

**REVISED MEMORANDUM OF AGREEMENT
BETWEEN THE
STATE WATER RESOURCES CONTROL BOARD
AND THE
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS AND GEOTHERMAL RESOURCES
REGARDING
UNDERGROUND INJECTION CONTROL, DISCHARGES TO LAND, AND OTHER PROGRAM ISSUES**

I. PURPOSE

This Memorandum of Agreement ("MOA") between the State Water Resources Control Board ("Board" or "State Water Board") and the Department of Conservation Division of Oil, Gas and Geothermal Resources ("Division") (collectively, the "Parties") is a revision of the 1988 Memorandum of Agreement ("1988 MOA") signed by the Parties. The 1988 MOA provides that:

The agreement may be modified upon the initiative of either party for the purpose of ensuring consistency with State or Federal statutes or regulations, or for any other purpose mutually agreed upon. Any such modifications must be in writing and must be signed by the Director of the Department of Conservation, the State Oil and Gas Supervisor, and the Chairman of the SWRCB.

The revisions to the 1988 MOA serve to reflect developments in how the Parties coordinate in administering the state's Underground Injection Control ("UIC") program for Class II wells, regulating discharges to land of produced water from oil and gas operations, responding to incidents such as spills, taking enforcement actions, and handling other related issues. The procedures described herein are intended to provide a coordinated approach resulting in a single permit satisfying the statutory obligations of both parties in regulating the injection of fluids in Class II wells and a single permit in regulating the discharge of produced water from oil and gas operations to land.

II. SCOPE

The following procedures have been formulated and adopted by the Division and Board to: (1) achieve coordination of activity; (2) simplify reporting of proposed waste discharges by oil and gas operators; and, (3) eliminate duplication of effort among the State agencies. As far as the Parties are concerned, the method of reporting proposed underground injection and discharges to land will be uniform throughout the State.

The following procedures will not generally be applicable to the injection of fluids in wells other than Class II wells as defined by the US Environmental Protection Agency ("US EPA") or discharges to land of wastes other than produced water from oil and gas operations. Other discharges (e.g., refinery wastes) must be issued waste discharge requirements or waivers through the appropriate regional water board (Water Code, Division 7, Chapter 4). Such discharges will not be subject to regulation by the Division unless the subject disposal well is within the administrative limits of an oil field. In such case, the Division must also issue a permit for the well construction. (Public Resources Code Sections 3008 and 3203.) The conditions of this permit should be in agreement with applicable waste discharge requirements.

III. OVERVIEW OF STATUTORY AUTHORITY

A. Division

Chapter 1 (Oil and Gas Conservation) of Division 3 (Oil and Gas) of the Public Resources Code (commencing with section 3000) ("Chapter 1") governs oil and gas activities in the State. Chapter 1 establishes the Division as the principal state agency charged with regulating the drilling, operation, maintenance, and abandonment of oil and gas wells. The State Oil and Gas Supervisor supervises these activities on behalf of the Division as well as the operation, maintenance, and removal or abandonment of tanks and facilities attendant to oil and gas production. Such supervision is "to prevent, as far as possible, damage to life, health, property, and natural resources; damage to underground oil and gas deposits from infiltrating water and other causes; loss of oil, gas, or reservoir energy, and damage to underground and surface waters suitable for irrigation or domestic purposes by the infiltration of, or the addition of, detrimental substances." (Pub. Resources Code, § 3106, subd. (a).)

In regulating oil and gas activities and related facilities to protect the public and environment, the Division's regulatory powers include, but are not limited to: (1) issuing permits or approvals for oil and gas activities, such as the drilling or abandonment of wells; (2) investigating the environmental conditions and inspecting facilities associated with oil and gas activities and preparing related reports; (3) ordering and/or undertaking tests or remedial work; and (4) issuing enforcement orders for violations of applicable oil and gas law and permits or approvals.

In September 1982, the Division received primacy from US EPA pursuant to the provisions of Section 1425(a) of the federal Safe Drinking Water Act that gives the Division additional authority and responsibility to regulate Class II wells in the State. Class II wells are used to inject fluids into the subsurface that are related to oil and gas production. (See 40 C.F.R. § 144.6(b).)

B. State Water Board

The State Water Board and nine regional water boards ("Water Boards") are the principal state agencies with primary responsibility to coordinate and control surface water and groundwater quality in the State. The legal authority of the State Water Board and regional water boards generally extends to regulating any activity or factor(s) that may affect the quality of the waters of the state and includes the prevention and correction of water pollution and nuisance. The Water Boards derive their authority primarily from, and must exercise their authority in accordance with, the State Porter-Cologne Water Quality Control Act (Wat. Code, § 13000 et seq.) and, where applicable, the federal Clean Water Act (33 U.S.C. § 1251 et seq.) and its implementing regulations. The Solid Waste Disposal Regulatory Reform Act of 1993 (Pub. Resources Code, § 43100 et seq.) provides additional authority for the State Water Board and the regional water boards to regulate the disposal of solid waste for the purpose of protecting the waters of the state.

The regulatory powers of the Water Boards related to water quality include, but are not limited to: (1) designating the beneficial uses of groundwater and surface waters and establishing water quality objectives to protect the uses; (2) investigating water quality issues, for example, by requiring water quality monitoring and reporting; (3) adopting water quality control plans, regulations, and policies; (4) issuing

waste discharge requirements ("WDRs") that regulate discharges of "waste" ¹ that may affect the quality of the "waters of the state" ²; (5) conditionally waiving the requirement to file a report of waste discharge ("ROWD") and obtaining WDRs for certain discharges, such as low-threat discharges; (6) prohibiting types of waste discharges and/or waste discharges in certain locations; (7) issuing enforcement orders; and (8) receiving information from, and providing information to, governmental agencies and the public regarding water quality issues.

IV. RESPONSIBILITIES AND REQUIREMENTS REGARDING UNDERGROUND INJECTION CONTROL

The Division and State Water Board shall have the following responsibilities and requirements regarding UIC and UIC-related activities:

A. Aquifer Exemptions

1. Upon completing a proposal to exempt an aquifer or to expand an existing aquifer exemption under the federal Safe Drinking Water Act (hereafter "aquifer exemption"), the Division shall forward a copy of the data submitted in support of the aquifer exemption request to the State Water Board. The Division shall notify the State Water Board and appropriate regional water board of, and provide, any additional information that the Division receives during the request review process. The Water Boards shall notify the Division of, and provide, any additional information that the Water Boards receive during the request review process.
2. During the review of the aquifer exemption request, the Division, the State Water Board, and the appropriate regional water board shall consult with one another, and may require the requestor to submit additional information to demonstrate that the proposed aquifer exemption and the injection into the aquifer(s) or portion of the aquifer(s) at issue meets the requirements of § 146.4 of Title 40 of the Code of Federal Regulations (CFR) and California Public Resources Code (PRC) § 3131.³
3. Prior to submitting a proposed aquifer exemption for public comment and hearing, the Division and State Water Board, in collaboration with the appropriate regional water board, must preliminarily determine that the proposed aquifer exemption and proposed injection into the aquifer(s) or portion of the aquifer(s) at issue meet the criteria of 40 CFR § 146.4 and PRC § 3131. If, after (1) a 30-day comment period, (2) a joint public hearing by the Division and State Water Board, and (3) considering public comments, the State Water Board, in collaboration with the appropriate regional water board, concurs with a determination by the

¹ "Waste" includes "sewage and any other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for the purposes of, disposal." (Wat. Code, § 13050, subd. (d).)

² "Waters of the state" means any surface water or groundwater, including saline waters, within the boundaries of the state." (Wat. Code, § 13050, subd. (e).)

³ If the state or federal regulatory criteria for evaluating an aquifer exemption (i.e., PRC§ 3131 and 40 CFR § 146.4) proposal are modified, those modified criteria will apply in this section and any other section in which aquifer exemption regulatory criteria are referenced.

Division that the criteria of 40 CFR § 146.4 and PRC§ 3131 are satisfied, the Division may submit the request to the US EPA for final determination.

