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## State Water Resources Control Board

February 8, 2013

The Honorable Fran Pavley  
California State Senate  
State Capitol, Room 4035  
Sacramento, CA 95814

The Honorable Michael Rubio  
California State Senate  
State Capitol, Room 2066  
Sacramento, CA 95814

Dear Senators Pavley and Rubio:

Thank you for your letter of January 22, 2013 requesting that the State Water Resources Control Board (State Water Board) provide information on the State Water Board and Regional Water Quality Control Boards' (Regional Water Boards') role in regulating hydraulic fracking in California with respect to water quality. Our responses to your questions are below.

**1. What is the water boards' existing statutory and regulatory authority to regulate water quality?**

The State Water Board and Regional Water Boards' (collectively referred to as "the Water Boards") existing statutory authority to regulate water quality in the state is contained primarily in the state Porter-Cologne Water Quality Control Act (Water Code, §13000 *et seq*) (Porter Cologne) and delegated authority under the federal Clean Water Act. The State Water Board's regulatory authority is contained primarily in California Code of Regulations, Title 23. Both federal and state law require the Regional Water Boards to adopt water quality standards by designating the beneficial uses to be protected and by adopting water quality objectives that protect the designated uses. In California, the water quality standards are reflected in Water Quality Control Plans (Basin Plans), and all regulatory actions taken by the Regional Water Boards must comply with the applicable Basin Plans and federal regulations.

The Water Boards are responsible for regulating all actual and potential discharges of waste to the waters of the state, including discharges or potential discharges from point sources such as industrial facilities, wastewater treatment plants, stormwater runoff, landfills, and confined animal facilities, as well as from nonpoint sources, such as

agricultural activities, grazing, and timber operations. All dischargers/potential dischargers must obtain a "permit" from the Water Boards either in the form of a National Pollutant Discharge Elimination System (NPDES) (federal) permit, Waste Discharge Requirements (WDRs) or under a formal conditional waiver of WDRs (waiver). Waivers can be used to regulate individual projects or any project of one or more particular types (categorical waivers). The Water Boards have authority to require persons suspected of discharging waste that could affect water quality to investigate and submit technical reports regarding the discharge. In addition, the Water Boards have broad enforcement powers, including the authority to require persons responsible for threatened or actual water pollution or nuisance to remediate the discharge and restore water quality.

**2. How does the water boards' authority apply to risks to surface and groundwater quality from disposal or spills of hydraulic fracturing fluids and waste hydraulic fracturing fluids? Does their authority depend on how the waste was generated and/or how it is disposed of?**

Under Porter Cologne, the Water Boards have the authority to permit, through the issuance of NPDES Permits or WDRs, the disposal of hydraulic fracturing fluids and wastes to protect surface water and groundwater quality, and to take enforcement action to require the cleanup of spills of such wastes that could potentially threaten water quality. Specifically, under current law:

- Discharges to surface water require a NPDES Permit from a Regional Water Board, regardless of the source of the discharge.
- Discharges that may affect groundwater require WDRs.
- Spills are subject to cleanup and abatement orders.

Persons who propose to discharge waste that could affect water quality or propose to operate or construct an injection well must file a report with the Water Boards. (Water Code, §13260(a).)

In 1988, the State Water Board and the Department of Conservation entered into a Memorandum of Agreement (MOA) to address oil and gas related discharges. The Water Code recognizes the Water Board's MOA with the Department of Conservation's Division of Oil, Gas, and Geothermal Resources (DOGGR), which allows for Class II underground injection wells to be regulated by DOGGR instead of the Water Boards. (Water Code, § 13260(j).)

The Water Boards retain authority to address water quality impacts related to any activity, including oil and gas activities, independent of the MOA. The authority does not depend on how the waste is generated; however, the Water Boards do regulate some

wastes differently based on the type of waste (e.g., hazardous versus non-hazardous wastes).

- 3. Hydraulic fracturing fluid waste, or wastewater, may be generated by Class II wells and non-Class II wells, both under DOGGR's jurisdiction. Wastewater may be permanently disposed of in a Class II well, discharged to nearby surface water, or transported to sewage treatment facilities. Can you explain how the 1988 Memorandum of Agreement (MOA) between the State Water Board and DOGGR divides authority over hydraulic fracturing fluid and wastewater? Are hydraulic fracturing fluids or wastewater considered Class II wastes under the terms of the MOA? Has hydraulic fracturing wastewater been identified to the water boards for discharge or disposal?**

As indicated by the question, there are multiple ways to dispose of a waste. The 1988 MOA addresses wastewater produced by oil and gas wells, which includes wastewater produced in hydraulic fracturing activities.

The federal Safe Drinking Water Act defines injection wells as part of the U.S. Environmental Protection Agency's (US EPA) Underground Injection Control Program (UIC). Injection wells related to enhanced oil recovery, or disposal of wastewater associated with oil and gas activities are "Class II". DOGGR has received authorization or primacy from US EPA to regulate for Class II wells in California. Class II well activities include wastewater injection, steam injection, steam-flood injection, or enhanced oil recovery using carbon dioxide.

