watersheds and aquifers (such as those which provide communities with contaminated or compromised sources of drinking water), Native American cultural sites, air basins in non-attainment areas under the federal or State Clean Air Acts, National Forests, National Wildlife Refuges, National Monuments, BLM Areas of Critical Environmental Concern, and terrestrial or marine habitat for especially vulnerable, threatened, or endangered species.

## **III. DEFINITIONS**

The definitions used in the DEIR should support the expanded project description described above as well as the alternatives to be studied.

In particular, the term "well stimulation treatment" is too narrowly defined in the draft proposed regulations for well stimulation and that version of the term should not be included in the DEIR. The definition should not limit the regulations to only treatments that penetrate a formation more than 36 inches from the well-bore and acid matrix stimulations that utilize more than 7 percent concentration of acid. These thresholds are arbitrary, have not been scientifically justified, violate the mandate of Senate Bill 4, and could leave potentially dangerous processes under or un-regulated. In addition, Senate Bill 4 mandates that DOGGR establish a threshold volume for acid, not a threshold concentration. A proper definition of "well stimulation treatment" must at the very least be consistent with section 3157, subsection (a) of the Public Resources Code (i.e. no more limited) and should include any process that modifies the permeability of a formation, regardless of distance of penetration or acid concentration. In addition, excluding injection projects from the scope of the EIR is problematic because many injection projects also utilize well stimulation. (To be clear, we are not suggesting that the EIR analyze the Underground Injection Control program, only that well stimulation be analyzed regardless of its locale.)

A more appropriate definition of "well stimulation treatment" would be: "activities performed in a well designed to enhance oil and gas production or recovery by modifying the permeability of the target formation. Well stimulation treatments include, but are not limited to, hydraulic fracturing treatments and acid matrix stimulation treatments."

#### **IV. SITE PREPARATION, CONSTRUCTION, AND OPERATIONAL EFFECTS ON THE ENVIRONMENT**

Well construction and stimulation often involves road building, the use of heavy-duty trucks, mostly diesel-powered, as well as diesel-powered off-road equipment such as pumps and drill rigs. Studies conducted in Colorado and West Virginia identified diesel particulate exposures as an onsite health concern for workers and offsite air quality threat for adjacent homes and communities. Therefore, air quality impacts from these efforts should be analyzed, as well as any effects the building of new roads and use of heavy equipment on new or existing roads may have on the land.

The EIR should also cover the potential impacts on the environment and public health of mining and transportation of the sand that is used for fracking and well stimulation. The mining and transport of large quantities of sand has both natural resource consequences and public health repercussions, including the emission of silica and particulate matter.

In addition, the environmental effects of all phases of well drilling, completion, operation, and waste disposal should be analyzed, including drilling, casing, cementing, testing of cementing and mechanical integrity, use of drilling mud, and the use of water, fracking fluids, acids and other materials. It must be acknowledged that a well cannot undergo stimulation unless all of the above activities have occurred. For pre-existing wells that could be stimulated, less analysis may be necessary. The basis for and effects of the proposed 7 percent acid concentration threshold should also be analyzed.

In preparation and anticipation of drilling, oil and gas industries often engage in pre-drilling seismic surveys. These should reasonably be considered activities that may occur at oil wells or in any potential hydrocarbon-producing area. The EIR should consider the effects of these terrestrial and/or marine seismic surveys, especially their potential impacts to wildlife, local traffic, and human health.

## V. WATER ISSUES

Hydraulic fracturing and increased drilling activities enabled by well stimulation has been linked to groundwater and surface water contamination in some circumstances. The EIR should examine in detail the safeguards currently in place, and proposed, to protect groundwater and surface water from well stimulation activities. In particular, the EIR should examine the adequacy of current well construction practices as they relate to stimulation and whether the use of fracking fluids or acid may weaken well casing and/or cementing at depths where aquifers may exist, or have the potential to create unintended geologic pathways into underground or surface waters. The EIR should also examine the increased potential for erosion and runoff caused by well construction and operation activities and any related impacts on water quality including the potential avenues for and likelihood of human error in the well construction and operation processes. In addition, the EIR must evaluate the impacts of fracking wastewater and wastewater resulting from other well treatments, whether that waste is reused or recycled or disposed via underground injection wells or by other means. Due to the data from other states — which reveals a high prevalence of spills associated with well stimulation activities and resulting contamination of both surface and ground waters — the EIR must include an evaluation of the impacts from spills of stimulation fluids, flowback, and wastewater.

