# CALIFORNIA LEGISLATURE

STATE CAPITOL
SACRAMENTO, CALIFORNIA
95814

OVERSIGHT HEARING OF THE
SENATE NATURAL RESOURCES AND WATER
AND
ENVIRONMENTAL QUALITY COMMITTEES
FRAN PAVLEY, CHAIR
ROBERT WIECKOWSKI, CHAIR

Tuesday, March 10, 2015
9:30 a.m.
CALIFORNIA STATE CAPITOL
JOHN L. BURTON HEARING ROOM (4203)

# Ensuring Groundwater Protection: Is the Underground Injection Control Program Working?

## BACKGROUND INFORMATION

---

### Overview

There are approximately 50,000 underground injection wells in California. The majority of which are used for Enhanced Oil Recovery (EOR) operations to spur oil and gas production.

Approximately 75% of California's oil and gas production is attributable to the use of EOR. The wastewaters produced by oil and gas extraction are disposed of in approximately 1,500 injection waste disposal wells.

Since June 2014, when a set of oil and gas waste disposal wells were ordered "shut in" by the Division of Oil, Gas and Geothermal Resources (DOGGR), there have been a series of news stories released, as well as acknowledgements made by DOGGR, that numerous oil and gas related injected wells are improperly sited and present a risk of contamination to good quality groundwater used for drinking water and agricultural irrigation purposes.

## Underground Injection Control (UIC) Program Overview

What is an Injection Well?

An injection well is a device that places fluid deep underground into porous rock formations, such as sandstone or limestone, or into or below the shallow soil layer. These fluids may be water, wastewater, brine (salt water), or water mixed with chemicals.

The UIC program defines an injection well as:

- A bored, drilled, or driven shaft, or a dug hole that is deeper than it is wide,
- An improved sinkhole, or
- A subsurface fluid distribution system.

How an injection well looks and is constructed depends on the fluid injected and the depth of the injection zone. For example, deep wells that inject hazardous wastes or carbon dioxide ($CO_2$) into isolated formations far below the earth's surface are designed to provide multiple layers of protective casing and cement. Shallow wells that inject into or above drinking water sources are usually of simple construction and inject non-hazardous fluids.

For What Purposes are Injection Wells Used?

Injection wells have a range of uses that include waste disposal, EOR, mining, long-term carbon dioxide ($CO_2$) storage, and preventing salt water intrusion.

Widespread use of injection wells began in the 1930s to dispose of brine generated during oil production. Injection effectively disposed of unwanted brine, preserved surface waters, and in some formations, enhanced the recovery of oil.

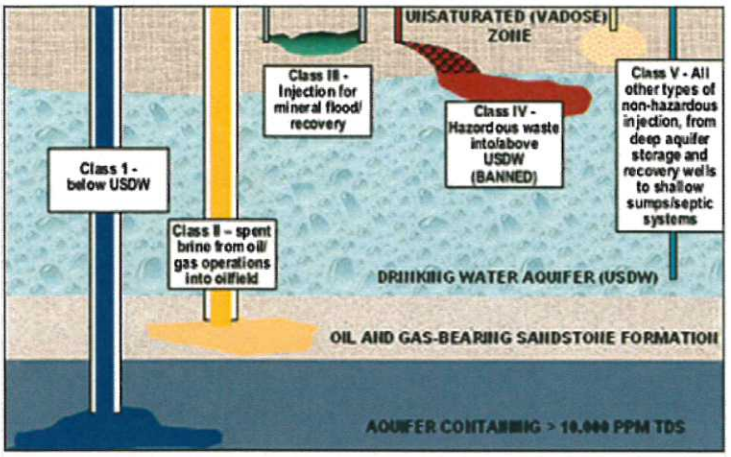
In the 1950s, chemical companies began injecting industrial wastes into deep wells. As chemical manufacturing increased, so did the use of deep injection. Injection was considered a safe and inexpensive option for the disposal of unwanted and often hazardous industrial byproducts.

How Does the UIC Program Categorize the Different Types of Injection?