4. In connection with any concurrence described in the preceding section (Section IV.A.3}, the State Water Board, in collaboration with the appropriate regional water board, and the Division shall consult with one another regarding conditions to be considered for incorporation into any new or revised UIC project approved by the Division for injection into aquifer(s) exempted pursuant to this memorandum in order to address any water quality concerns. Conditions to be considered may include, but are not limited to, requiring groundwater monitoring to ensure injected fluids do not migrate out of the approved injection zone, requiring hydraulic controls, incorporating a buffer zone between the injection zone and the aquifer exemption boundary, and collecting water samples to determine baseline quality.
5. In connection with any concurrence described in Section IV.A.3, the State Water Board, in collaboration with the appropriate regional water board, shall consult with the Division regarding any proposed limitation(s) to be incorporated into any new or revised UIC project approved by the Division for injection into aquifer(s) exempted pursuant to this memorandum in order to address water quality concerns. A limitation is a condition the State Water Board or regional water board deems necessary to incorporate into all new and revised UIC projects into exempted aquifer(s) in order to address water quality concerns (e.g., limiting injection volumes or rates, restricting the quality of the injectate, and restricting the type of injection into an aquifer). If the State Water Board and the Division agree upon the limitation(s) proposed by the State Water Board, and the State Water Board issues a letter of concurrence identifying the limitation(s), the Division will incorporate the limitation(s) into all new and revised UIC project approval letters involving projects in the aquifer(s) at issue.
6. The Division and the Water Boards will develop a system for tracking progress on the review of aquifer exemption proposals. The system shall be accessible to and duly maintained by the Division, the State Water Board, and the regional water boards.
7. To the extent that the Division, State Water Board, or a regional water board considers that the status of an existing aquifer exemption should be reviewed for consistency with the requirements of 40 CFR § 146.4 and PRC§ 3131, such Party may consult with the other regarding potential modification or rescission of the exemption and/or modification or rescission of injection projects in the exempted area(s) at issue.

B. UIC Projects

1. Upon (1) completing the review of an application for a new UIC project or an application to modify an existing UIC project or (2) engaging in a review of an existing project as part of a comprehensive periodic project review process, the Division shall forward a copy of the information associated with the project, as specified in the appendix (or some portion of the information as agreed upon), to the State Water Board and appropriate regional water board. The Division shall notify the State Water Board and appropriate regional water board of, and provide, any additional information described in the appendix that the Division subsequently receives during the application/ project review process. The State Water Board or regional water board may also request from the Division additional information relevant to protecting

or monitoring water quality. The Division may invite State Water Board and regional water board staff to attend meetings with operators regarding projects under review.

2. In conjunction with a review of an existing project or review of an application for a new or modified project, the State Water Board and regional water board may consult with the Division regarding the evaluation of potential impacts on water quality. Upon receiving the UIC project information specified in the appendix, the State Water Board or the regional water board shall notify the Division as to whether the Water Boards intend to comment on the application or existing project under review. The notification of intent to comment shall include an estimate of the amount of time the Water Boards will need to provide comments or questions on the UIC project. The project review process is described in greater detail below and in the appendix.
 - a. The Water Boards shall consult with the Division regarding potential provisions to incorporate into project approvals to protect water quality. The Water Boards may submit comments that recommend that the Division add provisions to a UIC project under review to address the Water Boards' concerns pertaining to the protection or monitoring of water quality. Provisions may include, among others, limitations and conditions identified by the State Water Board in a concurrence issued for an aquifer exemption proposal for the aquifer(s) at issue in the project under review. Provisions may also include conditions to be incorporated into the project in order to protect water that is, or may reasonably be, used for any beneficial use. See Section IV.A.4 for examples of such conditions. The Water Boards may submit comments recommending the Division either disapprove a proposed project or rescind an approval for a UIC project.
 - b. The Division shall consult with the State Water Board and regional water board regarding any limitation(s) identified in an aquifer exemption letter of concurrence issued by the State Water Board if a new or revised UIC project is proposed into the aquifer(s) at issue in the concurrence letter. Upon confirmation by the Division that the injection zone(s) at issue in the UIC project are subject to the limitation(s) identified in the concurrence letter, the Division will incorporate the limitation(s) into the project approval letter unless there is agreement between the Division and Water Boards that such limitation(s) should not apply.
 - c. The Division shall consider all comments from the State Water Board and regional water board, including those related to project conditions and limitations, prior to issuing a project approval letter. The Division may consult with the State Water Board and regional water board regarding comments on a project under review.
 - d. If a project approval letter incorporates limitations or conditions proposed by the Water Boards to protect water that is, or may reasonably be, used for any beneficial use, those provisions will be noted as "Water Quality Requirements" and will specify the mechanism for monitoring and enforcing operators' compliance with the requirements.
 - e. The Division shall provide a copy of the unsigned final draft project approval letter to the State Water Board and regional water board at least five business days prior to issuing a final project approval letter to an operator. If the State Water Board or regional water board identify any concerns with the unsigned final draft project approval letter before it is

signed and issued, the Division will not issue the letter and will consult with the Water Boards regarding those concerns.

- f. If the Water Boards find that the terms of the draft project approval letter adequately address any concerns raised and adequately protect water that is, or may reasonably be, used for any beneficial use, the State Water Board or regional water board will provide written communication to the Division indicating that the Water Boards have no objections to the issuance of the project approval letter. If the State Water Board or regional water board find that the terms of the draft project approval letter do not adequately address the concerns raised or adequately protect water that is, or may reasonably be, used for any beneficial use, the State Water Board or regional water board may request further consultation with the Division, or may provide written communication to the Division indicating that the Water Boards object to the project approval letter.
 - g. The Division will provide the State Water Board and regional water board with a copy of the signed, final project approval letter.
3. The Water Boards shall have primary responsibility for evaluating and approving water quality monitoring plans and administering approved monitoring plans associated with UIC projects. A requirement to conduct water quality monitoring may be included in a project approval letter issued by the Division or pursuant to an order issued by a regional water board under section 13267 of the Water Code.
 4. The Division and the Water Boards will develop a system for tracking progress on the review of UIC project applications and UIC project reviews. The system shall be accessible to and duly maintained by the Division, the State Water Board, and the regional water boards.

V. RESPONSIBILITIES AND REQUIREMENTS REGARDING DISCHARGES OF PRODUCED WATER TO LAND

A. Waste Discharge Requirements and Waivers

1. Upon receiving a Report of Waste Discharge (an application for a permit to discharge waste or ROWD) that involves the discharge of produced water from oil and gas operations to land, the regional water board shall notify the Division of the receipt of the ROWD and shall forward a copy of the ROWD (or some portion thereof as agreed upon) to the Division upon its request.
2. The regional water board shall notify the Division of any additional information that the regional water board subsequently receives during the review of the ROWD. The Division may request from the regional water board additional information related to the ROWD. The regional water board may invite Division staff to attend meetings with operators regarding a ROWD under review.
3. In conjunction with a review of a ROWD, the Division may consult with and provide comments to the regional water board. The regional water board shall consider all comments from the Division prior to circulating any draft Waste Discharge Requirements or waiver of WDRs to the public.

4. The regional water board shall provide to the Division any draft WDRs or waiver of WDRs that are circulated to the public for review. The Division may recommend that the regional water board add provisions to any draft WDRs or waiver of WDRs. The regional water board shall consider all comments from the Division. If the Division finds that the terms of the draft WDRs or waiver of WDRs do not adequately address the Division's comments, the Division may request further consultation with the regional water board, or may provide written communication to the Water Board indicating that the Division objects to the draft WDRs or waiver of WDRs.
5. The regional water board will furnish a copy of the final WDRs or waiver of WDRs to the Division.

VI. INCIDENT RESPONSE AND ENFORCEMENT COORDINATION

A. Incident Response

1. The State Water Board and regional water boards shall be primarily responsible for overseeing water quality monitoring and the investigation and cleanup of leaks, spills, and other unauthorized discharges to waters of the state in the context of all oil and gas production activities and surface storage and disposal of related fluids. In some cases, the State Water Board and the local regional water board may defer to another local, state, or federal agency that takes primary responsibility for investigation and cleanup of the leak, spill, or other unauthorized discharge as described above. The Division shall assist as appropriate, including as this MOA, other agreements between the Parties, or applicable law may require.
2. The Division shall immediately inform the State Water Board and the appropriate regional water board when it becomes aware of any potential or actual water quality violations or any surface or sub-surface discharge of fluids associated with oil and gas production activities or surface storage or disposal of related fluids that has potential or actual impacts on surface or groundwater quality. Such discharges include, but are not limited to, any discharge to waters of the State or waters of the U.S., discharges to land that pose a potential or actual threat to surface or groundwater quality, and sub-surface discharges that pose a potential or actual threat to groundwater quality (resulting from, for example, well failure or a failure of zonal isolation). The Division shall also inform the State Water Board and appropriate regional water board when the Division initiates an investigation related to any such surface or sub-surface discharge. If an investigation results in the issuance of a report, the Division shall make any such report available to the State Water Board and the appropriate regional water board upon request. Any portion of a report that might disclose protected information (e.g., trade secrets or other confidential information) shall be made available to the State Water Board and/or regional water board for its use in regulating operations associated with oil and gas production activities consistent with applicable law. The State Water Board and/or regional water board shall not disclose the protected information to the public or other governmental agencies except as authorized or required by law and consistent with this MOA.
3. The Water Boards shall immediately inform the Division when they become aware of any potential or actual water quality violations or any surface or sub-surface discharge of fluids associated with oil and gas production activities or surface storage or disposal of related fluids

that has potential or actual impacts on surface or groundwater quality. If the State Water Board or a regional water board issues an order related to any such surface or sub-surface discharge, the Water Boards shall make the order and any resulting reports available to the Division upon request. Any portion of a report that might disclose protected information (e.g., trade secrets or other confidential information) shall be made available to the Division for its use in regulating operations associated with oil and gas production activities consistent with applicable law. The Division shall not disclose the protected information to the public or other governmental agencies except as authorized or required by law and consistent with this MOA.

