



California Independent Petroleum Association
Blair Knox, Director of Regional Affairs
1200 Discovery Drive Suite 100
Bakersfield, CA 93309
Phone: (661) 395-5287
E-Mail: blair@cipa.org

Date: May, 29, 2015



RE: Comments on the State Water Resources Control Board's Draft Model Criteria for Groundwater Monitoring in Areas of Oil and Gas Well Stimulation

Thank you for the opportunity to comment on the current Draft Model Criteria for SB4 related Groundwater Monitoring. The California Independent Petroleum Association (CIPA) is a non-profit, non-partisan trade association representing approximately 500 independent crude oil and natural gas producers, royalty owners, and service and supply companies operating in California. Our members represent approximately 70% of California's total oil production and 90% of California's natural gas production.

In general, CIPA supports the general and specific comments provided by WSPA in their comment letter provided by WSPA separately. In addition CIPA has the following comments provided in two sections: General and Specific comments.

GENERAL COMMENTS

Economic Impacts

The draft Model Criteria does not address the economic impacts associated with potential requirement to install multiple monitoring wells for each aquifer penetration. Monitoring wells can range in capital costs from \$100,000 for a shallow well to nearly \$1 million for a very deep well. CIPA requests the Board address these potential costs as this economic impact would severely burden CIPA members.

Effect on Small Operators

Monitoring criteria will be very difficult for smaller operators wishing to stimulate 1 to 3 wells in an isolated area. For example, the use of 3 monitoring wells to stimulate 1 well will raise the cost of the single well stimulation by approximately \$600,000 (assuming 3 wells to a depth of 1,000').

Narrow Aquifer Definition

The definition of an aquifer is so broad that any well outside of an exempted aquifer will be subject to the requirements, and all of the expense and burden to prove that protected groundwater exists falls on the operator.

Isolation Confirmation

Other methods of confirming fracture stimulation isolation should be considered viable options for water monitoring. If it can be illustrated that the fracture stayed in the intended zone and was contained, the need for monitoring at the aquifer becomes much less important.

A geological study based on well log information and known hydrogeology should be sufficient to prove the absence of protected water.

Limited Substance Sampling

Sampling requirements for multiple substances is overly broad and should be limited to either markers used in the stimulation or the additives in the fracture fluid.

Future Studies

Language should be included that acknowledges that if well stimulation is proved safe, that the monitoring requirement will be changed to require *less* monitoring by operators and not more.

Single Monitoring Well for Multiple Depths

Monitoring of multiple aquifer depths can be accomplished through a single well bore using a multi-chamber completion within that single well bore.

Risk Based Monitoring

A risk based analysis and subsequent monitoring design should be allowed. For example, if the risk to groundwater comes from the zone of fracture stimulation, then the monitoring of the deepest protected aquifer should be sufficient.

SPECIFIC COMMENTS

2.0 Area Specific Groundwater Monitoring

- Although the word “area-specific” is continually used in this document, the requirements are not area specific at all. The definition of an aquifer is so broad that any well outside of an exempted aquifer will be subject to the requirements, and all of the expense and burden to prove that protected groundwater exists falls on the operator. This burden of proof will vastly increase the cost of every stimulation.
- An aquifer is defined as yielding more than 200 gallons of water per day. This is an incredibly low value (0.14 gallons per minute) that would not come close to providing the daily water for a typical American household. A typical well rate that would sustain a

single family home is 5 GPM. We recommend this rate be raised to a minimum of 1 GPM or 1,440 gallons per day.

2.1.1 Groundwater Monitoring Design

- Requiring operators to drill three monitoring wells per aquifer for one stimulation is economically unfeasible. This requirement will raise the cost of a single stage one well stimulation by at least \$600,000 (assuming 3 wells to a depth of 1,000') and effectively prevent an operator from maximizing the resource recovery.
- The location of a monitoring well should be based on geology instead of using a cookie-cutter approach.
- Other methods of gaining data should be considered viable options for water monitoring. For example, radioactive tracers can give you a picture of the fracture dimensions after the job, confirming or denying the estimated fracture geometry and whether the fracture stayed in the intended zone. Calculating and plotting the net pressure during the actual stimulation will show the growth patterns and containment of the fracture. If it can be illustrated that the fracture stayed in the intended zone and was contained, the need for monitoring at the aquifer becomes much less important. The best data is the data we collect near the wellbore and the data collected during the stimulation activity itself.

2.1.3 Sampling and Testing Requirements

- The sampling and testing requirements should be based on chemicals used in the actual stimulation / and hydrocarbon production operations in the area.

2.2.1 Exclusion Based on Absence of Protected Water

- A geological study based on well log information and known hydrogeology should be sufficient to prove the absence of protected water. The concern is that the regulators will require drilling water monitoring wells in every case just to prove that there is no usable water, even in geographically remote areas where there are no current water wells.

4.0 Regional Groundwater Monitoring Program

- If the area-specific water monitoring wells show no evidence of contamination after a period of 2 years, then a regional monitoring program should not be necessary. Please provide language that acknowledges that if well stimulation is proven safe and effective and remains isolated, that the monitoring requirement will be changed to require *less* monitoring by operators and not more.

Thank you again for the opportunity to comment. If you have questions or concerns please do not hesitate to contact CIPA anytime.

Sincerely,

A handwritten signature in black ink that reads "Blair Knox". The signature is written in a cursive style with a large, prominent initial 'B'.

Blair Knox