US EPA's regulations group injection wells into six groups or "classes" which categorize wells with similar functions, construction, and operating features. This provides consistent technical requirements to be applied to each well class.

The six classes are based on similarity in the fluids injected, activities, construction, injection depth, design, and operating techniques. This categorization is meant to ensure that wells with common design and operating techniques are required to meet appropriate performance criteria for protecting underground sources of drinking water (USDWs, as defined below).

| CLASSES | USE |
|---|---|
| Class I | Inject hazardous wastes, industrial non-hazardous liquids, or municipal wastewater beneath the lowermost USDW. |
| **Class II** | **Inject brines and other fluids associated with oil and gas production, and hydrocarbons for storage.** |
| Class III | Inject fluids associated with solution mining of minerals beneath the lowermost USDW. |
| Class IV | Inject hazardous or radioactive wastes into or above USDWs. These wells are banned unless authorized under a federal or state ground water remediation project. |
| Class V | All injection wells not included in Classes I-IV. In general, Class V wells inject non-hazardous fluids into or above USDWs and are typically shallow, on-site disposal systems. However, there are some deep Class V wells that inject below USDWs. |
| Class VI | Inject carbon dioxide ($CO_2$) for long-term storage, also known as Geologic Sequestration of ($CO_2$). (NOTE: This is the newest class of well and US EPA finalized regulations for this class of well in 2010). |



Five classes of underground injection well

Why Does US EPA Regulate Injection Wells?

In 1974, Congress passed the Safe Drinking Water Act (SDWA). The SDWA required US EPA to report back to Congress on underground waste disposal practices, and develop minimum federal requirements for injection practices that protect public health by preventing injection wells from contaminating USDWs.

What is a USDW?

An underground source of drinking water (USDW) is an aquifer or a part of an aquifer that is currently used as a drinking water source or may be needed as a drinking water source in the future. Specifically, a USDW:

- Supplies any public water system, or
- Contains a sufficient quantity of ground water to supply a public water system, and
  - currently supplies drinking water for human consumption, or
  - contains fewer than 10,000 mg/l total dissolved solids (TDS), and
- **Is not an exempted aquifer.**

The UIC program implements this protective mandate through the UIC regulations.

How do the UIC Regulations Protect Ground Water?

The UIC program protects USDWs from endangerment by setting minimum requirements for injection wells. All injection must be authorized under either general

rules or specific permits. Injection well owners and operators may not site, construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity that endangers USDWs.

The purpose of the UIC requirements is to:

- Ensure that injected fluids stay within the well and the intended injection zone, or
- Mandate that fluids that are directly or indirectly injected into a USDW do not cause a public water system to violate drinking water standards or otherwise adversely affect public health.

Who Regulates Injection Wells?

Injection wells are overseen by either a state or Tribal Agency or one of US EPA's regional offices. States and tribes may apply for primary enforcement responsibility, or primacy, to implement the UIC program within their borders. In general, state and tribal programs must meet minimum federal UIC requirements to gain primacy. If a state or tribe does not obtain primacy, US EPA implements the program directly through one of its regional offices.

US EPA has delegated primacy for all well classes to 33 states and 3 territories; it shares responsibility in 7 states, and implements a program for all well classes in 10 states, 2 territories, the District of Columbia, and most Tribes. California has primacy for the UIC program for Class II wells and the Department of Conservation, Division of Oil, Gas and Geothermal Resources (DOGGR) implements this program.

What is an Aquifer Exemption?

An aquifer exemption is an action by US EPA to remove an aquifer or a portion of an aquifer from protection as an underground source of drinking water under the SDWA.

What Criteria Does US EPA Use to Evaluate Aquifer Exemptions?

US EPA is responsible for the final review and approval of all aquifer exemption requests. UIC permit applicants that seek an aquifer exemption in order to conduct injection activities typically delineate the proposed exempted area and submit a package, including supporting data, to the primacy agency. States with primacy, like California, review the application and, if the information submitted supports a determination that an aquifer exemption is warranted, propose to exempt the aquifer, provide for public participation, and submit a request for approval of the exemption to US EPA.