The EIR should thoroughly analyze all impacts on surface waterbodies from well treatments. For example, because the hydraulic fracturing of one well generally requires a five to ten acre construction site and includes activities such as site clearing, hauling of equipment and materials, the installation of miles of steel pipe and drill rigs, among other heavy construction activities, the potential for impact on surface water bodies via storm water contamination as rain water flows over construction sites is significant and should be analyzed in the EIR. This is especially important for well treatment conducted in areas where storm water and non-storm water discharges could affect federally-impaired waterbodies. (One example of this is PXP's Inglewood Oil Field, which is located in close proximity of Ballona Creek.<sup>2</sup>) The impacts of potential spills of contaminated fluids used in well treatment or produced as a result of well treatment, such as stimulation fluids, wastewater, and drilling muds, as well as any hydrocarbon spills associated with well treatment, must also be addressed as they can reach and degrade surface waters as well as ground waters. This includes the transportation of chemicals to and from a project site. Further, the EIR should also consider and address the impacts of offshore well treatments on ocean water quality and marine life and marine habitat. Careful attention should also be paid to the recent Colorado study that found higher levels of endocrine-disrupting chemicals in water sources at or near fracking sites.<sup>3</sup>

Well stimulation is water-intensive. The EIR should examine the effects of statewide well stimulation on water supplies for municipal, personal, agricultural, industrial, and environmental uses, taking into account predicted reduced streamflows, reduced rainfall, and other water supply stressors caused by

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<sup>2</sup> Ballona Creek and Ballona Creek Estuary are impaired for toxicity and various heavy metals, including copper, cadmium, lead, zinc and silver, among others. *See* 2010 Integrated Report (Clean Water Act Section 303(d)/305(b) Report), available at: [http://www.waterboards.ca.gov/water\\_issues/programs/tmdl/integrated2010.shtml](http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml) (last accessed Jan. 16, 2014.)

<sup>3</sup> Kassotis, C., Tillitt, D., Wade Davis, J., Hormann, A., Nagel, S., 2013, Estrogen and Androgen Receptor Activities of Hydraulic Fracturing Chemical and Surface and Ground Water in a Drilling-Dense Region, available at: <http://press.endocrine.org/doi/abs/10.1210/en.2013-1697> (accessed Jan. 16, 2014.)

global climate change. In addition to statewide analysis, the study of water impacts must look at regional issues, noting the potential impacts in already water impaired parts of the state, such as the Central Valley, with special attention to the potential water supply impacts on communities which may already suffer from contaminated or compromised drinking water sources. The EIR should also examine whether water use for hydraulic fracturing may affect the habitats of any terrestrial or marine vulnerable, threatened, or endangered species, or the existence of wetlands. Well stimulation results in the existence of many wells that would not otherwise be productive; therefore, overall water use for hydrocarbon production must be analyzed — consideration must not be limited to just the water used in the stimulation itself.

## **VI. HAZARDOUS WASTES**

Hydraulic fracturing and acid stimulation can expose people, crops, and wildlife to harm from the chemicals involved, as well as naturally occurring heavy metals, such as arsenic, boron, and radioactivity that are brought back to the surface in produced water. Studies conducted of fracking in other states have found health threats for both oil and gas field workers and people living near oil and gas fields. Notably, acidizing may involve the injection of large volumes of hydrofluoric and hydrochloric acids underground. Hydrofluoric acid is extremely toxic and exposure to it can be life threatening, according to the U.S. Centers for Disease Control and Prevention.<sup>4</sup> Oil and gas companies in California are already injecting tens of thousands of gallons of hydrofluoric and other acids into wells around the state. Trucks also carry the chemicals, many of which are toxic and listed pursuant to Proposition 65, on public roads and across properties to the job site. The EIR should analyze the risks to people and the environment of the use of these chemicals.

