Appendix 1 – Application Templates

STATE OF ARIZONA

UNDERGROUND INJECTION CONTROL PROGRAM

CLASS I PERMIT APPLICATION
FOR
NON-HAZARDOUS
WASTE INJECTION WELLS

Last Revised: July 12, 2022

Table of Contents

GENERAL INSTRUCTIONS

The Arizona Underground Injection Control (UIC) Administrative Rules (A.A.C. Title 18 Chapter 9 Article 6) regulate the injection of fluids into the subsurface. The following instructions outline the procedures, documents, and information needed for a Class I Non Hazardous injection well permit application.

The applicant shall submit an original Permit Application and a Technical Report. Both documents shall be submitted electronically through ADEQ's e-Permitting Online Portal at https://www.azdeq.gov/mydeq.

If the required reports cannot be submitted, or require further documentation that cannot be submitted on the myDEQ portal, then submit items to uic@azdeq.gov or the address listed below:

Arizona Department of Environmental Quality
Division of Water Quality
1110 West Washington Street
Phoenix, AZ 85007
ATTN: Underground Injection Control (UIC) Program

Telephone inquiries: (602) 771-2300
Email inquiries: uic@azdeq.gov

1. Confidential Business Information (CBI): The information provided in the permit application must be of sufficient detail to allow the Arizona Department of Environmental Quality (ADEQ) Division of Water Quality to make informed decisions in setting permit conditions. However, if the submitted documents, or portions thereof, are considered confidential, the applicant must follow appropriate procedures in requesting CBI status for those documents, or portions thereof, as detailed in the Arizona Public Records Law, A.R.S. §§ -39-101 to -161. According to the Law, any person who provides to a governmental entity a record that the person believes should be protected as business confidential shall provide with the record a written claim of business confidentiality and a concise statement of reasons supporting the claim of business confidentiality. When the records in question relate to a program for which the State has been delegated primacy, as is the case for the UIC Program, the standards of the Freedom of Information Act, 5 U.S.C. Section 552 (FOIA) shall apply. Furthermore, the regulation of the U.S. Environmental Protection Agency interpreting FOIA as it appears at 40CFR Part 2 (1992 version) shall also apply. Since permit applications are published during the public comment period, the applicant should provide an approved redacted copy of the permit application and the accompanying technical report.

2. Signature on Application: The person who signs the application form will often be the applicant; when another person signs on behalf of the applicant, his/her title or relationship to the applicant should be shown in the space provided. In all cases, the person signing the form should be authorized to do so by the applicant. An application submitted by a corporation must be signed by a responsible corporate officer or his duly authorized representative, if such representative is responsible for the overall operation of the facility from which the activity described in the form originates. In the case of a partnership or a sole proprietorship, the application must be signed by a general partner or the proprietor, respectively. In the case of a municipal, state, federal or other public facility, the application must be signed by either a principal executive officer, ranking elected official or other duly authorized employee.

The Division shall require a person signing an application on behalf of an applicant to provide proof of authorization (R18-9-C617; 40CFR Part 144.32).

3. An application will not be processed until all information required to properly review the application has been obtained. When an application is severely lacking in detail or the applicant fails to submit additionally requested information in a timely manner, the application may be returned.

4. An application which involves the injection of a fluid containing radioactive materials shall be accompanied by a letter or other instrument in writing from the Arizona Department of Health Services, Bureau of Radiation Control, stating that either the applicant has a license from the Bureau of Radiation Control governing the disposal of radioactive materials; or that the applicant does not need a license. In the case of radioactive materials disposal, the Bureau of Radiation Control must receive a copy of the application for an injection permit. The copy should be mailed to:

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This permit application addresses both non-hazardous and hazardous wastes. Basic requirements for non-hazardous waste injection wells are contained in application instructions, additional requirements for hazardous waste injection wells are noted in Attachment 1 – Requirements for all Class I Wells and Class I Hazardous Waste Wells.

Requirements for the public notice include:

1. That a public notice be published for each draft permit, major permit modification, or permit renewal that has been prepared. The notice will appear within each county where the proposed facility or discharge is located and each county affected by the discharge.
2. The Division will mail notice of the application to affected persons and certain governmental entities.

A public hearing will be scheduled regarding an application when requested by the Division Director, the

applicant, or any affected person within thirty (30) days following newspaper publication.

ADEQ may act upon a permit application, a draft permit, a major permit modification, or renewal of a permit without holding a public hearing when:

1. Adequate public notice and comment period has been provided, including:
   (a) notice of the application has been mailed to persons possibly affected by the proposed permit;
   (b) notice has been published at least once in a newspaper, regularly published, or circulated within each county where the proposed facility or discharge is located and, in each county, affected by the discharge; and
2. Within thirty (30) days following publication of the ADEQ's notice the Division Director, the applicant, or an affected person has not requested a public hearing; or
3. When a proposed amendment results in an improvement of the quality of the fluid authorized to be injected and the applicant does not seek to significantly increase the quantity of fluid to be injected or to materially change the pattern or place of injection.

After resolution of any public comment the Division shall issue or deny the draft permit, major permit modification, or permit renewal. Within thirty (30) days of issuance, a copy of the permit or permit denial will be mailed to the applicant.

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
Division of Water Quality
Underground Injection Control (UIC) Program

CLASS I INJECTION WELL PERMIT APPLICATION FOR NON-HAZARDOUS AND HAZAROUS WASTE DISPOSAL

(Reference to R18-9-Part E in parentheses indicates sections of Arizona UIC Administrative Code and Code of Federal Regulations, respectively, requiring information.)

1. Type of Permit Application (check one)

   ☐ Initial Application

   ☐ Permit Renewal, Original Permit No._____

   ☐ Permit Modification, Original Permit No. _____

2. Type of Permit (check one)

   ☐ Individual (Single) Well Permit ☐ Area (Multiple Wells) Permit

3. Facility Operator (Applicant must be the operator if owner/operator are different)
   (R18-9-C616(B) and 40CFR 144.31(b))

   Name: _____
   (Individual, Corporation or Other Legal Entity)

   Address: _____
   (Permanent Mailing Address)

   City:_____ State: _____ Zip:_____

   Telephone Number: _____

4. Facility Owner
   (R18-9-A602 and 40CFR 144.31(e)(4))

   Name: _____
   (Individual, Corporation or Other Legal Entity)

   Address: _____
   (Permanent Mailing Address)

   City:_____ State: _____ Zip:_____

   Telephone Number: _____

5. Facility ownership status: ☐Federal ☐State ☐Private ☐Public ☐Other
   (R18-9-C616(D)(4) and 40CFR 144.31(e)(4))

6. List those persons or firms authorized to act for the applicant during the processing of the permit application. Include a complete mailing address and telephone number:

7. List all activities conducted at this facility that require an environmental permit under federal, state, or local statutes, rules, or ordinances.
   (R18-9-C616(D)(1) and 40CFR 144.31(e)(1))

8. List all environmental permits or construction approvals received or applied for relevant to this facility or this location under federal, state, or local statutes, rules, or ordinances.
   (R18-9-C616(D)(5) and 40CFR 144.31(e)(6))

9. Provide a brief description of the nature of the business at the facility including generation of the waste fluid to be injected (include appropriate North American Industry Classification System (NAICS) Codes).
   (R18-9-C616(D)(3) and 40CFR 144.31(e)(3) and (8))

10. Location of Proposed Class I Injection Well Operation:
    (R18-9-C616(D)(2) and (40CFR 144.31(e)(2))

    Facility name: _____

    Facility mailing address: _____

    Facility location description: _____

    Street address: _____

    City: _____

    County: _____ Lease: _____

    No. of Wells* : _____

    For each well provide the following:

    Township; Range; Section; and 1/4, 1/4 Section: _____

    Latitude: _____

    Longitude: _____

    * Location(s) of injection well(s) should be identified on all maps included in the Technical Report.

11. Are the proposed injection well(s) located on Indian land? ☐ Yes ☐ No
(R18-9-A602, R18-9-C616(D)(2) and 40CFR 144.31(e)(5))

12. Submit the Technical Report with Application (R18-9-E642).

Note: All applications for an Arizona UIC permit, including any required Technical Report including technical information necessary for the adequate evaluation of any permit application, or any permit renewal applications and associated Technical Reports that are significantly different from the original permit application, must be prepared by or under the direction, and bear the seal, of a registered professional geologist or professional engineer.

13. Certification of information submitted on application form and in the Technical Report
(R18-9-C617(A) and 40CFR 144.32).

_____

(Name of Company Official: Type or Print Legibly)

_____

(Title)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: _____

Date: _____

TECHNICAL REPORT OUTLINE
FOR CLASS I INJECTION WELL
PERMIT APPLICATIONS

A Technical Report, prepared under the direction of a registered professional geologist or engineer, must accompany a permit application for a Class I injection well permit. The Technical Report must contain all parts detailed in the outline below. The term 'Director' in the outline below refers to the Director of the Arizona Water Quality Division or an appointed representative, i.e. the UIC staff reviewing the permit application. The UIC staff, upon demonstrating justifications, may make adjustments in the requirements set forth in this Technical Report Outline below. References in parentheses refer to sections in the Arizona UIC Administrative Rules (R18-9) and the Code of Federal Regulations (40CFR) that apply to the associated data requirements.

Note: The required plans, programs, and attachments below must be approved by the Director. Once approved, they may be included in the permit as an enforceable attachment.

Part A – Determination of Area of Review (AOR)

Submit details of the method and, if appropriate, the calculations used to determine the area of review. Refer to R18-9-B612 for acceptable methods and calculations for determining the area of review. In Arizona, a radius area of review as determined by:

1. the zone of endangering influence based on physical measurements;
2. zone of endangering influence computation based on the modified Theis equation;
3. a fixed radius not less than 1/4 mile, from the injection well for an individual well permit or for an area permit; or
4. a mathematical model.

(R18-9-B612; 40CFR 146.6)

Part B - Permit Application Maps

1. Map of Facility and Well (or Project Area)

Submit a topographic map (or other map if a topographic map is unavailable) extending one mile beyond the property boundaries of the injection well (individual permit) or project area (area permit). The following items listed in public records or otherwise known to the applicant and occurring within a quarter mile of the facility property boundary must be included on the map:

(i) injection well (individual permit) or project area (area permit)
(ii) the facility property boundary and each of its intake and discharge structures;
(iii) each of its hazardous waste treatment, storage, or disposal facilities;
(iv) each well where fluids from the facility are injected underground (injection wells other than those for which this permit application is being prepared);
(v) wells, springs, and other surface water bodies, and drinking water wells.

(R18-9-C616(D)(6), 40CFR 144.31(e)(7))

2. Map of Area of Review (AOR)

Submit a map showing the injection well (individual permit) or project area (area permit) and the applicable area of review. Within the area of review, the map must include the following:

(i) the number or name and location of all existing producing wells, injection wells, abandoned wells, dry holes, public water systems and water wells.

(ii) surface bodies of waters, springs, mines (surface and subsurface), quarries and other pertinent surface features including residences and roads, and faults if known or suspected. Only pertinent information of public record or otherwise known to the applicant is required to be included on this map.

(R18-9-E642(B)(2); 40CFR 146.14(a)(2))

3. Maps and Cross Sections of USDWs

Submit maps and cross sections indicating the general vertical and lateral limits of all underground sources of drinking water (USDWs) within the area of review, their position relative to the injection formation, and the direction of water movement, where known, in every underground source of drinking water which may be affected by the proposed injection.

An Underground Source of Drinking Water (USDW) is an aquifer or a portion thereof that:
A. Supplies any public water system, **or** contains a sufficient quantity of ground water to supply a public water system (a sustainable delivery of 1 gallon per minute); **and**

1. currently supplies drinking water for human consumption; **or**
2. contains fewer than 10,000 mg/l total dissolved solids (TDS); **and**

B. Is not an exempted aquifer. (See R18-9-A605; R18-9-A606 for definition and criteria of 'exempt aquifer').

(R18-9-E642(B)(4)); 40CFR 146.14(a)(4))

4. Maps and Cross Sections of Local Geologic Structure and Lithology

Submit maps and cross sections detailing the geologic structure and lithology of the local area with particular emphasis on the injection and confining intervals.

(R18-9-E642(B)(5)); 40CFR 146.14(a)(5))

5. Maps and Cross Sections of Regional Geologic and Hydrologic Setting

Submit generalized map and cross sections illustrating the regional geologic and hydrologic setting.

(R18-9- E642(B)(6); 40CFR 146.14(a)(6))

Part C – Tabulation of Artificial Penetration Data

Submit a tabulation of data on wells within the area of review included on the AOR Map (Part B, Map 2) that penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of plugging and/or completion, any water quality data, and any additional information the Director may require.

(R18-9-E642(B)(3); 40CFR 146.14(a)(3))

Part D – Corrective Action Plan

Submit a corrective action plan describing the necessary steps or modifications to prevent movement of fluid into underground sources of drinking water through any artificial penetrations into the injection zone, identified on Part B, Map 2 and Part C, that are improperly sealed, completed, or abandoned.

(R18-9- E642(B)(14); R18-9-D639; 40CFR 144.55; 40CFR 146.14(a)(14))

Part E – Formation Testing Program

Submit a description of the proposed injection zone formation testing designed to obtain data on fluid pressure, fracture pressure, and the physical and chemical characteristics of the formation fluid if the injection zone is a formation that is naturally water-bearing. If the injection zone formation is NOT naturally water-bearing, only the fracture pressure need be determined.

(R18-9-E642(B)(8); 40CFR 146.14(a)(8))

Part F – Well Stimulation Program

If the applicant intends to stimulate the well to clean the well bore, enlarge channels, and increase pore space in the interval to be injected thereby enhancing the injectivity of the well, the applicant must submit a well stimulation program.

