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## Central Valley Regional Water Quality Control Board

28 August 2020

Faisal Latis  
California Resources Production Corp.  
900 Old River Road  
Bakersfield, CA 93311

**CERTIFIED MAIL**  
**7019 2970 0001 5202 3835**

### **ORDER PURSUANT TO CALIFORNIA WATER CODE SECTION 13267**

**You are legally obligated to respond to this Order. Read this Order carefully.**

Predecessors in interest to California Resources Production Corporation (hereinafter, California Resources) operated 12 injection wells in South Belridge Oil Field (hereinafter, "injection wells subject to this Order"). Public information about these wells from the California Department of Conservation, Geologic Energy Management Division (CalGEM) is in Attachment A of this Order. A publication by the United States Geological Survey (USGS)<sup>1</sup> revealed to the Central Valley Regional Water Quality Control Board (Central Valley Water Board) that injected fluids from injection wells completed in the Tulare Formation in portions of Lost Hills, North Belridge, and South Belridge Oil Fields have potentially migrated outside of an aquifer exempted from the protections of the federal Safe Drinking Water Act (42 U.S.C. § 300f et seq.).

As described further below, for the injection wells subject to this Order or any additional injection wells identified by California Resources, California Resources is required to submit technical reports containing information about (1) the injection wells, (2) the fluids injected in the wells into the aquifer, (3) the quality of the groundwater in the aquifer where fluids have been injected, (4) the lateral and vertical extent of impacts from injected fluids on groundwater quality in the aquifer, and (5) water supply wells completed in the aquifer.

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<sup>1</sup> Gillespie et al., Groundwater Salinity and the Effects of Produced Water Disposal in the Lost Hills–Belridge Oil Fields, Kern County, California, *Environmental Geosciences*, v. 26, no. 3 (September 2019), pp. 73–96

[Link to publication –](#)

(<http://archives.datapages.com/data/deg/2019/EG032019/eg18009/eg18009.html>)

[Link to supporting data –](#)

(<https://www.sciencebase.gov/catalog/item/5b4d123ce4b06a6dd17c59ab>)

KARL E. LONGLEY ScD, P.E., CHAIR | PATRICK PULUPA, ESQ., EXECUTIVE OFFICER

The Central Valley Water Board's authority to require technical reports derives from section 13267 of the California Water Code, which specifies, in part, that:

*(a) A regional board...in connection with any action relating to any plan or requirement authorized by this division, may investigate the quality of any waters of the state within its region.*

*(b)(1) In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region...that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.*

The Central Valley Water Board is concerned about the potential threat to human health and potential impacts to water quality posed by the migration of injected fluids into a non-exempt aquifer that may be suitable for drinking water supply and other beneficial uses. Given the report cited above, this Order is designed to assess the cause of the migration to be sure it has adequately been resolved and any water quality impacts addressed. The technical information and reports required by this Order are necessary to assess the potential threat to human health and potential impacts to water quality. Information regarding the use of these wells and the materials injected is within California Resource's control. The need to understand the potential threat to human health and potential impacts to water quality justifies the need for the information and reports required by this Order. Based on the nature and possible consequences of the discharges of waste, the burden of providing the required information, including reporting costs, bears a reasonable relationship to the need for the report, and the benefits to be obtained. California Resources is required to submit this information and reports because it is the operator of the injection wells subject to this Order. If California Resources and its predecessors in interest have never injected fluids into the injection wells subject to this Order, please advise Central Valley Water Board staff of this in writing as soon as possible.

**Under the authority of California Water Code section 13267, the Central Valley Water Board hereby orders California Resources Production Corporation to:**

1. By 30 October 2020, submit a technical report in the form of a work plan that describes proposed tasks and time schedule to be completed to investigate the lateral and vertical extent of impacts to groundwater quality in the aquifer(s) from the injection of fluids in the injection wells subject to this Order or any additional injection wells identified by California Resources. California Resources shall

implement approved tasks in accordance with the time schedule approved by the Executive Officer, as described in more detail below.

2. By 20 November 2020, for the injection wells subject to this Order or any additional injection wells identified by California Resources, submit a technical report that contains the following information:
  - a. Identification of any injection wells completed within the Tulare Formation that are owned and/or operated by California Resources that are not identified in Attachment A; including any injection wells that are considered to be active, idle, plugged and abandoned, or wells that were converted from an injection well.
  - b. For the fluids being injected into the injection wells an analysis of a representative sample of those fluids in accordance with the water quality analysis and reporting requirements contained in Attachment B to this Order.
  - c. Historical chemical analyses of the fluids injected into each injection well.
  - d. Analytical data for groundwater samples collected from the injection zone(s) in each of the injection wells.
  - e. Representative formation pressure data collected from the injection zone(s) in each of the injection wells.
  - f. A list and location map of all water supply wells within three miles of any injection well.
  - g. Information for each identified water supply well, including the well owner name and contact information; type of well (i.e., domestic, irrigation, industrial, etc.); whether any of the water is used for domestic purposes; status (i.e., active, idle, etc.); well construction; borehole geophysical logs; and all analytical results for any water sample(s) collected from each water supply well. Notify Central Valley Water Board staff within 24 hours upon determination that any water supply well information cannot be obtained from the California Department of Water Resources because it is confidential.
  - h. For each injection well, provide the following information. The information for items A-P shall be in spreadsheet format, labeled with the capital letters indicated. The information for items Q-T shall be in attachments:
    - A. The name of the owner and/or operator of the injection well;
    - B. API number for the injection well;
    - C. Injection well name and number;
    - D. Name of the field in which the injection well is located;
    - E. County in the which the injection well is located;
    - F. Latitude and Longitude (decimal degrees) of well head location;
    - G. Latitude and Longitude Datum, indicate "1" for North American Datum of 1983 or "2" for North American Datum of 1927;
    - H. Elevation and datum of the well head (feet above mean sea level);