4. The Division and the Water Boards will cross-train each other's staff, as the Parties deem appropriate, to enhance investigations designed to ensure compliance with UIC projects and permits and applicable law.

B. Enforcement Coordination

1. If the Division, State Water Board, or regional water board determines that there is a violation of water quality-based statutory or regulatory requirement, the agency shall take any actions under its authority that the agency deems appropriate to ensure that compliance is achieved.
2. The Division and Water Boards will coordinate incident response, investigations, and enforcement actions and hearings to the extent appropriate. Where feasible, prior to ordering or otherwise requiring that remedial or preventative action be taken to address water quality issues, including, but not limited to, pollution and nuisance, the Water Boards may consult with the Division regarding the actions to be required. Where feasible, prior to ordering or otherwise requiring that remedial or preventative action be taken that may affect water that is, or may reasonably be, used for any beneficial use, the Division may consult with the State Water Board and the appropriate regional Board.
3. Nothing in this MOA shall be construed as precluding the Parties from taking independent enforcement actions or from responding timely to an emergency, such as an ongoing or imminent threat to public health, safety, or the environment.

VII. ADDITIONAL PROVISIONS AND AGREEMENTS

A. Information Sharing

1. For the purpose of regulating UIC and UIC-related activities, the Division and Water Boards may share or exchange information in a manner that is consistent with the Public Records Act (Gov. Code, § 6250 et seq.) and any other applicable law. The information that may be shared or exchanged includes, but is not limited to, information that is subject to confidential well status pursuant to Public Resources Code section 3234 and information that is subject to protection as a trade secret.
2. Any information shared or exchanged between or among Parties that the transmitting Party deems protected from public disclosure shall include a written advisory to that effect (e.g., include "Confidential" in the subject line of the transmitting electronic mail). As used in this

MOA, "Confidential Communication" refers to such information transmitted with the written advisory.

3. Only persons authorized in writing by the Director of the Department of Conservation, the Executive Director of the State Water Board or the Executive Officer of a regional water board (as applicable) shall be permitted to obtain Confidential Communications.
4. Except by written agreement, or as required by court order, neither the Division nor the Water Boards shall release, disclose, discuss, or otherwise make available to the public any Confidential Communication or any other information which the Public Records Act or any other applicable law protects from public disclosure.
5. A Party that receives a request from a non-Party to release, disclose, discuss, or otherwise obtain access to any Confidential Communication (whether by way of subpoena, discovery request, request under the California Public Records Act, or other federal or state law) shall notify the transmitting Party that deemed the information protected of the request before the date on which a response to such a request is due, with the goal of providing the notice at least five calendar days before the response deadline. Unless the transmitting Party consents to disclosure or release of the Confidential Communication, the Party that received the disclosure request shall assert all relevant privileges and other objections to the disclosure to the extent authorized by law and subject to any court orders.

B. Resolution of Technical Questions and Policy Issues

1. Management of the programs described in this MOA involves the evaluation of numerous complex technical questions. In the event of a disagreement between Division and Water Boards staff, staff will refer the matter to their respective supervisors for cooperative resolution. If no agreement is reached, the matter will be sequentially escalated to corresponding levels of agency management for resolution.
2. All technical reports, work plans, and other documents prepared by regulated entities (e.g., Class II well operators), consultants or other third parties, the Division, or Water Boards that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be signed and stamped by a registered professional to the extent required by California Business and Professions Code sections 6735, 7835, and 7835.1. In the event of a disagreement about whether or how these requirements apply, advice shall be solicited from the Board of Professional Engineers, Land Surveyors, and Geologists as appropriate, and the approach outlined in Paragraph 1 above will be employed.

C. Other Responsibilities and Requirements

1. The Division and Water Boards shall have any other responsibilities and requirements as set forth in the Safe Drinking Water Act and other statutes, regulations, and orders.
2. Any responsibility or requirement set forth in this MOA that is inconsistent with any regulation of the Division or Water Boards shall be inoperative and not take effect unless and until the regulation is repealed or revised in a manner that provides consistency with this MOA.

D. Reservation of Authority

1. Nothing in this MOA shall be construed as delegating, limiting, or expanding the authority of the Division or Water Boards in carrying out their respective legal responsibilities for the management, regulation, coordination, and control of UIC activities, UIC-related activities, and discharges of UIC-related fluids to land.
2. Nor shall anything in this MOA be construed as affecting the discretion of the Division or Water Boards in carrying out their respective legal responsibilities for the management, regulation, coordination, and control of UIC, UIC-related activities, and discharges of UIC-related fluids to land.
3. This MOA is not a regulation, nor does it create binding obligations for either Party.

E. No Third-Party Beneficiaries

1. This MOA is not intended for the benefit of any person or entity other than the Parties. Third-parties cannot enforce any provision of this MOA.

F. Execution, Term, and Modification

1. This MOA represents the entire agreement of the Parties and merges and supersedes any prior written or oral representations, discussions, understandings, or agreements by, between, or among the Parties relating to the subject matter of this MOA, including the 1988 Memorandum of Agreement Between the State Water Resources Control Board and the Department of Conservation Division of Oil and Gas, but excluding the 2014 Memorandum of Agreement Among the Department of Conservation Division of Oil, Gas, and Geothermal Resources and State Water Resources Control Board and Regional Water Quality Control Boards Regarding Well Stimulation Treatments and Well Stimulation Treatment-Related Activities.
2. The Parties may execute this MOA in counterparts. Each executed counterpart shall have the same force and effect as an original instrument. Taken together, the executed counterparts shall constitute one and the same agreement.
3. This MOA shall become effective upon the date of final signature of the Parties.
4. This MOA shall continue in effect until modified by the mutual consent of the Parties or until terminated by a Party upon a 30-day advance written notice to the other Party.
5. The appendix to this MOA may be modified at any time by mutual agreement of the State Oil and Gas Supervisor and Executive Director of the State Water Board.

G. Construction

1. Any determination that a provision of this MOA is invalid does not invalidate any other provision of this MOA or the MOA in its entirety.

H. Representation on Authority

1. Each Party represents and warrants that it has the right, power, and authority to execute this MOA. Each Party represents and warrants that it has given any and all notices, and obtained any and all consents, powers, and authorities necessary to permit it, and the persons executing this MOA for it, to enter into this MOA.

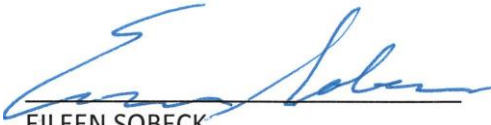
VIII. SIGNED AND DATED



DAVID BUNN
Director

CALIFORNIA DEPARTMENT OF CONSERVATION

7/31/18
Date



EILEEN SOBECK
Executive Director
STATE WATER RESOURCES CONTROL BOARD

7/27/18
Date



KENNETH A. HARRIS JR.
State Oil and Gas Supervisor

DIVISION OF OIL, GAS, AND GEOTHERMAL
RESOURCES

7/30/2018
Date

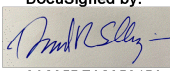
Revised Memorandum of Agreement Between the State Water Resources Control Board and the Department of Conservation, Geologic Energy Management Division (Formerly DOGGR) Regarding Underground Injection Control, Discharges to Land, and other Program Issues

APPENDIX

This appendix is comprised of the following attached documents:

- Attachment 1 – UIC Project Review Process (“Flowchart”), dated July 31, 2018
- Attachment 2 – UIC Project Data Requirements (“Checklist”), dated Apr 08, 2020
- Attachment 3 – Non-expansion Project Data Requirements, dated Dec 08, 2021

This appendix was last updated on December 10, 2021 and this version of the appendix replaces and supersedes all previous versions of the appendix to the Revised Memorandum of Agreement.