(R18-9-E642(B)(9); 40CFR 146.14(a)(9))

Part G – Injection Well Construction Plan

Submit a well construction plan that includes details of the cementing and casing program, logging procedures, deviation checks, and a drilling, testing, and coring program that conform with the Class I well construction requirements in R18-9-E640 and 40CFR 146.12. Changes in construction plans during construction may be approved as minor modifications; however, no such changes may be physically incorporated into construction of the well prior to approval of the modification by the Director.

(R18-9-D636, R18-9-E640; 40CFR 144.52, 40CFR 146.12)

Part H – Injection Well Construction Details

Submit schematic or other appropriate drawings of the surface and subsurface construction details of the well that meet the construction requirements of R18-9-E640.

(R18-9-E642(B)(11); 40CFR 146.14(a)(11))

Part I – Injection Well Operation Plan and Procedures

Submit a description of the proposed injection procedure and proposed operating data for each well including:

(i) average and maximum daily rate and volume of the fluid to be injected;
(ii) average and maximum injection pressure;
(iii) source and an analysis of the chemical, physical, radiological and biological characteristics of injection fluids

The permit shall establish injection operation requirements including any maximum injection volumes and/or maximum wellhead pressures necessary to assure that:

(i) fractures are not initiated in the confining zone,

(ii) injected fluids do not migrate into any underground source of drinking water,
(iii) formation fluids are not displaced into any underground source of drinking water, and
(iv) injection between the outermost casing protecting USDWs and the well bore does not occur.

R18-9-D636(A)(3); R18-9-E641(A); R18-9-E642(B)(7);
40CFR 144.52(a)(3); 40CFR 146.13(a); 40CFR 146.14(a)(10)

Part J – Monitoring, Recording, and Reporting Plan

Submit a monitoring, recording, and reporting plan, including maps. In the plan, the applicant must

(i) identify the types of tests, methods, and equipment used to generate the monitoring data,
(ii) address the proper use, maintenance, and installation, when appropriate, of monitoring equipment or methods, and
(iii) propose type, intervals, and frequency sufficient to yield data that are representative of the monitored activity.

R18-9-D636(A)(4); R18-9-E641(B) and (C);
40CFR 144.52; 40CFR 144.54;40CFR 146.8; 40CFR 146.13

Part K – Contingency Plan

Submit a contingency plan to address well shut-ins or well failure that ensures that USDWs are protected during these events.

(R18-9-E642(B)(12); 40CFR 146.14(a)(12))

Part L – Plugging and Abandonment Plan

Submit a plugging and abandonment plan that meets the requirements of R18-9-B614(A) and 40CFR 146.10 and is acceptable to the Director.

(R18-9-B614(A); R18-9-E642(B)(14); 40CFR 146.10; 40CFR 146.14(c))

Part M – Financial Responsibility

Submit a Standby Trust Agreement with a Financial Guarantee Bond, or another financial mechanism approved by the Director to demonstrate financial resources necessary to close, plug, and / or abandon the Class I injection well(s). The applicant must use the financial assurance mechanism template provided by the Director.

(R18-9-D636(A)(6); R18-9-E642(B)(16); 40CFR 144.52(a)(7); 40CFR 146.14(a)(16))

Part N – Aquifer Exemption

If an aquifer exemption for a Class I well is required by the Director or requested by the applicant, the applicant must submit sufficient data to demonstrate that the aquifer meets the following criteria:

1) It does not currently serve as a source of drinking water, and
2) It cannot now and will not in the future serve as a source of drinking water because:
   a) It is mineral, hydrocarbon or geothermal energy producing, or can be demonstrated by a permit applicant as part of a permit application for a Class II or III operation to contain minerals or hydrocarbons that considering their quantity and location are expected to be commercially producible.

b) It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical;
c) It is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption;
d) It is located over a Class III well mining area subject to subsidence or catastrophic collapse; or

3) The TDS content of the groundwater is more than 3,000 and less than 10,000 mg/l and it is not reasonably expected to supply a public water system.

(R18-9-A605 and A606; 40CFR 146.4)

Requirements for all Class I Wells
and
Class I Hazardous Waste Wells

SITING – Fluids must be injected into a formation that is below the lowermost formation containing, within ¼ mile of the well, a USDW. To demonstrate this, owners and operators are required to provide the following:

Requirements for All Class I Wells	Additional Requirements for Hazardous Waste Wells
Geologic Studies of the injection and confining zones to determine that: • The receiving formations are sufficiently permeable, porous, homogeneous, and thick enough to receive the fluids at the proposed injection rate without requiring excessive pressure • Formations are large enough to prevent pressure buildup and injected fluid would not reach aquifer recharge areas • There is a low-permeability confining zone to prevent vertical migration of injection fluids • Injected fluids are compatible with well materials and with rock and fluid in injection zone • The area is geologically stable • The injection zone has no economic value	Additional **structural** studies to demonstrate: • Injection and confining formations are free of vertically transmissive fissures or faults • Low seismicity and probability of earthquakes • Proposed injection will not induce earthquakes or increase the frequency of naturally occurring earthquakes
Area of Review (AOR) analysis of the surrounding area to identify artificial penetrations, such as other wells, that might allow fluid to move out of the injection zone • Minimum area of review is ¼ mile • Can be a fixed radius around the well or mathematically calculated • Includes a corrective action plan to address improperly completed or plugged wells within the AOR	•Additional review required: •Minimum AOR of 1/4 mile •No-migration petition demonstrating that fluids will remain in the injection zone for as long as they are hazardous (modeling conducted to show either the waste will remain in the injection zone for 10,000 years or it will be rendered non-hazardous before migration)

CONSTRUCTION – Wells must have a multilayered design to prevent fluids from entering USDWs.

Requirements for All Class I Wells	Additional Requirements for Hazardous Waste Wells
• Approved engineering schematics and subsurface construction details • At least 2 layers of concentric casing and cement • Outer (or surface) casing cemented to the surface • Tubing and packer design based on: ▪ well depth ▪ characteristics of the injected fluid ▪ injection and annular pressure ▪ injection rate ▪ temperature and volume of injected fluid ▪ size of well casing ▪ cementing requirements • Tests during drilling to ensure no vertical migration of fluid	Detailed requirements for tubing and packer Long-string (inner) casing fully cemented to surface • UIC Program approval of casing, cement, tubing, and packer prior to construction

OPERATION – Provides multiple safeguards to ensure the injected wastewater is fully confined.

Requirements for All Class I Wells	Additional Requirements for Hazardous Waste Wells
Maintain injection at pressures that will not initiate new fractures or propagate existing fractures Approved fluids and permitted pressures must be maintained in the annular space Continuous monitoring and recording devices	Automatic alarms and shutdown devices • Notify permitting authority within 24 hours if problem occurs Cease injection and resume only with UIC Program Director's permission

MONITORING AND TESTING – Ensures that there are no leaks in the casing, tubing, or packer and the injected fluid is contained within the injection zone.

Requirements for All Class I Wells	Additional Requirements for Hazardous Waste Wells
• Continuously monitor: • Annulus pressure (to detect leaks in the casing, tubing, or packer; and any fluid movement into a USDW) • Containment in the injection zone • Characteristics of injected waste • Monitor for fluid movement into USDWs within the AOR • Internal and external mechanical integrity test (MIT) every 5 years	• Explicit procedures for reporting and correcting problems due to lack of mechanical integrity • Develop and follow a waste analysis plan • Analyze wastewaters as specified in the plan • Internal MIT every year • Test cement at base of well annually

REPORTING AND RECORD KEEPING – Informs the UIC Program about the operation of the well and all testing results.

Requirements for All Class I Wells	Additional Requirements for Hazardous Waste Wells
• Quarterly on injection and injected fluids and monitoring of USDW in the area of review • Every 5 years on internal and external MITs • Changes to the facility, progress on compliance schedule, loss of mechanical integrity (MI), or noncompliance with permit conditions	• Results from the waste analysis program and geochemical compatibility • Internal MIT yearly • Maximum injection pressure quarterly • Volume of fluid injected

CLOSURE –Ensures that the well is safely and properly abandoned when injection is completed.

Requirements for All Class I Wells	Additional Requirements for Hazardous Waste Wells
• Submit plugging and abandonment report	• Conduct pressure fall off and mechanical integrity tests • Continue ground water monitoring until injection zone pressure cannot influence USDW • Flush well with non-reactive fluid • Inform authorities about the well, its location, and zone of influence

STATE OF ARIZONA

UNDERGROUND INJECTION CONTROL PROGRAM

CLASS II INJECTION WELL PERMIT APPLICATION

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The applicant shall submit an original Permit Application and a Technical Report. Both documents shall be submitted electronically through ADEQ's e-Permitting Online Portal at https://www.azdeq.gov/mydeq.

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(b) notice has been published at least once in a newspaper, regularly published, or circulated within each county where the proposed facility or discharge is located and, in each county, affected by the discharge; and

2. Within thirty (30) days following publication of the ADEQ's notice the Division Director, the applicant, or an affected person has not requested a public hearing; or
3. When a proposed amendment results in an improvement of the quality of the fluid authorized to be injected and the applicant does not seek to significantly increase the quantity of fluid to be injected or to materially change the pattern or place of injection.

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ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
Division of Water Quality
Underground Injection Control (UIC) Program

CLASS II INJECTION WELL PERMIT APPLICATION

(Reference to R18-9-Part F in parentheses indicates sections of Arizona UIC Administrative Code and Code of Federal Regulations, respectively, requiring information.)

1. Type of Permit Application (check one)
   - □ Initial Application
   - □ Permit Renewal, Original Permit No. _____
   - □ Permit Modification, Original Permit No. _____

2.a. Type of Permit (check one)
   - □ Individual (Single) Well Permit
   - □ Area (Multiple Wells) Permit

2.b. Purpose (check one)
   - □ Enhanced Recovery
   - □ Disposal
   - □ Storage

3. Facility Operator (Applicant must be the operator if owner/operator are different)
   (R18-9-C616(B) and 40CFR 144.31(b))

   Name: _____
   (Individual, Corporation or Other Legal Entity)

   Address: _____
   (Permanent Mailing Address)

   City:_____ State: _____ Zip:_____

   Telephone Number: _____

4. Facility Owner
   (R18-9-A602 and 40CFR 144.31(e)(4))

   Name: _____
   (Individual, Corporation or Other Legal Entity)

   Address: _____
   (Permanent Mailing Address)

   City:_____ State: _____ Zip:_____

   Telephone Number: _____

5. Facility ownership status: □Federal □State □Private □Public □Other
   (R18-9-C616(D)(4) and 40CFR 144.31(e)(4))

6. List those persons or firms authorized to act for the applicant during the processing of the permit application. Include a complete mailing address and telephone number:

7. List all activities conducted at this facility that require an environmental permit under federal, state, or local statutes, rules, or ordinances.
   (R18-9-C616(D)(1) and 40CFR 144.31(e)(1))

8. List all environmental permits or construction approvals received or applied for relevant to this facility or this location under federal, state, or local statutes, rules, or ordinances.
   (R18-9-C616(D)(5) and 40CFR 144.31(e)(6))

9. Provide a brief description of the nature of the business at the facility including generation of the fluid to be injected (include appropriate North American Industry Classification System (NAICS) Codes).
   (R18-9-C616(D)(3) and 40CFR 144.31(e)(3) and (8))

10. Location of Proposed Class II Injection Well Operation:
    (R18-9-C616(D)(2) and (40CFR 144.31(e)(2))

    Facility name: _____

    Facility mailing address: _____

    Facility location description: _____

    Street address: _____

    City: _____

    County: _____ Lease: _____

    No. of Wells* : _____

    For each well provide the following:

    Township; Range; Section; and 1/4, 1/4 Section: _____
    Latitude: _____

    Longitude: _____

* Location(s) of injection well(s) should be identified on all maps included in the Technical Report.

11. Are the proposed injection well(s) located on Indian land? □ Yes □ No
R18-9-A602, R18-9-C616(D)(2) and 40CFR 144.31(e)(5))

12. Submit the Technical Report with Application (R18-9-F645).

Note: All applications for an Arizona UIC permit, including any required Technical Report including technical information necessary for the adequate evaluation of any permit application, or any permit renewal applications and associated Technical Reports that are significantly different from the original permit application, must be prepared by or under the direction, and bear the seal, of a registered professional geologist or professional engineer.

13. Certification of information submitted on application form and in the Technical Report (R18-9-C617(A) and (B); 40CFR 144.32).

_____

(Name of Company Official: Type or Print Legibly)

_____

(Title)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: _____

Date: _____

TECHNICAL REPORT OUTLINE
FOR CLASS II INJECTION WELL
PERMIT APPLICATIONS

A Technical Report, prepared under the direction of a registered professional geologist or engineer, must accompany a permit application for a Class II injection well permit. The Technical Report must contain all parts detailed in the outline below. The term 'Director' in the outline below refers to the Director of the Arizona Water Quality Division or an appointed representative, i.e. the UIC staff reviewing the permit application. The UIC staff, upon demonstrating justifications, may make adjustments in the requirements set forth in this Technical Report Outline below. References in parentheses refer to sections in the Arizona UIC Administrative Rules (R18-9) and the Code of Federal Regulations (40CFR) that apply to the associated data requirements.

Note: The required plans, programs, and attachments below must be approved by the Director. Once approved, they may be included in the permit as an enforceable attachment.

