

## 40 CFR 145.22(a)(2) – Program Description



## **Arizona Department of Environmental Quality**

### **Underground Injection Control Program Description 40 CFR 145.23**



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## **I. PROGRAM AUTHORITY AND SCOPE**

As mandated by the Safe Drinking Water Act of 1974 (as amended), the United States Environmental Protection Agency (EPA) has promulgated regulations establishing minimum requirements, technical criteria, and standards for State Underground Injection Control (UIC) programs to protect underground sources of drinking water (USDW). The SDWA charges EPA with the administration of the UIC program, including the promulgation of regulations and the authority to grant primacy to qualifying, individual states. Statutory authority for the UIC program can be found at 42 U.S.C. §300h *et seq.*

Arizona's Department of Environmental Quality (ADEQ) is submitting this program description as an element of an application to obtain primary enforcement authority (primacy) to administer the UIC program in the State of Arizona. In order to gain primacy for all UIC classes of injection wells, the State of Arizona UIC program closely follows the federal UIC program and, as demonstrated in this submittal, is at least as stringent as the federal standards.

The Arizona Revised Statutes (A.R.S., Title 49, Chapter 2, Article 3.3) and the Arizona Administrative Code (A.A.C., primarily Title 18, Chapter 9, Article 6) were revised to authorize the state's UIC program. State statutory authority to apply for primacy, promulgate rules and charge fees can be found at A.R.S. §§ 49-203(A)(6), 49-257.01(A) and 49-203(A)(9).

Any state that seeks primacy for the UIC program is required to submit a description of the program it proposes to administer in lieu of the federal program under state law, in accordance with 40 C.F.R. § 145.23. This program description (PD) aims to meet the delineated requirements of 40 C.F.R. § 145.23, as well as, to describe other necessary program details. Upon primacy, administration of the UIC program for all injection wells in Arizona is planned to be conducted by ADEQ – Water Quality Division (WQD).

With the submission of this PD and the rest of Arizona's primacy application to EPA, ADEQ applies for primacy under 42 U.S.C. §300h-1 (Section 1422) for the SDWA-UIC Program, Classes I through VI.

## **II. OVERVIEW OF THE STATE UIC PROGRAM (40 CFR 145.23(a))**

Arizona's UIC program is designed to allow and regulate injection wells within the jurisdiction of the state of Arizona by protecting USDWs. A USDW is an aquifer(s) or its portion that:

- i. Supplies any public water system; or
- ii. Contains a sufficient quantity of ground water to supply a public water system; and
  - a. Currently supplies drinking water for human consumption; or
  - b. Contains fewer than 10,000 mg/l total dissolved solids; and
- iii. Is not an exempted aquifer.



Injection wells are wells used to place injectate or fluid underground into geologic materials ranging from deep porous rocks to shallow soils. Injectate may include stormwater, wastewater, brine (salt water) or water mixed with chemicals.

Arizona's UIC program regulates six classes of injection wells (known as Classes I through VI). Class I UIC wells are industrial and municipal waste disposal wells. Class II UIC wells are oil and gas related injection wells. Class III UIC wells are solution mining injection wells. Class IV UIC wells are shallow hazardous and radioactive waste injection wells and are prohibited. Class V UIC wells inject non-hazardous fluids into or above USDWs. Class VI UIC wells are geologic sequestration injection wells.

Classes I, II, III, and VI injection wells must be permitted. Upon submittal, each permit application will be reviewed for completeness. A preliminary decision to proceed with the development of a draft permit or a notice of intent to deny is then made. For applications moving on to the draft permit phase, a public notice will be issued allowing for 30 days of public comment. A public hearing may be held thereafter if a significant degree of public interest occurs. Response to comments collected during the written comment period and the public hearing (if held) will be responded to along with the issuance of a final permit. Applications must include, but are not limited to, a technical evaluation, an area of review, a corrective action plan, a demonstration of financial responsibility, a demonstration of mechanical integrity, a contingency plan, a proposed testing and monitoring plan, a well plugging and abandonment plan, and an injection well operating plan.

Shallow Class V injection wells can be authorized by rule and are required to submit basic inventory information; these wells do not need a permit to operate. However, the Director may require the owner or operator of any Class V injection well authorized by rule to apply for and obtain an individual or area UIC permit (*see* A.A.C. R18-9-I651). Class IV wells are prohibited under the federal program unless they are operating for the purposes of remediation. This prohibition and exception will remain the same under the state UIC program.

ADEQ is the lead agency for the Arizona UIC Program. ADEQ has regulatory and enforcement authority over all six classes of injection wells within the scope of the program. The Arizona UIC Program does not apply to injection activities outside of the scope of the program, such as the underground injection of natural gas for purposes of storage nor the underground injection of fluids or propping agents pursuant to hydraulic fracturing operations related to oil, gas, or geothermal production activities (*see* A.A.C. R18-9-A601(68); 42 U.S.C. 300h(b)(2); 42 U.S.C. 300h(d)(1)(b)).

Portions of USDWs may be exempted from the requirements of the program through the procedure and criteria listed in A.A.C. R18-9-A605 and R18-9-A606. These aquifer exemptions require public notice, a hearing and approval by EPA. Other than EPA-approved aquifer exemption expansions that meet the criteria for exempted aquifers, new aquifer exemptions will not be issued for Class VI injection well activities.

Arizona's program closely follows the federal UIC program and will not change the scope of regulation once primacy is approved by EPA. Arizona has many tens of thousands of Class V

injection wells. Most are designated as drywells used to dispose of stormwater, while a smaller number are used to recharge aquifers with treated effluent. None of these wells are currently permitted under the federal UIC program, but are instead authorized by rule.

Arizona has three in situ solution mining facilities that use Class III injection wells, all of which have received UIC permits from EPA. These wells are used to inject fluids into the subsurface to dissolve minerals (salt or copper). The fluids are then extracted from groundwater and then processed to obtain the dissolved minerals. One facility uses injection wells to mine underground salt. The other two facilities mine underground copper. There are currently no UIC Class I, II, IV, or VI permitted facilities in Arizona.

Upon obtaining primacy, ADEQ will begin administering the existing EPA UIC permits within Arizona state jurisdiction. At that time, ADEQ will modify the existing permits in a non-substantive manner for administrative purposes. Thereafter, ADEQ does not anticipate issuing many, if any, modifications or new facility permits during the first few years of the State UIC Program. However, there are a number of future opportunities related to Class I brine disposal projects and Class VI carbon capture and sequestration that may increase the number of permits in the program.

Currently and into the future, expected population growth in Arizona will increase demands on water supply. Arizona has an estimated 600 million acre-feet of brackish groundwater that could be used to augment the state's water supply. Desalinization of brackish groundwater generates brine that must be disposed of properly and safely. One potential solution is to dispose of the brine via a Class I well through deep well injection below any USDWs. Such injection would require permitting through the UIC program. Other potential future permitting may occur for carbon sequestration wells, and for brine disposal wells, which could be Class I, II, V or VI, related to helium, carbon dioxide, oil and gas, and potash extraction.

### **III. ADEQ ORGANIZATION AND STRUCTURE (40 CFR 145.23(b) & (b)(1))**

As was mentioned above, ADEQ will administer the UIC program in the State of Arizona's jurisdiction. ADEQ is headed by the ADEQ Director who oversees three divisions: Water Quality, Air Quality and Waste Programs and a number of supporting offices. Within the Water Quality Division is a section known as Groundwater Protection (GPS). Dedicated staff in the GPS will carry out most of the UIC duties required upon primacy. The GPS will be supported by ADEQ Leadership, ADEQ Administrative Counsel, ADEQ's Office of Business and Financial Services, Arizona's Attorney General's Office, as well as, other Arizona state and ADEQ offices in executing the duties, explained below.

#### **A. Coverage of Programmatic Duties:**

UIC application review, issuance, general project oversight (including site characterization, modeling, well construction, well testing, risk analysis, review of operating, testing and monitoring data, injection well closure and potential post-closure remediation determinations) and other appropriate duties will be conducted by

hydrogeologists and engineers in the GPS's Individual Permits Unit. These duties are represented as the "UIC Permit Specialist" role and the "UIC Data Management" role in the "Annual Program Costs" table in Section V below. The "UIC Permit Specialist" role will be dedicated 0.5 FTE at a cost of \$85,000 annually and the "UIC Data Management" role will be dedicated 0.25 FTE at a cost of \$27,500 annually.

An applicant's financial assurance demonstration will be reviewed by specialists in ADEQ's Office of Business and Financial Services (OBFS). ADEQ estimates the OBFS currently has the capacity to take on the occasional and incidental duties primacy will bring without adding dedicated full-time-equated (FTE) employees or a portion thereof to the office. ADEQ has the ability to adjust this estimate at any time through contractors or program funding revisions.

UIC Class V inventorying, billing and licensing time frame duties will be conducted by staff in the GPS's General Permits Unit. These duties are represented as the "Administrative Support" role and the "UIC Data Management" role in the "Annual Program Costs" table in Section V below. The UIC "Administrative Support" role will be dedicated 0.5 FTE at a cost of \$40,000 annually and the UIC "UIC Data Management" role will be dedicated 0.25 FTE at a cost of \$27,500 annually.

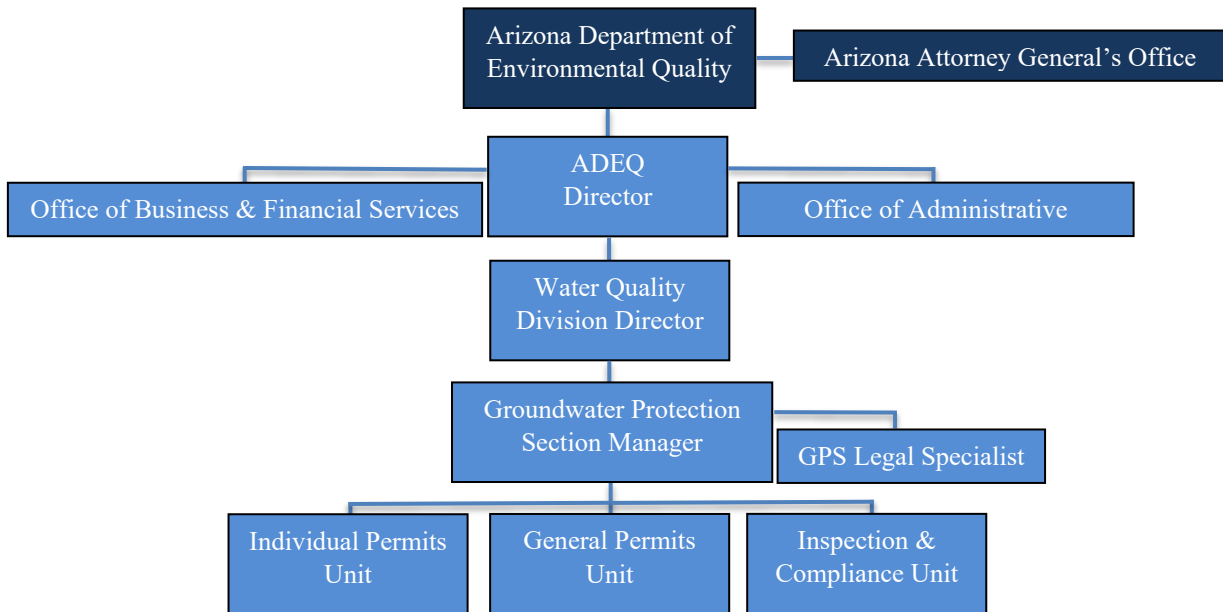
The duties including overall UIC program administration, oversight, as well as, policy matters, strategic planning and budgeting will be addressed by ADEQ's management and leadership teams which are represented as the "Leadership" role in the "Annual Program Costs" table in Section V below. The UIC "Leadership" role will be dedicated 0.3 FTE at a cost of \$49,500 annually.

Specific regulatory issues will be addressed by the GPS's Legal Specialist, ADEQ's Office of Administrative Counsel and, if necessary, the Arizona Attorney General's Office which are represented as the "Legal, Compliance Assurance & Enforcement Support" role and "Attorney General's Office Support" role in the "Annual Program Costs" table in Section V below. The UIC "Legal, Compliance Assurance & Enforcement Support" role will be dedicated 0.4 FTE at a cost of \$52,000 annually and the UIC "Attorney General's Office Support" role will be allocated \$25,000 annually.

UIC inspections, compliance assistance and compliance assurance will be conducted by GPS's Inspections and Compliance Unit. These duties are represented as the "UIC Inspections, Compliance, Enforcement" role and the "Legal, Compliance Assurance & Enforcement Support" role in the "Annual Program Costs" table in Section V below. The "UIC Inspections, Compliance, Enforcement" role will be dedicated 1.25 FTE at a cost of \$162,500 annually and the UIC "Legal, Compliance Assurance & Enforcement Support" role will be dedicated 0.4 FTE at a cost of \$52,000 annually.

UIC enforcement will be addressed by GPS's Inspections and Compliance Unit, with assistance from the GPS's Legal Specialist, the Office of Administrative Counsel and, if necessary, the Arizona Attorney General's Office. These duties are represented as the "Legal, Compliance Assurance & Enforcement Support" role and the "Attorney General

Office Support” role in the “Annual Program Costs” table in Section V below. The “UIC Inspections, Compliance, Enforcement” role will be dedicated 1.25 FTE at a cost of \$162,500 annually, while the UIC “Legal, Compliance Assurance & Enforcement Support” role will be dedicated 0.4 FTE at a cost of \$52,000 annually. Also, the UIC “Attorney General’s Office Support” role will be allocated \$25,000 annually.



#### IV. ADEQ STAFFING AND RESOURCES (40 CFR 145.23(b) & (b)(1))

To help carry out the duties of UIC primacy, ADEQ will dedicate 3.2 FTEs to the UIC program (detailed in Section III(A) above). While ADEQ expects the UIC program to grow, the current program scope is relatively small, including only 5 permits and approximately 65,000 Class V well inventories, authorized by rule. Until the program grows, ADEQ has calculated the 3.2 dedicated FTE (along with occasional and incidental assistance from ADEQ’s Office of Business and Financial Services and the Arizona Attorney General’s Office) will be sufficient to effectively carry out the duties of the UIC program. It should be noted that when the State UIC program adds permits, the program’s revenue will increase due to its fee and revenue structure. This will allow ADEQ to dedicate more FTE to the UIC program as it grows.

Additionally, ADEQ has access to contractors if a need arises. If ADEQ determines capacity or resource is lacking in a particular area of expertise necessary to carry out the duties of the program, appropriately qualified contractors are available for ADEQ to acquire at that time. The table below identifies the sources of expertise ADEQ plans to utilize in administering the UIC program:

<b>Expertise Area</b>	<b>In-House</b>	<b>Contractor</b>
<b>Site Characterization</b> , e.g., geologists, hydrogeologists, geochemists, and log analysts/experts to review site characterization data submitted throughout a project's duration.	✓	✓
<b>Modeling</b> , e.g., hydrogeologists and environmental/reservoir modelers to evaluate area of review (AoR) delineation computational models during permitting and AoR reevaluations.	✓	✓
<b>Well construction and testing</b> , e.g., well engineers, log analysts/experts, and geologists to review well construction information and operational reports on the performance of Class VI wells and review/evaluate testing and monitoring reports.	✓	✓
<b>Finance experts</b> to review financial responsibility information during permitting and annual evaluations of financial instruments.	✓	
<b>Risk analysts</b> to evaluate emergency and remedial response scenario probabilities and remediation cost estimates.	✓	✓
<b>Policy/regulatory</b> experts on the UIC Program to evaluate compliance with UIC requirements	✓	
<b>Enforcement/compliance</b> , e.g., staff who can initiate and pursue appropriate enforcement actions when permit or rule requirements are violated.	✓	
<b>Inspectors</b> including well engineers or log analysts/experts to inspect wells or witness construction activities, workovers, and/or mechanical integrity tests.	✓	
<b>Administrative Assistants</b> to carry out Class V inventorying.	✓	✓
<b>Environmental justice</b> experts to evaluate the Environmental justice impact report, ensuring that the report is thorough, contextualized, and agrees with the demographic and environmental data from an EJ Screen tool or its equivalent.	✓	✓

## V. ESTIMATED COSTS AND ADMINISTERING THE PROGRAM (40 CFR 145.23 (b)(2))

In the initial years after primacy, ADEQ estimates that \$461,500 annually will cover the costs of running the UIC program. The program's initial sources of funding include billing for permitting and administrative services, annual fees from existing permits, billing for technical review, well installation fees, an EPA Primacy grant and Class V inventory fees. As the program's size and needs change with time, revenues and allocations will be adjusted accordingly (*see* the program's fee and revenue rules; specifically, A.A.C. R18-14-115).

Annual Program Costs and staff budget allocation are represented in the Annual Program Costs table below. For a description of the ADEQ staff who will carry out the State program, including the number, occupations, and general duties of the employees, please see Section III(A) above.

<b>Annual Program Costs</b>		
<b>Role</b>	<b>Position</b>	<b>Cost</b>
Administrative (Inventory, LTF, Fees, Billing)	Administrative Support (0.50 FTE)	\$ 40,000.00
UIC Data Management	Environmental Engineer (0.25 FTE)	\$ 27,500.00
UIC Inspections, Compliance, Enforcement	Inspector (1.25 FTE)	\$ 162,500.00
UIC Permit Specialist	Environmental Engineer/Hydrogeologist (0.5 FTE)	\$ 85,000.00
Legal, Compliance Assurance & Enforcement Support	Compliance Case Manager/Legal Specialist (0.40 FTE)	\$ 52,000.00
Leadership	Unit and Section Managers/Agency Director/WQD Director (0.3 FTE)	\$ 49,500.00
<b>Other Direct Costs</b>		
Annual Staff Training	Technical Staff	\$ 10,000.00
Staff Travel	Inspector	\$ 10,000.00
Attorney General Office Support (70 hrs/year)	Assistant Attorney General	\$ 25,000.00
<b>Total Cost</b>		<b>\$ 461,500.00</b>

Concerning the Annual Program Costs table above, the \$10,000 “Annual Staff Training” allocation includes development and maintenance of training modules for ADEQ UIC staff training, staff time spent in training, as well as, incidental staff attendance of virtual or in-person UIC-related conferences. The \$10,000 “Staff Travel” allocation covers staff transportation for inspections and conferences.

At the time the initial annual program costs were developed, there were only three permitted UIC facilities in the state. While ADEQ anticipates the UIC program to grow in the future, the initial budget and allocations reflect the program’s current size and a projection of its size in the first few years (significant growth is not expected). However, it should be noted that the fees associated with the UIC program in A.A.C. Title 18, Chapter 14, Article 1 were designed to generate funds as applications are received, allowing ADEQ to hire resources (both internally and externally) on an as-needed basis. If the need arises, ADEQ can hire from an established list of preferred professional service contractors or can hire outside of this list, should the need arise. Furthermore, ADEQ plans to adjust the budget and staff to align to the needs of the program on an ongoing basis (see A.A.C. R18-14-115).

## VI. SOURCES AND AMOUNTS OF FUNDING (40 CFR 145.23 (b)(3))

As was stated in the previous section, the estimated cost for establishing, administering and then maintaining the Arizona UIC program in its first two years is \$923,000 (\$461,500 annually). In order to meet these projected costs, the program will operate on a fee-for-service model. ADEQ uses the term “fee-for-service” to mean a majority of the funding for the program will be generated through fees assessed to applicants and permittees of the program itself.

For Arizona’s UIC program, funding sources include revenue from hourly fees billed associated with permitting, administrative and technical review by ADEQ staff, annual fees billed for area permits, per well installation fees, Class V registration fees and an annual EPA UIC Primacy Grant. The projected annual revenue from the aforementioned sources are represented in the table below:

<b>Fees</b>	<b>Annual Revenue</b>
Permitting & Administrative Fees	\$72,500.00
Annual Fee for Area Permits	\$30,000.00
Technical Review Fees	\$142,100.00
Well Installation Fees	\$25,200.00
Class V Registration Fees	\$200,000.00
<b>Grant</b>	<b>--</b>
EPA Primacy Grant	\$105,000.00
<b>Total Projected Revenue</b>	<b>\$574,800.00</b>

In order to meet the amount of funding necessary, ADEQ projects its program and fees will collect approximately \$1,149,600 in the first two years which will comfortably cover the projected two-year cost of the program (\$923,000) and allow for a reasonable margin of error.

Permitting and Administrative review by ADEQ staff includes tasks such as application review and management, issuing public notice, collecting public comment and facilitating public hearings, as well as, ADEQ management and leadership review of draft permits. ADEQ estimates 500 hours of Permitting and Administration review annually in the initial years of the program. A \$10,000 Annual Fee will be assessed for the three existing UIC permittees. Technical Review will be billed by the hour and includes tasks such as groundwater and injection well modeling review, well pre-construction, construction and completion review, aquifer testing review, monitoring proposal review and periodic report review. ADEQ estimates 980 hours of Technical Review in the initial years of the program. Each UIC well installed will be charged a flat fee of \$200 under the Arizona UIC fee rules. ADEQ estimates 126 well installations annually in the initial years of the program. Also, each Class V well registration will be accompanied with a \$200 charge. ADEQ has data from its past drywell registration program suggesting over a thousand wells will be registered annually.

The permitting, administrative and technical review hourly rate fee can be found in A.A.C. R18-14-102(B). The annual fee for area permits can be found at A.A.C. R18-14-104, Table 3.1. The Well Installation and the Class V inventory fees can be found at A.A.C. R18-14-111(1) and R18-14-111(2), respectively. All UIC fees were determined by considering the necessary revenue needed to support the administration of the program and careful consideration of the appropriate locations to elicit that revenue.

Under the fee-for-service model, the primary source of funding in the early years of the program will come from Arizona's existing UIC permittees. The three permittees will support the program through annual fees, the per well charge for any new well installations, and ADEQ's billable hours in reviewing any permitting, administrative or technical-related materials by ADEQ staff.

ADEQ also expects the program to be supported by Class V drywell registrations. ADEQ projects over \$200,000 to be collected annually through these registrations based on data from Arizona's previous drywell registry. The \$200,000 breaks down to approximately 1,000 registrations annually at \$200 each. Additional revenue generation could occur should an application be submitted for a Class I, Class II, and Class VI well. Those fees can be found in A.A.C. R18-14-104 and A.A.C. R18-14-111. These funding sources will allow for sustained program growth.

Additionally, the program has established maximum account fees for billable hourly services which can be found in A.A.C. R18-14-102(C). For example, the maximum account fee for an application for permit, including permitting, administrative and technical review by ADEQ staff is \$200,000. Whereas, the maximum account fee that could be compiled in association with a complex modification is \$150,000. ADEQ purposely did not establish a maximum account fee for Class VI permit applications due to the potential complexity and nascent nature of carbon sequestration injection well processes.

Also, ADEQ will conduct reviews of its UIC budget, revenues, costs and allocations every three years, pursuant to A.A.C. R18-14-115. These reviews will ensure fees associated with the program and costs necessary to administer the program are reasonably balanced. In addition, these assessments will include consideration for the burden fees place on stakeholders.

## **VII. PERMITTING, ADMINISTRATIVE, JUDICIAL PROCEDURES (40 CFR 145.23 (c))**

### **A. Permitting**

All permitting requirements in 40 CFR 145.11 are represented and required in state law through the Arizona Revised Statutes or the Arizona Administrative Code (*see the Attorney General's Statement component of Arizona's Primacy Application for more information*).

The UIC application process will be initiated through a pre-application meeting with the applicant in order to discuss proposed injection well(s), the site and the requirements for application submittal under A.A.C. R18-9-C616 (for permits, Classes I, II, III and V) and



A.A.C. R18-9-J657 (for Class VI). It should be noted that owners or operators of Class VI wells must submit all required reports, submittals, and notifications under Part J of A.A.C. Title 18, Chapter 9, Article 6 to ADEQ and EPA via the Geologic Sequestration Data Tool (GSDT) (*see* A.A.C. R18-9-J666(5)).

The application itself will be comprised of two main sections, the administrative requirements and the technical report. The administrative requirements section consists of general information gathering, such as the type of permit being applied for, the facility operator, the facility owner, the facility's land type and more (*see* A.A.C. R18-9-C616). The Technical Report section of the application will consist of a determination of the area of review (AoR), a facility and well map, an AoR map, a USDW map, lithologic maps of the local and regional area and more well class specific technical requirements which can be found in Parts E, F, C and I of the Arizona UIC rule (A.A.C. Title 18, Chapter 9, Article 6).

ADEQ's UIC permitting and regulatory process will include application submittal, administrative completeness review, substantive review, issuance of the draft permit, public notice, and final permit approval.

## **B. Application Review**

The following steps will be taken in reviewing permit applications and issuing the final permit decision:

1. First, submittal of the application will occur electronically via MyDEQ (ADEQ's e-Permitting Online Portal (<https://www.azdeq.gov/mydeq>)) for Classes I, II, III and V. Electronic submittal for Class VI wells will occur electronically via the Geologic Sequestration Data Tool (GSDT).
  - a. MyDEQ has the ability for applicants to earmark their submitted application information as confidential. Thereafter, confidential business information (CBI) will be kept separate and confidential in ADEQ's databases and records.
  - b. The submittal package must also include the appropriate registration fee in accordance with A.A.C. R18-14-104.
  - c. For Class VI applications, an Environmental Justice (EJ) report must accompany the application submittal (for more on Class VI EJ procedures see Section VII(C) below).
2. Next, an initial review of the application will be conducted in order to determine administrative completeness (A.A.C. R18-1-503).
3. Next, the substantive review process will determine if the proposed injection well(s) meet the requirements of the applicable rules (A.A.C. R18-1-504).
4. If the reviewers identify any elements that may appear to be deficient with regard to an applicable requirement, a request for additional information and a list of concerns and comments relevant to the application package will be prepared (A.A.C. R18-1-504(C)).

- a. If the applicant does not sufficiently respond to the request for additional information (A.A.C. R18-1-504(C)) with the proper application information specified in A.A.C. R18-1-503 or the applicable requirements in A.A.C. Title 18, Chapter 9, Article 6, within a reasonable amount of time, the application will be denied and a denial letter will be issued to the applicant pursuant to A.A.C. R18-1-507.
  - b. Please note that an administratively incomplete application does not rise to the level of a Draft Permit under A.A.C. R18-9-C618.
- 5. When all comments, information requests, and concerns have been satisfactorily addressed by the applicant, the Director will tentatively decide whether to prepare a draft permit or to deny the application (A.A.C. R18-9-C618).
  - a. If the Director decides to issue a draft permit, the applicant will be provided with the draft permit and the fact sheet and allowed reasonable time for informal comment prior to publicly noticing the draft permit and fact sheet.
  - b. (*see* A.A.C. R18-9-C618(B) and (D) for application denial procedure)
- 6. Next, the Director will give public notice that a draft permit has been prepared and allow 30 days for public comment (A.A.C. R18-9-C620).
  - a. A public hearing can be requested by a member of the public during the public comment period (A.A.C. R18-9-C621 and R18-9-C622).
  - b. Pursuant to A.A.C. R18-9-C620(D)(1)(b) and (c), recipients of a copy of the public notice include:
    - i. any affected federal, state, tribal, or local agency, or council of government.
      - 1. In implementing this requirement, ADEQ will evaluate which entities from the list are affected based on the UIC permit going to public notice and deliver a copy thereto. Further implementation will include searching ADEQ's internal databases for the facility applying for the permit to see if other regulatory programs apply to the facility.
    - ii. the Advisory Council on Historic Preservation (ACHP)
      - 1. the Advisory Council on Historic Preservation (ACHP) is considered an affected federal agency under A.A.C. R18-9-C620(D)(1)(b) and will receive a copy of each public notice pursuant to 40 CFR 124.10(c)(1)(iii), in conjunction with 40 CFR 145.11(a)(28).
    - iii. for Class I injection well UIC permits only, state and local oil and gas regulatory agencies and state agencies regulating mineral exploration and recovery; and
    - iv. any agency which has issued or is required to issue a permit for the same facility or activity.
      - 1. This determination will be made by ADEQ Staff prior to public notice issuance.

- c. Pursuant to 40 CFR 124.10(c)(1)(ii), recipients of a copy of the public notice include:
  - i. any other agency which the Director knows has issued or is required to issue a RCRA, UIC, PSD (or other permit under the Clean Air Act), NPDES, 404, sludge management permit, or ocean dumping permit under the Marine Research Protection and Sanctuaries Act for the same facility or activity (including EPA when the draft permit is prepared by the State).
- d. Pursuant to A.A.C. R18-9-C620(D)(1)(b), recipients of a copy of the public notice include:
  - i. the Advisory Council on Historic Preservation (ACHP)
  - ii. *See* 40 CFR 124.10(c)(1)(iii), in conjunction with 40 CFR 145.11(a)(28).
- e. When Public Notices or Hearings are made, the Department will take reasonable measures to provide access to department services for individuals with limited ability to speak, write or understand English and/or to those with disabilities. Stakeholders may request language translation, American Sign Language (ASL) interpretation, Communication Access Realtime Translation (CART) captioning services or disability accommodations by contacting ADEQ's Title VI Nondiscrimination Coordinator.
- 7. Thereafter, the Director will respond to comments and issue a final permit decision (A.A.C. R18-9-C623 and R18-9-C627). After a decision to issue a permit has been made, a package including the permit, a brief summary, an updated fact sheet, and a public notice announcement will be prepared for the Director approval (*see* A.A.C. R18-9-C623 and R18-9-C627).
  - a. In the event of permit denial, a letter stating the reasons for denial will be sent to the applicant. The decision to deny the permit may be appealed (R18-9-C627(B); *see* subsection (G) below for administrative and judicial appeal procedure).
- 8. An approved permit is signed by the Director, assigned an issuance date, an effective date, and an expiration date per A.A.C. R18-9-C628, if applicable.
- 9. New injection operations may not commence until well construction is complete, construction requirements are met, financial responsibility has been properly demonstrated, mechanical integrity has been demonstrated, and approval has been granted by the Director (A.A.C. R18-9-D636).

### **C. Environmental Justice – Class VI**

As part of the Class VI application process, ADEQ will request the owner or operator to conduct an Environmental Justice (EJ) review and submit a report alongside or as a component of the application, itself. EJ review will be encouraged as early in the process as possible, including at initial, pre-application meetings. At a minimum, the report would include the identification of EJ areas in the Area of Review (AoR). Evaluations of the report will consider the presence of existing environmental hazards, cumulative impacts, potential exposure pathways, and vulnerable sub-populations, as well as the

likely distribution of any environmental and public health benefits from the proposed Class VI project in affected communities.

When the application is submitted, ADEQ staff will use EPA's EJScreen, or a similar tool, to evaluate the location of the project and to identify environmental and social stressors in specific communities. ADEQ will use the results to determine if an enhanced public comment period will be required for the application. An enhanced public comment period may extend the public comment period for the application and may require a more inclusive public participation process such as targeted public outreach and creation of visual tools and approachable language. Enhanced public outreach may also include scheduling public meetings at times convenient for residents with appropriate translation services where needed, enabling face-to-face or written feedback on permit applications early in the review process, convening local stakeholders and community groups for safety planning, and supporting the development of community benefits agreements.

ADEQ will proactively work within its legal authority to prevent and/or reduce any adverse impacts to underground sources of drinking water from well construction and operational activities. While the UIC program is designed to protect underground sources of drinking water (USDWs), ADEQ may consider other mitigation measures in order to ensure Class VI projects do not increase environmental impacts and public health risks in already overburdened communities such as carbon dioxide monitoring, release notification networks and installation of enhanced pollution controls. Additional considerations include the adoption of other measures to offset impacts by improving environmental amenities for communities identified within the delineated area and providing resources for clean-up of previously degraded public areas, as authorized by state law.

#### **D. Notes on Public Notice**

In state regulation, at A.A.C. R18-9-C620(D)(1)(b), UIC public notices must be delivered to any affected federal, state, tribal, or local agency, or council of government. Affected agencies include those known to have issued or who are required to issue a RCRA, UIC, PSD (or other permit under the Clean Air Act), NPDES, 404, or sludge management permit for the same facility or activity. To identify affected agencies, ADEQ will search internal databases to determine whether other regulatory programs apply to the facility applying for the permit.

Also, the Advisory Council on Historic Preservation (ACHP) is considered an affected federal agency under A.A.C. R18-9-C620(D)(1)(b) and will receive a copy of each public notice for a UIC Permit.

For Class I UIC permits, state and local oil and gas regulatory agencies and state agencies regulating mineral exploration and recovery are considered affected state and local agencies under A.A.C. R18-9-C620(D)(1)(b) and will receive a copy of the public notice for those permits.

For the purposes of A.A.C. R18-9-C620(D)(1)(e), the contact list developed from past permit proceedings and public outreach refers to a UIC-specific email subscription list that includes all current UIC permittee contacts, all past UIC permit commenters (both oral and written) and any email subscribers to the UIC-specific email subscription. In addition, UIC public notices will be posted on ADEQ’s website and will be posted on appropriate public bulletin boards in the communities immediately adjacent to the proposed facility.

For the purposes of A.A.C. R18-9-A601(44), “major facility” means all facilities requiring a permit under the UIC program. “Major facility” does not include UIC Class V wells authorized by rule under A.A.C. R18-9-I650 *et seq.*

## **E. Arizona’s Aquifer Protection Permit Program and UIC Class V Well**

### **1. UIC Class V Wells**

All UIC Class V wells are required to comply with the inventory requirements detailed in A.A.C. R18-9-I652, unless specifically notified to apply for a permit under A.A.C. R18-9-I651. Under the UIC program, most Class V wells will:

- not require a permit,
- will be subject to the R18-9-I652 inventory requirements, and
- will be considered authorized by rule (ABR).

### **2. UIC / APP Interface**

Per A.R.S. § 49-250(B)(26) and A.A.C. R18-9-103(6), all UIC wells with permits are exempt from Arizona’s APP program. Concerning Class V ABR wells, some (but not all) are additionally subject to the APP program.

It should be noted that APP permit coverage does not replace the UIC inventory requirements.

### **3. Class V Wells Subject to Both Programs**

This subsection identifies and describes wells subject to both UIC Class V ABR and APP program requirements upon primacy.

Generally, A.A.C. R18-9-A604(E)(1) delineates a non-exhaustive list of UIC Class V ABR wells. A vast majority of Arizona’s UIC Class V ABR wells are stormwater injection wells (A.A.C. R18-9-A604(E)(1)(d)). ADEQ estimates Arizona has more than 65,000 stormwater injection wells that qualify and must follow the UIC Class V ABR requirements. However, when it comes to the APP program, most stormwater injection wells are exempt under A.R.S. § 49-250(B)(23). Additionally, it should be noted that Arizona repealed its state stormwater drywell regulatory program in 2022 in order to avoid duplicative regulation with the UIC Class V ABR requirements.

The APP program regulates, and will continue to regulate upon primacy, a small subset of stormwater injection wells with a greater risk of groundwater contamination under A.A.C. R18-9-C301 and A.A.C. R18-9-C304. These permits (known as APP General Permits, Types 2.01 and 2.04) regulate injection wells that drain stormwater in areas where:

- Type 2.01 - hazardous substances are used, stored, loaded, or treated, and at
- Type 2.04 - motor fuel dispensing facilities where motor fuels are used, stored, or loaded.

These permits do not authorize disposal of hazardous substances, nor motor vehicle waste, but do acknowledge the increased risk these wells pose to the environment. In fact, A.A.C. R18-9-C301(D)(1) and R18-9-C304(E)(1) explicitly require permittees to maintain and operate Type 2.01 and 2.04 injection wells only for the subsurface disposal of stormwater. Such injection wells are additionally required to inventory as UIC Class V wells ABR.

Aquifer storage and recovery (ASR) wells (A.A.C. R18-9-A604(E)(1)(f)) are subject to the UIC Class V ABR requirements, but may additionally be subject to the APP program. A number of ASR wells in Arizona currently hold individual APP permits (see A.A.C. Title 18, Chapter 9, Article 2).

A.A.C. R18-9-A604(E)(2)(a) exempts single-family residential septic system wells or non-residential septic system wells used solely for the disposal of sanitary waste with a design capacity of less than 3,000 gallons per day from regulation under the UIC Program. This rule effectively exempts the vast majority of the APP program's onsite wastewater treatment facility subprogram (A.A.C. Title 18, Chapter 9, Article 3, Part E) from the UIC Program because all but one of the permits in the subprogram have a design capacity of less than 3,000 gallons per day. Onsite wastewater treatment facilities used solely for the disposal of sanitary waste with a design capacity of more than 3,000 gallons per day are subject to the APP Type 4.23 General Permit, which provides requirements for onsite wastewater treatment facilities with a design flow of 3,000 to less than 24,000 gallons per day. These facilities are subject to both the UIC Class V ABR requirements and the APP Type 4.23 General Permit requirements.

## **F. Applicable Standards – National Primary Drinking Water Regulations**

### **Maintenance**

A.A.C. R18-9-B608(A) prohibits the movement of fluid containing any contaminant into USDWs, if the presence of that contaminant may cause a violation of any primary drinking water regulation under this Article, as shown in Table 1 (*see* A.A.C. Title 18, Chapter 9, Article 6, Table 1 – located at the end of the article). During the Arizona state UIC rulemaking, Table 1 was compiled based on contaminants identified in 40 C.F.R. § 141 (Maximum Contaminant Levels – MCLs) that could occur as a result of underground injection.

Upon the establishment of new applicable MCLs or the changing of existing applicable MCLs in 40 C.F.R. § 141, ADEQ will open a rulemaking docket in order to align Table 1: Applicable Standards – National Primary Drinking Water Regulations with 40 C.F.R. § 141. Through the Arizona state rulemaking process, ADEQ will update Table 1 in a timely fashion.

## **G. Administrative and Judicial Procedures**

1. Final permit decisions are appealable agency actions. Upon a final permit decision, an applicant or an adversely affected person may appeal the decision to one of two state administrative appeal bodies, depending on the type of permit (*see* A.A.C. R18-9-C627A).
  - a. Individual permits may be appealed to the Water Quality Appeals Board (WQAB) pursuant to A.R.S. § 49-323. The WQAB allows for the appeal of any grant, denial, modification or revocation of any individual permit issued as part of the UIC Program by any person who is adversely affected by the action or by any person who may with reasonable probability be adversely affected by the action and who has exercised any right to comment on the action as provided in A.R.S. § 41-1092.03. Any interested person may intervene in the appeal as a matter of right. The board shall hold a hearing if questions of material fact are at issue in the appeal. Notice and hearing procedures are subject to Title 41, Chapter 6, Article 10.
  - b. Any UIC appeal from a final permit decision that does not fall into the jurisdiction of the WQAB may be appealed to the Office of Administrative Hearings (OAH) pursuant to A.R.S. § 41-1092 *et seq.* Appealable agency action is defined as “an action that determines the legal rights, duties or privileges of a party, including the administrative completeness of an application...and that is not a contested case....” (*see* A.R.S. § 41-1092(3)).
2. Arizona Administrative Appeals Summary:
  - a. Any UIC appeal from a final permit decision that does not fall into the jurisdiction of the WQAB, would be appealable to OAH if the decision is an appealable agency action.
3. After exhausting their administrative rights, a party may appeal the final administrative decision from the WQAB or the OAH to the applicable Arizona superior court as a judicial review of an administrative appeal. *See* A.R.S. §§ 49-323(B), 41-1092.08(H).

## **H. Data Management**

ADEQ maintains an electronic document receiving system to accept electronic documents under the proposed UIC program sufficient to meet the requirements for a reporting system under an EPA-authorized state program pursuant to 40 CFR § 3.2000. Specifically, ADEQ will utilize a comprehensive data management program, to receive electronic documents in satisfaction of requirements under the UIC program, that is able

to generate all data necessary with respect to such electronic documents including an enforceable copy of record (COR). The generated data, including the COR, meets all security, recordkeeping, and certification requirements of 40 CFR § 3.2000(b) Finally, the Arizona Attorney General's Office certifies that the State of Arizona has sufficient legal authority over enforcement of an electronic reporting system such that ADEQ's proposed data management program for UIC complies with the requirements of 40 CFR §3.2000(c) (*see* the Attorney General's Statement component of Arizona's Primacy Application for more information).

## **VIII. PERMIT DOCUMENTS (40 CFR 145.23(d))**

### **A. Applications**

ADEQ maintains an electronic Application forms for Classes I, II, III, V and VI permits are provided in Appendix, Document A-1. The applicant shall submit an original Permit Application and a Technical Report. The Technical Report is described above in Section VII. Both documents shall be submitted electronically through MyDEQ, ADEQ's e-Permitting Online Portal at <https://www.azdeq.gov/mydeq>, or, in the case of a Class VI application, using the Geologic Sequestration Data Tool (GSDT).

### **B. Permits**

ADEQ maintains an electronic Permit templates for Classes I, II, III, V and VI are provided in Appendix A-2.

### **C. Reporting**

ADEQ maintains an electronic ADEQ will use existing EPA 7520 and inventory forms for reporting purposes. UIC permitting and compliance/inspection data collected through forms 7520-1, -2A, -2B, -3, and -4 and annual well inventory will be reported to EPA via the UIC Data Application (<https://uicdata.epa.gov/>). The 7520 forms are important informational documents covering Arizona UIC Program activities such as permit review, issuance, compliance, and inspections. The Arizona UIC Program will submit the 7520 form data to EPA Region 9 biannually in accordance with the schedule below. The 7520 forms and instructions are available at EPA's UIC website, <https://www.epa.gov/uic/underground-injection-control-reporting-forms-state-summary-information>.

Reporting Requirements	Midyear (Second Quarter) Forms (7520 -2A, -2B, -4)	End of Year (Fourth Quarter) Forms (7520-1, -2A, -2B, -3, -4, inventory)
Reporting Period	October 1 – March 30	April 1 – September 30
Final Submittal to EPA UIC Data Application	May 15	November 15



## **IX. COMPLIANCE TRACKING AND ENFORCEMENT (40 CFR 145.23 (e))**

### **A. Compliance Monitoring**

Compliance monitoring will, at a minimum, include on-site inspections conducted by inspectors in the GPS's Inspections and Compliance Unit and a review of operating and monitoring reports submitted in compliance with permit requirements and the applicable UIC rules in Title 18, Chapter 9, Article 6 of the Arizona Administrative Code to verify that the construction, completion, operation, maintenance, and site closure of UIC projects are performed according to approved plans and specifications and meet all permit and regulatory requirements. Please reference ADEQ's Compliance and Enforcement Handbook (Appendix, Document A-6) for current and detailed policies on compliance and enforcement.

The state's compliance monitoring program includes the following activities:

- Reviewing plans and reports (e.g., well completion reports, test results, workover reports) submitted by permit applicants or owners or operators.
- Conducting site inspections to verify or witness construction, operation and testing/maintenance procedures. Site inspections will be conducted by inspectors in the GPS's Inspections and Compliance Unit and will be followed by the issuance of an inspection report on the facility's compliance status with applicable state law and the UIC program.
- Issuing "action update letters" (AULs) providing a regulated party with status updates on agency action resulting from an inspection or a file review.
- Investigating complaints alleging improper construction, completion, operation or maintenance of a UIC project.
- Performing compliance monitoring (e.g., reviewing monitoring, operating and maintenance data) to verify compliance with permit conditions, regulations and any other conditions or stipulations.
- Conducting annual inspections and compliance follow-up inspections of UIC projects.

ADEQ shall submit to the EPA quarterly non-compliance reports as specified in 40 CFR § 144.8(a). Quarterly reports will be submitted in accordance with the following schedule (or as otherwise specified in ADEQ's FY UIC Workplan):

- October, November, December – due January 30
- January, February, March – due April 30
- April, May, June – due July 30
- July, August, September – due October 30

### **B. Enforcement Procedures**

Any person violating applicable Arizona Revised Statutes, Arizona Administrative Code, or any condition of a UIC permit, or any rule or order of ADEQ is subject to enforcement

action. The agency is responsible for initiating, pursuing and resolving enforcement actions. Enforcement proceedings may result in modification, revocation or suspension of any permit issued under authority of the UIC Program.

The agency will handle minor UIC program violations in accordance with ADEQ's Compliance and Enforcement Handbook, Chapter 3: Informal Enforcement (Appendix, Document A-6). Tools for handling minor violations include, correspondence between agency staff and the alleged violator and issuance of a Notice of Opportunity to Correct (NOC) or a Notice of Violation (NOV). The Handbook includes procedures for escalating enforcement if the violation is not remedied.

The agency will handle escalated or major UIC program violations in accordance with ADEQ's Compliance and Enforcement Handbook, Chapter 4: Formal Enforcement (Appendix, Document A-6). Tools for handling escalated or major violations include, issuance of a Consent Order, a Compliance Order, Civil Referral and Criminal Referral (to the Attorney General's Office (AGO)).

ADEQ staff use a database to electronically track all NOCs, NOVs, Consent Orders, Compliance Orders, and AGO referrals.

The Class VI regulations include strong protections for communities to prevent contamination of underground drinking water sources (USDWs). These regulatory protections include a variety of measures, including proper site characterization and strict construction, operating, and monitoring requirements to ensure well and formation integrity, proper plugging of wells, and long-term project management and post-injection site care to ensure leakage prevention. ADEQ will properly implement and enforce these requirements to protect communities from potential harms associated with injection wells. ADEQ will make reports of enforcement activities accessible to the public.

## **X. SCHEDULE FOR ISSUING PERMITS (40 CFR 145.23 (f)(1) & (2))**

The land within the state of Arizona under state jurisdiction has a total of five (5) federally issued UIC permits. All five permits authorize Class III well injection through either Area or Class III permits. The permits are spread across three permittees. Two permittees hold Area permits for their Class III wells (in-situ copper mines), while the remaining permittee holds three individual permits for Class III wells (in-situ salt mine). These permits were issued by the EPA.

ADEQ does not anticipate issuing any new permits in the near future and therefore has not drafted a priority schedule for permit issuance.

Upon primacy, ADEQ and EPA have agreed that EPA will transfer the 5 Federal UIC permits to ADEQ for administration. Thereafter, ADEQ plans to make administrative modifications to the permits as soon as possible under the authority in rule, A.A.C. R18-9-C632(E)(3). These administrative modifications will be limited to regulation reference updates, from the Code of Federal Regulations (CFR) to the corresponding rules in the Arizona Administrative Code

(AAC), as well as other non-substantive modifications for the purpose of adjusting the permits to fit within the state authorities and program.

The administrative modifications will be “modifications” as opposed to a “minor modifications” as defined in the UIC rules at A.A.C. R18-9-C631, C632 and C633. These modifications will follow the draft permit process like any other UIC modification pursuant to A.A.C. R18-9-C631(C) and A.A.C. R18-9-C618. This process includes ADEQ’s issuance of a fact sheet, as well as the allowance of informal comment by the permittee, followed by public notice, public comment, a public hearing, final permit decision and a responsiveness summary to comments. Please note that A.A.C. R18-9-C631(D) limits the scope of comments on a proposed modification to the conditions up for modification and not the rest of the permit.

## **XI. MECHANICAL INTEGRITY TESTING (MIT) REQUIREMENTS (40 CFR 145.23 (f)(3))**

### **A. MIT Implementation Table**

Well Class	Internal MIT	External MIT
I (not incl. HW)	5 years	Continuous monitoring of annulus pressure (except for municipal wells)
II	5 years	Once
III	5 years <sup>1</sup>	5 years <sup>1</sup>
IV	Illegal wells	
V	None	None
VI	-	1 year

<sup>1</sup>MIT at least once every five years during the life of the well for salt solution mining. Internal and external MIT frequencies for other types of solution mining will be specified in the UIC Permit.

### **B. MIT Implementation**

Permittees shall conduct Mechanical Integrity Testing (MIT) to demonstrate that there is no significant leak in the casing, tubing, or packer; and there is no significant fluid movement into an USDW through channels adjacent to the well bore. To evaluate the absence of significant leaks the operator will, following an initial annulus pressure test, continuously monitor injection pressure, rate, injected volumes, pressure on the annulus between tubing and long-string casing, and annulus fluid volume. Reports of the data and other pertinent information must be submitted to ADEQ in accordance with the regulations and the authorizing permit. UIC Permit conditions may require additional internal and/or external MITs if routine well monitoring indicates significant fluid movement within the well annulus or into the surrounding formation.

ADEQ will require MIT at all Class I, and II wells at least once every five years. MIT for Class III wells is dependent on the type of solution mining, casing, and site-specific criteria. Per A.A.C. R18-9-G647(B)(3), MIT at Class III wells is required at least once every five years for salt solution mining. External MIT frequencies for Class III wells used for other

types of solution mining and casing are typically required once but will be prescribed in the UIC Permit to address site-specific criteria.

Per A.A.C. R18-9-B613(C)(3) and (4), cementing records with a monitoring program prescribed by A.A.C. R18-9-G647(B) designed to verify the absence of significant fluid movement adjacent to the well bore can be used for satisfying external MIT requirements. Consideration of site-specific criteria per A.A.C. R18-9-G646 and A.A.C. R18-9-G647(B) is used in specifying monitoring requirements in the permit. Upon a confirmed detection of mining fluids from a monitoring program, the permit may require additional testing to confirm a leak. External MITs may include tracer surveys, and/or temperature or noise logs, as required.

Class VI MIT occurs more frequently and includes annual external MIT. Tracer surveys, temperature or noise logs will also be performed annually for Class VI wells to determine the absence of significant fluid movement.

Acceptable methods for determining mechanical integrity are specified in A.A.C. R18-9-B613 or as specified in the UIC Permit. The Permittee must provide a 30-day advance notice of the intent to conduct a MIT, and it is the intent of ADEQ to routinely witness testing at the majority of the facilities. For large Area facilities such as the Florence Copper and Gunnison Copper in situ mines, ADEQ will conduct routine monthly inspections that include witnessing well workovers, aquifer tests, well abandonment, review of reports (well completion and operations), investigating complaints, and observing MIT. ADEQ does not propose to require MIT on Class V wells such as dry wells and aquifer storage and recovery wells.

## **XII. NEW PERMIT COMMUNICATION REQUIREMENTS (40 CFR 145.23 (f)(4))**

As part of primacy, EPA will transfer the five Federal UIC permits for the facilities located within the state of Arizona under state jurisdiction whereupon ADEQ will make administrative modifications to them as soon as possible. At primacy, ADEQ will send an email to an established and appropriate contact from the three existing UIC permittees within the state's jurisdiction, notifying them of the permit transition process described in Section X above.

ADEQ is not aware of any UIC facilities located within the state of Arizona under state jurisdiction other than the five permitted facilities identified in Section X. Permits for the five facilities identified above will be transferred to ADEQ, as described in Section X. All other injection wells within the state of Arizona under state jurisdiction are either authorized by rule (Class V wells) or are unauthorized. No owners or operators of injection wells will need to apply for and obtain a permit upon primacy.

ADEQ's former drywell registration program was repealed in September 2022. In preparation for the repeal of that program, a communication campaign was executed notifying the state drywell registrants of the repeal of the state-based program, the ongoing requirement to inventory as Class

V wells with EPA and to watch for the upcoming primacy where ADEQ will take primary enforcement authority over the UIC program, including the Class V inventory. In addition to these communications, ADEQ will notify the Class V authorized by rule regulated community in Arizona at primacy of the inventory requirements. This will be executed through the bulk emailing of existing Class V contacts, an announcement posting on ADEQ's website and a webinar.

### **XIII. STATE UIC RULE (40 CRF 145.23 (f)(5))**

ADEQ adopted programmatic UIC regulations, codified at A.A.C. R18-9-A601 *et seq.* on September 6, 2022. Supporting UIC regulations, were codified at A.A.C. R18-1-501 *et seq.* and A.A.C. R18-14-101 *et seq.*, also on September 6, 2022. The final rule can be found in the Appendix, Document A-3.

### **XIV. HYDROCARBON STORAGE COMPLIANCE PROGRAM (40 CRF 145.23 (f)(6))**

Enhanced recovery and hydrocarbon storage (into underground formations such as salt caverns) wells refer to Class II wells that are utilized for the disposal of fluids associated with the production of oil and natural gas; or utilized for the injection of fluids (including brine, freshwater, steam, polymers, and carbon dioxide) into petroleum bearing formations for the purpose of enhanced recovery operations. Diesel fuels are also utilized as a component of hydraulic fracturing fluid or for injection for the storage of hydrocarbons that are liquid at standard temperature and pressure. There are currently no Class II wells permitted in Arizona's state jurisdiction; however, if any such wells are permitted in the future, they will be covered under the UIC program and regulated by ADEQ. Natural gas storage wells do not fall under the jurisdiction of the UIC Program and are exempt per A.A.C. R18-9-A601(68) and A.A.C. R18-9-A602(G)(2). The underground storage of natural gas is regulated and authorized by the Arizona Oil and Gas Conservation Commission under A.A.C. R12-7-175(2)(b).

All Class II enhanced recovery and hydrocarbon storage wells shall be constructed per the requirements specified in A.A.C. R18-9-F643. The operator is required to monitor the injection pressure, flow rate, and cumulative volume monthly for enhanced recovery wells in accordance with A.A.C. R18-9-F644(B)(2)(b). For hydrocarbon storage wells, the operator is required to monitor the injection pressure, flow rate, and cumulative volume daily in accordance with A.A.C. R18-9-F644(B)(2)(c). Monitoring results for both enhanced recovery and hydrocarbon storage wells shall be reported annually to ADEQ.

Hydrocarbon storage and enhanced recovery may also be monitored on a field or project basis rather than on an individual well basis by manifold monitoring. Manifold monitoring may be used in cases where facilities, consisting of more than one injection well, operate with a common manifold. Separate monitoring systems for each well are not required provided the owner/operator demonstrates that manifold monitoring is comparable to individual well monitoring.

As required in A.A.C. R18-9-D636, the operator shall assume full financial responsibility to close, plug, and abandon all enhanced recovery and hydrocarbon storage wells. The permittee shall demonstrate financial assurance to ADEQ by the submission of a surety bond, or other adequate assurances, such as a financial statement.

#### **XV. STATE INJECTION WELL INVENTORY (40 CFR 145.23 (F)(7))**

The table below represents the current number of UIC facilities, the injection well classes, the number of federally issued permits and authorized by rule wells.

ADEQ will have electronic databases established in order to manage permitted injection wells and inventory wells that are authorized by rule in the state. Please reference Section VII – Subsection H – Data Management, above.

<b>Injection Well Class</b>	<b>UIC Regulated Facilities</b>	<b>Number of Federally issued Permits</b>	<b>Number of Wells</b>	<b>ABR'd Wells</b>
<b>I</b>	0	0	0	n/a
<b>II</b>	0	0	0	n/a
<b>III</b>	3	5	52 (Active) 3,259 (Proposed)	n/a
<b>IV</b>	0	0	0	n/a
<b>V</b>	Approx. 16,000	0	Approx. 65,000	Approx. 65,000
<b>VI</b>	0	0	0	n/a

#### **XVI. USDW DESIGNATION, AQUIFER EXEMPTIONS AND INJECTION DEPTH WAIVERS (40 CFR 145.23 (f)(8) & (9))**

##### **A. USDW Designations**

ADEQ will make USDW determinations for each UIC application. Applications will require a written narrative describing the hydrogeology of each aquifer such as the lithology and the geologic structure (joints, faults, folds, strike, and dip). The description should include the hydrology of the aquifer such as hydraulic conductivity, saturated thickness, observed yields, and groundwater flow directions. A generalized discussion of hydrocarbon, mineral or geothermal potential in the state should also be included in the narrative. Groundwater quality of each aquifer including tabulation of average range of major ion, Total Dissolved Solids (TDS), and trace metal concentrations, all supporting materials (including references) should be provided in the description.

## **B. Aquifer Exemptions**

Please reference rules A.A.C. R18-9-A605 and A606 for aquifer exemptions (AEs). When a request for an AE is made by an applicant or a permittee, ADEQ will consult with EPA as soon as is reasonably possible. These early discussions will serve to identify potential technical or legal issues that may require additional consideration prior to submitting an ADEQ-proposed AE to EPA. In addition to procedures for AEs in A.A.C. R18-9-A605 and A.A.C. R18-9-A606, ADEQ will use the Aquifer Exemption Checklist in compiling necessary information to determine the eligibility of an aquifer for exemption (*see* Appendix, Document A-4)

As described in A.A.C. R18-9-A608(A), all USDWs which have not been exempted, are protected as such. Issuances, modifications, or revocations and reissuances of permits that necessitate new AEs or enlargements of a previously approved AE are not effective until the AE has been approved by EPA.

As is stated above, AE requests proposed by ADEQ are not final until approved by EPA, except those that meet the criteria in R18-9-A605(B)(4)(b), which become final if EPA has not disapproved the proposed designation within 45 days. The state will utilize an AE checklist in Appendix, Document A-4, as a guide for reviewing AE requests and will submit the checklist for EPA's review when seeking approval of the proposed AE. For approval of an AE, the EPA must determine that the state has demonstrated the aquifer or the portion of the aquifer identified as exempt does not serve as a source of drinking water per the regulatory criteria in 40 CFR 146.4. EPA shall document all reasons and factors considered in a Statement of Basis or decision memorandum regarding the final AE decision. The Statement of Basis should include explanations of the factual, technical, and legal bases for the determination.

The issuance of a UIC permit and the approval or denial of an AE are separate regulatory actions. If the operation of a UIC facility in a UIC permit is dependent on EPA's approval of an AE or AE expansion, ADEQ may issue the permit under the condition that injection is not authorized until the AE is approved by EPA.

## **C. EPA Approved Aquifer Exemptions**

EPA has issued three AEs for in situ copper mining projects in Arizona. Each AE is related to the following Area, and Class III UIC permits:

- EPA issued an AE on October 13, 1999 for the In-Situ Production of Copper Permit # AZ397000001 known as the "Santa Cruz Project" in Casa Grande, Arizona. The Permit was withdrawn. The AE is still effective, and the documents are included in the Appendix, Document A-5.
- EPA issued an AE on May 1, 1997, for the In-Situ Production of Copper Permit # AZ396000001 known as the "Florence Copper Project" in Florence, Arizona. This Permit was revoked and replaced with the UIC Permit # R9UIC-AZ3-FY11-1, for the Florence Copper Production Test Facility at the same site in Florence, Arizona. EPA made a correction to the AE boundary on August 10,

2022 and issued a Draft Class III In-Situ Production of Copper Permit # R9UIC-AZ3-FY19-1 in August 2022 for the commercial scale Florence Copper Project. On September 12, 2023, EPA issued a commercial-scale in-situ copper mining permit, UIC Permit # R9UIC-AZ3-FY19-1, which supersedes and replaces the Production Test Facility permit. This commercial scale permit uses the 1997 AE that continues to be effective. The AE documents are included in the Appendix, Document A-5.

- EPA issued an AE on June 6, 2018 for the In-Situ Production of Copper Permit #R9UIC-AZ23-FY16-1 known as the “Gunnison Copper Project” in Cochise County, Arizona. The AE documents are included in the Appendix, Document A-5.

Currently, there are no pending AE requests in Arizona.

#### **D. Class VI Injection Depth Waivers**

Class VI Carbon Sequestration wells are typically required to inject at a specific depth. A.A.C. R18-9-J670 allows an applicant to request a waiver of the injection depth requirement upon concurrence from EPA. The issuance of a Class VI UIC permit and the written concurrence or non-concurrence of an injection depth waiver (IDW) are separate regulatory actions. If the operation of a Class VI UIC facility in a UIC permit is dependent on EPA’s written concurrence with a proposed IDW, ADEQ may issue the permit under the condition that injection is not authorized until written concurrence has been made by EPA.