US EPA must follow the regulatory criteria set forth in 40 CFR 146.4 in making aquifer exemption determinations. For US EPA to approve an aquifer exemption, US EPA must:

1. Find that the state, or where US EPA directly implements the UIC program, the applicant, has demonstrated that the aquifer or the portion of an aquifer sought for exemption does not currently serve as a source of drinking water.

2. Determine either that the aquifer cannot now, or will not in the future, serve as a source of drinking water, or that the total dissolved solids content of the ground water is more than 3,000 and less than 10,000 mg/l and is not reasonably expected to supply a public water system.

   The regulations describe four potential reasons for making the determination that the aquifer cannot now and will not in the future serve as a source of drinking water.

   - The aquifer is mineral, hydrocarbon, or geothermal energy producing, or
   - Can be demonstrated as part of a permit application to contain minerals or hydrocarbons that are expected to be commercially producible.
   - The other reasons relate to the practicality and cost of accessing and treating the water for human consumption.

   In California the State Water Resources Control Board (SWRCB) has statutory authority and responsibility to protect ground water under both the federal Clean Water Act and the Porter-Cologne Water Quality Act. SWRCB Resolution 88-63 recognizes and incorporates aquifer exemptions with specific reference to the SDWA.

What is the Importance of TDS Levels in Water?

Salinity is a measure of the amount of dissolved particles and ions in water. A common measure of salinity is the level of total dissolved solids (TDS). TDS is generally expressed in units of mg/l (milligrams per liter) or ppm (parts per million). In expressions of TDS levels, milligrams per liter (mg/l) and parts per million (ppm) are equivalent units.

Salinity levels can result from hundreds of different ions, but a few make up most of the dissolved material in water: chloride and sodium, followed by calcium, nitrate, magnesium, bicarbonate and sulfate.

The higher the salinity level of water, the less likely it is to be used for purposes such as drinking and other beneficial uses. As a general rule, aquifer TDS levels increase with depth. Below is some information about water with different TDS levels:

- Precipitation: 10 ppm
- Freshwater lake: 10-200 ppm
- Agricultural impact to sensitive crops: 500 ppm
- California drinking water limit - secondary max contaminant level (taste/odor): 1,000 ppm (max)
- US EPA's regulatory definition of a USDW: 10,000 ppm
- Brackish: 23,000 ppm
- Seawater: 35,000 ppm

What is the Risk to Groundwater Associated with Class II Wells?

As noted above the UIC program is a part of the federal SDWA and is in place to ensure that injection wells are not located near groundwater aquifers that may currently be used as or have the potential to be used in the future for drinking water.

Additionally, if a well is drilled near a USDW the following pathways of contamination put the USDW at risk:

- lack of well casing integrity.
- faulty cementing of the well allowing fluid movement up the annulus.
- Movement from the formation itself into the confining formation (the cap, meant to separate it geologically from a USDW).
- Abandoned or poorly plugged wells acting as a conduit.
- Movement from one part of a formation to another (by changing the hydraulic gradient).
- Injection directly into a USDW. (NOTE: this is the current problem in which California is concerned).

California is becoming ever more reliant on groundwater as a source of drinking water as well as other beneficial uses, such as agriculture.

When wastewater and other fluids associated with the extraction of oil or natural gas are injected into an aquifer they can change the chemistry of and contaminate that aquifer. For this reason the SDWA criteria for injection specify that these wells cannot be into aquifers where the water quality is currently or may be considered in the future high enough to use a source of drinking water. Class II wells should only be located in areas where there is not any potential use of the aquifer as a USDW.

## California's Implementation of the UIC Program

DOGGR has implemented the UIC program, specific to Class II wells, for California pursuant to a primacy agreement with US EPA reached in 1982 and incorporated into federal regulations in 1983. The following is a timeline of the UIC program in California.

Timeline

- **1974** – Safe Drinking Water Act (SDWA) was enacted. The SDWA gave US EPA the authority and responsibility to control underground injection to protect underground drinking water sources.