DocuSigned by:

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DAVID SHABAZIAN
Director
DEPARTMENT OF CONSERVATION

12/27/2021

Date



UDUAK-JOE NTUK
State Oil and Gas Supervisor
CALIFORNIA GEOLOGIC ENERGY
MANAGEMENT DIVISION

12/20/2021

Date

DocuSigned by:

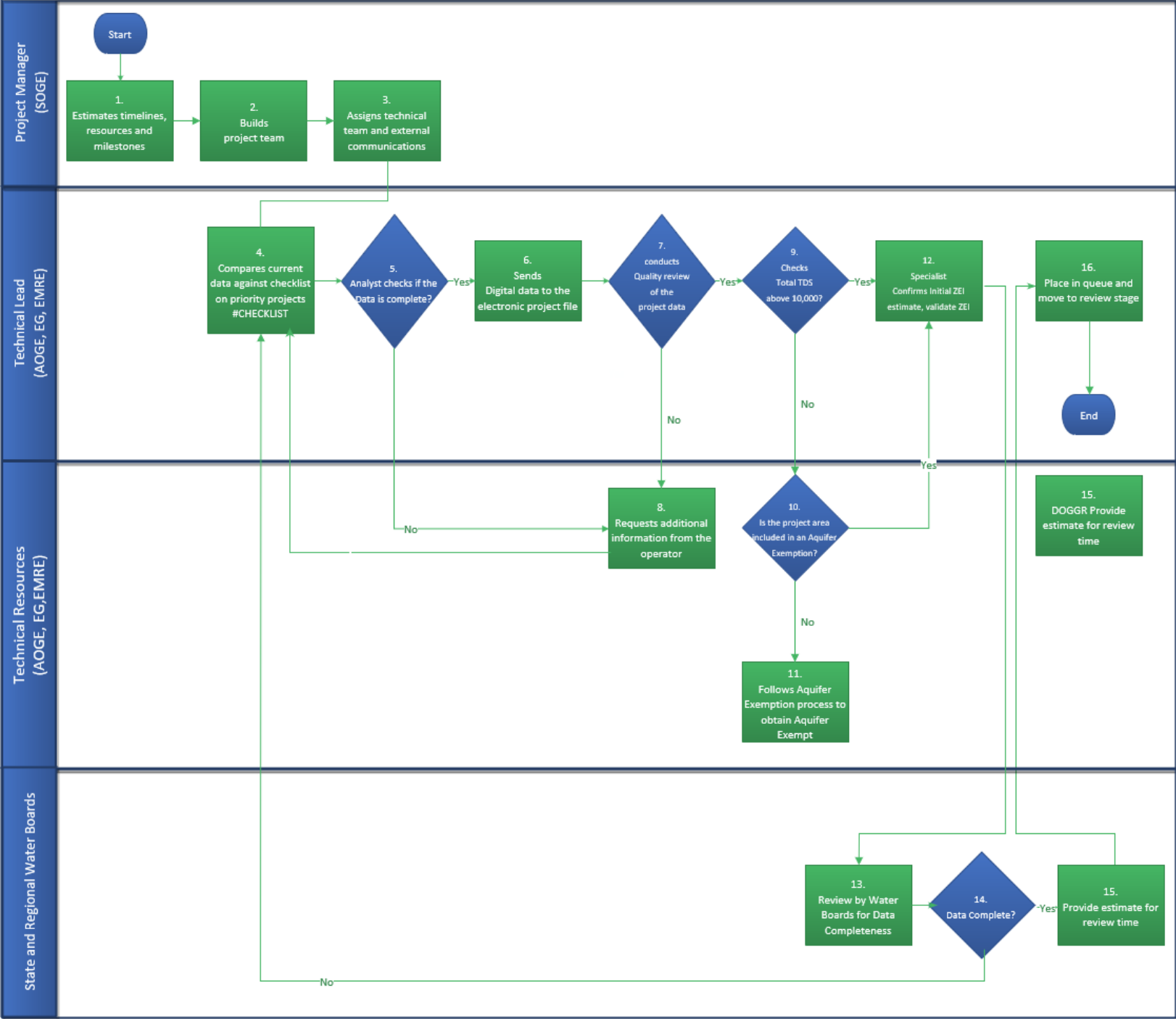
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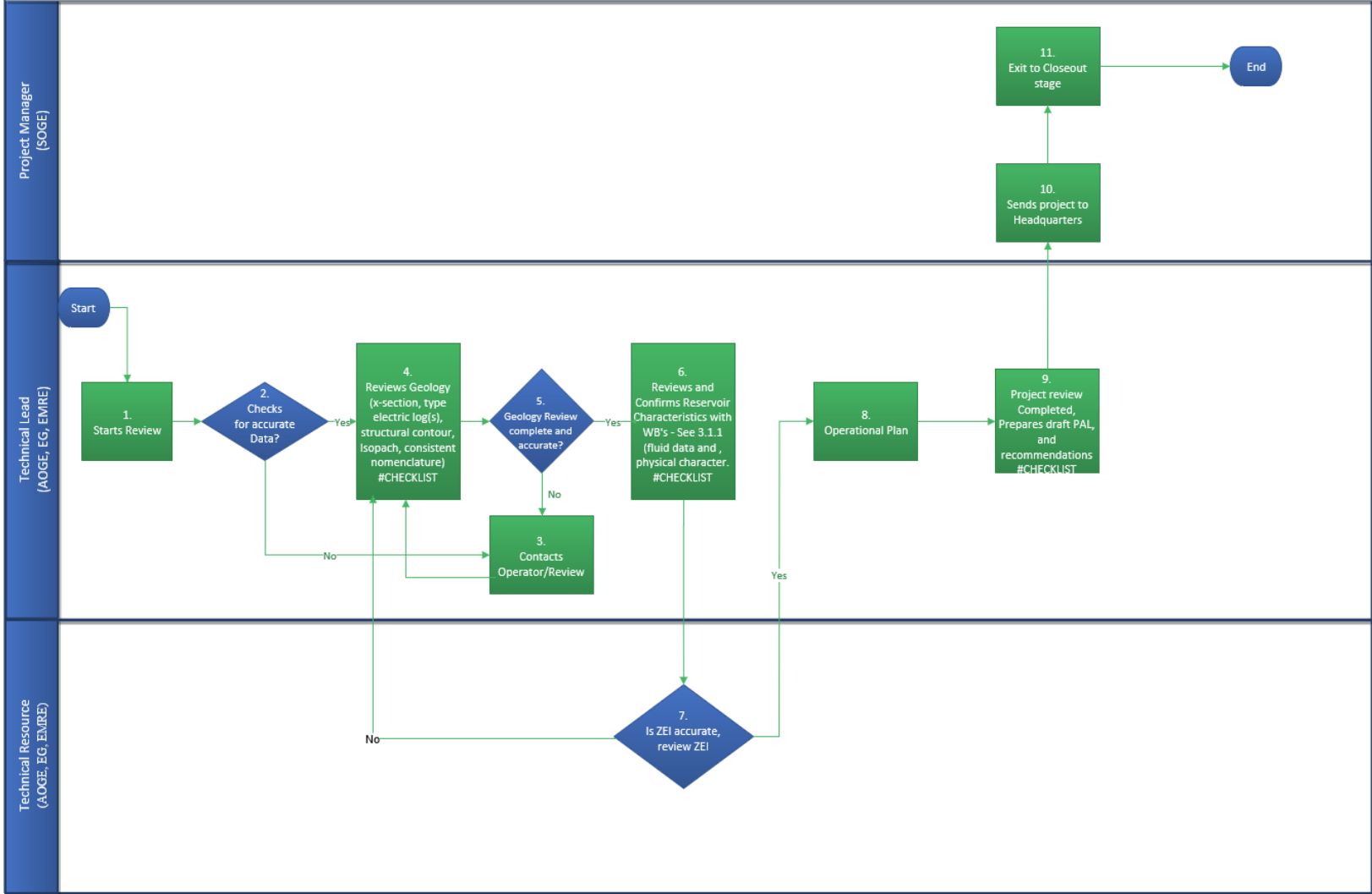
EILEEN SOBECK
Executive Director
STATE WATER RESOURCES CONTROL BOARD