### **XVII. PROGRAMMATIC BAN ON CLASS IV WELLS (40 CFR 145.23 (f)(10))**

#### **A. Class IV Wells**

Class IV wells are prohibited by the State UIC regulations at A.A.C. R18-9-B609(B), except for Class IV wells that meet the criteria under A.A.C. R18-9-B609(B)(3) – (remediation wells). Also, the State Hazardous Waste regulations prohibit the underground injection of hazardous waste at A.A.C. R18-8-270(B)(2)(b). A.A.C. R18-9-B609(B) prohibits the injection of hazardous or radioactive wastes into or above a formation with a USDW located within one-quarter mile of a well bore.

A.A.C. R18-9-B609(B)(3) provides that wells used to inject contaminated groundwater that has been treated and is being reinjected into the same formation that it was drawn are not prohibited if such injection is approved by EPA or ADEQ pursuant to one of the following: provisions for cleanup of releases under CERCLA, the requirements and provisions under RCRA, or the requirements and provisions under other applicable state laws for corrective and remedial action.

#### **B. Definition of Hazardous Waste**

The federal UIC program definitions at 40 C.F.R 144.3 state “[h]azardous waste means a hazardous waste as defined in 40 CFR 261.3.” The ADEQ UIC program defines



hazardous waste in A.A.C. R18-9-A601(37) as “a hazardous waste as defined in A.R.S. § 49-921.” The hazardous waste definition in A.R.S. § 49-921(5) incorporates A.R.S. § 49-922. A.R.S. § 49-922(A) requires ADEQ to adopt a hazardous waste program consistent with the federal hazardous waste regulations, including the hazardous waste definition in 40 C.F.R. 261.3.

## **XVIII. INVENTORY PLAN FOR EXISTING CLASS V WELLS (40 CFR 145.23 (f)(11))**

Before primacy, the owners or operators of all Class V injection wells within state jurisdiction were required to provide inventory information to EPA. Upon primacy, ADEQ will administer the Class V inventory in accordance with A.A.C. R18-9-I652.

Prior to obtaining primacy, ADEQ plans to notify the Class V authorized by rule regulated community in Arizona of the inventory requirements. This will be executed through the bulk emailing of existing Class V contacts, an announcement posting on ADEQ’s website and a webinar aimed at the Class V authorized by rule regulated community.

Upon primacy, Arizona Class V owners or operators will be required to submit inventory information via MyDEQ, ADEQs online e-Permitting portal, (<https://azdeq.gov/node/331>) (please reference Section VII(H) - Data Management for more information). MyDEQ will correspond with the ADEQ internal database, AZURITE (Arizona Unified Repository for Informational Tracking of the Environment) for administrative and record-keeping purposes. A one-time registration fee of \$200 will be required for all new Class V wells and a \$100 transfer fee will be required for existing wells requesting transfer of ownership (see A.A.C. R18-14-111).

Additionally, upon primacy, EPA plans to transfer all information from the existing Class V inventory to ADEQ, where ADEQ will incorporate the inventory into its databases. All inventories made before primacy will be maintained by ADEQ when ADEQ takes primary enforcement authority of the program.

ADEQ understands the vast majority of Class V wells in Arizona to be drywells. Other types of Class V wells include aquifer storage recharge (ASR) wells, certain large septic systems under A.A.C. R18-9-A604(E)(2), and geothermal wells. Arizona’s drywells far outnumber other types of Class V wells.

## **XIX. MOTOR VEHICLE WASTE DISPOSAL WELLS (40 CFR (145.23 (f)(12))**

40 CFR 144.88 delineates specific requirements for Motor Vehicle Waste Disposal Wells (MVWDWs). ADEQ has banned MVWDWs statewide per rule A.A.C. R18-9-I654. Therefore, Arizona’s rule is at least as stringent as the Federal analog.

## **XX. NOTIFYING ADJACENT GOVERNMENTS – CLASS VI (40 CFR 145.23 (f)(13))**

After an application for a Class VI well is submitted to ADEQ and EPA via the Geologic Sequestration Data Tool (GSDT) and is administratively complete per A.A.C. R18-1-503, ADEQ staff will begin the substantive review of the application. If ADEQ staff determine during the substantive review that the area of review (AoR) crosses State, Tribal, or International boundaries, ADEQ will notify in writing an appropriate representative of the affected entity.

## **XXI. APPENDIX**

- A-1 - Application Forms
- A-2 - Permit Templates
- A-3 - State UIC Rule
- A-4 - Aquifer Exemption (AE) Checklist
- A-5 - Arizona Aquifer Exemptions
- A-6 - 2023 ADEQ Compliance and Enforcement Handbook

# Program Description Appendices

## Appendix A-1

### Arizona UIC Application Forms

# Application Form

Class I

**STATE OF ARIZONA**

**UNDERGROUND INJECTION CONTROL PROGRAM**

**CLASS I PERMIT APPLICATION**  
**FOR**  
**NON-HAZARDOUS**  
**WASTE INJECTION WELLS**

Last Revised: July 12, 2022

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### Attachments:

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

## 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](mailto: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](mailto: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.

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
<p><b>Geologic Studies</b> of the injection and confining zones to determine that:</p> <ul style="list-style-type: none"> <li>The receiving formations are sufficiently permeable, porous, homogeneous, and thick enough to receive the fluids at the proposed injection rate without requiring excessive pressure</li> <li>Formations are large enough to prevent pressure buildup and injected fluid would not reach aquifer recharge areas</li> <li>There is a low-permeability confining zone to prevent vertical migration of injection fluids</li> <li>Injected fluids are compatible with well materials and with rock and fluid in injection zone</li> <li>The area is geologically stable</li> <li>The injection zone has no economic value</li> </ul>	<p>Additional <b>structural</b> studies to demonstrate:</p> <ul style="list-style-type: none"> <li>Injection and confining formations are free of vertically transmissive fissures or faults</li> <li>Low seismicity and probability of earthquakes</li> <li>Proposed injection will not induce earthquakes or increase the frequency of naturally occurring earthquakes</li> </ul>
<p><b>Area of Review (AOR)</b> analysis of the surrounding area to identify artificial penetrations, such as other wells, that might allow fluid to move out of the injection zone</p> <ul style="list-style-type: none"> <li>Minimum area of review is ¼ mile</li> <li>Can be a fixed radius around the well or mathematically calculated</li> <li>Includes a corrective action plan to address improperly completed or plugged wells within the AOR</li> </ul>	<ul style="list-style-type: none"> <li>Additional review required:</li> <li>Minimum AOR of 1/4 mile</li> <li>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)</li> </ul>

**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
<ul style="list-style-type: none"> <li>Approved engineering schematics and subsurface construction details</li> <li>At least 2 layers of concentric casing and cement</li> <li>Outer (or surface) casing cemented to the surface</li> <li>Tubing and packer design based on: <ul style="list-style-type: none"> <li>well depth</li> <li>characteristics of the injected fluid</li> <li>injection and annular pressure</li> <li>injection rate</li> <li>temperature and volume of injected fluid</li> <li>size of well casing</li> <li>cementing requirements</li> </ul> </li> <li>Tests during drilling to ensure no vertical migration of fluid</li> </ul>	<p>Detailed requirements for tubing and packer</p> <p>Long-string (inner) casing fully cemented to surface</p> <ul style="list-style-type: none"> <li>UIC Program approval of casing, cement, tubing, and packer prior to construction</li> </ul>

**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 <ul style="list-style-type: none"><li>Notify permitting authority within 24 hours if problem occurs</li></ul> 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
<ul style="list-style-type: none"><li>Continuously monitor:</li><li>Annulus pressure (to detect leaks in the casing, tubing, or packer; and any fluid movement into a USDW)</li><li>Containment in the injection zone</li><li>Characteristics of injected waste</li><li>Monitor for fluid movement into USDWs within the AOR</li><li>Internal and external mechanical integrity test (MIT) every 5 years</li></ul>	<ul style="list-style-type: none"><li>Explicit procedures for reporting and correcting problems due to lack of mechanical integrity</li><li>Develop and follow a waste analysis plan</li><li>Analyze wastewaters as specified in the plan</li><li>Internal MIT every year</li><li>Test cement at base of well annually</li></ul>

**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
<ul style="list-style-type: none"><li>Quarterly on injection and injected fluids and monitoring of USDW in the area of review</li><li>Every 5 years on internal and external MITs</li><li>Changes to the facility, progress on compliance schedule, loss of mechanical integrity (MI), or noncompliance with permit conditions</li></ul>	<ul style="list-style-type: none"><li>Results from the waste analysis program and geochemical compatibility</li><li>Internal MIT yearly</li><li>Maximum injection pressure quarterly</li><li>Volume of fluid injected</li></ul>

**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
<ul style="list-style-type: none"><li>Submit plugging and abandonment report</li></ul>	<ul style="list-style-type: none"><li>Conduct pressure fall off and mechanical integrity tests</li><li>Continue ground water monitoring until injection zone pressure cannot influence USDW</li><li>Flush well with non-reactive fluid</li><li>Inform authorities about the well, its location, and zone of influence</li></ul>

# Application Form

Class II

**STATE OF ARIZONA**

**UNDERGROUND INJECTION CONTROL PROGRAM**

**CLASS II INJECTION WELL**  
**PERMIT APPLICATION**

Last Revised: July 12, 2022

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## 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 II 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](mailto: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](mailto: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 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 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).

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(Name of Company Official: Type or Print Legibly)

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(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)

# Application Form

Class III

**STATE OF ARIZONA**

**UNDERGROUND INJECTION CONTROL PROGRAM**

**CLASS III PERMIT APPLICATION PACKAGE FOR**  
**IN-SITU SOLUTION MINING**

Last Revised: July 12, 2022

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## 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](mailto: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](mailto: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.
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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.
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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).

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(Name of Company Official: Type or Print Legibly)

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(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))

# Application Form

Class IV



**STATE OF ARIZONA**

**UNDERGROUND INJECTION CONTROL PROGRAM**

**CLASS IV PERMIT APPLICATION**  
**FOR**  
**UNDERGROUND INJECTION WELLS**

Last Revised: July 12, 2022

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## 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](mailto: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](mailto: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.
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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

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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).

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(Name of Company Official: Type or Print Legibly)

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(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)

# Application Form

Class V

**STATE OF ARIZONA**

**UNDERGROUND INJECTION CONTROL PROGRAM**

**CLASS V PERMIT APPLICATION**

**FOR**

**UNDERGROUND INJECTION WELLS**

Last Revised: July 12, 2022

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## 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](mailto: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](mailto: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).

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(Name of Company Official: Type or Print Legibly)

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(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))

# Application Form

Class VI



**STATE OF ARIZONA**

**UNDERGROUND INJECTION CONTROL PROGRAM**

**CLASS VI INJECTION WELL**  
**PERMIT APPLICATION**

Last Revised: July 12, 2022

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## 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](mailto: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](mailto: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).

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(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 directly enforceable 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 approval within 30 days of such change.
- (iii) The owner or operator shall monitor the site following the cessation of injection to show the position of 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 monitoring as 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 project will 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 this time, 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 a manner 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 facility property 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 must include 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 meet well 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 into any 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 any other 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 any other 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 methods are 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)

END

of Appendix A-1



## Appendix A-2

### Arizona UIC Permit Templates

Arizona UIC Permit Template  
Class I

**UNDERGROUND INJECTION CONTROL PROGRAM**

**PERMIT to Construct and Inject**

**Class I NON-HAZARDOUS Injection Wells**

**Permit No. UIC-AZI-FY22-#**

**[PROJECT NAME] Project**

**[COUNTY NAME] County, Arizona**

**Issued to:**

[COMPANY NAME]  
[ADDRESS LINE 1]  
ADDRESS LINE 2  
ADDRESS LINE 3]

**AUTHORIZING SIGNATURE**

---

[Name of Director], Director

Water Quality Division

Arizona Department of Environmental Quality

Signed this \_\_\_\_ day of \_\_\_\_, 20\_\_\_\_

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ATTACHMENT A – Project Location Maps

ATTACHMENT B – Well Schematics

ATTACHMENT C – Reporting Forms

ATTACHMENT D – Geophysical Logging Requirements

ATTACHMENT E – Pressure Falloff Requirements

ATTACHMENT F – Step Rate Test Procedure Guidelines

ATTACHMENT G – Plugging and Abandonment Plan

ATTACHMENT H – Description of Operations

## PART I. AUTHORIZATION TO CONSTRUCT AND INJECT

Pursuant to the Underground Injection Control regulations of the Arizona Department of Environmental Quality codified at Title 18 of the Arizona Administrative Code, Chapter 9, Article 6

[COMPANY NAME]  
[ADDRESS LINE 1  
LINE 2  
LINE3]

is hereby authorized, contingent upon Permit conditions, to construct and operate a Class I injection well facility used to dispose of non-hazardous waste generated by the Permittee's facility [for non-commercial facilities DURING THE MANUFACTURE OF XXX; for commercial facilities AND FROM OTHER SOURCES] at the [PROJECT NAME]. The Project is in [PROJECT LOCATION], Arizona, approximately [DISTANCE AND DIRECTION TO NEAREST LANDMARK], as depicted in Attachment A. The location is [LOCATION DESCRIPTION(Include Section, Township, Range, with latitude/longitude)]. The well [IS/WILL BE] located [DESCRIBE LOCATION].

The injection zone is within the [FORMATION NAME] Formation at the [FOR WELLS NOT YET DRILLED USE APPROXIMATE] depths of [NUMBER] feet to [NUMBER] feet below ground level. The authorized injection interval is within the [FORMATION NAME] Formation at the [FOR WELLS NOT YET DRILLED USE APPROXIMATE] depths of [NUMBER] to [NUMBER] feet below ground level.

[DESCRIBE INJECTATE AND SOURCE OR PRODUCTION PROCESS] [INDICATE IF AQUIFER EXEMPTION IS REQUIRED OR HAS BEEN APPROVED. ENSURE THAT THE APPROVED INJECTION ZONE IS BELOW THE LOWERMOST USDW.]

For the permitted wells within the Area of Review (AOR), ADEQ will issue authorization to drill and construct only after requirements of Financial Responsibility in Part II, Section L of this Permit have been met. ADEQ will grant authorization to inject only after the requirements of Part II, Sections B, C and D of this Permit have been met. Operation of injection Well [WELL ID] will be limited to a maximum volume of [SPECIFY QUANTITY] and pressure of [SPECIFY QUANTITY]. All conditions set forth herein refer to Title 18, Chapter 9, Article 6 of the Arizona Administrative Code (A.A.C.) which are regulations in effect on the date that this Permit is effective.

This Permit consists of [NUMBER] pages plus Attachments, and includes all items listed in the Table of Contents. Further, it is based upon representations made by [COMPANY NAME] (the Permittee) and on other information contained in the administrative record. It is the responsibility of the Permittee to read, understand, and comply with all terms and conditions of this Permit.

This Permit and the authorization to construct, operate, and inject are issued for a period to include the approximate [NUMBER]-year Project operation unless terminated under the

conditions set forth in Part III, Section B.1 of this Permit. This Permit and authorization to inject shall also include any additional post-closure monitoring beyond [SPECIFY DURATION] years, if deemed necessary by ADEQ.

This Permit is issued on [DATE] and becomes effective on [DATE]. This Permit is issued for a period of xx years unless the Permit is terminated under the conditions set forth in Part III.B.1. or administratively extended under the conditions set forth in Part III.E.

Signed by

---

[Name of Director], Director Water Quality Division  
Arizona Department of Environmental Quality

## **PART II. SPECIFIC PERMIT CONDITIONS**

### **A. REQUIREMENTS PRIOR TO DRILLING, TESTING, CONSTRUCTING, OR OPERATING**

#### **1. Financial Assurance**

The Permittee shall supply evidence of financial assurance prior to commencing any well drilling and construction, in accordance with Section G of this part.

#### **2. Field Demonstration Submittal, Notification, and Reporting**

- a. Prior to each demonstration or test required in this Permit, the Permittee shall submit plans and specifications for procedures to the ADEQ for approval 90 days prior to demonstration or testing activities. No demonstration or test in these sections may proceed without prior written approval from ADEQ.
- b. The Permittee must notify ADEQ at least thirty (30) days prior to performing any required field demonstrations or test, after ADEQ approves the plans/procedures for testing, in order to allow ADEQ to arrange to witness if so elected.
- c. The Permittee shall submit results of each demonstration or test required in Part II of this Permit to ADEQ within thirty (30) days of completion, unless otherwise noted.

**[INCLUDE SECTION ON AQUIFER EXEMPTION IF APPLICABLE – SEE PART II.B IN CLASS III PERMIT TEMPLATE]**

### **B. CONDITIONS FOR EXISTING WELLS AND PROPOSED WELLS**

#### **1. Surface Location**

[DESCRIBE LOCATION OF ANY EXISTING AND/OR PROPOSED WELLS]

#### **2. Existing Well Construction Details**

A well schematic for the Well(s) is contained in Attachment B of this Permit. The Permittee shall at all times maintain the well consistent with this well schematic.

#### **3. Proposed Well Construction Details**

The Permittee shall submit an updated Well Schematic for the Proposed Well and must receive written ADEQ approval prior to commencing drilling and construction of the well.



**4. Future Well Construction Beyond the Existing Well Identified in this Permit**

Prior to drilling any new injection well(s) not covered by this Permit, the Permittee must submit to ADEQ, for review and approval, a Permit application with detailed construction plans and procedures, including proposed field coordinates (Section, Township, Range, with latitude/longitude) for the surface and bottom hole locations of the proposed well(s). The Permittee shall also provide the drilling program details, and the distance between all wells, and any justification for the proposed separation distance between the wells, both at the surface and at the true vertical depth of the top of the injection interval.

**5. Injection Formation Testing**

a. Step-Rate Test (SRT)

- i. Within ninety (90) days after the completion of the injection well, the Permittee shall conduct an SRT on the well to establish the maximum allowable surface injection pressure (MAIP). The report shall be submitted to ADEQ within sixty (60) days of test completion.
- ii. Refer to Attachment F – Step Rate Test Procedure Guidelines. Refer also to Society of Petroleum Engineers (SPE) Paper #16798 for test design and analysis guidance.
- iii. Injection into the well as proposed in the approved SRT procedure, which may include injecting above fracture pressure, will be temporarily authorized only until such time that ADEQ approves final injection requirements.

b. Pressure Fall Off Test (FOT)

- i. Within one hundred eighty (180) days after ADEQ approves the completed SRT and establishes an MAIP for the well pursuant to Part II.D.3., the Permittee shall conduct an initial FOT to determine and monitor formation characteristics. A FOT shall be performed approximately six (6) months after the permit becomes effective, if an FOT has not been conducted within the last six (6) months under the prior permit. If an FOT has been performed within six (6) months under the prior permit, the next FOT shall be performed one year after the prior FOT. The other injection wells shall either be inactive, or operated at a constant rate, prior to and during the FOT, in order to obtain reliable pressure data and accurate results. The Permittee shall conduct the FOT after a radial flow regime has been established at an injection rate which is representative of the wastewater contribution to the well.

- ii. The Permittee shall submit to ADEQ for review and approval a detailed plan for the FOT that is developed in accordance with Attachment E. Once ADEQ approves in writing the test plan, the Permittee may schedule the FOT. The final FOT report shall be submitted to ADEQ within sixty (60) days of test completion.
  - iii. The Permittee shall use the test results to calculate the Zone of Endangering Influence (ZEI), consistent with procedures set forth at A.A.C. R18-9-B612, and to evaluate whether any additional corrective action will be required (refer to Part II.C.). The Permittee shall include a summary of the ZEI recalculation with the FOT report.
  - iv. After the initial FOT, the Permittee shall conduct an annual FOT to monitor formation characteristics. The Permittee may conduct the annual FOT in conjunction with the annual External Mechanical Integrity Test demonstration, as required by Part II.D.2.a.i.i.i.
  - v. The Permittee shall create a plot/graph of the latest static reservoir pressure of the injection zone and its cumulative behavior over time, starting with the FOT conducted after the initial FOT; the plot shall be included with the annual FOT report each year.
- c. **Formation Testing Program**  
In addition to Part II.B.5.a. and b., above, the Permittee shall submit a detailed proposed formation testing program for each well for ADEQ review. The Permittee shall not commence construction of the Proposed Well until ADEQ has approved the proposed formation testing program.

## **6. Injection Interval**

The [PROPOSED OR EXISTING WELLS] [ARE CURRENTLY/ WILL BE] injecting into the [DESCRIBE FORMATION] within the [NAME OF FACILITY]. Injection is only permitted into [FORMATION NAME] Formation within the depth range as depicted in the as-built diagrams in Attachment B (i.e., at a depth of approximately [NUMBER] to [NUMBER] feet bgs).

## **7. Monitoring Devices**

The Permittee shall install and maintain in good operating condition at all times during the operation of each well, the following monitoring devices:

- a. A tap on the discharge line between the injection pump and the wellhead or an alternative location proposed in a detailed written request by the Permittee and approved in writing by ADEQ for the purpose of obtaining representative samples of injection fluid; and

- b. Devices to continuously measure and record injection pressure, annulus pressure, flow rate, and injection volume, subject to the following:
  - i. Pressure gauges shall be of a design to provide:
    - (a) A full pressure range of at least fifty (50) percent greater than the anticipated operating pressure; and
    - (b) A certified deviation accuracy of five (5) percent or less throughout the operating pressure range.
  - ii. Flow meters shall measure cumulative volumes and be certified for a deviation accuracy of five (5) percent or less throughout the range of injection rates allowed by the Permit.

## **8. Proposed Changes and Workovers**

- a. The Permittee shall give advance notice to ADEQ as soon as possible, pursuant to and in accordance with A.A.C. R18-9-D635, of any planned physical alterations or additions to each well, including sidetracking and deepening or perforating additional intervals. Any changes in well construction, including changes in casing, tubing, packers, and/or perforations other than minor changes, require prior written approval by ADEQ and may require a Permit modification under the requirements of A.A.C. R18-9-C632. Modifications that are considered routine in well construction details, such as tubing dimensions and strengths, packer models, types and setting depths, and perforation interval changes within the permitted injection zone may be processed by ADEQ as minor permit modifications consistent with A.A.C. R18-9-C633.
- b. The Permittee shall provide all records of well workovers, logging, or other subsequent test data to ADEQ within sixty (60) days of completion of the activity.
- c. The Permittee shall submit all reports required by this Permit using the appropriate reporting forms contained in Attachment C.
- d. The Permittee shall perform a Mechanical Integrity Test (MIT), using the procedures set forth in Part II.D.1 and Part II.D.2.a. within thirty (30) days of completion of workovers or alterations and prior to resuming injection activities. The Permittee shall provide results of the MIT to ADEQ within sixty (60) days of completion.

## **9. Testing during Drilling and Construction**

- a. The Permittee shall include logs and other tests conducted during drilling and construction including, at a minimum, deviation checks, casing logs, and injection formation tests as outlined in A.A.C. R18-9-E640.
- b. The Permittee shall conduct open hole logs over the entire open hole sequence below the conductor casing.
- c. The Permittee shall conduct formation evaluation logs and tests and shall provide and use those results to estimate and report values for porosity, permeability, compressibility, static formation pressure, effective thickness, lithology, and rock mechanical properties for both the injection and confining zones identified within the permitted geological sequence.
- d. The Permittee shall collect and analyze full-diameter cores from the overlying confining unit [NAME OF FORMATION] and within the [NAME OF FORMATION] Formation during drilling of each proposed well.
- e. Before surface, intermediate, and long string casings are set, the Permittee shall run dual induction/spontaneous potential/gamma ray/caliper (DIL/SP/GR/CAL) logs over the course of the entire open hole sequence after the well is drilled to each respective terminal depth. After each casing is set and cementing is completed, the Permittee shall conduct a cement bond evaluation over the course of the entire cased hole sequence. The cement bond evaluation shall enable the analysis of bond between cement and casing as well as any cement channeling in the borehole annulus.
- f. During construction of each well, the Permittee shall obtain information relating to ground water at the site and submit to ADEQ. This information shall include a direct Total Dissolved Solids analysis of the target injection formation water to demonstrate the presence and characteristics of, or the lack thereof, any Underground Sources of Drinking Water (USDWs, as defined in A.A.C. R18-9-A605.

## **C. CORRECTIVE ACTION**

The Permittee is required to conduct corrective actions as mandated in R18-9-D639, prior to ADEQ granting authorization to inject under this Permit.

### **1. Annual Zone of Endangering Influence Review**

The Permittee shall annually review the ZEI calculation based on any new data obtained from the FOT and static reservoir pressure observations required by Part II.B.7.b. The Permittee shall provide to ADEQ a copy of the modified ZEI

calculations, along with all associated assumptions and justifications, with the next Quarterly Report due in accordance with the schedule, set forth in Part II.E.

## **2. Implementation of Corrective Action**

- a. If any wells requiring corrective action, in accordance with A.A.C. R18-9- D639, are found within the modified ZEI referenced in Part II.C.1., above, a list of the wells along with their locations and construction data shall be provided to ADEQ within thirty (30) days of their identification. ADEQ will determine whether corrective action is required and no corrective action shall be performed without authorization.
- b. Corrective action may be required after permit issuance to address any wells within the area of review that may allow migration of fluids into underground sources of drinking water. ADEQ will use the annual FOT results and re-calculation of the ZEI, along with USDW monitoring results from the monitoring well, as described in Section E, Monitoring, Recordkeeping, and Reporting of Results to determine the potential need for any future corrective action.
- c. The Permittee shall submit a plan for approval by ADEQ to re-enter, plug, and abandon the wells listed in Part II.C.2.a., above, in a way that prevents the migration of fluids into any USDWs. The Permittee may submit an alternative plan to address the potential for fluid migration in any of these wells to ADEQ.
- d. The Permittee may not commence corrective action activities without prior written approval from ADEQ.

## **D. WELL OPERATION**

### **1. Required Demonstrations**

- a. Mechanical Integrity
  - i. The Permittee shall propose a schedule to conduct a MIT to demonstrate each well authorized by this Permit has mechanical integrity consistent with A.A.C. R18-9-B613 and with Section II.D.2.a. The test should be planned for no more than 365 days after the prior well tests were conducted under the previous permit. The Permittee shall demonstrate that there are no significant leaks in the casing and tubing (internal mechanical integrity) and that there is not significant fluid movement into or between USDWs through the casing wellbore annulus or vertical channels adjacent to the injection wellbore (external mechanical integrity).

**b. Injectate Hazardous Waste Determination**

- i. Within sixty (60) days of the effective date of this Permit, the Permittee shall certify that the existing Injectate “Hazardous Waste Determination” of each unique waste stream source injected into the each well authorized by this Permit, as listed in Section II.D.5.a, is unchanged. If a change is identified, a new determination must be performed within sixty (60) days of the effective date of this Permit. The results of the analysis shall demonstrate that the injectate does not meet the definition of hazardous waste as defined in A.R.S. § 49- 921.
- ii. The Permittee shall submit a letter to ADEQ confirming that the “Hazardous Waste Determination” was carried out according to 40 CFR § 262.11 within sixty (60) days of it having been completed for the well.
- iii. The Permittee shall perform an additional “Hazardous Waste Determination” whenever there is a process change or a change in fluid chemical constituents or characteristics of the injectate. The Permittee shall also refer to injectate testing requirements set forth in Part II.E.1., below.

**2. Mechanical Integrity Testing**

**a. Mechanical Integrity Tests**

Mechanical integrity testing shall conform to the following requirements throughout the life of any injection wells currently or in the future authorized by ADEQ under this Permit and in accordance with the requirements set forth at A.A.C. R18-9- D635.

**i. Casing/Tubing Annular Pressure (Internal MIT)**

In accordance with the timing requirements defined in Part II.D.2.b., below, the Permittee shall perform a pressure test on the annular space between the tubing and long string casing to demonstrate the absence of significant leaks in the casing, tubing, and/or liner. This test shall be for a minimum of thirty (30) minutes at a pressure equal to or greater than three hundred and fifty (350) pounds per square inch gauge (psig). If greater than the MAIP, it should be no greater than one hundred (100) psig or 10% of the MAIP, whichever is less. A well passes the MIT if there is less than a five (5) percent change in pressure over the thirty (30) minute period. A pressure differential of at least three hundred and fifty (350) psig between the tubing and annular pressures shall be maintained throughout the MIT. This test shall be performed on each well within five years of the previous Internal MIT and once every five (5) years thereafter.

Detailed plans for conducting the Internal MIT must be submitted to ADEQ for review and approval. Once approved, the Permittee may schedule the Internal MIT, providing ADEQ at least thirty (30) days' notice before the Internal MIT is conducted. The final test report shall be submitted to ADEQ within sixty (60) days of test completion.

ii. Continuous Pressure Monitoring

The Permittee shall continuously monitor and record the tubing/casing annulus pressure and injection pressure by a digital instrument with a resolution of one tenth (0.1) psig. The average, maximum, and minimum monthly results shall be included in the next Quarterly Report submitted to ADEQ pursuant to Part II.E.5.b., along with any additional records or data requested by ADEQ regarding the continuous monitoring data described in this Section.

iii. Injection Profile Survey (External MIT)

The Permittee shall conduct a demonstration that the injectate is confined to the proper zone and submit the results of the demonstration to ADEQ for approval.

This demonstration shall consist of temperature and radioactive tracer surveys, and top perforation and packer checks (as specified in Attachment D) or another diagnostic tool or procedure as approved by ADEQ.

Detailed plans for conducting the external MIT must be submitted to ADEQ for review and approval. Once approved, the Permittee may schedule the External MIT, providing ADEQ at least thirty (30) days' notice before the External MIT is conducted. Results of the External MITs shall be submitted to ADEQ in the quarterly reports.

iv. Cement Evaluation Analysis

After installing and cementing casing, conducting a cement squeeze job, or any well cement repair for any approved injection well under this Permit, the Permittee shall submit to ADEQ cementing records and cement evaluation logs that demonstrate isolation of the injection interval and other formations from underground sources of drinking water. Surface casing, intermediate, and long string casing well bore annuli shall be cemented to ground surface. Analysis shall include cement evaluation

performed after each casing is set and cemented. Cement evaluation must assess the following four objectives:

- a. Bond between casing and cement;
- b. Bond between cement and formation;
- c. Detection and assessment of any micro-annulus (small gaps between casing and cement); and
- d. Identification of any cement channeling in the borehole annulus.

If the cement bond logs indicate a lack of sufficient cement or poor bonding at the base of USDWs and/or other critical intervals in any approved injection well under this Permit, remedial cementing may be required to place additional cement in the casing/wellbore annulus.

The Permittee may not commence or recommence injection on the well until it has received written notice from ADEQ that the cement valuation/demonstration is satisfactory.

After any repair that requires removing the tubing and packer from the well the Permittee shall conduct a casing evaluation log. A copy of the casing evaluation log shall be provided to ADEQ within sixty (60) days.

b. Schedule for MITs

ADEQ may require that an Internal and/or External MIT be conducted within thirty (30) days of a written request from ADEQ during the permitted life of any well authorized by this Permit. The Permittee shall also arrange and conduct MITs according to the following requirements and schedule:

- i. Within thirty (30) days from completion of any workover operation where well integrity is compromised, an Internal MIT shall be conducted and submitted to ADEQ for approval to verify that the well has mechanical integrity. Prior to this field demonstration, the Permittee shall submit testing plans to ADEQ, as described in Part II.A.2.
- ii. At least annually, an injection profile survey External MIT shall be conducted in accordance with A.A.C. R18-9-B613 and Part II.D.2.a.iii.
- iii. At least once every five (5) years for each operating well authorized under this Permit, an Internal MIT shall be conducted in accordance with A.A.C. R18-9-B613 and Part II.D.2.a.i., above.



c. **Loss of Mechanical Integrity**

Within twenty-four (24) hours from the time the Permittee becomes aware of any loss of mechanical integrity of any well authorized by this Permit, the Permittee shall notify ADEQ of the situation and specify which of the following circumstances apply:

- i. The well fails to demonstrate mechanical integrity during a test; or
- ii. A loss of mechanical integrity becomes evident during operation; or
- iii. A significant change in the annulus or injection pressure occurs during normal operating conditions.

In the event of a loss of mechanical integrity, the Permittee shall immediately suspend injection activities in the affected well and shall not resume operation until it has taken necessary actions to restore and confirm mechanical integrity of the affected well and not until ADEQ has provided written approval prior to the recommencing of injection into the affected well.

The Permittee may not recommence injection after a workover which has compromised well integrity (such as unseating the packer, etc.) until it has received written approval from ADEQ that the demonstration of mechanical integrity is satisfactory.

**3. Injection Pressure Limitation**

For any injection wells authorized pursuant to this Permit:

- a. The maximum injection pressure (MAIP) measured at the wellhead shall not exceed [NUMBER] psig for injection into the [FORMATION NAME] Formation.
- b. The Permittee may request a change in the maximum injection pressure allowed under Part II.D.3. Any such request shall be made in writing and justified to ADEQ with the results of a SRT. If ADEQ approves the change, the proposed MAIP would be added to the Permit as an attachment, becoming the enforceable MAIP.
- c. In no case shall the Permittee inject at pressures that
  - i. initiate new fractures or propagate existing fractures in the injection zone or the confining zone,
  - ii. cause the movement of injection or formation fluids into or between USDWs, or
  - iii. allow injection fluids to migrate to any oil, gas, or geothermal field operations or production wells.

#### **4. Injection Volume (Rate) Limitation**

- a. For any injection wells authorized pursuant to this Permit:
- b. The injection rate shall not exceed [NUMBER] gallons per month or [NUMBER] gallons per day. This rate will be subject to an annual review based on the annual ZEI determinations as described in Part II.C.1.
- c. The Permittee may request a change in the maximum rate allowed in Part II.D.4.a., above. Any such request shall be made in writing, along with a justification for the proposed increase, to ADEQ for review and approval.
  - a.
- d. Should any increase in injection rate be requested, the Permittee shall demonstrate to the satisfaction of ADEQ that the proposed increase will not interfere with the operation of the facility, its ability to meet conditions described in this Permit, change its well classification, or cause migration of injectate or pressure buildup to occur beyond the AOR.
  - b.
- e. The injection rate shall not cause an exceedance of the injection pressure limitation established pursuant to Part II.D.3.
  - c.

#### **5. Injection Fluid Limitation**

- a. This Permit authorizes the following injection fluids into the [Well ID]: [DESCRIBE FLUID AND SOURCES]. Fluids from other sources or any other types of waste fluids are prohibited from injection at this Facility.
- b. The Permittee shall not inject any hazardous waste, as defined by A.R.S. § 49-921, at any time.
- c. Injection fluids shall be limited to those authorized by this Permit, which are those fluids produced by the Permittee and authorized sources described in Part II.D.5.a. and Part II.D.5.b., above.
- d. Any well stimulation or treatment procedure (such as acidizing, etc.) performed at the discretion of the Permittee shall be proposed and submitted to ADEQ for approval. If approval is granted, notification to ADEQ is required at least thirty (30) days prior to performing the approved procedure. This requirement may be modified if the Permittee submits a standard operating procedure for well stimulation or treatment for ADEQ approval after the effective date of this Permit. If the standard operating procedure plan is approved by ADEQ in writing, the Permittee shall notify ADEQ within fifteen (15) days of the proposed well

stimulation or treatment procedure, provided the procedure does not deviate in any way from the ADEQ-approved plan.

## **6. Tubing/Casing Annulus Requirements**

For any injection wells authorized pursuant to this Permit:

- a. The Permittee shall use and maintain corrosion-inhibiting annular fluid during well operation. The annular fluid used in the [NAME OF WELL] is a [DESCRIBE FLUID] with a density of [NUMBER] pounds per gallon (ppg).
- b. If the historic cyclic range of annular pressure fluctuation is not already known, then within the first three (3) months of normal injection operations after the effective date of this Permit, the Permittee shall monitor and record to determine that range. The pressure fluctuation data shall be submitted with the first Quarterly Report due after the effective date of the Permit.
- c. Any annular pressure measured outside of the established normal pressure range, regardless of whether it otherwise meets the requirements of this Permit, shall be reported orally to ADEQ within twenty-four (24) hours, followed by a written submission within five (5) days, as a potential loss of mechanical integrity. In the submission, the Permittee must describe the event and include details, such as associated injection pressures and temperatures. The Permittee shall provide any additional information regarding the reported annular pressure event requested by ADEQ within sixty (60) days of receipt of a written request from ADEQ.

## **E. MONITORING, RECORDKEEPING, AND REPORTING OF RESULTS**

### **1. Injection Fluid Monitoring Program**

On a quarterly basis, the Permittee shall sample and analyze injection fluids to yield representative data on their physical, chemical, and other relevant characteristics. Test results shall be submitted by the Permittee to ADEQ on a quarterly basis.

Samples and measurements shall be representative of the monitored activity. The Permittee shall utilize applicable analytical methods described in Table I of 40 CFR or in EPA Publication SW-846, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," and as described below, unless other methods have been approved by ADEQ or additional approved methods or updates to the methods become available.

### Summary of Acceptable Analytical Methods

- a. Inorganic Constituents –USEPA Method 300.0, Part A for Major Anions and USEPA Method 200.8 for Cations and Trace Metals.
- b. Solids - Standard Methods 2540C and 2540D for Total Dissolved Solids (TDS) and Total Suspended Solids (TSS).
- c. General and Physical Parameters – appropriate USEPA methods for Temperature, Turbidity, pH, Conductivity, Hardness, Specific Gravity, Alkalinity, and Biological Oxygen Demand (BOD); and Density and Viscosity (See EPA Bulletin 712-C-96-032) under standard conditions.
- d. Volatile Organic Compounds (VOCs) - USEPA Method 8260D.
- e. Semi-Volatile Organic Compounds (SVOCs) - USEPA Method 8270E.

## **2. Monitoring Information**

The Permittee shall maintain records of monitoring activity required under this Permit, including the following information and data:

- a. Date, exact location, and time of sampling or field measurements;
- b. Name(s) of individual(s) who performed sampling or measurement;
- c. Exact sampling method(s) used;
- d. Date(s) laboratory analyses were performed;
- e. Name(s) of individual(s) who performed laboratory analyses;
- f. Types of analyses; and
- g. Results of analyses.

## **3. Monitoring Devices**

- a. Continuous monitoring devices:  
During all periods of operation of any well authorized by this Permit, the Permittee shall measure the following wellhead parameters:
  - i. injectate rate/volume,
  - ii. injectate temperature,

- iii. annular pressure, and
- iv. injection pressure.

All measurements must be recorded at minimum to a resolution of one tenth (0.1) of the unit of measure (e.g. injection rate and volume must be recorded to a resolution of one tenth (0.1) gallon; pressure must be recorded to a resolution of one tenth (0.1) psig; injection fluid temperature must be recorded to a resolution of one tenth (0.1) degree Fahrenheit). Exact dates and times of measurements, when taken, must be recorded and submitted. The well shall have a dedicated flow meter, installed at or near the wellhead so it records all injection flow. To meet the requirements of this Section, the Permittee shall monitor the following parameters, at the prescribed frequency, and record the measurements at this required frequency, using the prescribed instruments (continuous monitoring requires a minimum frequency of at least one (1) data point every sixty (60) seconds:

Monitoring Parameter	Frequency	Instrument
Injection rate (gpm)	Continuous	Digital Recorder
Daily injection volume (gallons)	Daily	Digital Totalizer
Total cumulative injection volume (gallons)	Continuous	Digital Totalizer
Well head injection pressure (psig)	Continuous	Digital Recorder
Annular pressure (psig)	Continuous	Digital Recorder
Injection fluid temperature (degrees F)	Continuous	Digital Recorder

Permittee must adhere to the required format below for reporting injection rate and well head injection pressure. An example of the required electronic data format:

Date	Time	Inj. Press (psig)	Inj. Rate (gpm)
06/27/09	16:33:16	1525.6	65.8
06/27/09	17:33:16	1525.4	66.3

[DESCRIBE DATA SUBMISSION REQUIREMENTS, CONSIDER THE FOLLOWING] Each data line shall include four (4) values separated by a consistent combination of spaces or tabs. The first value contains the date measurement in the format of mm/dd/yy or mm/dd/yyyy, where mm is the number of the month, dd is the number of the day, and yy or yyyy is the number of the year. The second value is the time measurement, in the format of hh:mm:ss, where hh is the hour, mm are the minutes, and ss are the seconds. Hours should be calculated on a twenty-four (24)-hour basis, i.e. 6 PM is entered as 18:00:00.

Seconds are optional. The third value is the well head injection pressure in psig. The fourth column is injection rate in gallons per minute (gpm).

b. Calibration and Maintenance of Equipment

All monitoring and recording equipment shall be calibrated and maintained on a regular basis to ensure proper working order.

**4. Recordkeeping**

- a. The Permittee shall retain the following records and make them available at all times for examination by an ADEQ inspector:
- i. All monitoring information, including required observations, calibration and maintenance records, recordings for continuous monitoring instrumentation, copies of all reports required by this Permit, and records of all data used to complete the permit application;
  - ii. Information on the physical nature and chemical composition of all injected fluids; and
  - iii. Results of the injectate “Hazardous Waste Determination” according to 40 CFR § 262.11 (See Part II.D.1.b.). Results shall demonstrate that the injectate does not meet the definition of hazardous waste as defined in A.R.S. § 49-921; and
  - iv. Records and results of MITs, FOTs, and any other tests and logs required by ADEQ, and any well work and workovers completed.
- b. The Permittee shall maintain copies (or originals) of all records described in Part II.E.4.a.i. through iv., above, during the operating life of the well and shall make such records available at all times for inspection at the facility. The Permittee shall only discard the records described in Part II.E.4.a.i. through iv., if written approval from ADEQ to discard the records is obtained.
- c. Except for information determined to be confidential under A.A.C. R18-9-A603, all permit applications, permits, reports, and well operation data prepared in accordance with the conditions of this Permit shall be available for public inspection at appropriate offices of ADEQ.

## 5. Reporting of Results

- a. The Permittee shall submit to ADEQ Quarterly Reports containing, at minimum, the following information gathered during the Reporting Period identified in this Part (below):
  - i. Injection fluid characteristics for parameters specified in Part II.E.1.a.;
  - ii. When appropriate, Injectate Hazardous Waste Determination according to Part II.D.1.b.;
  - iii. The results of any additional MITs, FOTs, logging or other tests, as required by ADEQ;
  - iv. Any pressure tests, as required by Part II.D.2.a.i.;
  - v. Shut-in static reservoir pressure cumulative behavior plot of the injection zone;
  - vi. Hourly and daily values, submitted in electronic format, for the continuously monitored parameters specified for the injection wells in Part II.E.3.a.; and
  - vii. Monthly cumulative volumes, as well as monthly average, minimum and maximum values for the continuously monitored rate, pressure and temperature parameters specified for the injection well in Part II.E.3.a., unless more detailed records are requested by ADEQ.
- b. Quarterly Reports, with the applicable Attachment C forms, shall be submitted for the reporting periods by the respective due dates as listed below:

Reporting Period	Report Due
Jan, Feb, Mar	Apr 28
Apr, May, June	July 28
July, Aug, Sept	Oct 28
Oct, Nov, Dec	Jan 28

- c. For the January Quarterly Report, the Permittee shall also include in that Report the following information collected during the prior year covering January through December:
  - i. Annual reporting summary (7520-8 in Attachment C);
  - ii. Annual injection profile survey results as required in Part II.D.2.a.iii.;

- iii. Annual ZEI recalculation as required in Part II.C.1.; and
  - iv. A narrative description of all non-compliance that occurred during the past year.
- d. In addition to meeting the submittal requirements of Part III.E.9., digital e- copies of all Quarterly Reports shall also be provided to the following:

Arizona Department of Environmental Quality  
Water Quality Division, Groundwater, UIC Program  
1110 West Washington Street  
Phoenix, AZ 85007

## **F. PLUGGING AND ABANDONMENT**

### **1. Notice of Plugging and Abandonment**

The Permittee shall notify ADEQ no less than sixty (60) days before abandonment of any well authorized by this Permit and shall not perform the plugging and abandonment activities until the Permittee receives written notice of approval by ADEQ.

### **2. Plugging and Abandonment Plans**

The Permittee shall plug and abandon the well as provided by the Plugging and Abandonment Plan submitted by the Permittee (see Attachment G) and approved by ADEQ, consistent with A.A.C. R18-9-B614. Upon written notice to the Permittee, ADEQ may change the manner in which a well will be plugged, based upon but not limited to the following reasons: (a) if the well is modified during its permitted life, (b) if the proposed Plugging and Abandonment Plan for the well is not consistent with ADEQ requirements for construction or mechanical integrity, or (c) otherwise at ADEQ's discretion. Upon written notice, ADEQ may periodically require the Permittee to estimate and to update the estimated plugging cost. To determine the appropriate level of financial assurance for the Plugging and Abandonment Plan, the Permittee shall obtain a cost estimate from an independent third-party firm in the business of plugging wells. The estimate shall include the costs of all the materials and activities necessary to pay an independent third-party contractor to completely plug and abandon the well as established in the Plugging and Abandonment Plan.

### **3. Cessation of Injection Activities**

After a cessation of injection operations for two (2) years for any well authorized by this Permit, a well is considered inactive. In this case, the Permittee shall plug and abandon the inactive well in accordance with the approved Plugging and Abandonment Plans contained in Attachment G, unless the Permittee:



- a. Provides notice to ADEQ of an intent to re-activate the well;
- b. Has demonstrated that the well(s) will be used in the future;
- c. Has described actions or procedures, satisfactory to ADEQ and approved in writing by ADEQ, which will be taken to ensure that the well(s) will not endanger USDWs during the period of inactivity, including annually demonstrating external mechanical integrity of the well(s); and
- d. Conducts an initial Internal MIT and every two (2) years thereafter while the well remains inactive, demonstrating no loss of mechanical integrity. Note that the Permittee must restore mechanical integrity of the inactive well if the well fails the MIT.

#### **4. Plugging and Abandonment Report**

Within sixty (60) days after plugging any well, or at the time of the next Quarterly Report (whichever comes first), the Permittee shall submit a report on Form 7520-19, provided in Attachment C, as well as the detailed procedural activity of engineer's log and daily rig log to ADEQ. The report shall be certified as accurate by the person who performed the plugging operation and shall consist of either:

- a. A statement that the well was plugged in accordance with the approved Plugging and Abandonment Plans contained in Attachment G; or
- b. Where actual plugging differed from the Plugging and Abandonment Plans contained in Attachment G, a statement specifying and justifying the different procedures followed.

### **G. FINANCIAL ASSURANCE REQUIREMENTS**

#### **1. Demonstration of Financial Responsibility**

The Permittee shall demonstrate and maintain financial responsibility and resources sufficient to close, plug, and abandon any existing or future- permitted underground injection operations approved pursuant to this Permit, as provided in the Plugging and Abandonment Plan contained in Attachment G and consistent with A.A.C. R18-9-D636(A)(6).

- a. The Permittee shall post an approved financial instrument such as a surety bond or other financial assurance in the amount of [SPECIFY \$ AMOUNT] to guarantee groundwater monitoring and plugging and abandonment activities for closure and post-closure. Authority to construct, inject, and operate the wells under the authority of this Permit will be granted only after the financial instrument has been secured and approved by ADEQ.

- b. The level and mechanism of financial responsibility shall be reviewed and updated annually, upon request of ADEQ. The Permittee shall provide ADEQ the financial responsibility update within sixty (60) days of receipt of a written request from ADEQ. The Permittee may be required to change to an alternate method of demonstrating financial responsibility. Any such change must be approved in writing by ADEQ prior to the change.
- c. ADEQ may require the Permittee to estimate and to update the estimated plugging, and/or post-closure activity costs periodically. Such estimates shall be based upon costs that a third party would incur to carry out the required restoration activities, properly plug and abandon the wells, and perform post-closure monitoring activities, including materials, equipment, mud and disposal costs, and labor with appropriate contingencies.

## **2. Insolvency of Financial Institution**

The Permittee shall submit an alternate instrument of financial responsibility acceptable to ADEQ within sixty (60) days after either of the following events occurs:

- a. The institution issuing any bond or other financial instrument that is secured to demonstrate financial responsibility in accordance with Part II, Section G.1. of this Permit files for bankruptcy; or
- b. The authority of the trustee institution to act as trustee, or the authority of the institution issuing the financial instrument, is suspended or revoked.
- c. The institution issuing the financial instrument lets it lapse or decides not to extend it.

Failure to submit an acceptable financial demonstration may result in the termination of this Permit pursuant to A.A.C. R18-9-C634(A)(1).

## **3. Insolvency of Owner or Operator**

The Permittee shall notify ADEQ by certified mail of the commencement of voluntary or involuntary proceedings under U.S. Code Title 11 (Bankruptcy), naming the owner or operator as debtor, within ten (10) business days. A guarantor of a corporate guarantee must make such a notification if he/she is named as debtor, as required under the terms of the guarantee.

**4. DURATION OF PERMIT**

This Permit and the authorization to inject are issued for a period of [NUMBER] years unless terminated under the conditions set forth in Part III.B.1. or administratively extended under the conditions set forth in Part III.E.11.

## PART III. GENERAL PERMIT CONDITIONS

### A. EFFECT OF PERMIT

The Permittee is allowed to engage in underground injection well construction and operation in accordance with the conditions of this Permit. The Permittee shall not construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant (as defined by A.A.C. R18-9-A601) into USDWs (as defined A.A.C R18-9-A601).

Any underground injection activity not specifically authorized in this Permit is prohibited. The Permittee must comply with all applicable provisions of 18 A.A.C. 9, Article 6. Such compliance does not constitute a defense to any action brought under Section 1431 of the SDWA, 42 U.S.C. §300(i), or any other common law, statute, or regulation other than Part C of the SDWA. Issuance of this Permit does not convey property rights of any sort or any exclusive privilege, nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of State or local law or regulations. Nothing in this Permit shall be construed to relieve the Permittee of any duties under all applicable laws and regulations.

No injection fluids are allowed to migrate to any nearby oilfield production wells. Further, this Permit requires systematic and predictive documentation over the facility's operational life to ensure that no injection fluids, either presently or in the future, will migrate to oilfield operation or geothermal production wells

### B. PERMIT ACTIONS

#### 1. Modification, Revocation and Reissuance, or Termination

ADEQ may, for cause or upon request from the Permittee, modify, revoke and reissue, or terminate this Permit in accordance with A.A.C. R18-9-C631, C632, and C634. The permit is also subject to minor modifications for causes as specified in A.A.C. R18-9-C633. The filing of a request for a Permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated non-compliance by the Permittee, does not stay the applicability or enforceability of any permit condition. ADEQ may also modify, revoke and reissue, or terminate this Permit in accordance with any amendments to the SDWA if the amendments have applicability to this Permit.

#### 2. Transfers

This Permit is not transferable to any person unless notice is first provided to ADEQ and the Permittee complies with requirements of A.A.C. R18-9-C630. ADEQ may require modification or revocation and reissuance of the permit to change the name of the Permittee and incorporate such other requirements as may be necessary under the SDWA.

### **C. SEVERABILITY**

The provisions of this Permit are severable, and if any provision of this Permit or the application of any provision of this Permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this Permit shall not be affected thereby.

### **D. CONFIDENTIALITY**

In accordance with A.A.C. R18-9-A603, any information submitted to ADEQ pursuant to this Permit may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, ADEQ may make the information available to the public without further notice. If a claim is asserted, the validity of the claim will be assessed in accordance with the procedures contained in A.R.S. § 49-205 (Public Information). Claims of confidentiality for the following information will be denied:

- a. Name and address of the Permittee, or
- b. Information dealing with the existence, absence, or level of contaminants in drinking water.

### **E. GENERAL DUTIES AND REQUIREMENTS**

#### **1. Duty to Comply**

The provisions of R18-9-D635 are incorporated by reference into this Permit, except as modified by specific provisions in this Permit. In addition, the following general duties and requirements apply to this Permit and the Permittee. The Permittee shall comply with all applicable UIC Program regulations and conditions of this Permit, except to the extent and for the duration such non-compliance is authorized by an emergency permit issued in accordance with A.A.C. R18-9-C625. Any permit non-compliance constitutes a violation of the SDWA and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or for denial of a Permit renewal application. Such non-compliance may also be grounds for enforcement action under the Resource Conservation and Recovery Act (RCRA).

#### **2. Penalties for Violations of Permit Conditions**

Any person who violates a Permit requirement is subject to civil penalties, fines, and other enforcement action under the SDWA and may also be subject to enforcement actions pursuant to RCRA. Any person who willfully violates permit conditions may be subject to criminal prosecution.

**3. Need to Halt or Reduce Activity not a Defense**

It shall not be a defense, for the Permittee in an enforcement action, that it would have been necessary to halt or reduce the permitted activity to maintain compliance with the conditions of this Permit.

**4. Duty to Mitigate**

The Permittee shall take all reasonable steps to minimize and correct any adverse impact on the environment resulting from non-compliance with this Permit.

**5. Proper Operation and Maintenance**

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this Permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this Permit.

**6. Property Rights**

This Permit does not convey any property rights of any sort, or any exclusive privilege.

**7. Duty to Provide Information**

The Permittee shall furnish to ADEQ, within a time specified, any information which ADEQ may request to determine whether cause exists for modifying, revoking, and reissuing, or terminating this Permit, or to determine compliance with this Permit. The Permittee shall also furnish to ADEQ, upon request, copies of records required to be kept by this Permit pursuant to A.A.C. R18-9- D635(A)8.

**8. Inspection and Entry**

The Permittee shall allow ADEQ, or an authorized representative, upon the presentation of credentials and other documents as may be required pursuant to A.A.C. R18-9-D635(A)9 to:

- a. Enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Permit;
- b. Have access to and copy, at reasonable times, any records that are kept under the conditions of this Permit;

- c. Inspect and photograph at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Permit; and
- d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the SDWA, any substances or parameters at any location.

## **9. Signatory Requirements**

All applications, reports, or other information submitted to ADEQ shall be signed and certified by a responsible corporate officer or duly authorized representative according to A.A.C. R18-9-C617.

## **10. Additional Reporting Requirements**

- a. **Planned Changes** - The Permittee shall give notice to ADEQ as soon as possible of any planned physical alterations or additions to the permitted facility affecting any of the terms and conditions of the permit.
- b. **Anticipated Non-compliance**-The Permittee shall give advance notice to ADEQ of any planned changes in the permitted facility or activity which may result in non-compliance with permit requirements.
- c. **Compliance Schedules** - Reports of compliance or non-compliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Permit shall be submitted to ADEQ no later than thirty (30) days following each schedule date.
- d. **Twenty-four Hour Reporting** - The Permittee shall report to ADEQ any non-compliance which may endanger health or the environment. The following Information shall be provided orally within 24 hours from the time the Permittee becomes aware of the circumstances.
  - i. Any monitoring or other information which indicates that any contaminant may cause an endangerment to a USDW; and
  - ii. Any non-compliance with a Permit condition, malfunction of the injection system, or loss of mechanical integrity, which may cause fluid migration into or between USDWs.
- e. A written submission of all non-compliance shall also be provided to ADEQ within five (5) days of the time the Permittee becomes aware of the circumstances. The written submission shall contain: a description of the non-compliance and its cause; the period of non-compliance, including exact dates and times; if the non-

compliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the non-compliance.

- f. Other non-compliance - At the time monitoring reports are submitted, the Permittee shall report in writing all other instances of non-compliance not otherwise reported.
- g. Other Information - If the Permittee becomes aware that it failed to submit all relevant facts in the permit application or submitted incorrect information in the permit application or in any report to ADEQ, the Permittee shall submit such facts or information within two (2) weeks of the time such facts or information becomes known.

## **11. Continuation of Expiring Permit**

- a. Duty to Reapply - If ADEQ requires the Permittee to continue an activity regulated by this Permit past the expiration date of this Permit, the Permittee must submit a complete application for a new permit at least one hundred and eighty (180) days before this Permit expires.
- b. Permit Extensions - The conditions and requirements of an expired permit continue in force and effect in accordance with 5 U.S.C. §558(c) until the effective date of a new permit, if:
  - i. The Permittee has submitted a timely and complete application for a new permit; and
  - ii. ADEQ, through no fault of the Permittee, does not issue a new permit with an effective date on or before the expiration date of the previous permit.



Arizona UIC Permit Template  
Class II

**UNDERGROUND INJECTION CONTROL PROGRAM**

**PERMIT to Construct and Inject**

**Class II Injection Wells**

**Permit No. UIC-AZII-FY22-#**

**[PROJECT NAME] Project**

**[COUNTY NAME] County, Arizona**

**Issued to:**

**[PERMITTEE NAME]**

**[ADDRESS LINE 1]**

**[ADDRESS LINE 2]**

**[ADDRESS LINE 3]**

**AUTHORIZING SIGNATURE**

---

[Name of Director], Director Water Quality Division

Arizona Department of Environmental Quality

Signed this \_\_\_\_ day of \_\_\_\_\_, 20\_\_

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ATTACHMENT A – Project Location Maps

ATTACHMENT B – Well Schematics

ATTACHMENT C – Plugging and Abandonment Plan

**PART I. AUTHORIZATION TO CONSTRUCT AND INJECT**

Pursuant to the Underground Injection Control regulations of the Arizona Department of Environmental Quality codified at Title 18 of the Arizona Administrative Code, Chapter 9, Article 6

[COMPANY NAME]  
[ADDRESS LINE 1]  
[LINE 2]  
[LINE3]

is hereby authorized, contingent upon Permit conditions, to [construct and] operate [SPECIFY NEW OR EXISTING] Class II [SPECIFY TYPE] injection well facility used to dispose of [SPECIFY FLUID] generated by the Permittee's facility. The Project is in [PROJECT LOCATION], Arizona, approximately [DISTANCE AND DIRECTION TO NEAREST LANDMARK], as depicted in Attachment A. The location is [LOCATION DESCRIPTION (Include Section, Township, Range, with latitude/longitude)]. The well [IS/WILL BE] located [DESCRIBE LOCATION]. The injection zone is within the [FORMATION NAME] Formation at the [FOR WELLS NOT YET DRILLED USE APPROXIMATE] depths of [NUMBER] feet to [NUMBER] feet below ground level. The authorized injection interval is within the [FORMATION NAME] Formation at the [FOR WELLS NOT YET DRILLED USE APPROXIMATE] depths of [NUMBER] to [NUMBER] feet below ground level.

[DESCRIBE INJECTATE AND SOURCE OR PRODUCTION PROCESS] [INDICATE IF AQUIFER EXEMPTION IS REQUIRED OR HAS BEEN APPROVED]

For the permitted wells within the area of review (AOR), ADEQ will issue authorization to drill and construct only after requirements of Financial Responsibility in Part II, Section L of this Permit have been met. ADEQ will grant authorization to inject only after the requirements of Part II, Sections B and C of this Permit have been met. Operation of injection [WELL ID] will be limited to a maximum volume of [SPECIFY QUANTITY] and pressure of [SPECIFY QUANTITY]. All conditions set forth herein refer to Title 18, Chapter 9, Article 6 of the Arizona Administrative Code (A.A.C.), which are regulations in effect on the date that this Permit is effective.

This Permit consists of [NUMBER] pages plus Attachments, and includes all items listed in the Table of Contents. Further, it is based upon representations made by [COMPANY NAME] (the Permittee) and on other information contained in the administrative record. It is the responsibility of the Permittee to read, understand, and comply with all terms and conditions of this Permit.

This Permit and the authorization to construct, operate, and inject are issued for a period to include the approximate [NUMBER]-year Project operation unless terminated under the conditions set forth in Part III, Section B.1 of this Permit. This Permit and authorization to inject shall also include any additional post-closure monitoring beyond [NUMBER] years, if deemed necessary by ADEQ.

This Permit is issued on [DATE] and becomes effective on [DATE]. This Permit is issued for a period of xx years unless the Permit is terminated under the conditions set forth in Part III.B.1. or administratively extended under the conditions set forth in Part III.E.