Part A – Determination of Area of Review (AOR)

Submit details of the method and, if appropriate, the calculations used to determine the area of review. Refer to R18-9-B612 for acceptable methods and calculations for determining the area of review. In Arizona, a radius area of review as determined by:

1. the zone of endangering influence based on physical measurements;
2. zone of endangering influence computation based on the modified Theis equation;
3. a fixed radius not less than 1/4 mile, from the injection well for an individual well permit or for an area permit; or
4. a mathematical model.

(R18-9-B612; 40CFR 146.6)

Part B - Permit Application Maps

1. Map of Facility and Well (or Project Area)

Submit a topographic map (or other map if a topographic map is unavailable) extending one mile beyond the property boundaries of the injection well (individual permit) or project area (area permit). The following items listed in public records or otherwise known to the applicant and occurring within a quarter mile of the facility property boundary must be included on the map:

(i) injection well (individual permit) or project area (area permit)
(ii) the facility property boundary and each of its intake and discharge structures;
(iii) each of its hazardous waste treatment, storage, or disposal facilities;
(iv) each well where fluids from the facility are injected underground (injection wells other than those for which this permit application is being prepared);
(v) wells, springs, and other surface water bodies, and drinking water wells.
(vi) residences and roads; and
(vii) faults if known or suspected.

(R18-9-C616(D)(6), R-18-9-F645(B)(2); 40CFR 144.31(e)(7))

2. Map of Area of Review (AOR)

Submit a map showing the injection well (individual permit) or project area (area permit) and the applicable area of review. Within the area of review, the map must include the following:

(i) the number or name and location of all existing producing wells, injection wells, abandoned wells, dry holes, public water systems and water wells.
(ii) surface bodies of waters, springs, mines (surface and subsurface), quarries and other pertinent surface features including residences and roads, and faults if known or suspected.

Only pertinent information of public record or otherwise known to the applicant is required to be included on this map. This requirement does not apply to existing Class II wells.

(R18-9-F645(B)(2); 40CFR 146.24(a)(2))

3. Identify USDWs

Identify the geologic name and depth to bottom of all underground sources of drinking water (USDWs) within the area of review which may be affected by the proposed injection.

An Underground Source of Drinking Water (USDW) is an aquifer or a portion thereof that:

A. Supplies any public water system, **or** contains a sufficient quantity of ground water to supply a public water system (a sustainable delivery of 1 gallon per minute); **and**

1. currently supplies drinking water for human consumption; **or**
2. contains fewer than 10,000 mg/l total dissolved solids (TDS); **and**

B. Is not an exempted aquifer. (See R18-9-A605; R18-9-A606 for definition and criteria of 'exempt aquifer').

(R18-9-F645(B)(6); 40CFR 146.24)

4. Maps and Cross Sections of Local Geologic Structure and Lithology

Submit maps and cross sections detailing the geologic structure and lithology of the local area with particular emphasis on the injection and confining intervals.

(R18-9-F645(B)(5); 40CFR 146.24(a)(5))

Part C – Tabulation of Artificial Penetration Data

Submit a tabulation of data on wells within the area of review included on the AOR Map (Part B, Map 2) that penetrate the proposed injection zone. Such data shall include a description of each well type, construction, date drilled, location, depth, record of plugging and/or completion, any water quality data, and any additional information the Director may require.

(R18-9- F645(B)(3); 40CFR 146.24(a)(3))

Part D – Corrective Action Plan

Submit a corrective action plan describing the necessary steps or modifications to prevent movement of fluid into underground sources of drinking water through any artificial penetrations into the injection zone, identified on Part B, Map 2 and Part C, that are improperly sealed, completed, or abandoned.

(R18-9- F645(B)(8); R18-9-D639; 40CFR 144.55; 40CFR 146.24(a)(8))

Part E – Formation Testing Program

Submit a proposed formation testing program to obtain the receiving formation fluid pressure, fracture pressure, and physical and chemical characteristics.

(R18-9-F643(F), R18-9-F645(C)(1); 40CFR 146.22(g), 40CFR 146.24(b)(1))

Part F – Well Stimulation Program

Submit a proposed well stimulation program.

(R18-9-F645(C)(2); 40CFR 146.24(b)(2))

Part G – Injection Well Construction Plan

Submit a well construction plan that includes details of the cementing and casing program, logging procedures, deviation checks, and a drilling, testing, and coring program that conform with the Class II well construction requirements in R18-9-F643 and 40CFR 146.24. Changes in construction plans during

construction may be approved as minor modifications; however, no such changes may be physically incorporated into construction of the well prior to approval of the modification by the Director.

(R18-9-D636, R18-9-F643, 40CFR 146.24)

Part H – Injection Well Construction Details

Submit schematic or other appropriate drawings of the surface and subsurface construction details of the well that meet the construction requirements of R18-9-F643.

(R18-9-F645(B)(7); 40CFR 146.24(a)(7))

Part I – Injection Well Operation Plan and Procedures

Submit a description of the proposed injection procedure and proposed operating data for each well including:

(i) average and maximum daily rate and volume of the fluid to be injected;
(ii) average and maximum injection pressure;
(iii) source and an analysis of the chemical, physical, radiological and biological characteristics of injection fluids

The permit shall establish injection operation requirements including any maximum injection volumes and/or maximum wellhead pressures necessary to assure that:

(i) fractures are not initiated in the confining zone,
(ii) injected fluids do not migrate into any underground source of drinking water,
(iii) formation fluids are not displaced into any underground source of drinking water, and
(iv) injection between the outermost casing protecting USDWs and the well bore does not occur.

(R18-9-D636(A)(3), R18-9-F645(C)(3);

40CFR 144.52(a)(3); 40CFR 146.24(a)(4))

Part J – Monitoring, Recording, and Reporting Plan

Submit a monitoring, recording, and reporting plan, including maps. In the plan, the applicant must

(i) identify the types of tests, methods, and equipment used to generate the monitoring data,
(ii) address the proper use, maintenance, and installation, when appropriate, of monitoring equipment or methods, and
(iii) propose type, intervals, and frequency sufficient to yield data that are representative of the monitored activity.

(R18-9-D636(A)(4); R18-9-F644(B) and (C);
40CFR 144.52; 40CFR 144.54; 40CFR 146.8; 40CFR 146.23)

Part K – Contingency Plan

Submit a contingency plan to address well shut-ins or well failure that ensures that USDWs are protected during these events.

(R18-9-F645(C)(4); 40CFR 146.24(b)(4))

Part L – Plugging and Abandonment Plan

Submit a plugging and abandonment plan that meets the requirements of R18-9-B614(A) and 40CFR 146.10 and is acceptable to the Director.

(R18-9-B614(A); R18-9-F645(E);
40CFR 146.10; 40CFR 146.24(d))

Part M – Financial Responsibility

Submit a Standby Trust Agreement with a Financial Guarantee Bond, or another financial mechanism approved by the Director to demonstrate financial resources necessary to close, plug, and / or abandon the Class II injection well(s). The applicant must use the financial assurance mechanism template provided by the Director.

(R18-9-D636(A)(6); R18-9-F645(B)(9);
40CFR 144.52(a)(7); 40CFR 146.24(a)(9))

Part N – Aquifer Exemption

If an aquifer exemption for a Class II well is required by the Director or requested by the applicant, the applicant must submit sufficient data to demonstrate that the aquifer meets the following criteria:

1) It does not currently serve as a source of drinking water, and
2) It cannot now and will not in the future serve as a source of drinking water because:
   a) It is mineral, hydrocarbon or geothermal energy producing, or can be demonstrated by a permit applicant as part of a permit application for a Class II or III operation to contain minerals or hydrocarbons that considering their quantity and location are expected to be commercially producible.
   b) It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical;
   c) It is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption;
   d) It is located over a Class III well mining area subject to subsidence or catastrophic collapse; or

3) The TDS content of the groundwater is more than 3,000 and less than 10,000 mg/l and it is not reasonably expected to supply a public water system.

(R18-9-A605 and A606; 40CFR 146)

STATE OF ARIZONA

UNDERGROUND INJECTION CONTROL PROGRAM

CLASS III PERMIT APPLICATION PACKAGE FOR IN-SITU SOLUTION MINING

Last Revised: July 12, 2022

TABLE OF CONTENTS

GENERAL INSTRUCTIONS

The Arizona Underground Injection Control (UIC) Administrative Rules (A.A.C. Title 18 Chapter 9 Article 6) regulate the injection of fluids into the subsurface. The following instructions outline the procedures, documents, and information needed for a Class III In-Situ Solution Mining Injection Well Permit Application.

The applicant shall submit an original Permit Application and a Technical Report. Both documents shall be submitted electronically through ADEQ's e-Permitting Online Portal at https://www.azdeq.gov/mydeq.

If the required reports cannot be submitted, or require further documentation that cannot be submitted on the myDEQ portal, then submit items to uic@azdeq.gov or the address listed below:

Arizona Department of Environmental Quality
Division of Water Quality
1110 West Washington Street
Phoenix, AZ 85007
ATTN: Underground Injection Control (UIC) Program

Telephone inquiries: (602) 771-2300
Email inquiries: uic@azdeq.gov

1. Confidential Business Information (CBI): The information provided in the permit application must be of sufficient detail to allow the Arizona Department of Environmental Quality (ADEQ) Division of Water Quality to make informed decisions in setting permit conditions. However, if the submitted documents, or portions thereof, are considered confidential, the applicant must follow appropriate procedures in requesting CBI status for those documents, or portions thereof, as detailed in the Arizona Public Records Law, A.R.S. §§ -39-101 to -161. According to the Law, any person who provides to a governmental entity a record that the person believes should be protected as business confidential shall provide with the record a written claim of business confidentiality and a concise statement of reasons supporting the claim of business confidentiality. When the records in question relate to a program for which the State has been delegated primacy, as is the case for the UIC Program, the standards of the Freedom of Information Act, 5 U.S.C. Section 552 (FOIA) shall apply. Furthermore, the regulation of the U.S. Environmental Protection Agency interpreting FOIA as it appears at 40CFR Part 2 (1992 version) shall also apply. Since permit applications are published during the public comment period, the applicant should provide an approved redacted copy of the permit application and the accompanying technical report.

2. Signature on Application: The person who signs the application form will often be the applicant; when another person signs on behalf of the applicant, his/her title or relationship to the applicant should be shown in the space provided. In all cases, the person signing the form should be authorized to do so by the applicant. An application submitted by a corporation must be signed by a responsible corporate officer or his duly authorized representative, if such representative is responsible for the overall operation of the facility from which the activity described in the form originates. In the case of a partnership or a sole proprietorship, the application must be signed by a general partner or the proprietor,

respectively. In the case of a municipal, state, federal or other public facility, the application must be signed by either a principal executive officer, ranking elected official or other duly authorized employee. The Division shall require a person signing an application on behalf of an applicant to provide proof of authorization (R18-9-C617; 40CFR Part 144.32).

3. An application will not be processed until all information required to properly review the application has been obtained. When an application is severely lacking in detail or the applicant fails to submit additionally requested information in a timely manner, the application may be returned.

4. An application which involves the injection of a fluid containing radioactive materials shall be accompanied by a letter or other instrument in writing from the Arizona Department of Health Services, Bureau of Radiation Control, stating that either the applicant has a license from the Bureau of Radiation Control governing the disposal of radioactive materials; or that the applicant does not need a license. In the case of radioactive materials disposal, the Bureau of Radiation Control must receive a copy of the application for an injection permit. The copy should be mailed to:

Arizona Department of Environmental Quality
Division of Water Quality
1110 West Washington Street
Phoenix, AZ 85007
ATTN: Underground Injection Control (UIC) Program

PROCEDURAL INFORMATION

The staff will review the application for completeness. During the completeness review, the applicant may be contacted for clarification or additional information. When all pertinent information is present, a notice that an application has been received may be given to other state agencies and local governmental entities interested in water quality control and industrial waste management. A preliminary draft permit will be prepared by the Division and transmitted to the applicant for review. Comments from the applicant may result in changes to the draft permit, after concurrence by the Division Director. The draft permit will be subjected to a 30-day public comment period. A public hearing may be requested. In either case, a notice will be provided to inform the public that a draft permit has been prepared.

Requirements for public notice include:

1. That a public notice be published for each draft permit, major permit modification, or permit renewal that has been prepared. The notice will appear within each county where the proposed facility or discharge is located, and each county affected by the discharge.
2. The Division will mail notice of the application to affected persons and certain governmental entities.

A public hearing will be scheduled regarding an application when requested by the Division Director, the applicant, or any affected person within thirty (30) days following newspaper publication.

ADEQ may act upon a permit application, a draft permit, a major permit modification, or renewal of a permit without holding a public hearing when:

1. Adequate public notice and comment period has been provided, including:
    (a) notice of the application has been mailed to persons possibly affected by the proposed permit;
    (b) notice has been published at least once in a newspaper, regularly published, or circulated within each county where the proposed facility or discharge is located and, in each county, affected by the discharge; and
2. Within thirty (30) days following publication of the ADEQ's notice the Division Director, the applicant, or an affected person has not requested a public hearing; or
3. An application to amend a permit resulting in an improvement of the quality of the fluid authorized to be injected and if the applicant does not seek to increase significantly the quantity of fluid to be injected or to change materially the pattern or place of injection.

After resolution of any public comment the Division shall issue or deny the draft permit, major permit modification, or permit renewal. Within thirty (30) days of issuance, a copy of the permit or permit denial will be mailed to the applicant.

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
Division of Water Quality
Underground Injection Control (UIC) Program

CLASS III INJECTION WELL PERMIT APPLICATION FOR IN-SITU SOLUTION MINING

(Reference to R18-9-Part G: Class III Injection Well Requirements and 40CFR in parentheses indicates sections of Arizona UIC Program and Code of Federal Regulations, respectively, requiring information.)

