CALIFORNIA Water Boards

Glossary

Oil and Gas Water Quality Monitoring Program

OIL AND GAS PRODUCTION GLOSSARY

California Environmental Protection Agency (CalEPA): A state agency with a mission to restore, protect and enhance the environment, to ensure public health, environmental quality and economic vitality. CalEPA fulfills this mission by regulating air, water and soil quality, pesticide use and waste recycling and reduction. CalEPA comprises six boards, departments and offices, including the California Water Boards.

California Department of Conservation Geologic Energy Management Division (CalGEM): A State agency protecting public health, safety, and the environment by overseeing oil, natural gas, and geothermal industries, while helping California achieve its climate change and clean energy goals. To do that, CalGEM regulates the drilling, operation, and permanent closure of energy resource wells.

State Water Resources Control Board (State Water Board): A State agency protecting water quality by setting statewide policy, supporting Regional Water Boards, and reviewing petitions that contest Regional Board actions. The State and Regional Water Boards (California Water Boards) implement the federal Clean Water Act among other federal and state environmental and water quality related laws in California and are part of the California Environmental Protection Agency (CalEPA).

Regional Water Quality Control Boards (Regional Water Boards): Part of the California Water Boards. The Regional Water Boards provide local implementation of statewide policy and regulations, set water quality standards for their respective region, issue waste discharge requirements, and determine compliance with and enforce those requirements. There are nine Regional Water Boards, each with seven appointed Board members. The Los Angeles Regional Water Board covers most of Los Angeles and Ventura Counties along with small parts of Kern and Santa Barbara Counties.

Aquifer: An underground geological formation that contains or can transmit groundwater.

Wells: A hole drilled into the ground with or without casing to obtain and transport water, oil, or gas.

Class II Wells: The USEPA's Underground Injection Control (UIC) Program classifies six kind of injection wells. Class II wells are injection wells used to (1) inject

fluids for enhanced oil recovery or (2) inject fluids that are brought to the surface during oil and gas production for disposal.

Enhanced Oil Recovery: Enhanced Oil Recovery (EOR) is an oil and gas extraction method that improves oil and fluid flow within the reservoir and restores formation pressure. EOR uses three techniques: thermal recovery, gas injection, and chemical injection. The main techniques being used in California are waterflooding, thermal recovery (steamflood and cyclic steam) and gas injection.

Basin Plan: Also called a "water quality control plan" is designed to preserve and enhance water quality and protect the beneficial uses of all regional waters. The Basin Plan: (1) designates beneficial uses of surface and ground waters; (2) sets water quality objectives that must be met or maintained to protect those uses; and (3) describes implementation programs to protect all waters in the region. It incorporates (by reference) all applicable plans, and water quality policies and regulations.

Beneficial Uses of Water: Beneficial uses form the cornerstone of water quality protection under a Basin Plan. Together with numerical water quality objectives, they make up the water quality standards for all surface waterbodies and groundwater basins. Uses of water protected against degradation include domestic, municipal, agricultural, industrial supply, power generation, recreation, aesthetic enjoyment, navigation, preservation of fish and wildlife, and other aquatic uses. The Water Boards' Oil and Gas Monitoring Program reviews well stimulation and UIC projects to protect beneficial use waters and underground sources of drinking water.

Hydrocarbons: Organic chemical compounds of carbon and hydrogen that are the main components of petroleum and natural gas. They are primary components of fuels and lubricants, as well as raw materials to produce plastics, fibers, rubbers, solvents, explosives, and industrial chemicals.

Hydraulic Fracturing: Also called "fracking," is an oil and gas well stimulation technique that typically involves injecting water, sand, and chemicals under high pressure into a bedrock formation via a well. This process creates fractures in the rock and increases the size, extent, and connectivity of existing fractures. It is commonly used in low-permeability rocks like tight sandstone, shale, and some coal beds to increase oil and/or gas flow to a well or to improve underground reservoir permeability.

Produced Water: Water, often brine (salt water) brought up from the ground during the extraction of oil and gas, which can include formation water, injection water, and chemicals added to the well or during the oil/water separation process.

Produced Water Ponds/Sumps: Any open pit, pond, excavation, natural depression, or area that collects and/or stores fluids or solid waste from one or a group of oil and gas wells.

Project Approval Letter (PAL): Written record of CalGEM documenting approval of a UIC project, including any project approval conditions, such as water quality monitoring and reporting.

Underground Injection Control (UIC) Program: USEPA has delegated primacy authority to CalGEM for regulating three types of Class II wells for oil and gas production: (1) enhanced recovery wells where brine, water, steam, carbon dioxide, or other fluids and gases are injected into oil or gas-bearing formations to increase oil and gas recovery; (2) disposal wells where water and other fluids brought to the surface during oil and gas production are disposed of; and (3) storage wells into which liquid petroleum products are injected as a reserve.

Underground Injection Project (UIP): Injection into one or more wells over an extended period for enhanced oil recovery, disposal, storage of liquid hydrocarbons, pressure maintenance, or subsidence mitigation. Project examples include injection, steamflood injection, cyclic steam injection, carbon dioxide enhanced oil recovery, and disposal injection.

Subsidence: Sinking of the ground because of underground material movement, which can be caused by the removal of water, oil, natural gas, or mineral resources by pumping, fracking, or mining activities in some circumstances. It can also be caused by natural events such as earthquakes, soil compaction, glacial-related land movement, erosion, sinkholes, and the addition of water to fine soil deposits (loess). Subsidence can happen over very large areas, like whole states, or very small areas, like the corner of your yard.

Underground Source of Drinking Water (USDW): An aquifer or portion of an aquifer that has not been exempted by the USEPA that: (1) supplies a public water system; or (2) contains enough groundwater to supply a public water system and currently supplies drinking water for human consumption or contains fewer than 10,000 milligrams per liter (mg/L) of total dissolved solids.

Well Stimulation: Treatment to restore or enhance well productivity, which includes hydraulic fracturing and matrix treatments. Fracturing treatments occur above the reservoir fracture pressure and are used to increase well productivity. Matrix treatments are performed below the reservoir fracture pressure to generally restore the natural permeability of the reservoir following damage. Shale gas reservoirs typically involve hydraulic fracturing treatments.

Caption: Oil Field Production Pad

Caption: Oil Pump

This document was updated in May 2022.