- **April 20, 1981** – Governor Jerry Brown signed a letter conveying the Division of Oil and Gas's (predecessor to the Division of Oil, Gas and Geothermal Resources or DOGGR) application to the US EPA to obtain primacy to implement the US EPA's UIC program for Class II (oil and gas) wells in California.

  The primacy application includes a list of proposed "exempt" aquifers. The request for exemption is based on a statement that the aquifers that should not warrant protection under the SDWA. These are aquifers are:
  - Co-located with oil/gas fields
  - Already contain hydrocarbons and
  - Generally contain high salt concentrations and
  - Were being used for waste disposal already.

  (NOTE: Under current law, an aquifer with a TDS concentration exceeding 10,000 ppm does not require exemption from the SDWA).

- **September 1982** – A primacy agreement is signed by US EPA to DOGGR within the Department of Conservation (DOC). The sole agreement (posted online until recently) denies exemption for 11 aquifers with high water quality.

  NOTE: In February 2015, DOGGR replaced the online version of the agreement on its website with a packet of documents. The packet included: two versions of the September 1982 primacy agreement – one with the exemption denial for the 11 aquifers and a second approving the exemption of the 11 aquifers, and a December 1985 letter from the US EPA to the Western Oil and Gas Association

that discusses the primacy agreement and also states that the 11 aquifers were exempt.

In has recently been stated by DOGGR, that DOGGR's UIC permitting decisions presume these exemptions were granted for the 11 aquifers. However, until recently, it was the primacy agreement that denied the exemptions that was posted on DOGGR's website.

A report released by CalEPA on March 3, 2015 (addressed further in the timeline) describes how the discrepancy between the two documents was discovered.

The Senate Committee on Natural Resources and Water received conflicting accounts from DOGGR about the division's knowledge of these documents.

ADDITIONAL NOTE: The administrative boundaries of the exempt aquifers were set with this agreement. Since the primacy agreement was approved, DOGGR has sought only three changes in intervening years according to materials provided by US EPA. DOGGR has never applied to change the vast majority of these boundaries even as the oil/gas fields themselves expanded over time and techniques made more oil recoverable and more wells were drilled. This Memorandum of Agreement (MOA) says that an aquifer exemption must be approved, if needed prior to DOGGR's approval of an injection well permit. SWRCB also has a role in reviewing the proposal for aquifer exemption before it is provided to US EPA.

- **December 1985** – US EPA granted approval of McCool Ranch aquifer exemption. (Pursuant to documents provided by US EPA, this exemption was purportedly overlooked in the original primacy application.)

- **1988** – DOGGR and SWRCB signed an MOA governing oil and gas related discharges. SWRCB retains authority over water quality independent of the MOA. The MOA lacks clarity, however, according to SWRCB emails. The terms of the MOA, as well as state statute, give DOGGR lead responsibility over Class II wells.

- **July 12, 1999** – DOGGR applied for and was granted US EPA approval of a Monterey County (San Ardo) aquifer exemption.

- **July 31, 2009** – DOGGR applied for and was granted US EPA approval of an Asphalto aquifer exemption.

- **2009** – Elana Miller was named Oil and Gas Supervisor, replacing Hal Bopp (who had served since April 2003.)

- **May 2010** – An internal memo was issued by Supervisor Miller to DOGGR personnel raising concern that UIC regulations are not being tightly followed and directed staff to follow the regulations.

- **Fiscal Year 2010-11 California State Budget** – Pursuant to the Budget, DOGGR received an additional 17 staff and $2.7 million ongoing, in order to "strengthen regulatory oversight" of the UIC program. Budget sub-committee documents, as well as a budget change proposal from DOGGR to the legislature, indicate that the UIC regulations and regulatory staff levels have not changed in decades and issues associated with thermal recovery (steam injection) in shallow diatomite fields are explicitly identified as a concern.