1. Type of Permit Application (check one)
   - □ Initial Application
   - □ Permit Renewal, Original Permit No. _____
   - □ Permit Modification, Original Permit No. _____

2. Type of Permit (check one)
   - □ Individual (Single) Well Permit □ Area (Multiple Wells) Permit

3. Facility Operator (Applicant must be the operator if owner/operator are different) (R18-9-C616(B) and 40CFR 144.31(b))

   Name: _____
   (Individual, Corporation or Other Legal Entity)

   Address: _____
   (Permanent Mailing Address)

   City:_____ State: _____ Zip:_____

   Telephone Number: _____

4. Facility Owner (R18-9-A602 and 40CFR 144.31(e)(4))

   Name: _____
   (Individual, Corporation or Other Legal Entity)

   Address: _____
   (Permanent Mailing Address)

   City:_____ State: _____ Zip:_____

   Telephone Number: _____

5. Facility ownership status: □Federal □State □Private □Public □Other
   (R18-9-C616(D)(4) and 40CFR 144.31(e)(4))

6. List those persons or firms authorized to act for the applicant during the processing of the permit application. Include a complete mailing address and telephone number:

7. List all activities conducted at this facility that require an environmental permit under federal, state, or local statutes, rules, or ordinances.
   (R18-9-C616(D)(1) and 40CFR 144.31(e)(1))

8. List all environmental permits or construction approvals received or applied for relevant to this facility or this location under federal, state, or local statutes, rules, or ordinances.
   (R18-9-C616(D)(5) and 40CFR 144.31(e)(6))

9. Provide a brief description of the in-situ solution mining operation (s) (include appropriate North American Industry Classification System (NAICS) Codes).
   (R18-9-C616(D)(3) and 40CFR 144.31(e)(3) and (8))

10. Location of Proposed In-Situ Solution Mining Operation
    (R18-9-C616(D)(2) and (40CFR 144.31(e)(2))

    Facility name: _____

    Facility mailing address: _____

    Facility location description: _____

    Street address: _____

    City: _____

    County: _____ Lease: _____

    No. of Wells* : _____

    For each well provide the following:

    Township; Range; Section; and 1/4, 1/4 Section: _____

    Latitude: _____

    Longitude: _____

* Location(s) of injection well(s) should be identified on all maps included in the Technical Report.

11. Are the proposed injection well(s) located on Indian land? □ Yes □ No
(R18-9-A602), R18-9-C616(D)(2) and 40CFR 144.31(e)(5))

12. Submit the Technical Report with Application Form (R18-9-G648).

Note: All applications for an Arizona UIC permit, including any required Technical Report including technical information necessary for the adequate evaluation of any permit application, or any permit renewal applications and associated Technical Reports that are significantly different from the original permit application, must be prepared by or under the direction, and bear the seal, of a registered professional geologist or professional engineer.

13. Certification of information submitted on application form and in the Technical Report (R18-9-C617(A) and 40CFR 144.32).

_____

(Name of Company Official: Type or Print Legibly)

_____

(Title)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: _____

Date: _____

TECHNICAL REPORT OUTLINE
FOR CLASS III IN-SITU SOLUTION MINING
INJECTION WELL PERMIT APPLICATIONS

A Technical Report, prepared under the direction of a registered professional geologist or engineer, must accompany a permit application for a Class III injection well permit. The Technical Report must contain all parts detailed in the outline below. The term 'Director' in the outline below refers to the Director of Division of Water Quality or an appointed representative, i.e. the UIC staff reviewing the permit application. The staff, upon demonstrating justifications, may make adjustments in the requirements set forth in this Technical Report Outline below. References in parentheses refer to sections in the Arizona UIC Administrative Rules (R18-9) and the Code of Federal Regulations (40CFR) that apply to the associated data requirements.

Note: The required plans, programs, and attachments below must be approved by the Director. Once approved, they may be included in the permit as an enforceable attachment.

Part A – Determination of Area of Review (AOR)

Submit details of the method and, if appropriate, the calculations used to determine the area of review. Refer to R18-9-B612 for acceptable methods and calculations for determining the area of review. In Arizona, a radius area of review as determined by:

1. the zone of endangering influence based on physical measurements;
2. zone of endangering influence computation based on the modified Theis equation;
3. a fixed radius not less than 1/4 mile, from the injection well for an individual well permit or for an area permit; or
4. a mathematical model.

(R18-9-B612; 40CFR 144.31, 40CFR 146.34)

Part B - Permit Application Maps

1. Map of Facility and Injection Well (or Project Area)

Submit a topographic map (or other map if a topographic map is unavailable) extending one mile beyond the property boundaries to include the AOR of the injection well (individual injection well permit) or project area (area permit for multiple injection wells). The following items listed in public records or otherwise known to the applicant and occurring within a quarter mile of the facility property boundary must be included on the map:

(i) injection well (individual permit) or project area (area permit)
(ii) the facility property boundary and each of its intake and discharge structures;
(iii) each of its hazardous waste treatment, storage, or disposal facilities;
(iv) each well where fluids from the facility are injected underground (injection wells other than those for which this permit application is being prepared);
(v) wells, springs, and other surface water bodies, and drinking water wells;
(vi) residences and roads; and
(vii) faults if known or suspected.

(R18-9-C616(D)(6); R18-9-G648(B)(2); 40CFR 144.31(e)(7))

2. Map of Area of Review (AOR)

Submit a map showing the injection well (individual permit) or project area (area permit) and the applicable area of review. Within the area of review, the map must include the following:

(i) the number or name and location of all existing producing wells, injection wells, abandoned wells, dry holes, public water systems and water wells.

(ii) surface bodies of waters, springs, mines (surface and subsurface), quarries and other pertinent surface features including residences and roads, and faults if known or suspected.
Only pertinent information of public record or otherwise known to the applicant is required to be included on this map.

(R18-9-G648(B)(2); 40CFR 144.631, 40CFR 146.34))

3. Maps and Cross Sections of USDWs

Submit maps and cross sections indicating the vertical limits of all underground sources of drinking water (USDWs) within the area of review, their position relative to the injection formation, and the direction of water movement, where known, in every underground source of drinking water which may be affected by the proposed injection.

An Underground Source of Drinking Water (USDW) is an aquifer or a portion thereof that:

A. Supplies any public water system, **or** contains a sufficient quantity of ground water to supply a public water system (a sustainable delivery of 1 gallon per minute); **and**
   1. currently supplies drinking water for human consumption; **or**
   2. contains fewer than 10,000 mg/l total dissolved solids (TDS); **and**

B. is not an exempted aquifer. (See R18-9-A605; R18-9-A606 for definition and criteria of 'exempt aquifer').

(R18-9-G648(B)(4); 40CFR 146.34(a)(4))

4. Maps and Cross Sections of Local Geologic Structure and Lithology

Submit maps and cross sections detailing the geologic structure and lithology of the local area with particular emphasis on the injection and confining intervals.

(R18-9-G648(B)(5); 40CFR 146.34(a)(5))

5. Maps and Cross Sections of Regional Geologic and Hydrologic Setting

Submit generalized map and cross sections illustrating the regional geologic and hydrologic setting.

R18-9-G648(B)(6); 40CFR 146.34(a)(6))

Part C – Tabulation of Artificial Penetration Data

Submit a tabulation of data on wells within the area of review included on the AOR Map (Part B, Map 2) that penetrate the proposed injection zone. Include data reasonably available from public records or otherwise known to the applicant. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of plugging and/or completion, any water quality data, and any additional information the Director may require.

(R18-9-G648(B)(3); 40CFR 146.34(a)(3))

Part D – Corrective Action Plan

Submit a corrective action plan describing the necessary steps or modifications to prevent movement of fluid into underground sources of drinking water through any artificial penetrations into the injection zone, identified on Part B, Map2 and Part C, that are improperly sealed, completed, or abandoned.

(R18-9-G648(B)(16); R18-9-D639; 40CFR 144.55; 40CFR 146.7; 40CFR 146.34(a)(16))

Part E – Formation Testing Program

Submit a description of the proposed injection zone formation testing designed to obtain data on fluid pressure, fracture pressure, and the physical and chemical characteristics of the formation fluid if the injection zone is a formation that is naturally water-bearing. If the injection zone formation is NOT naturally water-bearing, only the fracture pressure need be determined.

(R18-9-G648(C); 40CFR 146.34(a)(8))

Part F – Well Stimulation Program

If the applicant intends to stimulate the well to clean the well bore, enlarge channels, and increase pore space in the interval to be injected thereby enhancing the injectivity of the well, the applicant must submit a well stimulation program.

(R18-9-G648(B)(9); 40CFR 146.34(a)(9))

Part G – Injection Well Construction Plan

Submit a well construction plan that includes details of the cementing and casing program, logging procedures, deviation checks, and a drilling, testing, and coring program that conform with the Class III well construction requirements in R18-9-G648 and 40CFR 146.32. Changes in construction plans during construction may be approved as minor modifications; however, no such changes may be physically incorporated into construction of the well prior to approval of the modification by the Director.

(R18-9-D636, R18-9-G646; 40CFR 146.32)

Part H – Injection Well Construction Details

Submit schematic or other appropriate drawings of the surface and subsurface construction details of the well that meet the construction requirements of R18-9-G648.

(R18-9-G648(B)(11); 40CFR 146.34(a)(11))

Part I – Injection Well Operating Plan and Procedures

Submit a description of the proposed injection procedure and proposed operating data for each well including:

(i) average and maximum daily rate and volume of the fluid to be injected;
(ii) average and maximum injection pressure;
(iii) qualitative analysis and ranges in concentrations of all constituents of injected fluids. The applicant may request confidentiality as specified in R18-9-A603 and 40CFR 144.5. If the information is proprietary an applicant may, in lieu of the ranges in concentrations, choose to submit maximum concentrations which shall not be exceeded. In such a case the applicant shall retain records of the undisclosed concentrations and provide them upon request to the Director.

The permit shall establish injection operation requirements including any maximum injection volumes and/or maximum wellhead pressures necessary to assure that:

(i) fractures are not initiated in the confining zone,
(ii) . injected fluids do not migrate into any underground source of drinking water,
(iii) formation fluids are not displaced into any underground source of drinking water, and
(iv) injection between the outermost casing protecting USDWs and the well bore does not occur.

(R18-9-D636(A)(3); R18-9-G647(A), R18-9-G648(B)(7);

40CFR 144.52(a)(3); 40CFR 146.34(a)(10); 40CFR 146.34(b)(7))

Part J – Monitoring, Recording, and Reporting Plan

Submit a monitoring, recording, and reporting plan, including maps, for meeting the monitoring and reporting requirements of R18-9-G649(B) and R18-9-G649(C); 40CFR 146.33; 40CFR 146.8. In the plan, the applicant must

(i) identify the types of tests, methods, and equipment used to generate the monitoring data,

(ii) address the proper use, maintenance, and installation, when appropriate, of monitoring equipment or methods, and

(iii) propose type, intervals, and frequency sufficient to yield data that are representative of the monitored activity.

(R18-9-D636(A)(4); R18-9-G647(B) and (C);
40CFR 146.33; 40CFR 144.52; 40CFR 144.54))

Part K – Contingency Plan

Submit a contingency plan to address well shut-ins or well failure that ensures that USDWs are protected during these events.

(R18-9-G648(B)(14); 40CFR 146.34(a)(14))

Part L – Plugging and Abandonment Plan

Submit a plugging and abandonment plan that meets the requirements of R18-9-B614(A) and 40CFR 146.10 and is acceptable to the Director.

(R18-9-B614(A), R18-9-G648(D);
40CFR 146.10; 40CFR 146.34(c))

Part M – Financial Responsibility

Submit a certificate that the applicant has assured through a performance bond or other appropriate means approved by the Director to demonstrate financial resources necessary to close, plug, and / or abandon the Class III injection well(s).

(R18-9-D636(A)(6);R18-9-G648(B)(15);
40CFR 144.52(a)(7); 40CFR 146.34(a)(15))

Part N – Aquifer Exemption

If an aquifer exemption for a Class III in-situ solution mining operation is required by the Director or requested by the applicant, the applicant must submit sufficient data to demonstrate that the aquifer meets the following criteria:

1) It does not currently serve as a source of drinking water, and
2) It cannot now and will not in the future serve as a source of drinking water because:
   a) It is mineral, hydrocarbon or geothermal energy producing, or can be demonstrated by a permit applicant as part of a permit application for a Class II or III operation to contain minerals or hydrocarbons that considering their quantity and location are expected to be commercially producible.
   b) It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical;
   c) It is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption; **or**
   d) It is located over a Class III well mining area subject to subsidence or catastrophic collapse; **or**
3) The TDS content of the groundwater is more than 3,000 and less than 10,000 mg/l and it is not reasonably expected to supply a public water system.

For Class III wells, the applicant must also submit data necessary to demonstrate that the aquifer is expected to be mineral or hydrocarbon producing. Relevant information as is contained in the mining plan for the proposed project, such as a map and general description of the mining zone, general information on the mineralogy and geochemistry of the mining zone, analysis of the amenability of the mining zone to the proposed mining method, and a time-table of planned development of the mining zone must be submitted.

(R18-9-A605, R18-9-A606; 40CFR 144.7; 40CFR 146.4)

Part O – Expected Changes Due to Injection

Submit a description of the expected changes in pressure, native fluid displacement, and direction of movement of injection fluid.

(R18-9-G648(B)(13); 40CFR 146.34 (a)(13))

STATE OF ARIZONA

UNDERGROUND INJECTION CONTROL PROGRAM

CLASS IV PERMIT APPLICATION
FOR
UNDERGROUND INJECTION WELLS

Last Revised: July 12, 2022

Table of Contents

GENERAL INSTRUCTIONS

The Arizona Underground Injection Control (UIC) Administrative Rules (A.A.C. Title 18 Chapter 9 Article 6) regulate the injection of fluids into the subsurface. The following instructions outline the procedures, documents, and information needed for a Class IV well permit application in order to verify the well is authorized by rule (R18-9-H649(B); 40 CFR 144.23(c)).

