



WELL STIMULATION TREATMENTS

February 2017

Introduction

There have been questions about whether the Los Cerritos Wetlands Oil Consolidation and Restoration Project (Project) will include well stimulation techniques, particularly fracking. This paper provides an overview as to what activities generally constitute well stimulation treatments, and whether or not those activities are part of the Project currently proposed. An explanation of the regulatory framework to date is also provided.

What are well stimulation treatments?

Oil and gas development in California is regulated by, among other regulations, the California Public Resources Code. As defined in the Public Resource Code, well stimulation treatments are “any treatment of a well designed to enhance oil and gas production or recovery by increasing the permeability of the formation. Well stimulation treatments include, but are not limited to, *hydraulic fracturing treatments* and *acid well stimulation treatments*.”¹ These are generally described below.

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Hydraulic fracturing, also called fracking, is a drilling technique wherein water, sand (or similar substance) and a small amount of additives are pumped down the well bore under high pressure. This process either causes existing fractures to expand, or new fractures to form. After the fractures are created, the water and additives are drawn back up the well bore to the surface. The sand remains in the new or expanded fractures and serves to prop them open, creating a pathway for the oil and gas to enter the wellbore and flow into the well (see Figure 1 on the following page).

Acid well stimulation treatments apply one or more acids to the well or underground geologic formation, at variable pressures. Acid well stimulation treatments include acid matrix stimulation treatments and acid fracturing treatments. Acid matrix stimulation treatments involve pumping acid into a well at a pressure low enough to prevent a reservoir rock from fracturing. Acid fracturing treatments use acids to fracture the underground rock; however this practice is used primarily in carbonate reservoirs, which generally do not generally occur in California.

¹ Public Resource Code Section 3157(a)

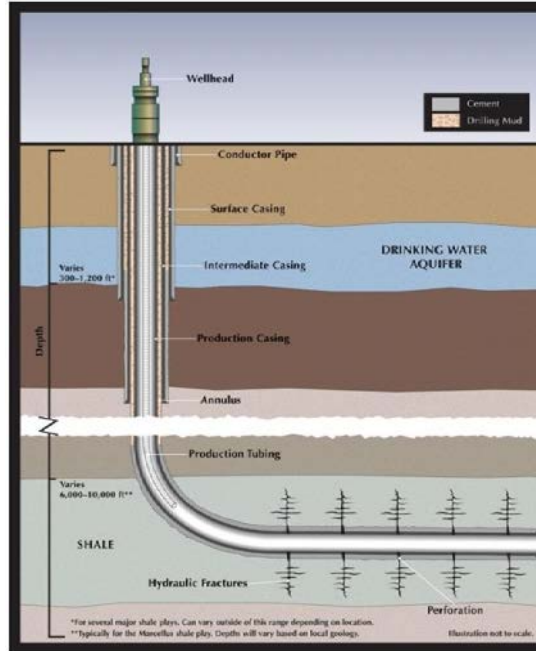


Figure 1- Typical configuration for a horizontally drilled, hydraulically fractured well (Source: EPA)

The environmental impacts from these well stimulation treatments were analyzed in the California Division of Oil, Gas and Geothermal Resources (DOGGR) “Analysis of Oil and Gas Well Stimulation Treatments in California Environmental Impact Report,” and mitigation measures were identified.² Several of the mitigation measures were proposed to be adopted as regulations by DOGGR, while the majority of the mitigation measures were to be included in DOGGR’s Mitigation Policy Manual that DOGGR will use for determining the exact mitigation measures that might be necessary for a particular proposed well stimulation treatment permit or groups of permits.

Does the Project include well stimulation treatments, especially fracking?

The current Project proposal includes the drilling and operation of up to 120 oil production, water injection (water flooding³) and water source wells⁴ from two sites. Throughout the life of the Project, well maintenance and workover operations would be periodically necessary to sustain production from the wells. Typical routine well maintenance activities include, but are not limited to, repair or replacement of wearable parts and maintenance of downhole components. Typical workover operations likely involve downhole repairs and may involve pulling tubing and/or replacing downhole pumping equipment.