Signed by

---

[Name of Director], Director Water Quality Division  
Arizona Department of Environmental Quality

## **PART II. SPECIFIC PERMIT CONDITIONS**

### **A. REQUIREMENTS PRIOR TO DRILLING, TESTING, CONSTRUCTING, OR OPERATING**

#### **1. Financial Assurance**

The Permittee shall supply evidence of financial assurance prior to commencing any well drilling and construction, in accordance with Section F of this part.

#### **2. Field Demonstration Submittal, Notification, and Reporting**

- a. Prior to each demonstration or test required in this Permit, the Permittee shall submit plans and specifications for procedures to the ADEQ for approval 90 days prior to demonstration or testing activities. No demonstration or test in these sections may proceed without prior written approval from ADEQ.
- b. The Permittee must notify ADEQ at least thirty (30) days prior to performing any required field demonstrations or test, after ADEQ approves the plans/procedures for testing, in order to allow ADEQ to arrange to witness if so elected.
- c. The Permittee shall submit results of each demonstration or test required in Part II of this Permit to ADEQ within thirty (30) days of completion, unless otherwise noted.

[INCLUDE SECTION ON AQUIFER EXEMPTION IF APPLICABLE – SEE PART II.B IN CLASS III PERMIT TEMPLATE]

### **B. CONDITIONS FOR EXISTING WELLS AND PROPOSED WELLS**

#### **1. Surface Location**

[DESCRIBE LOCATION OF EXISTING AND PROPOSED WELLS]

#### **2. Existing Well Construction Details**

A well schematic for each well is contained in Attachment B of this Permit. The Permittee shall at all times maintain the well consistent with this well schematic.

#### **3. Proposed Well Construction Details**

The Permittee shall submit an updated well schematic for each proposed well, including the location of packer(s). Proposed well construction details must receive written ADEQ approval prior to commencing drilling and construction of the well.

#### **4. Confining Zone**

Notwithstanding any other provision of this Permit, the Permittee shall inject through the injection well only into a formation which is separated from any USDW by a confining zone that is free of known open faults or fractures within the area of review.



## 5. Casing and Cementing

The Permittee shall case and cement each injection well to prevent the movement of fluids into or between USDWs. The Permittee shall use casing and cement designed for the life expectancy of the wells. The Permittee shall install in each injection well [SPECIFY CASING AND CEMENT PLAN CONSIDER THE FOLLOWING] 7-inch surface casing from the ground surface to a depth of approximately 450 feet, and at least 50 feet below the base of the lowermost USDW [MINIMUM DEPTH OF SURFACE CASING], and cement that entire length of casing back to the surface [SIZES OF CASING AND TUBING STRINGS MAY VARY DEPENDING ON GEOLOGY AND TYPE OF FLUID BEING INJECTED]. The Permittee shall isolate the injection zone by placing 2-3/8 inch, long string casing from the surface to the top of the injection zone and cement this casing from the top of the injection zone to a minimum of 100 feet above the injection zone. The Permittee shall complete each injection well with a 1-inch tubing string with packer set inside the 2-3/8 inch long string casing.

## 6. Logs and Tests

The Permittee shall obtain appropriate logs and perform tests during the drilling and construction or rework of new Class II injection wells. At a minimum deviation checks shall be performed on all holes. [DEPENDING ON AVAILABILITY OF SIMILAR DATA SPECIFY GEOPHYSICAL TESTING][CONSIDER THE FOLLOWING]. The Permittee shall perform electric, gamma ray and caliper logs in the open hole, a cement bond, temperature or density log on the surface casing, and a cement bond log/variable density log on the long string casing.

The Permittee shall submit to the Director, for all injection wells, cement records, a narrative report that interprets the well log(s) and test results, which specifically relate to the USDW and the confining zone adjacent to it, and a detailed description of the rationale used to make these interpretations. The narrative report shall be prepared by a knowledgeable log analyst and submitted to the Director. The Director may prescribe additional logs or waive logging requirements in the future should field conditions so warrant.

For all new Class II wells at a minimum, the Permittee shall determine fluid pressure, fracture pressure and physical and chemical characteristics of the injection zone.

## 7. Mechanical Integrity

The Permittee is prohibited from conducting injection operations in any injection well until it demonstrates: (1) the mechanical integrity of the injection well in accordance with Part II(D)(1)d of this Permit and (2) the Permittee has received notice from the Director that such a demonstration is satisfactory.

## 8. Corrective Action

The Permittee is prohibited from conducting injection operations in any injection well until it has plugged all abandoned wells identified within the AOR.

**9. Completion Report**

The Permittee shall prepare a Completion Report that summarizes the activities and the results of the testing required in Part II(B)1 through 7 of this Permit and submit the Completion Report to the Director prior to the commencement of injection operations.

**C. WELL OPERATIONS****1. Injection Formation**

The Permittee shall inject only in the [NAME OF FORMATION] Formation located at the subsurface interval between approximately [NUMBER] and [NUMBER] feet below ground surface

**2. Injectate Waste Determination**

The Permittee shall not inject any hazardous substances as defined in A.R.S. § 49-921 or any other fluid, other than produced fluid obtained from [COMPANY NAME] production operations.

**3. Injection Pressure Limitation**

The Permittee shall not exceed a surface injection pressure maximum of [NUMBER] psi. The Permittee shall not inject fluid at a pressure which initiates fractures in the confining zone, adjacent to USDWs or causes the movement of injection or formation fluids into a USDW.

**4. Injection Volume Limitation**

Injection volume shall be limited to a maximum of [NUMBER] barrels per day per well.

**5. Outermost Casing Limitation**

For all of the injection wells, the Permittee is prohibited from injecting between the outermost casing protecting USDW and the well bore, and also from injecting directly into any USDW. Injection is only allowed through the inner most casing string.

**D. MONITORING, RECORDKEEPING, AND REPORTING OF RESULTS****1. Monitoring Program**

- a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The Permittee shall obtain representative sample(s) of the fluid to be analyzed and conduct analysis(es) of the sample(s) in accordance with the approved methods and test procedures provided in applicable analytical methods described in Table I of 40 CFR or in EPA Publication SW-846, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", unless other methods have been approved by ADEQ or additional approved

methods or updates to the methods become available. The Permittee shall identify in its monitoring records the types of tests and methods used to generate the monitoring data.

- b. The Permittee shall monitor and record injection pressure, flow rate and cumulative volume in each well at least [weekly FOR DISPOSAL OPERATIONS; monthly FOR ENHANCED RECOVERY OPERATIONS; daily DURING INJECTION AND WITHDRAWAL OF LIQUID HYDROCARBONS; daily DURING INJECTION OF CYCLIC STEAM OPERATIONS] beginning on the date the injection well commences operation and concluding when the injection well is plugged and abandoned. The Permittee shall compile the monitoring data monthly to complete the Annual Report pursuant to Section D(4) of this Permit.
- c. The Permittee shall monitor the nature and composition of the injected fluid by sampling, analyzing and recording injected fluid for the parameters listed below, at the initiation of the injection operation and every [FREQUENCY] thereafter, and whenever the operator anticipates a change in the injection fluid.

[CONSIDER FOLLOWING PARAMETERS]

pH	Manganese
Specific Gravity	Total Dissolved Solids
Specific Conductance	Barium
Sodium	Hydrogen Sulfide
Chloride	Alkalinity
Iron	Dissolved Oxygen
Magnesium	Hardness

- d. The Permittee shall make a demonstration of mechanical integrity in accordance with A.A.C. R18-9-B613 at least once every five years. In addition, the Permittee shall conduct a mechanical integrity test demonstration on any injection wells where and when the protective casing or tubing is removed from the well, the packer is resealed, or a well failure is likely, or as requested by the Director. The Permittee may continue operation of the injection well(s) only if the Permittee has demonstrated the mechanical integrity of the injection well(s) to the Director's satisfaction. The Permittee shall cease injection operations if a loss of mechanical integrity becomes evident or if the Permittee cannot demonstrate mechanical integrity.

**1. Monitoring Information**

The Permittee shall maintain records of monitoring activity required under this Permit, including the following information and data:

- a. Date, exact location, and time of sampling or field measurements;
- b. Name(s) of individual(s) who performed sampling or measurement;
- c. Exact sampling method(s) used;
- d. Date(s) laboratory analyses were performed;
- e. Name(s) of individual(s) who performed laboratory analyses;
- f. Types of analyses; and
- g. Results of analyses.

**2. Recordkeeping**

- a. The Permittee shall retain the following records and make them available at all times for examination by an ADEQ inspector:
  - i. All monitoring information, including required observations, calibration and maintenance records, recordings for continuous monitoring instrumentation, copies of all reports required by this Permit, and records of all data used to complete the permit application;
  - ii. Information on the physical nature and chemical composition of all injected fluids;
  - iii. Results of the injectate waste determination according to 40 CFR § 262.11 (See Part II.C.2.). Results shall demonstrate that the injectate does not meet the definition of hazardous waste as defined in A.R.S. § 49-921; and
  - iv. Records and results of MITs and any other tests and logs required by ADEQ, and any well work and workovers completed.
  - v. The Permittee shall maintain copies (or originals) of all records described in Part II.D during the operating life of the well and shall make such records available at all times for inspection at the facility. The Permittee shall only discard the records if written approval from ADEQ to discard the records is obtained.
  - vi. Except for information determined to be confidential under A.A.C. R18-9-A603, all permit applications, permits, reports, and well operation data prepared in accordance with the conditions of this Permit shall be available for public inspection at appropriate offices of ADEQ.

**3. Reporting of Results**

- a. The Permittee shall submit an Annual Report to the Director summarizing the results of the monitoring required in Part II of this permit. This report shall include monthly monitoring records of injected fluids, the results of any mechanical integrity test(s), and any major changes in characteristics or sources of injected fluids. The Permittee shall complete and submit this information with its Annual Report Form 7520-11 (Annual Disposal Injection Well Monitoring Report). The Permittee shall submit the Annual Report to the Director no later than January 31st of each year, summarizing the activity of the calendar year ending the previous December 31st.
- b. In addition to meeting the submittal digital e- copies of all reports shall also be provided to the following:

Arizona Department of Environmental Quality  
Water Quality Division, Groundwater, UIC Program  
1110 West Washington Street  
Phoenix, AZ 85007

## **E. PLUGGING AND ABANDONMENT**

### **1. Notice of Plugging and Abandonment**

The Permittee shall notify ADEQ no less than sixty (60) days before abandonment of any well authorized by this Permit and shall not perform the plugging and abandonment activities until the Permittee receives written notice of approval by ADEQ.

### **2. Plugging and Abandonment Plans**

The Permittee shall plug and abandon the well as provided by the Plugging and Abandonment Plan submitted by the Permittee (see Attachment C) and approved by ADEQ, consistent with A.A.C. R18-9-B614. Upon written notice to the Permittee, ADEQ may change the manner in which a well will be plugged, based upon but not limited to the following reasons: (a) if the well is modified during its permitted life, (b) if the proposed Plugging and Abandonment Plan for the well is not consistent with ADEQ requirements for construction or mechanical integrity, or (c) otherwise at ADEQ's discretion. Upon written notice, ADEQ may periodically require the Permittee to estimate and to update the estimated plugging cost. To determine the appropriate level of financial assurance for the Plugging and Abandonment Plan, the Permittee shall obtain a cost estimate from an independent third-party firm in the business of plugging wells. The estimate shall include the costs of all the materials and activities necessary to pay an independent third-party contractor to completely plug and abandon the well as established in the Plugging and Abandonment Plan.

### **3. Cessation of Injection Activities**

After a cessation of injection operations for two (2) years for any well authorized by this Permit, a well is considered inactive. In this case, the Permittee shall plug and

abandon the inactive well in accordance with the approved Plugging and Abandonment Plans contained in Attachment C, unless the Permittee:

- a. Provides notice to ADEQ of an intent to re-activate the well;
- b. Has demonstrated that the well(s) will be used in the future;
- c. Conduct a new MIT prior to operation to demonstrate protection of USDW.
- d. Has described actions or procedures, satisfactory to ADEQ and approved in writing by ADEQ, which will be taken to ensure that the well(s) will not endanger USDWs during the period of inactivity, including compliance with the technical requirements applicable to active wells unless waived by the Director.

**4. Plugging and Abandonment Report**

Within sixty (60) days after plugging any well, or at the time of the next Quarterly Report (whichever comes first), the Permittee shall submit a report on Form 7520-19, provided in Attachment C, as well as the detailed procedural activity of engineer's log and daily rig log to ADEQ. The report shall be certified as accurate by the person who performed the plugging operation and shall consist of either:

- a. A statement that the well was plugged in accordance with the approved Plugging and Abandonment Plans contained in Attachment C; or
- b. Where actual plugging differed from the Plugging and Abandonment Plans contained in Attachment C, a statement specifying and justifying the different procedures followed.

**F. FINANCIAL ASSURANCE REQUIREMENTS**

**1. Demonstration of Financial Responsibility**

The Permittee shall demonstrate and maintain financial responsibility and resources sufficient to close, plug, and abandon any existing or future-permitted underground injection operations approved pursuant to this Permit, as provided in the Plugging and Abandonment Plan contained in Attachment C and consistent with A.A.C. R18-9-D636(A)(6).

- a. The Permittee shall post an approved financial instrument such as a surety bond or other financial assurance in the amount of [SPECIFY \$ AMOUNT PLUS CONTINGENCY] to guarantee plugging and abandonment activities for closure. Authority to construct, inject, and operate the wells under the authority of this Permit will be granted only after the financial instrument has been secured and approved by ADEQ.

- b. The level and mechanism of financial responsibility shall be reviewed and updated periodically, upon request of ADEQ. The Permittee may be required to change to an alternate method of demonstrating financial responsibility. Any such change must be approved in writing by ADEQ prior to the change.
- c. ADEQ may require the Permittee to estimate and to update the estimated plugging and abandonment costs periodically. Such estimates shall be based upon costs that a third party would incur to carry out the required restoration activities, properly plug and abandon the wells, and perform post-closure monitoring activities, including materials, equipment, mud and disposal costs, and labor with appropriate contingencies.

## **2. Insolvency of Financial Institution**

The Permittee shall submit an alternate instrument of financial responsibility acceptable to ADEQ within sixty (60) days after either of the following events occurs:

- a. The institution issuing any bond or other financial instrument that is secured to demonstrate financial responsibility in accordance with Part II, Section F.1. of this Permit files for bankruptcy; or
- b. The authority of the trustee institution to act as trustee, or the authority of the institution issuing the financial instrument, is suspended or revoked.
- c. The institution issuing the financial instrument lets it lapse or decides not to extend it.

Failure to submit an acceptable financial demonstration may result in the termination of this Permit pursuant to A.A.C. R18-9-C634(A)(1).

## **3. Insolvency of Owner or Operator**

The Permittee shall notify ADEQ by certified mail of the commencement of voluntary or involuntary proceedings under U.S. Code Title 11 (Bankruptcy), naming the owner or operator as debtor, within ten (10) business days. A guarantor of a corporate guarantee must make such a notification if he/she is named as debtor, as required under the terms of the guarantee.

## **G. DURATION OF PERMIT**

This Permit and the authorization to inject are issued for a period of [SPECIFY DURATION] years unless terminated under the conditions set forth in Part III.B.1. or administratively extended under the conditions set forth in Part III.E.11.

## **PART III. GENERAL PERMIT CONDITIONS**

### **A. EFFECT OF PERMIT**

The Permittee is allowed to engage in underground injection well construction and operation in accordance with the conditions of this Permit. The Permittee shall not construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant (as defined by A.A.C. R18-9-A601) into USDWs (as defined A.A.C R18-9-A601).

Any underground injection activity not specifically authorized in this Permit is prohibited. The Permittee must comply with all applicable provisions of 18 A.A.C. 9, Article 6. Such compliance does not constitute a defense to any action brought under Section 1431 of the SDWA, 42 U.S.C. §300(i), or any other common law, statute, or regulation other than Part C of the SDWA. Issuance of this Permit does not convey property rights of any sort or any exclusive privilege, nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of State or local law or regulations. Nothing in this Permit shall be construed to relieve the Permittee of any duties under all applicable laws and regulations.

### **B. PERMIT ACTIONS**

#### **1. Modification, Revocation and Reissuance, or Termination**

ADEQ may, for cause or upon request from the Permittee, modify, revoke and reissue, or terminate this Permit in accordance with A.A.C. R18-9-C631, C632, and C634. The permit is also subject to minor modifications for causes as specified in A.A.C. R18-9- C633. The filing of a request for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated non-compliance by the Permittee, does not stay the applicability or enforceability of any permit condition.

ADEQ may also modify, revoke and reissue, or terminate this Permit in accordance with any amendments to the SDWA if the amendments have applicability to this Permit.

#### **2. Transfers**

This Permit is not transferable to any person unless notice is first provided to ADEQ and the Permittee complies with requirements of A.A.C. R18-9-C630. ADEQ may require modification or revocation and reissuance of the permit to change the name of the Permittee and incorporate such other requirements as may be necessary under the SDWA.

### **C. SEVERABILITY**

The provisions of this Permit are severable, and if any provision of this Permit or the application of any provision of this Permit to any circumstance is held invalid, the



application of such provision to other circumstances and the remainder of this Permit shall not be affected thereby.

#### **D. CONFIDENTIALITY**

In accordance with A.A.C. R18-9-A603, any information submitted to ADEQ pursuant to this Permit may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, ADEQ may make the information available to the public without further notice. If a claim is asserted, the validity of the claim will be assessed in accordance with the procedures contained in A.R.S. § 49-205 (Public Information). Claims of confidentiality for the following information will be denied:

Name and address of the Permittee, or  
Information dealing with the existence, absence, or level of contaminants in drinking water.

#### **E. GENERAL DUTIES AND REQUIREMENTS**

##### **1. Duty to Comply**

The provisions of R18-9-635 are incorporated by reference into this Permit, except as modified by specific provisions in this Permit. In addition, the following general duties and requirements apply to this Permit and the Permittee. The Permittee shall comply with all applicable UIC Program regulations and conditions of this Permit, except to the extent and for the duration such non-compliance is authorized by an emergency permit issued in accordance with A.A.C. R18-9-C625. Any permit non-compliance constitutes a violation of the SDWA and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or for denial of a permit renewal application. Such non-compliance may also be grounds for enforcement action under the Federal Resource Conservation and Recovery Act (RCRA).

##### **2. Penalties for Violations of Permit Conditions**

Any person who violates a Permit requirement is subject to civil penalties, fines, and other enforcement action under the SDWA and may also be subject to enforcement actions pursuant to RCRA. Any person who willfully violates permit conditions may be subject to criminal prosecution.

##### **3. Need to Halt or Reduce Activity not a Defense**

It shall not be a defense, for the Permittee in an enforcement action, that it would have been necessary to halt or reduce the permitted activity to maintain compliance with the conditions of this Permit.

##### **4. Duty to Mitigate**

The Permittee shall take all reasonable steps to minimize and correct any adverse impact on the environment resulting from non-compliance with this Permit.

**5. Proper Operation and Maintenance**

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this Permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this Permit.

**6. Property Rights**

This Permit does not convey any property rights of any sort, or any exclusive privilege.

**7. Duty to Provide Information**

The Permittee shall furnish to ADEQ, within a time specified, any information which ADEQ may request to determine whether cause exists for modifying, revoking, and reissuing, or terminating this Permit, or to determine compliance with this Permit. The Permittee shall also furnish to ADEQ, upon request, copies of records required to be kept by this Permit pursuant to A.A.C. R18-9-D635(A)8.

**8. Inspection and Entry**

The Permittee shall allow ADEQ, or an authorized representative, upon the presentation of credentials and other documents as may be required pursuant to A.A.C. R18-9-D635(A)9 to:

- a. Enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Permit;
- b. Have access to and copy, at reasonable times, any records that are kept under the conditions of this Permit;
- c. Inspect and photograph at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Permit; and
- d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the SDWA, any substances or parameters at any location.

**9. Signatory Requirements**

All applications, reports, or other information submitted to ADEQ shall be signed and certified by a responsible corporate officer or duly authorized representative according to A.A.C. R18-9-C617.

**10. Additional Reporting Requirements**

- a. **Planned Changes** - The Permittee shall give notice to ADEQ as soon as possible of any planned physical alterations or additions to the permitted facility affecting any of the terms and conditions of the permit.
- b. **Anticipated non-compliance**-The Permittee shall give advance notice to ADEQ of any planned changes in the permitted facility or activity which may result in non-compliance with permit requirements.
- c. **Compliance Schedules** - Reports of compliance or non-compliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Permit shall be submitted to ADEQ no later than thirty (30) days following each schedule date.
- d. **Twenty-four Hour Reporting** - The Permittee shall report to ADEQ any non-compliance which may endanger health or the environment. The following Information shall be provided orally within 24 hours from the time the Permittee becomes aware of the following circumstances.
  - i. Any monitoring or other information which indicates that any contaminant may cause an endangerment to a USDW; and
  - ii. Any non-compliance with a Permit condition, malfunction of the injection system, or loss of mechanical integrity, which may cause fluid migration into or between USDWs.
- e. A written submission of all non-compliance shall also be provided to ADEQ within five (5) days of the time the Permittee becomes aware of the circumstances. The written submission shall contain: a description of the non-compliance and its cause; the period of non-compliance, including exact dates and times; if the non-compliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the non-compliance.
- f. **Other non-compliance** - At the time monitoring reports are submitted, the Permittee shall report in writing all other instances of non-compliance not otherwise reported.
- g. **New activities** – The Permittee shall give notice to ADEQ as soon as possible

if after the permit is issued and injection activity initiated, the operator becomes aware of new activity within the AOR.

- h. Other Information - If the Permittee becomes aware that it failed to submit all relevant facts in the permit application or submitted incorrect information in the permit application or in any report to ADEQ, the Permittee shall submit such facts or information within two (2) weeks of the time such facts or information becomes known.

## **11. Continuation of Expiring Permit**

- a. Duty to Reapply - If ADEQ requires the Permittee to continue an activity regulated by this Permit past the expiration date of this Permit, the Permittee must submit a complete application for a new permit at least one hundred and eighty (180) days before this Permit expires.
- b. Permit Extensions - The conditions and requirements of an expired permit continue in force and effect in accordance with 5 U.S.C. §558(c) until the effective date of a new permit, if:
  - i. The Permittee has submitted a timely and complete application for a new permit; and
  - ii. ADEQ, through no fault of the Permittee, does not issue a new permit with an effective date on or before the expiration date of the previous permit.

Arizona UIC Permit Template  
Class III

**UNDERGROUND INJECTION CONTROL PROGRAM**  
**AREA PERMIT to Construct and Operate**  
**Class III Solution Mining of [SPECIFY MINERAL] and Aquifer Restoration**  
**Permit No. R9UIC-AZIII-FY22-#**

**[PROJECT NAME] Project [COUNTY NAME] County, Arizona**

**Issued to:**

**[COMPANY NAME] [ADDRESS LINE 1]**

**[ADDRESS LINE 2]**

**[ADDRESS LINE 3]**

**AUTHORIZING SIGNATURE**

\_\_\_\_\_  
[Name of Director], Director Water Quality Division  
Arizona Department of Environmental Quality  
Signed this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_

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## PART I. AUTHORIZATION TO CONSTRUCT AND INJECT

Pursuant to the Underground Injection Control regulations of the Arizona Department of Environmental Quality codified at Title 18 of the Arizona Administrative Code, Chapter 9, Article 6

[COMPANY NAME]  
[ADDRESS LINE 1]  
[LINE 2]  
[LINE3]

is hereby authorized, contingent upon Permit conditions, to construct and operate a Class III injection well facility and engage in [SOLUTION MINING FOR XXX] operations at the [PROJECT NAME]. The Project is in [PROJECT LOCATION], Arizona, approximately [DISTANCE AND DIRECTION TO NEAREST LANDMARK], as depicted in Attachment A. The location is [LOCATION DESCRIPTION (Include Section, Township, Range, with latitude/longitude)]. The Project will consist of approximately [NUMBER OF WELLS] Class III injection and recovery wells, [NUMBER] of hydraulic control (HC) wells, [NUMBER] observation wells (OW), [NUMBER] rinse verification monitoring wells (RVW), up to [NUMBER] intermediate monitoring wells (IMW), and [NUMBER] point-of-compliance (POC) wells. It will be operational [DESCRIBE OPERATION] over [DURATION] years at the Project site. [INCLUDE IF APPLICABLE: FOR AREAWIDE PERMITS FOLLOWING PHASED OPERATIONS AND EXPANSION] Mine operations will be implemented in stages:

- Stage 1: Years [RANGE OF YEARS]
- Stage 2: Years [RANGE OF YEARS]
- Stage 3: Years [RANGE OF YEARS]
- Post-production: Years [RANGE OF YEARS]
- Monitoring – [NUMBER OF YEARS]

[DESCRIBE OPERATIONAL PLAN] [DESCRIBE AREA OF REVIEW] [DESCRIBE WELLFIELD AREA]

[DESCRIBE INJECTATE AND DEPTHS AUTHORIZED BY THE PERMIT] [DESCRIBE PRODUCTION PROCESS AT THE SURFACE]

[DESCRIBE THE MINERAL BEARING FEATURE AND DEPTH BGS AT THE PROJECT SITE]

[INDICATE IF AQUIFER EXEMPTION IS REQUIRED OR HAS BEEN APPROVED]  
[DESCRIBE WELLFIELD AND TYPES OF WELLS IN IT] [DESCRIBE GROUNDWATER MONITORING PLAN]

For the permitted wells within the Area of Review (AOR), ADEQ will issue authorization to drill and construct only after requirements of Financial Responsibility in Part II, Section L of this Permit have been met. ADEQ will grant authorization to inject only after the requirements of

Part II, Sections C, D, and E of this Permit have been met. Operation of injection [WELL ID] will be limited to a maximum volume of [SPECIFY QUANTITY] and pressure of [SPECIFY QUANTITY]. All conditions set forth herein refer to Title 18, Chapter 9, Article 6 of the Arizona Administrative Code (A.A.C.), which are regulations in effect on the date that this Permit is effective.

This Permit consists of [NUMBER] pages plus Attachments, and includes all items listed in the Table of Contents. Further, it is based upon representations made by [COMPANY NAME] (the Permittee) and on other information contained in the administrative record. It is the responsibility of the Permittee to read, understand, and comply with all terms and conditions of this Permit.

This Permit and the authorization to construct, operate, and inject are issued for a period to include the approximate [NUMBER]-year Project operation and restoration life and the [NUMBER]-year post-rinsing monitoring period, unless terminated under the conditions set forth in Part III, Section B.1 of this Permit. This Permit and authorization to inject shall also include any additional post-rinsing monitoring beyond [NUMBER] years, if deemed necessary by ADEQ.

This Permit is issued on [DATE] and becomes effective on [DATE]. This Permit is issued for a period of x years unless the Permit is terminated under the conditions set forth in Part III.B.1. or administratively extended under the conditions set forth in Part III.E.

Signed by

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[Name of Director], Director  
Water Quality Division  
Arizona Department of Environmental Quality

## **PART II. SPECIFIC PERMIT CONDITIONS**

### **A. REQUIREMENTS PRIOR TO DRILLING, TESTING, CONSTRUCTING, OR OPERATING**

#### **1. Financial Assurance**

The Permittee shall supply evidence of financial assurance prior to commencing any well drilling and construction, in accordance with Section L of this part.

#### **2. Field Demonstration Submittal, Notification, and Reporting**

- a. Prior to each demonstration or test required in this Permit, the Permittee shall submit plans and specifications for procedures to the ADEQ for approval 90 days prior to demonstration or testing activities. No demonstration or test in these sections may proceed without prior written approval from ADEQ.
- b. The Permittee must notify ADEQ at least thirty (30) days prior to performing any required field demonstrations or test, after ADEQ approves the plans/procedures for testing, in order to allow ADEQ to arrange to witness if so elected.
- c. The Permittee shall submit results of each demonstration or test required in Part II of this Permit to ADEQ within thirty (30) days of completion, unless otherwise noted.

### **B. [INCLUDE IF APPLICABLE] AQUIFER EXEMPTION**

#### **1. Exempted Zone**

Concurrent with the issuance of this Permit, EPA is approving an Aquifer Exemption (AE) at the Project site. Pursuant to A.A.C. R18-9- A605 and A606, the exempted portion of the aquifer at the Project site is defined by the following lateral and vertical boundaries:

- a. Lateral Aquifer Exemption Boundary [DESCRIBE]
- b. Vertical Aquifer Exemption Boundaries

[DESCRIBE] Refer to Figures [LIST] in Attachment A.

#### **2. No Migration into or between Underground Sources of Drinking Water (USDWs).**

Pursuant to A.A.C. R18-9-A605 and A606 and the conditions established herein, during well construction and testing and the approximate [NUMBER]- year operation and restoration life of the [PROJECT NAME] Project and [NUMBER]-year post-rinsing monitoring period, the Permittee shall ensure that there is no migration of injection fluids, process by-products, or formation fluids that exceed the limits

specified in Part II.F of this Permit beyond the exempted zone described at Part II, Section B.1 and delineated as described in the Aquifer Exemption in Attachment A of this Permit.

## **C. WELL CONSTRUCTION**

### **1. Location of Project Wells**

- a. [DESCRIBE WELL LOCATIONS]
- b. After drilling and well construction is completed, the Permittee must submit final well location information, including distances in feet from the closest section lines in Sections [X] and [X] and latitude/longitude coordinates of the wells constructed under this Permit, including all hydraulic control, observation, monitoring, and POC wells. The distances and direction of each HC, OW, and POC well from the Project wellfield boundary shall also be provided in the Final Well Construction Report required under paragraph 9(a) of this section. If final well coordinates differ significantly from the proposed coordinates described above, justification and documentation of any communication with and approval by ADEQ shall be included.

### **2. Logging and Testing during Drilling and Construction**

[DESCRIBE LOGS TO BE PERFORMED]

[DESCRIBE GEOPHYSICS] Additional geophysical surveys may be conducted as required by ADEQ. The cement bond log evaluation will enable the analysis of the bond between the cement and casing, as well as between the casing and formation, and shall allow detection and assessment of any micro-annuli between the casing and cement as well as any cement channeling in the borehole annulus. Refer to Attachment D for information on temperature logging guidelines and requirements for evaluation of zonal isolation after injection commences.

### **3. Drilling, Work-over, and Plugging Procedures and Records**

Drilling, work-over, and plugging procedures shall comply with applicable portions of the Arizona Oil and Gas Conservation Commission's requirements in the Arizona Administrative Code, found at Title 12, Natural Resources, Chapter 7, Article I, R12-7-108 to R12-7-127, unless a section conflicts with UIC permit requirements. Drilling, work-over, and plugging procedures for each well or group of similarly constructed wells shall be submitted to ADEQ for approval. Once approved, a thirty (30)-day notice shall be submitted to ADEQ for witnessing purposes prior to construction of individual or groups of similarly constructed Class III wells. Procedures and records shall include the following:

- a. Details for well construction and cementing casing strings and work- overs, and plugging procedures;

- b. Records of daily Drilling Reports (electronic and hard copies);
- c. Blowout Preventer (BOP) System testing on recorder charts including complete explanatory notes during the test(s), if applicable; and
- d. Casing and other tubular and accessory measurement tallies.

Information to be provided for reporting forms such as, Completion of Construction Report, Well Rework Record, or, Plugging and Abandonment Plan (list in Attachment C) is also acceptable to include in the procedures. The Permittee shall also comply with the requirements of the Arizona Department of Water Resources minimum construction standards in the Arizona Administrative Code found at Title 12, Chapter 15, Article 8, Well Construction and Licensing of Drillers.

#### **4. Well Casing and Drilling**

Wells drilled and installed at the Project will include injection, recovery, HC, OW, and POC monitoring wells. Those wells shall be constructed to meet Class III requirements at A.A.C. R18-9-G646. In addition, IMWs will be converted from existing test wells and coreholes or drilled within the wellfield perimeter at locations surrounding active mine blocks, for monitoring and controlling the movement of ISR fluids within the wellfield. Newly drilled IMWs shall also be constructed to meet Class III requirements.

The well construction procedures described in Attachment B shall be binding on the Permittee. Where any conflict or inconsistency exists between Attachment B and the permit conditions, the permit condition shall supersede the procedure or detail in Attachment B. All wells shall be cased and cemented to prevent the migration of fluids into or between USDWs and into or out of the injection zone. The casing and cement used in the construction of each newly drilled well shall be designed for the life expectancy of the well and shall be maintained until the well is plugged and abandoned in accordance with Part II, Section I of this Permit.

ADEQ may require minor alterations to the construction requirements based upon information obtained during well drilling and related operations. Final casing setting depths will be determined by the field conditions, well logs, and other input from the Permittee and ADEQ staff. ADEQ approval must be obtained for any revisions of the procedures approved as referenced in Parts II.C.3 and II.C.4 of this Permit prior to installation, and these will be documented in the Final Well Construction Report (See paragraph 9(a) below).

[MODIFY AS REQUIRED FOR SPECIFIC GEOLOGY] Boreholes will be drilled in two stages. After driving surface casing to a depth of 20 feet, the upper stage will consist of a boring drilled from land surface through basin fill at least 40 feet below the first contact with competent bedrock. After casing for the first stage is cemented

in place, a smaller diameter borehole will be drilled into the bedrock to total depth. The borehole within the bedrock will remain open in most wells.

Screen may be installed in the bedrock section in the borehole if found to be unstable. Borehole diameters will be sufficient to allow for installation of casing that will accommodate the pumps and other downhole equipment.

[DESCRIBE WELL CONSTRUCTION DETAILS]

## **5. Cementing**

[DESCRIBE WELL CEMENTING DETAILS SPECIFIC TO THE SITE GEOLOGY]

## **6. Monitoring Devices**

The Permittee shall install and maintain in good operating condition:

- a. Sampling equipment upstream of the injection wellhead for the purpose of obtaining representative samples of injection fluids.
- b. Devices to continuously measure and record injection pressure, annulus pressures, flow rates, injection and production volumes, subject to the following:
  - i. Pressure gauges shall be of a design to provide:
  - ii. A full pressure range of at least fifty (50) percent greater than the anticipated operating pressure; and
  - iii. A certified deviation accuracy of five (5) percent or less throughout the operating pressure range.
  - iv. Flow meters shall measure cumulative volumes and be certified for a deviation accuracy of five (5) percent or less throughout the range of rates allowed by the permit.
- c. Conductivity or Other Sensors (if used):

[DESCRIBE USE OF OTHER SENSORS]

The proposed demonstration procedures and results of the demonstration are subject to ADEQ review and approval.

## **7. Injection Interval**

The Permittee shall only inject fluids at depths greater than [SPECIFY NUMBER] feet below the top of the competent bedrock zone ("bedrock exclusion zone") unless the Permittee has received written approval from the Director to expand the injection interval. To ensure that the injection interval is at least [SPECIFY NUMBER] feet

below the top of the bedrock zone, the Permittee shall case and cement all injection wells in a manner described at Part II, Sections C.4 and C.5 of this Permit from at least [SPECIFY NUMBER] feet above the bedrock surface or the top of the saturated zone, whichever is shallower, to at least [SPECIFY NUMBER] feet below the top of the bedrock zone. The Permittee will develop the injection interval for each well by drilling into the bedrock zone, beyond the bottom of the casing and cemented interval. Well screens in IMWs, observation, and POC wells will be installed through the interval below the bedrock exclusion zone to a depth and interval equivalent to the open-hole or screened completion intervals in the nearest injection, recovery, and HC wells.

## **8. Injection Formation Testing**

[INCLUDE IF APPLICABLE] Aquifer testing will be performed upon installation of injection and recovery wells and used to determine the layout and number of recovery wells and injection and recovery rates in each mine block. Results of the aquifer tests will be compared to parameters used in the groundwater flow model, and the model parameters will be revised accordingly if the resulting test parameters are significantly different from those used in the model. Proposed formation testing procedures must be submitted to ADEQ for review and approval in accordance with Part II.A.2 of this Permit. Test results shall be reported to ADEQ in accordance with Part II.G of this Permit.

## **9. Final Well Construction Report and Completion of Construction Notice**

- a. The Permittee must submit a Final Well Construction Report for all Project wells, including logging and other results, with a schematic diagram and detailed description of construction, including driller's log and materials used (e.g., tubing tally, cement type and amounts, and other materials and amounts), to ADEQ within sixty (60) days after completion of all Project wells within a specific mine block, including injection/recovery, HC, OW, monitoring, and POC wells. Construction details, downhole equipment, depths to key formation tops and the USDW base, if applicable, screened or open hole interval depths, and schematics of all Project wells shall be described in the Final Well Construction Report for each mine block.
- b. The Permittee shall also submit a notice of completion of construction to ADEQ (refer to Attachment G). Injection operations for a particular well or mine block may not commence until all related Project wells are completed and operational, all well and formation testing is complete, necessary reports are submitted, and ADEQ has inspected or otherwise reviewed and approved the construction and other details for the permitted wells and notified the Permittee of ADEQ's approval.

## **10. Proposed Changes and Work-overs**

A well work-over is any physical alteration or addition to an existing well that results in a change in the composition, diameter, perforations, screen depths, tubing, packer depths, or depth of the well casing or a change in the cement in the outer annulus.

- a. The Permittee shall give advance notice to ADEQ, as soon as possible, of any planned physical alterations or additions to the permitted Project wells. Any changes in well construction that deviate from approved construction parameters defined in Part II.C of this Permit shall require prior approval by ADEQ and may require a permit modification under the requirements of A.A.C. R18-9-C631 and C633.
- b. In addition, the Permittee shall provide all records of well work- overs, logging, or other subsequent test data, including required mechanical integrity testing, to ADEQ within thirty (30) days of completion of the activity.
- c. Attachment G contains a list of the appropriate ADEQ reporting forms for well changes or work-overs. Demonstration of mechanical integrity shall be performed within thirty (30) days of completion of work-overs or alterations and prior to resuming injection and recovery activities of the modified well, in accordance with Section E.3 of this part.

## **D. CORRECTIVE ACTION (PLUGGING AND ABANDONMENT PLAN)**

Before injection and recovery wells are placed in service:

All existing non-Class III wells and coreholes within the proposed Project mine blocks and non-Class III wells and coreholes not intended for use as IMWs within [SPECIFY NUMBER] feet of a mine block shall be abandoned per the Plugging and Abandonment Plan (Attachment C of this Permit). The identification, location, and construction details of the wells and coreholes to be plugged and abandoned or used as IMWs are listed in Attachment C for each well and corehole within the AOR. ADEQ shall be notified, and final plugging and abandonment plans and procedures shall be submitted to ADEQ for approval at least thirty (30) days in advance of plugging operations. ADEQ approval will be provided within thirty (30) days if the plans and procedures are deemed complete and fully acceptable. If not provided within thirty (30) days, Permittee may assume ADEQ approval and proceed with plugging and abandonment operations.

## **E. WELL OPERATION**

### **1. Description of Operations [DESCRIBE OPERATIONS]**

- a. Planned injection rates will vary in each of the three stages of mining operations as follows:



Stage 1 ([SPECIFY RANGE]) [NUMBER] gallons per minute (gpm)  
 Stage 2 ([SPECIFY RANGE]) [NUMBER] gpm  
 Stage 3 ([SPECIFY RANGE]) [NUMBER] gpm

During ISR operations, the extraction rate of recovery and HC wells shall not fall below one-hundred-one (101) percent of the injection rate on a 48-hour rolling average basis without prior written approval of a lower percentage from ADEQ. Net extraction volumes shall be maintained at one percent (1%) or greater, depending on the maintenance of an inward gradient of no less than 0.01 ft./ft. between OW pairs on a daily average basis. If the inward gradient cannot be maintained at 0.01 ft./ft, the net extraction rate or volume shall be increased to achieve that minimum inward gradient at all OW pairs. The choice and number of IMW, HC well and OW locations to be monitored during the three stages of ISR and rinsing operations shall be subject to ADEQ review and approval in accordance with Part II, Section F.5. The updated model and operational experience will be used to review and modify the proposed locations of HC wells, OWs, and IMWs in Stage 1 and 2 and beyond year 13 in Stage 3 of ISR operations.

An inward gradient of at least 0.01 ft./ft. between OW pairs shall be established prior to the commencement of injection of mining solution and maintained for demonstrating hydraulic control unless adjusted by ADEQ as described in Part II, Section H.1.b. Re-balancing of net extraction volumes to restore hydraulic control of ISR fluids shall be required on a 48-hour basis.

The Permittee may submit an operational and monitoring plan to demonstrate that a thirty (30)-day rolling average is as protective as the 48- hour flow volume re-balancing. If the Permittee demonstrates that re- balancing on greater than a 48-hour rolling average basis is as effective and protective as 48-hour re-balancing, ADEQ will consider the results of that demonstration for a revision to the re-balancing requirement. However, a change to that condition will not be authorized without prior written approval from ADEQ.

- b. The Permittee shall measure specific conductance in the outer OWs to confirm hydraulic control at appropriate and approved depths throughout the monitored interval. Conductivity readings in the OWs shall not significantly exceed baseline conductivity and statistical noise levels, as determined by ADEQ approved procedures, to confirm hydraulic control.
- c. Actions shall be taken to restore hydraulic control within 24 hours of detection that the extraction to injection ratio has fallen below one- hundred-one (101) percent or the inward gradient at any observation well pair is less than 0.01 ft./ft., or the specific conductance data in the outer OWs indicate a possible loss of hydraulic control. Actions shall also be taken on a timely basis to reverse outward ISR fluid movement detected in IMWs, HC, or other monitoring wells, and to contain ISR fluids to the wellfield during recovery, rinsing, and post- rinsing monitoring operations.

## **2. Demonstrations Required Prior to Injection**

Injection operations may not commence until construction of all Project wells associated with subject injection operations in a specific mine block is complete and the Permittee has complied with the following mechanical integrity requirements.

The Permittee shall demonstrate that the Project wells have and maintain mechanical integrity consistent with A.A.C. R18-9-B613 and with paragraph 3 of Section E. The Permittee shall demonstrate that there are no significant leaks in the casing and tubing, and that there is not significant fluid movement through the casing/wellbore annulus or vertical channels adjacent to the wellbore. The Permittee may not commence initial injection into the wells or recommence injection after a work-over which has corrected any loss of well integrity, until the Permittee has received written notice from ADEQ that the demonstration provided is satisfactory and that injection is authorized.

## **3. Mechanical Integrity**

Pursuant to A.A.C. R18-9-D635(A)(17), all injection and recovery wells, other Project (POC, HC, and observation) wells, and newly drilled IMWs shall maintain mechanical integrity at all times. Pursuant to A.A.C. R18-9-B613, the Permittee shall demonstrate mechanical integrity,

Parts I and II by the following methods and schedule:

### **a. Methods for Demonstrating Mechanical Integrity**

Part I: Mechanical Integrity Pursuant to A.A.C. R18-9-B613(A)(1), the Permittee shall demonstrate Part I of the mechanical integrity requirement by the following methods:

- i. Pressure testing - A packer will be installed immediately above the proposed injection interval, the wellbore will be completely filled with water, and a hydraulic pressure equal to or above the maximum allowable wellhead injection pressure but not less than 100 pounds per square inch (psi) will be applied. This test shall be for a minimum of thirty (30) minutes. A well shall pass the mechanical integrity test (MIT) if there is less than a five (5) percent decrease/increase in pressure over the thirty (30) minute period. A well shall not be operated at injection pressures greater than the maximum allowable injection pressure as set forth in Part II, Section E.4 below; and
- ii. Continuous pressure monitoring - The tubing/casing annulus (if a packer is installed) and injection pressure in active injection wells shall be monitored and recorded continuously by a digital instrument with a resolution of one tenth (0.1) psi.

Part II: Mechanical Integrity Pursuant to A.A.C. R18-9-B613(A)(2), the Permittee shall demonstrate Part II of the mechanical integrity requirement in all Project wells by the following methods:

- i. A review of the casing and cementing records to verify the absence of fluid movement through vertical channels adjacent to the well bore in existing test wells and coreholes that are converted to monitoring wells. Casing and cementing records shall be provided for all of the existing test wells and coreholes that will be converted to IMWs if the records are available. Part II mechanical integrity must be demonstrated in new monitoring wells as described below for new Project wells.
  - ii. A demonstration that the injectate solution (lixiviant) and ISR fluids are confined to the proper zone and monitored intervals are hydraulically isolated shall be conducted and submitted for review and subject to approval by ADEQ. A temperature log and casing caliper log shall be run in all new Project wells. Secondary temperature and tracer surveys may be required if a loss of external injection well integrity is detected or suspected. Secondary temperature logs shall be run in accordance with ADEQ guidance (in Attachment D), for evaluation of zonal isolation after injection commences in injection wells. Radioactive tracer surveys may also be required for evaluation of zonal isolation after injection commences in injection wells at the direction of ADEQ. Proposed MIT procedures must be submitted to ADEQ for review and approval. Once approved, the Permittee may schedule the external MIT, providing ADEQ at least thirty (30) days notice before the external MIT is conducted.
  - iii. After installing and cementing the casing, conducting a cement squeeze operation, or any well cement repair, the Permittee shall provide to the Director cementing records and cement evaluation logs that demonstrate isolation of the injection interval. Cement bond logs and temperature logs shall be run in wells with steel casing. Temperature logs shall be run in FRP and PVC cased wells. Cementing records and logs shall demonstrate complete filling of the annulus between the borehole wall and well casing with cement to a depth at least [SPECIFY DEPTH] feet above the specified geologic unit, whichever is shallower.
- b. Cement evaluation must assess the following four objectives:
- i. Bond between casing and cement;
  - ii. Bond between cement and formation;

- iii. Detection and assessment of any micro-annuli (small gaps between casing and cement); and
- iv. Identification of any absence of cement and cement channeling in the borehole annulus.

The Permittee shall not commence or recommence well operations until the Permittee has received written notice from ADEQ that the cement evaluation and demonstration is satisfactory. ADEQ notice will be provided within thirty (30) days if the evaluation is acceptable and the demonstration is satisfactory.

c. Schedule for Demonstrations of Mechanical Integrity

ADEQ may require that an MIT be conducted at any time during the permitted life of any well authorized by this Permit. The Permittee shall also arrange and conduct MITs per the following requirements:

- i. A demonstration of mechanical integrity shall be made within thirty (30) days following the installation of a new Project or monitoring well. Injection and recovery wells shall be pressure tested for mechanical integrity in accordance with paragraph 3.a of this Section E no less frequently than once every five (5) years. If an injection well is inactive for two (2) years, a notice of actions and procedures must be provided to ADEQ that ensures USDWs will not be endangered during the period of temporary abandonment, or the well must be plugged and abandoned. Internal mechanical integrity of injection and recovery wells shall also be demonstrated within thirty (30) days after a work-over is conducted, the construction of the well is modified, or when loss of mechanical integrity becomes evident during injection operations.
- ii. Results of the MITs shall be submitted to the Director in the quarterly reports described in Part II, Section G.2 of this Permit.

d. Loss of Mechanical Integrity

The Permittee shall notify ADEQ, in accordance with Part II, Section G, paragraph 2(h) of this Permit, under any of the following circumstances:

- i. A well fails to demonstrate mechanical integrity during a test, or
- ii. A loss of mechanical integrity becomes evident during operation, or
- iii. A significant and anomalous change in the annular or injection pressure and/or rate occurs during normal operating conditions.

Furthermore, for new injection wells, the Permittee shall not commence injection, and for operating wells, the Permittee shall terminate injection and may not resume injection until the Permittee has taken necessary actions to restore integrity to the subject well and has demonstrated that the well has integrity as defined at Part II.E.3(a), above.

**e. Prohibition without Demonstration**

After the permit's effective date, the Permittee shall commence injection into the well only if:

- i. The well has passed an internal pressure MIT in accordance with paragraph 3.a of this Section E; and
- ii. The Permittee has received written notice from ADEQ that the internal pressure MIT demonstration is satisfactory.

**4. Injection Pressure Limitation**

- a. Injection wells shall be operated at pressures less than the fracturing pressure of the formations open to injection in the bedrock oxide zone. Based on field test data at the Project site, a variable fracture pressure, measured at the top of the injection interval, will be used to establish maximum hydraulic pressure which may be exerted at the surface. The maximum wellhead pressure calculation will be based on the lowest measured fracture gradient of the weakest formation(s) open to injection in each well and be dependent on the depth to the top of the interval receiving the injection fluid and the specific gravity of the injectate, but in no event shall it exceed the calculated pressure that can be safely applied to well equipment. A safety factor of 0.9 shall be applied in the calculation of the maximum allowable surface injection pressure. In wells that are open to certain formations [SPECIFY FORMATIONS], fracture gradients (adjusted for the safety factor) of [SPECIFY ALTERNATE SAFETY FACTOR DESIRED] psi/ft., respectively, shall be applied in the calculation. The maximum allowable surface injection pressure will be established for each injection well on that basis. Refer to Attachment E for formation fracture pressure gradients of each formation.
- b. In no case shall pressure in the injection zone during injection initiate new fractures or propagate existing fractures in the injection zone or the confining zone. In no case shall injection cause the movement of injectate or formation fluids into a USDW. Injection pressures shall be monitored using a digital instrument and recorded on a daily basis. Injection pressures that exceed the maximum allowable surface injection pressure shall be reduced immediately to a pressure not to exceed the maximum, or the well must be shut in pending correction of an equipment malfunction.

- c. The injection pressure limitations in paragraph 4(a) of this Section E may be increased by the Director based on the results of valid step-rate tests or other ADEQ-approved injectivity tests in the respective proposed injection zone. The Director will determine any allowable increase based upon the step-rate test or other injectivity test results and other parameters reflecting actual injection operations. Step-rate testing shall be performed in accordance with the ADEQ Step- Rate Test Policy, which is included in Attachment H of this Permit.
- d. Step-rate test and other types of injectivity test procedures shall be submitted for ADEQ review and approval at least thirty (30) days in advance of the tests.

Should the Director approve an increase in injection pressure limitations per paragraph 4(b) of this Section E, the increased limit shall be made part of this Permit by minor modification procedures (A.A.C. R18-9-C633).

## **5. Injection Volume (Rate) Limitation**

- a. Planned injection rates will vary in each of the three stages of mining operations as follows:
  - Stage 1 ([SPECIFY RANGE] years): [NUMBER] gpm or [NUMBER] million gallons per day (gpd)
  - Stage 2 ([SPECIFY RANGE] years): [NUMBER] gpm or [NUMBER] million gallons per day (gpd)
  - Stage 3 ([SPECIFY RANGE] years): [NUMBER] gpm or [NUMBER] million gallons per day (gpd).

The estimated maximum injection rates will vary in each of the three stages of mining as follows:

- Stage 1 ([SPECIFY RANGE] years): [NUMBER] gpm or [NUMBER] million gallons per day (gpd)
- Stage 2 ([SPECIFY RANGE] years): [NUMBER] gpm or [NUMBER] million gallons per day (gpd)
- Stage 3 ([SPECIFY RANGE] years): [NUMBER] gpm or [NUMBER] million gallons per day (gpd)

During ISR operations, the injection rate shall not exceed the recovery rate and the extraction rate of recovery and HC wells shall not fall below one-hundred-one (101) percent of the total wellfield injection rate on a daily average basis without prior written ADEQ approval. Net extraction volumes shall be maintained at one percent (1%) or greater, depending on the maintenance of an inward gradient of no less than 0.01 ft./ft. between observation well pairs on a daily average basis. If the inward gradient cannot be maintained at 0.01, the net extraction and/or

recovery rate or volume shall be increased to achieve that minimum inward gradient at all OW pairs.

- b. The Permittee may request an increase in the maximum injection rate or a decrease in the minimum ratio of extraction to injection rate allowed in paragraph 5(a) above. Any such request shall be made in writing and appropriately justified to ADEQ. Should ADEQ approve an increase in injection rate limitations, the increased limit shall be made part of this Permit by minor modification procedures if the increase is in accordance with requirements at A.A.C. R18-9- C633.
- c. Any request for an increase in the injection rate or decrease in the minimum ratio of extraction to injection rate shall demonstrate to the satisfaction of ADEQ that the increase in volume or reduction in the minimum ratio of extraction to injection rate will not interfere with the operation of the Project or its ability to meet conditions described in this Permit, change its well classification, or cause migration of fluids into USDWs or beyond the Project wellfield AOR and aquifer exemption (AE) boundary.
- d. The injection rate increase shall not cause an exceedance of the injection pressure limitation established under paragraph 4(a) of this Section E.

## **6. Injectate Fluid Limitations**

- a. The Permittee shall not inject any solid wastes as defined by A.R.S. § 49-701.01.
- b. Injection fluids shall be limited to only fluids authorized by this Permit and generated by the Project operation. No fluids shall be accepted from other sources for injection into the permitted wells.
- c. Fresh water may be injected to assess the hydraulics of the injection and recovery patterns in the Project wellfield, to assess the performance of related surface facilities, and for rinsing operations.
- d. [MODIFY SECTIONS d thru j BELOW AS APPROPRIATE] During ISR operations, the lixiviant shall consist of a dilute sulfuric acid solution that includes inorganic and organic constituents as defined below. The lixiviant shall have a pH of approximately [SPECIFY PH]. Organic compounds in the lixiviant shall be limited to those listed in Part II. Section F.7.(a) of this Permit. Should ADEQ approve an increase in constituent limits, the increased limit shall be made part of this Permit by minor modification procedures (A.A.C. R18-9- C633).
- e. The forecast composition of the injectate and other ISR process solutions is provided in Attachment E. Inorganic constituents in the lixiviant shall be

limited to constituents in the neutralizing agents used for the purposes described in paragraph 6(f) of this Section E, and to constituents resulting from the interaction of lixiviant with groundwater and minerals in the zone. Concentrations of inorganic constituents in the lixiviant shall be subject to the requirements of paragraph 6(g) of this Section E.

- f. During rinsing and closure, fresh groundwater may be injected to restore the zone to federal drinking water standards or pre-operational background concentrations, whichever are greater. The Permittee may also adjust the pH with neutralizing agents to aid in the precipitation of soluble metals.
- g. At least thirty (30) days prior to commencement of the Project operations, the Permittee shall submit a report for the Director's approval that includes the name and grade of each process chemical that is proposed to be used at the ISR process. [DESCRIBE THE ISR PROCESS AND ALL FLUIDS AND CHEMICALS USED] The report shall also include recommendations, with justifications, as to which constituents of the reported chemicals should or should not be included in the Level 1 or Level 2 groundwater monitoring program defined at Part II.F.2 and the injectate monitoring program defined at Part II.F.7 of this Permit.
- h. The Permittee may use a process chemical not included in the reports submitted pursuant to paragraph 6 (g) of this Section E above, provided the Permittee submits a report for the Director's approval at least thirty (30) days prior to the date of the proposed use of the chemical and receives written approval from the Director. Approved changes in process chemicals shall be made part of this Permit by minor permit modification procedures (A.A.C. R18-9-C633). Reports submitted pursuant to this section during Project operations must include information required by paragraph 6(g) of this Section E.
- i. The Permittee shall expand the groundwater monitoring program defined at Part II.F.2 and the injectate monitoring program defined at Part II.F.7 as necessary to conform to the Director's conditions of approval of reports submitted pursuant to paragraphs 6(g) of this Section E.
- j. The monitoring and advance notification requirements of Section E.6 and Section F.7 apply only to the lixiviant prior to injection and to constituents of process chemicals that may become part of the lixiviant.

## **F. MONITORING PROGRAM**

### **1. Water Quality Monitoring Wells.**

[DESCRIBE THE MONITORING PROGRAM, INCLUDING:

- a. WELL NETWORK
- b. WELL ASSIGNMENTS



- c. MONITORING ALERTS
- d. PURGING PROTOCOLS
- e. PARAMETERS
- f. AQUIFER QUALITY LIMITS
- g. ANALYTES
- h. MCLS
- i. ALERTS AND ALERT LEVELS
- j. WARNING SYSTEMS
- k. EXCEEDENCE MANAGEMENT
- l. RECORD KEEPING, ETC.]

## **2. Baseline Data and Statistical Methods**

[DESCRIBE SIMILAR TO a., b., c., below]

- a. Collect baseline water quality samples and analyze for all Level 1 and Level 2 parameters such that accepted statistical methods can be applied to assign alert levels (ALs) and aquifer quality limits (AQLs) at all POC, outer OWs, and inactive HC wells at the southern and eastern wellfield boundaries.  
[INCLUDE TABLE OF ALs and AQLs] For Process-Related Organics (Level 2), two (2) months of data collection with nondetectable organic levels will be sufficient for background characterization.
- b. Submit to the Director a report containing mean baseline concentrations, standard deviations, ALs, and federal AQLs, based on statistical methods used to establish ALs and AQLs, as described at Section 2.4 in Attachment P and Section 2.5.3.1.2.1 of Attachment I of this Permit, or based on other methods approved by the Director, which establishes a means of verifying whether or not USDWs are endangered during Project recovery operations, rinsing, and post-rinsing, and establishes specific points at which contingency plans are activated.
- c. Receive written approval from the Director for the baseline data, action levels, and statistical approach defined at paragraph 3(b) of this Section F, above. The ADEQ response will be provided within thirty (30) days if the report is complete and satisfactory.

## **3. Water Quality Monitoring Schedule**

The Permittee shall comply with the monitoring schedule in Table 1 at the [SPECIFY NUMBER] POC wells and [SPECIFY NUMBER] outer OWs, in accordance with the final installation scheduled for those wells, for the approximately [SPECIFY DURATION]-year Project operation and restoration life and the [SPECIFY DURATION]-year post-rinsing monitoring period:

**Table 1.** Monitoring Schedule for the POC and Outer Observation Wells during Project Life and Post-Rinsing Period

Time Period	Water Quality Parameters	Sampling Frequency
Project	Level 1	At least once per quarter
Operation	Level 2	At least once annually
Post-Rinsing	Level 1	At least once per quarter for the first two (2) years after closure
	Level 2	At least once annually

**Note:** The Quarterly Compliance Monitoring Tables (Level 1 parameters) for each POC and monitoring well are presented in Table X and the Annual and Contingency Monitoring Tables (Level 2 parameters) for each POC and monitoring well are presented in Tables [XX and XX] in Appendix I of this Permit. Refer to Tables [XX and XX] for water quality monitoring well schedules.

#### 4. Hydraulic Control Monitoring Wells

[MODIFY AS APPROPRIATE] External monitoring of the ISR process around the perimeter of the Project wellfield shall be conducted to verify hydraulic control. This monitoring of the bedrock zone shall be performed using [SPECIFY NUMBER] hydraulic control wells and [SPECIFY NUMBER] OWs at the perimeter of the wellfield. Hydraulic control monitoring will entail using the OW pairs for head comparison and for verifying that the head gradient is inward, that is, from the outer OW toward the inner OW and wellfield. Head monitoring will be accomplished using pressure transducers placed in the OWs from which average daily head measurements will be recorded. In addition, the Permittee shall monitor specific conductance in the outer OWs to verify that hydraulic control is maintained and to detect any excursion. Fluids produced from the HC wells shall be monitored for specific conductance daily. The revisions to the installation and activation schedule, choice, and number of IMW, HC well, and OW locations to be monitored shall be subject to ADEQ review and approval.