- **October 10, 2010** – SB 855 (Senate Committee on Budget and Fiscal Review), Chapter 718, Statutes of 2010, which is the accompanying policy legislation to the 2010-11 Budget was signed into law. There is an uncodified section telling DOC/DOGGR to provide annual updates on its UIC program for 5 years. This language was approved in conjunction with the approval of the staff and resource augmentations that were granted to DOGGR in the Budget.

  NOTE: To date, DOGGR has filed one of the required annual reports since 2010 (see below). The Senate Natural Resources and Water Committee asked for the reports in September 2014 and 2015, but did not receive them. In 2014 and 2015, DOGGR acknowledged that the reports have not been done.

- **February 18, 2011** – SB 855 report was sent to Legislature from Supervisor Miller. A UIC work plan is mentioned. It is unclear if this work plan was completed or implemented. NOTE: Pursuant to the 2010-11 California State Budget, at this time, the UIC program would then have had 28 staff (17 new positions were granted in the Budget).

- **June 2011** – A sinkhole fatality occurred in the Midway-Sunset field, which was likely related to cyclic steaming well operations at the field.

- **July 18, 2011** – US EPA sent a letter to DOGGR transmitting the results of a US EPA audit of DOGGR's implementation of the UIC program for Class II wells. The audit highlighted deficiencies that include:

    - DOGGR was using a 3,000 ppm TDS or less standard when a USDW is 10,000 ppm or less;
    - DOGGR was doing an insufficient job with the Zone of Endangering Influence calculations statewide (an Area of Review of ¼ mile is not always appropriate);
    - Raised pressure testing, inspection and maximum injection pressure concerns;
    - Asks for a September 1, 2011 response (NOTE: response was not sent to US EPA until November, 2012)

- **Fiscal Year 2011-12 California State Budget** – Pursuant to the Budget, DOGGR received an additional 18 staff and $2.7 million ongoing, in order to again "strengthen regulatory oversight" of the UIC program. NOTE: DOGGR requested 36 additional staff and resources and were granted half of its request.

- **Fall 2011** – There is a widely cited injection well project permitting slowdown due to concerns raised by DOC Director Chernow and DOGGR Supervisor Miller related to well permitting.

- **November 2011** – Director Chernow's appointment was withdrawn and he was terminated. Supervisor Miller was subsequently fired.

- **December 2011** – Dr. Mark Nechodom was appointed director of the Department of Conservation. Tim Kustic, a long-term employee of DOGGR, was appointed Oil and Gas Supervisor.

- **March to May 2012** – Director Nechodom and DOGGR went before the Senate Budget Subcommittee 2 and Assembly Budget Subcommittee 3 committees and were questioned about issues relating to DOGGR's oversight of well permitting, including permits for wells utilizing hydraulic fracturing (fracking) for oil extraction.

- **May 2, 2012** – DOGGR issued report on the fatality at Midway-Sunset field which describes the events both before and after the development of the

sinkhole including steam injection practices, ground instability and surface eruptions.

Cyclic steam injection wells alternate between injection and production. Steam is injected into wells at pressures that can exceed the fracture pressure of the formation. After injection the well is shut-in and after some time is passed, the well is produced. This process is used to produce the heavy oil in many locations in active fields. However, when used in fields located in shallow diatomite formations, there are several risks which include, for example, the development of sink holes.
(NOTE: Injection pressure is required to less than the fracture pressure of the formation under both federal and state regulation. DOGGR has acknowledged that cyclic steam injection routinely exceeds the fracture gradient of the formation in violation of these regulations.)

- **May 3, 2012** – DOGGR released their "Road Map" which outlined nine issues and was designed to be the division's work plan for setting new priorities for DOGGR and making improvements to the permitting process for Class II wells.

- **May 2012** – The Sacramento/Modesto Bee reported "permits flowing" under the new leadership at DOGGR and a "streamlined review process." It is unclear what was meant by a streamlined review process. NOTE: The article mentions steam injection regulations being under discussion with industry.

  NOTE: Additionally, both the DOGGR budget change proposals and the DOGGR "Road Map" from May of 2012 raise concern about outdated regulations. However, to date new regulations for injection wells have not been proposed or adopted, with the one minor exception since 1984.