The applicant shall submit an original Permit Application and a Technical Report. Both documents shall be submitted electronically through ADEQ's e-Permitting Online Portal at https://www.azdeq.gov/mydeq.

If the required reports cannot be submitted, or require further documentation that cannot be submitted on the myDEQ portal, then submit items to uic@azdeq.gov or the address listed below:

Arizona Department of Environmental Quality
Division of Water Quality
1110 West Washington Street
Phoenix, AZ 85007
ATTN: Underground Injection Control (UIC) Program

Telephone inquiries: (602) 771-2300
Email inquiries: uic@azdeq.gov

1. Confidential Business Information (CBI): The information provided in the permit application must be of sufficient detail to allow the Arizona Department of Environmental Quality (ADEQ) Division of Water Quality (ADEQ) to make informed decisions in setting permit conditions. However, if the submitted document, or portions thereof, are considered confidential, the applicant must follow appropriate procedures in requesting CBI status for those documents, or portions thereof, as detailed in the Arizona Public Records Law, A.R.S. §§ -39-101 to -161. According to the Law, any person who provides to a governmental entity a record that the person believes should be protected as business confidential shall provide with the record a written claim of business confidentiality and a concise statement of reasons supporting the claim of business confidentiality. When the records in question relate to a program for which the State has been delegated primacy, as is the case for the UIC Program, the standards of the Freedom of Information Act, 5 U.S.C. Section 552 (FOIA) shall apply. Furthermore, the regulation of the U.S. Environmental Protection Agency interpreting FOIA as it appears at 40CFR Part 2 (1992 version) shall also apply. Since permit applications are published during the public comment period, the applicant should provide an approved redacted copy of the permit application.

2. Signature on Application: The person who signs the application form will often be the applicant; when another person signs on behalf of the applicant, his/her title or relationship to the applicant should be shown in the space provided. In all cases, the person signing the form should be authorized to do so by the applicant. An application submitted by a corporation must be signed by a responsible corporate officer or his duly authorized representative, if such representative is responsible for the overall operation of the facility from which the activity described in the form originates. In the case of a partnership or a sole proprietorship, the application must be signed by a general partner or the proprietor, respectively. In the case of a municipal, state, federal or other public facility, the application must be signed by either a principal executive officer, ranking elected official or other duly authorized employee.

The Division shall require a person signing an application on behalf of an applicant to provide proof of authorization (R18-9-C617; 40CFR Part 144.32).

3. An application will not be processed until all information required to properly review the application has been obtained. When an application is severely lacking in detail or the applicant fails to submit additionally requested information in a timely manner, the application may be returned.

4. An application which involves the injection of a fluid containing radioactive materials shall be accompanied by a letter or other instrument in writing from the Arizona Department of Health Services, Bureau of Radiation Control, stating that either the applicant has a license from the Bureau of Radiation Control governing the disposal of radioactive materials; or that the applicant does not need a license. In the case of radioactive materials disposal, the Bureau of Radiation Control must receive a copy of the application for an injection permit. The copy should be mailed to:

Arizona Department of Environmental Quality
Division of Water Quality
1110 West Washington Street
Phoenix, AZ 85007
ATTN: Underground Injection Control (UIC) Program

PROCEDURAL INFORMATION

The staff will review the application for completeness. During the completeness review, the applicant may be contacted for clarification or additional information. When all pertinent information is present, a notice that an application has been received may be given to other state agencies and local governmental entities interested in water quality control and industrial waste management. A preliminary draft permit will be prepared by the Division and transmitted to the applicant for review. Comments from the applicant may result in changes to the draft permit, after concurrence by the Division Director. The draft permit will be subjected to a 30-day public comment period. A public hearing may be requested. In either case, a notice will be provided to inform the public that a draft permit has been prepared.

Requirements for the public notice include:

1. That a public notice be published for each draft permit, major permit modification, or permit renewal that has been prepared. The notice will appear within each county where the proposed facility or discharge is located and each county affected by the discharge.
2. The Division will mail notice of the application to affected persons and certain governmental entities.

A public hearing will be scheduled regarding an application when requested by the Division Director, the applicant, or any affected person within thirty (30) days following newspaper publication.

ADEQ may act upon a permit application, a draft permit, a major permit modification, or renewal of a permit without holding a public hearing when:

1. Adequate public notice and comment period has been provided, including:

(a) notice of the application has been mailed to persons possibly affected by the proposed permit;
(b) notice has been published at least once in a newspaper, regularly published, or circulated within each county where the proposed facility or discharge is located and, in each county, affected by the discharge; and

2. Within thirty (30) days following publication of the ADEQ's notice the Division Director, the applicant, or an affected person has not requested a public hearing; or
3. When a proposed amendment results in an improvement of the quality of the fluid authorized to be injected and the applicant does not seek to significantly increase the quantity of fluid to be injected or to materially change the pattern or place of injection.

After resolution of any public comment the Division shall issue or deny the draft permit, major permit modification, or permit renewal. Within thirty (30) days of issuance, a copy of the permit or permit denial will be mailed to the applicant.

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
Division of Water Quality
Underground Injection Control (UIC) Program

CLASS IV INJECTION WELL PERMIT APPLICATION

(Reference to R18-9-Part H in parentheses indicates sections of Arizona UIC Administrative Code and Code of Federal Regulations, respectively, requiring information.)

1. . Type of Permit Application (check one)
   - □ Initial Application
   - □ Permit Renewal, Original Permit No. _____
   - □ Permit Modification, Original Permit No. _____

2. Type of Permit (check one)
   - □ Individual (Single) Well Permit □ Area (Multiple Wells) Permit

3. . Remediation Program (check one)
   (R18-9-H649(B) 40CFR 144.23(c)
   - □ RCRA □ CERCLA □ Other

4. Regulatory Agency Providing Primary Oversight of this Remediation: _____
   _____

5. Project Manager in Oversight Agency: _____
Contact Information: Phone/Email : _____

6. Facility Operator (Applicant must be the operator if owner/operator are different)
   (R18-9-C616(B) and 40CFR 144.31(b))

   Name: _____
   (Individual, Corporation or Other Legal Entity)

   Address: _____
   (Permanent Mailing Address)

   City:_____ State: _____ Zip:_____

   Telephone Number: _____

7. Facility Owner
   (R18-9-A602 and 40CFR 144.31(e)(4))

   Name: _____
   (Individual, Corporation or Other Legal Entity)

Address: _____
(Permanent Mailing Address)

City:_____ State: _____ Zip:_____

Telephone Number: _____

8. List those persons or firms authorized to act for the applicant during the processing of the permit application. Include a complete mailing address and telephone number:

9. Location of Class IV Injection Well Operation:
(R18-9-C616(D)(2) and (40CFR 144.31(e)(2))

Facility name: _____

Facility mailing address:_____

Facility location description:_____

Street address: _____

City:_____

County: _____ Lease:_____

No. of Wells* : _____

For each well provide the following:

Township; Range; Section; and 1/4, 1/4 Section:_____

Latitude: _____

Longitude:_____

* Location(s) of injection well(s) should be identified on all maps included in the Technical Report.

10. Is injection well(s) located on Indian land? □ Yes □ No
(R18-9-A602), R18-9-C616(D)(2) and 40CFR 144.31(e)(5))

11. Submit the Technical Report with Application Form (R18-9-H649).

Note: All applications for an Arizona UIC permit, including any required Technical Report including technical information necessary for the adequate evaluation of any permit application, or any permit renewal applications and associated Technical Reports that are significantly different from the original permit application, must be prepared by or under the direction, and bear the seal, of a registered professional geologist or professional engineer.

12. Certification of information submitted on application form (R18-9-C617(A) and 40CFR 144.32).

_____

(Name of Company Official: Type or Print Legibly)

_____

(Title)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: _____

Date: _____

TECHNICAL REPORT OUTLINE
FOR CLASS IV INJECTION WELL
PERMIT APPLICATIONS

A Technical Report, prepared under the direction of a registered professional geologist or engineer, must accompany a permit application for a Class IV injection permit in order to verify the well(s) is authorized by rule (R18-9-H649(B); 40CFR 144.23(c)). The Technical Report must contain all parts detailed in the outline below. The term 'Director' in the outline below refers to the Director of the Arizona Water Quality Division or an appointed representative, i.e. the UIC staff reviewing the permit application. The UIC staff, upon demonstrating justifications, may make adjustments in the requirements set forth in this Technical Report Outline below. References in parentheses refer to sections in the Arizona UIC Administrative Rules (R18-9) and the Code of Federal Regulations (40CFR) that apply to the associated data requirements.

Note: The required plans, programs, and attachments below must be approved by the Director. Once approved, they may be included in the permit as an enforceable attachment.

Part A – Geologic and Hydrogeologic Data

Attach to this application a report containing the following information:

1. Map showing location of injection well(s). The map must show the location of all injection wells, surface water bodies, springs, quarries, water wells, and other pertinent surface features including residences and roads.
2. Maps and cross-sections indicating the vertical and lateral limits of all underground sources of drinking water (USDWs) and their position relative to the formation that contaminated groundwater is being withdrawn from and reinjected into.
3. Description of the groundwater contaminants including concentration, treatment process, and reinjection process including concentration of injected fluids.

(R18-9-H649); 40CFR 144.23)

Part B – Closure

Submit a plan for plugging or otherwise closing the well for approval by the Director. The owner or operator must notify the Director of intent to abandon the well at least thirty days prior to abandonment.

(R18-9-H649); 40CFR 144.23)

STATE OF ARIZONA

UNDERGROUND INJECTION CONTROL PROGRAM

CLASS V PERMIT APPLICATION
FOR
UNDERGROUND INJECTION WELLS

Last Revised: July 12, 2022

Table of Contents

GENERAL INSTRUCTIONS

The Arizona Underground Injection Control (UIC) Administrative Rules (A.A.C. Title 18 Chapter 9 Article 6) regulate the injection of fluids into the subsurface. The following instructions outline the procedures, documents, and information needed for a Class V injection well permit application.

The applicant shall submit an original Permit Application and a Technical Report. Both documents shall be submitted electronically through ADEQ's e-Permitting Online Portal at https://www.azdeq.gov/mydeq.

If the required reports cannot be submitted, or require further documentation that cannot be submitted on the myDEQ portal, then submit items to uic@azdeq.gov or the address listed below:

Arizona Department of Environmental Quality
Division of Water Quality
1110 West Washington Street
Phoenix, AZ 85007
ATTN: Underground Injection Control (UIC) Program

Telephone inquiries: (602) 771-2300
Email inquiries: uic@azdeq.gov

1. Confidential Business Information (CBI): The information provided in the permit application must be of sufficient detail to allow the Arizona Department of Environmental Quality (ADEQ) Division of Water Quality ADEQ to make informed decisions in setting permit conditions. However, if the submitted documents, or portions thereof, are considered confidential, the applicant must follow appropriate procedures in requesting CBI status for those documents, or portions thereof, as detailed in the Arizona Public Records Law, A.R.S. §§ -39-101 to -161. According to the Law, any person who provides to a governmental entity a record that the person believes should be protected as business confidential shall provide with the record a written claim of business confidentiality and a concise statement of reasons supporting the claim of business confidentiality. When the records in question relate to a program for which the State has been delegated primacy, as is the case for the UIC Program, the standards of the Freedom of Information Act, 5 U.S.C. Section 552 (FOIA) shall apply. Furthermore, the regulation of the U.S. Environmental Protection Agency interpreting FOIA as it appears at 40CFR Part 2 (1992 version) shall also apply. Since permit applications are published during the public comment period, the applicant should provide an approved redacted copy of the permit application and the accompanying technical report.

2. Signature on Application: The person who signs the application form will often be the applicant; when another person signs on behalf of the applicant, his/her title or relationship to the applicant should be shown in the space provided. In all cases, the person signing the form should be authorized to do so by the applicant. An application submitted by a corporation must be signed by a principal executive officer of at least the level of vice president or his duly authorized representative, if such representative is responsible for the overall operation of the facility from which the activity described in the form and accompanying technical report originates. In the case of a partnership or a sole proprietorship, the application must be signed by a general partner or the proprietor, respectively. In the case of a municipal, state, federal or other public facility, the application must be signed by either a principal executive

officer, ranking elected official or other duly authorized employee. The Division shall require a person signing an application on behalf of an applicant to provide proof of authorization (R18-9-C617; 40CFR Part 144.32).

3. An application will not be processed until all information required to properly review the application has been obtained. When an application is severely lacking in detail or the applicant fails to submit additionally requested information in a timely manner, the application may be returned.

4. An application which involves the injection of a fluid containing radioactive materials shall be accompanied by a letter or other instrument in writing from the Arizona Department of Health Services, Bureau of Radiation Control, stating that either the applicant has a license from the Bureau of Radiation Control governing the disposal of radioactive materials; or that the applicant does not need a license. In the case of radioactive materials disposal, the Bureau of Radiation Control must receive a copy of the application for an injection permit. The copy should be mailed to:

   Arizona Department of Environmental Quality
   Division of Water Quality
   1110 West Washington Street
   Phoenix, AZ 85007
   ATTN: Underground Injection Control (UIC) Program

5. Although required by Arizona UIC regulations for inclusion in the permit application, not all parts (for example, Corrective Action, Well Stimulation, Formation Testing) in the required technical report are relevant to all Class V injection wells. It is the responsibility of the applicant to assess the applicability of these parts in the technical report and to provide justification for omitting them. Note: Corrective Action, Well Stimulation, and Formation Testing ***generally*** apply to deep disposal wells that inject into a discrete injection zone bounded by well-defined confining zones.