²Analysis of Oil and Gas Well Stimulation Treatments in California Final Environmental Impact Report; accessed: http://www.conservation.ca.gov/dog/Pages/SB4_Final_EIR_TOC.aspx

³ See Water Injection White Paper

⁴ See Water Injection White Paper

Neither the Project's water flooding practices nor well maintenance activities constitute well stimulation treatments, as defined in the amended Public Resource Code. Specifically, well stimulation treatments do not include, "steam flooding, water flooding, or cyclic steaming and do not include routine well cleanout work, routine well maintenance, routine removal of formation damage due to drilling, bottom hole pressure surveys, or routine activities that do not affect the integrity of the well or the formation."⁵

The current Project proposal does not include the use of well stimulation treatments, as defined above.

Regulation of Fracking in California

Senate Bill 4 (Pavley) was signed into law by Governor Edmund G. Brown, Jr. on September 20, 2013 and amended multiple sections of the Public Resources Code⁶ and the Water Code⁷ of California. Senate Bill 4 (SB 4) established a comprehensive regulatory program for oil and gas well stimulation treatments. Generally, SB 4 required the DOGGR to prepare an Environmental Impact Report (EIR) analyzing potential environmental impacts associated with well stimulation treatments in California and recommended mitigation to offset these impacts; required adoption of fracking regulations; established a permit system to regulate fracking and related drilling technologies; expanded the volume of information about oil operations that is publicly available; established monitoring and reporting requirements; and allowed for trade secret protections.

Pursuant to SB 4, in July 2015, the "Final Permanent Well Stimulation Treatment Regulations"⁸ went into effect and the "Analysis of Oil and Gas Well Stimulation Treatments in California" EIR⁹ was certified. Also, a permit system was formed, requiring oil and gas operators to submit a permit application for DOGGR's review and possible approval prior to conducting well stimulation treatments.

Also in 2015, Californians Against Fracking (a coalition of environmental and community organizations) petitioned¹⁰ California Governor Brown to use his emergency powers under the duties of the Governor's office by implementing an immediate statewide moratorium on hydraulic fracturing and other forms of well stimulation. On April 1, 2015, Governor Brown rejected the petition, defending well stimulation and fracking's safety record while stressing a balance between health and safety concerns and the economic benefits of drilling.

In January 2016, the Center for Biological Diversity (CBD) settled a lawsuit with the Obama administration requiring a halt to offshore fracking in federal waters off California pending the Department of the Interior's completion of a final environmental review pursuant to the National Environmental Policy Act. After preparation of an Environmental Assessment analyzing the potential effects of well stimulation treatments on the Pacific Outer Continental Shelf, the Department of the

⁵ Public Resource Code Section 3157(b)

⁶ SB 4 amended Sections 3213, 3215, 3236.5 and 3401; and added a new Article 3 (Sections 3150 through 3161) to Chapter 1, Division 3 of the Public Resource Code.

⁷ SB 4 added a new Section 10783 to Division 6, Part 2.76 (Groundwater Quality Monitoring) of the Water Code.

⁸ California Code of Regulations Title 14, Division 2, Chapter 4.

⁹ Analysis of Oil and Gas Well Stimulation Treatments in California Final Environmental Impact Report. Prepared for California Department of Conservation. State Clearinghouse No. 2013112046. July 2015.

¹⁰ Emergency Permit for an Immediate Statewide Moratorium on Fracking and Well Stimulation, Pursuant to Cal. Administrative Procedure Act, Government Code § 11340.6; February 26, 2015.

Interior issued a Finding of No Significant Impact on May 24, 2016, effectively lifting the off coast fracking ban. On November 11, 2016 the Environmental Defense Center and Santa Barbara Channelkeeper sued the Bureau of Ocean Energy Management, the Bureau of Safety and Environmental Enforcement and the U.S. Department of the Interior and officials within those agencies alleging the failure of the federal government to analyze the impacts from well stimulation treatments for oil drilling off California's coast. On November 15, the CBD and Wishtoyo Foundation sued the same agencies under similar grounds.

Various counties and municipalities throughout California have instituted moratoriums or bans on fracking. The City of Long Beach does not currently have such a restriction and operates consistent with Federal and State guidelines.