#### 5. Specific Conductance Monitoring

[MODIFY AS APPROPRIATE]

Prior to commencement of injection in new mine blocks, the Permittee shall comply with the following conductivity sensor monitoring requirements:

- a. The Permittee shall collect baseline conductivity measurements to establish the range of background specific conductance levels and baseline specific conductance measurements in the IMWs, outer OWs, and activated HC wells associated with the new mine blocks and in inactive HC wells at the southern and eastern wellfield perimeter prior to commencement of injection in the first activated mine block, in accordance with methods described in Attachment I. Where any conflict or inconsistency exists between Attachments and the permit conditions, the permit condition shall supersede the language in Attachments.
- b. For the purpose of detecting any loss of hydraulic control or any excursion of injection or ISR fluids at the perimeter of the wellfield, the Permittee shall

submit to the Director a report describing the results of baseline measurements and proposed procedures for identifying a statistically significant increase above statistical noise levels in conductivity values at the OW and specific conductance values at the IMW and HC wells confirming a loss of hydraulic control and a possible excursion requiring contingency actions.

- c. Receive written approval from the Director for the baseline data, proposed action levels, and proposed procedures. The ADEQ response will be provided within thirty (30) days if the report is complete and satisfactory.
- d. During Project ISR and rinsing operations, the Permittee shall monitor specific conductance in the outer OWs on a daily basis. Specific conductance in IMW and HC well fluids shall also be monitored daily.

## **6. Injectate Solution (Lixiviant) Monitoring** [MODIFY AS APPROPRIATE]

The Permittee shall comply with the following injectate solution monitoring requirements:

- a. At least once per month, the Permittee shall measure the pH and the total concentration of [SPECIFY CONSTITUENTS] in the injectate solution using applicable analytical methods described in Table I of 40 CFR §136.3, in USEPA SW-846, Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods, unless other methods have been approved by ADEQ. [CONSIDER THE FOLLOWING] The Permittee may request monthly monitoring be reduced to quarterly monitoring if the listed organics concentrations do not vary significantly during the first six (6) months of sampling. The requirement for monthly monitoring will be reinstated if concentrations vary significantly during quarterly sampling.
- b. The Permittee shall modify the list of organic constituents required under the injectate solution monitoring program defined above, if the Permittee has received written approval from the Director for a change in the injectate solution, as detailed at Part II Section E.6. of this Permit, and the list described in paragraph 7(a) of this Section F, does not include all organic constituents which are present or could be present in the raffinate pond. [CONSIDER THE FOLLOWING] Monitoring for [LIST SPECIFIC CONSTITUENTS] may be discontinued if not detected in the first six (6) monthly sampling events.
- c. The Permittee shall measure inorganic constituents in the pregnant leach solution (PLS) and lixiviant at least once per month using applicable analytical methods described in Table I of 40 CFR §136.3, in USEPA SW-846 unless other methods have been approved by ADEQ. The inorganic analytes to be measured shall include all constituents listed in Description of Operations of this Permit plus [SPECIFY ADDITIONAL CONSTITUENTS].

[CONSIDER THE FOLLOWING]The Permittee may request monthly monitoring be reduced to quarterly monitoring if the listed inorganics concentrations do not vary significantly during the first six (6) months of sampling. The requirement for monthly monitoring will be reinstated if concentrations vary significantly during quarterly sampling.

- d. The Permittee shall modify the list of inorganic constituents in accordance with the requirements of Part II, Section E.6 of this Permit.

## **7. Groundwater Elevation Monitoring.**

Groundwater depths and elevations, measured in feet relative to mean sea level, in the POC, IMWs, and OWs shall be measured on a quarterly basis and reported in accordance with this Permit.

## **8. Monitoring Information**

Records of monitoring activity required under this Permit shall include:

- a. Date, exact location, and time of sampling or field measurements;
- b. Name(s) of individual(s) who performed sampling or measurement;
- c. Exact sampling method(s) used;
- d. Date(s) laboratory analyses were performed;
- e. Name(s) of individual(s) who performed laboratory analyses;
- f. Types of analyses; and
- g. Results of analyses.

## **9. Monitoring Devices**

- a. Continuous monitoring devices:  
Temperature and injection pressure shall be measured using equipment of sufficient precision and accuracy, as described below. All measurements must be recorded at minimum to a resolution of one tenth of the unit of measure, except temperature (i.e., injection and production rates and volumes must be recorded to a resolution of a tenth of a gallon; pressure must be recorded to a resolution of a tenth of a psi gauge (psig); injection fluid temperature must be recorded to a resolution of one-degree Fahrenheit). Exact dates and times of measurements, when taken, shall be recorded and submitted. Injection and production rates shall be measured at or near the wellhead. Lixiviant temperature can be measured at a central distribution point. Produced fluid temperature shall be measured at or near the wellhead. The Permittee shall

continuously monitor and shall record the following parameters at the prescribed frequency shown in Table 2.

**Table 2. Continuous Monitoring**

Parameters	Frequency	Instrument
Injection rate (gpm)	Continuous	Digital Recorder
Daily injection volume (gallons)	Daily	Digital Totalizer
a. Total cumulative injection volume (gallons)	Continuous	Digital Totalizer
Injection pressure (psig)	Daily	Digital Recorder
Injection fluid temperature (degrees Fahrenheit)	Daily	Digital Recorder
Production rate (gpm)	Continuous	Digital Recorder
Daily produced fluid volume (gallons)	Daily	Digital Totalizer
Total cumulative produced fluid volume (gallons)	Continuous	Digital Totalizer
Produced fluid temperature (degrees Fahrenheit)	Daily	Digital Recorder
Specific conductance (mmhos/cm)	Continuous	Digital Recorder

**b. Calibration and Maintenance of Equipment**

All monitoring and recording equipment shall be calibrated and maintained on a regular basis to ensure proper working order.

## **G. RECORDKEEPING AND REPORTING**

### **1. Recordkeeping**

The Permittee shall retain the following records and make them available at all times for examination by an ADEQ inspector:

- a. All monitoring information, including required observations, calibration and maintenance records, recordings for continuous monitoring instrumentation, copies of all reports required by this Permit, and records of all data used to complete the permit application;
- b. Information on the physical nature and chemical composition of all injected fluids; and

- c. Records and results of MITs, any other tests required by ADEQ, and any well work-overs completed.
- d. The Permittee shall maintain copies (or originals) of all records described in paragraphs (a) through (c) above during the operating life of the well and post-rinsing monitoring period and shall make such records available at all times for inspection at the facility.
- e. Except for information determined to be confidential under A.A.C. R18-9-A603, all permit applications, permits, reports, and well operation data prepared in accordance with the conditions of this Permit shall be available for public inspection at appropriate offices of ADEQ.
- f. The Permittee shall only discard the records described in paragraphs b through c if:
  - i. The records are delivered to ADEQ, or
  - ii. Written approval from the ADEQ Director to discard the records is obtained.

## **2. Reporting of Results**

The Permittee shall submit, in accordance with the required schedule set out in Section G accurate reports to ADEQ containing, at minimum, the following information:

- a. A map showing the current Project operational status and groundwater elevation contours based on the current quarterly monitoring data.
- b. A table and graph showing daily cumulative injection volumes and recovery volumes and the daily percent recovery to injection volume in the Project over the reporting period. The report shall identify any 24-hour periods in which the volume recovered is less than the minimum percent of volume injected and any contingency actions taken during the reporting period.
- c. A table and graphs comparing daily average head measurements in the eleven (11) outer OWs surrounding the Project wellfield with the same measurements in the eleven (11) inner OWs and a calculation of the head gradients between OW pairs.
- d. A table and graph showing results of the specific conductance measurements and depths in the outer OWs compared to the established background and action levels identifying any statistically significant increase above statistical noise levels in conductivity values. The record shall also include a discussion of any increase that occurred, an evaluation of whether an excursion has occurred, and mitigating actions taken during the reporting period.

- e. A table showing POC, IMWs, and outer observation well groundwater depths and elevations, analytical results, AQLs, and ALs along with a summary narrative, plus a graphical presentation of those results since inception of monitoring for the current reporting quarter. The records should also include a discussion of any exceedances that occurred and mitigating actions taken during the reporting period.
- f. Results of monthly analyses of organics in the lixiviant.
- g. Results of monitoring required at Part II.F.7 (pursuant to A.A.C. R18-9-G647(B)(1)) whenever the injection fluid is modified to the extent that previously reported analyses are incorrect or incomplete.
- h. Results of mechanical integrity tests conducted during the reporting period.
- i. A summary of the any plugging and abandonment activity conducted during the reporting period.
- j. A summary of rinsing and closure operations conducted during the reporting period, including monitoring data from rinse verification and closure verification wells.
- k. A table showing the average, maximum, and minimum monthly tubing/casing annulus and injection pressures.
- l. If action is taken under either paragraphs (a) or (b) of Section H.1, a description of the causes and impacts of the loss of hydraulic control or the variance from the required recovery to injection ratio and the actions that were taken to correct the event.

### **3. Submission of Quarterly Reports**

Quarterly reports shall be submitted by the dates listed below:

### **4. Formation Testing and Geophysical Well Logging Reports**

Copies of all reports of formation testing and geophysical well logging conducted prior to beginning ISR operations shall be submitted to ADEQ and reviewed and approved by ADEQ before commencement of ISR operations is authorized.

### **5. Submittal Address**

Copies of the monitoring results and all other reports required by this Permit shall be submitted to the following address:

Arizona Department of Environmental Quality  
Water Quality Division, Groundwater, UIC Program

1110 West Washington Street  
Phoenix, AZ 85007

## **H. CONTINGENCY PLANS**

### **1. Loss of Hydraulic Control**

- a. The Permittee shall initiate the following actions within 24 hours of becoming aware that the volume of fluids recovered from the injection and recovery zone of the active mine blocks during a 24- hour period is less than one-hundred-one (101) percent of the amount of fluid injected during the same 24-hour period:
  - i. adjust the flow rate for the recovery and/or injection wells and/or the HC wells to restore the percent of recovered fluid volume to at least one-hundred-one (101) percent of the injected volume,
  - ii. inspect the injection and recovery lines, pumps, flow meters, totalizers, pressure gages, pressure transducers and other associated instruments and facilities,
  - iii. initiate pressure testing of wells if the loss of fluids cannot be determined to be caused by a surface facility failure, and
  - iv. repair the system as necessary to restore the percent of recovered fluid volume to at least one-hundred-one (101) percent of the injected volume.
- b. A loss of hydraulic control is deemed to occur when the amount of fluid recovered during a 48-hour period is less than one-hundred-one (101) percent of the amount of fluid injected during the same 48-hour period. Loss of hydraulic control is also defined by an inward gradient (in head differential) of less than 0.01 ft./ft. or an outward gradient observed in any pair of OWs over a 48-hour period or by an action level in conductivity values above statistical noise levels in OWs over a 48-hour period. An inward gradient of less than 0.01ft./ft. (i.e., loss of hydraulic control) shall require action to restore the inward gradient to at least 0.01 ft./ft. in the subsequent 24-hour period.

The minimum inward flow ratio and head differentials may be adjusted during the ISR operation if warranted by specific conductance data from outer OWs or head data from OW-pairs and from POC and other monitoring wells, subject to ADEQ review and approval.



The Permittee shall initiate the following actions within 24 hours of becoming aware of the loss of hydraulic control within the Project area for more than 48 consecutive hours, as defined above. The Permittee shall:

- i. Cease or reduce injection in one or more wells as necessary to restore hydraulic control,
  - ii. operate injection, recovery, and HC wells to reverse a confirmed loss of hydraulic control and excursion indicated by a specific conductance exceedance at an outer OW or until the amount recovered equals an amount sufficient to restore the ratio of fluid recovered to injected during the prior 72-hour period to a minimum of one-hundred-one (101) percent and restore all OW pair head differentials to at least 0.01 ft./ft. to verify an inward flow gradient,
  - iii. verify proper operation of all facilities within the Project area, and
  - iv. perform any necessary repairs.
- c. If action is taken under either paragraphs (a) or (b) above, the Permittee shall, in the next quarterly report, describe the causes and impacts of the loss of hydraulic control or the variance from the required recovery to injection ratio and the actions that were taken to correct the event.

## **2. Water Quality Exceedances at POC and outer observation wells**

The following describes contingency plans to be followed after the verification of an AL or AQL exceedance in a POC or outer OW during the approximately [SPECIFY NUMBER OF YEARS] -year operation and restoration life and during the [SPECIFY NUMBER OF YEARS] -year post-rinsing monitoring period:

- a. In the event of an AL exceedance during operational project life.
- b. The Permittee shall collect a verification sample within five (5) days after becoming aware of an exceedance of an AL listed in [REFER TO TABLE OF ALs FOR WATER QUALITY PARAMETERS] in this Permit.
- c. Within five (5) days after receiving the results of verification sampling from the laboratory, the Permittee shall notify the Director in a written report if the results indicate an exceedance.
- d. If the results of verification sampling indicate that an AL has not been exceeded, the Permittee shall notify ADEQ of the results. No further action is required until the next scheduled monitoring round.

- e. Within thirty (30) days of receiving the laboratory results verifying that an AL has been exceeded, the Permittee shall do the following:
  - i. Submit a written report to ADEQ providing an evaluation of the cause, impacts, and any mitigation of the discharge responsible for the AL exceedance, or
  - ii. Submit a written report to ADEQ which definitively demonstrates that the AL exceedance resulted from an error(s) in sampling, analysis, or statistical evaluation.
- f. Upon review of the report documenting the AL exceedance, the Director may require additional monitoring and/or action beyond those specifically listed in this Permit.
- g. In the event of an AQL exceedance during operational Project Life, rinsing, and post-rinsing monitoring period:
  - i. The Permittee shall collect a verification sample within five (5) days of becoming aware of an exceedance of an AQL listed in [REFER TO TABLE OF AQLs FOR WATER QUALITY PARAMETERS] in this Permit.
  - ii. Within five (5) days of receiving the results of verification sampling from the laboratory, the Permittee shall notify the Director of the results in a written report, regardless of whether the results are positive or negative.
  - iii. If the results of verification sampling indicate that an AQL has not been exceeded, the Permittee shall notify ADEQ. No further action is required until the next scheduled monitoring round.
  - iv. Within thirty (30) days of receiving the laboratory results verifying that an AQL has been exceeded, the Permittee shall submit a written report to ADEQ providing an evaluation of the cause, impacts, and any mitigation of the discharge responsible for the AQL exceedance or Submit a written report to ADEQ which definitively demonstrates that the AQL exceedance resulted from an error(s) in sampling, analysis, or statistical evaluation.
  - v. Upon review of the report documenting the AQL exceedance, the Director may require additional monitoring and/or action beyond those specifically listed in this Permit.

## **I. RESTORATION, PLUGGING AND ABANDONMENT**

Pursuant to A.A.C. R18-9-B614 and B608, the Permittee shall comply with the Wellfield Closure Strategy in Attachment F and the Plugging and Abandonment Plans in Attachment C in accordance with the schedule for aquifer restoration, groundwater monitoring, and plugging and abandonment activities to ensure adequate protection of USDWs. The Permittee shall also comply with the conditions at I.1 and I.2 below. Where

any conflict or inconsistency exists between the Plugging and Abandonment Plans and permit conditions, the permit conditions shall supersede the language in the Plugging and Abandonment Plans.

## **1. Closure and Plugging and Abandonment Plan**

- a. Constituents with primary MCLs: Within sixty (60) days after completing copper recovery operations in the injection and recovery zone of a specific mine block, the Permittee shall commence restoration activities for the zone. The groundwater in the injection and recovery zone shall be restored to concentrations which are less than or equal to primary MCLs defined at 40 CFR Part 141, or to pre-operational background concentrations if the pre- operational background concentrations exceed MCLs. The Permittee shall follow the procedure detailed at (c), below.
- b. Constituents without primary MCLs: In addition to constituents with primary MCLs, the Permittee shall ensure that constituents which do not have primary MCLs do not impact USDWs in a way that could adversely affect the health of persons.
- c. Closure and Plugging & Abandonment Procedure: The Permittee shall commence closure operations in the injection and recovery zone after copper recovery operations have been completed. During closure operations, the Permittee will cease injection of lixiviant and initiate rinsing of the injection and recovery zone by injection/recovery or recovery operations. At all times during injection and recovery zone rinsing, the Permittee shall maintain inward hydraulic gradients (i.e., maintaining hydraulic containment of the injection and recovery zone).

Closure of the wellfield will include rinsing to remove residual PLS, post-rinsing onitoring, and well abandonment, as described in the Wellfield Closure Strategy in Attachment F. After copper recoveries drop below the economic cutoff, ISR in each production block will be deemed complete and the block will be rinsed using fresh groundwater until applicable water quality standards are met. A three- step rinsing process will be implemented as follows:

- i. Rinse three (3) pore volumes (based on a 3% fracture porosity of the orebody);
- ii. Rest for one (1) year; and
- iii. Rinse two (2) pore volumes.

The Permittee shall monitor the rinsing progress by analyzing fluids recovered from all recovery wells in the first mine block after rinsing Step 3. These data will then be used to determine the minimum number of sampled wells needed to confirm that rinsing has been

successful in the rinsing and closure of subsequent mine blocks. The results of that evaluation shall be submitted for ADEQ review and approval. The wells to be retained for sampling during rinsing operations in subsequent mine blocks shall be identified and the locations of those wells shall be provided before closure of other wells in a mine block is approved by ADEQ.

The Permittee will sample discharges for all Level 2 constituents defined at Part II.F of this Permit. If results of the Level 2 sampling show that one or more compounds are above primary MCLs and the pre-operational background concentrations, rinsing operations will continue until all compounds are below primary MCLs or the pre-operational background concentrations if pre-operational background concentrations exceed MCLs (AQLs).

If the Level 2 constituents in a well are below AQL concentrations, the Permittee may discontinue rinsing that well until the end of the thirty (30)- day period described below. If the Level 2 constituents in a well exceed the AQLs, the Permittee shall continue rinsing operations until such time that Level 2 constituent concentrations in the well are less than the AQLs for the Project.

When all individual rinse verification well concentrations within the injection and recovery zone of a specific mine block are below the AQLs, rinsing operations for all wells within the mine block will be discontinued for thirty (30) days. At the end of the thirty (30)-day period, the wells shall be re-sampled and if Level 2 constituent concentrations remain below the AQLs in all wells, the Permittee may cease all rinsing activities for the wells in the injection and recovery zone of that mine block.

The Permittee shall document the results of the closure operation in the subsequent quarterly monitoring report and notify ADEQ of the schedule for plugging and abandonment operations at least thirty (30) days in advance of commencing plugging and abandonment operations at wells to be plugged in an abandoned mine block. The Permittee shall identify the wells and locations of those wells to be retained as CVWs during the post- closure monitoring period in a closure report. The Permittee shall submit the notification, the closure report, and an updated Plugging and Abandonment Plan and schedule for ADEQ approval. The wells shall be abandoned in accordance with the Plugging and Abandonment Plan (Attachment C) and the Wellfield Closure Strategy in Attachment F unless modified for individual well conditions.

## **2. Post-Rinsing Monitoring**

Monitoring at POC, outer OWs, CVWs, and other Project monitoring wells: To ensure that the restoration required at Section II.I(1), above, accomplished the objective of returning the injection and recovery zone to primary MCLs (or pre-operational background concentrations) and thereby providing adequate protection to surrounding USDWs, the Permittee shall comply with the Wellfield Closure Strategy in Attachment F of this Permit, the post-rinsing monitoring schedule at Part II. Section F.4 of this Permit and the AQL exceedance contingency plan established in

Part II, Section H.2, paragraph (b) of this Permit. The post-rinsing monitoring schedule at Part II, Section F.4 may be extended beyond five (5) years, as described in the Wellfield Closure Strategy, if water quality standards are not met for five consecutive years at all closure verification wells and outer OWs, and ADEQ deems it necessary to ensure adequate protection of USDWs. The Permittee shall submit a post-rinsing notification and report, with documentation, to ADEQ within thirty (30) days following completion of the post-rinsing monitoring program.

## **J. OPERATIONAL AND POST-RINSING AUDITS**

[MODIFY AS APPROPRIATE] The Permittee shall submit a groundwater flow model evaluation and updated report within six (6) months of the completion of the first year of operation for each of the three stages and every five (5) years thereafter for Stages 1 and 3 until mine closure. The schedule for these audits may be adjusted, depending on the progress of Stage 1, 2, and 3 operations, subject to ADEQ review and approval. The groundwater flow model evaluation and updated report shall include: hydrographs; changes to the site conceptual model, if any; water balance(s); results of calibration and sensitivity analysis, as appropriate; model run logs; any changes to the input model parameters; specific conductance trend analysis for IMWs and OWs and any constituents in the compliance monitoring program, if determined appropriate; updated quarterly groundwater contour maps; and updates to the groundwater flow model to assess particle tracking (fate and transport). The model shall assess the performance of the operating mine blocks, rinsing of mine blocks, capture associated with hydraulic control wells, and any changes to the post-rinsing period required by this Permit and recommend adjustments to the post-rinsing monitoring period based on updated groundwater flow modeling results. Simulation of the injection/recovery well performance may be included in the assessment of operating mine block performance if warranted by ISR operational performance and monitoring data.

## **K. DURATION OF PERMIT**

The duration of this Class III permit shall include well construction, corrective actions, and demonstrations required prior to injection under permit conditions in Part II, Sections C, D, and E of this Permit. After injection is authorized, the duration of this Class III permit shall include the approximately [SPECIFY DURATION] year Project operation and restoration life and [SPECIFY DURATION] year post-rinsing monitoring period unless terminated under the conditions set forth in Part III, Section B.1 of this Permit or administratively extended under the conditions set forth in Part III.E.11. The duration of this Class III permit shall include any post-rinsing monitoring required beyond five (5) years.

## **L. FINANCIAL RESPONSIBILITY**

### **1. Demonstration of Financial Responsibility**

The Permittee shall demonstrate and maintain financial responsibility and resources sufficient to meet the restoration and plugging and abandonment requirements established at Part II, Section I of this Permit and described in the Plugging and Abandonment Plan (Attachment C) and the Wellfield Closure Strategy (Attachment F) and consistent with A.A.C. R18-9- D636(A)(6), which the Director has chosen to apply.

- a. The Permittee shall post an approved financial instrument such as a surety bond or other financial assurance in the amount of [SPECIFY \$ AMOUNT] to guarantee aquifer restoration, groundwater monitoring, and plugging and abandonment activities for closure and post-closure. Authority to construct, inject, and operate the wells under the authority of this Permit will be granted only after the financial instrument has been secured and approved by ADEQ. The Closure Plan and detailed cost estimates for the [PROJECT NAME] Wellfield are provided in the permit application, which is included in Attachment C.
- b. The level and mechanism of financial responsibility shall be reviewed and updated periodically, upon request of ADEQ. The Permittee may be required to change to an alternate method of demonstrating financial responsibility. Any such change must be approved in writing by ADEQ prior to the change.
- c. ADEQ may require the Permittee to estimate and to update the estimated restoration, plugging, and/or post-closure activity costs periodically. Such estimates shall be based upon costs that a third party would incur to carry out the required restoration activities, properly plug and abandon the wells, and perform post-closure monitoring activities, including materials, equipment, mud and disposal costs, and labor with appropriate contingencies.

[MINING COMPANY] must provide estimated closure costs and updated financial assurance for Stage 2 and 3 operations before initiating drilling and ISR operations in those stages. Those cost estimates and the updated financial assurance mechanism, if necessary, must be provided and reviewed for acceptance by ADEQ in accordance with Part II.L and A.A.C. R18-9- D636(A)(6), and 40 CFR Subpart F before [MINING COMPANY] will be authorized to begin those operations.

### **2. Insolvency of Financial Institution**

The Permittee shall submit an alternate instrument of financial responsibility acceptable to ADEQ within sixty (60) days after either of the following events occurs:

- a. The institution issuing any bond or other financial instrument that is secured to demonstrate financial responsibility in accordance with Part II, Section L.1. of this Permit files for bankruptcy; or
- b. The authority of the trustee institution to act as trustee, or the authority of the institution issuing the financial instrument, is suspended or revoked.
- c. Except for information determined to be confidential under A.A.C. R18-9-A603, all permit applications, permits, reports, and well operation data prepared in accordance with the conditions of this Permit shall be available for public inspection at appropriate offices of ADEQ.

Failure to submit an acceptable financial demonstration may result in the termination of this Permit pursuant to A.A.C. R18-9-C634(A)(1).

### **3. Insolvency of Owner or Operator**

The Permittee shall notify ADEQ by certified mail of the commencement of voluntary or involuntary proceedings under U.S. Code Title 11 (Bankruptcy), naming the owner or operator as debtor, within ten (10) business days. A guarantor of a corporate guarantee must make such a notification if he/she is named as debtor, as required under the terms of the guarantee.

## **PART III. GENERAL PERMIT CONDITIONS**

### **A. EFFECT OF PERMIT**

The Permittee is allowed to engage in underground injection well construction and operation in accordance with the conditions of this Permit. The Permittee shall not construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant (as defined by A.A.C. R18-9-A601) into USDWs (as defined A.A.C R18-9-A601).

Any underground injection activity not specifically authorized in this Permit is prohibited. The Permittee must comply with all applicable provisions of 18 A.A.C. 9, Article 6. Such compliance does not constitute a defense to any action brought under Section 1431 of the SDWA, 42 U.S.C. §300(i), or any other common law, statute, or regulation other than Part C of the SDWA. Issuance of this Permit does not convey property rights of any sort or any exclusive privilege, nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of State or local law or regulations. Nothing in this Permit shall be construed to relieve the Permittee of any duties under all applicable laws and regulations.

### **B. PERMIT ACTIONS**

#### **1. Modification, Revocation and Reissuance, or Termination**

ADEQ may, for cause or upon request from the Permittee, modify, revoke and reissue, or terminate this Permit in accordance with A.A.C. R18-9-C631, C632, and C634. The permit is also subject to minor modifications for causes as specified in A.A.C. R18-9-C633. The filing of a request for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated non-compliance by the Permittee, does not stay the applicability or enforceability of any permit condition. ADEQ may also modify, revoke and reissue, or terminate this Permit in accordance with any amendments to the SDWA if the amendments have applicability to this Permit.

#### **2. Transfers**

This Permit is not transferable to any person unless notice is first provided to ADEQ and the Permittee complies with requirements of A.A.C. R18-9-C630. ADEQ may require modification or revocation and reissuance of the permit to change the name of the Permittee and incorporate such other requirements as may be necessary under the SDWA.



**C. SEVERABILITY**

The provisions of this Permit are severable, and if any provision of this Permit or the application of any provision of this Permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this Permit shall not be affected thereby.

**D. CONFIDENTIALITY**

In accordance with A.A.C. R18-9-A603, any information submitted to ADEQ pursuant to this Permit may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, ADEQ may make the information available to the public without further notice. If a claim is asserted, the validity of the claim will be assessed in accordance with the procedures contained in A.R.S. § 49-205 (Public Information). Claims of confidentiality for the following information will be denied:

1. Name and address of the Permittee, or
2. Information dealing with the existence, absence, or level of contaminants in drinking water.

**E. GENERAL DUTIES AND REQUIREMENTS**

**1. Duty to Comply**

The provisions of R18-9-D635 are incorporated by reference into this Permit, except as modified by specific provisions in this Permit. In addition, the following general duties and requirements apply to this Permit and the Permittee. The Permittee shall comply with all applicable UIC Program regulations and conditions of this Permit, except to the extent and for the duration such non-compliance is authorized by an emergency permit issued in accordance with A.A.C. R18-9-C625. Any permit non-compliance constitutes a violation of the SDWA and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or for denial of a permit renewal application. Such non-compliance may also be grounds for enforcement action under the Resource Conservation and Recovery Act (RCRA).

**2. Penalties for Violations of Permit Conditions**

Any person who violates a permit requirement is subject to civil penalties, fines, and other enforcement action under the SDWA and may also be subject to enforcement actions pursuant to RCRA. Any person who willfully violates permit conditions may be subject to criminal prosecution.

**3. Need to Halt or Reduce Activity not a Defense**

It shall not be a defense, for the Permittee in an enforcement action, that it would have been necessary to halt or reduce the permitted activity to maintain compliance with the conditions of this Permit.

**4. Duty to Mitigate**

The Permittee shall take all reasonable steps to minimize and correct any adverse impact on the environment resulting from non-compliance with this Permit.

**5. Proper Operation and Maintenance**

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this Permit.

Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this Permit.

**6. Property Rights**

This Permit does not convey any property rights of any sort, or any exclusive privilege.

**7. Duty to Provide Information**

The Permittee shall furnish to ADEQ, within a time specified, any information which ADEQ may request to determine whether cause exists for modifying, revoking, and reissuing, or terminating this Permit, or to determine compliance with this Permit.

The Permittee shall also furnish to ADEQ, upon request, copies of records required to be kept by this Permit pursuant to A.A.C. R18-9- D635(A)8.

**8. Inspection and Entry**

The Permittee shall allow ADEQ, or an authorized representative, upon the presentation of credentials and other documents as may be required pursuant to A.A.C. R18-9-D635(A)9 to:

- a. Enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Permit;
- b. Have access to and copy, at reasonable times, any records that are kept under the conditions of this Permit;
- c. Inspect and photograph at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Permit; and
- d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the SDWA, any substances or parameters at any location.

## 9. Signatory Requirements

All applications, reports, or other information submitted to ADEQ shall be signed and certified by a responsible corporate officer or duly authorized representative according to A.A.C. R18-9-C617.

## 10. Additional Reporting Requirements

- a. **Planned Changes** - The Permittee shall give notice to ADEQ as soon as possible of any planned physical alterations or additions to the permitted facility affecting any of the terms and conditions of the permit.
- b. **Anticipated non-compliance**-The Permittee shall give advance notice to ADEQ of any planned changes in the permitted facility or activity which may result in non-compliance with permit requirements.
- c. **Compliance Schedules** - Reports of compliance or non-compliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Permit shall be submitted to ADEQ no later than thirty (30) days following each schedule date.

### d. Twenty-four Hour Reporting

The Permittee shall report to ADEQ any non-compliance which may endanger health or the environment. The following Information shall be provided orally within 24 hours from the time the Permittee becomes aware of the circumstances.

- i. Any monitoring or other information which indicates that any contaminant may cause an endangerment to a USDW; and
  - ii. Any non-compliance with a permit condition, malfunction of the injection system, or loss of mechanical integrity, which may cause fluid migration into or between USDWs.
- e. A written submission of all non-compliance shall also be provided to ADEQ within five (5) days of the time the Permittee becomes aware of the circumstances. The written submission shall contain: a description of the non-compliance and its cause; the period of non-compliance, including exact dates and times; if the non-compliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the non-compliance.
  - f. **Other non-compliance** - At the time monitoring reports are submitted, the Permittee shall report in writing all other instances of non-compliance not otherwise reported.

- g. Other Information - If the Permittee becomes aware that it failed to submit all relevant facts in the permit application or submitted incorrect information in the permit application or in any report to ADEQ, the Permittee shall submit such facts or information within two (2) weeks of the time such facts or information becomes known.

## **11. Continuation of Expiring Permit**

- a. Duty to Reapply - If ADEQ requires the Permittee to continue an activity regulated by this Permit past the expiration date of this Permit, the Permittee must submit a complete application for a new permit at least one hundred and eighty (180) days before this Permit expires.
- b. Permit Extensions - The conditions and requirements of an expired permit continue in force and effect in accordance with 5 U.S.C. §558(c) until the effective date of a new permit, if:
  - i. The Permittee has submitted a timely and complete application for a new permit; and
  - ii. ADEQ, through no fault of the Permittee, does not issue a new permit with an effective date on or before the expiration date of the previous permit.

Arizona UIC Permit Template  
Class V

**UNDERGROUND INJECTION CONTROL PROGRAM**

**PERMIT [IF APPLICABLE: AREA PERMIT] to Construct and Inject**

**Class V Injection Wells**

**Permit No. UIC-AZV-FY22-#**

**[PROJECT NAME] Project**

**[COUNTY NAME] County, Arizona**

**Issued to:**

**[PERMITTEE NAME]**

**[ADDRESS LINE 1]**

**[ADDRESS LINE 2]**

**[ADDRESS LINE 3]**

**AUTHORIZING SIGNATURE**

---

[Name of Director], Director  
Water Quality Division  
Arizona Department of Environmental Quality  
Signed this \_\_\_\_ day of \_\_\_\_\_, 20\_\_

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ATTACHMENT A – Project Location Maps  
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## PART I. AUTHORIZATION TO CONSTRUCT AND INJECT

Pursuant to the Underground Injection Control regulations of the Arizona Department of Environmental Quality codified at Title 18 of the Arizona Administrative Code, Chapter 9, Article 6

[COMPANY NAME]  
[ADDRESS LINE 1]  
[LINE 2 LINE3]

is hereby authorized, contingent upon Permit conditions, to [construct and] operate [SPECIFY NEW OR EXISTING] Class V [SPECIFY TYPE] injection well facility used to dispose of [SPECIFY FLUID] generated by the Permittee's facility. The Project is in [PROJECT LOCATION], Arizona, approximately [DISTANCE AND DIRECTION TO NEAREST LANDMARK], as depicted in Attachment A. The location is [LOCATION DESCRIPTION (Include Section, Township, Range, with latitude/longitude)]. The well [IS/WILL BE] located

[DESCRIBE LOCATION]. The injection zone is within the [FORMATION NAME] Formation at the [FOR WELLS NOT YET DRILLED USE APPROXIMATE] depths of [NUMBER] feet to [NUMBER] feet below ground level. The authorized injection interval is within the [FORMATION NAME] Formation at the [FOR WELLS NOT YET DRILLED USE APPROXIMATE] depths of [NUMBER] to [NUMBER] feet below ground level.

[DESCRIBE INJECTATE AND SOURCE OR PRODUCTION PROCESS]

For the permitted wells within the area of review (AOR), ADEQ will issue authorization to drill and construct only after requirements of Financial Responsibility in Part II, Section L of this Permit have been met. ADEQ will grant authorization to inject only after the requirements of Part II, Sections B, C and D of this Permit have been met. Operation of injection [WELL ID] will be limited to a maximum volume of [SPECIFY QUANTITY] and pressure of [SPECIFY QUANTITY]. All conditions set forth herein refer to Title 18, Chapter 9, Article 6 of the Arizona Administrative Code (A.A.C.), which are regulations in effect on the date that this Permit is effective.

This Permit consists of [NUMBER] pages plus Attachments, and includes all items listed in the Table of Contents. Further, it is based upon representations made by [COMPANY NAME] (the Permittee) and on other information contained in the administrative record. It is the responsibility of the Permittee to read, understand, and comply with all terms and conditions of this Permit. This Permit and the authorization to construct, operate, and inject are issued for a period to include the approximate [NUMBER]-year Project operation unless terminated under the conditions set forth in Part III, Section B.1 of this Permit. This Permit and authorization to inject shall also include any additional post-closure monitoring beyond [NUMBER] years, if deemed necessary by ADEQ.

This Permit is issued on [DATE] and becomes effective on [DATE]. This Permit is issued for a period of xx years unless the Permit is terminated under the conditions set forth in Part III.B.1. or administratively extended under the conditions set forth in Part III.E.

Signed by

---

[Name of Director], Director  
Water Quality Division  
Arizona Department of Environmental Quality

## **PART II. SPECIFIC PERMIT CONDITIONS**

### **A. REQUIREMENTS PRIOR TO DRILLING, TESTING, CONSTRUCTING, OR OPERATING**

#### **1. Financial Assurance**

The Permittee shall supply evidence of financial assurance prior to commencing any well drilling and construction, in accordance with Section G of this part.

#### **2. Field Demonstration Submittal, Notification, and Reporting**

- a. Prior to each demonstration or test required in this Permit, the Permittee shall submit plans and specifications for procedures to the ADEQ for approval 90 days prior to demonstration or testing activities. No demonstration or test in these sections may proceed without prior written approval from ADEQ.
- b. The Permittee must notify ADEQ at least thirty (30) days prior to performing any required field demonstrations or test, after ADEQ approves the plans/procedures for testing, in order to allow ADEQ to arrange to witness if so elected.
- c. The Permittee shall submit results of each demonstration or test required in Part II of this Permit to ADEQ within thirty (30) days of completion, unless otherwise noted.

[INCLUDE SECTION ON AQUIFER EXEMPTION IF APPLICABLE – SEE PART II.B IN CLASS III PERMIT TEMPLATE]

### **B. CONDITIONS FOR EXISTING WELLS AND PROPOSED WELLS**

#### **1. Surface Location**

[DESCRIBE LOCATION OF EXISTING AND PROPOSED WELLS]

#### **2. Existing Well Construction Details**

A well schematic for each well is contained in Attachment B of this Permit. The Permittee shall at all times maintain the well consistent with this well schematic.

#### **3. Proposed Well Construction Details**

The Permittee shall submit an updated well schematic for each proposed well and must receive written ADEQ approval prior to commencing drilling and construction of the well.

**4. Future Well Construction Beyond the Existing Well Identified in this Permit**

Prior to drilling any new injection well(s) not covered by this Permit, the Permittee must submit to ADEQ, for review and approval, a permit application with detailed construction plans and procedures, including proposed field coordinates [SECTION, TOWNSHIP, RANGE, LATITUDE/LONGITUDE] for the surface and bottom hole locations of the proposed well(s). The Permittee shall also provide the drilling program details, and the distance between all wells, and any justification for the proposed separation distance between the wells, both at the surface and at the true vertical depth of the top of the injection interval.

**5. Injection Formation Testing**

**a. Step-Rate Test (SRT)**

- i. Within ninety (90) days after the completion of the injection well, the Permittee shall conduct an SRT on the well to establish the maximum allowable surface injection pressure (MAIP). The report shall be submitted to ADEQ within sixty (60) days of test completion.
- ii. Step Rate Test Procedure Guidelines. Refer to Society of Petroleum Engineers (SPE) Paper #16798 for test design and analysis guidance.
- iii. Injection into the well as proposed in the approved SRT procedure, which may include injecting above fracture pressure, will be temporarily authorized only until such time that ADEQ approves final injection requirements.

**b. Pressure Fall Off Test (FOT)**

- i. Within one hundred eighty (180) days after ADEQ approves the completed SRT and establishes an MAIP for the well pursuant to Part II.D.3., the Permittee shall conduct an initial FOT to determine and monitor formation characteristics. The other injection wells shall either be inactive, or operated at a constant rate, prior to and during the FOT, in order to obtain reliable pressure data and accurate results. The Permittee shall conduct the FOT after a radial flow regime has been established at an injection rate which is representative of the wastewater contribution to the well.
- ii. The Permittee shall submit to ADEQ for review and approval a detailed plan for the FOT that is developed in accordance with Attachment D. Once ADEQ approves in writing the test plan, the

Permittee may schedule the FOT. The final FOT report shall be submitted to ADEQ within sixty (60) days of test completion.

- iii. After the initial FOT, the Permittee shall conduct an annual FOT to monitor formation characteristics. The Permittee may conduct the annual FOT in conjunction with the annual External Mechanical Integrity Test demonstration, as required by Part II.D.3.
- iv. The Permittee shall create a plot/graph of the latest static reservoir pressure of the injection zone and its cumulative behavior over time, starting with the FOT conducted after the initial FOT; the plot shall be included with the annual FOT report each year.

c. Formation Testing Program

In addition to Part II.B.5.a. and b., above, the Permittee shall submit a detailed proposed formation testing program for each well for ADEQ review as part of the proposed drilling program. The Permittee shall not commence construction of the well until ADEQ has approved the proposed formation testing program.

**6. Injection Interval**

The [PROPOSED OR EXISTING WELLS] [ARE CURRENTLY/ WILL BE] injecting into the [DESCRIBE FORMATION] within the [NAME OF FACILITY]. Injection is only permitted into [FORMATION NAME] Formation within the depth range as depicted in the as-built diagrams in Attachment B (i.e., at a depth of approximately [NUMBER] to [NUMBER] feet bgs).

**7. Monitoring Devices**

The Permittee shall install and maintain in good operating condition at all times during the operation of the Well(s), the following monitoring devices:

- a. A tap on the discharge line between the injection pump and the wellhead or an alternative location proposed in a detailed written request by the Permittee and approved in writing by ADEQ for the purpose of obtaining representative samples of injection fluid; and
- b. Devices to continuously measure and record injection pressure, annulus pressure, temperature, flow rate, and injection volume, subject to the following:
  - i. Pressure gauges shall be of a design to provide:

- a) A full pressure range of at least fifty (50) percent greater than the anticipated operating pressure; and
  - b) A certified deviation accuracy of five (5) percent or less throughout the operating pressure range.
- ii. Flow meters shall measure cumulative volumes and be certified for a deviation accuracy of five (5) percent or less throughout the range of injection rates allowed by the Permit.

## **8. Proposed Changes and Workovers**

- a. The Permittee shall give advance notice to ADEQ as soon as possible, pursuant to and in accordance with A.A.C. R18-9-D635, of any planned physical alterations or additions to the well(s), including sidetracking and deepening or perforating additional intervals. Any changes in well construction, including changes in casing, tubing, packers, and/or perforations other than minor changes, require prior written approval by ADEQ and may require a permit modification under the requirements of A.A.C. R18-9-C632. Modifications that are considered routine in well construction details, such as tubing dimensions and strengths, packer models, types and setting depths, and perforation interval changes within the permitted injection zone may be processed by ADEQ as minor permit modifications consistent with A.A.C. R18-9- C633.
- b. The Permittee shall provide all records of well workovers, logging, or other subsequent test data to ADEQ within sixty (60) days of completion of the activity.
- c. The Permittee shall submit all reports required by this Permit using the appropriate reporting forms contained in Attachment E.
- d. The Permittee shall perform a Mechanical Integrity Test (MIT), using the procedures set forth in Part II.D.1 and Part II.D.2.a within thirty (30) days of completion of workovers or alterations and prior to resuming injection activities. The Permittee shall provide results of the MIT to ADEQ within sixty (60) days of completion.

## **9. Testing during Drilling and Construction**

- a. The Permittee shall include logs and other tests conducted during drilling and construction including, at a minimum, deviation checks, casing logs, and injection formation tests as outlined in A.A.C. R18-9-E640.
- b. The Permittee shall conduct open hole logs over the entire open hole sequence below the conductor casing.
- c. The Permittee shall conduct formation evaluation logs and tests and shall provide and use those results to estimate and report values for porosity, permeability, compressibility, static formation pressure, effective thickness, lithology, and rock mechanical properties for both the injection and confining zones identified within the permitted geological sequence.
- d. The Permittee shall collect and analyze full-diameter cores from the overlying confining unit [NAME OF FORMATION] and within the [NAME OF FORMATION] Formation during drilling of the each well.
- e. Before surface, intermediate, and long string casings are set, the Permittee shall run dual induction/spontaneous potential/gamma ray/caliper (DIL/SP/GR/CAL) logs over the course of the entire open hole sequence after the well is drilled to each respective terminal depth. After each casing is set and cementing is completed, the Permittee shall conduct a cement bond evaluation over the course of the entire cased hole sequence. The cement bond evaluation shall enable the analysis of bond between cement and casing as well as any cement channeling in the borehole annulus.
- f. During construction of each well, the Permittee shall obtain information relating to ground water at the site and submit to ADEQ. This information shall include a direct Total Dissolved Solids analysis of the target injection formation water to demonstrate the presence and characteristics of, or the lack thereof, any Underground Sources of Drinking Water (USDWs, as defined in A.A.C. R18-9- A605.

## **C. CORRECTIVE ACTION**

The Permittee is required to conduct corrective actions as mandated in R18-9-D639, prior to ADEQ granting authorization to inject under this Permit.

### **1. Annual AOR Review**

The Permittee shall annually review the AOR calculation based on any new data obtained from the FOT and static reservoir pressure observations required by Part II.B.7.b. The Permittee shall provide to ADEQ a copy of the modified AOR calculations, along with all associated assumptions and justifications, with the next Quarterly Report due in accordance with the schedule, set forth in Part II.E.

### **2. Implementation of Corrective Action**

- a. If any wells requiring corrective action, in accordance with A.A.C. R18-9-D639, are found within the modified AOR referenced in Part II.C.1., above, a list of the wells along with their locations and construction data shall be provided to ADEQ within thirty (30) days of their identification. ADEQ will determine whether corrective action is required and no corrective action shall be performed without authorization.
- b. Corrective action may be required after permit issuance to address any wells within the area of review that may allow migration of fluids into underground sources of drinking water. ADEQ will use the annual FOT results and re-calculation of the ZEI, along with USDW monitoring results from the monitoring well, as described in Section E, Monitoring, Recordkeeping, and Reporting of Results to determine the potential need for any future corrective action.
- c. The Permittee shall submit a plan for approval by ADEQ to re-enter, plug, and abandon the wells listed in Part II.C.2.a., above, in a way that prevents the migration of fluids into any USDWs. The Permittee may submit an alternative plan to address the potential for fluid migration in any of these wells to ADEQ.
- d. The Permittee may not commence corrective action activities without prior written approval from ADEQ.



## **D. WELL OPERATION**

### **1. Required Demonstrations**

#### **a. Mechanical Integrity**

The Permittee shall propose a schedule to conduct a MIT to demonstrate the Well(s) authorized by this Permit has mechanical integrity consistent with A.A.C. R18-9-B613 and with Section II.D.2.a. The test should be planned for no more than 365 days after the prior well tests were conducted under the previous permit. The Permittee shall demonstrate that there are no significant leaks in the casing and tubing (internal mechanical integrity) and that there is not significant fluid movement into or between USDWs through the casing wellbore annulus or vertical channels adjacent to the injection wellbore (external mechanical integrity).

#### **b. Injectate Waste Determination**

Within sixty (60) days of the effective date of this Permit, the Permittee shall certify that the existing Injectate “Hazardous Waste Determination” of each unique waste stream source injected into the each well authorized by this Permit, as listed in Section II.D.5.a, is unchanged. If a change is identified, a new determination must be performed within sixty (60) days of the effective date of this Permit. The results of the analysis shall demonstrate that the injectate does not meet the definition of hazardous waste as defined in A.R.S. § 49-921.

The Permittee shall submit a letter to ADEQ confirming that the “Hazardous Waste Determination” was carried out according to 40 CFR § 262.11 within sixty (60) days of it having been completed for the well.

The Permittee shall perform an additional “Hazardous Waste Determination” whenever there is a process change or a change in fluid chemical constituents or characteristics of the injectate. The Permittee shall also refer to injectate testing requirements set forth in Part II.E.1., below.

### **2. Mechanical Integrity Testing**

#### **a. Mechanical Integrity Tests**

Mechanical integrity testing shall conform to the following requirements throughout the life of any injection wells currently or in the future authorized by ADEQ under this Permit and in accordance with the requirements set forth at A.A.C. R18-9- D635.

##### **i. Casing/Tubing Annular Pressure (Internal MIT)**

In accordance with the timing requirements defined in Part II.D.2.b., below, the Permittee shall perform a pressure test on the annular space between the tubing and long string casing to demonstrate the absence

of significant leaks in the casing, tubing, and/or liner. This test shall be for a minimum of thirty (30) minutes at a pressure equal to or greater than three hundred and fifty (350) pounds per square inch gauge (psig). If greater than the MAIP, it should be no greater than one hundred (100) psig or 10% of the MAIP, whichever is less. A well passes the MIT if there is less than a five (5) percent change in pressure over the thirty (30) minute period. A pressure differential of at least three hundred and fifty (350) psig between the tubing and annular pressures shall be maintained throughout the MIT. This test shall be performed on each well within five years of the previous Internal MIT and once every five (5) years thereafter.

Detailed plans for conducting the Internal MIT must be submitted to ADEQ for review and approval. Once approved, the Permittee may schedule the Internal MIT, providing ADEQ at least thirty (30) days' notice before the Internal MIT is conducted. The final test report shall be submitted to ADEQ within sixty (60) days of test completion.

- ii. **Continuous Pressure Monitoring**  
The Permittee shall continuously monitor and record the tubing/casing annulus pressure and injection pressure by a digital instrument with a resolution of one tenth (0.1) psig. The average, maximum, and minimum monthly results shall be included in the next Quarterly Report submitted to ADEQ pursuant to Part II.E.5.b., along with any additional records or data requested by ADEQ regarding the continuous monitoring data described in this Section.
- iii. **Injection Profile Survey (External MIT)**  
The Permittee shall conduct a demonstration that the injectate is confined to the proper zone and submit the results of the demonstration to ADEQ for approval.

This demonstration shall consist of temperature and radioactive tracer surveys, and top perforation and packer checks or another diagnostic tool or procedure as approved by ADEQ.

Detailed plans for conducting the external MIT must be submitted to ADEQ for review and approval. Once approved, the Permittee may schedule the External MIT, providing ADEQ at least thirty (30) days' notice before the External MIT is conducted. Results of the External MITs shall be submitted to ADEQ in the quarterly reports.

**b. Schedule for MITs**

ADEQ may require that an Internal and/or External MIT be conducted within thirty

(30) days of a written request from ADEQ during the permitted life of any well authorized by this Permit. The Permittee shall also arrange and conduct MITs according to the following requirements and schedule:

- i. Within thirty (30) days from completion of any workover operation where well integrity is compromised, an Internal MIT shall be conducted and submitted to ADEQ for approval to verify that the well has mechanical integrity. Prior to this field demonstration, the Permittee shall submit testing plans to ADEQ, as described in Part II.A.2.
- ii. At least annually, an injection profile survey External MIT shall be conducted in accordance with A.A.C. R18-9-B613 and Part II.D.2.a.iii.
- iii. At least once every five (5) years for each operating well authorized under this Permit, an Internal MIT shall be conducted in accordance with A.A.C. R18-9-B613 and Part II.D.2.a.i., above.

c. Loss of Mechanical Integrity

Within twenty-four (24) hours from the time the Permittee becomes aware of any loss of mechanical integrity of any well authorized by this Permit, the Permittee shall notify ADEQ of the situation and specify which of the following circumstances apply:

- i. The well fails to demonstrate mechanical integrity during a test; or
- ii. A loss of mechanical integrity becomes evident during operation; or
- iii. A significant change in the annulus or injection pressure occurs during normal operating conditions.

In the event of a loss of mechanical integrity, the Permittee shall immediately suspend injection activities in the affected well and shall not resume operation until it has taken necessary actions to restore and confirm mechanical integrity of the affected well and not until ADEQ has provided written approval prior to the recommencing of injection into the affected well.

The Permittee may not recommence injection after a workover which has compromised well integrity (such as unseating the packer, etc.) until it has received written approval from ADEQ that the demonstration of mechanical integrity is

satisfactory.

### **3. Injection Pressure Limitation**

For any injection wells authorized pursuant to this Permit:

- d. Injection pressure measured at the wellhead shall not exceed [NUMBER] psig for injection into the [FORMATION NAME] Formation.
- e.
- f. The Permittee may request a change in the maximum injection pressure allowed under Part II.D.3. Any such request shall be made in writing and justified to ADEQ with the results of a SRT. If ADEQ approves the change, the proposed MAIP would be added to the Permit as an attachment, becoming the enforceable MAIP.
- g.
- h. In no case shall the Permittee inject at pressures that initiate new fractures or propagate existing fractures in the injection zone or the confining zone, cause the movement of injection or formation fluids into or between USDWs, or allow injection fluids to migrate to any other wells.

### **4. Injection Volume (Rate) Limitation**

For any injection wells authorized pursuant to this Permit:

- i. The injection rate shall not exceed [NUMBER] gallons per month or [NUMBER] gallons per day. This rate will be subject to an annual review based on the annual AOR determinations as described in Part II.C.1.
- j.
- k. The Permittee may request a change in the maximum rate allowed in Part II.D.4.a., above. Any such request shall be made in writing, along with a justification for the proposed increase, to ADEQ for review and approval.
- l.
- m. Should any increase in injection rate be requested, the Permittee shall demonstrate to the satisfaction of ADEQ that the proposed increase will not interfere with the operation of the facility, its ability to meet conditions described in this Permit, change its well classification, or cause migration of injectate or pressure buildup to occur beyond the AOR.
- n.
- o. The injection rate shall not cause an exceedance of the injection pressure limitation established pursuant to Part II.D.3.

### **5. Injection Fluid Limitation**

- a. This Permit authorizes the following injection fluids into the [Well ID]: [DESCRIBE FLUID AND SOURCES]. Fluids from other sources or any other types of waste fluids are prohibited from injection at this Facility.
- b. The Permittee shall not inject any hazardous waste, as defined by A.R.S. § 49-921, at any time.
- c. Injection fluids shall be limited to those authorized by this Permit, which are those fluids produced by the Permittee and authorized sources described in Part II.D.5.a. and Part II.D.5.b., above.
- d. Any well stimulation or treatment procedure (such as acidizing, etc.) performed at the discretion of the Permittee shall be proposed and submitted to ADEQ for approval. If approval is granted, notification to ADEQ is required at least thirty (30) days prior to performing the approved procedure. This requirement may be modified if the Permittee submits a standard operating procedure for well stimulation or treatment for ADEQ approval after the effective date of this Permit. If the standard operating procedure plan is approved by ADEQ in writing, the Permittee shall notify ADEQ within fifteen (15) days of the proposed well stimulation or treatment procedure, provided the procedure does not deviate in any way from the ADEQ-approved plan.

## **6. Tubing/Casing Annulus Requirements**

For any injection wells authorized pursuant to this Permit:

- a. The Permittee shall use and maintain corrosion-inhibiting annular fluid during well operation. The annular fluid used in the [NAME OF WELL] is a [DESCRIBE FLUID] with a density of [NUMBER] pounds per gallon (ppg).
- b. If the historic cyclic range of annular pressure fluctuation is not already known, then within the first three (3) months of normal injection operations after the effective date of this Permit, the Permittee shall monitor and record to determine that range. The pressure fluctuation data shall be submitted with the first Quarterly Report due after the effective date of the Permit.
- c. Any annular pressure measured outside of the established normal pressure range, regardless of whether it otherwise meets the requirements of this Permit, shall be reported orally to ADEQ within twenty-four (24) hours, followed by a written submission within five (5) days, as a potential loss of mechanical integrity. In the submission, the Permittee must describe the event and include details, such as associated injection pressures and temperatures. The Permittee shall provide any additional information regarding the reported annular pressure event requested by ADEQ within sixty (60) days of receipt of a written request from ADEQ.

## **E. MONITORING, RECORDKEEPING, AND REPORTING OF RESULTS**

### **1. [CONSIDER THE FOLLOWING] Injection Fluid Monitoring Program**

On a quarterly basis, the Permittee shall sample and analyze injection fluids to yield representative data on their physical, chemical, and other relevant characteristics. Test results shall be submitted by the Permittee to ADEQ on a quarterly basis.

Samples and measurements shall be representative of the monitored activity. The Permittee shall utilize applicable analytical methods described in Table I of 40 CFR or in EPA Publication SW-846, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," and as described below, unless other methods have been approved by ADEQ or additional approved methods or updates to the methods become available.

#### **a. Summary of Acceptable Analytical Methods**

- i. Inorganic Constituents –USEPA Method 300.0, Part A for Major Anions and USEPA Method 200.8 for Cations and Trace Metals.
- ii. Solids - Standard Methods 2540C and 2540D for Total Dissolved Solids (TDS) and Total Suspended Solids (TSS).
- iii. General and Physical Parameters – appropriate USEPA methods for Temperature, Turbidity, pH, Conductivity, Hardness, Specific Gravity, Alkalinity, and Biological Oxygen Demand (BOD); and Density and Viscosity (See EPA Bulletin 712-C-96-032) under standard conditions.
- iv. Volatile Organic Compounds (VOCs) - USEPA Method 8260D.
- v. Semi-Volatile Organic Compounds (SVOCs) - USEPA Method 8270E.

### **2. Monitoring Information**

The Permittee shall maintain records of monitoring activity required under this permit, including the following information and data:

- a. Date, exact location, and time of sampling or field measurements;
- b. Name(s) of individual(s) who performed sampling or measurement;
- c. Exact sampling method(s) used;
- d. Date(s) laboratory analyses were performed;

- e. Name(s) of individual(s) who performed laboratory analyses;
- f. Types of analyses; and
- g. Results of analyses

### **3. Monitoring Devices**

- a. Continuous monitoring devices:

During all periods of operation of any well authorized by this Permit, the Permittee shall measure the following wellhead parameters:

- i. injectate rate/volume,
- ii. injectate temperature,
- iii. annular pressure, and
- iv. injection pressure.

All measurements must be recorded at minimum to a resolution of one tenth (0.1) of the unit of measure (e.g. injection rate and volume must be recorded to a resolution of one tenth (0.1) gallon; pressure must be recorded to a resolution of one tenth (0.1) psig; injection fluid temperature must be recorded to a resolution of one tenth (0.1) degree Fahrenheit). Exact dates and times of measurements, when taken, must be recorded and submitted.

The well shall have a dedicated flow meter, installed at or near the wellhead so it records all injection flow. To meet the requirements of this Section, the Permittee shall monitor the following parameters, at the prescribed frequency, and record the measurements at this required frequency, using the prescribed instruments (continuous monitoring requires a minimum frequency of at least one (1) data point every sixty (60) seconds:

Permittee must adhere to the required format below for reporting injection rate and well head injection pressure. An example of the required electronic data format:

[DESCRIBE DATA SUBMISSION REQUIREMENTS, CONSIDER THE FOLLOWING] Each data line shall include four (4) values separated by a consistent combination of spaces or tabs. The first value contains the date measurement in the format of mm/dd/yy or mm/dd/yyyy, where mm is the number of the month, dd is the number of the day, and yy or yyyy is the number of the year. The second value is the time measurement, in the format of hh:mm:ss, where hh is the hour, mm are the minutes, and ss are the seconds. Hours should be calculated on a twenty-four (24)-hour basis, i.e. 6 PM is entered as 18:00:00. Seconds are optional. The third value is the well head injection pressure in psig. The fourth column is injection rate in gallons

per minute (gpm).

b. Calibration and Maintenance of Equipment

All monitoring and recording equipment shall be calibrated and maintained on a regular basis to ensure proper working order. Within 180 days of permit issuance, the Permittee shall submit to the ADEQ for prior written approval a one-time report describing the calibration procedures and the frequency at which the equipment will be calibrated.

**4. Recordkeeping**

- a. The Permittee shall retain the following records and make them available at all times for examination by an ADEQ inspector:
  - i. All monitoring information, including required observations, calibration and maintenance records, recordings for continuous monitoring instrumentation, copies of all reports required by this Permit, and records of all data used to complete the permit application;
  - ii. Information on the physical nature and chemical composition of all injected fluids;
  - iii. Results of the injectate "Hazardous Waste Determination" according to 40 CFR § 262.11 (See Part II.D.1.b.). Results shall demonstrate that the injectate does not meet the definition of hazardous waste as defined in A.R.S. § 49-921; and
  - iv. Records and results of MITs, FOTs, and any other tests and logs required by ADEQ, and any well work and workovers completed.
- b. The Permittee shall maintain copies (or originals) of all records described in Part II.E.4.a.i. through iv., above, during the operating life of the well and shall make such records available at all times for inspection at the facility. The Permittee shall only discard the records described in Part II.E.4.a.i. through iii., if written approval from ADEQ to discard the records is obtained. The submission of records, analytical results, recorded inspections, status reports, and any other reporting as specified and required by this Permit shall be accurate, current, and representative of the activity being monitored within the specified time frame for monitoring.
- c. Except for information determined to be confidential under A.A.C. R18-9-A603, all permit applications, permits, reports, and well operation data prepared in accordance with the conditions of this Permit shall be available for public inspection at appropriate offices of ADEQ.