Production wells that are hydraulically fractured are not by definition considered Class II injection wells\*, unless the fracturing fluid contains diesel. Once fluids return to the surface in the form of flowback water or production water, that water is defined as wastewater, which when re-injected is subject to Class II regulations and the MOA.

(\*Hydraulically fractured wells are not classified as Class II wells because of an exemption in the Safe Drinking Water Act, added as part of the Energy Policy Act of 2005. The exemption is included in the federal definition of "underground injection" in 42 U.S.C., §300h, which states that the term underground injection "excludes... the underground injection of fluids or propping agents (other than diesel fuels) pursuant to hydraulic fracturing operations related to oil, gas, or geothermal production activities.")

- 4. Has the 1988 MOA been revised or are there plans to revise the MOA?**

The Water Boards and DOGGR have informally discussed updating the MOA in the last few years; however, there are no formal plans at this time. The Water Boards are

working with DOGGR on their "discussion draft" of proposed hydraulic fracturing regulations prior to the formal rulemaking process.

- 5. In addition to the 1988 MOA with DOGGR, do the water boards share regulatory authority and jurisdiction over hydraulic fracturing fluid or wastewater with another regulator? If so, can you specify the regulator and how authority is shared?**

As discussed in the response to question 3, in addition to DOGGR, the US EPA shares regulatory authority with the State Water Board to address injection wells in California. The US EPA has authority to regulate injection wells as part of the federal Underground Injection Control Program under the Safe Drinking Water Act, Sections 1421, 1422, and 40 CFR 144. The US EPA released a draft guidance memo for hydraulic fracturing wells that are fractured using diesel fuels:

(<http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/upload/hfdieselfuelsguidance508.pdf>). In the draft guidance, the US EPA indicates that wells that are fractured with diesel fuels should be regulated as Class II wells.

- 6. Do you regard the water board's existing statutory authority and regulations to be sufficient to minimize potential risks to water quality from hydraulic fracturing activities? If not, what changes are necessary?**

The Water Boards' existing statutory authorities and regulations are sufficient to minimize potential risks to water quality related to hydraulic fracturing activities. In the case of oil and gas related activities, the Water Boards historically have deferred to DOGGR's specific authority and expertise with respect to oil, gas, and geothermal wells. In that regard, the Water Boards do not have an established permitting scheme for hydraulic fracturing or other uses of injection wells for oil and gas production operations. Instead, the Water Boards have focused their efforts on using their authority to require investigation and cleanup of spills from these operations.

In order to provide efficient and effective regulatory oversight of hydraulic fracturing operations, the State Water Board is reviewing DOGGRS' discussion draft regulations and working with DOGGR to ensure that regulations are protective of water quality. The Water Boards also are working with DOGGR to ensure that the Water Boards are notified of any type of oil and gas well failure. This will help the Water Boards evaluate whether there are ongoing water quality concerns associated with gas and oil activities.

The Water Boards generally consider hydraulic fracturing a low threat to groundwater because oil production/hydraulic fracturing predominantly occurs at thousands of feet below the base of fresh groundwater, separated by thousands of feet of solid rock. It is very unlikely that fluids emplaced by hydraulic fracturing will migrate upwards through

solid cap rock and other low-permeability zones to reach drinking water groundwater aquifers.

**7. If the water boards have jurisdiction over hydraulic fracturing fluids or wastewater at any point in the hydraulic fracturing lifecycle, what statutory and regulatory authority governs the disclosure of the chemical composition of the fluids? What is the time period for disclosure?**

Hydraulic fracturing fluid is mostly comprised of water (generally greater than 95 percent). The remaining part of the fluid consists of chemicals added to prevent the buildup of minerals, to prevent corrosion, and to keep fractures from closing. The US EPA has identified over 300 different chemicals that have been used by hydraulic fracturing operators over the last decade.

Water Code §13267(d) allows the Water Boards to require any person who is discharging or proposing to discharge fluid into an injection well to provide information necessary to determine whether the injection will affect the quality of the waters of the state. Water Code §13267(b)(2) also allows for portions of those reports to be kept secret. The authority granted by these two sections of the Water Code allow the Water Boards to request proprietary or trade secret information from hydraulic fracturing operations, while maintaining the information as a trade secret.

As discussed previously, in the case of oil and gas related activities, the Water Boards historically have deferred to DOGGR's specific authority and expertise with respect to oil, gas, and geothermal wells. In that regard, the Water Boards do not have an established permitting scheme for fracking or other uses of injection wells for oil and gas production operations. Instead, the Water Boards have focused their efforts on using their authority to require investigation and cleanup of spills from these operations.

**8. What implementation, inspection, auditing and enforcement do the water boards currently perform where it has jurisdiction over hydraulic fracturing fluids and wastewater?**

Historically, the Water Boards have not issued permits or inspected/audited hydraulic fracturing operations and have not historically inspected/audited wastewater injection operations, since these activities are overseen by DOGGR under the 1988 MOA. DOGGR and the Water Board staff work together to establish protocols and requirements addressing where wastewater may be injected.