PROCEDURAL INFORMATION

The staff will review the application for completeness. During the completeness review, the applicant may be contacted for clarification or additional information. When all pertinent information is present, a notice that an application has been received may be given to other state agencies and local governmental entities interested in water quality control and industrial waste management. A preliminary draft permit will be prepared by the Division and transmitted to the applicant for review. Comments from the applicant may result in changes to the draft permit, after concurrence by the Division Director. The draft permit will be subjected to a 30-day public comment period. A public hearing may be requested. In either case, a notice will be provided to inform the public that a draft permit has been prepared.

Requirements for the public notice include:

1. That a public notice be published for each draft permit, permit amendment, or permit renewal that has been prepared. The notice will appear within each county where the proposed facility or discharge is located, and each county affected by the discharge.

2. The Director will mail notice of the application to affected persons and certain governmental entities.

A public hearing will be scheduled regarding an application when requested by the Division Director, the applicant, or any affected person within thirty (30) days following newspaper publication.

ADEQ may act upon a permit application, a draft permit, permit amendment, or renewal of a permit without holding a public hearing when:

1. Adequate public notice and comment period has been provided, including:

   (a) notice of the application has been mailed to persons possibly affected by the proposed permit

   (b) notice has been published at least once in a newspaper, regularly published, or circulated within each county where the proposed facility or discharge is located and, in each county, affected by the discharge; and

2. Within thirty (30) days following publication of the ADEQ's notice the Director, the applicant, or an affected person has not requested a public hearing; or

3. An application to amend a permit will result in an improvement of the quality of the fluid authorized to be injected and if the applicant does not seek to increase significantly the quantity of fluid to be injected or to change materially the pattern or place of injection.

After resolution of any public comment the Director shall issue or deny the draft permit, permit amendment, or permit renewal. Within thirty (30) days of issuance, a copy of the permit or permit denial will be mailed to the applicant.

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
Division of Water Quality
Underground Injection Control (UIC) Program

CLASS V INJECTION WELL PERMIT APPLICATION

(Reference to R18-9-Part I in parentheses indicates sections of Arizona UIC Administrative Code and Code of Federal Regulations, respectively, requiring information.)

1. Type of Permit Application (check one)

   ☐ Initial Application

   ☐ Permit Renewal, Original Permit No. _____

   ☐ Permit Modification, Original Permit No. _____

2. Type of Permit (check one)

   ☐ Individual (Single) Well Permit ☐ Area (Multiple Wells) Permit

3. Facility Operator (Applicant must be the operator if owner/operator are different) (R18-9-C616(B); 40CFR 144.31(b); 40CFR 144.32(e)(4)):

   Name: _____
   (Individual, Corporation or Other Legal Entity)

   Address: _____
   (Permanent Mailing Address)

   City: _____ State: _____ Zip: _____

   Telephone Number: _____

4. Facility Owner (R18-9-A602 and 40CFR 144.31(e)(4)):

   Name: _____
   (Individual, Corporation or Other Legal Entity)

   Address: _____
   (Permanent Mailing Address)

   City: _____ State: _____ Zip: _____

   Telephone Number: _____

5. Facility ownership status: □Federal □State □Private □Public □Other
   (R18-9-C616(D)(4) and 40CFR 144.31(e)(4))

6. List those persons or firms authorized to act for the applicant during the processing of the permit application. Include a complete mailing address and telephone number:

7. List all activities conducted at this facility that require an environmental permit under federal, state, or local statutes, rules, or ordinances.
   (R18-9-C616(D)(1) and 40CFR 144.31(e)(1)):

8. List all environmental permits or construction approvals received or applied for relevant to this facility or this location under federal, state, or local statutes, rules, or ordinances.
   (R18-9-C616(D)(5) and 40CFR 144.31(e)(6))

9. Provide a brief description of the business activities at the facility for which this permit is being sought (include appropriate North American Industry Classification System (NAICS) Codes).
   (R18-9-C616(D)(3) and 40CFR 144.31(e)(3) and (8))

10. Location of Proposed Class V Injection
    (R18-9-C616(D)(2) and (40CFR 144.31(e)(2))

    Facility name: _____

    Facility mailing address: _____

    Facility location description: _____

    Street address: _____

    City: _____

    County: _____ Lease: _____

    No. of Wells* : _____

    For each well provide the following:

    Township; Range; Section; and 1/4, 1/4 Section: _____

    Latitude: _____

    Longitude: _____

* Location(s) of injection well(s) should be identified on all maps included in the Technical Report.

11. Are the proposed injection well(s) located on Indian land? □ Yes □ No
(R18-9-A602, R18-9-C616(D)(2) and 40CFR 144.31(e)(5))

12. Submit the Technical Report with Application (R18-9-I653)

Note: All applications for an Arizona UIC permit, including any required Technical Report containing technical information necessary for the adequate evaluation of any permit application, or any permit renewal applications and associated Technical Reports that are significantly different from the original permit application, must be prepared by or under the direction, and bear the seal, of a registered professional geologist or professional engineer.

13. Certification of information submitted on application form and in the Technical Report (R18-9-C617(A) and 40CFR 144.32).

_____

(Name of Company Official: Type or Print Legibly)

_____

(Title)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: _____

Date: _____

TECHNICAL REPORT OUTLINE
FOR CLASS V INJECTION WELL
PERMIT APPLICATIONS

A Technical Report, prepared under the direction of a registered professional geologist or engineer, must accompany a permit application for an injection well permit. The Technical Report must contain all parts detailed in the outline below. The term 'Director' in the outline below refers to the Director of the Division of Water Quality or an appointed representative, i.e. the UIC staff reviewing the permit application. The staff, upon demonstrating justifications, may make adjustments in the requirements set forth in this Technical Report Outline below. References in parentheses refer to sections in the Arizona UIC Administrative Rules (R18-9) and the Code of Federal Regulations (40CFR) that apply to the associated data requirements.

Note: The required plans, programs, and attachments below must be approved by the Director. Once approved, they may be included in the permit as an enforceable attachment.

Part A – Determination of Area of Review (AOR)

Submit details of the method and, if appropriate, the calculations used to determine the area of review. Refer to R18-9-B612 for acceptable methods and calculations for determining the area of review. In Arizona, a radius area of review as determined by:

1. the zone of endangering influence based on physical measurements;
2. zone of endangering influence computation based on the modified Theis equation;
3. a fixed radius not less than 1/4 mile, from the injection well for an individual well permit or for an area permit; or
4. a mathematical model.

(R18-9-B612; 40CFR 146.6)

(R18-9-B612; 40CFR 144.31, 40CFR 146.34)

Part B - Permit Application Maps

1. Map of Facility and Well (or Project Area)

Submit a topographic map (or other map if a topographic map is unavailable) extending one mile beyond the property boundaries of the injection well (individual permit) or project area (area permit). The following items listed in public records or otherwise known to the applicant and occurring within a quarter mile of the facility property boundary must be included on the map:

(i) injection well (individual permit) or project area (area permit)
(ii) the facility property boundary and each of its intake and discharge structures;
(iii) each of its hazardous waste treatment, storage, or disposal facilities;
(iv) each well where fluids from the facility are injected underground (injection wells other than those for which this permit application is being prepared);
(v) wells, springs, and other surface water bodies, and drinking water wells.

(R18-9-C616(D)(6); 40CFR 144.31(e)(7))

2. Map of Area of Review (AOR)

Submit a map showing the injection well (individual permit) or project area (area permit) and the applicable area of review. Within the area of review, the map must include the following:

(i) the number or name and location of all existing producing wells, injection wells, abandoned wells, dry holes, public water systems and water wells.

(ii) surface bodies of waters, springs, mines (surface and subsurface), quarries and other pertinent surface features including residences and roads, and faults if known or suspected. Only pertinent information of public record or otherwise known to the applicant is required to be included on this map.

(R18-9-C616(D)(6); 40CFR 146.6))

3. Maps and Cross Sections of USDWs

Submit maps and cross sections indicating the vertical limits of all underground sources of drinking water (USDWs) within the area of review, their position relative to the injection formation, and the direction of water movement, where known, in every underground source of drinking water which may be affected by the proposed injection.

An Underground Source of Drinking Water (USDW) is an aquifer or a portion thereof that:
A. Supplies any public water system, **or** contains a sufficient quantity of ground water to supply a public water system [a sustainable delivery of 1 gallon per minute]; **and**
1. currently supplies drinking water for human consumption; **or**
2. contains fewer than 10,000 mg/l total dissolved solids (TDS); **and**
B. is not an exempted aquifer.

(R18-9-A605; R18-9-A606; 40CFR 144.7 40CFR 146.4))

4. Maps and Cross Sections of Local Geologic Structure and Lithology

Submit maps and cross sections detailing the geologic structure and lithology of the local area with particular emphasis on the injection and confining intervals.

(R18-9-I653(B)(3); 40CFR 144.27, 40CFR 144.83(b))

Part C – Tabulation of Artificial Penetration Data

Submit a tabulation of data on wells within the area of review included on the AOR Map (Part B, Map 2) that penetrate the proposed injection zone. Include data reasonably available from public records or otherwise known to the applicant. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of plugging and/or completion, any water quality data, and any additional information the Director may require.

(R-18-9-C616(D)(6); 40CFR 144.31)

Part D – Corrective Action Plan

Submit a corrective action plan describing the necessary steps or modifications to prevent movement of fluid into underground sources of drinking water through any artificial

penetrations into the injection zone, identified on Part B, Map 2 and Part C, that are improperly sealed, completed, or abandoned.

(R18-9-B608, R18-9-D639); 40CFR 144.55, 40CFR 146.7)

Part E – Formation Testing Program

Submit a description of the proposed formation testing program designed to obtain data on fluid pressure, fracture pressure, and the physical and chemical characteristics of the formation fluid if the injection zone is a formation that is naturally water-bearing. If the injection zone formation is NOT naturally water-bearing, only the fracture pressure need be determined.

(R18-9-I653; 40CFR 144.27, 40CFR 14.83(b))

Part F – Well Stimulation Program

If the applicant intends to stimulate the well to clean the well bore, enlarge channels, and increase pore space in the interval to be injected thereby enhancing the injectivity of the well, the applicant must submit a well stimulation program.

(40CFR 144.52)

Part G – Injection Well Construction Plan

For existing wells, submit as-built well diagrams along with a well construction narrative, if available.

For new wells, submit a well construction plan that includes details of the cementing (grouting) and casing program, logging procedures, and a drilling, testing, and coring (cuttings) program. In addition to the requirements set by ARS Title 45 and the ADEQ Administrative Rules (R18-9-D636(A)), the well shall be constructed to protect from degradation any USDW into and through which it is constructed. This shall include, but is not limited to, the careful selection of appropriate construction materials to prevent mechanical failure of the well and the careful selection and placement of cementing material so as to prevent vertical flow along the borehole from the injection zone or between aquifers. Changes in construction plans during construction may be approved as minor modifications; however, no such changes may be physically incorporated into construction of the well prior to approval of the modification by the Director.

((R18-9-D636(A); 40CFR 144.52; 40CFR 144.82(a)(1))

Part H – Injection Well Construction Details

Submit schematic or other appropriate drawings of the surface and subsurface construction details of the well.

(R18-9-D636(A); 40CFR 144.52)

Part I – Injection Well Operation Plan and Procedures

Submit a description of the proposed injection procedure and proposed operating data for each well including:

(i) average and maximum daily rate and volume of the fluid to be injected;
(ii) average and maximum injection pressure;
(iii) source and an appropriate analysis of the chemical, physical, radiological, and biological characteristics of injection fluids.

The permit shall establish injection operation requirements including any maximum injection volumes and/or maximum wellhead pressures necessary to assure that:

(i) fractures are not initiated in the confining zone, if applicable,
(ii) injected fluids do not migrate into any underground source of drinking water,
(iii) formation fluids are not displaced into any underground source of drinking water, and
(iv) injection between the outermost casing protecting USDWs and the well bore does not occur.

(R18-9-D636(A)(3); 40CFR 144.52(a)(3))

Part J – Monitoring, Recording, and Reporting Plan

Submit a monitoring, recording, and reporting plan, including maps, for demonstrating and ensuring the protection of USDWs. In the plan, the applicant must

(i) identify the types of tests (including mechanical integrity tests (MITs)), methods, and equipment used to generate the monitoring data,
(ii) address the proper use, maintenance, and installation, when appropriate, of monitoring equipment or methods, and
(iii) propose type, intervals, and frequency sufficient to yield data that are representative of the monitored activity.

(R18-9-D636(A)(4), R18-9-I653(B)(1);
40CFR 144.27(b)(1), 40CFR 144.52))

Part K – Contingency Plan

Submit a contingency plan to address well shut-ins or well failure that ensures that USDWs are protected during these events.

(40CFR 144.54)

Part L – Plugging and Abandonment Plan

Submit a plugging and abandonment plan that meets the requirements of R18-9-B614(C) and is acceptable to the Director.

(R18-9-B614(C); 40CFR 146.10)

Part M – Financial Responsibility

The applicant must demonstrate financial resources for plugging and abandoning a UIC well. If the applicant has already made this demonstration to another agency, a copy of that certificate will suffice in meeting this requirement. However, if this demonstration has not been made to another agency, the applicant will be required to submit a performance bond

or other appropriate means approved by the Director to demonstrate financial resources necessary to close, plug, and / or abandon the Class V injection well(s). The applicant must use the financial assurance mechanism template provided by the Director.