## 5. Reporting of Results

- a. The Permittee shall submit to ADEQ Quarterly Reports containing, at minimum, the following information gathered during the Reporting Period identified in this Part (below):
  - i. Injection fluid characteristics for parameters specified in Part II.E.1.a.;
  - ii. The results of any additional MITs, FOTs, logging or other tests including ground water monitoring, if applicable, as required by ADEQ;
  - iii. Information on workovers and well conversions.
  - iv. Any pressure tests, as required by Part II.D.2.a.i.;
  - v. Shut-in static reservoir pressure cumulative behavior plot of the injection zone;
  - vi. Hourly and daily values, submitted in electronic format, for the continuously monitored parameters specified for the injection wells in Part II.E.3.a.; and
  - vii. Monthly cumulative volumes, as well as monthly average, minimum and maximum values for the continuously monitored rate, pressure and temperature parameters specified for the injection well in Part II.E.3.a., unless more detailed records are requested by ADEQ.
- b. Quarterly Reports, with the applicable Attachment E forms, shall be submitted for the reporting periods by the respective due dates as listed below:
- c. For the January Quarterly Report, the Permittee shall also include in that Report the following information collected during the prior year covering January through December:
  - i. Annual reporting summary (7520-8 in Attachment E);
  - ii. Annual injection profile survey results as required in Part II.D.2.a.iii.;
  - iii. Annual AOR recalculation as required in Part II.C.1.; and
  - iv. A narrative description of all non-compliance that occurred during the past year.
- d. In addition to meeting the submittal requirements of Part III.E.9., digital e-copies of all Quarterly Reports shall also be provided to the following:

Arizona Department of Environmental Quality  
Water Quality Division  
Groundwater, UIC Program  
1110 West Washington Street  
Phoenix, AZ 85007

## **F. PLUGGING AND ABANDONMENT**

### **1. Notice of Plugging and Abandonment**

The Permittee shall notify ADEQ no less than sixty (60) days before abandonment of any well authorized by this Permit and shall not perform the plugging and abandonment activities until the Permittee receives written notice of approval by ADEQ.

### **2. Plugging and Abandonment Plans**

The Permittee shall plug and abandon the well as provided by the Plugging and Abandonment Plan submitted by the Permittee (see Attachment F) and approved by ADEQ, consistent with A.A.C. R18-9-B614. Upon written notice to the Permittee, ADEQ may change the manner in which a well will be plugged, based upon but not limited to the following reasons: (a) if the well is modified during its permitted life, (b) if the proposed Plugging and Abandonment Plan for the well is not consistent with ADEQ requirements for construction or mechanical integrity, or (c) otherwise at ADEQ's discretion. Upon written notice, ADEQ may periodically require the Permittee to estimate and to update the estimated plugging cost. To determine the appropriate level of financial assurance for the Plugging and Abandonment Plan, the Permittee shall obtain a cost estimate from an independent third-party firm in the business of plugging wells. The estimate shall include the costs of all the materials and activities necessary to pay an independent third-party contractor to completely plug and abandon the well as established in the Plugging and Abandonment Plan.

### **3. Cessation of Injection Activities**

After a cessation of injection operations for two (2) years for any well authorized by this Permit, a well is considered inactive. In this case, the Permittee shall plug and abandon the inactive well in accordance with the approved Plugging and Abandonment Plans contained in Attachment F, unless the Permittee:

- a. Provides notice to ADEQ of an intent to re-activate the well;
- b. Has demonstrated that the well(s) will be used in the future;
- c. Has described actions or procedures, satisfactory to ADEQ and approved in writing by ADEQ, which will be taken to ensure that the well(s) will not

endanger USDWs during the period of inactivity, including annually demonstrating external mechanical integrity of the well(s); and

- d. Conducts an initial Internal MIT and every two (2) years thereafter while the well remains inactive, demonstrating no loss of mechanical integrity. Note that the Permittee must restore mechanical integrity of the inactive well if the well fails the MIT.

#### **4. Plugging and Abandonment Report**

Within sixty (60) days after plugging any well, or at the time of the next Quarterly Report (whichever comes first), the Permittee shall submit a report on Form 7520-19, provided in Attachment F, as well as the detailed procedural activity of engineer's log and daily rig log to ADEQ. The report shall be certified as accurate by the person who performed the plugging operation and shall consist of either:

- a. A statement that the well was plugged in accordance with the approved Plugging and Abandonment Plans contained in Attachment F; or
- b. Where actual plugging differed from the Plugging and Abandonment Plans contained in Attachment F, a statement specifying and justifying the different procedures followed.

### **G. FINANCIAL ASSURANCE REQUIREMENTS**

#### **1. Demonstration of Financial Responsibility**

The Permittee shall demonstrate and maintain financial responsibility and resources sufficient to close, plug, and abandon any existing or future-permitted underground injection operations approved pursuant to this Permit, as provided in the Plugging and Abandonment Plan contained in Attachment F and consistent with A.A.C. R18-9-D636(A)(6).

- a. The Permittee shall post an approved financial instrument such as a surety bond or other financial assurance in the amount of [SPECIFY \$ AMOUNT PLUS CONTINGENCY] to guarantee groundwater monitoring and plugging and abandonment activities for closure and post-closure. Authority to construct, inject, and operate the wells under the authority of this Permit will be granted only after the financial instrument has been secured and approved by ADEQ.
- b. The level and mechanism of financial responsibility shall be reviewed and updated periodically, upon request of ADEQ. The Permittee may be required to change to an alternate method of demonstrating financial responsibility. Any such change must be approved in writing by ADEQ prior to the change.

- c. ADEQ may require the Permittee to estimate and to update the estimated plugging, and/or post-closure activity costs periodically. Such estimates shall be based upon costs that a third party would incur to carry out the required restoration activities, properly plug and abandon the wells, and perform post-closure monitoring activities, including materials, equipment, mud and disposal costs, and labor with appropriate contingencies.

## **2. Insolvency of Financial Institution**

The Permittee shall submit an alternate instrument of financial responsibility acceptable to ADEQ within sixty (60) days after either of the following events occurs:

- a. The institution issuing any bond or other financial instrument that is secured to demonstrate financial responsibility in accordance with Part II, Section G.1. of this Permit files for bankruptcy; or
- b. The authority of the trustee institution to act as trustee, or the authority of the institution issuing the financial instrument, is suspended or revoked.
- c. The institution issuing the financial instrument lets it lapse or decides not to extend it.

Failure to submit an acceptable financial demonstration may result in the termination of this Permit pursuant to A.A.C. R18-9-C634(A)(1).

## **3. Insolvency of Owner or Operator**

The Permittee shall notify ADEQ by certified mail of the commencement of voluntary or involuntary proceedings under U.S. Code Title 11 (Bankruptcy), naming the owner or operator as debtor, within ten (10) business days. A guarantor of a corporate guarantee must make such a notification if he/she is named as debtor, as required under the terms of the guarantee.

## **H. DURATION OF PERMIT**

This Permit and the authorization to inject are issued for a period of [SPECIFY DURATION] years unless terminated under the conditions set forth in Part III.B.1. or administratively extended under the conditions set forth in Part III.E.11.

### **PART III. GENERAL PERMIT CONDITIONS.**

#### **A. EFFECT OF PERMIT**

The Permittee is allowed to engage in underground injection well construction and operation in accordance with the conditions of this Permit. The Permittee shall not construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant (as defined by A.A.C. R18-9-A601) into USDWs (as defined A.A.C R18-9-A601).

Any underground injection activity not specifically authorized in this Permit is prohibited. The Permittee must comply with all applicable provisions of 18 A.A.C. 9, Article 6. Such compliance does not constitute a defense to any action brought under Section 1431 of the SDWA, 42 U.S.C. §300(i), or any other common law, statute, or regulation other than Part C of the SDWA. Issuance of this Permit does not convey property rights of any sort or any exclusive privilege, nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of State or local law or regulations. Nothing in this Permit shall be construed to relieve the Permittee of any duties under all applicable laws and regulations.

#### **B. PERMIT ACTIONS**

##### **1. Modification, Revocation and Reissuance, or Termination**

ADEQ may, for cause or upon request from the Permittee, modify, revoke and reissue, or terminate this Permit in accordance with A.A.C. R18-9-C631, C632, and C634. The permit is also subject to minor modifications for causes as specified in A.A.C. R18-9- C633. The filing of a request for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated non-compliance by the Permittee, does not stay the applicability or enforceability of any permit condition.

ADEQ may also modify, revoke and reissue, or terminate this Permit in accordance with any amendments to the SDWA if the amendments have applicability to this Permit.

##### **2. Transfers**

This Permit is not transferable to any person unless notice is first provided to ADEQ and the Permittee complies with requirements of A.A.C. R18-9-C630. ADEQ may require modification or revocation and reissuance of the permit to change the name of the Permittee and incorporate such other requirements as may be necessary under the

SDWA.

### **C. SEVERABILITY**

The provisions of this Permit are severable, and if any provision of this Permit or the application of any provision of this Permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this Permit shall not be affected thereby.

### **D. CONFIDENTIALITY**

In accordance with A.A.C. R18-9-A603, any information submitted to ADEQ pursuant to this Permit may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, ADEQ may make the information available to the public without further notice. If a claim is asserted, the validity of the claim will be assessed in accordance with the procedures contained in A.R.S. §49-205 (Public Information). Claims of confidentiality for the following information will be denied:

1. Name and address of the Permittee, or
2. Information dealing with the existence, absence, or level of contaminants in drinking water.

### **E. GENERAL DUTIES AND REQUIREMENTS**

#### **1. Duty to Comply**

The provisions of R18-9-D635 are incorporated by reference into this Permit, except as modified by specific provisions in this Permit. In addition, the following general duties and requirements apply to this Permit and the Permittee. The Permittee shall comply with all applicable UIC Program regulations and conditions of this Permit, except to the extent and for the duration such non-compliance is authorized by an emergency permit issued in accordance with A.A.C. R18-9-C625. Any permit non-compliance constitutes a violation of the SDWA and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or for denial of a permit renewal application. Such non-compliance may also be grounds for enforcement action under the Resource Conservation and Recovery Act (RCRA).

#### **2. Penalties for Violations of Permit Conditions**

Any person who violates a Permit requirement is subject to civil penalties, fines, and other enforcement action under the SDWA and may also be subject to enforcement actions pursuant to RCRA. Any person who willfully violates permit conditions may

be subject to criminal prosecution.

**3. Need to Halt or Reduce Activity not a Defense**

It shall not be a defense, for the Permittee in an enforcement action, that it would have been necessary to halt or reduce the permitted activity to maintain compliance with the conditions of this Permit.

**4. Duty to Mitigate**

The Permittee shall take all reasonable steps to minimize and correct any adverse impact on the environment resulting from non-compliance with this Permit.

**5. Proper Operation and Maintenance**

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this Permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this Permit.

**6. Property Rights**

This Permit does not convey any property rights of any sort, or any exclusive privilege.

**7. Duty to Provide Information**

The Permittee shall furnish to ADEQ, within a time specified, any information which ADEQ may request to determine whether cause exists for modifying, revoking, and reissuing, or terminating this Permit, or to determine compliance with this Permit. The Permittee shall also furnish to ADEQ, upon request, copies of records required to be kept by this Permit pursuant to A.A.C. R18-9-D635(A)8.

**8. Inspection and Entry**

The Permittee shall allow ADEQ, or an authorized representative, upon the presentation of credentials and other documents as may be required pursuant to A.A.C. R18-9-D635(A)9 to:

- a. Enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Permit

- b. Have access to and copy, at reasonable times, any records that are kept under the conditions of this Permit;
- c. Inspect and photograph at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Permit; and
- d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the SDWA, any substances or parameters at any location.

## **9. Signatory Requirements**

All applications, reports, or other information submitted to ADEQ shall be signed and certified by a responsible corporate officer or duly authorized representative according to A.A.C. R18-9-C617.

## **10. Additional Reporting Requirements**

- a. **Planned Changes** - The Permittee shall give notice to ADEQ as soon as possible of any planned physical alterations or additions to the permitted facility affecting any of the terms and conditions of the permit.
- b. **Anticipated non-compliance** -The Permittee shall give advance notice to ADEQ of any planned changes in the permitted facility or activity which may result in non- compliance with permit requirements.
- c. **Compliance Schedules** - Reports of compliance or non-compliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Permit shall be submitted to ADEQ no later than thirty (30) days following each schedule date.
- d. **Twenty-four Hour Reporting** - The Permittee shall report to ADEQ any non-compliance which may endanger health or the environment. The following Information shall be provided orally within 24 hours from the time the Permittee becomes aware of the circumstances.
  - i. Any monitoring or other information which indicates that any contaminant may cause an endangerment to a USDW; and
  - ii. Any non-compliance with a Permit condition, malfunction of the injection system, or loss of mechanical integrity, which may cause fluid migration into or between USDWs.



- e. A written submission of all non-compliance shall also be provided to ADEQ within five (5) days of the time the Permittee becomes aware of the circumstances. The written submission shall contain: a description of the non-compliance and its cause; the period of non-compliance, including exact dates and times; if the non-compliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the non-compliance.
- f. Other non-compliance - At the time monitoring reports are submitted, the Permittee shall report in writing all other instances of non-compliance not otherwise reported.
- g. Other Information - If the Permittee becomes aware that it failed to submit all relevant facts in the permit application or submitted incorrect information in the permit application or in any report to ADEQ, the Permittee shall submit such facts or information within two (2) weeks of the time such facts or information becomes known.

#### **11. Continuation of Expiring Permit**

- a. Duty to Reapply - If ADEQ requires the Permittee to continue an activity regulated by this Permit past the expiration date of this Permit, the Permittee must submit a complete application for a new permit at least one hundred and eighty (180) days before this Permit expires.
- b. Permit Extensions - The conditions and requirements of an expired permit continue in force and effect in accordance with 5 U.S.C. §558(c) until the effective date of a new permit, if:
  - i. The Permittee has submitted a timely and complete application for a new permit; and
  - ii. ADEQ, through no fault of the Permittee, does not issue a new permit with an effective date on or before the expiration date of the previous permit.

Arizona UIC Permit Template  
Class VI



PERMIT NO. UIC-AZI-FY24-#

**UNDERGROUND INJECTION CONTROL PROGRAM**

**PERMIT to Construct and Inject**

**Class VI Injection Wells**

**Permit No. UIC-AZVI-FY22-#**

**[PROJECT NAME] Project**

**[COUNTY NAME] County, Arizona**

**Issued to:**

**[COMPANY NAME]**

**[ADDRESS LINE 1]**

**[ADDRESS LINE 2]**

**[ADDRESS LINE 3]**

AUTHORIZING SIGNATURE

\_\_\_\_\_  
[Name of Director], Director  
Water Quality Division  
Arizona Department of Environmental Quality  
Signed this \_\_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_\_

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## PART I. AUTHORIZATION TO CONSTRUCT AND INJECT

Pursuant to the Underground Injection Control regulations of the Arizona Department of Environmental Quality codified at Title 18 of the Arizona Administrative Code, Chapter 9, Article 6

[COMPANY NAME]  
[ADDRESS LINE 1]  
[LINE 2 LINE3]

is hereby authorized, contingent upon Permit conditions, to construct and operate a Class VI injection well facility used to dispose of Carbon Dioxide (CO<sub>2</sub>) generated by the Permittee's facility [for non-commercial facilities DURING THE MANUFACTURE OF XXX; for commercial facilities AND FROM OTHER SOURCES] at the [PROJECT NAME]. The Project is in [PROJECT LOCATION], Arizona, approximately [DISTANCE AND DIRECTION TO NEAREST LANDMARK], as depicted in Attachment A. The location is [LOCATION DESCRIPTION (Include Section, Township, Range, with latitude/longitude)]. The well [IS/WILL BE] located [DESCRIBE LOCATION].

The injection zone is within the [FORMATION NAME] Formation at the [FOR WELLS NOT YET DRILLED USE APPROXIMATE] depths of [NUMBER] feet to [NUMBER] feet below ground level. The authorized injection interval is within the [FORMATION NAME] Formation at the [FOR WELLS NOT YET DRILLED USE APPROXIMATE] depths of [NUMBER] to [NUMBER] feet below ground level.

[DESCRIBE INJECTATE AND SOURCE OR PRODUCTION PROCESS] [INDICATE IF AQUIFER EXEMPTION EXPANSION IS REQUIRED OR HAS BEEN APPROVED.]

For the permitted wells within the Area of Review (AOR), ADEQ will issue authorization to drill and construct only after requirements of Financial Responsibility in Part II, Section L of this Permit have been met. ADEQ will grant authorization to inject only after the requirements of Part II, Sections C, D, E and F of this Permit have been met. Operation of injection [WELL ID] will be limited to a maximum volume of [SPECIFY QUANTITY] and pressure of [SPECIFY QUANTITY]. All conditions set forth herein refer to Title 18, Chapter 9, Article 6 of the Arizona Administrative Code (A.A.C.), which are regulations in effect on the date that this Permit is effective.

This Permit consists of [NUMBER] pages plus Attachments, and includes all items listed in the Table of Contents. Further, it is based upon representations made by [COMPANY NAME] (the Permittee) and on other information contained in the administrative record. It is the responsibility of the Permittee to read, understand, and comply with all terms and conditions of this Permit.

This Permit and the authorization to construct, operate, and inject are issued for a period to include the approximate [NUMBER]-year Project operation unless terminated under the conditions set forth in Part III, Section B.1 of this Permit. This Permit and authorization to inject shall also include additional post-closure monitoring for at least fifty (50) years following cessation of injection unless an alternative timeframe is approved by ADEQ.



This Permit is issued on [DATE] and becomes effective on [DATE]. This Permit is issued for a period of xx years unless the Permit is terminated under the conditions set forth in Part III.B.1. or administratively extended under the conditions set forth in Part III.E.

Signed by

---

[Name of Director], Director  
Water Quality Division  
Arizona Department of Environmental Quality

## **PART II. SPECIFIC PERMIT CONDITIONS**

### **A. REQUIREMENTS PRIOR TO DRILLING, TESTING, CONSTRUCTING, OR OPERATING**

#### **1. Financial Assurance**

The Permittee shall supply evidence of financial assurance prior to commencing any well drilling and construction, in accordance with Section L of this part.

#### **2. Field Demonstration Submittal, Notification, and Reporting**

- a. Prior to each demonstration or test required in this Permit, the Permittee shall submit plans and specifications for procedures to the ADEQ for approval 90 days prior to demonstration or testing activities. No demonstration or test in these sections may proceed without prior written approval from ADEQ.
- b. The Permittee must notify ADEQ at least thirty (30) days prior to performing any required field demonstrations or test, after ADEQ approves the plans/procedures for testing, in order to allow ADEQ to arrange to witness if so elected.
- c. The Permittee shall submit results of each demonstration or test required in Part II of this Permit to ADEQ within thirty (30) days of completion, unless otherwise noted.

[INCLUDE SECTION ON AQUIFER EXEMPTION IF APPLICABLE – SEE PART II.B IN CLASS III PERMIT TEMPLATE

### **B. WELL CONSTRUCTION**

#### **1. Siting**

The Permittee has demonstrated to the satisfaction of the Director that the well is in an area with suitable geology in accordance with the requirements of A.A.C. R18-9-J658.

#### **2. Casing and Cementing**

Casing and cement or other materials used in the construction of the well must have sufficient structural strength for the life of the geologic sequestration project. All well materials must be compatible with all fluids with which the materials may be expected to come into contact and must meet or exceed standards developed for such materials by the American Petroleum Institute, ASTM International, or comparable standards acceptable to the Director. The casing and cementing program must prevent

the movement of fluids into or between USDWs for the expected life of the well in accordance with A.A.C. R18-9-J661. The casing and cement used in the construction of this well are shown in Attachment B of this Permit and in the administrative record for this Permit. Any change must be submitted in an electronic format for approval by the Director before installation.

### **3. Tubing and Packer Specification**

Tubing and packer materials used in the construction of the well must be compatible with fluids with which the materials may be expected to come into contact and must meet or exceed standards developed for such materials by the American Petroleum Institute, ASTM International, or comparable standards acceptable to the Director. The Permittee shall inject only through tubing with a packer set within the long string casing at a point within or below the confining zone immediately above the injection zone. The tubing and packer used in the well are represented in engineering drawings contained in Attachment B of this Permit. Any change must be submitted in an electronic format for approval by the Director before installation.

## **C. CONDITIONS FOR WELLS AND PROPOSED WELLS**

### **1. Surface Location**

[DESCRIBE LOCATION OF EXISTING AND PROPOSED WELLS]

### **2. Well Construction Details**

A well schematic for each well is contained in Attachment B of this Permit. The Permittee shall at all times maintain the well consistent with this well schematic.

### **3. Proposed Well Construction Details**

The Permittee shall submit an updated well schematic for each proposed well and must receive written ADEQ approval prior to commencing drilling and construction of the well.

### **4. Injection Formation Testing**

Prior to the Director authorizing injection, the Permittee shall perform all pre-injection logging, sampling, and testing specified at A.A.C. R18-9-J662. This testing shall include:

- a. Logs, surveys and tests to determine or verify the depth, thickness, porosity, permeability, lithology, and formation fluid salinity in all relevant geologic formations. These tests shall include:
  - i. Deviation checks;
  - ii. Logs and tests before and upon installation of the surface casing;

- iii. Logs and tests before and upon installation of the long-string casing;
- iv. Tests to demonstrate internal and external mechanical integrity; and
- v. Any alternative methods that are required by and/or approved by the Director.
- vi. Whole cores or sidewall cores of the injection zone and confining system and formation fluid samples from the injection zone;
- vii. Records of the fluid temperature, pH, conductivity, reservoir pressure, and static fluid level of the injection zone;
- viii. Tests to provide information about the injection and confining zones, including calculated fracture pressure and the physical and chemical characteristics of the injection and confining zones and the formation fluids in the injection zone;
- ix. Tests to determine maximum allowable injection pressure; and
- x. Tests to verify hydrogeologic characteristics of the injection zone, including:
  - a) A pressure fall-off test and
  - b) A pumping test or injectivity tests.

The Permittee shall submit to the Director for approval in an electronic format a schedule for logging and testing activities 30 days prior to conducting the first test and submit any changes to the schedule 30 days prior to the next scheduled test. The Permittee must provide the Director or their representative with the opportunity to witness all logging, sampling, and testing required under this Section.

## **5. Injection Interval**

The Wells will inject into the [DESCRIBE FORMATION] within the [NAME OF FACILITY]. Injection by the Wells area only permitted into [FORMATION NAME] Formation within the depth range as depicted in the as-built diagrams in Attachment B (i.e., at a depth of approximately [NUMBER] to [NUMBER] feet bgs).

## **6. Monitoring Devices**

The Permittee shall maintain continuous monitoring devices and use them to monitor injection pressure, flow rate, volume, the pressure on the annulus between the tubing and the long string of casing, annulus fluid level, and temperature. This monitoring shall be performed as described in the Testing and Monitoring Plan to meet the requirements of A.A.C. R18-9-J665. The Permittee shall maintain for ADEQ's inspection at the facility an appropriately scaled, continuous record of these

monitoring results as well as original files of any digitally recorded information pertaining to these operations.

**7. Pressure Fall-Off Test (FOT)**

The Permittee shall conduct a pressure fall-off test at least once every five years unless more frequent testing is required by the Director based on site- specific information. The test shall be performed as described in the Testing and Monitoring Plan to meet the requirements of A.A.C. R18-9-J665.

**8. Proposed Changes and Workovers**

The Permittee shall give advance notice to ADEQ as soon as possible, pursuant to and in accordance with A.A.C. R18-9-D635, of any planned physical alterations or additions to the Well, including sidetracking and deepening or perforating additional intervals. Any changes in well construction, including changes in casing, tubing, packers, and/or perforations other than minor changes, require prior written approval by ADEQ and may require a permit modification under the requirements of A.A.C. R18-9-C632. Modifications that are considered routine in well construction details, such as tubing dimensions and strengths, packer models, types and setting depths, and perforation interval changes within the permitted injection zone may be processed by ADEQ as minor permit modifications consistent with A.A.C. R18-9-C633.

For the Well, the Permittee shall provide all records of well workovers, logging, or other subsequent test data to ADEQ within sixty (60) days of completion of the activity.

The Permittee shall submit all reports required by this Permit using the appropriate reporting forms contained in Attachment C.

The Permittee shall perform a Mechanical Integrity Test (MIT), using the procedures set forth in Part II.F, within thirty (30) days of completion of workovers or alterations and prior to resuming injection activities, in accordance with Part II.D.1. The Permittee shall provide results of the MIT to ADEQ within sixty (60) days of completion.

**9. Testing during Drilling and Construction of Proposed Well**

The Permittee shall include logs and other tests conducted during drilling and construction including, at a minimum, deviation checks, casing logs, and injection formation tests as outlined in A.A.C. R18-9-J662. The Permittee shall conduct Open Hole logs over the entire open hole sequence below the conductor casing.

The Permittee shall conduct formation evaluation logs and tests and shall provide and use those results to estimate and report values for porosity, permeability, compressibility, static formation pressure, effective thickness, lithology, and rock mechanical properties for both the injection and confining zones identified within the permitted geological sequence.

The Permittee shall collect and analyze full-diameter cores from the overlying confining unit [NAME OF FORMATION] and within the [NAME OF FORMATION] Formation during drilling of the Proposed Well.

At a minimum, the owner or operator must determine or calculate the following information concerning the injection and confining zone(s):

- a. fracture pressure;
- b. other physical and chemical characteristics of the injection and confining zone(s); and
- c. physical and chemical characteristics of the formation fluids in the injection zone(s).

Upon completion, but prior to operation, the owner or operator must conduct the following tests to verify hydrogeologic characteristics of the injection zone(s):

- a. a pressure fall-off test; and,
- b. a pump test; or
- c. injectivity tests.

#### **D. AREA OF REVIEW AND CORRECTIVE ACTION**

The Area of Review (AOR) is the region surrounding the geologic sequestration project where USDWs may be endangered by the injection activity. The AOR is delineated using computational modeling that accounts for the physical and chemical properties of all phases of the injected CO<sub>2</sub> stream and is based on available site characterization, monitoring, and operational data. The Permittee shall maintain and comply with the approved Area of Review and Corrective Action Plan (Attachment D of this Permit) which is an enforceable condition of this Permit and shall meet the requirements of A.A.C. R18-9-J659.

At the fixed frequency specified in Attachment D, or more frequently when monitoring and operational conditions warrant, the Permittee must reevaluate the AOR and perform corrective action and update Attachment D or demonstrate to the Director that no update is needed.

Following each AOR reevaluation or a demonstration that no evaluation is needed, the Permittee shall submit the resultant information in an electronic format to the Director for review and approval of the AOR results. Once approved by the Director, the revised Area of Review and Corrective Action Plan will become an enforceable condition of this Permit.

## **E. WELL OPERATION**

### **1. Injection Pressure Limitation**

Except during stimulation, the Permittee must ensure that injection pressure does not exceed 90 percent of the fracture pressure of the injection zone(s) so as to ensure that the injection does not initiate new fractures or propagate existing fractures in the injection zone(s). In no case shall injection pressure initiate fractures or propagate existing fractures in the confining zone or cause the movement of injection or formation fluids into a USDW. The maximum injection pressure limit is listed in Part I of this Permit.

### **2. Stimulation Program**

Pursuant to requirements at A.A.C. R18-9-J657, all stimulation programs proposed by the Permittee must be approved by the Director as a permit modification and incorporated into Attachment J of this Permit.

### **3. Additional Injection Limitation**

No injectate other than that identified in Part I of this Permit shall be injected except fluids used for stimulation, rework, and well tests as approved by the Director.

### **4. Annulus Fluid**

The Permittee must fill the annulus between the tubing and the long string casing with a non-corrosive fluid approved by the Director.

### **5. Annulus/Tubing Pressure Differential**

Except during workovers or times of annulus maintenance, the Permittee must maintain on the annulus a pressure that exceeds the operating injection pressure as specified in Part I of this Permit, unless the Director determines that such requirement might harm the integrity of the well or endanger USDWs.

### **6. Automatic Alarms and Automatic Shut-off System**

a. The Permittee must:

- i. Install, continuously operate, and maintain an automatic alarm and an automatic shut-off system or, at the discretion of the Director, down-hole shut-off systems, or other mechanical devices that provide equivalent protection; and
- ii. Successfully demonstrate the functionality of the alarm system and shut-off system prior to the Director authorizing injection, and at a minimum of once every twelfth month after the last approved demonstration.

- b. Testing under this Section must involve subjecting the system to simulated failure conditions and must be witnessed by the Director or his or her representative unless the Director authorizes an unwitnessed test in advance. The Permittee must provide notice in an electronic format 30 days prior to running the test and must provide the Director or their representative the opportunity to attend. The test must be documented using either a mechanical or digital device which records the value of the parameter of interest, or by a service company job record. A final report including any additional interpretation necessary for evaluation of the testing must be submitted in an electronic format within the time period specified in Section H of this Permit.

## **7. Precautions to Prevent Well Blowouts**

At all times, the Permittee shall maintain on the well a pressure which will prevent the return of the injection fluid to the surface. The well bore must be filled with a high specific gravity fluid during workovers to maintain a positive (downward) gradient and/or a plug shall be installed which can resist the pressure differential. A blowout preventer must be installed and kept in proper operational condition whenever the wellhead is removed to work on the well. The Permittee shall follow procedures such as those below to assure that a backflow or blowout does not occur:

- a. Limit the temperature and/or corrosivity of the injectate; and
- b. Develop procedures necessary to assure that pressure imbalances do not occur.

## **8. Circumstances Under Which Injection Must Cease**

Injection shall cease when any of the following circumstances arises:

- a. Failure of the well to pass a mechanical integrity test;
- b. A loss of mechanical integrity during operation;
- c. The automatic alarm or automatic shut-off system is triggered;
- d. A significant unexpected change in the annulus or injection pressure;
- e. The Director determines that the well lacks mechanical integrity; or
- f. The Permittee is unable to maintain compliance with any permit condition or regulatory requirement and the Director determines that injection should cease.



## **9. Approaches for Ceasing Injection**

- a. The Permittee must shut-in the well by gradual reduction in the injection pressure as outlined in Attachment G of this Permit; or
- b. The Permittee must immediately cease injection and shut-in the well as outlined in the Emergency and Remedial Response Plan (Attachment K of this Permit).

## **F. MECHANICAL INTEGRITY**

### **1. Standards**

Other than during periods of well workover (maintenance) approved by the Director in which the sealed tubing-casing annulus is disassembled for maintenance or corrective procedures, the injection well must have and maintain mechanical integrity consistent with A.C.C. R18-9-J664. To meet these requirements, mechanical integrity tests/demonstrations must be witnessed by the Director or an authorized representative of the Director unless prior approval has been granted by the Director to run an un-witnessed test. In order to conduct testing without an ADEQ representative, the following procedures must be followed.

- a. The Permittee must submit prior notification in an electronic format within the time period specified in Section L(3) of this Permit, including the information that no ADEQ representative is available, and receive permission from the Director to proceed;
- b. The test must be performed in accordance with the Testing and Monitoring Plan (Attachment G of this Permit) and documented using either a mechanical or digital device that records the value of the parameter of interest; and
- c. A final report including any additional interpretation necessary for evaluation of the testing must be submitted in an electronic format within the time period specified in Section H of this Permit.

### **2. Mechanical Integrity Testing**

The Permittee shall conduct a casing inspection log and mechanical integrity testing as follows:

- a. Prior to receiving authorization to inject, the Permittee shall perform the following testing to demonstrate internal mechanical integrity pursuant to A.A.C. R18-9-J662:
  - i. A pressure test with liquid or gas; and

- ii. A casing inspection log; or
  - iii. An alternative approved by the Director that has been approved by the Administrator.
- b. Prior to receiving authorization to inject, the Permittee shall perform the following testing to demonstrate external mechanical integrity pursuant to A.A.C. R18-9-J662:
  - i. A tracer survey such as an oxygen activation log; or
  - ii. A temperature or noise log; or
  - iii. An alternative approved by the Director that has been approved by the Administrator pursuant to requirements at A.A.C. R18-9-J664.
- c. Other than during periods of well workover (maintenance) approved by the Director in which the sealed tubing-casing annulus is disassembled for maintenance or corrective procedures, the Permittee must continuously monitor injection pressure, injection rate, injection volumes; pressure on the annulus between tubing and long string casing; and annulus fluid volume as specified in A.A.C. R18-9-J664.
- d. At least once per year, the Permittee must perform the following testing to demonstrate external mechanical integrity:
  - i. An Administrator-approved tracer survey such as an oxygen-activation log; or
  - ii. A temperature or noise log. The Director may require such tests whenever the well is worked over; or
  - iii. An alternative approved by the Director that has been approved by the Administrator.
- e. After any workover that may compromise the internal mechanical integrity of the well, the well shall be tested by means of a pressure test approved by the Director and the well must pass the test to demonstrate mechanical integrity.
- f. Prior to plugging the well, the Permittee shall demonstrate external mechanical integrity as described in the Injection Well Plugging Plan and that meets the requirements of A.A.C. R18-9-J667.
- g. The Director may require the use of any other tests to demonstrate mechanical integrity other than those listed above with the written approval of the Administrator pursuant to requirements at A.A.C. R18-9-J664.

### **3. Prior Notice and Reporting**

- a. The Permittee shall notify the Director in an electronic format of his or her intent to demonstrate mechanical integrity in an electronic format at least 30 days prior to such demonstration. At the discretion of the Director a shorter time period may be allowed.
- b. Reports of mechanical integrity demonstrations which include logs must include an interpretation of results by a knowledgeable log analyst. The Permittee shall report in an electronic format the results of a mechanical integrity demonstration within the time period specified in Section H of this Permit.

### **4. Gauge and Meter Calibration**

The Permittee shall calibrate all gauges used in mechanical integrity demonstrations and other required monitoring to an accuracy of not less than 0.5 percent of full scale, within one year prior to each required test. The date of the most recent calibration shall be noted on or near the gauge or meter. A copy of the calibration certificate shall be submitted to the Director in an electronic format with the report of the test. Pressure gauge resolution shall be no greater than five psi. Certain mechanical integrity and other testing may require greater accuracy and shall be identified in the procedure submitted to the Director prior to the test.

### **5. Loss of Mechanical Integrity**

- a. If the Permittee or the Director finds that the well fails to demonstrate mechanical integrity during a test, or fails to maintain mechanical integrity during operation, or that a loss of mechanical integrity as defined by A.A.C. R18-9-J664 is suspected during operation (such as a significant unexpected change in the annulus or injection pressure), the Permittee must:
  - i. Cease injection in accordance with Attachments G or K of this Permit;
  - ii. Take all steps reasonably necessary to determine whether there may have been a release of the injected CO<sub>2</sub> stream or formation fluids into any unauthorized zone. If there is evidence of USDW endangerment, implement the Emergency and Remedial Response Plan (Attachment K of this Permit);
  - iii. Follow the reporting requirements as directed in Section H of this Permit;

- iv. Restore and demonstrate mechanical integrity to the satisfaction of the Director and receive written approval from the Director prior to resuming injection; and
  - v. Notify the Director in an electronic format when injection can be expected to resume.
- b. If a shutdown (i.e., down-hole or at the surface) is triggered, the Permittee must immediately investigate and identify as expeditiously as possible the cause of the shutdown. If, upon such investigation, the well appears to be lacking mechanical integrity, or if monitoring required indicates that the well may be lacking mechanical integrity, the Permittee must take the actions listed above in Section F(5)(a)(i) through (v).
  - c. If the well loses mechanical integrity prior to the next scheduled test date, then the well must either be plugged or repaired and retested within 30 days of losing mechanical integrity. The Permittee shall not resume injection until mechanical integrity is demonstrated and the Director gives written approval to recommence injection in cases where the well has lost mechanical integrity.

#### **6. Mechanical Integrity Testing on Request from Director**

The Permittee shall demonstrate mechanical integrity at any time upon written notice from the Director.

### **G. TESTING AND MONITORING**

#### **1. Testing and Monitoring Plan**

- a. The Permittee shall maintain and comply with the approved Testing and Monitoring Plan (Attachment G of this Permit) and with the requirements in A.A.C. R18-9-D635, A.A.C. R18-9-J663, and A.A.C. R18-9-J665. The Testing and Monitoring Plan is an enforceable condition of this Permit. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. Procedures for all testing and monitoring under this Permit must be submitted to the Director in an electronic format for approval at least 30 days prior to the test. In performing all testing and monitoring under this Permit, the Permittee must follow the procedures approved by the Director. If the Permittee is unable to follow the ADEQ approved procedures, then, the Permittee must contact the Director at least 30 days prior to testing to discuss options, if any are feasible. When the test report is submitted, a full explanation must be provided as to why any approved procedures were not followed. If the approved procedures were not followed, ADEQ may take an appropriate action, including but not limited to, requiring the Permittee to re-run the test.

- b. The Permittee must update the Testing and Monitoring Plan as required at A.A.C. R18-9-J665 to incorporate monitoring and operational data and in response to AOR reevaluations required under Section D of this Permit or demonstrate to the Director that no update is needed. The amended Testing and Monitoring Plan or demonstration shall be submitted to the Director in an electronic format within one year of an AOR reevaluation; following any significant changes to the facility such as addition of monitoring wells or newly permitted injection wells within the AOR; or when required by the Director.
- c. Following each update of the Testing and Monitoring Plan or a demonstration that no update is needed, the Permittee shall submit the resultant information in an electronic format to the Director for review and approval of the results. Once approved by the Director, the revised Testing and Monitoring Plan will become an enforceable condition of this Permit.

**2. Carbon Dioxide Stream Analysis**

The Permittee shall analyze the CO<sub>2</sub> stream with sufficient frequency to yield data representative of its chemical and physical characteristics, as described in the Testing and Monitoring Plan and to meet the requirements of A.A.C. R18-9- J665(A)1.

**3. Continuous Monitoring**

The Permittee shall maintain continuous monitoring devices and use them to monitor injection pressure, flow rate, volume, the pressure on the annulus between the tubing and the long string of casing, annulus fluid level, and temperature. This monitoring shall be performed as described in the Testing and Monitoring Plan to meet the requirements of A.A.C. R18-9-J665(A)2. The Permittee shall maintain for ADEQ's inspection at the facility an appropriately scaled, continuous record of these monitoring results as well as original files of any digitally recorded information pertaining to these operations.

**4. Corrosion Monitoring**

The Permittee shall perform corrosion monitoring of the well materials for loss of mass, thickness, cracking, pitting, and other signs of corrosion on a quarterly basis using the procedures described in the Testing and Monitoring Plan and in accordance with A.A.C. R18-9-J665(A)3 to ensure that the well components meet the minimum standards for material strength and performance set forth in A.A.C. R18-9-J661.

**5. Groundwater Quality Monitoring**

The Permittee shall monitor ground water quality and geochemical changes above the confining zone(s) that may be a result of CO<sub>2</sub> movement through the confining zone(s) or additional identified zones. This monitoring shall be performed for the parameters identified in the Testing and Monitoring Plan at the locations and depths, and at frequencies described in the Testing and Monitoring Plan to meet the requirements of A.A.C. R18-9-J665(A)4.

**6. External Mechanical Integrity Testing**

The Permittee shall demonstrate external mechanical integrity as described in the Testing and Monitoring Plan to meet the requirements of A.A.C. R18-9-J665(A)5.

**7. Pressure Fall-Off Test**

The Permittee shall conduct a pressure fall-off test at least once every five years unless more frequent testing is required by the Director based on site-specific information. The test shall be performed as described in the Testing and Monitoring Plan to meet the requirements of A.A.C. R18-9-J665(A)6.

**8. Plume and Pressure Front Tracking**

The Permittee shall track the extent of the CO<sub>2</sub> plume and the presence or absence of elevated pressure (e.g., the pressure front) as described in the Testing and Monitoring Plan.

- a. The Permittee shall use direct methods to track the position of the CO<sub>2</sub> plume and the pressure front in the injection zone as described in the Testing and Monitoring Plan and to meet the requirements of A.A.C. R18-9-J665(A)7(a).
- b. The Permittee shall use indirect methods to track the position of the CO<sub>2</sub> plume and pressure front as described in the Testing and Monitoring Plan and to meet the requirements of A.A.C. R18-9-J665(A)7(b).

**9. Surface Air and/or Soil Gas Monitoring**

The Permittee shall conduct any surface air monitoring and/or soil gas monitoring required by the Director to detect movement of CO<sub>2</sub> that could endanger a USDW at the frequency and locations described in the Testing and Monitoring Plan to meet the requirements of A.A.C. R18-9-J665.

**10. Additional Monitoring**

If required by the Director as provided in A.A.C. R18-9-J665, the Permittee shall perform any additional monitoring determined to be necessary to support, upgrade, and improve computational modeling of the AOR evaluation required under A.A.C. R18-9-J659 and to determine compliance with standards under A.A.C. R18-9-B608 or A.A.C. R18-9-J661. This monitoring shall be performed as described in a modification to the Testing and Monitoring Plan.

**H. REPORTING AND RECORDKEEPING**

**1. Electronic Reporting**

Electronic reports, submittals, notifications and records made and maintained by the Permittee under this Permit must be in an electronic format approved by ADEQ. The Permittee shall electronically submit all required reports to the Director.

## **2. Semi-Annual Reports**

The Permittee shall submit semi-annual reports containing:

- a. Any changes to the physical, chemical, and other relevant characteristics of the CO<sub>2</sub> stream from the proposed operating data;
- b. Monthly average, maximum, and minimum values for injection pressure, flow rate and daily volume, temperature, and annular pressure;
- c. A description of any event that exceeds operating parameters for annulus pressure or injection pressure specified in the permit;
- d. A description of any event which triggers the shut-off systems required in Section (E)(6) of this Permit pursuant to A.A.C. R18-9-J663(E) and the response taken;
- e. The monthly volume and/or mass of the CO<sub>2</sub> stream injected over the reporting period and the volume and/or mass injected cumulatively over the life of the project;
- f. Monthly annulus fluid volume added; and
- g. Results of the monitoring prescribed under A.A.C. R18-9-J665.

## **3. 24-Hour Reporting**

The Permittee shall report to ADEQ any non-compliance which may endanger health or the environment and/or any events that require implementation of actions in the Emergency and Remedial Response Plan (Attachment K of this Permit). The following information shall be provided orally within 24 hours from the time the Permittee becomes aware of the circumstances.

- a. Any evidence that the injected CO<sub>2</sub> stream or associated pressure front may cause an endangerment to a USDW;
- b. Any non-compliance with a permit condition, malfunction of the injection system, or loss of mechanical integrity, which may cause fluid migration into or between USDWs;
- c. Any triggering of a shut-off system (i.e., down-hole or at the surface);
- d. Any failure to maintain mechanical integrity; or
- e. Pursuant to compliance with the requirement in A.A.C. R18-9-J665(A)8 for surface air/soil gas monitoring or other monitoring technologies, if required by ADEQ, any release of CO<sub>2</sub> to the atmosphere or biosphere.

**4. Reports on Well Tests and Workovers**

Report, within 30 days, the results of:

- a. Periodic tests of mechanical integrity;
- b. Any well workover, including simulation;
- c. Any other test of the injection well conducted by the Permittee if required by the Director; and
- d. Any test of any monitoring well required by this Permit.

**5. Records**

- a. The Permittee shall retain records and all monitoring information, including all calibration and maintenance records and all original chart recordings for continuous monitoring instrumentation and copies of all reports required by this Permit (including records from pre-injection, active injection, and post-injection phases) for a period of at least 10 years from collection. Monitoring records shall include: the date, exact place, and time of sampling or measurements; The name(s) of the individual(s) who performed the sampling or measurements; A precise description of both sampling methodology and the handling of samples; The date(s) analyses were performed; The name(s) of the individual(s) who performed the analyses; The analytical techniques or methods used; and the results of such analyses.
- b. All data collected under A.A.C. R18-9-J657 and any supplemental information (e.g. modeling inputs for AOR delineations and reevaluations, plan modifications) shall be maintained for a period of at least 10 years after site closure.
- c. The Permittee shall retain records concerning the nature and composition of all injected fluids until 10 years after site closure.
- d. Well plugging reports, post-injection site care data, including, if appropriate, data and information used to develop the demonstration of the alternative post-injection site care timeframe, and the site closure report collected pursuant to requirements at A.A.C. R18-9-J668(F) and (H) shall be retained for ten years after site closure.
- e. The retention periods specified in Section H(5)(a) through (d) of this Permit may be extended by request of the Director at any time. The Permittee shall continue to retain records after the retention period specified in Section H(5)(a) through (d) of this Permit or any requested extension thereof expires unless the Permittee delivers the records to the Director or obtains written approval from the Director to discard the records.



## **I. INJECTION WELL PLUGGING**

### **1. Prior to Well Plugging**

Prior to plugging, the owner or operator must flush each Class VI injection well with a buffer fluid, determine bottom hole pressure, and perform a final mechanical integrity test.

### **2. Well Plugging Plan**

The Permittee shall maintain and comply with the approved Well Plugging Plan (Attachment H of this Permit) which is an enforceable condition of this Permit.

### **3. Revision of Well Plugging Plan**

If the permittee finds it necessary to change the Well Plugging Plan, a revised plan shall be submitted in an electronic format to the Director for written approval. Any amendments to the Well Plugging Plan must be approved by the Director and must be incorporated into the permit, and are subject to the permit

### **4. Notice of Plugging**

The Permittee must notify the Director in writing in an electronic format at least sixty (60) days before plugging of a well. At the discretion of the Director, a shorter notice period may be allowed.

### **5. Plugging and Abandonment Approval and Report**

- a. The permittee must receive written approval of the Director before plugging the well and shall plug and abandon the well in accordance with R18-9-667, as provided in the Well Plugging Plan (Attachment H of this permit).
- b. Within sixty (60) days after plugging, the permittee must submit in an electronic format a plugging report to the Director. The report must be certified as accurate by the permittee and by the person who performed the plugging operation (if other than the permittee.) The permittee shall retain the well plugging report in an electronic format for 10 years following site closure. The report must include:
  - i. A statement that the well was plugged in accordance with the Well Plugging Plan previously approved by the Director (Attachment H of this permit); or
  - ii. If the actual plugging differed from the approved plan, a statement describing the actual plugging and an updated plan specifying the differences from the plan previously submitted and explaining why the Director should approve such deviation. If the Director determines that a deviation from the plan incorporated in this permit may

endanger underground sources of drinking water, the permittee shall replug the well as required by the Director.

**6. Temporary Abandonment**

In accordance with R18-9-D636, the permittee shall continue to comply with the conditions of this permit, including all monitoring and reporting requirements according to the frequencies outlined in the permit. The well shall also be tested to ensure that it maintains mechanical integrity, according to the requirements and frequency specified in Section F(2) of this permit.

**J. POST-INJECTION SITE CARE AND CLOSURE**

**1. Post-Injection Site Care and Site Closure Plan**

The Permittee shall maintain and comply with the Post-Injection Site Care and Site Closure Plan, found as Attachment E of this Permit. The permittee shall:

- a. Upon cessation of injection and in response to AoR reevaluations required under Section G(2) of this permit, either submit in an electronic format for the Director's approval an amended Post-Injection Site Care and Site Closure Plan or demonstrate through monitoring data and modeling results that no amendment to the plan is needed.
- b. At any time during the life of the project, the permittee may modify and resubmit in an electronic format the Post-Injection Site Care and Site Closure Plan for the Director's approval. The permittee may, as part of such modifications to the Plan, request a modification to the post-injection site care timeframe that includes documentation of the information pursuant to the requirements in A.A.C R18-9-J668(C)(1).

**2. Carbon Dioxide Plume and Pressure Front Monitoring**

The Permittee shall monitor the site following the cessation of injection to show the position of the CO<sub>2</sub> plume and pressure front and demonstrate that USDWs are not being endangered, as specified in the Post-Injection Site Care and Site Closure Plan pursuant to the requirements in A.A.C. R18-9-J668(B). The Permittee shall continue to conduct post-injection site monitoring for at least 50 years or for the duration of any alternative timeframe approved by the Director, including:

- a. Ground water quality monitoring;
- b. Tracking the position of the carbon dioxide plume and pressure front including direct pressure monitoring and geochemical plume monitoring and the use of indirect methods;
- c. Internal and external MITs of wells used for post-injection monitoring;

- d. Any other required monitoring, e.g., soil gas and/or surface air monitoring described in the Post-Injection Site Care and Site Closure Plan;
- e. The permittee shall submit in an electronic format the results of all monitoring performed according to the schedule identified in the Post-Injection Site Care and Site Closure Plan; and
- f. The permittee shall continue to conduct post-injection site monitoring for the duration of the alternative timeframe approved pursuant to A.A.C. R18-9-J668(C) and the Post-Injection Site Care and Site Closure Plan and until the Director has authorized site closure.
- g. The post-injection monitoring must continue until the project no longer poses an endangerment to USDWs and the demonstration pursuant to A.A.C. R18-9-J668(B)(1) and is approved by the Director in accordance with A.A.C. R18-9-J668(B)(3).

Prior to authorization for site closure, the Permittee shall submit to the Director for review and approval a demonstration based on monitoring and other site-specific data, that no additional monitoring is needed to ensure the geologic sequestration project does not pose an endangerment to USDWs. The Director reserves the right to amend the post-injection site monitoring requirements (including extend the monitoring period) if the CO<sub>2</sub> plume and the associated pressure front have not stabilized or there is a concern that USDWs are being endangered.

### **3. Notification and Well Plugging**

The Permittee shall notify the Director in an electronic format at least 120 days before site closure. At this time, if any changes to the approved Post-Injection Site Care and Site Closure Plan in Attachment L of this Permit are proposed, the Permittee shall submit a revised plan.

After the Director has authorized site closure, the Permittee shall plug all monitoring in a manner which will not allow movement of injection or formation fluids that endangers a USDW. The Permittee shall also restore the site to its pre- injection condition.

### **4. Site Closure Report and Recordkeeping**

The Permittee shall submit a site closure report in an electronic format to the Director within 90 days of site closure. The report must include the information specified in A.A.C. R18-9-J668(F).

The Permittee shall record a notation on the deed to the facility property or any other document that is normally examined during a title search that will in perpetuity provide any potential purchaser of the property the information listed A.A.C. R18-9-J668(G).

The Permittee shall retain for 10 years following site closure an electronic copy of the records collected during the post-injection site care period. The Permittee shall deliver the records in an electronic format 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.

## **K. EMERGENCY AND REMEDIAL RESPONSE**

The Emergency and Remedial Response Plan describes actions the Permittee must take to address movement of the injection or formation fluids that may cause an endangerment to a USDW during construction, operation, and post-injection site care periods. The Permittee shall maintain and comply with the approved Emergency and Remedial Response Plan (Attachment K of this Permit), which is an enforceable condition of this Permit.

If the Permittee obtains evidence that the injected CO<sub>2</sub> and/or associated pressure front may cause endangerment to a USDW, the Permittee must:

1. Immediately cease injection;
2. Take all steps reasonably necessary to identify and characterize any release;
3. Notify the Director within 24 hours; and
4. Implement the Emergency and Remedial Response Plan.

At the frequency specified in the Area of Review and Corrective Action Plan, or more frequently when monitoring and operational conditions warrant, but not less often than once every five years, the Permittee shall review and update the Emergency and Remedial Response Plan or demonstrate to the Director that no update is needed. The amended Emergency and Remedial Response Plan or demonstration shall be submitted to the Director in an electronic format within one year of an AOR reevaluation; following any significant changes to the facility such as addition of injection wells; or when required by the Director.

## **L. FINANCIAL ASSURANCE REQUIREMENTS**

### **1. Demonstration of Financial Responsibility**

The Permittee shall maintain financial responsibility and resources to meet the conditions of this Permit and address endangerment of USDWs. Financial responsibility shall be maintained through all phases of the project using one or more of the qualifying instruments listed in A.A.C. R18-9-J660(A)1 and approved by the Director. The financial assurance mechanism is found in Attachment I of this Permit.

The financial instrument(s) must be sufficient to cover the cost of:

- a. Corrective action under A.A.C. R18-9-J659;

- b. Injection well plugging under A.A.C. R18-9-J667;
- c. Post injection site care and site closure under A.A.C. R18-9-J668; and
- d. Emergency and remedial response under A.A.C. R18-9-J669.

Authority to construct, inject, and operate the wells under the authority of this Permit will be granted only after the financial instrument has been secured and approved by the Director. The Permittee shall post an approved financial instrument in the amount of [SPECIFY \$ AMOUNT] for all the phases of the geologic sequestration project prior to issue a Class VI permit.

## **2. Cost Estimate Updates**

During the active life of the geologic sequestration project, the Permittee must adjust the cost estimate for inflation within sixty (60) days prior to the anniversary date of the establishment of the financial instrument(s) and provide this adjustment to the Director in an electronic format. The Permittee must also provide to the Director written updates of adjustments to the cost estimate within sixty (60) days of any amendments to the Area of Review and Corrective Action Plan, Injection Well Plugging Plan, Post-Injection Site Care and Site Closure Plan, and Emergency and Remedial Response Plan included in this Permit.

## **3. Notification**

- a. Whenever the current cost estimate increases to an amount greater than the face amount of a financial instrument currently in use, the Permittee, within sixty (60) days after the increase, must either cause the face amount to be increased to an amount at least equal to the current cost estimate and submit evidence of such increase to the Director, or obtain other financial responsibility instruments to cover the increase. Whenever the current cost estimate decreases, the face amount of the financial assurance instrument may be reduced to the amount of the current cost estimate only after the Permittee has received written approval from the Director.
- b. The Permittee must notify the Director by certified mail and in an electronic format of adverse financial conditions such as bankruptcy that may affect the ability to carry out injection well plugging, post-injection site care and site closure, and any applicable ongoing actions under Corrective Action and/or Emergency and Remedial Response.
  - i. In the event that the Permittee or the third party provider of a financial responsibility instrument is going through a bankruptcy, the Permittee must notify the Director by certified mail and in an electronic format of the commencement of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming the Permittee as debtor, within 10 days after commencement of the proceeding.

- ii. A guarantor of a corporate guarantee must make such a notification if he or she is named as debtor, as required under the terms of the guarantee.
- iii. A Permittee who fulfills the requirements of paragraph 1 of this section by obtaining a trust fund, surety bond, letter of credit, escrow account, or insurance policy will be deemed to be without the required financial assurance in the event of bankruptcy of the trustee or issuing institution, or a suspension or revocation of the authority of the trustee institution to act as trustee of the institution issuing the trust fund, surety bond, letter of credit, escrow account, or insurance policy.

#### **4. Establishing Other Coverage**

The Permittee must establish other financial assurance or liability coverage acceptable to the Director, within sixty (60) days of the occurrence of the events in Section L(2) or L(3) of this Permit.

#### **M. DURATION OF PERMIT**

This Permit and the authorization to inject are issued for a period of [SPECIFY DURATION] years unless terminated under the conditions set forth in Part III.B.1. or administratively extended under the conditions set forth in Part III.E.11.

## **PART III. GENERAL PERMIT CONDITIONS.**

### **A. EFFECT OF PERMIT**

The Permittee is allowed to engage in underground injection well construction and operation in accordance with the conditions of this Permit. The Permittee shall not construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant (as defined by A.A.C. R18-9-A601) into USDWs (as defined A.A.C R18-9-A601).

Any underground injection activity not specifically authorized in this Permit is prohibited. The Permittee must comply with all applicable provisions of 18 A.A.C. 9, Article 6. Such compliance does not constitute a defense to any action brought under Section 1431 of the SDWA, 42 U.S.C. §300(i), or any other common law, statute, or regulation other than Part C of the SDWA. Issuance of this Permit does not convey property rights of any sort or any exclusive privilege, nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of State or local law or regulations. Nothing in this Permit shall be construed to relieve the Permittee of any duties under all applicable laws and regulations.

### **B. PERMIT ACTIONS**

#### **1. Modification, Revocation and Reissuance, or Termination**

ADEQ may, for cause or upon request from the Permittee, modify, revoke and reissue, or terminate this Permit in accordance with A.A.C. R18-9-C631, C632, and C634. The permit is also subject to minor modifications for causes as specified in A.A.C. R18-9-C633. The filing of a request for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated non-compliance by the Permittee, does not stay the applicability or enforceability of any permit condition. ADEQ may also modify, revoke and reissue, or terminate this Permit in accordance with any amendments to the SDWA if the amendments have applicability to this Permit.

#### **2. Minor Modifications**

Upon the consent of the permittee, the Director may modify a permit to make the corrections or allowances for minor changes in the permitted activity as listed in R18-9-C633. Any permit modification not processed as a minor modification under 40 CFR 144.41 R18-9-633 must be made for cause, and with a draft permit and public notice as required in R18-9-C632.

#### **3. Transfers**

This Permit is not transferable to any person unless notice is first provided to ADEQ and the Permittee complies with requirements of A.A.C. R18-9-C630. ADEQ may require modification or revocation and reissuance of the permit to change the name of

the Permittee and incorporate such other requirements as may be necessary under the SDWA.

### **C. SEVERABILITY**

The provisions of this Permit are severable, and if any provision of this Permit or the application of any provision of this Permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this Permit shall not be affected thereby.

### **D. CONFIDENTIALITY**

In accordance with A.A.C. R18-9-A603, any information submitted to ADEQ pursuant to this Permit may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, ADEQ may make the information available to the public without further notice. If a claim is asserted, the validity of the claim will be assessed in accordance with the procedures contained in A.R.S. § 49-205 (Public Information). Claims of confidentiality for the following information will be denied:

1. Name and address of the Permittee, or
2. Information dealing with the existence, absence, or level of contaminants in drinking water.

### **E. GENERAL DUTIES AND REQUIREMENTS**

#### **1. Duty to Comply**

The Permittee shall comply with all applicable UIC Program regulations and conditions of this Permit, except to the extent and for the duration such non-compliance is authorized by an emergency permit issued in accordance with A.A.C. R18-9-C625. Any permit non-compliance constitutes a violation of the SDWA and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or for denial of a permit renewal application. Such non-compliance may also be grounds for enforcement action under the Resource Conservation and Recovery Act (RCRA).

#### **2. Definitions**

All terms used in this permit shall have the meaning set forth in A.A.C. R18-9-A601 and Underground Injection Control regulations specified at A.A.C., Title 18, Chapter 9, Article 6. Unless specifically stated otherwise, all references to "days" in this permit should be interpreted as calendar days.



**3. Penalties for Violations of Permit Conditions**

Any person who violates a permit requirement is subject to civil penalties, fines, and other enforcement action under the SDWA and may also be subject to enforcement actions pursuant to RCRA. Any person who willfully violates permit conditions may be subject to criminal prosecution.

**4. Need to Halt or Reduce Activity not a Defense**

It shall not be a defense, for the Permittee in an enforcement action, that it would have been necessary to halt or reduce the permitted activity to maintain compliance with the conditions of this Permit.

**5. Duty to Mitigate**

The Permittee shall take all reasonable steps to minimize and correct any adverse impact on the environment resulting from non-compliance with this Permit.

**6. Proper Operation and Maintenance**

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this Permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this Permit.

**7. Property Rights**

This Permit does not convey any property rights of any sort, or any exclusive privilege.

**8. Duty to Provide Information**

The Permittee shall furnish to ADEQ, within a time specified, any information which ADEQ may request to determine whether cause exists for modifying, revoking, and reissuing, or terminating this Permit, or to determine compliance with this Permit. The Permittee shall also furnish to ADEQ, upon request, copies of records required to be kept by this Permit pursuant to A.A.C. R18-9- D635(A)8.

**9. Inspection and Entry**

The Permittee shall allow ADEQ, or an authorized representative, upon the presentation of credentials and other documents as may be required pursuant to A.A.C. R18-9-D635(A)9 to:

- a. Enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Permit;

- b. Have access to and copy, at reasonable times, any records that are kept under the conditions of this Permit;
- c. Inspect and photograph at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Permit; and
- d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the SDWA, any substances or parameters at any location.

#### **10. Signatory Requirements**

All applications, reports, or other information submitted to ADEQ shall be signed and certified by a responsible corporate officer or duly authorized representative according to A.A.C. R18-9-C617.