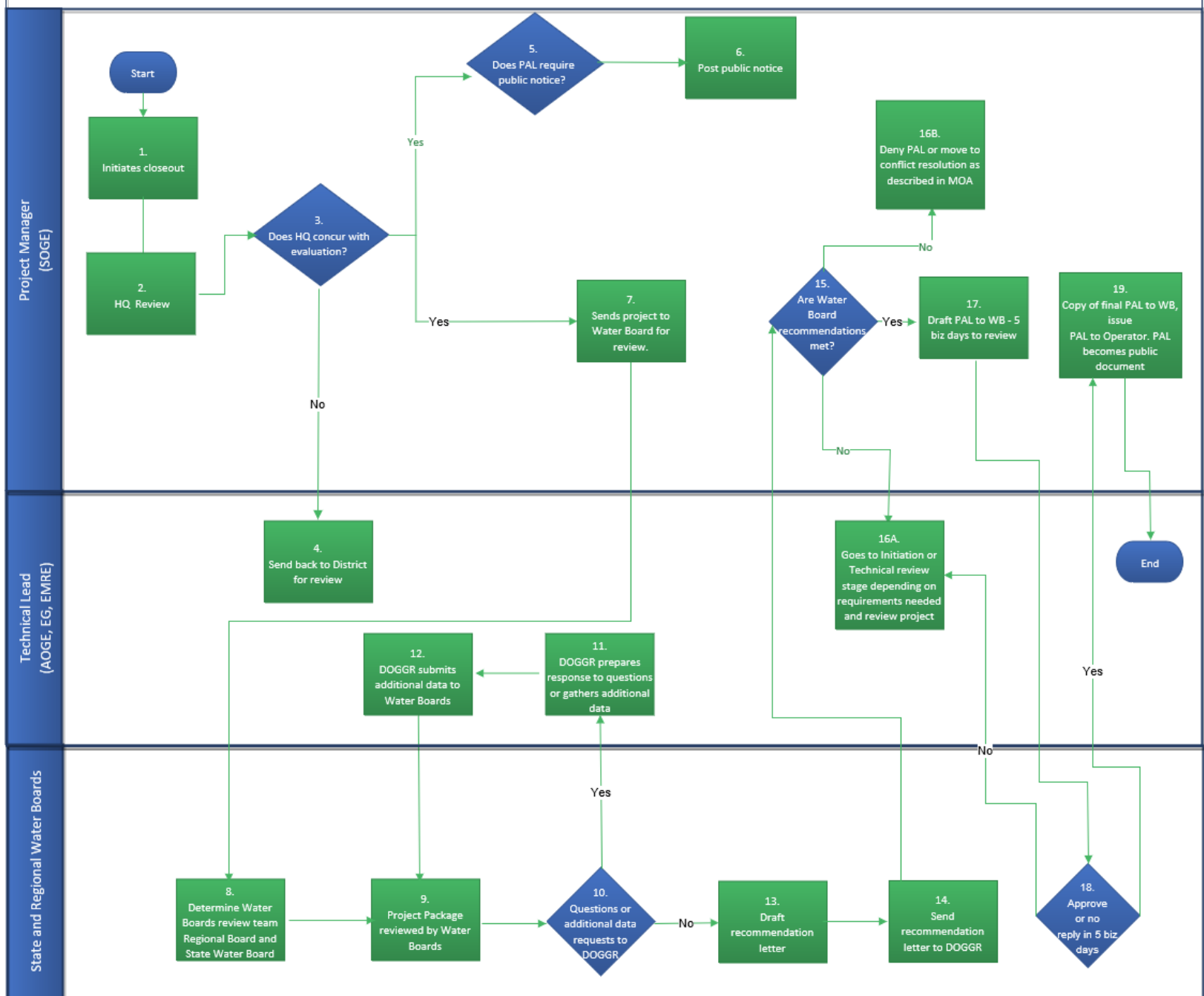
12/28/2021

Date

Attachment 1







Attachment 2

**UNDERGROUND INJECTION CONTROL (UIC)
GEOLOGIC ENERGY MANAGEMENT DIVISION
PROJECT INFORMATION CHECKLIST**
The purpose of this document is to streamline CalGEM and Water Boards review
(APRIL 8, 2020 VERSION)

The tables below summarize in checklist form the shared understanding of the Division and the Water Boards regarding the anticipated typical content and format of the project information to be forwarded from the Division to the Water Boards in connection with review of underground injection projects, as described in the Section IV.B. of the Revised Memorandum of Agreement, signed July 2018.

Note that this checklist does not necessarily identify all information an operator must provide to the Division in connection with an approval and ongoing operation of an underground injection project.¹ The requirements for approval and operation of underground injection projects are governed by applicable statutes and regulations. This checklist is not a substitute for those requirements.

Project Category (Project by Project, Periodic Review, New Project, Expansion, Modified Project):
Project Type (Water Disposal, Gas Disposal, Water Flood, Cyclic Steam, Steam Flood):
Number of Wells:
Operator:
Project No.:
Field Name:
Direct Injection Zone(s):
Indirect Migration Injection Zone(s):
DOGGR Reviewing Engineer:
Date Project Submitted:

Unless otherwise indicated, all authority references in the tables below are to sections within California Code of Regulations, title 14.

		Reference Authority	Complete	Location in the Data Package	Operator Notes Supporting / Clarifying Data Presented	Reviewed	CalGEM Notes
Data Format	DF(1)	All data supporting the underground injection project are in a digital format. <i>The Division and the Water Boards recognize that converting the Division's existing project files to a digital format is an ongoing process. The Division will work with the Water Boards to determine the most appropriate format for the data on a case-by-case basis.</i>					
	DF(2)	All maps, diagrams, and exhibits are clearly and appropriately labeled, such as to title, scale, and purpose, and clearly identify wells, boundaries, zones, contacts, and other relevant data.					
Cover Page	CP(1)	A cover page including a statement that appropriate licensed professionals, whose signatures and stamps appear at the bottom of the page, are responsible for all data, interpretations, and calculations, if any, subject to the requirements of Business and Professions Code sections 6735, 7835, and 7835.1. If the operator determines that the submission does not include data, interpretations, or calculations subject to the requirements of Business and Professions Code sections 6735, 7835, and 7835.1, the cover page must so indicate, and must provide the name(s) and signature(s) of the individual(s) responsible for preparing the submission.					
	ES(1)	A description of how the area of review was determined, including calculations, variables, citations, and assumptions. <i>The Division and Water Boards agree the AOR determination should include injection and production impacts of offset projects that could potentially interact with the proposed project, with due consideration for the geology, engineering aspects, and the nature of injected fluids.</i> <i>The Division may use the rates, pressures, and volumes included in the calculations as conditions of the Project Approval Letter. For water disposal projects, a determination of the current injectate front and pressure front also may be an important part of the area of review determination.</i>					
Engineering Study	ES(2)	A map of the area of review showing the location of the following: (1) All wells within and adjacent to the boundary of the area of review; (2) All water supply wells that are within the area of review and identified in public records or otherwise known to the operator; (3) Any underground disposal horizons, mining, and other subsurface industrial activities not associated with oil and gas production within the area of review, to the extent such information is publicly available or otherwise known to the operator; and (4) Traces of the geologic cross sections provided as part of the Geologic Study. <i>The historical term 'project area' may be shown as the map view projection of the injection zone defined in 1720.1(g). The 'project area' can include a single area of review (AOR), multiple AORs, or any overlapping cumulative effects of the AORs.</i>					
	ES(3)	A compendium of the following information: (1) For all wells depicted in the map of the area of review (including water supply wells to the extent information is known or publicly available), the API numbers, or other identifying information for wells that do not have API numbers, and the wellbore paths, total depths, and depths of completion interval(s) of the wells; (2) The type and status of water supply wells depicted in the map of the area of review; and (3) All the casing diagram data specified in Section 1724.7.1, provided in the form of graphical casing diagrams or flat-file data sets, for all wells that are within the area of review and that are completed in or penetrating the injection zone for the underground injection project or a deeper zone, including directionally drilled wells that intersect the area of review in the injection zone or a deeper zone.					