- I. Injection well total depth (feet);
- J. Top injection depth (feet);
- K. Formation/Zone name at top injection depth;
- L. Bottom injection depth (feet);
- M. Formation/Zone name at bottom injection depth;
- N. Date injection started in the well (Day/Month/Year, xx/xx/xxxx);
- O. Total injection volume in barrels from the date injection began through 31 August 2020;
- P. Total injection volume in barrels for the 12-month period from 1 September 2019 through 31 August 2020;
- Q. Well construction diagram including all perforations, annular material, and seals;
- R. A description of the sources of fluid injected;
- S. The data maintained in compliance with California Code of Regulations, title 14, section 1724.10, subdivision (h); and,
- T. Documentation associated with each mechanical integrity test undertaken to comply with California Code of Regulations, title 14, section 1724.10, subdivision (i).

The technical reports and information required by items 1 and 2 above must be uploaded to the [State Water Resources Control Board's \(State Water Board's\) Geotracker database](https://geotracker.waterboards.ca.gov/esi/login.asp) (<https://geotracker.waterboards.ca.gov/esi/login.asp>) in an electronic format that follows the [requirements of California Code of Regulations, title 23, section 3893](http://www.waterboards.ca.gov/ust/electronic_submittal/docs/text_regs.pdf) ([http://www.waterboards.ca.gov/ust/electronic\\_submittal/docs/text\\_regs.pdf](http://www.waterboards.ca.gov/ust/electronic_submittal/docs/text_regs.pdf)). Central Valley Water Board staff has provided, in Attachment A, a unique GeoTracker identifier (Global ID number). Your state-certified laboratory will need the assigned Global ID number to upload to GeoTracker the certified analytical results for each well. GeoTracker upload instructions are also provided in Attachment A.

Based on the information submitted in the work plan and/or technical report, additional information or action may be required.

All required technical information must be submitted to the attention of:

Alex Olsen  
Central Valley Water Board  
1685 E Street  
Fresno, CA 93706

In addition, all information is to be copied to CalGEM, to the attention of:

Uduak-Joe Ntuk, State Oil and Gas Supervisor  
Department of Conservation, Geologic Energy Management Division  
801 K Street  
Sacramento, CA 95814-3500

Submissions pursuant to this Order need to include the following statement signed by an authorized representative of California Resources:

*“I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.”*

Please note that the information produced in response to this Order will be used to ascertain the extent of the migration, as well as the impacts and any necessary remedial actions. Investigative orders are iterative in nature, and subsequent orders may be narrower and more precise in scope.

All technical reports and time schedules required herein are subject to the approval of the Executive Officer. The failure to furnish the required reports by the due dates herein or in a time schedule approved by the Executive Officer, or the submission of a substantially incomplete report or false information, is a misdemeanor, and may result in additional enforcement actions, including issuance of an Administrative Civil Liability Complaint pursuant to California Water Code section 13268. Liability may be imposed pursuant to California Water Code section 13268 in an amount not to exceed one thousand dollars (\$1,000) for each day in which the violation occurs.

In accordance with California Business and Professions Code sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. All technical reports specified herein that contain workplans for investigations and studies, that describe the conduct of investigations and studies, or that contain technical conclusions and recommendations concerning engineering and geology shall be prepared by or under the direction of appropriately qualified professional(s), even if not explicitly stated. Each technical report submitted by the Discharger shall bear the professional's signature and stamp.

Any person aggrieved by this Order of the Central Valley Water Board may petition the State Water Board to review the action in accordance with California Water Code section 13320. The State Water Board must receive the petition by 5:00 p.m., within 30 days after the date of this Order, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. [Copies of the law and regulations, and instructions applicable to filing petitions](#) are available at the State Water Board's Website or will be provided upon request ([http://www.waterboards.ca.gov/public\\_notices/petitions/water\\_quality/index.shtml](http://www.waterboards.ca.gov/public_notices/petitions/water_quality/index.shtml)).

Any questions regarding this matter should be directed to Alex Olsen at (559) 445-6076 or at [Alex.Olsen@waterboards.ca.gov](mailto:Alex.Olsen@waterboards.ca.gov).