#### **11. Additional Reporting Requirements**

- a. **Planned Changes** - The Permittee shall give notice to ADEQ as soon as possible of any planned physical alterations or additions to the permitted facility affecting any of the terms and conditions of the permit.
- b. **Anticipated non-compliance**-The Permittee shall give advance notice to ADEQ of any planned changes in the permitted facility or activity which may result in non-compliance with permit requirements.
- c. **Compliance Schedules** - Reports of compliance or non-compliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Permit shall be submitted to ADEQ no later than thirty (30) days following each schedule date.
- d. A written submission of all non-compliance shall also be provided to ADEQ within five (5) days of the time the Permittee becomes aware of the circumstances. The written submission shall contain: a description of the non-compliance and its cause; the period of non-compliance, including exact dates and times; if the non-compliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the non-compliance.
- e. **Other non-compliance** - At the time monitoring reports are submitted, the Permittee shall report in writing all other instances of non-compliance not otherwise reported.
- f. **Other Information** - If the Permittee becomes aware that it failed to submit all relevant facts in the permit application or submitted incorrect information in the permit application or in any report to ADEQ, the Permittee shall submit

such facts or information within two (2) weeks of the time such facts or information becomes known.

## **12. Continuation of Expiring Permit**

- a. Duty to Reapply - If ADEQ requires the Permittee to continue an activity regulated by this Permit past the expiration date of this Permit, the Permittee must submit a complete application for a new permit at least one hundred and eighty (180) days before this Permit expires.
- b. Permit Extensions - The conditions and requirements of an expired permit continue in force and effect in accordance with 5 U.S.C. §558(c) until the effective date of a new permit, if:
  - i. The Permittee has submitted a timely and complete application for a new permit; and
  - ii. ADEQ, through no fault of the Permittee, does not issue a new permit with an effective date on or before the expiration date of the previous permit.

END  
of Appendix A-2

## **Appendix 3 – Arizona SDWA – UIC Rule**

## **Primary Arizona SDWA-UIC Rules**

Arizona Administrative Code

Title 18 – Environmental Quality

Chapter 1 – Department of Environmental Quality – Administration

Article 5 – Licensing Time-Frames

**ARIZONA ADMINISTRATIVE CODE**

**TITLE 18. ENVIRONMENTAL QUALITY**

**CHAPTER 1. DEPARTMENT OF ENVIRONMENTAL QUALITY  
ADMINISTRATION**

**ARTICLE 5. LICENSING TIME-FRAMES**

Section

Table 10. Water Permit Licensing Time-frames (Business Days)

**ARTICLE 5. LICENSING TIME-FRAMES**

**Table 10. Water Permit Licensing Time-Frames (Business Days)**

<b>Permits</b>	<b>Authority</b>	<b>Administrative Completeness Review</b>	<b>Substantive Review</b>	<b>Overall Time- Frame</b>
<b>AQUIFER PROTECTION PERMITS</b>				
<b>Individual Permit</b> No public hearing Public hearing	A.R.S. §§ 49-203, 49- 242 18 A.A.C. 9, Article 2	35 35	186 231 <sup>1</sup>	221 266
<b>Complex Individual Permit</b> No public hearing Public hearing	A.R.S. §§ 49-203, 49- 242 18 A.A.C. 9, Article 2	35 35	249 294 <sup>1</sup>	284 329
<b>Individual Permit Significant Amendment</b> No public hearing Public hearing	A.R.S. §§ 49-203, 49- 242 18 A.A.C. 9, Article 2	35 35	186 231 <sup>1</sup>	221 266
<b>Complex Individual Permit Significant Amendment</b> No public hearing Public hearing	A.R.S. §§ 49-203, 49- 242 18 A.A.C. 9, Article 2	35 35	249 294 <sup>1</sup>	284 329
<b>Individual Permit Other Amendment</b>	A.R.S. §§ 49-203, 49- 242 18 A.A.C. 9, Article 2	35	100	135
<b>Temporary Individual Permit</b>	A.R.S. §§ 49-203, 49- 242 18 A.A.C. 9, Article 2	35	145	180
<b>Type 3 General Permit</b>	A.R.S. § 49-245 A.A.C. R18-9-D301 through R18-9-D307	21	60	81
<b>4.01 General Permit</b> 300 services or less More than 300 services	A.R.S. § 49-245 A.A.C. R18-9-E301	42 42	53 94	95 <sup>2</sup> 136 <sup>2</sup>
<b>Standard Single</b> 4.02, 4.03, 4.13, 4.14, 5.15, and 4.16 General Permits	A.R.S. § 49-245 A.A.C. R18-9-E302, R18-9- E303, R18-9-E313, R18-9-E314	42	31	73 <sup>2</sup>
<b>4.23 General Permit</b>	A.R.S. § 49-245 A.A.C. R18-9-E323	42	94	136 <sup>2</sup>

<b>Standard Combined</b> Two or three Type 4 General Permits	A.R.S. § 49-245 A.A.C. R18-9-E302 through R18-9-E323	42	53	95 <sup>2</sup>
<b>Complex Combined</b> Four or more Type 4 General Permits	A.R.S. § 49-245 A.A.C. R18-9-E302 through R18-9-E323	42	94	136 <sup>2</sup>
<b>SUBDIVISION APPROVALS</b>				
<b>Subdivision</b> Individual facilities	A.R.S. § 49-104(B)(11) A.A.C. R18-5-408	21	46	67
<b>Subdivision</b> Community facilities	A.R.S. § 49-104(B)(11) A.A.C. R18-5-403	21	37	58
<b>RECLAIMED WATER PERMITS</b>				
<b>Individual Permit</b> No public hearing Public hearing	A.R.S. § 49-203 A.A.C. R18-9-702 through R18-9-707	35 35	186 231 <sup>1</sup>	221 266
<b>Complex Individual Permit</b> No public hearing Public hearing	A.R.S. § 49-203 A.A.C. R18-9-702 through A.A.C. R18-9-707	35 35	249 294 <sup>1</sup>	284 329
<b>Type 3 General Permit</b>	A.R.S. § 49-203 A.A.C. R18-9-717, R18-9-718, R18-9-719	21	60	81
<b>ARIZONA POLLUTANT DISCHARGE ELIMINATION SYSTEM (AZPDES) PERMITS</b>				
<b>Individual Permit</b> <b>Major Facility</b> <sup>5</sup> No public hearing Public hearing	A.R.S. § 49-255.01 18 A.A.C. 9, Article 9, Part B	35 35	249 294 <sup>1</sup>	284 <sup>3, 4</sup> 329 <sup>3, 4</sup>
<b>Individual Permit</b> <b>Minor Facility</b> <sup>6</sup> No public hearing Public hearing	A.R.S. § 49-255.01 18 A.A.C. 9, Article 9, Part B	35 35	186 231 <sup>1</sup>	221 <sup>3, 4</sup> 266 <sup>3, 4</sup>
<b>Individual Permit</b> <b>Stormwater /</b> <b>Construction Activities</b> No public hearing Public hearing	A.R.S. § 49-255.01 18 A.A.C. 9, Article 9, Part B	35 35	126 171 <sup>1</sup>	161 206 <sup>3, 4</sup>
<b>Individual Permit</b> <b>Major Modification</b> No public hearing Public hearing	A.R.S. § 49-255.01 18 A.A.C. 9, Article 9, Part B	35 35	186 231 <sup>1</sup>	221 <sup>3, 4</sup> 266 <sup>3, 4</sup>
<b>LAND APPLICATION OF BIOSOLIDS REGISTRATIONS</b>				
<b>Biosolids Applicator</b> <b>Registration Request</b> <b>Acknowledgment</b>	A.R.S. § 49-255.03 A.A.C. R18-9-1004	15	0	15
<b>UNDERGROUND INJECTION CONTROL PERMITS</b>				
<b>Area Permit</b> <b>and Modification</b> No public hearing Public hearing	<u>A.R.S. §§ 49-203, 49-257.01</u> <u>A.A.C. R18-9-C624</u>	<u>35</u> <u>35</u>	<u>249</u> <u>294<sup>1</sup></u>	<u>284</u> <u>329</u>
<b>Class I Well Permit and Modification</b> No public hearing Public hearing	<u>A.R.S. §§ 49-203, 49-257.01</u> <u>A.A.C. R18-9-C616</u> <u>18 A.A.C. 9, Article 6,</u> <u>Part E</u>	<u>35</u> <u>35</u>	<u>249</u> <u>294<sup>1</sup></u>	<u>284</u> <u>329</u>



<b><u>Class II Well Permit and Modification</u></b> No public hearing Public hearing	<u>A.R.S. §§ 49-203, 49-257.01</u> <u>A.A.C. R18-9-C616</u> <u>18 A.A.C. 9, Article 6, Part F</u>	<u>35</u> <u>35</u>	<u>186</u> <u>231<sup>1</sup></u>	<u>221</u> <u>266</u>
<b><u>Class III Well Permit and Modification</u></b> No public hearing Public hearing	<u>A.R.S. §§ 49-203, 49-257.01</u> <u>A.A.C. R18-9-C616</u> <u>18 A.A.C. 9, Article 6, Part G</u>	<u>35</u> <u>35</u>	<u>186</u> <u>231<sup>1</sup></u>	<u>221</u> <u>266</u>
<b><u>Class V Well Individual Permit and Modification</u></b> No public hearing Public hearing	<u>A.R.S. §§ 49-203, 49-257.01</u> <u>A.A.C. R18-9-C616</u> <u>18 A.A.C. 9, Article 6, Part I</u>	<u>35</u> <u>35</u>	<u>186</u> <u>231<sup>1</sup></u>	<u>221</u> <u>266</u>
<b><u>Class VI Well Permit and Modification</u></b> No public hearing Public hearing	<u>A.R.S. §§ 49-203, 49-257.01</u> <u>A.A.C. R18-9-C616</u> <u>18 A.A.C. 9, Article 6, Part J</u>	<u>35</u> <u>35</u>	<u>249</u> <u>294<sup>1</sup></u>	<u>284</u> <u>329</u>

1 A request for a public hearing allows the Department 60 days to publish the notice of public hearing and for the official comment period. Forty-five business days are added to the substantive review time-frame.

2 Each request for an alternative design, installation, or operational feature under R18-9-A312(G) to a Type 4 General Permit adds eight business days to the substantive review time-frame.

3 EPA reserves the right, under 40 CFR 123.44, to take 90 days to supply specific grounds for objection to a draft or proposed permit when a general objection is filed within the review period. The first 30 days run concurrently with the Department's official comment period. Forty-five business days will be added to the substantive review time-frame to allow for the EPA review.

4 If a request for a variance is submitted to the Department, 40 CFR 124.62 requires that specific variances are subject to review by EPA. Under 40 CFR 123.44, EPA reserves the right to take 90-days to approve or deny the variance. Sixty-four business days will be added to the substantive review time-frame to allow for the EPA review.

5 "Major facility" means any NPDES "facility or activity" classified as such by the EPA in conjunction with the Director.

6 "Minor facility" means any facility that is not classified as a major facility.

## **Primary Arizona SDWA-UIC Rules**

Arizona Administrative Code

Title 18 – Environmental Quality

Chapter 9 – Department of Environmental Quality – Water Pollution Control

Article 6 – Underground Injection Control

**ARIZONA ADMINISTRATIVE CODE**

**TITLE 18. ENVIRONMENTAL QUALITY**

**CHAPTER 9. DEPARTMENT OF ENVIRONMENTAL QUALITY  
WATER POLLUTION CONTROL**

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R18-9-J667. Class VI; Injection Well Plugging  
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## ARTICLE 6. UNDERGROUND INJECTION CONTROL

### PART A. GENERAL PROVISIONS

#### **R18-9-A601. Definitions**

The following terms apply to this Article:

1. "Abandoned well" means a well whose use has been permanently discontinued or which is in a state of disrepair such that it cannot be used for its intended purpose or for observation purposes.
2. "Administrator" means the Administrator of the United States Environmental Protection Agency (EPA), or an authorized representative.
3. "Application" means the ADEQ prescribed method, such as a form, for applying for a permit, including any additions, revisions or modifications thereof.
4. "Appropriate Act and regulations" means the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA); or Safe Drinking Water Act (SDWA), whichever is applicable; and applicable regulations promulgated under those statutes.
5. "Aquifer" means a geological formation, group of formations, or part of a formation that is capable of yielding a significant amount of water to a well or spring.
6. "Area of review" means the area surrounding an injection well described according to the criteria set forth in R18-9-B612 or in the case of an area permit, the project area plus a circumscribing area the width of which is either 1/4 of a mile or a number calculated according to the criteria set forth in R18-9-B612.
7. "Arizona UIC Memorandum of Agreement" means the agreement between the Administrator and the Director that coordinates EPA and ADEQ activities, responsibilities, and programs under the Arizona UIC Program.
8. "Arizona UIC Program" means the UIC program administered by the Director and approved by EPA according to 42 U.S.C. § 300h-1.
9. "Casing" means a pipe or tubing of appropriate material, of varying diameter and weight, lowered into a borehole during or after drilling to support the sides of the hole and prevent the walls from caving; to prevent loss of drilling mud into porous ground; or to prevent water, gas, or other fluid from entering or leaving the hole.
10. "Catastrophic collapse" means the sudden and utter failure of overlaying strata caused by removal of underlying materials.
11. "Cementing" means the operation whereby a cement slurry is pumped into a drilled hole and/or forced behind the casing.
12. "Cesspool" means a drywell that receives untreated sanitary waste containing human excreta, and which sometimes has an open bottom and/or perforated sides.
13. "Confining zone" means a geological formation, group of formations, or parts of a formation that is capable of limiting fluid movement above an injection zone.
14. "Contaminant" means any physical, chemical, biological, or radiological substance or matter in water.
15. "Conventional mine" means an open pit or underground excavation for the production of minerals.
16. "Director" means the Director of the Arizona Department of Environmental Quality or the Director's designee.
17. "Disposal well" means a well that is used for the disposal of waste into a subsurface stratum.
18. "Draft permit" means a document prepared under R18-9-C618 indicating the Director's tentative decision to issue, renew, modify, revoke and reissue, or terminate a permit. A notice of intent to terminate a permit, and a notice of intent to deny a permit, as discussed in R18-9-C631 are types of draft permits. A denial of a request for modification, revocation and reissuance, or termination, of a permit is not a draft permit, except as discussed in R18-9-C631(B).
19. "Drilling mud" means a heavy suspension used in drilling an injection well, introduced down the drill pipe and through the drill bit.
20. "Drywell" means a well, other than an improved sinkhole or subsurface fluid distribution system, completed above the water table so that its bottom and sides are typically dry except when receiving fluids.
21. "Effective date of the Arizona UIC Program" means the date that the Arizona UIC Program is approved or established by the Administrator.
22. "Emergency permit" means a UIC permit issued in accordance with R18-9-C625.
23. "Environmental Protection Agency" or "EPA" means the United States Environmental Protection Agency.

24. "Exempted aquifer" means an aquifer or its portion that meets the criteria in the definition of underground source of drinking water (USDW) but has been exempted according to the procedures in R18-9-A605.
25. "Existing injection well" means an injection well other than a new injection well.
26. "Experimental technology" means a technology which has not been proven feasible under the conditions in which it is being tested.
27. "Facility" or "activity" means any UIC injection well subject to regulation under this Article.
28. "Fault" means a surface or zone of rock fracture along which there has been displacement.
29. "Final permit decision" means the Director's decision to issue, renew, modify, revoke and reissue, deny or terminate a permit as described in R18-9-C627.
30. "Flow rate" means the volume per time unit given the flow of gases or other fluid substance which emerges from an orifice, pump, turbine, or passes along a conduit or channel.
31. "Fluid" means any material or substance which flows or moves whether in a semisolid, liquid, sludge, gas, or any other form or state.
32. "Formation" means a body of consolidated or unconsolidated rock characterized by a degree of lithologic homogeneity which is prevailing, but not necessarily, tabular and is mappable on the earth's surface or traceable in the subsurface.
33. "Formation fluid" means fluid present in a formation under natural conditions as opposed to introduced fluids, such as drilling mud.
34. "Generator" means any person, by site location, whose act or process produces hazardous waste identified or listed in A.A.C. Title 18, Chapter 8 (Hazardous Waste Management).
35. "Geologic sequestration" means the long-term containment of a gaseous, liquid, or supercritical carbon dioxide stream in subsurface geologic formations. This term does not apply to carbon dioxide capture or transport.
36. "Ground water" means water below the land surface in a zone of saturation.
37. "Hazardous waste" means a hazardous waste as defined in A.R.S. § 49-921.
38. "Improved sinkhole" means a naturally occurring karst depression or other natural crevice found in volcanic terrain and other geologic settings which have been modified by man for the purpose of directing and emplacing fluids into the subsurface.
39. "Indian lands" means Indian country as defined in 18 U.S.C. 1151.
40. "Indian Tribe" means any Indian Tribe having a Federally recognized governing body carrying out substantial governmental duties and powers over a defined area.
41. "Injection well" means a well into which fluids are being injected.
42. "Injection zone" means a geological formation group of formations, or part of a formation receiving fluids through a well.
43. "Lithology" means the description of rocks on the basis of their physical and chemical characteristics.
44. "Major facility" means any UIC facility or activity classified as such by the Administrator in conjunction with the Director.
45. "New injection wells" means an injection well which began injection after the effective date of the Arizona UIC Program.
46. "Owner" or "operator" means the owner or operator of any facility or activity subject to regulation under the Arizona UIC program.
47. "Packer" means a device lowered into a well to produce a fluid-tight seal.
48. "Permit" means an authorization issued by the Director pursuant to this Article. 'Permit' includes an area permit under R18-9-C624 and an emergency permit under R18-9-C625. 'Permit' does not include UIC authorization by rule or any permit which has not yet been subject to a final permit decision, such as a 'draft permit.'
49. "Person" means an individual, employee, officer, managing body, trust, firm, joint-stock company, consortium, public or private corporation, Partnership, association or state, a political subdivision of this state, a commission, the United States government or any federal facility, interstate body, Tribal agency, or other entity.
50. "Plugging" means the act or process of stopping the flow of water, oil or gas into or out of a formation through a borehole or well penetrating that formation.
51. "Plugging record" means a systematic listing of permanent or temporary abandonment of water, oil, gas, test, exploration and waste injection wells, and may contain a well log, description of amounts and types of plugging material used, the method employed for plugging, a description of formations which are sealed and

a graphic log of the well showing formation location, formation thickness, and location of plugging structures.

52. "Pressure" means the total load or force per unit area acting on a surface.
53. "Project" means a group of wells in a single operation.
54. "Radioactive Waste" means any waste which contains radioactive material in concentrations which exceed those listed in 10 CFR part 20, appendix B, table II column 2.
55. "RCRA" means the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act of 1976 (Pub. L. 94-580, as amended by Pub. L. 95-609, Pub. L. 96-510, 42 U.S.C. 6901 et seq.).
56. "Sanitary waste" means liquid or solid wastes originating solely from humans and human activities, such as wastes collected from toilets, showers, wash basins, sinks used for cleaning domestic areas, sinks used for food preparation, clothes washing operations, and sinks or washing machines where food and beverage serving dishes, glasses, and utensils are cleaned. Sources of these wastes may include single or multiple residences, hotels and motels, restaurants, bunkhouses, schools, ranger stations, crew quarters, guard stations, campgrounds, picnic grounds, day-use recreation areas, other commercial facilities, and industrial facilities provided the waste is not mixed with industrial waste.
57. "Schedule of compliance" means a schedule of remedial measures included in a permit including an enforceable sequence of interim requirements leading to compliance with this Article.
58. "SDWA" or "Safe Drinking Water Act" means the Safe Drinking Water Act (Pub. L. 93-523, as amended; 42 U.S.C. 300f et seq.).
59. "Septic system" means a well that is used to emplace sanitary waste below the surface and is typically comprised of a septic tank and subsurface fluid distribution system or disposal system.
60. "Site" means the land or water area where any facility or activity is physically located or conducted, including adjacent land used in connection with the facility or activity.
61. "Stratum" means a single sedimentary bed or layer, or series of layers that consists of generally the same kind of rock material regardless of thickness. The plural of stratum is strata.
62. "Subsidence" means the lowering of the natural land surface in response to earth movements; lowering fluid pressures; removal of underlying support material by mining or solution of solids, either artificially or from natural causes; compaction due to wetting; oxidation of organic matter in soils; or added load on the land surface.
63. "Subsurface fluid distribution system" means an assemblage of perforated pipes, drain tiles, or other similar mechanisms intended to distribute fluids below the surface of the ground.
64. "Surface casing" means the first string of well casing to be installed in the well.
65. "Total dissolved solids" or "TDS" means the total dissolved (filterable) solids as determined by use of the method specified in A.A.C. R9-14-610 or R9-14-611.
66. "Transferee" means the owner or operator receiving ownership and/or operational control of the well.
67. "Transferor" means the owner or operator transferring ownership and/or operational control of the well.
68. "Underground injection" means a well injection; which excludes the underground injection of natural gas for purposes of storage and the underground injection of fluids or propping agents (other than diesel fuels) pursuant to hydraulic fracturing operations related to oil, gas, or geothermal production activities.
69. "Underground Injection Control" or "UIC" means the Underground Injection Control program under Part C of the Safe Drinking Water Act, including the Arizona UIC Program.
70. "USDW," "USDWs," or "Underground source of drinking water" means an aquifer(s) or its portion that:
  - a. Supplies any public water system; or
  - b. Contains a sufficient quantity of ground water to supply a public water system; and
    - i. Currently supplies drinking water for human consumption; or
    - ii. Contains fewer than 10,000 mg/l total dissolved solids; and
  - c. Is not an exempted aquifer.
71. "Well" means a bored, drilled, or driven shaft whose depth is greater than the largest surface dimension; or a dug hole whose depth is greater than the largest surface dimension; or, an improved sinkhole; or a subsurface fluid distribution system.
72. "Well injection" means the subsurface emplacement of fluids through a well.
73. "Well plug" means a watertight and gastight seal installed in a borehole or well to prevent movement of fluids.
74. "Well monitoring" means the measurement, by on-site instruments or laboratory methods, of the quality of water in a well.

75. "Well stimulation" means several processes used to clean the well bore, enlarge channels and increase pore space in the interval to be injected thus making it possible for wastewater to move more readily into the formation and includes surging, jetting, blasting, acidizing, or hydraulic fracturing.

**R18-9-A602. Applicability**

- A.** This Article becomes effective upon the date of the Environmental Protection Agency's approval of the Arizona UIC Program. Upon that date, the Department shall, under A.R.S. Title 49, Chapter 2, Articles 3.3, 4 and Article 6 of this Chapter, administer and enforce any permit which has been previously authorized or issued in this state under the Federal UIC program.
- B.** This Article and 40 CFR Part 145, Subpart C provide the minimum requirements of the State of Arizona's Underground Injection Control (UIC) program under A.R.S. Title 49, Chapter 2, Article 3.3 (Underground Injection Control Permit Program) and pursuant to Part C of the Safe Drinking Water Act (SDWA) (Pub. L. 93-523, as amended; 42 U.S.C. 300h et seq.).
- C.** Underground injection is prohibited in lands under the jurisdiction of the State of Arizona unless:
1. Authorized by permit or rule under this Article in accordance with 42 U.S.C. 300h et seq., or
  2. Authorized by OGCC pursuant to regulations approved by EPA.
- D.** Any injection activity authorized by permit or rule under this Article shall prohibit the movement of fluid containing any contaminant into underground sources of drinking water (USDWs), where the presence of that contaminant may cause a violation of this Article or may adversely affect the health of persons.
- E.** Injection wells regulated under this Article are categorized into six classes based on characteristics of the injection well activity. Owners or operators of injection wells regulated under all six classes must be authorized by permit (all classes) or rule (Class V only if no permit is required) pursuant to the requirements of this Article.
- F.** Specific inclusions. The following wells are included among those types of injection activities which are covered by the UIC regulations in this Article. (This list is not intended to be exclusive but is for clarification only.)
1. Any injection well located on a drilling platform inside the State's territorial waters.
  2. Any dug hole or well that is deeper than its largest surface dimension, where the principal function of the hole is emplacement of fluids.
  3. Any well used by generators of hazardous waste, or by owners or operators of hazardous waste management facilities, to dispose of fluids containing hazardous waste. This includes the disposal of hazardous waste into what would otherwise be septic systems and cesspools, regardless of their capacity.
  4. Any septic tank, cesspool, or other well used by a multiple dwelling, or community, or other large system for the injection of wastes.
- G.** Specific exclusions. The following are not covered by these regulations:
1. Septic systems or similar waste disposal systems if such systems:
    - a. Are used solely for the disposal of sanitary waste, and
    - b. Have a design capacity of less than 3,000 gallons per day.
  2. Injection wells used for injection of hydrocarbons which are of pipeline quality and are gases at standard temperature and pressure for the purpose of storage.
  3. Any dug hole, drilled hole, or bored shaft which is not used for the subsurface emplacement of fluids.
  4. Injection wells authorized by OGCC pursuant to regulations approved by EPA, in accordance with 42 U.S.C. 300h et seq.
- H.** Safe Drinking Water Act exemptions.
1. The following activities are exempt from the Arizona UIC Program:
    - a. The underground injection of natural gas for purposes of storage.
    - b. The underground injection of fluids or propping agents (other than diesel fuels) pursuant to hydraulic fracturing operations related to oil, gas, or geothermal production activities.
- I.** The Director may identify aquifers and portions of aquifers which are actual or potential sources of drinking water, to assist in carrying out the Director's duty pursuant to this Article. Any aquifer meeting the criteria under R18-9-A601(70) shall be protected as an USDW, even if it has not been explicitly identified pursuant to this Section.
- J.** The Director may also designate aquifers or portions of aquifers as exempt from the program using the criteria in R18-9-A605 and R18-9-A606, subject to EPA approval. Any aquifer or portion thereof within the State that has previously been designated exempt by EPA pursuant to 40 CFR § 144.7 shall be part of the Arizona UIC program upon the effective date of the Arizona UIC program.



**R18-9-A603. Confidentiality of Information**

- A.** In accordance with A.R.S. § 49-205, any information submitted to the Director pursuant to these regulations may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or instructions or, in the case of other submissions, by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, the Director may make the information available to the public without further notice. If a claim is asserted, the information will be treated in accordance with the procedures in A.R.S. § 49-205 (Availability of information to the public).
- B.** Claims of confidentiality for the following information will be denied:
1. The name and address of any permit applicant or permittee.
  2. Information which deals with the existence, absence, or level of contaminants in drinking water.

**R18-9-A604. Classification of Wells**

- A.** Class I wells are:
1. Wells used by generators of hazardous waste or owners or operators of hazardous waste management facilities to inject hazardous waste beneath the lowermost formation that contains, within one-quarter mile of the well bore, an USDW.
  2. Other industrial and municipal disposal wells which inject fluids beneath the lowermost formation that contains, within one-quarter mile of the well bore, an USDW.
  3. Radioactive waste disposal wells which inject fluids beneath the lowermost formation that contains, within one-quarter mile of the well bore, an USDW.
- B.** Class II wells are injection wells that inject fluids:
1. That are brought to the surface in connection with natural gas storage operations, or conventional oil or natural gas production and may be commingled with waste waters from gas plants which are an integral part of production operations, unless those waters are classified as a hazardous waste at the time of injection.
  2. For enhanced recovery of oil or natural gas.
  3. For storage of hydrocarbons which are liquid at standard temperatures and pressure.
- C.** Class III wells are injection wells used for the extraction of minerals, including:
1. Sulfur mining by the Frasch process.
  2. In-situ production of uranium or other metals from those ore bodies not conventionally mined. Solution mining of conventional mines such as stopes leaching is included in Class V.
  3. Solution mining of salts or potash.
- D.** Class IV wells are injection wells that either:
1. Inject hazardous or radioactive wastes into or above a formation with an USDW located within one-quarter mile of the well bore, or
  2. Inject hazardous wastes and cannot be classified under subsection (A)(1), or (D)(1) (e.g., wells used to dispose of hazardous wastes into or above a formation which contains an aquifer which has been previously exempted or exempted pursuant to R18-9-A606).
- E.** Class V wells are injection wells not included in Class I, II, III, IV, or VI.
1. Class V wells include but are not limited to:
    - a. Air conditioning return flow wells used to return to the supply aquifer the water used for heating or cooling in a heat pump.
    - b. Cesspools including multiple dwelling, community or regional cesspools, or other devices that receive wastes which have an open bottom and sometimes have perforated sides. The UIC requirements do not apply to single family residential cesspools nor to non-residential cesspools which receive solely sanitary wastes and have the capacity to serve fewer than 20 persons a day.
    - c. Cooling water return flow wells used to inject water previously used for cooling.
    - d. Drainage wells used to drain surface fluid, primarily storm runoff, into a subsurface formation.
    - e. Dry wells used for the injection of wastes into a subsurface formation.
    - f. Recharge wells used to replenish the water in an aquifer.
    - g. Salt water intrusion barrier wells used to inject water into a fresh water aquifer to prevent the intrusion of salt water into the fresh water.
    - h. Sand backfill and other backfill wells used to inject a mixture of water and sand, mill tailings or other solids into mined out portions of subsurface mines, except for radioactive wastes.

- i. Septic system wells used to inject the waste or effluent from a multiple dwelling, business establishment, community or regional business establishment septic tank.
- j. Subsidence control wells, other than those used in oil or natural gas production, that inject fluids into a non-oil or gas producing zone to reduce or eliminate subsidence associated with freshwater overdraft.
- k. Injection wells associated with the recovery of geothermal energy for heating, aquaculture, and production of electric power.
- l. Wells used for solution mining of conventional mines such as stopes leaching.
- m. Wells used to inject spent brine into the same formation from which it was withdrawn after extraction of halogens or their salts.
- n. Injection wells used in experimental technologies.
- o. Injection wells used for in situ recovery of lignite, coal, tar sands, and oil shale.
- 2. Class V wells do not include:
  - a. Single-family residential septic system wells or non-residential septic system wells used solely for the disposal of sanitary waste with a design capacity of less than 3,000 gallons per day.
- F. Class VI wells are:**
  - 1. Not experimental in nature that are used for geologic sequestration of carbon dioxide beneath the lowermost formation containing a USDW;
  - 2. Wells used for geologic sequestration of carbon dioxide that have been granted a waiver of the injection depth requirements pursuant to requirements at R18-9-J670; or
  - 3. Wells used for geologic sequestration of carbon dioxide that have received an expansion to the areal extent of an existing Class II enhanced oil recovery or enhanced gas recovery aquifer exemption pursuant to R18-9-A605 of this Chapter and R18-9-A604.

**R18-9-A605. Identification of Underground Sources of Drinking Water and Exempt Aquifers**

- A.** The Director may identify, by narrative description, illustration, maps, or other means, and shall protect as USDWs, all aquifers and parts of aquifers that meet the definition of USDW in R18-9-A601(70) except to the extent there is an applicable aquifer exemption under subsection (B) of this Section or an expansion to the areal extent of an existing Class II enhanced oil recovery or enhanced gas recovery aquifer exemption for the exclusive purpose of Class VI injection for geologic sequestration under subsection (D) of this Section. Other than EPA-approved aquifer exemption expansions that meet the criteria set forth in R18-9-A606(4), new aquifer exemptions shall not be issued for Class VI injection wells. Even if an aquifer has not been specifically identified by the Director, it is an USDW if it meets the definition in R18-9-A601(70).
- B.** Aquifer exemptions procedure:
  - 1. The Director may identify, by narrative description, illustrations, maps, or other means, and describe in geographic and/or geometric terms, such as vertical and lateral limits and gradient, that are clear and definite, all aquifers or parts thereof that the Director proposes to designate as exempted aquifers using the criteria in R18-9-A606.
  - 2. No designation of an exempted aquifer submitted as part of Arizona's UIC program shall be final until approved by EPA as part of the Arizona UIC Program. No designation of an expansion to the areal extent of a Class II enhanced oil recovery or enhanced gas recovery aquifer exemption for the exclusive purpose of Class VI injection for geologic sequestration shall be final until approved by the EPA as a substantial revision of the Arizona UIC Program in accordance with 40 CFR 145.32.
  - 3. Subsequent to the program approval or promulgation, the Director may, after notice and opportunity for public hearing, identify additional exempted aquifers.
  - 4. Exemption of aquifers identified:
    - a. Under R18-9-A606(2) shall be treated as a program revision under 40 CFR 145.32;
    - b. Under R18-9-A606(3) shall become final if the Director submits the exemption in writing to the Administrator and the Administrator has not disapproved the designation within 45 days.
- C.** Additional aquifer exemption requirements:
  - 1. For Class III wells, the Director shall require an applicant for a permit which necessitates an aquifer exemption under R18-9-A606(2)(a) to furnish the data necessary to demonstrate that the aquifer is expected to be mineral or hydrocarbon producing. Information 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 shall be considered by the Director in addition to the information required by R18-9-C616(D).

2. For Class II wells, a demonstration of commercial producibility shall be made as follows:
  - a. For a Class II well to be used for enhanced oil recovery processes in a field or project containing aquifers from which hydrocarbons were previously produced, commercial producibility shall be presumed by the Director upon a demonstration by the applicant of historical production having occurred in the project area or field.
  - b. For Class II wells not located in a field or project containing aquifers from which hydrocarbons were previously produced, information such as logs, core data, formation description, formation depth, formation thickness and formation parameters such as permeability and porosity shall be considered by the Director, to the extent such information is available.

**D.** Owners or operators of Class II enhanced oil recovery or enhanced gas recovery wells may request that the Director approve an expansion to the areal extent of an aquifer exemption already in place for a Class II enhanced oil recovery or enhanced gas recovery well for the exclusive purpose of Class VI injection for geologic sequestration. Such requests must be treated as a substantial program revision to the Arizona UIC program under 40 CFR 145.32 and will not be final until approved by EPA.

1. The owner or operator of a Class II enhanced oil recovery or enhanced gas recovery well that requests an expansion of the areal extent of an existing aquifer exemption for the exclusive purpose of Class VI injection for geologic sequestration must define, by narrative description, illustrations, maps or other means, and describe in geographic and/or geometric terms, such as vertical and lateral limits and gradient, that are clear and definite, all aquifers or parts thereof that are requested to be designated as exempted using the criteria in R18-9-A606.
2. In evaluating a request to expand the areal extent of an aquifer exemption of a Class II enhanced oil recovery or enhanced gas recovery well for the purpose of Class VI injection, the Director must determine that the request meets the criteria for exemptions in R18-9-A606. In making the determination, the Director shall consider:
  - a. Current and potential future use of the USDWs to be exempted as drinking water resources;
  - b. The predicted extent of the injected carbon dioxide plume, and any mobilized fluids that may result in degradation of water quality, over the lifetime of the geologic sequestration project, as informed by computational modeling performed pursuant to R18-9-J659(C)(1), in order to ensure that the proposed injection operation will not at any time endanger USDWs including non-exempted portions of the injection formation;
  - c. Whether the areal extent of the expanded aquifer exemption is of sufficient size to account for any possible revisions to the computational model during reevaluation of the area of review, pursuant to R18-9-J659(E) and
  - d. Any information submitted to support a waiver request made by the owner or operator under R18-9-J670 if appropriate.

#### **R18-9-A606. Criteria for Exempted Aquifers**

An aquifer or a portion thereof which meets the criteria for an “USDW” in R18-9-A601(70) may be determined under R18-9-A605 to be an “exempted aquifer” for Class I-V wells if it meets the criteria in subsections (A)(1) through (A)(3) of this Section. Class VI wells must meet the criteria under subsection (A)(4) of this Section.

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 Class 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 technically 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 total dissolved solids content of the ground water is more than 3,000 and less than 10,000 mg/l and it is not reasonably expected to supply a public water system.

4. 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) if it meets the following criteria:
  - a. It does not currently serve as a source of drinking water; and
  - b. The total dissolved solids content of the ground water is more than 3,000 mg/l and less than 10,000 mg/l; and
  - c. It is not reasonably expected to supply a public water system.

#### **PART A. GENERAL PROGRAM REQUIREMENTS**

##### **R18-9-B607. Prohibition of Unauthorized Injection**

Any underground injection, except into a well authorized by rule or authorized by permit under the Arizona UIC program, is prohibited. The construction of any well required to have a permit is prohibited until the permit has been issued.

##### **R18-9-B608. Prohibition of Movement of Fluid into Underground Sources of Drinking Water**

- A. No owner or operator shall construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant into USDWs, if the presence of that contaminant may cause a violation of any primary drinking water regulation under this Article, as shown in Table 1, or may otherwise adversely affect the health of persons. The applicant for a permit shall have the burden of showing that the requirements of this subsection are met.
- B. For Class I, II, III, and VI wells, if any water quality monitoring of an USDW indicates the movement of any contaminant into the USDW, except as authorized under this Article, the Director shall prescribe such additional requirements for construction, corrective action, operation, monitoring, or reporting (including closure of the injection well) as are necessary to prevent such movement. In the case of wells authorized by permit, these additional requirements shall be imposed by modifying the permit in accordance with R18-9-C632 or the permit may be terminated under R18-9-C634 if cause exists, or appropriate enforcement action may be taken if the permit has been violated. In the case of Class V wells authorized by rule see R18-9-I650 through R18-9-I655 in Part I of this Article.
- C. For Class V wells, if at any time the Director learns that a Class V well may cause a violation of primary drinking water regulations under this Article, they shall:
  1. Require the injector to obtain an individual permit;
  2. Order the injector to take such actions (including, where required, closure of the injection well) as may be necessary to prevent the violation; or
  3. Take enforcement action.
- D. Whenever the Director learns that a Class V well may be otherwise adversely affecting the health of persons, they may prescribe such actions as may be necessary to prevent the adverse effect, including any action authorized under subsection (C) of this Section.
- E. Notwithstanding any other provision of this Section, the Director may take emergency action upon receipt of information that a contaminant which is present in or likely to enter a public water system or USDW may present an imminent and substantial endangerment to the health of persons.

##### **R18-9-B609. Prohibition of Hazardous Waste Injection and Class IV Wells**

- A. Hazardous Waste Injection.
  1. The following are prohibited, except as provided in subsection (B)(3):
    - a. The construction of any well for the purpose of hazardous waste injection.
    - b. The operation of any well for the purpose of hazardous waste injection.
  2. The owner or operator of a well for the purpose of hazardous waste injection shall close the well in accordance with this subsection.
  3. The owner or operator of a well for the purpose of hazardous waste injection shall comply with the following requirements regarding closure of the well.
    - a. Prior to abandoning any well for the purpose of hazardous waste injection, the owner or operator shall plug or otherwise close the well in a manner acceptable to the Director.
    - b. The owner or operator of a well for the purpose of hazardous waste injection must notify the Director of intent to abandon the well at least 30 days prior to abandonment.
- B. Class IV.

1. The following are prohibited, except as provided in subsection (B)(3) of this Section:
  - a. The construction of any Class IV well.
  - b. The operation or maintenance of any Class IV well.
2. The owner or operator of a Class IV well shall comply with the requirements of R18-9-H649 regarding closure of Class IV wells.
3. Wells used to inject contaminated groundwater that has been treated and is being reinjected into the same formation that it was drawn are not prohibited by this Section if such injection is approved by the Administrator or the Director pursuant to subsections (a), (b) or (c) below:
  - a. Provisions for cleanup of releases under CERCLA, or
  - b. The requirements and provisions under RCRA, or
  - c. The requirements and provisions under other applicable state laws for corrective and remedial action.

#### **R18-9-B610. Waiver of Requirement by Director**

- A.** When injection does not occur into, through, or above an USDW, the Director may authorize a well or project with less stringent requirements for area of review, construction, mechanical integrity, operation, monitoring, and reporting than required under this Article or R18-9-D636 to the extent that reduction in requirements will not result in an increased risk of movement of fluids into an USDW.
- B.** When injection occurs through or above an USDW, but the radius of endangering influence when computed under R18-9-B612(A) is smaller or equal to the radius of the well, the Director may authorize a well or project with less stringent requirements for operation, monitoring, and reporting than required under R18-9-D636 to the extent that a reduction in requirements will not result in an increased risk of movement of fluids into an USDW.
- C.** When reducing requirements under this Section, the Director shall prepare a fact sheet under R18-9-C619 explaining the reasons for the action.

#### **R18-9-B611. Records**

The Director may require, by written notice on a selective well-by-well basis, an owner or operator of an injection well to establish and maintain records, make reports, conduct monitoring, and provide other information as is deemed necessary to determine whether the owner or operator has acted or is acting in compliance with this Article and Part C of the SDWA or its implementing regulations.

#### **R18-9-B612. Area of Review**

- A.** The area of review for each injection well or each field, project or area of the State shall be determined according to this Section. The Director may solicit input from the owners or operators of injection wells within the State as to which method is most appropriate for each geographic area or field.
- B.** Where the area of review is determined according to the zone of endangering influence:
  1. The zone of endangering influence shall be:
    - a. In the case of application(s) for well permit(s) under R18-9-C616 that area the radius of which is the lateral distance in which the pressures in the injection zone may cause the migration of the injection and/or formation fluid into an USDW; or
    - b. In the case of an application for an area permit under R18-9-C624, the project area plus a circumscribing area the width of which is the lateral distance from the perimeter of the project area, in which the pressures in the injection zone may cause the migration of the injection and/or formation fluid into an USDW.
  2. Computation of the zone of endangering influence may be based upon the parameters listed below and should be calculated for an injection time period equal to the expected life of the injection well or pattern. The following modified Theis equation illustrates one form which the mathematical model may take.

$$r = \left( \frac{2.25KHt}{S10^x} \right)^{1/2}$$

where:

$$X = \frac{4\pi KH(h_w - h_{bo} \times S_p G_b)}{2.3Q}$$

- r = Radius of endangering influence from injection well (length)  
 K = Hydraulic conductivity of the injection zone (length/time)  
 H = Thickness of the injection zone (length)  
 t = Time of injection (time)  
 S = Storage coefficient (dimensionless)

- $Q$  = Injection rate (volume/time)
- $h_{bo}$  = Observed original hydrostatic head of injection zone (length) measured from the base of the lowermost USDW
- $h_w$  = Hydrostatic head of USDW (length) measured from the base of the lowest USDW
- $S_p G_b$  = Specific gravity of fluid in the injection zone (dimensionless)
- $\pi$  = 3.142 (dimensionless)

The above equation is based on the following assumptions:

1. The injection zone is homogenous and isotropic;
  2. The injection zone has infinite area extent;
  3. The injection well penetrates the entire thickness of the injection zone;
  4. The well diameter is infinitesimal compared to "r" when injection time is longer than a few minutes; and
  5. The emplacement of fluid into the injection zone creates instantaneous increase in pressure.
- C.** Where Fixed Radius is used, the following shall apply:
1. In the case of application(s) for well permit(s) under R18-9-C616 a fixed radius around the well of not less than one-quarter mile may be used.
  2. In the case of an application for an area permit under R18-9-C624, a fixed radius width of not less than one-quarter mile for circumscribing area may be used.
  3. In determining the fixed radius, the following factors shall be taken into consideration: Chemistry of injected and formation fluids; hydrogeology; population and ground-water use and dependence; and historical practices in the area.
- D.** If the area of review is determined by a mathematical model pursuant to subsections (B) of this Section, the permissible radius is the result of such calculation even if it is less than one-fourth mile.

#### **R18-9-B613. Mechanical Integrity**

- A.** An injection well has mechanical integrity if:
1. There is no significant leak in the casing, tubing or packer; and
  2. There is no significant fluid movement into an USDW through vertical channels adjacent to the injection well bore.
- B.** One of the following methods must be used to evaluate the absence of significant leaks under subsection (A)(1) of this Section:
1. Following an initial pressure test, monitoring of the tubing-casing annulus pressure with sufficient frequency to be representative, as determined by the Director, while maintaining an annulus pressure different from atmospheric pressure measured at the surface;
  2. Pressure test with liquid or gas; or
  3. Records of monitoring showing the absence of significant changes in the relationship between injection pressure and injection flow rate for the following Class II enhanced recovery wells:
    - a. Existing wells completed without a packer provided that a pressure test has been performed and the data is available and provided further that one pressure test shall be performed at a time when the well is shut down and if the running of such a test will not cause further loss of significant amounts of oil or gas; or
    - b. Existing wells constructed without a long string casing, but with surface casing which terminates at the base of fresh water provided that local geological and hydrological features allow such construction and provided further that the annular space shall be visually inspected. For these wells, the Director shall prescribe a monitoring program which will verify the absence of significant fluid movement from the injection zone into an USDW.
- C.** One of the following methods must be used to determine the absence of significant fluid movement under subsection (A)(2) of this Section:
1. The results of a temperature or noise log;
  2. For Class II only, cementing records demonstrating the presence of adequate cement to prevent such migration;
  3. For Class III wells where the nature of the casing precludes the use of the logging techniques prescribed at subsection (C)(1) of this Section, cementing records demonstrating the presence of adequate cement to prevent such migration; or

4. For Class III wells where the Director elects to rely on cementing records to demonstrate the absence of significant fluid movement, the monitoring program prescribed by R18-9-G647(B) shall be designed to verify the absence of significant fluid movement.
- D.** The Director may allow the use of a test to demonstrate mechanical integrity other than those listed in subsections (B) and (C)(2) of this Section with the written approval of the Administrator.
- E.** In conducting and evaluating the tests enumerated in this Section or others to be allowed by the Director, the owner or operator and the Director shall apply methods and standards generally accepted in the industry. When the owner or operator reports the results of mechanical integrity tests to the Director, they shall include a description of the test(s) and the method(s) used. In making the evaluation, the Director shall review monitoring and other test data submitted since the previous evaluation.
- F.** The Director may require additional or alternative tests if the results presented by the owner or operator under subsection (E) of this Section are not satisfactory to the Director to demonstrate that there is no movement of fluid into or between USDWs resulting from the injection activity.

#### **R18-9-B614. Plugging and Abandoning Class I, II, III, IV, and V Wells**

- A.** Requirements for Class I, II and III wells.
  1. Prior to abandoning Class I, II and III wells, the well shall be plugged with cement in a manner which will not allow the movement of fluids either into or between USDWs. The Director may allow Class III wells to use other plugging materials if the Director is satisfied that such materials will prevent movement of fluids into or between USDWs.
  2. Placement of the cement plugs shall be accomplished by one of the following:
    - a. The Balance method;
    - b. The Dump Bailer method;
    - c. The Two-Plug method; or
    - d. An alternative method approved by the Director, which will reliably provide a comparable level of protection to USDWs.
  3. The well to be abandoned shall be in a state of static equilibrium with the mud weight equalized top to bottom, either by circulating the mud in the well at least once or by a comparable method prescribed by the Director, prior to the placement of the cement plug(s).
  4. The plugging and abandonment plan required under R18-9-D635(15) and R18-9-D636(A)(5) shall, in the case of a Class III project which underlies or is in an aquifer which has been exempted under R18-9-A606, also demonstrate adequate protection of USDWs. The Director shall prescribe aquifer cleanup and monitoring where it is deemed necessary and feasible to insure adequate protection of USDWs.
- B.** Requirements for Class IV wells. Prior to abandoning a Class IV well, the owner or operator shall close the well in accordance with R18-9-H649.
- C.** Requirements for Class V wells.
  1. Prior to abandoning a Class V well, the owner or operator shall close the well in a manner that prevents the movement of fluid containing any contaminant into an USDW, if the presence of that contaminant may cause a violation of any primary drinking water regulation under Table 1 of this Article or may otherwise adversely affect the health of persons.
  2. The owner or operator shall dispose of or otherwise manage any soil, gravel, sludge, liquids, or other materials removed from or adjacent to the well in accordance with all applicable Federal, State, and local regulations and requirements.

#### **R18-9-B615. Transitioning from Class II to Class VI Injection Well**

- A.** Owners and operators that are injecting carbon dioxide for the primary purpose of long-term storage into an oil and gas reservoir must apply for and obtain a Class VI geologic sequestration permit when there is an increased risk to the USDWs compared to Class II operations. In determining if there is an increased risk to USDWs, the owner or operator must consider the factors specified in subsection (B) of this Section.
- B.** The Director shall determine when there is an increased risk to USDWs compared to Class II operations and a Class VI permit is required. In order to make this determination the Director shall consider the following:
  1. Increase in reservoir pressure within the injection zone(s);
  2. Increase in carbon dioxide injection rates;
  3. Decrease in reservoir production rates;
  4. Distance between the injection zone(s) and USDWs;
  5. Suitability of the Class II area of review delineation;

6. Quality of abandoned well plugs within the area of review;
7. The owner's or operator's plan for recovery of carbon dioxide at the cessation of injection;
8. The source and properties of injected carbon dioxide; and
9. Any additional site-specific factors as determined by the Director.

## **PART C. AUTHORIZATION BY PERMIT FOR UNDERGROUND INJECTION**

### **R18-9-C616. Individual Permits; Application for Individual Permits**

- A.** Unless an underground injection well is authorized by rule under R18-9-I650, all injection activities including construction of an injection well are prohibited until the owner or operator is authorized by permit. Authorization by rule for a well or project that has submitted a permit application terminates for the well or project upon the effective date of the permit. Procedures for applications, issuance, and administration of emergency permits are found exclusively under R18-9-C625.
- B.** When a facility or activity is owned by one person but is operated by another person, it is the operator's duty to obtain a permit.
- C.** Any person who performs or proposes an underground injection for which a permit is or will be required shall submit an application to the Director in accordance with the Arizona UIC program as follows:
  1. For existing wells, as expeditiously as practicable.
  2. For new injection wells, except new wells authorized by an existing area permit under R18-9-C624(C), at a reasonable time before construction is expected to begin.
- D.** All applicants for Class I, II, III, and V permits shall provide the following information to the Director, using the application form provided by the Director. Applicants for Class VI permits shall follow the criteria provided in R18-9-J657.
  1. Activities conducted by the applicant which require a permit;
  2. Name, mailing address, and location of the facility for which the application is submitted;
  3. Up to four NAICS codes which best reflect the principal products or services provided by the facility;
  4. The operator's name, address, telephone number, ownership status, and status as Federal, State, private, public, or other entity;
  5. A listing of all state and federal environmental permits or construction approvals received or applied for and other relevant environmental permits;
  6. A topographic map (or other map if a topographic map is unavailable) extending one mile beyond the property boundaries of the source depicting the facility and each of its intake and discharge structures; each of its hazardous waste treatment, storage, or disposal facilities; each well where fluids from the facility are injected underground; and those wells, springs, and other surface water bodies, and drinking water wells listed in public records or otherwise known to the applicant within a quarter mile of the facility property boundary;
  7. A brief description of the nature of the business;
  8. A plugging and abandonment plan that meets the requirements of R18-9-B614 and is acceptable to the Director;
  9. A listing of any historic property or potential historic property as defined by R12-8-301.
- E.** Applicants shall keep records of all data used to complete permit applications and any supplemental information submitted under this Section for a period of at least three years from the date the application is signed.

### **R18-9-C617. Signatories**

- A.** All permit applications, except those submitted for Class II wells, shall be signed as follows:
  1. For a corporation: by a responsible corporate officer. For the purpose of this Section, a responsible corporate officer means:
    - a. A president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation; or
    - b. The manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25 million, if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
  2. For a Partnership or sole proprietorship: by a general Partner or the proprietor, respectively; or
  3. For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this Section, a principal executive officer of a Federal agency includes:



- a. The chief executive officer of the agency; or
  - b. A senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.
- B.** All reports required by permits, other information requested by the Director, and all permit applications submitted for Class II wells under R18-9-C616 shall be signed by a person described in subsection (A) of this Section, or by a duly authorized representative of that person. A person is a duly authorized representative only if:
  - 1. The authorization is made in writing by a person described in subsection (A) of this Section;
  - 2. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility; and
  - 3. The written authorization is submitted to the Director.
- C.** If an authorization under subsection (B) of this Section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of subsection (B) of this Section must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.
- D.** Any person signing a document under subsection (A) or (B) of this Section shall make the following certification:

*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.*

#### **R18-9-C618. Draft Permits**

- A.** Once an application is complete, the Director shall tentatively decide whether to prepare a draft permit or to deny the application.
- B.** If the Director tentatively decides to deny the permit application, they shall issue a notice of intent to deny. A notice of intent to deny the permit application is a type of draft permit which follows the same procedures as any draft permit prepared under this section. If the Director's final decision is that the tentative decision to deny the permit application was incorrect, they shall withdraw the notice of intent to deny and proceed to prepare a draft permit under subsection (D) of this section.
- C.** If the Director decides to prepare a draft permit, it shall contain the following information, to the extent applicable:
  - 1. All conditions under R18-9-D635;
  - 2. All compliance schedules under R18-9-D637;
  - 3. All monitoring requirements under R18-9-D638; and
  - 4. Permit conditions under R18-9-D636.
- D.** All draft permits prepared under this Section shall be accompanied by a brief summary of the basis for the draft permit conditions or the intent to deny, including references to applicable statutory or regulatory provisions and a fact sheet pursuant to R18-9-C619. The Director shall provide the applicant with the draft permit and the fact sheet and allow reasonable time for informal comment by the applicant prior to publicly noticing the draft permit and fact sheet. The Director shall give notice of opportunity for a public hearing and public comment, issue a final permit decision, and respond to comments.

#### **R18-9-C619. Fact Sheet**

- A.** A fact sheet shall be prepared for every draft permit for a UIC facility or activity. The fact sheet shall briefly set forth the principal facts and the significant factual, legal, methodological, and policy questions considered in preparing the draft permit. The Director shall send the fact sheet to the applicant and, on request, to any other person.
- B.** The fact sheet shall include, when applicable:
  - 1. A brief description of the type of facility or activity that is the subject of the draft permit.
  - 2. The type and quantity of wastes, fluids, or pollutants that are proposed to be or are being injected.

3. A brief summary of the basis for the draft permit conditions including references to applicable statutory or regulatory provisions and appropriate supporting references to the administrative record.
4. Reasons why any requested variance or alternatives to required standards do or do not appear justified.
5. A description of the procedures for reaching a final decision on the draft permit, including:
  - a. The beginning and ending dates of the comment period under R18-9-C620 and the address where comments will be received;
  - b. Procedures for requesting a hearing and the nature of that hearing; and
  - c. Any other procedures by which the public may Participate in the final decision.
6. The name and telephone number of a person to contact for additional information.

**R18-9-C620. Public Notice of Permit Actions and Public Comment Period**

- A. The Director shall give public notice that the following actions have occurred:
  1. A draft permit that has been prepared under R18-9-C618 and
  2. A hearing has been scheduled under R18-9-C622.
- B. Public notices may describe more than one permit or permit action.
- C. Public notice of the preparation of a draft permit required under subsection (A) of this Section:
  1. Shall allow at least 30 days for public comment; and
  2. Shall be given at least 30 days before the hearing date.
- D. Public notice of activities described in subsection (A) of this Section shall be given by the following methods:
  1. Delivery of a copy of the notice to:
    - a. The applicant;
    - b. Any affected federal, state, tribal, or local agency, or council of government;
    - c. Federal and state agencies with jurisdiction over fish, shellfish, and wildlife resources, and the State Historic Preservation Office;
    - d. Any person who requested, in writing, notification of the activity;
    - e. Any persons on a contact list developed from past permit proceedings and public outreach; and
    - f. For Class VI injection well UIC permits, mailing or e-mailing a notice to State and local oil and gas regulatory agencies and State agencies regulating mineral exploration and recovery and all agencies that oversee injection wells in the State.
  2. For Major Facilities only, newspaper publication in accordance with A.A.C. R18-1-401(A)(1).
- E. All public notices issued under this Part shall contain the following information:
  1. Name and address of the Department;
  2. Name and address of the permittee or permit applicant and, if different, of the facility or activity regulated by the permit;
  3. A brief description of the business conducted at the facility or activity described in the permit application or the draft permit;
  4. Name, address, and telephone number of a person from whom interested persons may obtain further information, including copies of the draft permit or draft general permit, as the case may be, fact sheet, and the application;
  5. A brief description of the comment procedures, the time and place of any hearing, including a statement of procedures to request a hearing, unless a hearing has already been scheduled, and other procedures that the public may use to participate in the final permit decision; and
  6. Any additional information considered necessary to the permit decision.
- F. In addition to the general public notice described in subsection (E) of this Section, the public notice of hearing under R18-9-C622 shall contain the following information:
  1. Reference to the date of previous public notices relating to the permit;
  2. Date, time, and place of the hearing; and
  3. A brief description of the nature and purpose of the hearing, including the applicable rules and procedures.
- G. In addition to the general public notice described in subsection (E) of this Section, the Director shall deliver a copy of the fact sheet, permit application, and draft permit to all persons identified in subsections (D)(1)(a), (D)(1)(b), and (D)(1)(c).

**R18-9-C621. Public Comments and Requests for Public Hearings**

During the public comment period provided under R18-9-C620, any interested person may submit written comments on the draft permit and may request a public hearing, if no hearing has already been scheduled. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing. All

comments shall be considered in making the final decision and shall be answered as provided in R18-9-C623.

**R18-9-C622. Public Hearings**

- A. The Director shall hold a public hearing whenever they find, on the basis of a request, a significant degree of public interest in a draft permit(s).
- B. The Director may also hold a public hearing at their discretion such as when a hearing might clarify one or more issues involved in the permit decision. The Director may designate a presiding officer if a hearing is held.
- C. Public notice of the hearing shall be given as specified in R18-9-C620.
- D. Any person may submit oral or written statements and data concerning the draft permit. Reasonable limits may be set upon the time allowed for oral statements, and the submission of statements in writing may be required. The public comment period under R18-9-C620 shall automatically be extended to the close of any public hearing under this Section. The hearing officer may also extend the comment period by so stating at the hearing.
- E. An audio recording or written transcript of the hearing shall be made available to the public upon request.

**R18-9-C623. Response to Comments**

- A. At the time that any final permit is issued under R18-9-C627, the Director shall issue a response to comments. This response shall:
  - 1. Specify which provisions, if any, of the draft permit have been changed in the final permit decision, and the reasons for the change; and
  - 2. Briefly describe and respond to all significant comments on the draft permit raised during the public comment period, or during any hearing.
- B. The response to comments shall be available to the public.

**R18-9-C624. Area Permits**

- A. The Director may issue a permit on an area basis, rather than for each well individually, provided that the permit is for injection wells:
  - 1. Described and identified by location in permit application(s) if they are existing wells, except that the Director may accept a single description of wells with substantially the same characteristics;
  - 2. Within the same well field, facility site, reservoir, project, or similar unit located in Arizona;
  - 3. Operated by a single owner or operator;
  - 4. Used to inject fluids other than hazardous waste; and
  - 5. Other than Class VI wells.
- B. Area permits shall specify:
  - 1. The area within which underground injections are authorized; and
  - 2. The requirements for construction, monitoring, reporting, operation, and abandonment, for all wells authorized by the permit.
- C. The area permit may authorize the permittee to construct and operate, convert, or plug and abandon wells within the permit area provided:
  - 1. The permittee notifies the Director at such time as the permit requires;
  - 2. The additional well satisfies the criteria in subsection (A) of this Section and meets the requirements specified in the permit under subsection (B) of this Section; and
  - 3. The cumulative effects of drilling and operation of additional injection wells are considered by the Director during evaluation of the area permit application and are acceptable to the Director.
- D. If the Director determines any well that is constructed pursuant to subsection (C) of this Section does not satisfy any of the requirements of subsections (C)(1) and (2) of this Section the Director may modify the permit under R18-9-C632, terminate under R18-9-C634, or take enforcement action. If the Director determines that cumulative effects are unacceptable, the permit may be modified under R18-9-C632.