	ES(4)	The planned well-drilling and plugging-and-abandonment program to complete the project, including a flood-pattern map, if applicable, showing all injection, production, and plugged and abandoned wells, and unit boundaries. <i>The Division recognizes plans are subject to change during the course of a project review. It is the operator's responsibility to update project data accordingly prior to approval.</i>	1724.7(a)(1)(D) 1724.8				
Geologic Study	GS(1)	Geologic information describing the reservoir characteristics of the injection zone, such as porosity, permeability, average thickness, areal extent, fracture gradient, original and present temperature and pressure, and original and residual oil, gas, and water saturations. The scope of the geologic characterization shall encompass the caprock and sealing mechanisms, the injection zone including the vertical interval above and below the approved injection zone, and the areas where potential migration of fluid or entrapment of migrated fluid could occur. <i>The Division and Water Boards agree all supporting data shall be the most current, accurate and relevant. All data sources shall be cited.</i>	1724.7(a)(2)(A)				
	GS(2)	Reservoir fluid data for the injection zone, such as oil gravity and viscosity, water quality, presence and concentration of non-hydrocarbon components in the associated gas (such as hydrogen sulfide) and specific gravity of gas. Liquid analysis of the reservoir fluid shall be performed in accordance with Section 1724.7.2. <i>The Division and Water Boards agree supporting documentation for formation fluid TDS determination should be included and from actual samples when available. Supporting documents may include, but are not limited to, historic data, properly documented log derivations, and when available, submission of LAS logs and all constants used for verification.</i>	1724.7(a)(2)(B) 1724.7.2				
	GS(3)	Structural contour map drawn on a geologic marker at or near the top and base of each injection zone in area of review, indicating faults and any lateral containment features. If faults are identified, there must also be analysis addressing whether or not the faults are capable of confining fluid to the approved injection zone and any geologic features that could result in the migration of fluid out of the approved injection zone. <i>If a GIS shapefile is submitted, layers with labeled wellbore paths of all existing and proposed wells in the map area would lead to a more comprehensive understanding of the system.</i>	1724.7(a)(2)(C)				
	GS(4)	Isopach map of each injection zone or subzone in the area of review.	1724.7(a)(2)(D)				
	GS(5)	At least two geologic cross sections in the area of review through at least three wells, including one injection well. As near as possible, one of the geologic cross sections shall be along strike and the other shall be perpendicular to strike. The cross section shall extend from the base of the deepest production or injection zone to surface and indicate the location of the approved injection zone, the base of freshwater, and the base of the USDW.	1724.7(a)(2)(E)				
	GS(6)	Representative electric log to a depth below the deepest producing or injection zone, whichever is deeper, identifying all geologic units, formations, USDWs, freshwater aquifers, and oil or gas zones. The electric log shall identify the API number of the well that was logged.	1724.7(a)(2)(F)				
Injection Plan	IP(1)	A statement of primary purpose of the project.	1724.7(a)(3)(A)				
	IP(2)	A map showing injection facilities related to the project, and piping and instrumentation diagram(s) for the injection facilities.	1724.7(a)(3)(B)				
	IP(3)	A statement of the anticipated project duration, anticipated daily rate of injection (by well), and anticipated cumulative net volume of fluid to be injected. <i>The Division and Water Boards anticipate this data to be based on maximum values.</i>	1724.7(a)(3)(C)				
	IP(4)	Identification of all wells that are part of the project, including injection wells, affected production wells, water source wells, observation or other wells and any planned wells to the extent known. The depths of water source wells shall also be provided.	1724.7(a)(3)(D)				
	IP(5)	Monitoring system, including methods or standard operating procedures to be utilized by the operator to ensure that no damage is occurring and that the injection fluid is confined to the approved injection zone. In the event the Division or the Water Boards require groundwater monitoring in relation to the underground injection project, or as a condition of project approval, the operator shall consult with the State Water Resources Control Board or the Regional Water Quality Control Board and provide the Division with documentation and the results of such consultation.	1724.7(a)(3)(E)				
	IP(6)	A description of the method of injection, including such information as injection string configuration and bottom-hole assembly.	1724.7(a)(3)(F)				
	IP(7)	A list of the cathodic protection or other corrosion prevention measures employed for plant, lines, and wells, if such measures are warranted.	1724.7(a)(3)(G)				
	IP(8)	Identification of the source(s) of the injection fluid and analyses of the injection fluid in accordance with Section 1724.7.2. <i>NTO- Guidelines for Collection of Oilfield Water Quality Data</i>	1724.7(a)(3)(H) 1724.7.2				

Other Standard Information	OI(1)	All data supporting the determination of the maximum allowable surface injection pressure for each injection well in the underground injection project, as described in Section 1724.10.3, including all calculations, variables, citations and assumptions.	1724.7.(a)(4) 1724.10.3				
	OI(2)	Copies of letters of notification sent to offset operators by the operator of the underground injection project.	1724.7(a)(5)				
Situational Information	SI(1)	Any other data that, in the judgement of the Division, are pertinent and necessary for the proper evaluation of the underground injection project. Examples of such data are: isochore maps, isogor maps, water-oil ratio maps, isobar maps, three-dimensional geologic models, reservoir simulation results, isopach maps of the confining layers, equipment diagrams, and safety programs.	1724.7(a)(6)				
	SI(2)	Any alternative data accepted by Division in lieu of the default regulatory requirements for project data, as described in Section 1724.7(e).	1724.7(e)				
	SI(3)	For an underground injection project that includes an injection well with open perforations located within 500 linear feet of the screen or perforations of a water supply well (or a project otherwise required to provide this information as determined by the Division), all of the following information, updated yearly: (1) A water treatment process flow diagram depicting all physical and chemical treatment processes applied to the injection fluid, from its source to the injection well; (2) The safety data sheet for each chemical additive emplaced in injection wells within the underground injection project, and for each chemical added to the fluid to be injected from the time the fluid is first obtained to the time it is injected; (3) The project-aggregate volume or weight of each additive reported; and (4) A brief description of the intended purpose of each additive reported.	1724.10(e)				

**UNDERGROUND INJECTION CONTROL (UIC)
WATER BOARDS PROJECT INFORMATION CHECKLIST**
The purpose of this document is to streamline CalGEM and Water Boards review
(APRIL 8, 2020 VERSION)

The table below summarizes in checklist form the supplemental information required in addition to that listed in the Application checklist that the Water Boards need for review of underground injection projects.

The information requested below is made in lieu of requiring operators to file a report of discharge under California Water Code section 13260 and is consistent with authority provided in Water Code sections 13260, 13267, and 13267.5.

To help expedite the Water Board's review, please identify the exact WellStar location of the data indicated below.

		Complete	Location in the Data Package	Operator Notes Supporting / Clarifying Data Presented	Reviewed	Water Board Notes
Water Boards	W-CP					
	W-ES(1)					
	W-ES(2)					
	W-ES(3)					
	W-ES(4)					
	W-ES(5)					
	W-ES(6)					
	W-GS(1)					
	W-GS(2)					

W-GS(3)	Provide representative water quality data (collected within the past 5 years) of the injection zone from well(s) located within the AOR. The injection zone groundwater analysis should be representative of the reservoir groundwater in its native condition. The groundwater analyzed shall be either sampled from the injection zone itself prior to commencement of any injection into the reservoir or sampled from an analogous reservoir that has not already received injection fluid. The representative sample shall be recovered after all completion and drilling fluid has been circulated from the wellbore. Any proposed groundwater sampling and analysis proposed for new or modified projects must follow the most recent version of the Notice to Operators – Guidelines for Collection of Oilfield Water Quality Data.				
W-GS(4)	If the injection zone is not an exempted aquifer, then a non-USDW determination shall be made using recent (collected within the past 5 years) water quality samples of the injection zone groundwater within the Project Area. If no wells exist within the Project Area, then total dissolved solids (TDS) well log calculations can be used provided that: 1) The accuracy (i.e. percent error) of the computed result is validated with a water quality sample of the same injection zone groundwater within 1 mile of the project area; and 2) The method, calculations, and assumptions used in the TDS analysis are provided. If the Operator determines through water quality sampling or TDS calculations that the injection zone and/or overlying formations are non-USDWs, the lateral and vertical extent of this determination shall be defined on the application maps and cross sections.				
W-GS(5)	Any groundwater quality data or well log analysis that will be used to justify the injection of fluids (e.g., showing that TDS concentrations within the proposed injection zone are greater than 10,000 milligrams per liter) must be accompanied by a written statement or report, prepared by a state-registered professional geologist or professional engineer, indicating the degree to which the water quality data is representative of the injectate fluid or native formation groundwater and provide justification for that conclusion.				
W-IP(1)	Provide a map that shows the location of any pretreatment facilities, location of proposed injection wells and any other injection wells plumbed to the facility.				
W-IP(2)	Provide information including the type of treatment and plan for the disposal of reject water.				
W-IP(3)	Provide representative water quality data of the injectate; collected within the past year. The source of the injectate fluids should be identified including zone/formation and approximate volume percentages. The injection liquid to be analyzed shall be sampled after all additives (if any) are added to the liquid and after all treatment or separation processes (if any), to ensure that it is representative of the liquid actually injected. Sampling protocol for existing projects (project by project) should be provided. Any proposed water sampling and analysis proposed for new or modified projects should follow the most recent Notice to Operators regarding Guidelines for Collection of Oilfield Water Quality Data.				
W-IP(4)	The Aquifer Exemption (AE) conditions as outlined in State Water Board's final concurrence letters need to be addressed in the Operator's application and incorporated into the Project Approval Letters, if appropriate. Such AE conditions may include monitoring that is different than the monitoring requested at the UIC project level. Requested "groundwater monitoring" includes but is not limited to the following: water quality monitoring (e.g. of the injectate and/or groundwater within the newly exempted zone/area), temperature monitoring, and/or pressure monitoring. For those projects with potential conduits into a USDW, a proposed monitoring plan to confirm the pressure front calculations used in determining the change in pressure near problem wells or faults shall be provided.				
W-SI	Using recent (measured within the past 2 years) idle well fluid level data for all idle wells within the AOR, provide a map showing the apparent groundwater flow direction(s) within the injection zone. The supporting data (e.g. acoustic water level surveys) used to create the maps shall be provided.				