- **Fiscal Year 2012-13 California State Budget** – DOGGR received 18 additional staff (14 technical/4 admin) citing the need, in part, to boost environmental compliance and address the UIC permitting backlog.

  NOTE: The overall augmentation to DOGGR from 2010 to 2013 was roughly 53 positions and over a $7M increase in annual ongoing funding.

- **August 14, 2012** – The Assembly Natural Resources Committee conducted an oversight hearing on DOGGR and UIC to review implementation of the "Road Map."

- **November 16, 2012** – DOGGR sent its late response to the 2011 US EPA audit (response was due September 1, 2011). In the response, DOGGR acknowledged that in 2009 it was not in conformance with state laws and regulations and promised to commence new UIC regulatory process in 2013.

  NOTE: To date, DOGGR has not conducted the UIC rulemaking. The letter additionally stated that 43 people were added in the last 3 years and commits to an annual review of injection in addition to other commitments.

- **August/September 2013** – DOC stated in discussions over then pending SB 4 (Pavley, Leno), Chapter 313, Statutes of 2013, that the September 1982 primacy agreement with the denial of the exemption for the 11 aquifers, the 1973 contours referred to in this primacy agreement and the Asphalto and Monterey County aquifer exemptions were the full extent of the aquifer exemptions. SB 4, which provides statutory direction for the regulation of well stimulation treatments, such as hydraulic fracturing, ultimately did not require groundwater monitoring where all aquifers are exempt.

  NOTE: In California, UIC does not include hydraulic fracturing or other forms of well stimulation treatments. DOGGR has long maintained that fracking and UIC are different processes – the former a short duration well completion technique used infrequently on any one well and the latter an on-going, largely continuous injection process using dedicated wells. SB 4 maintained that distinction.

- **June 2014** – SWRCB, in reviewing whether or not groundwater monitoring would be required around wells with well stimulation treatments, (pursuant to the requirements of SB 4), questioned the apparent exemption of numerous aquifers. In communications between SWRCB and DOGGR, it was discovered that DOGGR is approving injection wells in numerous locations where there are not exempt aquifers. SWRCB started to order groundwater quality data for injection wells injecting in the wrong place.

- **June 2014** –Steve Bohlen is appointed as DOGGR's Oil and Gas Supervisor following Tim Kustic's retirement.

- **June 2014** – the US Governmental Accountability Office (GAO) released its report 14-555 on the UIC program entitled: "EPA Program to Protect

Underground Sources from Injection of Fluids Associated with Oil and Gas Production Needs Improvement." The report included California as a surveyed state. It highlights recognized and emerging UIC issues:

- California allows UIC injection wells to exceed the fracture pressure (specifically against its own regulations).
- There are limited chemical reporting requirements in CA regulations for what is in the injectate.
- Cites water contamination violations from CA reporting: 9 in 2009, 12 in 2010 and 3 in 2012.
- The report notes that fracking (except for fracking w/diesel) is exempt from the SDWA and UIC. NOTE: the practice of fracking is not directly regulated as part of the UIC program in California.
- Specifically the report states:

  "[US] EPA is not consistently conducting two key oversight and enforcement activities for class II programs. First [US] EPA does not consistently conduct annual on-site state program evaluations as directed in guidance because, according to some officials, the agency does not have the resources to do so. The agency has not, however, evaluated its guidance, which dates from the 1980s, to determine which activities are essential for effective oversight."

- **July 2 – September 26, 2014** – DOGGR ordered a net 11 wells to be shut-in as these wells were injecting into non-exempt aquifers.

- **July 17, 2014** – US EPA sent a letter to DOGGR inquiring into these wells and the UIC program. The letter stated that in 2012 US EPA started a review of aquifer status and it was provided to DOGGR. This letter demanded specified information be provided from DOGGR at 30, 60 and 90 days. By 30 days, US EPA needed a status report or action plan on all Class II wells injecting into non-hydrocarbon bearing aquifers where the TDS is less than 10,000 ppm. By 60 days, US EPA required a timeline. By 90 days US EPA wanted a status report or action plan on all Class II wells injecting in to hydrocarbon-bearing aquifers that have a TDS less than 10,000 ppm.