**R18-9-C625. Emergency Permits**

- A. Notwithstanding any other provision of this Article, the Director may temporarily permit a specific underground injection if:
  - 1. An imminent and substantial endangerment to the health of persons will result unless a temporary emergency permit is granted; or
  - 2. A substantial and irretrievable loss of oil or gas resources will occur unless a temporary emergency permit is granted to a Class II well; and

- a. Timely application for a permit could not practicably have been made; and
  - b. The injection will not result in the movement of fluids into USDWs; or
- 3. A substantial delay in production of oil or gas resources will occur unless a temporary emergency permit is granted to a new Class II well and the temporary authorization will not result in the movement of fluids into an USDW.

**B. Requirements for issuance.**

- 1. Any temporary permit under subsection (A)(1) of this Section shall be for no longer term than required to prevent the hazard.
- 2. Any temporary permit under subsection (A)(2) of this Section shall be for no longer than 90 days, except that if a permit application has been submitted prior to the expiration of the 90-day period, the Director may extend the temporary permit until final action on the application.
- 3. Any temporary permit under subsection (A)(3) of this Section shall be issued only after a complete permit application has been submitted and shall be effective until final action on the application.
- 4. Notice of any temporary permit under this Section shall be published in accordance with R18-9-C621 within ten days of the issuance of the permit.
- 5. The temporary permit under this Section may be either oral or written. If oral, it must be followed within five calendar days by a written temporary emergency permit.
- 6. The Director shall condition the temporary permit in any manner they determine is necessary to ensure that the injection will not result in the movement of fluids into an USDW.

**R18-9-C626. Effect of a Permit**

- A. Except for Class II and III wells, compliance with a permit during its term constitutes compliance, for purposes of enforcement, with this Article and Part C of the SDWA. However, a permit may be modified, revoked and reissued, or terminated during its term for cause as set forth in R18-9-C632 and R18-9-C634.
- B. The issuance of a permit does not convey any property rights of any sort, or any exclusive privilege.
- C. The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations.

**R18-9-C627. Final Permit Decision and Notification**

- A. Issuance of a final permit decision by the Director shall be accompanied by the permit and an updated fact sheet per R18-9-C619, if applicable, and a notification to the applicant and each person who has submitted written comments or requested notice of the final permit decision. The notice and hearing procedures are subject to either Title 41, Chapter 6, Article 10, or Title 49, Chapter 2, Article 7 of the A.R.S.
- B. The notice shall include:
  - 1. If applicable, the reasons for the denial, revocation or termination, including reference to the statutes or rules on which the decision is based.
  - 2. A description of the party's right to request a hearing and a reference to the procedures for appealing the final permit decision, including the number of days within which an appeal may be filed and the name and telephone number of the Department contact person who can answer questions regarding the appeals process.
  - 3. A reference to the applicant's right to request an informal settlement conference under A.R.S. § 41-1092.06.
- C. If the final permit decision is based on a determination by the Director that the applicable criteria under R18-9-A606 are not satisfied, then that determination may be included as part of the appeal.
- D. The final permit decision shall take effect 30 days after its issuance in accordance with the notification requirements of subsection A of this Section unless stayed pursuant to Title 41, Chapter 6, Article 10, or Title 49, Chapter 2, Article 7 of the A.R.S.
- E. If, under this Article, the issuance, modification, or revocation and reissuance of a permit necessitates a new aquifer exemption or enlargement of a previously approved aquifer exemption, then the issuance, modification, or revocation and reissuance of the permit is appealable, but shall not become effective unless the new aquifer exemption or enlargement of the previously approved aquifer exemption has been approved by the Administrator.
- F. If, under this Article, the issuance, modification, or revocation and reissuance of a permit necessitates an injection depth waiver pursuant to R18-9-J670 of this Article then the issuance, modification, or revocation and

reissuance of the permit is appealable, but shall not become effective until the Director is in receipt of written concurrence from the Administrator.

#### **R18-9-C628. Permit Duration**

- A.** Permits for Class I and Class V wells shall be effective for a fixed term not to exceed ten years. UIC permits for Class II and III wells shall be issued for a period up to the operating life of the facility. UIC permits for Class VI wells shall be issued for the operating life of the facility and the post-injection site care period. The Director shall review each issued Class II, III, and VI well UIC permit at least once every five years to determine whether it should be modified, revoked and reissued, terminated, or a minor modification made as provided in R18-9-C632.
- B.** Except as provided in R18-9-C629, the term of a permit shall not be extended by modification beyond the maximum duration specified in this Section.
- C.** The Director may issue any permit for a duration that is less than the full allowable term under this Section.

#### **R18-9-C629. Continuation of Expiring Permits**

- A.** The conditions of an expiring permit continue in force under A.R.S. § 41-1092.11(A) until the effective date of a new permit if:
  - 1. The permittee has submitted a timely application that is a complete application for a new permit; and
  - 2. The Director, through no fault of the permittee, does not issue a new permit with an effective date on or before the expiration date of the prior permit.
- B.** Permits continued under this Section remain fully effective and enforceable.
- C.** When the permittee is not in compliance with the conditions of the expiring or expired permits the Director may choose to do any or all of the following:
  - 1. Initiate enforcement action based upon the permit that has been continued;
  - 2. Issue a notice of intent to deny the new permit. If the permit is denied, the owner or operator would then be required to cease the activities authorized by the continued permit or be subject to enforcement action for operating without a permit;
  - 3. Issue a new permit under this Article with appropriate conditions; or
  - 4. Take other action as authorized under this Article.
- D.** Upon the effective date of EPA's approval of Arizona's UIC program, the Department shall administer any permit authorized or issued under the EPA UIC program in the state of Arizona, excluding Indian lands. The Director may continue expired or expiring EPA-issued UIC permits until the effective date of a new state-issued UIC permit.

#### **R18-9-C630. Permit Transfer**

- A.** Except as provided in subsection (B) of this Section, a permit may be transferred by the permittee to a new owner or operator only if the permit has been modified or revoked and reissued under R18-9-C632(F)(2), or a minor modification made under R18-9-C633(4), to identify the new permittee and incorporate such other requirements as may be necessary under this Article the Safe Drinking Water Act.
- B.** As an alternative to transfers under subsection (A) of this Section, any UIC permit for a well not injecting hazardous waste or injecting carbon dioxide for geological sequestration may be automatically transferred to a new permittee if:
  - 1. The current permittee notifies the Director at least 30 days in advance of the proposed transfer date referred to in subsection (B)(2) of this Section;
  - 2. The notice includes a written agreement between the existing and new permittees containing a specific date for transfer or permit responsibility, coverage, and liability between them, and the notice demonstrates that the financial responsibility requirements of R18-9-D636(A)(6) will be met by the new permittee; and
  - 3. The Director does not notify the existing permittee and the proposed new permittee of the Director's intent to modify or revoke and reissue the permit. A modification under this Section may also be a minor modification under R18-9-C633. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in subsection (B)(2) of this Section.

**R18-9-C631. Modification; Revocation and Reissuance; or Termination of Permits**

- A.** Permits may only be modified or revoked and reissued pursuant to R18-9-C632 or terminated pursuant to R18-9-C634 either at the request of any interested person, including the permittee, or upon the Director's initiative. All requests shall be made in writing and shall contain facts or reasons supporting the request.
- B.** If the Director decides a request to modify, revoke and reissue, or terminate is not justified, they shall send the requestor a brief written response giving a reason for the decision. Denial of a request to terminate does not require a notice of intent to deny. Denial of a request for modification or revocation and reissuance requires a notice of intent to deny only when the request is made by the permittee, the scope of the request has not previously been requested and denied and the request is not for a minor modification. A notice of intent to deny is a type of draft permit which shall follow the same procedures as any draft permit prepared pursuant to R18-9-C618.
- C.** If the Director preliminarily decides to modify or revoke and reissue a permit under R18-9-C632, they shall prepare a draft permit under R18-9-C618 incorporating the proposed changes and notify the permittee in writing of the reason for the preliminary decision to modify or revoke and reissue a permit with reference to the statute or rule on which the decision is based. The Director may request additional information and, in the case of a modified permit, may require the submission of an updated application. The Director shall require the submission of a new application in the case of revoked and reissued permits.
- D.** In a permit modification under this Section, only those conditions to be modified shall be reopened when a new draft permit is prepared. All other aspects of the existing permit shall remain in effect for the duration of the unmodified permit. When a permit is revoked and reissued under this Section, the entire permit is reopened just as if the permit had expired and was being reissued. During any modification or revocation and reissuance proceeding the permittee shall comply with all conditions of the existing permit until a new final permit is issued.
- E.** Minor modifications pursuant to R18-9-C633 are not subject to the requirements of this Section.
- F.** If the Director preliminarily decides to terminate under R18-9-C634(A)(1), (2) or (3), the Director shall issue a notice of intent to terminate that identifies the reason for the preliminary decision to terminate with reference to the statute or rule on which the decision is based. A notice of intent to terminate is not required when a permittee requests termination under R18-9-C634(A)(4). A notice of intent to terminate is a type of draft permit which shall follow the same procedures as any draft permit prepared pursuant to R18-9-C618.

**R18-9-C632. Modification; Revocation and Reissuance of Permits**

- A.** When the Director receives any information (for example, inspects the facility, receives information submitted by the permittee as required in the permit, receives a request for modification or revocation and reissuance under R18-9-C631, or conducts a review of the permit file) they may determine whether or not one or more of the causes listed in subsections (E) and (F) of this Section for modification or revocation and reissuance or both exist.
- B.** If cause exists, the Director may modify or revoke and reissue the permit accordingly, subject to the limitations of subsection (G) of this Section, and may request an updated application if necessary.
- C.** If cause does not exist under this Section or R18-9-C633, the Director shall not modify or revoke and reissue the permit.
- D.** If a permit modification satisfies the criteria in R18-9-C633 for "minor modifications" the permit may be modified without a draft permit or public review. Otherwise, a draft permit must be prepared and other procedures under this Article must be followed.
- E.** For Class II, Class III or Class VI wells the following may be causes for revocation and reissuance as well as modification; and for all other wells the following may be cause for revocation or reissuance as well as modification when the permittee requests or agrees:
  - 1. There are material and substantial alterations or additions to the permitted facility or activity which occurred after permit issuance which justify the application of permit conditions that are different or absent in the existing permit.
  - 2. Permits other than for Class II and III wells may be modified during their terms for this cause only if the information was not available at the time of permit issuance, other than revised regulations, guidance, or test methods, and would have justified the application of different permit conditions at the time of issuance. For UIC area permits under R18-9-C624, this cause shall include any information indicating that cumulative effects on the environment are unacceptable.

3. The standards or regulations on which the permit was based have been changed by promulgation of new regulations or by judicial decision after the permit was issued. Permits other than those for Class II, Class III or Class VI wells may be modified during their permit terms for this cause only as follows:
    - a. For promulgation of amended standards or regulations, when:
      - i. The permit condition requested to be modified was based on a regulation promulgated under this Article;
      - ii. ADEQ has revised, withdrawn, or modified that portion of the regulation on which the permit condition was based, and
      - iii. A permittee requests modification in accordance with R18-9-C631 within 90 days after *Arizona Administrative Register* notice of the ADEQ action on which the request is based.
    - b. For judicial decisions, a court of competent jurisdiction has remanded and stayed ADEQ promulgated regulations if the remand and stay concern that portion of the regulations on which the permit condition was based and a request is filed by the permittee in accordance with R18-9-C631 within 90 days of judicial remand.
  4. The Director determines if good cause exists for modification of a compliance schedule. Good cause includes unforeseen circumstances, like a strike, a flood, a materials shortage or other events over which the permittee has little or no control and for which there is no reasonably available remedy. See also R18-9-C633 (minor modifications).
  5. Additionally, for Class VI wells, whenever the Director determines that permit changes are necessary based on:
    - a. Area of review reevaluations under R18-9-J659(E)(1);
    - b. Any amendments to the testing and monitoring plan under R18-9-J665(10);
    - c. Any amendments to the injection well plugging plan under R18-9-J667(C);
    - d. Any amendments to the post-injection site care and site closure plan under R18-9-J668(A)(3);
    - e. Any amendments to the emergency and remedial response plan under R18-9-J669(D); or
    - f. A review of monitoring and/or testing results conducted in accordance with permit requirements.
- F.** The following are causes to modify or, alternatively, revoke and reissue a permit:
1. Cause exists for termination under R18-9-C634, and the Director determines that modification or revocation and reissuance is appropriate.
  2. The Director has received notification of a proposed transfer of the permit. A permit also may be modified to reflect a transfer after the effective date of an automatic transfer under R18-9-C630(B) but will not be revoked and reissued after the effective date of the transfer except upon the request of the new permittee.
  3. A determination that the waste being injected is a hazardous waste as defined in A.R.S. § 49-921 either because the definition has been revised, or because a previous determination has been changed.
- G.** Suitability of the facility location will not be considered at the time of permit modification or revocation and reissuance unless new information or standards indicate that a threat to human health or the environment exists which was unknown at the time of permit issuance.

#### **R18-9-C633. Minor Modifications of Permits**

Upon the consent of the permittee, the Director may modify a permit to make the corrections or allowances for changes in the permitted activity listed in this Section, without following the procedures of this Article. Any permit modification not processed as a minor modification under this Section must be made for cause and with a draft permit and public notice as required by R18-9-C632. Minor modifications may only:

1. Correct typographical errors;
2. Require more frequent monitoring or reporting by the permittee;
3. Change an interim compliance date in a schedule of compliance, provided the new date is not more than 120 days after the date specified in the existing permit and does not interfere with attainment of the final compliance date requirement;
4. Allow for a change in ownership or operational control of a facility where the Director determines that no other change in the permit is necessary, provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new permittees has been submitted to the Director;
5. Change quantities or types of fluids injected which are within the capacity of the facility as permitted and, in the judgment of the Director, would not interfere with the operation of the facility or its ability to meet conditions described in the permit and would not change its classification;

6. Change construction requirements approved by the Director pursuant to R18-9-D636(A)(1), provided that any such alteration shall comply with the requirements of this Article;
7. Amend a plugging and abandonment plan that has been updated under R18-9-D636(A)(5); or
8. Amend a Class VI injection well testing and monitoring plan, plugging plan, post-injection site care and site closure plan, or emergency and remedial response plan where the modifications merely clarify or correct the plan, as determined by the Director.

#### **R18-9-C634. Termination of Permits**

- A. The Director may terminate a permit during its term, or deny a permit renewal application for the following causes:
  1. Noncompliance by the permittee with any condition of the permit;
  2. The permittee's failure in the application or during the permit issuance process to disclose fully all relevant facts, or the permittee's misrepresentation of any relevant facts at any time; or
  3. A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or termination; or
  4. The permittee has requested termination of their permit due to the completion of the terms and conditions therein, including proper abandonment or plugging pursuant to R18-9-B614.
- B. The Director shall follow the applicable procedures as required under R18-9-C631(F) in terminating any permit under this Section.

### **PART D: PERMIT CONDITIONS FOR UNDERGROUND INJECTION**

#### **R18-9-D635. Conditions Applicable to All Permits**

The following conditions apply to all UIC permits. All conditions applicable to all permits shall be incorporated into the permits issued under this Article, either expressly or referenced by specific citation. If incorporated by reference, a specific citation to this Section must be given in the permit.

1. The permittee must comply with all conditions of any permit issued under this Article. Any permit noncompliance constitutes a violation of this Article and is grounds for enforcement action; for permit modification, revocation and reissuance, or termination; or for denial of a permit renewal application unless otherwise authorized in an emergency permit under R18-9-C625.
2. If the permittee wishes to continue any activity regulated by permit under this Article after the expiration date of this permit, the permittee must apply for and obtain a new permit.
3. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
4. The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.
5. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control, and related appurtenances, that are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.
6. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.
7. This permit does not convey property rights of any sort, or any exclusive privilege.
8. The permittee shall furnish to the Director, within a time specified, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.
9. The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:
  - a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
  - b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;



- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
  - d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by this Article the SDWA, any substances or parameters at any location.
10. Monitoring and records.
- a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
  - b. The permittee shall retain records of all monitoring information, including the following:
    - i. Calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date of the sample, measurement, report, or application. This period may be extended by request of the Director at any time; and
    - ii. The nature and composition of all injected fluids until three years after the completion of any plugging and abandonment procedures specified under R18-9-D636(A)(5), or under this Article as appropriate. The Director may require the owner or operator to deliver the records to the Director at the conclusion of the retention period.
  - c. Records of monitoring information shall include:
    - i. The date, exact place, and time of sampling or measurements;
    - ii. The individual(s) who performed the sampling or measurements;
    - iii. The date(s) analyses were performed;
    - iv. The individual(s) who performed the analyses;
    - v. The analytical techniques or methods used; and
    - vi. The results of such analyses.
  - d. Owners or operators of Class VI wells shall retain records as specified in Part J of this Article, including R18-9-J659(G), R18-9-J666(6), R18-9-J667(D), R18-9-J668(F), and R18-9-J668(H).
11. All applications, reports, or information submitted to the Director shall be signed and certified as required under R18-9-C617.
12. Reporting requirements.
- a. The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility.
  - b. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity that may result in noncompliance with permit requirements.
  - c. This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under this Article.
  - d. Monitoring results shall be reported at the intervals specified in this permit.
  - e. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 30 days following each schedule date.
  - f. The permittee shall report any noncompliance that may endanger health or the environment within 24 hours, including:
    - i. Any monitoring or other information that indicates any contaminant may cause an endangerment to a USDW; or
    - ii. Any noncompliance with a permit condition or malfunction of the injection system that may cause fluid migration into or between USDWs.

Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within five days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause, the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.
  - g. The permittee shall report all instances of noncompliance not reported under subsections (A)(12)(a), (A)(12)(d), (A)(12)(e), and (A)(12)(f) of this Section, at the time monitoring reports are submitted. The reports shall contain the information listed in subsection (A)(12)(f) of this Section.

- h. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information.
- 13. Except for all new wells authorized by an area permit under R18-9-C624(C), a new injection well may not commence injection until construction is complete; and:
  - a. The permittee has submitted notice of completion of construction to the Director; and
  - b. Either of the following apply:
    - i. The Director has inspected or otherwise reviewed the new injection well and finds it is in compliance with the conditions of the permit; or
    - ii. The permittee has not received notice from the Director of the intent to inspect or otherwise review the new injection well within 13 days of the date of the notice under subsection (A)(13)(a) of this Section, in which case prior inspection or review is waived and the permittee may commence injection. The Director shall include in the notice a reasonable time period in which the well shall be inspected.
- 14. The permittee shall notify the Director at such times as the permit requires before conversion or abandonment of the well or in the case of area permits before closure of the project.
- 15. A Class I, II, or III permit shall include, and a Class V permit may include, conditions that meet the requirements of R18-9-B614 to ensure that plugging and abandonment of the well will not allow the movement of fluids into or between USDWs. Where the plan meets the requirements of R18-9-B614, the Director shall incorporate the plan into the permit as a permit condition. Where the Director's review of an application indicates that the permittee's plan is inadequate, the Director may require the applicant to revise the plan, prescribe conditions meeting the requirements of this subsection, or deny the permit. A Class VI permit shall include conditions that meet the requirements set forth in R18-9-J667. Where the plan meets the requirements of R18-9-J667, the Director shall incorporate it into the permit as a permit condition. For purposes of this subsection, temporary or intermittent cessation of injection operations is not abandonment.
- 16. Within 60 days after plugging a well or at the time of the next quarterly report, whichever is less, the owner or operator shall submit a report to the Director. If the quarterly report is due less than 15 days before completion of plugging, then the report shall be submitted within 60 days. The report shall be certified as accurate by the person who performed the plugging operation. Such report shall consist of either:
  - a. A statement that the well was plugged in accordance with the plan previously submitted to the Director; or
  - b. Where actual plugging differed from the plan previously submitted, an updated version of the plan on the form supplied by the Director, specifying the differences.
- 17. Duty to establish and maintain mechanical integrity.
  - a. The owner or operator of a Class I, II, III or VI well permitted under this Article shall establish mechanical integrity prior to commencing injection or on a schedule determined by the Director. Thereafter the owner or operator of Class I, II, and III wells must maintain mechanical integrity as defined in R18-9-B613 and the owner or operator of Class VI wells must maintain mechanical integrity as defined in R18-9-J664.
  - b. When the Director determines that a Class I, II, III or VI well lacks mechanical integrity pursuant to R18-9-B613 or R18-9-J664 for Class VI, written notice of the determination will be given to the owner or operator. Unless the Director requires immediate cessation, the owner or operator shall cease injection into the well within 48 hours of receipt of the Director's determination. The Director may allow plugging of the well pursuant to the requirements of R18-9-B614 or require the permittee to perform such additional construction, operation, monitoring, reporting, and corrective action as is necessary to prevent the movement of fluid into or between USDWs caused by the lack of mechanical integrity. The owner or operator may resume injection upon written notification from the Director that the owner or operator has demonstrated mechanical integrity pursuant to R18-9-B613.
  - c. The Director may allow the owner or operator of a well that lacks mechanical integrity pursuant to R18-9-B613(A)(1) to continue or resume injection, if the owner or operator has made a satisfactory demonstration that there is no movement of fluid into or between USDWs.

#### **R18-9-D636. Establishing Permit Conditions**

- A.** In addition to conditions required in R18-9-D635, the Director shall establish conditions, as required on a case-by-case basis under R18-9-C628 (Permit Duration), R18-9-D637 (Schedules of Compliance), and R18-9-D638 (Requirements for Recording and Reporting Monitoring Results). Permits for owners or operators of Class VI injection wells shall include conditions meeting the requirements of Part J of this Article. Permits for other wells shall contain the following requirements, when applicable.
1. Construction requirements as set forth in this Article. Existing wells shall achieve compliance with such requirements according to a compliance schedule established as a permit condition. The owner or operator of a proposed new injection well shall submit plans for testing, drilling, and construction as part of the permit application. Except as authorized by an area permit, no construction may commence until a permit has been issued containing construction requirements. New wells shall be in compliance with these requirements prior to commencing injection operations. Changes in construction plans during construction may be approved by the Director as minor modifications as defined under R18-9-C633. No such changes may be physically incorporated into construction of the well prior to approval of the modification by the Director.
  2. Corrective action as set forth in R18-9-D639 and R18-9-J659.
  3. Operation requirements as set forth in this Article; the permit shall establish any maximum injection volumes and/or pressures necessary to assure that fractures are not initiated in the confining zone, that injected fluids do not migrate into any USDW, that formation fluids are not displaced into any USDW, and to assure compliance with the operating requirements under this Article.
  4. Monitoring and reporting requirements as set forth in this Article. The permittee shall be required to identify types of tests and methods used to generate the monitoring data. Monitoring of the nature of injected fluids shall comply with an analytical method prescribed in A.A.C. R9-14-610, or an alternative analytical method approved under A.A.C. R9-14-610(C), or as approved by the Director. A test result from a sample taken to determine compliance with a national primary drinking water standard is valid only if the sample is analyzed by a laboratory that is licensed by the Arizona Department of Health Services, an out-of-state laboratory licensed under A.R.S. § 36-495.14, or a laboratory exempted under A.R.S. § 36-495.02, for the analysis performed.
  5. After a cessation of operations for two years the owner or operator shall plug and abandon the well in accordance with the plan unless they:
    - a. Provide notice to the Director; and
    - b. Describe actions or procedures, satisfactory to the Director, that the owner or operator will take to ensure that the well will not endanger USDWs during the period of temporary abandonment. These actions and procedures shall include compliance with the technical requirements applicable to active injection wells unless waived by the Director.
  6. Financial responsibility.
    - a. The permittee, including the transferor of a permit, is required to demonstrate and maintain financial responsibility and resources to close, plug, and abandon the underground injection operation in a manner prescribed by the Director until:
      - i. The well has been plugged and abandoned in accordance with an approved plugging and abandonment plan pursuant to R18-9-D635(15), R18-9-B614, and R18-9-J667, and submitted a plugging and abandonment report pursuant to R18-9-D635(16); or
      - ii. The well has been converted in compliance with the requirements of R18-9-D635(14); or
      - iii. The transferor of a permit has received notice from the Director that the owner or operator receiving transfer of the permit, the new permittee, has demonstrated financial responsibility for the well.
    - b. The permittee shall show evidence of such financial responsibility to the Director by the submission of a surety bond, or other adequate assurance, such as a financial statement or other materials acceptable to the Director. For Class VI wells, the permittee shall show evidence of such financial responsibility to the Director by the submission of a qualifying instrument, such as a financial statement or other materials acceptable to the Director. The owner or operator of a Class VI well must comply with the financial responsibility requirements set forth in R18-9-J660.
  7. A permit for any Class I, II, III or VI well or injection project that lacks mechanical integrity shall include, and for any Class V well may include, a condition prohibiting injection operations until the permittee shows to the satisfaction of the Director under R18-9-B613 or R18-9-J664 of this Chapter for Class VI, that the well has mechanical integrity.

8. The Director shall impose on a case-by-case basis such additional conditions as are necessary to prevent the migration of fluids into USDWs.
- B.** In addition to conditions required in all permits, the Director shall establish conditions in permits as required on a case-by-case basis, to provide for and assure compliance with all applicable requirements of this Article.
  1. Applicable requirements include, but are not limited to:
    - a. State statutory or regulatory requirements in effect prior to final administrative disposition of a permit; or
    - b. Any requirement in effect prior to the modification or revocation and reissuance of a permit, to the extent allowed under R18-9-C632.
- C.** New or reissued permits, and to the extent allowed under R18-9-C632 modified or revoked and reissued permits, shall incorporate each of the applicable requirements referenced in this Section.
- D.** All permit conditions shall be incorporated either expressly or by reference. If incorporated by reference, a specific citation to the applicable regulations or requirements must be given in the permit.
- E.** Permits shall provide language on duration, expiration and termination.

**R18-9-D637. Compliance Schedule**

- A.** A permit may, when appropriate, specify a schedule for compliance with this Article.
  1. Any compliance schedules shall require compliance as soon as possible, and in no case later than three years after the effective date of the permit.
  2. Except as provided in subsection (B)(1)(b) of this Section, if a permit establishes a compliance schedule that exceeds one year from the date of permit issuance, the schedule shall set forth interim requirements and the dates for their achievement.
    - a. The time between interim dates shall not exceed one year.
    - b. If the time necessary for completion of any interim requirement is more than one year and is not readily divisible into stages for completion, the permit shall specify interim dates for the submission of reports of progress toward completion of the interim requirements and indicate a projected completion date.
  3. The permit shall be written to require that if subsection (A)(1) of this Section is applicable, progress reports be submitted no later than 30 days following each interim date and the final date of compliance.
- B.** A permit applicant or permittee may cease conducting regulated activities at a given time by plugging and abandonment rather than continue to operate and meet permit requirements as follows:
  1. If the permittee decides to cease conducting regulated activities at a given time within the term of a permit which has already been issued:
    - a. The permit may be modified to contain a new or additional schedule leading to timely cessation of activities; or
    - b. The permittee shall cease conducting permitted activities before noncompliance with any interim or final compliance schedule requirement already specified in the permit.
  2. If the decision to cease conducting regulated activities is made before issuance of a permit whose term will include the termination date, the permit shall contain a schedule leading to termination that will ensure timely compliance with the applicable requirements.
  3. If the permittee is undecided whether to cease conducting regulated activities, the Director may issue or modify a permit to contain two schedules as follows:
    - a. Both schedules shall contain an identical interim deadline requiring a final decision on whether to cease conducting regulated activities no later than a date that ensures sufficient time to comply with applicable requirements in a timely manner if the decision is to continue conducting regulated activities;
    - b. One schedule shall lead to timely compliance with applicable requirements;
    - c. The second schedule shall lead to cessation of the regulated activities by a date that ensures timely compliance with applicable requirements; and
    - d. Each permit containing two schedules shall include a requirement that after the permittee has made a final decision under subsection (B)(3)(a) of this Section it shall follow the schedule leading to compliance if the decision is to continue conducting the regulated activities, and follow the schedule leading to termination if the decision is to cease conducting regulated activities.
  4. The applicant's or permittee's decision to cease conducting regulated activities shall be evidenced by a firm public commitment satisfactory to the Director, such as a resolution of the board of Directors of a corporation.

**R18-9-D638. Requirements for Recording and Reporting Monitoring Results**

All permits shall specify:

1. Requirements concerning the proper use, maintenance, and installation, when appropriate, of monitoring equipment or methods, including biological monitoring methods when appropriate;
2. Required monitoring including type, intervals, and frequency sufficient to yield data that are representative of the monitored activity including when appropriate, continuous monitoring; and
3. Applicable reporting requirements based upon the impact of the regulated activity and as specified under this Article. Reporting shall be no less frequent than specified in the above regulations.

**R18-9-D639. Corrective Action**

- A. Applicants for Class I, II, or III injection well permits shall identify the location of all known wells within the injection well's area of review that penetrates the injection zone, or in the case of Class II wells operating over the fracture pressure of the injection formation, all known wells within the area of review penetrating formations affected by the increase in pressure. For such wells that are improperly sealed, completed, or abandoned, the applicant shall also submit a plan consisting of such steps or modifications as are necessary to prevent movement of fluid into USDWs. Where the plan is adequate, the Director shall incorporate it into the permit as a condition. Where the Director's review of an application indicates that the permittee's plan is inadequate, the Director shall require the applicant to revise the plan, prescribe a plan for corrective action as a condition of the permit under subsection (B) through (E) of this Section, or deny the application. The Director may disregard the provisions of R18-9-B612 and this Section when reviewing an application to permit an existing Class II well.
- B. Any permit issued for an existing injection well, other than Class II wells, requiring corrective action shall include a compliance schedule requiring any corrective action accepted or prescribed under subsection (A) of this Section to be completed as soon as possible.
- C. No owner or operator of a new injection well may begin injection until all required corrective action has been taken.
- D. The Director may require as a permit condition that injection pressure be so limited that pressure in the injection zone does not exceed hydrostatic pressure at the site of any improperly completed or abandoned well within the area of review. This pressure limitation shall satisfy the corrective action requirement. Alternatively, such injection pressure limitation can be part of a compliance schedule and last until all other required corrective action has been taken.
- E. When setting corrective action requirements for Class III wells, the Director shall consider the overall effect of the project on the hydraulic gradient in potentially affected USDWs, and the corresponding changes in potentiometric surface(s) and flow direction(s) rather than the discrete effect of each well. If a decision is made that corrective action is not necessary based on the determinations above, the monitoring program required in R18-9-G647(B) shall be designed to verify the validity of such determinations.
- F. In determining the adequacy of corrective action proposed by the applicant under this Section and in determining the additional steps needed to prevent fluid movement into USDWs, the following criteria and factors shall be considered by the Director:
  1. Nature and volume of injected fluid;
  2. Nature of native fluids or by-products of injection;
  3. Potentially affected population;
  4. Geology;
  5. Hydrology;
  6. History of the injection operation;
  7. Completion and plugging records;
  8. Abandonment procedures in effect at the time the well was abandoned; and
  9. Hydraulic connections with USDWs.

**PART E: CLASS I INJECTION WELL REQUIREMENTS****R18-9-E640. Class I; Construction Requirements**

- A. All Class I wells shall be sited in such a fashion that they inject into a formation which is beneath the lowermost formation containing, within one-quarter mile of the well bore, an USDW.
- B. All Class I wells shall be cased and cemented to prevent the movement of fluids into or between USDWs. The casing and cement used in the construction of each newly drilled well shall be designed for the life expectancy

of the well. In determining and specifying casing and cementing requirements, the following factors shall be considered:

1. Depth to the injection zone;
  2. Injection pressure, external pressure, internal pressure, and axial loading;
  3. Hole size;
  4. Size and grade of all casing strings, such as wall thickness, diameter, nominal weight, length, joint Specification, and construction material;
  5. Corrosiveness of injected fluid, formation fluids, and temperatures;
  6. Lithology of injection and confining intervals; and
  7. Type or grade of cement.
- C.** All Class I injection wells, except those municipal wells injecting non-corrosive wastes, shall inject fluids through tubing with a packer set immediately above the injection zone, or tubing with an approved fluid seal as an alternative. The tubing, packer, and fluid seal shall be designed for the expected service.
1. The use of other alternatives to a packer may be allowed with the written approval of the Director. To obtain approval, the operator shall submit a written request to the Director, which shall set forth the proposed alternative and all technical data supporting its use. The Director shall approve the request if the alternative method will reliably provide a comparable level of protection to USDWs. The Director may approve an alternative method solely for an individual well or for general use.
  2. In determining and specifying requirements for tubing, packer, or alternatives the following factors shall be considered:
    - a. Depth of setting;
    - b. Characteristics of injection fluid such as chemical content, corrosiveness, and density;
    - c. Injection pressure;
    - d. Annular pressure;
    - e. Rate, temperature and volume of injected fluid; and
    - f. Size of casing.
- D.** Appropriate logs and other tests shall be conducted during the drilling and construction of new Class I wells. A descriptive report interpreting the results of such logs and tests shall be prepared by a knowledgeable log analyst and submitted to the Director. At a minimum, such logs and tests shall include:
1. Deviation checks on all holes constructed by first drilling a pilot hole, and then enlarging the pilot hole by reaming or another method. Such checks shall be at sufficiently frequent intervals to assure that vertical avenues for fluid migration in the form of diverging holes are not created during drilling.
  2. Such other logs and tests as may be needed after taking into account the availability of similar data in the area of the drilling site, the construction plan, and the need for additional information that may arise from time to time as the construction of the well progresses. In determining which logs and tests shall be required, the following logs shall be considered for use in the following situations:
    - a. For surface casing intended to protect USDWs:
      - i. Resistivity, spontaneous potential, and caliper logs before the casing is installed; and
      - ii. A cement bond, temperature, or density log after the casing is set and cemented.
    - b. For intermediate and long strings of casing intended to facilitate injection:
      - i. Resistivity, spontaneous potential, porosity, and gamma ray logs before the casing is installed;
      - ii. Fracture finder logs; and
      - iii. A cement bond, temperature, or density log after the casing is set and cemented.
- E.** At a minimum, the following information concerning the injection formation shall be determined or calculated for new Class I wells:
1. Fluid pressure;
  2. Temperature;
  3. Fracture pressure;
  4. Other physical and chemical characteristics of the injection matrix; and
  5. Physical and chemical characteristics of the formation fluids.

#### **R18-9-E641. Class I; Operating, Monitoring, and Reporting Requirements**

- A.** Operating requirements shall, at a minimum, specify that:
1. Except during stimulation injection pressure at the wellhead shall not exceed a maximum which shall be calculated so as to assure that the pressure in the injection zone during injection does not initiate new

- fractures or propagate existing fractures in the injection zone. In no case shall injection pressure initiate fractures in the confining zone or cause the movement of injection or formation fluids into an USDW.
2. Injection between the outermost casing protecting USDWs and the well bore is prohibited.
  3. Unless an alternative to a packer has been approved under R18-9-E640(C), the annulus between the tubing and the long string of casings shall be filled with a fluid approved by the Director and a pressure, also approved by the Director, shall be maintained on the annulus.
- B.** Monitoring requirements shall, at a minimum, include:
1. The analysis of the injected fluids with sufficient frequency to yield representative data of their characteristics;
  2. Installation and use of continuous recording devices to monitor injection pressure, flow rate and volume, and the pressure on the annulus between the tubing and the long string of casing;
  3. A demonstration of mechanical integrity pursuant to R18-9-B613 at least once every five years during the life of the well; and
  4. The type, number and location of wells within the area of review to be used to monitor any migration of fluids into and pressure in the USDWs, the parameters to be measured and the frequency of monitoring.
- C.** Reporting requirements shall, at a minimum, include:
1. Quarterly reports to the Director on:
    - a. The physical, chemical and other relevant characteristics of injection fluids;
    - b. Monthly average, maximum and minimum values for injection pressure, flow rate and volume, and annular pressure; and
    - c. The results of monitoring prescribed under subsection (B)(4) of this Section.
  2. Reporting the results, with the first quarterly report after the completion, of:
    - a. Periodic tests of mechanical integrity;
    - b. Any other test of the injection well conducted by the permittee if required by the Director; and
    - c. Any well work over.
- D.** Ambient monitoring.
1. Based on a site-specific assessment of the potential for fluid movement from the well or injection zone and on the potential value of monitoring wells to detect such movement, the Director shall require the owner or operator to develop a monitoring program. At a minimum, the Director shall require monitoring of the pressure buildup in the injection zone annually, including at a minimum, a shut down of the well for a time sufficient to conduct a valid observation of the pressure fall-off curve.
  2. When prescribing a monitoring system the Director may also require:
    - a. Continuous monitoring for pressure changes in the first aquifer overlying the confining zone. When such a well is installed, the owner or operator shall, on a quarterly basis, sample the aquifer and analyze for constituents specified by the Director;
    - b. The use of indirect, geophysical techniques to determine the position of the waste front, the water quality in a formation designated by the Director, or to provide other site specific data;
    - c. Periodic monitoring of the ground water quality in the first aquifer overlying the injection zone;
    - d. Periodic monitoring of the ground water quality in the lowermost USDW; and
    - e. Any additional monitoring necessary to determine whether fluids are moving into or between USDWs.

**R18-9-E642. Class I; Information to be Considered by the Director**

- A.** This Section sets forth the information which must be considered by the Director in authorizing Class I wells.
1. For an existing or converted new Class I well the Director may rely on the existing permit file for those items of information listed in subsections (B), (C) & (D) which are current and accurate in the file.
  2. For a newly drilled Class I well, the Director shall require the submission of all the information listed in subsections (B), (C) & (D) which are current and accurate in the file.
  3. For both existing and new Class I wells certain maps, cross sections, tabulations of wells within the area of review and other data may be included in the application by reference provided they are current, readily available to the Director and sufficiently identified to be retrieved.
- B.** Prior to the issuance of a permit for an existing Class I well to operate or the construction or conversion of a new Class I well the Director shall consider the following:
1. Information required in R18-9-C616;
  2. A map showing the injection well(s) for which a permit is sought and the applicable area of review. Within the area of review, the map must show the number, or name, and location of all producing wells,

- injection wells, abandoned wells, dry holes, surface bodies of water, springs, mines, quarries, water wells and other pertinent surface features including residences and roads. The map should also show faults, if known or suspected. Only information of public record is required to be included on this map;
3. A tabulation of data on all wells within the area of review which penetrate into 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, and any additional information the Director may require;
  4. Maps and cross sections indicating the general vertical and lateral limits of all USDWs within the area of review, their position relative to the injection formation and the direction of water movement, where known, in each USDW which may be affected by the proposed injection;
  5. Maps and cross sections detailing the geologic structure of the local area;
  6. Generalized maps and cross sections illustrating the regional geologic setting;
  7. Proposed operating data:
    - a. Average and maximum daily rate and volume of the fluid to be injected;
    - b. Average and maximum injection pressure; and
    - c. Source and an analysis of the chemical, physical, radiological and biological characteristics of injection fluids;
  8. Proposed formation testing program to obtain an analysis of the chemical, physical and radiological characteristics of and other information on the receiving formation;
  9. Proposed stimulation program;
  10. Proposed injection procedure;
  11. Schematic or other appropriate drawings of the surface and subsurface construction details of the well.
  12. Contingency plans to cope with all shut-ins or well failures so as to prevent migration of fluids into any USDW;
  13. Plans, including maps, for meeting the monitoring requirements in R18-9-E641(B);
  14. For wells within the area of review which penetrate the injection zone but are not properly completed or plugged, the corrective action proposed to be taken under R18-9-D639;
  15. Construction procedures including a cementing and casing program, logging procedures, deviation checks, and a drilling, testing, and coring program; and
  16. A certificate that the applicant has assured, through a performance bond or other appropriate means, the resources necessary to close, plug or abandon the well as required by R18-9-D636(A)(6).
- C.** Prior to granting approval for the operation of a Class I well the Director shall consider the following information:
1. All available logging and testing program data on the well;
  2. A demonstration of mechanical integrity pursuant to R18-9-B613;
  3. The anticipated maximum pressure and flow rate at which the permittee will operate;
  4. The results of the formation testing program;
  5. The actual injection procedure;
  6. The compatibility of injected waste with fluids in the injection zone and minerals in both the injection zone and the confining zone; and
  7. The status of corrective action on defective wells in the area of review.
- D.** Prior to granting approval for the plugging and abandonment of a Class I well the Director shall consider the following information:
1. The type and number of plugs to be used;
  2. The placement of each plug including the elevation of the top and bottom;
  3. The type and grade and quantity of cement to be used;
  4. The method for placement of the plugs; and
  5. The procedure to be used to meet the requirements of R18-9-B614(C).

## **PART F: CLASS II INJECTION WELL REQUIREMENTS**

### **R18-9-F643. Class II; Construction Requirements**

- A.** All new Class II wells shall be sited in such a fashion that they inject into a formation which is separated from any USDW by a confining zone that is free of known open faults or fractures within the area of review.
- B.** All Class II injection wells:



1. Shall be cased and cemented to prevent movement of fluids into or between USDWs. The casing and cement used in the construction of each newly drilled well shall be designed for the life expectancy of the well. In determining and specifying casing and cementing requirements, the following factors shall be considered:
    - a. Depth to the injection zone;
    - b. Depth to the bottom of all USDWs; and
    - c. Estimated maximum and average injection pressures.
  2. In addition the Director may consider information on:
    - a. Nature of formation fluids;
    - b. Lithology of injection and confining zones;
    - c. External pressure, internal pressure, and axial loading;
    - d. Hole size;
    - e. Size and grade of all casing strings; and
    - f. Class of cement.
- C.** The requirements in subsection (B) of this Section need not apply to existing or newly converted Class II wells located in existing fields if:
1. Regulatory controls for casing and cementing existed for those wells at the time of drilling and those wells are in compliance with those controls; and
  2. Well injection will not result in the movement of fluids into an USDW so as to create a significant risk to the health of persons.
- D.** The requirements in subsection (B) of this Section need not apply to newly drilled wells in existing fields if:
1. They meet the requirements of the State for casing and cementing applicable to that field at the time of submission of the State program to the Administrator; and
  2. Well injection will not result in the movement of fluids into an USDW so as to create a significant risk to the health of persons.
- E.** Appropriate logs and other tests shall be conducted during the drilling and construction of new Class II wells. A descriptive report interpreting the results of that portion of those logs and tests which specifically relate to (1) an USDW and the confining zone adjacent to it, and (2) the injection and adjacent formations shall be prepared by a knowledgeable log analyst and submitted to the Director. At a minimum, these logs and tests shall include:
1. Deviation checks on all holes constructed by first drilling a pilot hole and then enlarging the pilot hole, by reaming or another method. Such checks shall be at sufficiently frequent intervals to assure that vertical avenues for fluid movement in the form of diverging holes are not created during drilling.
  2. Such other logs and tests as may be needed after taking into account the availability of similar data in the area of the drilling site, the construction plan, and the need for additional information that may arise from time to time as the construction of the well progresses. In determining which logs and tests shall be required the following shall be considered by the Director in setting logging and testing requirements:
    - a. For surface casing intended to protect USDWs in areas where the lithology has not been determined:
      - i. Electric and caliper logs before casing is installed; and
      - ii. A cement bond, temperature, or density log after the casing is set and cemented.
    - b. For intermediate and long strings of casing intended to facilitate injection:
      - i. Electric, porosity and gamma ray logs before the casing is installed;
      - ii. Fracture finder logs; and
      - iii. A cement bond, temperature, or density log after the casing is set and cemented.
- F.** At a minimum, the following information concerning the injection formation shall be determined or calculated for new Class II wells or projects:
1. Fluid pressure;
  2. Estimated fracture pressure; and
  3. Physical and chemical characteristics of the injection zone.

**R18-9-F644. Class II; Operating, Monitoring, and Reporting Requirements**

- A.** Operating requirements shall, at a minimum, specify that:
1. Injection pressure at the wellhead shall not exceed a maximum which shall be calculated so as to assure that the pressure during injection does not initiate new fractures or propagate existing fractures in the confining zone adjacent to the USDWs. In no case shall injection pressure cause the movement of injection or formation fluids into an USDW.
  2. Injection between the outermost casing protecting USDWs and the well bore shall be prohibited.

**B. Monitoring requirements shall, at a minimum, include:**

1. Monitoring of the nature of injected fluids at time intervals sufficiently frequent to yield data representative of their characteristics;
2. Observation of injection pressure, flow rate, and cumulative volume at least with the following frequencies:
  - a. Weekly for produced fluid disposal operations;
  - b. Monthly for enhanced recovery operations;
  - c. Daily during the injection of liquid hydrocarbons and injection for withdrawal of stored hydrocarbons; and
  - d. Daily during the injection phase of cyclic steam operations; and
  - e. Record one observation of injection pressure, flow rate and cumulative volume at reasonable intervals no greater than 30 days;
3. A demonstration of mechanical integrity pursuant to R18-9-B613 at least once every five years during the life of the injection well;
4. Maintenance of the results of all monitoring until the next permit review; and
5. Hydrocarbon storage and enhanced recovery may be monitored on a field or project basis rather than on an individual well basis by manifold monitoring. Manifold monitoring may be used in cases of facilities consisting of more than one injection well, operating with a common manifold. Separate monitoring systems for each well are not required provided the owner/operator demonstrates that manifold monitoring is comparable to individual well monitoring.

**C. Reporting requirements.**

1. Reporting requirements shall at a minimum include an annual report to the Director summarizing the results of monitoring required under subsection (B) of this Section. Such summary shall include monthly records of injected fluids, and any major changes in characteristics or sources of injected fluid. Previously submitted information may be included by reference.
2. Owners or operators of hydrocarbon storage and enhanced recovery projects may report on a field or project basis rather than an individual well basis where manifold monitoring is used.

**R18-9-F645. Class II; Information to be Considered by the Director**

**A.** This Section sets forth the information which must be considered by the Director in authorizing Class II wells. Certain maps, cross sections, tabulations of wells within the area of review, and other data may be included in the application by reference provided they are current, readily available to the Director and sufficiently identified to be retrieved.

**B.** Prior to the issuance of a permit for an existing Class II well to operate or the construction or conversion of a new Class II well the Director shall consider the following:

1. Information required in R18-9-C616.
2. A map showing the injection well or project area for which a permit is sought and the applicable area of review. Within the area of review, the map must show the number or name and location of all existing producing wells, injection wells, abandoned wells, dry holes, and water wells. The map may also show surface bodies of waters, mines (surface and subsurface), quarries and other pertinent surface features including residences and roads, and faults if known or suspected. Only information of public record and pertinent information known to the applicant is required to be included on this map. This requirement does not apply to existing Class II wells.
3. A tabulation of data reasonably available from public records or otherwise known to the applicant on all wells within the area of review included on the map required under subsection (B)(2) of this Section which penetrate the proposed injection zone or, in the case of Class II wells operating over the fracture pressure of the injection formation, all known wells within the area of review which penetrate formations affected by the increase in pressure. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of plugging and completion, and any additional information the Director may require. In cases where the information would be repetitive and the wells are of similar age, type, and construction the Director may elect to only require data on a representative number of wells. This requirement does not apply to existing Class II wells.
4. Proposed operating data:
  - a. Average and maximum daily rate and volume of fluids to be injected;
  - b. Average and maximum injection pressure; and
  - c. Source and an appropriate analysis of the chemical and physical characteristics of the injection fluid.

5. Appropriate geological data on the injection zone and confining zone including lithologic description, geological name, thickness and depth.
  6. Geologic name and depth to bottom of all USDWs which may be affected by the injection.
  7. Schematic or other appropriate drawings of the surface and subsurface construction details of the well.
  8. In the case of new injection wells the corrective action proposed to be taken by the applicant under R18-9-D639.
  9. A certificate that the applicant has assured through a performance bond or other appropriate means, the resources necessary to close, plug or abandon the well as required by R18-9-D636(A)(6).
- C.** In addition the Director may consider the following:
1. Proposed formation testing program to obtain the information required by R18-9-F643(F);
  2. Proposed stimulation program;
  3. Proposed injection procedure;
  4. Proposed contingency plans, if any, to cope with well failures so as to prevent migration of contaminating fluids into an USDW;
  5. Plans for meeting the monitoring requirements of R18-9-F644(B).
- D.** Prior to granting approval for the operation of a Class II well the Director shall consider the following information:
1. All available logging and testing program data on the well;
  2. A demonstration of mechanical integrity pursuant to R18-9-B613;
  3. The anticipated maximum pressure and flow rate at which the permittee will operate;
  4. The results of the formation testing program;
  5. The actual injection procedure; and
  6. For new wells the status of corrective action on defective wells in the area of review.
- E.** Prior to granting approval for the plugging and abandonment of a Class II well the Director shall consider the following information:
1. The type, and number of plugs to be used;
  2. The placement of each plug including the elevation of top and bottom;
  3. The type, grade, and quantity of cement to be used;
  4. The method of placement of the plugs; and
  5. The procedure to be used to meet the requirements of R18-9-B614(A).

## **PART G: CLASS III INJECTION WELL REQUIREMENTS**

### **R18-9-G646. Class III; Construction Requirements**

- A.** All new Class III wells shall be cased and cemented to prevent the migration of fluids into or between USDWs. The Director may waive the cementing requirement for new wells in existing projects or portions of existing projects where they have substantial evidence that no contamination of USDWs would result. The casing and cement used in the construction of each newly drilled well shall be designed for the life expectancy of the well. In determining and specifying casing and cementing requirements, the following factors shall be considered:
1. Depth to the injection zone;
  2. Injection pressure, external pressure, internal pressure, axial loading, etc.;
  3. Hole size;
  4. Size and grade of all casing strings, such as wall thickness, diameter, nominal weight, length, joint specification, and construction material;
  5. Corrosiveness of injected fluids and formation fluids;
  6. Lithology of injection and confining zones; and
  7. Type and grade of cement.
- B.** Appropriate logs and other tests shall be conducted during the drilling and construction of new Class III wells. A descriptive report interpreting the results of such logs and tests shall be prepared by a knowledgeable log analyst and submitted to the Director. The logs and tests appropriate to each type of Class III well shall be determined based on the intended function, depth, construction and other characteristics of the well, availability of similar data in the area of the drilling site and the need for additional information that may arise from time to time as the construction of the well progresses. Deviation checks shall be conducted on all holes where pilot holes and reaming are used, unless the hole will be cased and cemented by circulating cement to the surface.

Where deviation checks are necessary they shall be conducted at sufficiently frequent intervals to assure that vertical avenues for fluid migration in the form of diverging holes are not created during drilling.

- C. Where the injection zone is a formation which is naturally water-bearing the following information concerning the injection zone shall be determined or calculated for new Class III wells or projects:
  - 1. Fluid pressure;
  - 2. Fracture pressure; and
  - 3. Physical and chemical characteristics of the formation fluids.
- D. Where the injection formation is not a water-bearing formation, the information in subsection (C)(2) of this Section must be submitted.
- E. Where injection is into a formation which contains water with less than 10,000 mg/l TDS monitoring wells shall be completed into the injection zone and into any USDWs above the injection zone which could be affected by the mining operation. These wells shall be located in such a fashion as to detect any excursion of injection fluids, process by-products, or formation fluids outside the mining area or zone. If the operation may be affected by subsidence or catastrophic collapse the monitoring wells shall be located so that they will not be physically affected.
- F. Where injection is into a formation which does not contain water with less than 10,000 mg/l TDS, no monitoring wells are necessary in the injection stratum.
- G. Where the injection wells penetrate an USDW in an area subject to subsidence or catastrophic collapse an adequate number of monitoring wells shall be completed into the USDW to detect any movement of injected fluids, process by-products or formation fluids into the USDW. The monitoring wells shall be located outside the physical influence of the subsidence or catastrophic collapse.
- H. In determining the number, location, construction and frequency of monitoring of the monitoring wells the following criteria shall be considered:
  - 1. The population relying on the USDW affected or potentially affected by the injection operation;
  - 2. The proximity of the injection operation to points of withdrawal of drinking water;
  - 3. The local geology and hydrology;
  - 4. The operating pressures and whether a negative pressure gradient is being maintained;
  - 5. The nature and volume of the injected fluid, the formation water, and the process by-products; and
  - 6. The injection well density.

#### **R18-9-G647. Class III; Operating, Monitoring, and Reporting Requirements**

- A. Operating requirements prescribed shall, at a minimum, specify that:
  - 1. Except during well stimulation, injection pressure at the wellhead shall be calculated so as to assure that the pressure in the injection zone during injection does not initiate new fractures or propagate existing fractures in the injection zone. In no case, shall injection pressure initiate fractures in the confining zone or cause the migration of injection or formation fluids into an USDW.
  - 2. Injection between the outermost casing protecting USDWs and the well bore is prohibited.
- B. Monitoring requirements shall, at a minimum, specify:
  - 1. Monitoring of the nature of injected fluids with sufficient frequency to yield representative data on its characteristics. Whenever the injection fluid is modified to the extent that the analysis required by R18-9-G648(B)(7)(c) is incorrect or incomplete, a new analysis as required by R18-9-G648(B)(7)(c) shall be provided to the Director.
  - 2. Monitoring of injection pressure and either flow rate or volume semi-monthly, or metering and daily recording of injected and produced fluid volumes as appropriate.
  - 3. Demonstration of mechanical integrity pursuant to R18-9-B613 at least once every five years during the life of the well for salt solution mining.
  - 4. Monitoring of the fluid level in the injection zone semi-monthly, where appropriate and monitoring of the parameters chosen to measure water quality in the monitoring wells required by R18-9-G646(E), semi-monthly.
  - 5. Quarterly monitoring of wells required by R18-9-G646(G).
  - 6. All Class III wells may be monitored on a field or project basis rather than an individual well basis by manifold monitoring. Manifold monitoring may be used in cases of facilities consisting of more than one injection well, operating with a common manifold. Separate monitoring systems for each well are not required provided the owner/operator demonstrates that manifold monitoring is comparable to individual well monitoring.

- C. Reporting requirements shall, at a minimum, include:
1. Quarterly reporting to the Director on required monitoring;
  2. Results of mechanical integrity and any other periodic test required by the Director reported with the first regular quarterly report after the completion of the test; and
  3. Monitoring may be reported on a project or field basis rather than individual well basis where manifold monitoring is used.

**R18-9-G648. Class III; Information to be Considered by the Director**

- A. This Section sets forth the information which must be considered by the Director in authorizing Class III wells. Certain maps, cross sections, tabulations of wells within the area of review, and other data may be included in the application by reference provided they are current, readily available to the Director and sufficiently identified to be retrieved.
- B. Prior to the issuance of a permit for an existing Class III well or area to operate or the construction of a new Class III well the Director shall consider the following:
1. Information required in R18-9-C616.
  2. A map showing the injection well or project area for which a permit is sought and the applicable area of review. Within the area of review, the map must show the number or name and location of all existing producing wells, injection wells, abandoned wells, dry holes, public water systems and water wells. The map may also show surface bodies of waters, mines (surface and subsurface) quarries and other pertinent surface features including residences and roads, and faults if known or suspected. Only information of public record and pertinent information known to the applicant is required to be included on this map.
  3. A tabulation of data reasonably available from public records or otherwise known to the applicant on wells within the area of review included on the map required under subsection (B)(2) of this Section which 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 completion, and any additional information the Director may require. In cases where the information would be repetitive and the wells are of similar age, type, and construction the Director may elect to only require data on a representative number of wells.
  4. Maps and cross sections indicating the vertical limits of all USDWs within the area of review, their position relative to the injection formation, and the direction of water movement, where known, in every USDW which may be affected by the proposed injection;
  5. Maps and cross sections detailing the geologic structure of the local area;
  6. Generalized map and cross sections illustrating the regional geologic setting;
  7. Proposed operating data:
    - a. Average and maximum daily rate and volume of fluid to be injected;
    - b. Average and maximum injection pressure; and
    - c. Qualitative analysis and ranges in concentrations of all constituents of injected fluids. If the information is confidential pursuant to R18-9-A603 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 as part of any enforcement investigation.
  8. Proposed formation testing program to obtain the information required by R18-9-G646(C).
  9. Proposed stimulation program;
  10. Proposed injection procedure;
  11. Schematic or other appropriate drawings of the surface and subsurface construction details of the well;
  12. Plans (including maps) for meeting the monitoring requirements of R18-9-G647(B);
  13. Expected changes in pressure, native fluid displacement, direction of movement of injection fluid;
  14. Contingency plans to cope with all shut-ins or well failures so as to prevent the migration of contaminating fluids into USDWs;
  15. A certificate that the applicant has assured, through a performance bond, or other appropriate means, the resources necessary to close, plug, or abandon the well as required by R18-9-D636(A)(5); and
  16. The corrective action proposed to be taken under R18-9-D639.
- C. Prior to granting approval for the operation of a Class III well the Director shall consider the following information:
1. All available logging and testing data on the well;

2. A satisfactory demonstration of mechanical integrity for all new wells and for all existing salt solution wells pursuant to R18-9-B613;
  3. The anticipated maximum pressure and flow rate at which the permittee will operate;
  4. The results of the formation testing program;
  5. The actual injection procedures; and
  6. The status of corrective action on defective wells in the area of review.
- D.** Prior to granting approval for the plugging and abandonment of a Class III well the Director shall consider the following information:
1. The type and number of plugs to be used;
  2. The placement of each plug including the elevation of the top and bottom;
  3. The type, grade and quantity of cement to be used;
  4. The method of placement of the plugs; and
  5. The procedure to be used to meet the requirements of R18-9-B614(A).

## **PART H: CLASS IV INJECTION WELL REQUIREMENTS**

### **R18-9-H649. Class IV; Closure Requirements and Remediation**

- A.** Closure.
1. Prior to abandoning any Class IV well, the owner or operator shall plug or otherwise close the well in a manner acceptable to the Director.
  2. The owner or operator of a Class IV well must notify the Director of intent to abandon the well at least 30 days prior to abandonment.
- B.** Remediation.
1. Injection wells used to inject contaminated groundwater that has been treated and is being injected into the same formation from which it was drawn are authorized by rule for the life of the well if such subsurface emplacement of fluids is approved by the Administrator or the Director pursuant to subsections (a), (b) or (c) below:
    - a. Provisions for cleanup of releases under CERCLA, or
    - b. The requirements and provisions under RCRA, or
    - c. The requirements and provisions under other applicable state laws for corrective and remedial action.

## **PART I: CLASS V INJECTION WELL REQUIREMENTS**

### **R18-9-I650. Class V; General Requirements**

- A.** The following requirements apply to Class V Wells authorized by rule:
1. A Class V Injection well is authorized by rule subject to the conditions under this Section.
  2. Well authorization under this Section expires upon the effective date of a permit issued pursuant to R18-9-I651, R18-9-C616, R18-9-C624, R18-9-C625, or upon proper closure of the well.
  3. An owner or operator of a well that is authorized by rule pursuant to this Section is prohibited from injecting into the well:
    - a. Upon the effective date of an applicable permit denial;
    - b. Upon failure to submit a permit application in a timely manner pursuant to R18-9-I651 or R18-9-C616;
    - c. Upon failure to submit inventory information in a timely manner pursuant to R18-9-I652; or
    - d. Upon failure to comply with a request for information in a timely manner pursuant to R18-9-I653.
  4. Submission of the following is required in order to transfer ownership of a well that is authorized by rule pursuant to this Section:
    - a. An inventory, and
    - b. A Class V authorized by rule transfer fee pursuant to R18-14-111(3).
- B.** The following requirements apply for all Class V Wells:
1. With certain exceptions listed in subsection (B)(2) of this Section, Class V injection activity is “authorized by rule,” meaning owners and operators must comply with all the requirements of this Article but do not have to get an individual permit. Well authorization expires once the injection well has been properly closed.
  2. A Class V well requires a permit and shall no longer be authorized by rule upon any of the following:

- a. Failure to comply with the prohibition of movement standard in R18-9-B608(A).
  - b. The Director specifically requires a Class V permit for the well to operate pursuant to R18-9-I651. In which case rule authorization expires upon the effective date of the permit issued, or you are prohibited from injecting into your well upon:
    - i. Failure to submit a permit application in a timely manner as specified in a notice from the Director; or
    - ii. Upon the effective date of permit denial.
  - c. Failure to submit inventory information as required under R18-9-I652.
  - d. Failure to comply with the Director's request for additional information under R18-9-I653 in a timely manner.
- 3. Prior to abandoning a Class V well, the owner or operator shall meet the plugging requirements in R18-9-B614(C).
  - 4. In limited cases, the Director may authorize the conversion (reclassification) of a motor vehicle waste disposal well to another type of Class V well. Motor vehicle wells may only be converted if: all motor vehicle fluids are segregated by physical barriers and are not allowed to enter the well; and, injection of motor vehicle waste is unlikely based on a facility's compliance history and records showing proper waste disposal. The use of a semi-permanent plug as the means to segregate waste is not sufficient to convert a motor vehicle waste disposal well to another type of Class V well.