Acronyms

AE	Aquifer Exemption
AOR	Area of review
BFW	Base of fresh water
CCR	California Code of Regulations
CP	Cover Page
DF	Data Format
DWR	Department of Water Resources
ES	Engineering Study
GAMA	Groundwater Ambient Monitoring and Assessment Program
GIS	Geographic Information System
GS	Geological Study
IP	Injection Plan
LAS	Log ASCII Standard
OI	Other Standard Information
SI	Situational Information
TDS	Total Dissolved Solids
UIC	Underground Injection Control
USDW	Underground Source of Drinking Water
WellSTAR	Well State Tracking and Reporting
ZEI	Zone of Endangering Influence

Attachment 3

UNDERGROUND INJECTION CONTROL (UIC)
 Geologic Energy Management Division
NON-EXPANSION PROJECT INFORMATION CHECKLIST
 The purpose of this document is to streamline CalGEM and Water Boards review
 (Dec 2021)

The tables below summarize in checklist form the shared understanding of CalGEM and the Water Boards regarding the anticipated typical content and format of the project information to be forwarded from the CalGEM to the Water Boards for new drill injection wells or wells converted to injection in approved underground injection projects.

Note that this checklist does not necessarily identify all information an operator must provide to the CalGEM in connection with addition of wells to an approved underground injection project. The requirements for approval and operation of underground injection projects are governed by applicable statutes and regulations. This checklist is not a substitute for those requirements.

Project Category: **Non Expansion NOI(s) Only**
 Project Type (Steam injection, Water Flood, Water Disposal):
 Number of Proposed Injection Wells:
 Number of Existing Injection Wells:
 Operator:
 Project No.:
 Field Name:
 Direct Injection Zone(s):
 Date of Issue of Most Recent PAL:
 Date of Issue of Most Recent Project Approval/Review:
 CalGEM Reviewing Engineer:
 Date Project Submitted:

Unless otherwise indicated, all authority references in the tables below are to sections within California Code of Regulations, title 14.

	Reference Authority	Complete	Location in the Data Package	Operator Notes Supporting / Clarifying Data Presented	Reviewed	CalGEM Notes	
Project/Well Summary	IP(3) Anticipated daily rate of injection (by well) for all newly proposed injection wells. The anticipated total injection volumes shall also be included for disposal wells. CalGEM and Water Boards anticipate this data to be based on maximum values.	1724.7(a)(3)(C) 1724.7(b)	<input type="checkbox"/>			<input type="checkbox"/>	
	OI(2) All data supporting the determination of the maximum allowable surface injection pressure for each newly proposed injection well in the underground injection project, as described in Section 1724.10.3, including all calculations, variables, citations and assumptions.	1724.7(a)(4) 1724.10.3 1724.7(b)	<input type="checkbox"/>			<input type="checkbox"/>	
	OI(3) CalGEM ONLY: A copy of the most recent Project Approval Letter (PAL)	1724.7(a)(6)	<input type="checkbox"/>			<input type="checkbox"/>	
	OI(4) CalGEM ONLY: A written statement stating that CalGEM staff has reviewed the project documents and agrees with the Operator's evaluation that: The non-expansion well(s) being added to the UIC project are consistent with the conditions in the existing PAL.		<input type="checkbox"/>			<input type="checkbox"/>	
	OI(5) All updates to project level material are clearly dated.	1724.7(b,c)	<input type="checkbox"/>			<input type="checkbox"/>	
	DF(2) All maps, diagrams, and exhibits are clearly and appropriately labeled, such as to title, scale, and purpose, and clearly identify wells, boundaries, zones, contacts, and other relevant data. If previously submitted maps are used, they must reflect the current conditions of the area the map is representing. Documentation to support NOI's on existing projects may include excerpts from previously submitted maps.	1724.7(c)	<input type="checkbox"/>			<input type="checkbox"/>	
Engineering Study	ES(1) A description of how the area of review was determined, including calculations, variables, citations, and assumptions, for the proposed injectors - Previously submitted calculations may be incorporated by reference if the pressure in the vicinity of proposed injectors is shown to be stable or decreasing. Updated calculations shall be stamped and dated. For existing water disposal projects, the current AOR needs to be determined. CalGEM and Water Boards agree the AOR determination should include injection and production impacts of offset projects that could potentially interact with the proposed project, with due consideration for the geology, engineering aspects, and the nature of injected fluids.	1724.7(a)(1)(A) 1724.7(b)	<input type="checkbox"/>			<input type="checkbox"/>	
	ES(2) The map shall show all existing injection wells and AOR(s), the location (surface and bottom hole) and type of the proposed non-expansion well(s), the determined AOR and all other wells within the AOR. In cases where TDS is below 10,000 ppm, the Aquifer Exemption boundary shall be shown on the map, or a second map included showing the position of the project or proposed wells relative to the Aquifer Exemption boundary. In cases where TDS is 10,000 ppm or higher, operator should provide the supporting data to demonstrate that approved injection zone is at or above 10,000 ppm. "Regarding the subsurface activities mentioned in item #3 of the area of review map contents referenced above (corresponding to section 1724.7(a)(1)(B)(i) of CalGEM's UIC regulations), CalGEM anticipates the operator of record for the injection project will provide updates to CalGEM promptly if and when the operator becomes aware of pertinent new information. This is part of the general regulatory requirement for the operator of an injection project to ensure that the supporting data for the injection project is current and accurately reflective of the project setting throughout the operation life of the project."	1724.7(a)(1)(B) 1724.8	<input type="checkbox"/>			<input type="checkbox"/>	
	ES(3) For the proposed injectors, and any wells within their AOR, a compendium of the following information: (1) For all wells depicted in the map of the area of review (including water supply wells to the extent information is known or publicly available), the API numbers, or other identifying information for wells that do not have API numbers, and the wellbore paths, total depths, and depths of completion interval(s) of the wells; (2) The type and status of water supply wells depicted in the map of the area of review; and (3) All the casing diagram data specified in Section 1724.7.1, provided in the form of graphical casing diagrams or flat-file data sets, for all wells that are within the area of review and that are completed in or penetrating the injection zone for the underground injection project or a deeper zone, including directionally drilled wells that intersect the area of review in the injection zone or a deeper zone. When proposed wells are within the scope of a recent project approval, data from that application may be incorporated by reference.	1724.7(a)(1)(C) 1724.7.1 1724.8 1724.7(b)	<input type="checkbox"/>			<input type="checkbox"/>	