Wastewater discharged to surface waterways or discharges to land that are issued WDRs are reviewed by Water Board staff prior to issuance of a permit. For wastewater stored in surface impoundments, Regional Water Board staff conduct regular inspections and may take samples for wastewater analysis. In cases where

wastewater stored in surface impoundments has impacted groundwater, the Water Boards have used their enforcement authority to require groundwater cleanup. The Water Boards and DOGGR historically have cooperated in identifying small surface spills, unrelated to hydraulic fracturing, that require cleanup.

**9. Was the SWRCB consulted in the development of DOGGR's draft hydraulic fracturing regulations?**

The Water Boards were invited to review the discussion draft and we are currently in the process of reviewing and commenting on it. The Water Boards did not directly assist in the development of the discussion draft language prior to that date.

**10. DOGGR's proposal calls for notifying the Regional Water Quality Control Board (RWQCB) in advance of hydraulic fracturing being performed on a well. How would this notification be incorporated into the water boards' activities?**

DOGGR's discussion draft regulations call for pre-notification of a production well to be hydraulically fractured, and for well operators to send pre-notification to the applicable Regional Water Board in addition to DOGGR. The Water Boards currently are reviewing the discussion draft regulations and will be working with DOGGR regarding the proper and necessary types of notifications that should be required. I would note that the draft regulation's pre-notification deadline of ten days prior to fracturing provides too little time for the Regional Board to review the proposed fracturing operation and the potential threat to groundwater quality. In addition, staff review would require time and resources that currently are not funded.

**11. The Groundwater Ambient Monitoring and Assessment Program established by the SWRCB in 2000, routinely monitors water quality in many of California's ground water basins. Will the program be sufficient to monitor groundwater quality in the vicinity of hydraulically fractured wells? Will there be pre-hydraulic fracturing, baseline data available? Are the chemical species typically used in hydraulic fracturing tracked? Do aquifer exemptions alter where monitoring occurs?**

The State Water Board's GAMA Program has been successful at providing a comprehensive baseline of groundwater quality in the State since sampling began in 2001. The GAMA program provides comprehensive baseline data on ambient groundwater quality in the state, at the basin level. This type of data is useful in monitoring the quality of a groundwater basin as a whole, over time. This information is publicly available on our website.

The GAMA data, however, will likely not be useful to monitor whether there are adverse impacts from a particular point source, such as hydraulic fracturing. In order to measure the impact on water quality of a particular point source, one needs a specific monitoring protocol that includes the proper placement of monitoring wells to detect likely discharges from the activity. The wells from which GAMA data is obtained are largely drinking water wells which were not installed for the purpose of detecting potential discharges from typically much deeper hydraulic fracturing operations.

In addition, it should be recognized that monitoring for the effects of hydraulic fracturing on groundwater sources used for drinking is problematic for the following reasons:

- The great depth separating the rock formation that will be fractured and the lowest-most drinking water aquifer. In most cases, thousands of feet of solid rock separate these two zones.
- The great depth to the lowest-most drinking water aquifer, which is typically hundreds of feet below the surface, makes installation of deep monitoring wells extremely expensive and technically challenging.
- Integration of water from multiple depths within an aquifer, depending on how the well is constructed, will potentially dilute any evidence of contamination (which would likely be at low levels to begin with).
- Most hydraulic fracturing wells take place in established oil fields where there are typically no drinking water aquifers (though some hydraulic fracturing does take place in more populated areas, and future fracturing may target different geologic formations).

In order to provide the public with as much information as is available on the relationships between fracking operations and water quality impacts, the State Water Boards is working with DOGGR to integrate the information in FracFocus into Geotracker GAMA, so that the public will be able to use a Google maps interface to see both the location of fracking operations and the location of nearby drinking water wells. Additionally, the interface allows the user to directly access the drinking water quality monitoring information associated with those wells.

**12. Do the water boards routinely measure the radioactivity of surface or groundwater, or of discharges?**

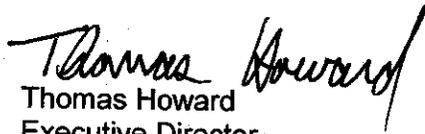
The Water Boards' GAMA Priority Basins Project and Domestic Well Project routinely monitor for gross alpha radionuclides and uranium (radioactivity) in groundwater. Gross alpha radionuclides are a naturally occurring contaminant. These projects have found that, on average, roughly 10 percent of the wells tested exceed the maximum contaminant level for radioactivity. In addition, the GeoTracker GAMA groundwater information system includes drinking water well monitoring data that is routinely reported by public water systems to the California Department of Public Health (CDPH). The CDPH drinking water well data also includes testing data for radioactivity

FEB - 8 2013

groundwater. The Water Boards do not routinely measure ambient surface waters for radioactivity. In general, the Water Boards require dischargers to monitor discharges for specific constituents based on site specific conditions, including any discharges authorized in their NPDES permits or WDRs, and would require testing for radioactivity where warranted. To our knowledge, there are no existing requirements to monitor wastewater associated with oil and gas operations for radioactivity.

Please let me know if you have any further questions.

Sincerely,

  
Thomas Howard  
Executive Director

cc: See next page.

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