- **July 18, 2014** – DOGGR issues a press release stating that DOGGR is working on complying with the letter.

- **July 21, 2014** – US EPA released an "enhanced coordination and communication" memo to the states on aquifer exemption requests.

- **August 18, 2014** – DOGGR responded to US EPA via email with draft work plan (work plan which is very similar to DOGGR's 2012 "Road Map").

- **September 15, 2014** – SWRCB sent a letter to US EPA, accompanying DOGGR's emailed transmission. The focus of the SWRCB's investigation outlined in the letter is where waste disposal wells are injecting into aquifers which have <3,000 ppm TDS and there is a risk to public health. SWRCB specifies a tiered priority investigation of the injection wells in question, as requested by US EPA.

  SWRCB identified their first priority for investigation as those waste disposal well injection zones within 500 foot vertically of the bottom of a water well within a radius of 1 mile of the injection well. (NOTE: SWRCB is not just looking into the waste disposal wells. This applies to all the other Class II injection wells too).

  - Category 1a wells are 11 waste disposal wells with 108 water wells in the vicinity. To date, thallium, arsenic and nitrate levels have been found at a level greater than the MCL in 4 samples and the TDS is higher than the secondary MCL in 3 samples.

  - Category 1b wells are waste disposal wells injecting into aquifers of "uncertain" exemption (these are the 11 aquifers of disputed exemption). There are 19 waste disposal wells and 37 water wells (no contamination was found at the time of the letter). Please note that the water wells are not necessarily in the place that a monitoring well would be.

  - Category 2, are 125 waste disposal wells injecting into aquifers that either have a TDS less than 3000 ppm or the TDS is not known.

- **December 22, 2014** – Because DOGGR did not meet the 90-day deadline prescribed in US EPA's July 17, 2014 letter and only partially met the other information requests, US EPA sent a follow up letter to DOGGR and SWRCB giving them a firm deadline of February 6, 2015 to show how California will get the State's UIC program into compliance with federal law by February, 2017.

- **February 6, 2015** – DOGGR sent a letter to US EPA providing a detailed plan. In the letter, DOGGR does not unequivocally advocate for shutting down all wells injecting into high water quality aquifers but commits to reviewing all of

them by the deadline of February, 2017. (NOTE: SDWA provides for a review process for aquifer exemptions).

As of this letter, approximately 500 waste disposal wells and 2000 EOR wells were identified to be reviewed. The well list which was provided in September, 2014 was revised to indicate that approximately 140 waste disposal wells were identified as the highest priority for review. Many of the highest priority wells are located in the disputed 11 aquifers. Ultimately, approximately 30,000 injection wells have been identified for review.

- **March 3, 2015** – The California Environmental Protection Agency (CalEPA) released a report, requested by Governor Brown, asking CalEPA to conduct an independent review of the state's Underground Injection Control program. The report:

1. Outlines the discrepancies in understanding about the exemption of the 11 aquifers.

2. States that DOGGR notified US EPA regarding the discrepancies three years ago (NOTE: As discussed above, the first primacy agreement WITHOUT the exemption was publicly stated as the governing document on DOGGR's website until recently it was represented to legislative staff that those aquifers were not exempt in discussions regarding SB 4 in 2013.)

3. Asserts that both DOGGR and US EPA agreed to exempt the 11 aquifers, but may not have followed regulatory procedures.

4. Specifies that about a half of the active wastewater disposal wells injecting in <3,000 ppm TDS aquifers are injecting into the 11 aquifers where the exemption is in question as part of the original primacy agreement with US EPA. The remaining half is the result of permitting errors.

**March 3, 2015** – In conjunction with the above-referenced report, DOGGR announced that an additional 12 injection wells were ordered to be shut in, which brings the total to 23 wells. SWRCB announced that it has issued 40 additional requests for water quality data from injection well operators.