ES(4)	<p>Any adjustments to the planned well-drilling and plugging-and-abandonment program to complete the project, including an updated flood-pattern map, if applicable, showing all injection, production, and plugged and abandoned wells, and unit boundaries.</p> <p>CalGEM recognizes plans are subject to change. It is the operator's responsibility to update project data accordingly prior to approval.</p>	1724.7(a)(1)(D) 1724.8 1724.7(b)	<input type="checkbox"/>			<input type="checkbox"/>
Geologic Study Update	<p>CalGEM must be kept up to date with the latest pressure measurements. Related tables and maps must be updated.</p> <p>The project data must include geologic information describing the reservoir characteristics of the injection zone, such as porosity, permeability, average thickness, areal extent, fracture gradient, original and present temperature and pressure. The scope of the geologic characterization shall encompass the caprock and sealing mechanisms, the injection zone including the vertical interval above and below the approved injection zone, and the areas where potential migration of fluid or entrapment of migrated fluid could occur.</p> <p>CalGEM and Water Boards agree all supporting data shall be the most current, accurate and relevant. All data sources shall be cited.</p>	1724.7(a)(2)(A) 1724.7(a)(6) 1724.7(b)	<input type="checkbox"/>			<input type="checkbox"/>

Project Level Information Below Must Be On File Before Sending To Water Boards For Consult:

Project Cover Page	<p>The project data must contain a cover page with a statement that appropriate licensed professionals, whose signatures and stamps appear at the bottom of the page, are responsible for all data, interpretations, and calculations, if any, subject to the requirements of Business and Professions Code sections 6735, 7835, and 7835.1. If the operator determines that the submission does not include data, interpretations, or calculations subject to the requirements of Business and Professions Code sections 6735, 7835, and 7835.1, the cover page must so indicate, and must provide the name(s) and signature(s) of the individual(s) responsible for preparing the submission.</p>	1724.7(d)	<input type="checkbox"/>			<input type="checkbox"/>
Geological Study	<p>The project data must include a structural contour map drawn on a geologic marker at or near the top and base of each injection zone in area of review (two maps), indicating faults and any lateral containment features. If faults are identified, there must also be analysis addressing whether or not the faults are capable of confining fluid to the approved injection zone and any geologic features that could result in the migration of fluid out of the approved injection zone.</p> <p>If a GIS shapefile is submitted, layers with labeled wellbore paths of all existing and proposed wells in the map area would lead to a more comprehensive understanding of the system.</p>	1724.7(a)(2)(C) 1724.7(b)	<input type="checkbox"/>			<input type="checkbox"/>
	<p>The project data must include an isopach map (net) of each injection zone or subzone in the area of review.</p>	1724.7(a)(2)(D) 1724.7(b)	<input type="checkbox"/>			<input type="checkbox"/>
	<p>The project data must include at least two geologic cross sections in the area of review through at least three wells, including one injection well. As near as possible, one of the geologic cross sections shall be along strike and the other shall be perpendicular to strike. The cross section shall extend from the base of the deepest production or injection zone to surface and indicate the location of the approved injection zone, the base of freshwater, and the base of the USDW.</p>	1724.7(a)(2)(E) 1724.7(b)	<input type="checkbox"/>			<input type="checkbox"/>
	<p>The project data must include a representative electric log to a depth below the deepest producing or injection zone, whichever is deeper, identifying all geologic units, formations, USDWs, freshwater aquifers, and oil or gas zones. The electric log shall identify the API number of the well that was logged.</p>	1724.7(a)(2)(F) 1724.7(b)	<input type="checkbox"/>			<input type="checkbox"/>
Project Injection Plan	<p>The project data must include a statement of primary purpose of the project.</p>	1724.7(a)(3)(A) 1724.7(b)	<input type="checkbox"/>			<input type="checkbox"/>
	<p>The project data must include identification of all wells that are part of the project, including injection wells, affected production wells, water source wells, observation or other wells and any planned wells to the extent known. The depths of water source wells shall also be provided.</p>	1724.7(a)(3)(D) 1724.7(b)	<input type="checkbox"/>			<input type="checkbox"/>
Project Situational Information	<p>The project data includes any other data that, in the judgement of the CalGEM, or as required by the Project Approval Letter, are pertinent and necessary for the proper evaluation of the underground injection project. Examples of such data are: Tabulated data and a graph of oil, water, gas production rates, water cut in percentage, water oil ratio (WOR), gas oil ratio (GOR) and injection rates vs. time for each existing injection pattern, isochore maps, isogor maps, isobar maps, three-dimensional geologic models, reservoir simulation results, isopach maps of the confining layers, equipment diagrams, and safety programs.</p>	1724.7(a)(6) 1724.10(f)	<input type="checkbox"/>			<input type="checkbox"/>
	<p>Any alternative data accepted by CalGEM in lieu of the default regulatory requirements for project data, as described in Section 1724.7(e).</p>	1724.7(e)	<input type="checkbox"/>			<input type="checkbox"/>

**UNDERGROUND INJECTION CONTROL (UIC)
WATER BOARDS
NON-EXPANSION PROJECT INFORMATION CHECKLIST**
The purpose of this document is to streamline CalGEM and Water Boards review
(Dec 2021)

The table below summarizes in checklist form the minimum supplemental information required that the Water Boards need to conduct its review. The Water Boards may ask for additional information, if needed, to ensure the protection of water quality and beneficial use waters.

The information requested below is made in lieu of requiring operators to file a report of discharge under California Water Code section 13260 and is consistent with authority provided in Water Code sections 13260, 13267, and 13267.5.

To help expedite the Water Board's review, please identify the exact location of the data indicated below.

		Complete	Location in the Data Package	Operator Notes Supporting / Clarifying Data Presented
Water Boards	W-CP	<input type="checkbox"/>		
	W-ES(1)	<input type="checkbox"/>		
	W-ES(2)	<input type="checkbox"/>		
	W-ES(3)	<input type="checkbox"/>		
	W-ES(4)	<input type="checkbox"/>		
	W-ES(5)	<input type="checkbox"/>		
	W-ES(6)	<input type="checkbox"/>		
	W-GS(1)	<input type="checkbox"/>		
	W-GS(2)	<input type="checkbox"/>		

W-GS(4)	<p>If the injection zone is not an exempted aquifer, then non-USDW determinations shall be made using water samples, representative of the reservoir, collected within the past 5 years. If no wells exist within the project area, then total dissolved solids (TDS) well log calculations can be used provided that: 1) The accuracy (i.e. percent error) of the computed result is validated with a water quality sample of the same injection zone groundwater within 1 mile of the project area; and 2) The method, calculations, and assumptions used in the TDS analysis are provided.</p> <p>If the Operator determines through water quality sampling or TDS calculations that the injection zone and/or overlying formations are non-USDWs, the lateral and vertical extent of this determination shall be defined on a map.</p> <p><i>Previously submitted and approved non-USDW determinations may be incorporated by reference. The location of the referenced information needs to be clearly identified in the application. For example, "the non-USDW determination can be found in the ABC application dated XXXX on page x, section x." Or the referenced information must be included as an attachment to the application.</i></p>	☐		
W-GS(5)	<p>Any groundwater quality data or well log analysis that will be used to justify the injection of fluids (e.g., showing that TDS concentrations within the proposed injection zone are equal to or greater than 10,000 milligrams per liter) must be accompanied by a written statement or report, prepared by a state-registered professional geologist or professional engineer, indicating the degree to which the water quality data is representative of the injectate fluid or native formation groundwater and provide justification for that conclusion.</p> <p><i>Previously submitted data and interpretations made that are signed and stamped by the appropriately registered professional may be incorporated by reference. The location of the referenced information needs to be clearly identified in the application (i.e., ABC application dated XXXX on page x, section x), or the referenced information must be included as an attachment to the application.</i></p>	☐		
W-IP(3)	<p>For all waterflood and water disposal non-expansion wells where the data is not available in WellStar, provide representative water quality data of the injectate; collected within the past year. The source of the injectate fluids should be identified including zone/formation and approximate volume percentages. The injection liquid to be analyzed shall be sampled after all additives (if any) are added to the liquid and after all treatment or separation processes (if any), to ensure that it is representative of the liquid actually injected. Any water sampling and analysis proposed should follow the most recent Notice to Operators regarding Guidelines for Collection of Oilfield Water Quality Data.</p>	☐		
W-SI	<p>If an isobaric map created in the last 2 years is not available in WellStar, a representative isobaric map of the UIC project, generated for the top of the injection zone and showing the apparent fluid flow direction(s), shall be provided. In addition, all data used to construct the isobaric map shall be provided, and shall include at a minimum; one representative downhole reservoir pressure measured at the top of the injection zone and validated fluid level data from all idle and observation wells within the project area.</p> <p>If the isobaric map uses reservoir pressures or fluid levels acquired from an active injection or production well, the operator shall calculate and validate the shut-in time required for the pressure to equalize. The required shut-in time calculations and validation process shall be submitted along with the isobaric map and downhole pressure data.</p>	☐		