In addition, the fluids and other substances used in well stimulation need to be disposed of carefully. The EIR needs to consider alternatives for such disposal in the terrestrial and offshore context, keeping in mind that injection wells have been linked to increased seismicity in some locations. The EIR must consider reclassifying oil and gas wastewater as hazardous waste and evaluating the impacts of requiring disposal in Class I underground injection wells or treatment at hazardous waste facilities when produced water and flowback exhibit hazardous properties.

## **VII. SEISMICITY**

Hydraulic fracturing and injection wells associated with it have been identified as the cause of earthquakes.<sup>5</sup> Induced seismicity is of particular concern in California because of our history of seismicity and California's heavily faulted geology. Accordingly, the EIR should analyze the risks and consequences of induced seismicity, and should consider alternatives to the seismicity study boundaries proposed by DOGGR in its permanent regulations. The EIR should analyze the potential seismic impacts of increased demand for Class II disposal wells as a potential result of increase drilling due to well

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<sup>4</sup> "Facts About Hydrogen Fluoride (Hydrofluoric Acid)." Centers for Disease Control and Prevention. n.p. 22 April 2013. Web. 5 December 2013. <<http://www.bt.cdc.gov/agent/hydrofluoricacid/basics/facts.asp>>.

<sup>5</sup> See, e.g., [http://switchboard.nrdc.org/blogs/bmordick/earthquakes\\_and\\_hydraulic\\_frac.html](http://switchboard.nrdc.org/blogs/bmordick/earthquakes_and_hydraulic_frac.html); [http://switchboard.nrdc.org/blogs/bmordick/earthquakes\\_caused\\_by\\_fracking.html](http://switchboard.nrdc.org/blogs/bmordick/earthquakes_caused_by_fracking.html); <http://www.sciencemag.org/content/341/6142/1225942>; [http://www.usgs.gov/blogs/features/usgs\\_top\\_story/man-made-earthquakes/](http://www.usgs.gov/blogs/features/usgs_top_story/man-made-earthquakes/).



stimulation. The EIR should analyze where disposal wells will be located in proximity to faults and the potential for induced seismicity there.

In particular, the EIR should analyze the potential for induced seismicity. This should include an analysis of background seismicity, local geology including faults and tectonically active features, local and regional stress state, proposed stimulation practices, and nearby instances of induced seismicity. The EIR should also analyze methods for addressing induced seismicity, including but not limited to an analysis of methods recommended by the National Academy of Sciences<sup>6</sup>.

### **VIII. BASELINE**

A proper baseline should include descriptions of seismic, groundwater, air quality, health, climate change, land use/zoning, fresh water use, hazardous waste, wetlands, threatened and endangered species, and oil and gas extraction factors in California as of the date of the NOP. The baseline should also carefully delineate where well stimulation is now occurring in California.

Dividing California into six regions for analysis, as the NOP proposes, makes little sense given the diversity of environmental factors in California. At minimum, DOGGR should separately analyze the eleven geomorphic regions of California as recognized by the California Geological Survey,<sup>7</sup> and if a natural resource area like a wetland, state park, or critical habitat spans the boundary between two districts, DOGGR should analyze the entire resource area and not cut it into pieces for analysis. We wish to note that there has been a marked increase in fracking for natural gas in the northern part of the state, and that the Monterey Formation extends over wide areas of the state. Therefore, no area of the state should be left out of the study in terms of potential impacts.

### **IX. THRESHOLDS OF SIGNIFICANCE AND MITIGATION MEASURES**

Determining thresholds of significance for purposes of analyzing environmental effects greater than the baseline will be a sensitive issue because of the statewide scope of the EIR. If there is overlap, DOGGR should use the most protective threshold in each area of California.