(R18-9-D636(A)(6); 40CFR 144.52(a)(7)

Part N – Aquifer Exemption

If an aquifer exemption for a Class V injection well operation is required by the Director or requested by the applicant, the applicant must submit sufficient data to demonstrate that the aquifer meets the following criteria:

1) It does not currently serve as a source of drinking water, and
2) It cannot now and will not in the future serve as a source of drinking water because:
   a) It is mineral, hydrocarbon or geothermal energy producing, or can be demonstrated by a permit applicant as part of a permit application for a Class II or III operation to contain minerals or hydrocarbons that considering their quantity and location are expected to be commercially producible.
   b) It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical;
   c) It is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption; **or**
   d) It is located over a Class III well mining area subject to subsidence or catastrophic collapse; **or**
3) The TDS content of the groundwater is more than 3,000 and less than 10,000 mg/l and it is not reasonably expected to supply a public water system.

For Class V wells, the applicant must also submit data necessary to demonstrate that the aquifer is expected to be mineral or hydrocarbon producing. Relevant information as is contained in the mining plan for the proposed project, such as a map and general description of the mining zone, general information on the mineralogy and geochemistry of the mining zone, analysis of the amenability of the mining zone to the proposed mining method, and a time-table of planned development of the mining zone must be submitted.

(R18-9-A605(C), R18-9-A606; 40CFR 144.7; 40CFR 146.4)

Part O – Other Information

The Director may require the submittal of additional information and impose conditions as are necessary on a case by case basis to prevent the migration of fluids into USDWs.

(R18-9-D636(A); 40CFR 144.52(a)(9))

STATE OF ARIZONA

UNDERGROUND INJECTION CONTROL PROGRAM

CLASS VI INJECTION WELL PERMIT APPLICATION

Last Revised: July 12, 2022

Table of Contents

GENERAL INSTRUCTIONS

The Arizona Underground Injection Control (UIC) Administrative Rules (A.A.C. Title 18 Chapter 9 Article 6) regulate the injection of fluids into the subsurface, specifically the geologic storage of carbon dioxide. The following instructions outline the procedures, documents, and information needed for a Class VI injection well permit application.

The applicant shall submit an original Permit Application and a Technical Report. Both documents shall be submitted electronically through ADEQ's e-Permitting Online Portal at https://www.azdeq.gov/mydeq.

If the required reports cannot be submitted, or require further documentation that cannot be submitted on the myDEQ portal, then submit items to uic@azdeq.gov or the address listed below:

Arizona Department of Environmental Quality
Division of Water Quality
1110 West Washington Street
Phoenix, AZ 85007
ATTN: Underground Injection Control (UIC) Program

Telephone inquiries: (602) 771-2300
Email inquiries: uic@azdeq.gov

1. Confidential Business Information (CBI): The information provided in the permit application must be of sufficient detail to allow the Arizona Department of Environmental Quality (ADEQ) to make informed decisions in setting permit conditions. However, if the submitted documents, or portions thereof, are considered confidential, the applicant must follow appropriate procedures in requesting CBI status for those documents, or portions thereof, as detailed in the Arizona Public Records Law, A.R.S. §§ -39-101 to -161. According to the Law, any person who provides to a governmental entity a record that the person believes should be protected as business confidential shall provide with the record a written claim of business confidentiality and a concise statement of reasons supporting the claim of business confidentiality. When the records in question relate to a program for which the State has been delegated primacy, as is the case for the UIC Program, the standards of the Freedom of Information Act, 5 U.S.C. Section 552 (FOIA) shall apply. Furthermore, the regulation of the U.S. Environmental Protection Agency interpreting FOIA as it appears at 40CFR Part 2 (1992 version) shall also apply. Since permit applications are published during the public comment period, the applicant should provide an approved redacted copy of the permit application and the accompanying technical report.

2. Signature on Application : The person who signs the application form will often be the applicant; when another person signs on behalf of the applicant, his/her title or relationship to the applicant should be shown in the space provided. In all cases, the person signing the form should be authorized to do so by the applicant. An application submitted by a corporation must be signed by a responsible corporate officer or his duly authorized representative, if such representative is responsible for the overall operation of the facility from which the activity described in the form originates. In the case of a partnership or a sole proprietorship, the application must be signed by a general partner or the proprietor, respectively. In the case of a municipal, state, federal or other public facility, the application must be signed by either a principal executive officer, ranking elected official or other duly authorized employee.

The Division shall require a person signing an application on behalf of an applicant to provide proof of authorization (R18-9-C618; 40CFR Part 144.32).

3. An application will not be processed until all information required to properly review the application has been obtained. When an application is severely lacking in detail or the applicant fails to submit additionally requested information in a timely manner, the application may be returned.

PROCEDURAL INFORMATION

The staff will review the application for completeness. During the completeness review, the applicant may be contacted for clarification or additional information. When all pertinent information is present, a notice that an application has been received may be given to other state agencies and local governmental entities interested in water quality control and industrial waste management. A preliminary draft permit will be prepared by the Division and transmitted to the applicant for review. Comments from the applicant may result in changes to the draft permit, after concurrence by the Division Director. The draft permit will be subjected to a 30-day public comment period. A public hearing may be requested. In either case, a notice will be provided to inform the public that a draft permit has been prepared.

Requirements for the public notice include:

1. That a public notice be published for each draft permit, major permit modification, or permit renewal that has been prepared. The notice will appear within each county where the proposed facility or discharge is located and each county affected by the discharge.
2. The Division will mail notice of the application to affected persons and certain governmental entities.

A public hearing will be scheduled regarding an application when requested by the Division Director, the applicant, or any affected person within thirty (30) days following newspaper publication.

ADEQ may act upon a permit application, a draft permit, a major permit modification, or renewal of a permit without holding a public hearing when:

1. Adequate public notice and comment period has been provided, including:
   (a) notice of the application has been mailed to persons possibly affected by the proposed permit;
   (b) notice has been published at least once in a newspaper, regularly published, or circulated within each county where the proposed facility or discharge is located and, in each county, affected by the discharge; and
2. Within thirty (30) days following publication of the ADEQ's notice the Division Director, the applicant, or an affected person has not requested a public hearing; or
3. An application to amend a permit resulting in an improvement of the quality of the fluid authorized to be injected and if the applicant does not seek to increase significantly the quantity of fluid to be injected or to change materially the pattern or place of injection.

After resolution of any public comment the Division shall issue or deny the draft permit, major permit modification, or permit renewal. Within thirty (30) days of issuance, a copy of the permit or permit denial will be mailed to the applicant.

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
Division of Water Quality
Underground Injection Control (UIC) Program

CLASS VI INJECTION WELL PERMIT APPLICATION

(Reference to R18-9-Part J in parentheses indicates sections of Arizona UIC Administrative Code and Code of Federal Regulations, respectively, requiring information.)

1. Type of Permit Application (check one)
   - □ Initial Application (new facility)
   - □ Initial Application (conversion from other well type)
   - □ Permit Renewal, Original Permit No. _____
   - □ Permit Modification, Original Permit No. _____

2. Type of Permit (check one)
   □ Individual (Single) Well Permit □ Area (Multiple Wells) Permit

3. Facility Operator (Applicant must be the operator if owner/operator are different) (R18-9-C616(B) and 40CFR 144.31(b))

   Name: _____
   (Individual, Corporation or Other Legal Entity)

   Address: _____
   (Permanent Mailing Address)

   City:_____ State: _____ Zip:_____

   Telephone Number: _____

4. Facility Owner
   (R18-9-A602 and 40CFR 144.31(e)(4))

   Name: _____
   (Individual, Corporation or Other Legal Entity)

   Address: _____
   (Permanent Mailing Address)

   City:_____ State: _____ Zip:_____

   Telephone Number: _____

5. Facility ownership status: □Federal □State □Private □Public □Other

(R18-9-C616(D)(4) and 40CFR 144.31(e)(4))

6. List those persons or firms authorized to act for the applicant during the processing of the permit application. Include a complete mailing address and telephone number:

7. List all activities conducted at this facility that require an environmental permit under federal, state, or local statutes, rules, or ordinances.
(R18-9-C616(D)(1) and 40CFR 144.31(e)(1))

8. List all environmental permits or construction approvals received or applied for relevant to this facility or this location under federal, state, or local statutes, rules, or ordinances.
(R18-9-C616(D)(5) and 40CFR 144.31(e)(6))

9. Provide a brief description of the nature of the business at the facility including generation of the fluid to be injected (include appropriate North American Industry Classification System (NAICS) Codes).
(R18-9-C616(D)(3) and 40CFR 144.31(e)(3) and (8))

10. Location of Proposed Class VI Injection Well Operation:
(R18-9-C616(D)(2) and (40CFR 144.31(e)(2))

    Facility name: _____

    Facility mailing address: _____

    Facility location description: _____

    Street address: _____

    City: _____

    County: _____ Lease: _____

    No. of Wells* : _____

    For each well provide the following:

        Township; Range; Section; and 1/4, 1/4 Section: _____

        Latitude: _____

        Longitude: _____

    * Location(s) of injection well(s) should be identified on all maps included in the

Technical Report.

11. Are the proposed injection well(s) located on Indian land? □ Yes □ No (R18-9-A602), R18-9-C616(D)(2),and 40CFR 144.31(e)(5))

12. A list of contacts, submitted to the Director, for those Tribes identified to be within the area of review of the geologic sequestration project. (R18-9-J657(B)(20))

13. Submit the Technical Report with Application (R18-9-J657).

Note: All applications for a Arizona UIC permit, including any required Technical Report including technical information necessary for the adequate evaluation of any permit application, or any permit renewal applications and associated Technical Reports that are significantly different from the original permit application, must be prepared by or under the direction, and bear the seal, of a registered professional geologist or professional engineer.

14. Certification of information submitted on application form and in the Technical Report (R18-9-C617(A); 40CFR 144.32).

_____

(Name of Company Official: Type or Print Legibly)

_____

(Title)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: _____

Date: _____

TECHNICAL REPORT OUTLINE
FOR CLASS VI INJECTION WELL
PERMIT APPLICATIONS

A Technical Report, prepared under the direction of a registered professional geologist or engineer, must accompany a permit application for a Class VI injection well permit. The Technical Report must contain all parts detailed in the outline below. The term 'Director' in the outline below refers to the Director of the Arizona Water Quality Division or an appointed representative, i.e. the UIC staff reviewing the permit application. The UIC staff, upon demonstrating justifications, may make adjustments in the requirements set forth in this Technical Report Outline below. References in parentheses refer to sections in the Arizona UIC Administrative Rules (R18-9) and the Code of Federal Regulations (40CFR) that apply to the associated data requirements.

Note: The required plans, programs, and attachments below must be approved by the Director. Once approved, they may be included in the permit as an enforceable attachment.

Part A – Determination of Area of Review (AOR)

Submit details of the method and the calculations used to determine the area of review. Refer to R18-9-J659 for the acceptable method for determining the area of review for Class VI wells. A radius area of review is determined by mathematical modeling that accounts for the physical and chemical properties of all phases of the injected carbon dioxide stream and is based on available site characterization, monitoring, and operational data.

The owner or operator must prepare, maintain, and comply with a plan to reevaluate the area of review periodically on a fixed frequency (not to exceed five years) that meets the requirements of this Section and is acceptable to the Director.

(R18-9-J659; 40CFR 146.84)

Part B - Permit Application Information

1. Map of Area of Review (AOR)

Submit a map extending beyond the property boundaries of the injection well(s) or project area (area permit). The following items listed in public records or otherwise known to the applicant and occurring within the area of review of the facility property boundary must be included on the map:

(i) The number or name, and location of all injection wells, producing wells, abandoned wells, plugged wells or dry holes, deep stratigraphic boreholes, State- or EPA-approved subsurface cleanup sites;
(ii) Surface bodies of water, springs, mines (surface and subsurface);
(iii) Quarries, water wells, other pertinent surface features;
(iv) Structures intended for human occupancy;
(v) State, Tribal, and Territory boundaries, and roads; and
(vi) Faults, if known or suspected.

Only information of public record is required to be included on this map;

(R18-9-J657(B)(2); 40CFR 146.82(a)(2))

2. Maps and Cross Sections of USDWs

Submit maps and stratigraphic cross sections indicating the general vertical and lateral limits of all USDWs, water wells and springs within the area of review, their positions relative to the injection zone(s), and the direction of water movement, where known.

An Underground Source of Drinking Water (USDW) is an aquifer or a portion thereof that:
A. Supplies any public water system, **or** contains a sufficient quantity of ground water to supply a public water system (a sustainable delivery of 1 gallon per minute); **and**

1. currently supplies drinking water for human consumption; **or**
2. contains fewer than 10,000 mg/l total dissolved solids (TDS); **and**

B. Is not an exempted aquifer. (See R18-9-A605; R18-9-A606 for definition and criteria of 'exempt aquifer').

(R18-9-J657(B)(5); 40CFR 146.82(a)(5))

3. Geologic Structure and Lithology

Submit information on the geologic structure and hydrogeologic properties of the proposed storage site and overlying formations, including:

(i) Maps and cross sections of the area of review;
(ii) The location, orientation, and properties of known or suspected faults and fractures that may transect the confining zone(s) in the area of review and a determination that they would not interfere with containment;
(iii) Data on the depth, areal extent, thickness, mineralogy, porosity, permeability, and capillary pressure of the injection and confining zone(s); including geology/facies changes based on field data which may include geologic cores, outcrop data, seismic surveys, well logs, and names and lithologic descriptions;
(iv) Geomechanical information on fractures, stress, ductility, rock strength, and in situ fluid pressures within the confining zone(s);
(v) Information on the seismic history including the presence and depth of seismic sources and a determination that the seismicity would not interfere with containment; and
(vi) Geologic and topographic maps and cross sections illustrating regional geology, hydrogeology, and the geologic structure of the local area.

