

## SUMMARY SHEET OF CHANGES

**DRAFT**

### **MODEL CRITERIA FOR GROUNDWATER MONITORING IN AREAS OF OIL AND GAS WELL STIMULATION**

Revised June 23, 2015

This summary sheet outlines the significant edits that were made to the DRAFT MODEL CRITERIA FOR GROUNDWATER MONITORING IN AREAS OF OIL AND GAS WELL STIMULATION that was posted for public comment on April 29, 2015.

Document Section	Modification to the Document
Section 1.0 Introduction	<p>The introduction was divided into three sections (background, purpose, and scope) and text was added, including:</p> <ul style="list-style-type: none"><li>• The text of Water Code section 10783 (Appendix A).</li><li>• Clarification that the methods described in the document are not intended for site investigation and cleanup.</li><li>• Clarification that in cases of well failure or breach, operators are required to notify the State Water Board and comply with applicable Division of Oil, Gas, and Geothermal Resources (DOGGR) well stimulation regulations. In addition, the State Water Board and Regional Water Boards (collectively, Water Boards) will exercise their authority under the Porter-Cologne Water Quality Control Act to direct well operators to implement necessary actions to assess any impacts to groundwater.</li></ul>
Section 2.1 Groundwater Monitoring Where Protected Water is Present	<p>The requirement of a yield of 200 gallons per day has been removed from the definition of protected water.</p>
Section 2.2.1 Groundwater Monitoring Design	<ul style="list-style-type: none"><li>• Clarification that area-specific monitoring is not designed for early detection of well stimulation impacts to groundwater, but rather is designed to characterize baseline water quality conditions and detect potential impacts to protected water from well stimulation treatments.</li><li>• Water Boards staff may consider proposed alternatives and modifications to the number and locations of monitoring wells, based on factors such as site-specific conditions (e.g. terrain, geology, access), number and depth of aquifers containing protected water, and potential risk to receptors (e.g. groundwater resources).</li></ul>

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<b>Document Section</b>	<b>Modification to the Document</b>
Section 2.2.2 Groundwater Monitoring Plan Requirements	The Axial Dimensional Stimulation Area (ADSA) information that is submitted within the groundwater monitoring plan must be approved by DOGGR.
Section 2.2.3 Sampling and Testing Requirements	<ul style="list-style-type: none"><li>• All sampling work shall be collected under the oversight of a California Registered Professional Engineer or Professional Geologist.</li><li>• Water Boards staff may request aquifer testing at monitoring wells if data are needed to evaluate aquifer conditions in the area of stimulated well(s).</li><li>• Based on analytical results, the Water Boards may modify the list of required analytes.</li><li>• The list of required analytes for groundwater sampling has been moved to Appendix B.</li></ul>
Section 2.2.4 Reporting Requirements	Reporting is to include: <ul style="list-style-type: none"><li>• A detailed description of any new wells added within two times the DOGGR-approved ADSA after approval of the groundwater monitoring plan.</li><li>• A summary of groundwater flow patterns, gradients, known velocities, and an analysis and interpretation of data collected to date and any potential impacts from well stimulation activities for each monitored aquifer.</li></ul>
Section 2.3 Requests for Exclusion from Area-specific Groundwater Monitoring Requirement Based on Absence of Protected Water	The exclusion from area-specific groundwater monitoring based on location of the well to be stimulated within the boundary of a regional groundwater monitoring program has been removed.
Section 4.0 Regional Groundwater Monitoring program	Text added to clarify, among other things, that: <ul style="list-style-type: none"><li>• The Regional Monitoring Program will be conducted in a phased approach, with the first phase anticipated to take approximately five years to accomplish.</li><li>• Due to the number and density of monitoring wells necessary to properly assess the potential effects of well stimulation treatments, it is expected that the Regional Monitoring Program well network will need to be supplemented with additional monitoring wells installed as part of an area-specific groundwater monitoring plan.</li><li>• Pilot and special studies will be conducted as part of the Regional Monitoring Program.</li></ul>