We expect that there will be significant effects over the baseline in the areas of seismicity, groundwater and freshwater use, air quality, climate change, land use, hazardous wastes, wetlands, threatened and endangered species, and public health. Mitigation measures for these effects should include moratoria (or partial or total bans) on well stimulation in these sensitive areas of California. The state should institute a robust monitoring program to ensure that mitigation measures are carried out.

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<sup>6</sup> National Research Council. *Induced Seismicity Potential in Energy Technologies*. Washington, DC: The National Academies Press, 2013.

<sup>7</sup> See [http://www.conservation.ca.gov/cgs/information/publications/cgs\\_notes/note\\_36/Documents/note\\_36.pdf](http://www.conservation.ca.gov/cgs/information/publications/cgs_notes/note_36/Documents/note_36.pdf) (accessed January 2, 2014). The regions are: Colorado Desert, Peninsular Ranges, Transverse Ranges, Mojave Desert, Basin and Range, Sierra Nevada, Great Valley, Coast Ranges, Klamath Mountains, Cascade Range, and Modoc Plateau. The Geological Survey describes geomorphic regions as: “naturally defined geologic regions that display a distinct landscape or landform. Earth scientists recognize eleven provinces in California. Each region displays unique, defining features based on geology, faults, topographic relief and climate.”

## **X. STATEMENT OF OVERRIDING CONSIDERATIONS**

Because of the statewide scope of the EIR, the magnitude of the expected significant environmental effects from well stimulation, and the lack of an existing knowledge base about well stimulation in California, use of a Statement of Overriding Considerations should not be employed with respect to this EIR.

## **XI. CUMULATIVE IMPACTS**

The cumulative impacts analysis should include a full lifecycle analysis of the chemicals used in well stimulation and the oil and gas produced by well stimulation, including effects on air quality, water quality, seismicity, climate change, land use, hazardous wastes, wetlands, threatened and endangered species, and public health. The cumulative impacts must also consider the cumulative impact of oil and gas exploration, drilling, extraction, and wastewater disposal on wildlife habitat fragmentation. The cumulative impacts must also consider the cumulative impact of oil and gas exploration, drilling, extraction, and wastewater disposal on surface and ground water reserves, especially in areas with contaminated sources of drinking water. The cumulative impacts must also consider the cumulative impact of increased oil and gas exploration, drilling, extraction, and wastewater disposal on air quality, especially in areas that are already in non-attainment. As we have previously noted, well stimulation can make it possible for the development of oil and gas wells that would not have been possible otherwise, as the technique makes a well feasible by generating or boosting production.

## **XII. ENVIRONMENTAL JUSTICE**

The EIR should consider the effects of increased well stimulation on environmental justice communities, including in rural areas of Kern County and urban areas of Los Angeles County. In rural areas of Kern County, residents already suffer from the highest rates of respiratory illness in the nation and many residents lack access to safe and affordable drinking water. Degradation of air quality and contamination of drinking water disproportionately impacts the many communities in Kern and Los Angeles Counties with higher than average numbers of residents who live at or below poverty level. These residents generally cannot afford to purchase bottled water and water treatment devices, and lack any safety net when primary wage-earners can't work because they suffer from cancer or asthma and other respiratory illness.

## **XIII. HUMAN HEALTH RISK**

The human health risk analysis should include evaluation of the public health risk arising from the chemicals used in well stimulation treatments that are linked to health threats, such as cancer and neurological, developmental, and reproductive harm. The risks related to the chemical confidentiality provisions of Senate Bill 4 should also be evaluated.

The risk analysis should also include an evaluation of the health risks from explosions and accidents both at the well site itself and due to well stimulation related truck traffic.