(R18-9-J657(B)(3); 40CFR 146.82(a)(3))

Part C – Tabulation of Artificial Penetration Data

Submit a tabulation of data on wells within the area of review included on the AOR Map (Part B, Map 2) that penetrate the proposed injection zone. Such data shall include a description of each well type, construction, date drilled, location, depth, record of plugging and/or completion, any water quality data, and any additional information the Director may require.

(R18-9- J657(B)(4); 40CFR 146.82(a)(4))

Part D – Corrective Action Plan

Submit a corrective action plan describing the necessary steps or modifications to prevent movement of fluid into underground sources of drinking water through any artificial penetrations into the injection zone, within the AOR, that are improperly sealed, completed, or abandoned.

(R18-9-J657(B)(13), R18-9-J661; 40CFR 146.848

Part E – Formation Testing Program

Submit a proposed pre-operational formation testing program to obtain an analysis of the physical and chemical characteristics of the injection zones, confining zones, fracture pressure, and formation fluids in the receiving formation.

(R18-9-J657(B)(8), R18-9-J657(D); 40 CFR 146.82(a)(8); 146.87)

Part F – Well Stimulation Program

Submit a proposed well stimulation program, a description of the stimulation fluids to be used, and a determination that stimulation will not interfere with containment.

(R18-9-J657(B)(9); 40CFR 146.2482(a)(9))

Part G – Injection Well Construction Plan

Submit a well construction plan that includes details of the cementing and casing program, logging procedures, deviation checks, and a drilling, testing, and coring program that conform with the Class VI well construction requirements in R18-9-J661 and 40CFR 146.86.

(R18-9-J657(B)(12); 40CFR 146.82(a)(12))

Part H – Injection Well Construction Details

Submit schematic or other appropriate drawings of the surface and subsurface construction details of the well that meet the construction requirements of R18-9-J661.

(R18-9-J657(B)(11); 40CFR 146.86(a)(11))

Part I – Injection Well Operation Plan and Procedures

Submit a description of the proposed injection procedure and proposed operating data for the geologic sequestration site, including:

(i) average and maximum daily rate and volume, and/or mass, and total anticipated volume, and/or mass, of the carbon dioxide stream;
(ii) average and maximum injection pressure;
(iii) the source of the carbon dioxide stream;
(iv) An analysis of the chemical and physical characteristics of the carbon dioxide stream.

(R18-9-J657(B)(7) and (10); 40CFR 146.86(a)(7) and (10))

Part J – Monitoring, Recording, and Reporting Plan

The owner or operator of a Class VI well must prepare, maintain, and comply with a testing and monitoring plan to verify that the geologic sequestration project is operating as permitted and is not endangering USDWs. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit. The testing and monitoring plan must be submitted with the permit application, for Director approval, and must include a description of how the owner or operator will meet the requirements of this section, including accessing sites for all necessary monitoring and testing during the life of the project. Testing and monitoring associated with geologic sequestration projects must, at a minimum, include:

(i) Analysis of the carbon dioxide stream with sufficient frequency to yield data representative of its chemical and physical characteristics;

(ii) Installation and use of continuous recording devices to monitor injection pressure, rate, and volume; the pressure on the annulus between the tubing and the long string casing; and the annulus fluid volume added;

(iii) Corrosion monitoring of the well materials for loss of mass, thickness, cracking, pitting, and other signs of corrosion;

(iv) Periodic monitoring of the ground water quality and geochemical changes above the confining zone(s) that may be a result of carbon dioxide movement through the confining zone(s) or additional identified zones;

(v) A demonstration of external mechanical integrity at least once per year;

(vi) A pressure fall-off test at least once every five years;

(vii) Testing and monitoring to track the extent of the carbon dioxide plume and the presence or absence of elevated pressure (e.g., the pressure front);

(viii) The Director may require surface air monitoring and/or soil gas monitoring to detect movement of carbon dioxide that could endanger a USDW;

(ix) Any additional monitoring, as required by the Director, necessary to support, upgrade, and improve computational modeling of the area of review evaluation;

(x) The owner or operator shall periodically review the testing and monitoring plan to incorporate monitoring data collected. In no case shall the owner or operator review the testing and monitoring plan less often than once every five years. Based on this review, the owner or operator shall submit an amended testing and monitoring plan or demonstrate to the Director that no amendment to the testing and monitoring plan is needed.

(xi) A quality assurance and surveillance plan for all testing and monitoring requirements.

The owner or operator must provide at a minimum, the following reports to the Director and the US EPA, in an electronic format approved by the EPA, as specified in R18-9-J666 for each Class VI permit:

(i) Semi-annual reports documenting changes to the physical, chemical, and other relevant characteristics of the carbon dioxide stream from the proposed operating data and the results of monitoring prescribed under R18-9-J666.

(ii) Report, within 30 days, the results of periodic tests of mechanical integrity; any well workover; and any other test of the injection well conducted by the permittee if required by the Director.

(iii) Report, within 24 hours any noncompliance with a permit condition, or malfunction of the injection system, which may cause fluid migration into or between USDWs; or any failure to maintain mechanical integrity; or pursuant to compliance with the requirement at R18-9-J666.

(iv) Owners or operators must notify the Director in writing 30 days in advance of any planned well workover; stimulation activities, and any other planned test of the injection well conducted by the permittee.

(v) Owners or operators must submit and retain all required reports, submittals, and notifications under Part J of this Article.

(R18-9-J665 and R18-9-J666; 40CFR 146.90 and 146.91)

Part K – Emergency and Remedial Response Plan

Submit an emergency and remedial response plan to address movement of the injection or formation fluids or potential movement of the pressure front that may cause endangerment to USDWs. The owner/operator shall review the plan no less frequently than every five years.

(R18-9-J657(B)(19), R18-9-J669; 40CFR 146.82, 40CFR 146.94)

Part L – Plugging and Abandonment Plan

Submit a plugging and abandonment plan that meets the requirements of R18-9-J667 and prior to plugging, the owner/operator must flush each well, determine bottom hole reservoir pressure, and perform a final external mechanical integrity test.

(R18-9-J667; 40CFR 146.92)

Part M – Class VI; Post-Injection Site Care and Site Closure

The owner or operator of a Class VI well must prepare, maintain, and comply with a plan for post-

injection site care and site closure that meets the requirements of R18-9-J668. The requirement to maintain and implement an approved plan is directlyenforceable regardless of whether the requirement is a condition of the permit:

(i) Upon cessation of injection, owners or operators of Class VI wells must either submit an amended post-injection site care and site closure plan or demonstrate to the Director through monitoring data and modeling results that no amendment to the plan is needed.

(ii) At any time during the life of the geologic sequestration project, the owner or operator may modify and resubmit the post-injection site care and site closure plan for the Director's approvalwithin 30 days of such change.

(iii) The owner or operator shall monitor the site following the cessation of injection to show the positionof the carbon dioxide plume and pressure front and demonstrate that USDWs are not being endangered.

(iv) Following the cessation of injection, the owner or operator shall continue to conduct monitoringas specified in the Director-approved post-injection site care and site closure plan for at least 50 years or for the duration of the alternative timeframe approved by the Director.

(v) At the Director's discretion, the Director may approve, in consultation with EPA, an alternative post- injection site care timeframe other than the 50-year default, if an owner or operator can demonstrate during the permitting process that an alternative post-injection site care timeframe is appropriate and ensures non-endangerment of USDWs. The demonstration must be based on significant, site-specific data and information including all data and information collected and must contain substantial evidence that the geologic sequestration projectwill no longer pose a risk of endangerment to USDWs at the end of the alternative post-injection site care timeframe.

(vi) The owner or operator must notify the Director in writing at least 120 days before site closure. At thistime, if any changes have been made to the original post-injection site care and site closure plan, the owner or operator must also provide the revised plan. The Director may allow for a shorter notice period.

(vii) After the Director has authorized site closure, the owner or operator must plug all monitoring wells in amanner which will not allow movement of injection or formation fluids that endangers a USDW.

(viii) The owner or operator must submit a site closure report to the Director within 90 days of site closure,which must thereafter be retained at a location designated by the Director for ten years. Each owner or operator of a Class VI injection well must record a notation on the deed to the facilityproperty or any other document that is normally examined during Title search that will in perpetuity provide any potential purchaser of the property the following information:

(ix) The owner or operator must retain for ten years following site closure, records collected during the post-injection site care period. The owner or operator must deliver the records to the Director at the conclusion of the retention period, and the records must thereafter be retained at a location designated by the Director for that purpose.

Part N – Financial Responsibility

Submit a Financial Responsibility Instrument approved by the Director to demonstrate financial resources necessary for corrective action, well plugging and/or abandoning the Class VI injection well(s), post-injection site care and site closure, emergency and remedial response sufficient to address endangerment of USDWs.

(R18-9-J660, 40CFR 146.85)

Part O – Injection Depth Waiver

In seeking a waiver of the requirement to inject below the lowermost USDW, the owner or operator must submit a supplemental report concurrent with permit application. The supplemental report mustinclude the following:

(i) A demonstration that the injection zone(s) is/are laterally continuous, is not a USDW, and is not hydraulically connected to USDWs; does not outcrop; has adequate injectivity, volume, and sufficient porosity to safely contain the injected carbon dioxide and formation fluids; and has appropriate geochemistry.

(ii) A demonstration that the injection zone(s) is/are bounded by laterally continuous, impermeable confining units above and below the injection zone(s) adequate to prevent fluid movement and pressure buildup outside of the injection zone(s); and that the confining unit(s) is/are free of transmissive faults and fractures. The report shall further characterize the regional fracture properties and contain a demonstration that such fractures will not interfere with injection, serve as conduits, or endanger USDWs.

(iii) A demonstration, using computational modeling, that USDWs above and below the injection zone will not be endangered as a result of fluid movement. This modeling should be conducted in conjunction with the area of review determination, as described in R18-9-J659, and is subject to requirements, as described in R18-9-J659(C), and periodic reevaluation, as described in R18-9-J659(E).

(iv) A demonstration that well design and construction, in conjunction with the waiver, will ensure isolation of the injectate in lieu of requirements at R18-9-J661(A)(1) and will meetwell construction requirements in subsection (G) of this Section.

(v) A description of how the monitoring and testing and any additional plans will be tailored to the geologic sequestration project to ensure protection of USDWs above and below the injection zone(s) if a waiver is granted.

(vi) Information on the location of all the public water supplies affected, reasonably likely to be affected, or served by USDWs in the area of review.

(vii) Any other information requested by the Director to inform the Administrator's decision to issue a waiver.

To inform the Administrator's decision on whether to grant a waiver of the injection depth requirements at R18-9-A604 and R18-9-J661(A)(1), the Director must submit, to the Administrator, documentation of the following:

(i) An evaluation of the following information as it relates to siting, construction, and operation of a geologic sequestration project with a waiver:

(ii) Consultation with the Public Water System Supervision Directors of all States and Tribes having jurisdiction over lands within the area of review of a well for which a waiver is sought.

(iii) Any written waiver-related information submitted by the Public Water System Supervision Director(s) to the (UIC) Director.

Upon receipt of a waiver to inject below the lower-most USDW, the owner/operator must comply with the following:

(i) All requirements at R18-9-J659, R18-9-J660, R18-9-J662, R18-9-J663, R18-9-J664, R18-9-J666,R18-9-J667, and R18-9-J669;

(ii) All requirements at R18-9-J661 with the following modified requirements:

a. The owner or operator must ensure that Class VI wells with a waiver are constructed and completed to prevent movement of fluids into any unauthorized zones including USDWs.

b. The casing and cementing program must be designed to prevent the movement of fluids intoany unauthorized zones including USDWs.

c. The surface casing must extend through the base of the nearest USDW directly above the injection zone and be cemented to the surface; or, at the Director's discretion, another formation above the injection zone and below the nearest USDW above the injection zone.

(iii) All requirements at R18-9-J665 with the following modified requirements:

a. The owner or operator shall monitor the groundwater quality, geochemical changes, and pressure in the first USDWs immediately above and below the injection zone(s); and in anyother formations at the discretion of the Director.

b. Testing and monitoring to track the extent of the carbon dioxide plume and the presence or absence of elevated pressure by using direct methods to monitor for pressure changes in the injection zone(s); and, indirect methods, unless the Director determines, based on site-specific geology, that such methods are not appropriate.

(iv) All requirements at R18-9-J668 with the following, modified post-injection site care monitoring requirements:

a. The owner or operator shall monitor the groundwater quality, geochemical changes, and pressure in the first USDWs immediately above and below the injection zone; and in anyother formations at the discretion of the Director.

b. Testing and monitoring to track the extent of the carbon dioxide plume and the presence or absence of elevated pressure by using direct methods in the injection zone(s); and indirect methods, unless the Director determines based on site-specific geology, that such methodsare not appropriate.

(v) Any additional requirements requested by the Director designed to ensure protection of USDWs above and below the injection zone(s).

(R18-9-J670; 40CFR 146.95)

Part P – Aquifer Exemption

The areal extent of an aquifer exemption for a Class II enhanced oil recovery or enhanced gas recovery well may be expanded for the exclusive purpose of Class VI injection for geologic sequestration under R18-9-A605(D) 144.7(d) if it meets the following criteria:

(i) it does not currently serve as a source of drinking water; and

(ii) the total dissolved solids content of the ground water is more than 3,000 mg/l and less than 10,000 mg/l; and

(iii) it is not reasonably expected to supply a public water system.

(R18-9-A605(D), R18-9-A606; 40CFR 144.7(d); 40CFR 146.4)