*Original Signed by Clay L. Rodgers for:*  
Patrick Pulupa  
Executive Officer

Enclosure: Attachment A, Information about the Injection Wells Subject to this Order, Assigned GeoTracker Global Identification Numbers, and GeoTracker Upload Instructions

Attachment B, Water Quality Sampling, Analysis and Reporting

**ATTACHMENT A**  
Information about the Injection Wells Subject to this Order and Assigned  
GeoTracker Global Identification Number

**Table 1- Assigned GeoTracker Global ID Number- T10000016009**

<b>Injection Well API No.</b>	<b>Well Designation</b>	<b>Latitude</b>	<b>Longitude</b>
03028354	Orchard SB23-7	35.41793442	-119.65904236
03036232	Orchard SB54-7	35.41741180	-119.65732574
03036378	Orchard SB143-7	35.41784286	-119.65232849
03036496	Sosa FOD SB1801-18	35.41097260	-119.65016174
03035779	Sosa FOD SB1401-18	35.41096115	-119.65229034
03036673	Orchard SB65-7	35.41604233	-119.65679932
03031446	Orchard SB142-7	35.41876984	-119.65238953
03031447	Orchard SB144-7	35.41695786	-119.65238953
03031448	Orchard SB146-7	35.41516495	-119.65235138
03028108	Orchard SB136-7	35.41579819	-119.65254211
03027994	Orchard SB8-7	35.41333771	-119.66015625
03028354	Orchard SB85-7	35.41616058	-119.65573883

[GeoTracker Upload Instructions](https://www.waterboards.ca.gov/ust/electronic_submission/)

(https://www.waterboards.ca.gov/ust/electronic\_submission/)

Work plans, and technical reports and associated data shall be uploaded in an electronic format compatible with the State's GeoTracker system. To begin the process:

- Log in or create a password
- Claim your site(s) (i.e. global ID)
- Add field point name(s)
- Upload the following:
  - Work plan/Technical report and associated data (GeoReport)
  - Laboratory report (EDF)
  - Site Maps (GeoMAP)

For more information, contact the GeoTracker Help Desk at [Geotracker@waterboards.ca.gov](mailto:Geotracker@waterboards.ca.gov).

## ATTACHMENT B Water Quality Sampling, Analysis, and Reporting

### Water Quality Sampling

All groundwater sampling is to be performed by a qualified person. A qualified person is any person with the knowledge and training in proper sampling methods, chain of custody, and quality assurance/quality control protocols. Any person conducting groundwater sampling, other than personnel from a certified laboratory, shall consult with the certified laboratory to ensure that the sampler understands and follows the proper sampling collection procedures and protocols. All procedures to sample groundwater supply wells shall be consistent with [US EPA Science and Ecosystem Support Division Operating Procedure for Groundwater Sampling \(March 2013\)](http://www.epa.gov/region04/sesd/fbqstp/Groundwater-Sampling.pdf)

([www.epa.gov/region04/sesd/fbqstp/Groundwater-Sampling.pdf](http://www.epa.gov/region04/sesd/fbqstp/Groundwater-Sampling.pdf))

### Water Quality Analysis

Groundwater samples collected from wells and injection zones shall be analyzed by a laboratory certified by the Environmental Laboratory Accreditation Program, using current applicable EPA-approved analytical methods. The methods of analysis and the detection limits used shall be appropriate for the expected concentrations. The analytical method having the lowest method detection limit (MDL) shall be selected from among those methods which would provide valid results in light of any matrix effects or interferences. Analyze samples for the following:

- A. Total dissolved solids
- B. Metals listed in California Code of Regulations, title 22, section 66261.24, subdivision (a)(2)(A)
- C. Benzene, toluene, ethylbenzene, and xylenes
- D. Total petroleum hydrocarbons for crude oil
- E. Polynuclear aromatic hydrocarbons (including acenaphthene, acenaphthylene, anthracene, benzo[a]anthracene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, chrysene, dibenzo[a,h]anthracene, fluoranthene, fluorene, indeno[1,2,3-cd]pyrene, naphthalene, phenanthrene, and pyrene)
- F. Radionuclides listed under California Code of Regulations, title 22, Table 64442, which includes Gross Alpha particle activity (excluding radon and uranium), Uranium, Radium-226, and Radium-228.
- G. Methane
- H. Stable oxygen and hydrogen isotopes
- I. Major and minor cations (including sodium, potassium, magnesium, and calcium)
- J. Major and minor anions (including nitrate, chloride, sulfate, alkalinity, and bromide)



K. Trace elements (including lithium, strontium, boron, iron, and manganese)

**Water Quality Reporting**

Water quality information shall be submitted in a technical report that includes, at a minimum:

- A. Site plan with locations of well(s) sampled.
- B. Description of field sampling procedures.
- C. Table(s) of analytical results organized by well number (including API number).
- D. Copies of analytical laboratory reports, including quality assurance/quality control procedures and analytical test methods.
- E. Waste management and disposal procedures.