#### **XIV. AIR QUALITY AND CLIMATE CHANGE**

Air pollution from the oil and natural gas sector is a serious problem that currently threatens the health of communities across the country. Flaring, venting, leaking and release of contaminants throughout the production, processing, transmission, and distribution systems are significant sources of air pollution from the oil and gas sector. One potentially large source of emissions during the production phase occurs during the flowback period after well stimulation. These emissions can include criteria and toxic air contaminants as well as methane, a greenhouse gas with a global warming potential at least 84 times greater than carbon dioxide over a 20-year horizon. Pollutants identified by the EPA as being related to the process of hydraulic fracturing and capturing hydrocarbons include but are not limited to alkanes, benzene, toluene, ethylbenzene, xylenes, and methanol. These toxic air contaminants and smog-forming volatile organic compounds (VOCs and NOx) threaten local communities and regional air quality.

The EIR should analyze the effects of increased well stimulation on California's ability to meet its AB32 targets and clean energy and efficiency goals. In that connection, attention should be paid to the recent Harvard University study on methane leakage.<sup>8</sup> Because increased well stimulation is expected to produce significant additional emissions of criteria pollutants and hazardous air pollutants, these must be analyzed and mitigation measures must be proposed and implemented to ameliorate and guard against their negative effects.

The EIR should also analyze the climate and air quality effects of the combustion of any hydrocarbons extracted as a result of well stimulation treatments. This analysis should include a comparison to existing and other new sources of oil or gas. The EIR must analyze the climate impacts of not extracting the hydrocarbon reserves that may become accessible due to well stimulation. The EIR should also evaluate the impacts of increased oil production from well stimulation on California's clean energy economy, efficiency goals, and transition to renewables. Again, more hydrocarbon production is made possible by the use of well stimulation. In the absence of these techniques, many hydrocarbons would be left in the ground.

#### **XV. WILDLIFE**

More than 100 endangered and threatened species live in the California counties and in California's coastal waters where well stimulation is expected to expand. The effects on each of these species and their habitat should be carefully examined.

#### **XVI. GROWTH-INDUCING IMPACTS**

The growth-inducing impacts of well stimulation on rural communities are expected to be significant, as can be seen in the shale gas boom in North Dakota. These impacts should be carefully analyzed, including impacts on physical infrastructure such as roads, as well as the ability of local and state governments to meet increased demands on services such as health care, law enforcement and other social services in areas experiencing growth due to an increase in drilling activity enabled by well stimulation.

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<sup>8</sup>Available at: <http://www.pnas.org/content/early/2013/11/20/1314392110.abstract> (last accessed on Jan. 16, 2014).

**XVII. GENERAL CEQA ISSUES**

As noted above, the EIR should make it clear whether it is proposed as a project, master, or programmatic EIR. This distinction makes a tremendous difference in terms of whether local, individual well stimulation projects will be able to tier off a programmatic EIR or will be subject to individual EIR requirements, if any. This is particularly significant in light of Kern County's attempt to evade CEQA for individual projects by making well stimulation permits ministerial. As discussed above, we strongly support well-specific environmental review in addition to the statewide EIR.

The EIR should also make clear whether DOGGR officials will have the ability to waive CEQA review for individual or group projects once the statewide EIR is completed. We strongly oppose such agency discretion and believe it would seriously compromise protection of public health and the environment.<sup>9</sup>

Thank you for your consideration of these comments.

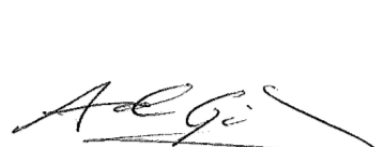
Yours truly,



David Pettit  
Senior Attorney  
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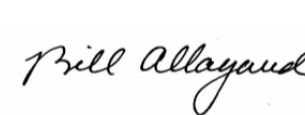
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Environmental Defense Center



Jeff Kuyper  
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Los Padres ForestWatch



Bill Allayaud  
California Director of Governmental Affairs  
Environmental Working Group

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<sup>9</sup> See, Pavley, Senator Fran. Letter to Secretary of the Senate Gregory Schmidt. September 12, 2013.