**R18-9-I651. Class V; Requiring a Permit**

- A. The Director may require the owner or operator of any Class V injection well authorized by rule under this Article to apply for and obtain an individual or area UIC permit. Cases where individual or area UIC permits may be required include:
  - 1. The injection well is not in compliance with any requirement under this Article or A.R.S. Title 49, Chapter 2, Article 3.3;
  - 2. The injection well is not or no longer is within the category of wells and types of well operations authorized in the rule; or
  - 3. The protection of USDWs requires that the injection operation be regulated by requirements, such as for corrective action, monitoring and reporting, or operation, which are not contained in the rule.
- B. If an individual or area UIC permit is required, the Director shall notify the discharger in writing of the decision. The notice shall include:
  - 1. A brief statement of the reasons for the decision,
  - 2. An application form,
  - 3. A statement setting a deadline to file the application,
  - 4. A statement that on the effective date of issuance or denial of the individual or area UIC permit, coverage by rule will automatically terminate.
  - 5. The applicant's right to appeal the individual permit requirement under A.R.S. § 49-323 and the name and telephone number of the Department contact person who can answer questions regarding the appeals process.
- C. An owner or operator of a well authorized by rule may request to be excluded from the coverage of this Section by applying for an individual or area UIC permit. The owner or operator shall submit an application under R18-9-C616 with reasons supporting the request to the Director. The Director may grant any such requests.

**R18-9-I652. Class V; Inventory Requirements for Class V Wells Authorized by Rule**

- A. The owner or operator of an injection well authorized by rule under R18-9-I650 shall submit inventory information to the Director. Such an owner or operator is prohibited from injecting into the well upon failure to submit inventory information for the well within the timeframe specified in subsection (D) of this Section.
- B. As part of the inventory, the Director shall require and the owner/operator shall provide at least the following information:
  - 1. Facility name and location;
  - 2. Name and address of legal contact;
  - 3. Ownership of facility;
  - 4. Nature and type of injection well; and
  - 5. Operating status of injection well.
- C. Upon approval of the Arizona UIC Program, the Director shall notify all known owners or operators of injection wells of their duty to submit inventory information in the manner specified by the Director.

- D.** The owner or operator of an injection well shall submit inventory information no later than one year after the effective date of the Arizona UIC program. The Director need not require inventory information from any facility with interim status under RCRA.

**R18-9-I653. Class V; Requiring Other Information**

- A.** In addition to the inventory requirements under R18-9-I652, the Director may require the owner or operator of any well authorized by rule under this Article to submit information as deemed necessary by the Director to determine whether a well may be endangering an USDW in violation of R18-9-B608 of this Part.
- B.** Such information requirements may include, but are not limited to:
1. Performance of ground-water monitoring and the periodic submission of reports of such monitoring;
  2. An analysis of injected fluids, including periodic submission of such analyses; and
  3. A description of the geologic strata through and into which injection is taking place.
- C.** Any request for information under this Section shall be made in writing, and include a brief statement of the reasons for requiring the information. An owner and operator shall submit the information within the time period(s) provided in the notice.
- D.** An owner or operator of an injection well authorized by rule under this Part is prohibited from injecting into the well upon failure of the owner or operator to comply with a request for information within the time period(s) specified by the Director pursuant to subsection (C) of this Section. An owner or operator of a well prohibited from injection under this Section shall not resume injection except under a permit issued pursuant to R18-9-I651; R18-9-C616, R18-9-C624, or R18-9-C625.

**R18-9-I654. Class V; Prohibition of Class V Cesspools and Motor Vehicle Waste Disposal Wells**

The construction and operation of cesspools and motor vehicle waste disposal wells are prohibited.

**R18-9-I655. Class V; Prohibition of Non-Experimental Class V Wells for Geologic Sequestration**

The construction, operation or maintenance of any non-experimental Class V geologic sequestration well is prohibited.

**PART J: CLASS VI INJECTION WELL REQUIREMENTS**

**R18-9-J656. Class VI; Applicability**

- A.** This Part establishes criteria and standards for underground injection control programs to regulate any Class VI carbon dioxide geologic sequestration injection wells.
- B.** This Part applies to any well used to inject carbon dioxide specifically for the purpose of geologic sequestration.
- C.** This Part also applies to owners or operators of permit- or rule-authorized Class V experimental carbon dioxide injection projects who seek to apply for Class VI geologic sequestration permit for their well or wells. Owners or operators seeking to convert existing Class I, Class II, or Class V experimental wells to Class VI geologic sequestration wells must demonstrate to the Director that the wells were engineered and constructed to meet the requirements of R18-9-J661 and ensure protection of USDWs, in lieu of requirements at R18-9-J661 and R18-9-J662. A converted well must still meet all other requirements under Part F of this Article.
- D.** The following definitions apply to this Part and govern for Class VI wells to the extent that these definitions conflict with those in R18-9-A601:
1. "Area of review" means the region surrounding the geologic sequestration project where USDWs may be endangered by the injection activity. The area of review is delineated using computational modeling that accounts for the physical and chemical properties of all phases of the injected carbon dioxide stream and displaced fluids, and is based on available site characterization, monitoring, and operational data as set forth in R18-9-J659.
  2. "Carbon dioxide plume" means the extent underground, in three dimensions, of an injected carbon dioxide stream.
  3. "Carbon dioxide stream" means carbon dioxide that has been captured from an emission source, plus incidental associated substances derived from the source materials and the capture process, and any substances added to the stream to enable or improve the injection process. This Part does not apply to any carbon dioxide stream that meets the definition of a hazardous waste under A.R.S. § 49-921.
  4. "Confining zone" means a geologic formation, group of formations, or part of a formation stratigraphically overlying the injection zone(s) that acts as barrier to fluid movement. For Class VI wells operating under



an injection depth waiver, confining zone means a geologic formation, group of formations, or part of a formation stratigraphically overlying and underlying the injection zone(s).

5. "Corrective action" means the use of Director-approved methods to ensure that wells within the area of review do not serve as conduits for the movement of fluids into USDWs.
6. "Geologic sequestration" means the long-term containment of a gaseous, liquid, or supercritical carbon dioxide stream in subsurface geologic formations. This term does not apply to carbon dioxide capture or transport.
7. "Geologic sequestration project" means an injection well or wells used to emplace a carbon dioxide stream beneath the lowermost formation containing a USDW; or, wells used for geologic sequestration of carbon dioxide that have been granted a waiver of the injection depth requirements pursuant to requirements at R18-9-J670; or, wells used for geologic sequestration of carbon dioxide that have received an expansion to the areal extent of an existing Class II enhanced oil recovery or enhanced gas recovery aquifer exemption pursuant to R18-9-A605 and R18-9-A606. It includes the subsurface three-dimensional extent of the carbon dioxide plume, associated area of elevated pressure, and displaced fluids, as well as the surface area above that delineated region.
8. "Injection zone" means a geologic formation, group of formations, or part of a formation that is of sufficient areal extent, thickness, porosity, and permeability to receive carbon dioxide through a well or wells associated with a geologic sequestration project.
9. "Post-injection site care" means appropriate monitoring and other actions, including corrective action, needed following cessation of injection to ensure that USDWs are not endangered, as required under R18-9-J668.
10. "Pressure front" means the zone of elevated pressure that is created by the injection of carbon dioxide into the subsurface. For the purposes of this Part, the pressure front of a carbon dioxide plume refers to a zone where there is a pressure differential sufficient to cause the movement of injected fluids or formation fluids into a USDW.
11. "Site closure" means the point/time, as determined by the Director following the requirements under R18-9-J668, at which the owner or operator of a geologic sequestration site is released from post-injection site care responsibilities.
12. "Transmissive fault" or "fracture" means a fault or fracture that has sufficient permeability and vertical extent to allow fluids to move between formations.

#### **R18-9-J657. Class VI; Required Permit Information**

- A.** This Section sets forth the information which must be considered by the Director in authorizing Class VI wells. For converted Class I, Class II, or Class V experimental wells, certain maps, cross sections, tabulations of wells within the area of review and other data may be included in the application by reference provided they are current, readily available to the Director, and sufficiently identified to be retrieved.
- B.** Prior to the issuance of a permit for the construction of a new Class VI well or the conversion of an existing Class I, Class II, or Class V well to a Class VI well, the owner or operator shall submit, pursuant to R18-9-J666, and the Director shall consider the following:
  1. Information required in R18-9-C616(D)(1) through (9);
  2. A map showing the injection well for which a permit is sought and the applicable area of review consistent with R18-9-J659. Within the area of review, the map must show 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, surface bodies of water, springs, mines (surface and subsurface), quarries, water wells, other pertinent surface features including structures intended for human occupancy, State, Tribal, and Territory boundaries, and roads. The map should also show faults, if known or suspected. Only information of public record is required to be included on this map;
  3. Information on the geologic structure and hydrogeologic properties of the proposed storage site and overlying formations, including:
    - a. Maps and cross sections of the area of review;
    - b. 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;
    - c. 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;
- d. Geomechanical information on fractures, stress, ductility, rock strength, and in situ fluid pressures within the confining zone(s);
  - e. 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
  - f. Geologic and topographic maps and cross sections illustrating regional geology, hydrogeology, and the geologic structure of the local area.
4. A tabulation of all wells within the area of review which penetrate the injection or confining zone(s). Such data must include a description of each well's type, construction, date drilled, location, depth, record of plugging and/or completion, and any additional information the Director may require;
  5. 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;
  6. Baseline geochemical data on subsurface formations, including all USDWs in the area of review;
  7. Proposed operating data for the proposed geologic sequestration site:
    - a. Average and maximum daily rate and volume and/or mass and total anticipated volume and/or mass of the carbon dioxide stream;
    - b. Average and maximum injection pressure;
    - c. The source(s) of the carbon dioxide stream; and
    - d. An analysis of the chemical and physical characteristics of the carbon dioxide stream.
  8. Proposed pre-operational formation testing program to obtain an analysis of the chemical and physical characteristics of the injection zone(s) and confining zone(s) and that meets the requirements at R18-9-J662;
  9. Proposed stimulation program, a description of stimulation fluids to be used and a determination that stimulation will not interfere with containment;
  10. Proposed procedure to outline steps necessary to conduct injection operation;
  11. Schematics or other appropriate drawings of the surface and subsurface construction details of the well;
  12. Injection well construction procedures that meet the requirements of R18-9-J661;
  13. Proposed area of review and corrective action plan that meets the requirements under R18-9-J659;
  14. A demonstration, satisfactory to the Director, that the applicant has met the financial responsibility requirements under R18-9-J660;
  15. Proposed testing and monitoring plan required by R18-9-J665;
  16. Proposed injection well plugging plan required by R18-9-J667(B);
  17. Proposed post-injection site care and site closure plan required by R18-9-J668(A);
  18. At the Director's discretion, a demonstration of an alternative post-injection site care timeframe required by R18-9-J668(C);
  19. Proposed emergency and remedial response plan required by R18-9-J669;
  20. A list of contacts, submitted to the Director, for those States, Tribes, and Territories identified to be within the area of review of the Class VI project based on information provided in subsection (B)(2) of this Section;
  21. A listing of any historic property or potential historic property as defined by R12-8-301, and
  22. Any other information requested by the Director.
- C.** The Director shall notify, in writing, any States, Tribes, or Territories within the area of review of the Class VI project based on information provided in subsections (B)(2) and (B)(20) of this Section of the permit application.
- D.** Prior to granting approval for the operation of a Class VI well, the Director shall consider the following information:
1. The final area of review based on modeling, using data obtained during logging and testing of the well and the formation as required by subsections (D)(2), (3), (4), (6), (7), and (10) of this Section;
  2. Any relevant updates, based on data obtained during logging and testing of the well and the formation as required by subsections (D)(3), (4), (6), (7), and (10) of this Section, to the information on the geologic structure and hydrogeologic properties of the proposed storage site and overlying formations, submitted to satisfy the requirements of subsection (B)(3) of this Section;

3. Information on the compatibility of the carbon dioxide stream with fluids in the injection zone(s) and minerals in both the injection and the confining zone(s), based on the results of the formation testing program, and with the materials used to construct the well;
  4. The results of the formation testing program required at subsection (B)(8) of this Section;
  5. Final injection well construction procedures that meet the requirements of R18-9-J661;
  6. The status of corrective action on wells in the area of review;
  7. All available logging and testing program data on the well required by R18-9-J662;
  8. A demonstration of mechanical integrity pursuant to R18-9-J664;
  9. Any updates to the proposed area of review and corrective action plan, testing and monitoring plan, injection well plugging plan, post-injection site care and site closure plan, or the emergency and remedial response plan submitted under subsection (B) of this Section, which are necessary to address new information collected during logging and testing of the well and the formation as required by all subsections of this Section, and any updates to the alternative post-injection site care timeframe demonstration submitted under subsection (B) of this Section, which are necessary to address new information collected during the logging and testing of the well and the formation as required by all subsections of this Section; and
  10. Any other information requested by the Director.
- E. Owners or operators seeking a waiver of the requirement to inject below the lowermost USDW must also refer to R18-9-J670 and submit a supplemental report, as required at R18-9-J670. The supplemental report is not part of the permit application.

**R18-9-J658. Class VI; Minimum Criteria for Siting**

- A. Owners or operators of Class VI wells must demonstrate to the satisfaction of the Director that the wells will be sited in areas with a suitable geologic system. The owners or operators must demonstrate that the geologic system comprises:
1. An injection zone(s) of sufficient areal extent, thickness, porosity, and permeability to receive the total anticipated volume of the carbon dioxide stream.
  2. Confining zone(s) free of transmissive faults or fractures and of sufficient areal extent and integrity to contain the injected carbon dioxide stream and displaced formation fluids and allow injection at proposed maximum pressures and volumes without initiating or propagating fractures in the confining zone(s).
- B. The Director may require owners or operators of Class VI wells to identify and characterize additional zones that will impede vertical fluid movement, are free of faults and fractures that may interfere with containment, allow for pressure dissipation, and provide additional opportunities for monitoring, mitigation, and remediation.

**R18-9-J659. Class VI; Area of Review and Corrective Action**

- A. The area of review is the region surrounding the geologic sequestration project where USDWs may be endangered by the injection activity. The area of review is delineated using computational 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.
- B. The owner or operator of a Class VI well must prepare, maintain, and comply with a plan to delineate the area of review for a proposed geologic sequestration project, periodically reevaluate the delineation, and perform corrective action that meets the requirements of this Section and is acceptable to the Director. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit. As a part of the permit application for approval by the Director, the owner or operator must submit an area of review and corrective action plan that includes the following information:
1. The method for delineating the area of review that meets the requirements of subsection (C) of this Section, including the model to be used, assumptions that will be made, and the site characterization data on which the model will be based.
  2. A description of:
    - a. The minimum fixed frequency, not to exceed five years, at which the owner or operator proposes to reevaluate the area of review;
    - b. The monitoring and operational conditions that would warrant a reevaluation of the area of review prior to the next scheduled reevaluation as determined by the minimum fixed frequency established in subsection (B)(2)(a) of this Section.
    - c. How monitoring and operational data will be used to inform an area of review reevaluation; and

- d. How corrective action will be conducted to meet the requirements of subsection (D) of this Section, including what corrective action will be performed prior to injection and what, if any, portions of the area of review will have corrective action addressed on a phased basis and how the phasing will be determined; how corrective action will be adjusted if there are changes in the area of review; and how site access will be guaranteed for future corrective action.
- C. Owners or operators of Class VI wells must perform the following actions to delineate the area of review and identify all wells that require corrective action:
  - 1. Predict, using existing site characterization, monitoring and operational data, and computational modeling, the projected lateral and vertical migration of the carbon dioxide plume and formation fluids in the subsurface from the commencement of injection activities until the plume movement ceases, until pressure differentials sufficient to cause the movement of injected fluids or formation fluids into a USDW are no longer present, or until the end of a fixed time period as determined by the Director. The model must:
    - a. Be based on detailed geologic data collected to characterize the injection zone(s), confining zone(s) and any additional zones; and anticipated operating data, including injection pressures, rates, and total volumes over the proposed life of the geologic sequestration project;
    - b. Take into account any geologic heterogeneities, other discontinuities, data quality, and their possible impact on model predictions; and
    - c. Consider potential migration through faults, fractures, and artificial penetrations.
  - 2. Using methods approved by the Director, identify all penetrations, including active and abandoned wells and underground mines, in the area of review that may penetrate the confining zone(s). Provide a description of each well's type, construction, date drilled, location, depth, record of plugging and/or completion, and any additional information the Director may require; and
  - 3. Determine which abandoned wells in the area of review have been plugged in a manner that prevents the movement of carbon dioxide or other fluids that may endanger USDWs, including use of materials compatible with the carbon dioxide stream.
- D. Owners or operators of Class VI wells must perform corrective action on all wells in the area of review that are determined to need corrective action, using methods designed to prevent the movement of fluid into or between USDWs, including use of materials compatible with the carbon dioxide stream, where appropriate.
- E. At the minimum fixed frequency, not to exceed five years, as specified in the area of review and corrective action plan, or when monitoring and operational conditions warrant, owners or operators must:
  - 1. Reevaluate the area of review in the same manner specified in subsection (C)(1) of this Section;
  - 2. Identify all wells in the reevaluated area of review that require corrective action in the same manner specified in subsection (C) of this Section;
  - 3. Perform corrective action on wells requiring corrective action in the reevaluated area of review in the same manner specified in subsection (C) of this Section; and
  - 4. Submit an amended area of review and corrective action plan or demonstrate to the Director through monitoring data and modeling results that no amendment to the area of review and corrective action plan is needed. Any amendments to the area of review and corrective action plan must be approved by the Director, must be incorporated into the permit, and are subject to the permit modification requirements under R18-9-C632 or R18-9-C633, as appropriate.
- F. The emergency and remedial response plan and the demonstration of financial responsibility must account for the area of review delineated as specified in subsection (C)(1) of this Section or the most recently evaluated area of review delineated under subsection (E) of this Section, regardless of whether or not corrective action in the area of review is phased.
- G. All modeling inputs and data used to support area of review reevaluations under subsection (E) of this Section shall be retained for ten years.

**R18-9-J660. Class VI; Financial Responsibility**

- A. The owner or operator must demonstrate and maintain financial responsibility as determined by the Director that meets the following conditions:
  - 1. The financial responsibility instrument(s) used must be from the following list of qualifying instruments:
    - a. Trust Funds.
    - b. Surety Bonds.
    - c. Letter of Credit.
    - d. Insurance.
    - e. Self Insurance (i.e., Financial Test and Corporate Guarantee).

- f. Escrow Account.
- g. Any other instrument(s) satisfactory to the Director.
- 2. The qualifying instrument(s) must be sufficient to cover the cost of:
  - a. Corrective action under R18-9-J659;
  - b. Injection well plugging under R18-9-J667;
  - c. Post injection site care and site closure under R18-9-J668; and
  - d. Emergency and remedial response under R18-9-J669.
- 3. The financial responsibility instrument(s) must be sufficient to address endangerment of USDWs.
- 4. The qualifying financial responsibility instrument(s) must comprise protective conditions of coverage.
  - a. Protective conditions of coverage must include at a minimum cancellation, renewal, and continuation provisions, specifications on when the provider becomes liable following a notice of cancellation if there is a failure to renew with a new qualifying financial instrument, and requirements for the provider to meet a minimum rating, minimum capitalization, and ability to pass the bond rating when applicable.
    - i. Cancellation--for purposes of this Part, an owner or operator must provide that their financial mechanism may not cancel, terminate or fail to renew except for failure to pay such financial instrument. If there is a failure to pay the financial instrument, the financial institution may elect to cancel, terminate, or fail to renew the instrument by sending notice by certified mail to the owner or operator and the Director. The cancellation must not be final for 120 days after receipt of cancellation notice. The owner or operator must provide an alternate financial responsibility demonstration within 60 days of notice of cancellation, and if an alternate financial responsibility demonstration is not acceptable (or possible), any funds from the instrument being cancelled must be released within 60 days of notification by the Director.
    - ii. Renewal--for purposes of this Part, owners or operators must renew all financial instruments, if an instrument expires, for the entire term of the geologic sequestration project. The instrument may be automatically renewed as long as the owner or operator has the option of renewal at the face amount of the expiring instrument. The automatic renewal of the instrument must, at a minimum, provide the holder with the option of renewal at the face amount of the expiring financial instrument.
    - iii. Cancellation, termination, or failure to renew may not occur and the financial instrument will remain in full force and effect in the event that on or before the date of expiration: The Director deems the facility abandoned; or the permit is terminated or revoked or a new permit is denied; or closure is ordered by the Director or a U.S. district court or other court of competent jurisdiction; or the owner or operator is named as debtor in a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code; or the amount due is paid.
- 5. The qualifying financial responsibility instrument(s) must be approved by the Director.
  - a. The Director shall consider and approve the financial responsibility demonstration for all the phases of the geologic sequestration project prior to issue a Class VI permit under R18-9-J657.
  - b. The owner or operator must provide any updated information related to their financial responsibility instrument(s) on an annual basis and if there are any changes, the Director must evaluate, within a reasonable time, the financial responsibility demonstration to confirm that the instrument(s) used remain adequate for use. The owner or operator must maintain financial responsibility requirements regardless of the status of the Director's review of the financial responsibility demonstration.
  - c. The Director may disapprove the use of a financial instrument if they determine that it is not sufficient to meet the requirements of this Section.
- 6. The owner or operator may demonstrate financial responsibility by using one or multiple qualifying financial instruments for specific phases of the geologic sequestration project.
  - a. In the event that the owner or operator combines more than one instrument for a specific geologic sequestration phase such combination must be limited to instruments that are not based on financial strength or performance, for example trust funds, surety bonds guaranteeing payment into a trust fund, letters of credit, escrow account, and insurance. In this case, it is the combination of mechanisms, rather than the single mechanism, which must provide financial responsibility for an amount at least equal to the current cost estimate.
  - b. When using a third-party instrument to demonstrate financial responsibility, the owner or operator must provide a proof that the third-party providers either have passed financial strength requirements

based on credit ratings; or has met a minimum rating, minimum capitalization, and ability to pass the bond rating when applicable.

- c. An owner or operator using certain types of third-party instruments must establish a standby trust to enable ADEQ to be party to the financial responsibility agreement without ADEQ being the beneficiary of any funds. The standby trust fund must be used along with other financial responsibility instruments (e.g., surety bonds, letters of credit, or escrow accounts) to provide a location to place funds if needed.
  - d. An owner or operator may deposit money to an escrow account to cover financial responsibility requirements; this account must segregate funds sufficient to cover estimated costs for Class VI (geologic sequestration) financial responsibility from other accounts and uses.
  - e. An owner or operator or its guarantor may use self insurance to demonstrate financial responsibility for geologic sequestration projects. In order to satisfy this requirement the owner or operator must meet a Tangible Net Worth of an amount approved by the Director, have a Net working capital and tangible net worth each at least six times the sum of the current well plugging, post injection site care and site closure cost, have assets located in the United States amounting to at least 90 percent of total assets or at least six times the sum of the current well plugging, post injection site care and site closure cost, and must submit a report of its bond rating and financial information annually. In addition the owner or operator must either: Have a bond rating test of AAA, AA, A, or BBB as issued by Standard & Poor's or Aaa, Aa, A, or Baa as issued by Moody's; or meet all of the following five financial ratio thresholds: A ratio of total liabilities to net worth less than 2.0; a ratio of current assets to current liabilities greater than 1.5; a ratio of the sum of net income plus depreciation, depletion, and amortization to total liabilities greater than 0.1; A ratio of current assets minus current liabilities to total assets greater than -0.1; and a net profit (revenues minus expenses) greater than 0.
  - f. An owner or operator who is not able to meet corporate financial test criteria may arrange a corporate guarantee by demonstrating that its corporate parent meets the financial test requirements on its behalf. The parent's demonstration that it meets the financial test requirement is insufficient if it has not also guaranteed to fulfill the obligations for the owner or operator.
  - g. An owner or operator may obtain an insurance policy to cover the estimated costs of geologic sequestration activities requiring financial responsibility. This insurance policy must be obtained from a third party provider.
- B.** The requirement to maintain adequate financial responsibility and resources is directly enforceable regardless of whether the requirement is a condition of the permit.
- 1. The owner or operator must maintain financial responsibility and resources until:
    - a. The Director receives and approves the completed post-injection site care and site closure plan; and
    - b. The Director approves site closure.
  - 2. The owner or operator may be released from a financial instrument in the following circumstances:
    - a. The owner or operator has completed the phase of the geologic sequestration project for which the financial instrument was required and has fulfilled all its financial obligations as determined by the Director, including obtaining financial responsibility for the next phase of the geologic sequestration project, if required; or
    - b. The owner or operator has submitted a replacement financial instrument and received written approval from the Director accepting the new financial instrument and releasing the owner or operator from the previous financial instrument.
- C.** The owner or operator must have a detailed written estimate, in current dollars, of the cost of performing corrective action on wells in the area of review, plugging the injection well(s), post-injection site care and site closure, and emergency and remedial response.
- 1. The cost estimate must be performed for each phase separately and must be based on the costs to the regulatory agency of hiring a third party to perform the required activities. A third party is a party who is not within the corporate structure of the owner or operator.
  - 2. During the active life of the geologic sequestration project, the owner or operator must adjust the cost estimate for inflation within 60 days prior to the anniversary date of the establishment of the financial instrument(s) used to comply with subsection (A) of this Section and provide this adjustment to the Director. The owner or operator must also provide to the Director written updates of adjustments to the cost estimate within 60 days of any amendments to the area of review and corrective action plan as required under R18-9-J659, the injection well plugging plan under R18-9-J667, the post-injection site care

and site closure plan as required under R18-9-J668, and the emergency and remedial response plan as required under R18-9-J669.

3. The Director must approve any decrease or increase to the initial cost estimate. During the active life of the geologic sequestration project, the owner or operator must revise the cost estimate no later than 60 days after the Director has approved the request to modify the area of review and corrective action plan as required under R18-9-J659, the injection well plugging plan under R18-9-J667, the post-injection site care and site closure plan as required under R18-9-J668, and the emergency and response plan as required under R18-9-J669, if the change in the plan increases the cost. If the change to the plans decreases the cost, any withdrawal of funds must be approved by the Director. Any decrease to the value of the financial assurance instrument must first be approved by the Director. The revised cost estimate must be adjusted for inflation as specified at subsection (C)(2) of this Section.
  4. Whenever the current cost estimate increases to an amount greater than the face amount of a financial instrument currently in use, the owner or operator, within 60 days after the increase, must either cause the face amount to be increased to an amount at least equal to the current cost estimate and submit evidence of such increase to the Director, or obtain other financial responsibility instruments to cover the increase. Whenever the current cost estimate decreases, the face amount of the financial assurance instrument may be reduced to the amount of the current cost estimate only after the owner or operator has received written approval from the Director.
- D.** The owner or operator must notify the Director by certified mail of adverse financial conditions such as bankruptcy that may affect the ability to carry out injection well plugging and post-injection site care and site closure.
1. In the event that the owner or operator or the third party provider of a financial responsibility instrument is going through a bankruptcy, the owner or operator must notify the Director by certified mail of the commencement of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming the owner or operator as debtor, within ten days after commencement of the proceeding.
  2. A guarantor of a corporate guarantee must make such a notification to the Director if they are named as debtor, as required under the terms of the corporate guarantee.
  3. An owner or operator who fulfills the requirements of subsection (A) of this Section by obtaining a trust fund, surety bond, letter of credit, escrow account, or insurance policy will be deemed to be without the required financial assurance in the event of bankruptcy of the trustee or issuing institution, or a suspension or revocation of the authority of the trustee institution to act as trustee of the institution issuing the trust fund, surety bond, letter of credit, escrow account, or insurance policy. The owner or operator must establish other financial assurance within 60 days after such an event.
- E.** The owner or operator must provide an adjustment of the cost estimate to the Director within 60 days of notification by the Director, if the Director determines during the annual evaluation of the qualifying financial responsibility instrument(s) that the most recent demonstration is no longer adequate to cover the cost of corrective action as required under R18-9-J659, injection well plugging under R18-9-J667, post-injection site care and site closure as required under R18-9-J668, and emergency and remedial response as required under R18-9-J669.
- F.** The Director must approve the use and length of pay-in-periods for trust funds or escrow accounts.

#### **R18-9-J661. Class VI; Injection Well Construction Requirements**

- A.** The owner or operator must ensure that all Class VI wells are constructed and completed to:
1. Prevent the movement of fluids into or between USDWs or into any unauthorized zones;
  2. Permit the use of appropriate testing devices and workover tools; and
  3. Permit continuous monitoring of the annulus space between the injection tubing and long string casing.
- B.** Casing and Cementing of Class VI Wells.
1. Casing and cement or other materials used in the construction of each Class VI well must have sufficient structural strength and be designed for the life of the geologic sequestration project. All well materials must be compatible with fluids with which the materials may be expected to come into contact and must meet or exceed standards developed for such materials by the American Petroleum Institute, ASTM International, or comparable standards acceptable to the Director. The casing and cementing program must be designed to prevent the movement of fluids into or between USDWs. In order to allow the Director to determine and specify casing and cementing requirements, the owner or operator must provide the following information:
    - a. Depth to the injection zone(s);

- b. Injection pressure, external pressure, internal pressure, and axial loading;
  - c. Hole size;
  - d. Size and grade of all casing strings (wall thickness, external diameter, nominal weight, length, joint specification, and construction material);
  - e. Corrosiveness of the carbon dioxide stream and formation fluids;
  - f. Down-hole temperatures;
  - g. Lithology of injection and confining zone(s);
  - h. Type or grade of cement and cement additives; and
  - i. Quantity, chemical composition, and temperature of the carbon dioxide stream.
2. Surface casing must extend through the base of the lowermost USDW and be cemented to the surface through the use of a single or multiple strings of casing and cement.
  3. At least one long string casing, using a sufficient number of centralizers, must extend to the injection zone and must be cemented by circulating cement to the surface in one or more stages.
  4. Circulation of cement may be accomplished by staging. The Director may approve an alternative method of cementing in cases where the cement cannot be recirculated to the surface, provided the owner or operator can demonstrate by using logs that the cement does not allow fluid movement behind the well bore.
  5. Cement and cement additives must be compatible with the carbon dioxide stream and formation fluids and of sufficient quality and quantity to maintain integrity over the design life of the geologic sequestration project. The integrity and location of the cement shall be verified using technology capable of evaluating cement quality radially and identifying the location of channels to ensure that USDWs are not endangered.
- C. Tubing and packer.**
1. Tubing and packer materials used in the construction of each Class VI well must be compatible with fluids with which the materials may be expected to come into contact and must meet or exceed standards developed for such materials by the American Petroleum Institute, ASTM International, or comparable standards acceptable to the Director.
  2. All owners or operators of Class VI wells must inject fluids through tubing with a packer set at a depth opposite a cemented interval at the location approved by the Director.
  3. In order for the Director to determine and specify requirements for tubing and packer, the owner or operator must submit the following information:
    - a. Depth of setting;
    - b. Characteristics of the carbon dioxide stream (chemical content, corrosiveness, temperature, and density) and formation fluids;
    - c. Maximum proposed injection pressure;
    - d. Maximum proposed annular pressure;
    - e. Proposed injection rate (intermittent or continuous) and volume and/or mass of the carbon dioxide stream;
    - f. Size of tubing and casing; and
    - g. Tubing tensile, burst, and collapse strengths.

**R18-9-J662. Class VI; Logging, Sampling, and Testing Prior to Well Operation**

- A.** During the drilling and construction of a Class VI injection well, the owner or operator must run appropriate logs, surveys and tests to determine or verify the depth, thickness, porosity, permeability, and lithology of, and the salinity of any formation fluids in all relevant geologic formations to ensure conformance with the injection well construction requirements under R18-9-J661 and to establish accurate baseline data against which future measurements may be compared. The owner or operator must submit to the Director a descriptive report prepared by a knowledgeable log analyst that includes an interpretation of the results of such logs and tests. At a minimum, such logs and tests must include:
1. Deviation checks during drilling on all holes constructed by drilling a pilot hole which is enlarged by reaming or another method. Such checks must be at sufficiently frequent intervals to determine the location of the borehole and to ensure that vertical avenues for fluid movement in the form of diverging holes are not created during drilling; and
  2. Before and upon installation of the surface casing:
    - a. Resistivity, spontaneous potential, and caliper logs before the casing is installed; and
    - b. A cement bond and variable density log to evaluate cement quality radially, and a temperature log after the casing is set and cemented.



3. Before and upon installation of the long string casing:
    - a. Resistivity, spontaneous potential, porosity, caliper, gamma ray, fracture finder logs, and any other logs the Director requires for the given geology before the casing is installed; and
    - b. A cement bond and variable density log, and a temperature log after the casing is set and cemented.
  4. A series of tests designed to demonstrate the internal and external mechanical integrity of injection wells, which may include:
    - a. A pressure test with liquid or gas;
    - b. A tracer survey such as oxygen-activation logging;
    - c. A temperature or noise log;
    - d. A casing inspection log; and
  5. Any alternative methods that provide equivalent or better information and that are required by and/or approved of by the Director.
- B.** The owner or operator must take whole cores or sidewall cores of the injection zone and confining system and formation fluid samples from the injection zone(s), and must submit to the Director a detailed report prepared by a log analyst that includes: Well log analyses (including well logs), core analyses, and formation fluid sample information. The Director may accept information on cores from nearby wells if the owner or operator can demonstrate that core retrieval is not possible and that such cores are representative of conditions at the well. The Director may require the owner or operator to core other formations in the borehole.
- C.** The owner or operator must record the fluid temperature, pH, conductivity, reservoir pressure, and static fluid level of the injection zone(s).
- D.** At a minimum, the owner or operator must determine or calculate the following information concerning the injection and confining zone(s):
1. Fracture pressure;
  2. Other physical and chemical characteristics of the injection and confining zone(s); and
  3. Physical and chemical characteristics of the formation fluids in the injection zone(s).
- E.** Upon completion, but prior to operation, the owner or operator must conduct the following tests to verify hydrogeologic characteristics of the injection zone(s):
1. A pressure fall-off test; and,
  2. A pump test; or
  3. Injectivity tests.
- F.** The owner or operator must provide the Director with the opportunity to witness all logging and testing by this Part. The owner or operator must submit a schedule of such activities to the Director 30 days prior to conducting the first test and submit any changes to the schedule 30 days prior to the next scheduled test.

#### **R18-9-J663. Class VI; Injection Well Operating Requirements**

- A.** Except during stimulation, the owner or operator must ensure that injection pressure does not exceed 90 percent of the fracture pressure of the injection zone(s) so as to ensure that the injection does not initiate new fractures or propagate existing fractures in the injection zone(s). In no case may injection pressure initiate fractures in the confining zone(s) or cause the movement of injection or formation fluids that endangers a USDW. Pursuant to requirements at R18-9-J657(B)(9), all stimulation programs must be approved by the Director as part of the permit application and incorporated into the permit.
- B.** Injection between the outermost casing protecting USDWs and the well bore is prohibited.
- C.** The owner or operator must fill the annulus between the tubing and the long string casing with a non-corrosive fluid approved by the Director. The owner or operator must maintain on the annulus a pressure that exceeds the operating injection pressure, unless the Director determines that such requirement might harm the integrity of the well or endanger USDWs.
- D.** Other than during periods of well workover (maintenance) approved by the Director in which the sealed tubing-casing annulus is disassembled for maintenance or corrective procedures, the owner or operator must maintain mechanical integrity of the injection well at all times.
- E.** The owner or operator must install and use:
1. Continuous recording devices to monitor: The injection pressure; the rate, volume and/or mass, and temperature of the carbon dioxide stream; and the pressure on the annulus between the tubing and the long string casing and annulus fluid volume; and
  2. Alarms and automatic surface shut-off systems or, at the discretion of the Director, down-hole shut-off systems for onshore wells or, other mechanical devices that provide equivalent protection.

- F.** If a shutdown (such as down-hole or at the surface) is triggered or a loss of mechanical integrity is discovered, the owner or operator must immediately investigate and identify as expeditiously as possible the cause of the shutoff. If, upon such investigation, the well appears to be lacking mechanical integrity, or if monitoring required under subsection (E) of this Section otherwise indicates that the well may be lacking mechanical integrity, the owner or operator must:
1. Immediately cease injection;
  2. Take all steps reasonably necessary to determine whether there may have been a release of the injected carbon dioxide stream or formation fluids into any unauthorized zone;
  3. Notify the Director within 24 hours;
  4. Restore and demonstrate mechanical integrity to the satisfaction of the Director prior to resuming injection; and
  5. Notify the Director when injection can be expected to resume.

**R18-9-J664. Class VI; Mechanical Integrity**

- A.** A Class VI well has mechanical integrity if:
1. There is no significant leak in the casing, tubing, or packer; and
  2. There is no significant fluid movement into a USDW through channels adjacent to the injection well bore.
- B.** To evaluate the absence of significant leaks under subsection (A)(1) of this Section, owners or operators must, following an initial annulus pressure test, continuously monitor injection pressure, rate, injected volumes; pressure on the annulus between tubing and long-string casing; and annulus fluid volume as specified in R18-9-J663;
- C.** At least once per year, the owner or operator must use one of the following methods to determine the absence of significant fluid movement under subsection (A)(2) of this Section:
1. An approved tracer survey such as an oxygen-activation log; or
  2. A temperature or noise log.
- D.** If required by the Director, at a frequency specified in the testing and monitoring plan required at R18-9-J665, the owner or operator must run a casing inspection log to determine the presence or absence of corrosion in the long-string casing.
- E.** The Director may require any other test to evaluate mechanical integrity under subsections (A)(1) or (A)(2) of this Section. Also, the Director may allow the use of a test to demonstrate mechanical integrity other than those listed above with the written approval of the Administrator. To obtain approval for a new mechanical integrity test, the Director must submit a written request to the Administrator setting forth the proposed test and all technical data supporting its use.
- F.** In conducting and evaluating the tests enumerated in this Section or others to be allowed by the Director, the owner or operator and the Director must apply methods and standards generally accepted in the industry. When the owner or operator reports the results of mechanical integrity tests to the Director, they shall include a description of the test(s) and the method(s) used. In making his/her evaluation, the Director must review monitoring and other test data submitted since the previous evaluation.
- G.** The Director may require additional or alternative tests if the results presented by the owner or operator under subsections (A) through (F) of this Section are not satisfactory to the Director to demonstrate that there is no significant leak in the casing, tubing, or packer, or to demonstrate that there is no significant movement of fluid into a USDW resulting from the injection activity as stated in subsections (A)(1) and (A)(2) of this Section.

**R18-9-J665. Class VI; Testing and Monitoring Requirements**

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:

1. Analysis of the carbon dioxide stream with sufficient frequency to yield data representative of its chemical and physical characteristics;
2. Installation and use, except during well workovers as defined in R18-9-J663, 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;

3. Corrosion monitoring of the well materials for loss of mass, thickness, cracking, pitting, and other signs of corrosion, which must be performed on a quarterly basis to ensure that the well components meet the minimum standards for material strength and performance set forth in R18-9-J661, by:
  - a. Analyzing coupons of the well construction materials placed in contact with the carbon dioxide stream; or
  - b. Routing the carbon dioxide stream through a loop constructed with the material used in the well and inspecting the materials in the loop; or
  - c. Using an alternative method approved by the Director;
4. 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 including:
  - a. The location and number of monitoring wells based on specific information about the geologic sequestration project, including injection rate and volume, geology, the presence of artificial penetrations, and other factors; and
  - b. The monitoring frequency and spatial distribution of monitoring wells based on baseline geochemical data that has been collected under R18-9-J657 and on any modeling results in the area of review evaluation required by R18-9-J659(C).
5. A demonstration of external mechanical integrity pursuant to R18-9-J664(C) at least once per year until the injection well is plugged; and, if required by the Director, a casing inspection log pursuant to requirements under R18-9-J664(D) at a frequency established in the testing and monitoring plan;
6. A pressure fall-off test at least once every five years unless more frequent testing is required by the Director based on site-specific information;
7. 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) by using:
  - a. Direct methods in the injection zone(s); and,
  - b. Indirect methods (e.g., seismic, electrical, gravity, or electromagnetic surveys and/or down-hole carbon dioxide detection tools), unless the Director determines, based on site-specific geology, that such methods are not appropriate;
8. The Director may require surface air monitoring and/or soil gas monitoring to detect movement of carbon dioxide that could endanger a USDW.
  - a. Design of Class VI surface air and/or soil gas monitoring must be based on potential risks to USDWs within the area of review;
  - b. The monitoring frequency and spatial distribution of surface air monitoring and/or soil gas monitoring must be decided using baseline data, and the monitoring plan must describe how the proposed monitoring will yield useful information on the area of review delineation and/or compliance with standards under R18-9-B608;
  - c. If an owner or operator demonstrates that monitoring employed under 40 CFR §§ 98.440 to 98.449 (Clean Air Act, 42 U.S.C. 7401 et seq.) accomplishes the goals of subsections (A)(8)(a) and (b) of this Section, and meets the requirements pursuant to R18-9-J666(3)(e), a Director that requires surface air/soil gas monitoring must approve the use of monitoring employed under 40 CFR §§ 98.440 to 98.449. Compliance with 40 CFR §§ 98.440 to 98.449 pursuant to this provision is considered a condition of the Class VI permit;
9. Any additional monitoring, as required by the Director, necessary to support, upgrade, and improve computational modeling of the area of review evaluation required under R18-9-J659(C) and to determine compliance with standards under R18-9-B608;
10. The owner or operator shall periodically review the testing and monitoring plan to incorporate monitoring data collected under this Part, operational data collected under R18-9-J663, and the most recent area of review reevaluation performed under R18-9-J659(E). 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. Any amendments to the testing and monitoring plan must be approved by the Director, must be incorporated into the permit, and are subject to the permit modification requirements under R18-9-C632 or R18-9-C633, as appropriate. Amended plans or demonstrations shall be submitted to the Director as follows:
  - a. Within one year of an area of review reevaluation;

- b. Following any significant changes to the facility, such as addition of monitoring wells or newly permitted injection wells within the area of review, on a schedule determined by the Director; or
  - c. When required by the Director.
11. A quality assurance and surveillance plan for all testing and monitoring requirements.

#### **R18-9-J666. Class VI; Reporting Requirements**

The owner or operator must provide at a minimum, the following reports to the Director, and as specified in subsection (5) of this Section to EPA, for each permitted Class VI well:

1. Semi-annual reports containing:
  - a. Any changes to the physical, chemical, and other relevant characteristics of the carbon dioxide stream from the proposed operating data;
  - b. Monthly average, maximum, and minimum values for injection pressure, flow rate and volume, and annular pressure;
  - c. A description of any event that exceeds operating parameters for annulus pressure or injection pressure specified in the permit;
  - d. A description of any event which triggers a shut-off device required pursuant to R18-9-J663(E) and the response taken;
  - e. The monthly volume and/or mass of the carbon dioxide stream injected over the reporting period and the volume injected cumulatively over the life of the project;
  - f. Monthly annulus fluid volume added; and
  - g. The results of monitoring prescribed under R18-9-J665.
2. Report, within 30 days, the results of:
  - a. Periodic tests of mechanical integrity;
  - b. Any well workover; and,
  - c. Any other test of the injection well conducted by the permittee if required by the Director.
3. Report, within 24 hours:
  - a. Any evidence that the injected carbon dioxide stream or associated pressure front may cause an endangerment to a USDW;
  - b. Any noncompliance with a permit condition, or malfunction of the injection system, which may cause fluid migration into or between USDWs;
  - c. Any triggering of a shut-off system (i.e., down-hole or at the surface);
  - d. Any failure to maintain mechanical integrity; or
  - e. Pursuant to compliance with the requirement at R18-9-J665(8) for surface air/soil gas monitoring or other monitoring technologies, if required by the Director, any release of carbon dioxide to the atmosphere or biosphere.
4. Owners or operators must notify the Director in writing 30 days in advance of:
  - a. Any planned well workover;
  - b. Any planned stimulation activities, other than stimulation for formation testing conducted under R18-9-J657; and
  - c. Any other planned test of the injection well conducted by the permittee.
5. Owners or operators must submit all required reports, submittals, and notifications under Part J of this Article to EPA in an electronic format approved by EPA.
6. Records shall be retained by the owner or operator as follows:
  - a. All data collected under R18-9-J657 for Class VI permit applications shall be retained throughout the life of the geologic sequestration project and for ten years following site closure.
  - b. Data on the nature and composition of all injected fluids collected pursuant to R18-9-J665(1) shall be retained until ten years after site closure. The Director may require the owner or operator to deliver the records to the Director at the conclusion of the retention period.
  - c. Monitoring data collected pursuant to R18-9-J665(2) through (9) shall be retained for ten years after it is collected.
  - d. Well plugging reports, post-injection site care data, including, if appropriate, data and information used to develop the demonstration of the alternative post-injection site care timeframe, and the site closure report collected pursuant to requirements at R18-9-J668(F) and (H) shall be retained for ten years following site closure.
  - e. The Director has authority to require the owner or operator to retain any records required in this Part for longer than ten years after site closure.

**R18-9-J667. Class VI; Injection Well Plugging**

- A.** Prior to the well plugging, the owner or operator must flush each Class VI injection well with a buffer fluid, determine bottomhole reservoir pressure, and perform a final external mechanical integrity test.
- B.** The owner or operator of a Class VI well must prepare, maintain, and comply with a plan that is acceptable to the Director. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit. The well plugging plan must be submitted as part of the permit application and must include the following information:
  - 1. Appropriate tests or measures for determining bottomhole reservoir pressure;
  - 2. Appropriate testing methods to ensure external mechanical integrity as specified in R18-9-J664;
  - 3. The type and number of plugs to be used;
  - 4. The placement of each plug, including the elevation of the top and bottom of each plug;
  - 5. The type, grade, and quantity of material to be used in plugging. The material must be compatible with the carbon dioxide stream; and
  - 6. The method of placement of the plugs.
- C.** The owner or operator must notify the Director in writing pursuant to R18-9-J666(5), at least 60 days before plugging of a well. At this time, if any changes have been made to the original well plugging plan, the owner or operator must also provide the revised well plugging plan. The Director may allow for a shorter notice period. Any amendments to the injection well plugging plan must be approved by the Director, must be incorporated into the permit, and are subject to the permit modification requirements at R18-9-C632 or R18-9-C633, as appropriate.
- D.** Within 60 days after plugging, the owner or operator must submit, pursuant to R18-9-J666(5), a plugging report to the Director. The report must be certified as accurate by the owner or operator and by the person who performed the plugging operation, if other than the owner or operator. The owner or operator shall retain the well plugging report for ten years following site closure.

**R18-9-J668. Class VI; Post-Injection Site Care and Site Closure**

- A.** 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 subsection (A)(2) of this Section and is acceptable to the Director. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit.
  - 1. The owner or operator must submit the post-injection site care and site closure plan as a part of the permit application to be approved by the Director.
  - 2. The post-injection site care and site closure plan must include the following information:
    - a. The pressure differential between pre-injection and predicted post-injection pressures in the injection zone(s);
    - b. The predicted position of the carbon dioxide plume and associated pressure front at site closure as demonstrated in the area of review evaluation required under R18-9-J659(C)(1);
    - c. A description of post-injection monitoring location, methods, and proposed frequency;
    - d. A proposed schedule for submitting post-injection site care monitoring results to the Director pursuant to R18-9-J666(5); and
    - e. The duration of the post-injection site care timeframe and, if approved by the Director, the demonstration of the alternative post-injection site care timeframe that ensures non-endangerment of USDWs.
  - 3. 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. Any amendments to the post-injection site care and site closure plan must be approved by the Director, be incorporated into the permit, and are subject to the permit modification requirements at R18-9-C632 or R18-9-C633, as appropriate.
  - 4. 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 approval within 30 days of such change.
- B.** The owner or operator shall monitor the site following the cessation of injection to show the position of the carbon dioxide plume and pressure front and demonstrate that USDWs are not being endangered.
  - 1. Following the cessation of injection, the owner or operator shall continue to conduct monitoring as 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 pursuant to requirements in subsection

(C) of this Section, unless they make a demonstration under subsection (B)(2) of this Section. The monitoring must continue until the geologic sequestration project no longer poses an endangerment to USDWs and the demonstration under subsection (B)(2) of this Section is submitted and approved by the Director.

2. If the owner or operator can demonstrate to the satisfaction of the Director before 50 years or prior to the end of the approved alternative timeframe based on monitoring and other site-specific data, that the geologic sequestration project no longer poses an endangerment to USDWs, the Director may approve an amendment to the post-injection site care and site closure plan to reduce the frequency of monitoring or may authorize site closure before the end of the 50-year period or prior to the end of the approved alternative timeframe, where they have substantial evidence that the geologic sequestration project no longer poses a risk of endangerment to USDWs.
  3. Prior to authorization for site closure, the owner or operator must submit to the Director for review and approval a demonstration, based on monitoring and other site-specific data, that no additional monitoring is needed to ensure that the geologic sequestration project does not pose an endangerment to USDWs.
  4. If the demonstration in subsection (B)(3) of this Section cannot be made at the end of the 50-year period or at the end of the approved alternative timeframe, or if the Director does not approve the demonstration, the owner or operator must submit to the Director a plan to continue post-injection site care until a demonstration can be made and approved by the Director.
- C. 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 pursuant to R18-9-J657 or R18-9-J658, and must contain substantial evidence that the geologic sequestration project will no longer pose a risk of endangerment to USDWs at the end of the alternative post-injection site care timeframe.
1. A demonstration of an alternative post-injection site care timeframe must include consideration and documentation of:
    - a. The results of computational modeling performed pursuant to delineation of the area of review under R18-9-J659;
    - b. The predicted timeframe for pressure decline within the injection zone, and any other zones, such that formation fluids may not be forced into any USDWs; and/or the timeframe for pressure decline to pre-injection pressures;
    - c. The predicted rate of carbon dioxide plume migration within the injection zone, and the predicted timeframe for the cessation of migration;
    - d. A description of the site-specific processes that will result in carbon dioxide trapping including immobilization by capillary trapping, dissolution, and mineralization at the site;
    - e. The predicted rate of carbon dioxide trapping in the immobile capillary phase, dissolved phase, and/or mineral phase;
    - f. The results of laboratory analyses, research studies, and/or field or site-specific studies to verify the information required in subsection (C)(1)(d) and (C)(1)(e) of this Section;
    - g. A characterization of the confining zone(s) including a demonstration that it is free of transmissive faults, fractures, and micro-fractures and of appropriate thickness, permeability, and integrity to impede fluid movement, such as carbon dioxide and formation fluids;
    - h. The presence of potential conduits for fluid movement including planned injection wells and project monitoring wells associated with the proposed geologic sequestration project or any other projects in proximity to the predicted/modeled, final extent of the carbon dioxide plume and area of elevated pressure;
    - i. A description of the well construction and an assessment of the quality of plugs of all abandoned wells within the area of review;
    - j. The distance between the injection zone and the nearest USDWs above and/or below the injection zone; and
    - k. Any additional site-specific factors required by the Director.
  2. Information submitted to support the demonstration in subsection (C)(1) of this Section must meet the following criteria:
    - a. All analyses and tests performed to support the demonstration must be accurate, reproducible, and performed in accordance with the established quality assurance standards;

- b. Estimation techniques must be appropriate and EPA-certified test protocols must be used where available;
  - c. Predictive models must be appropriate and tailored to the site conditions, composition of the carbon dioxide stream and injection and site conditions over the life of the geologic sequestration project;
  - d. Predictive models must be calibrated using existing information where sufficient data are available;
  - e. Reasonably conservative values and modeling assumptions must be used and disclosed to the Director whenever values are estimated on the basis of known, historical information instead of site-specific measurements;
  - f. An analysis must be performed to identify and assess aspects of the alternative post-injection site care timeframe demonstration that contribute significantly to uncertainty. The owner or operator must conduct sensitivity analyses to determine the effect that significant uncertainty may contribute to the modeling demonstration;
  - g. An approved quality assurance and quality control plan must address all aspects of the demonstration; and
  - h. Any additional criteria required by the Director.
- D.** The owner or operator must notify the Director in writing at least 120 days before site closure. At this time, 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.
- E.** After the Director has authorized site closure, the owner or operator must plug all monitoring wells in a manner which will not allow movement of injection or formation fluids that endangers a USDW.
- F.** 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. The report must include:
- 1. Documentation of appropriate injection and monitoring well plugging as specified in R18-9-J667 and subsection (E) of this Section. The owner or operator must provide a copy of a survey plat which has been submitted to the local zoning authority designated by the Director. The plat must indicate the location of the injection well relative to permanently surveyed benchmarks. The owner or operator must also submit a copy of the plat to the Administrator of EPA Region 9;
  - 2. Documentation of appropriate notification and information to such State, local and Tribal authorities that have authority over drilling activities to enable such State, local, and Tribal authorities to impose appropriate conditions on subsequent drilling activities that may penetrate the injection and confining zone(s); and
  - 3. Records reflecting the nature, composition, and volume of the carbon dioxide stream.
- G.** Each owner or operator of a Class VI injection well must record a notation on the deed to the facility property 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:
- 1. The fact that land has been used to sequester carbon dioxide;
  - 2. The name of the State agency, local authority, and/or Tribe with which the survey plat was filed, as well as the address of the Environmental Protection Agency Regional Office to which it was submitted; and
  - 3. The volume of fluid injected, the injection zone or zones into which it was injected, and the period over which injection occurred.
- H.** 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.

**R18-9-J669. Class VI; Emergency and Remedial Response**

- A.** As part of the permit application, the owner or operator must provide the Director with an emergency and remedial response plan that describes actions the owner or operator must take to address movement of the injection or formation fluids that may cause an endangerment to a USDW during construction, operation, and post-injection site care periods. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit.
- B.** If the owner or operator obtains evidence that the injected carbon dioxide stream and associated pressure front may cause an endangerment to a USDW, the owner or operator must:
- 1. Immediately cease injection;
  - 2. Take all steps reasonably necessary to identify and characterize any release;
  - 3. Notify the Director within 24 hours; and

4. Implement the emergency and remedial response plan approved by the Director.
- C. The Director may allow the operator to resume injection prior to remediation if the owner or operator demonstrates that the injection operation will not endanger USDWs.
- D. The owner or operator shall periodically review the emergency and remedial response plan developed under subsection (A) of this Section. In no case shall the owner or operator review the emergency and remedial response plan less often than once every five years. Based on this review, the owner or operator shall submit an amended emergency and remedial response plan or demonstrate to the Director that no amendment to the emergency and remedial response plan is needed. Any amendments to the emergency and remedial response plan must be approved by the Director, must be incorporated into the permit, and are subject to the permit modification requirements at R18-9-C632 or R18-9-C633, as appropriate. Amended plans or demonstrations shall be submitted to the Director as follows:
  1. Within one year of an area of review reevaluation;
  2. Following any significant changes to the facility, such as addition of injection or monitoring wells, on a schedule determined by the Director; or
  3. When required by the Director.

**R18-9-J670. Class VI; Injection Depth Waiver Requirements**

- A. This Section sets forth information which an owner or operator seeking a waiver of the Class VI injection depth requirements must submit to the Director; information the Director must consider in consultation with all affected Public Water System Supervision Directors; the procedure for Director-- Administrator communication and waiver issuance; and the additional requirements that apply to owners or operators of Class VI wells granted a waiver of the injection depth requirements.
- B. 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 must include the following:
  1. 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.
  2. 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.
  3. 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).
  4. 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 meet well construction requirements in subsection (G) of this Section.
  5. 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.
  6. 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.
  7. Any other information requested by the Director to inform the Administrator's decision to issue a waiver.
- C. 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:
  1. An evaluation of the following information as it relates to siting, construction, and operation of a geologic sequestration project with a waiver:
    - a. The integrity of the upper and lower confining units;
    - b. The suitability of the injection zone(s), such as lateral continuity, lack of transmissive faults and fractures, knowledge of current or planned artificial penetrations into the injection zone(s), or formations below the injection zone;



- c. The potential capacity of the geologic formation(s) to sequester carbon dioxide, accounting for the availability of alternative injection sites;
  - d. All other site characterization data, the proposed emergency and remedial response plan, and a demonstration of financial responsibility;
  - e. Community needs, demands, and supply from drinking water resources;
  - f. Planned needs, potential and/or future use of USDWs and non-USDWs in the area;
  - g. Planned or permitted water, hydrocarbon, or mineral resource exploitation potential of the proposed injection formation(s) and other formations both above and below the injection zone to determine if there are any plans to drill through the formation to access resources in or beneath the proposed injection zone(s)/formation(s);
  - h. The proposed plan for securing alternative resources or treating USDW formation waters in the event of contamination related to the Class VI injection activity; and,
  - i. Any other applicable considerations or information requested by the Director.
2. 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.
  3. Any written waiver-related information submitted by the Public Water System Supervision Director(s) to the (UIC) Director.
- D.** Pursuant to requirements at R18-9-C620 and concurrent with the Class VI permit application notice process, the Director shall give public notice that a waiver application has been submitted. The notice shall clearly state:
1. The depth of the proposed injection zone(s);
  2. The location of the injection well(s);
  3. The name and depth of all USDWs within the area of review;
  4. A map of the area of review;
  5. The names of any public water supplies affected, reasonably likely to be affected, or served by USDWs in the area of review; and,
  6. The results of UIC-Public Water System Supervision consultation required under subsection (C)(2) of this Section.
- E.** Following public notice, the Director shall provide all information received through the waiver application process to the Administrator. Based on the information provided, the Administrator shall provide written concurrence or non-concurrence regarding waiver issuance.
1. If the Administrator determines that additional information is required to support a decision, the Director shall provide the information. At the Administrator's discretion, they may require that public notice of the new information be initiated.
  2. In no case shall a Director of a State-approved program issue a waiver without receipt of written concurrence from the Administrator.
- F.** If a waiver is issued, within 30 days of waiver issuance, EPA shall post the following information on the Office of Water's Web site:
1. The depth of the proposed injection zone(s);
  2. The location of the injection well(s);
  3. The name and depth of all USDWs within the area of review;
  4. A map of the area of review;
  5. The names of any public water supplies affected, reasonably likely to be affected, or served by USDWs in the area of review; and
  6. The date of waiver issuance.
- G.** Upon receipt of a waiver of the requirement to inject below the lowermost USDW for geologic sequestration, the owner or operator of the Class VI well must comply with:
1. 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;
  2. 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, in lieu of requirements at R18-9-J661(A)(1).
    - b. The casing and cementing program must be designed to prevent the movement of fluids into any unauthorized zones including USDWs in lieu of requirements at R18-9-J661(B)(1).

- 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.
3. 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 any other 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 (such as seismic, electrical, gravity, or electromagnetic surveys and/or down-hole carbon dioxide detection tools), unless the Director determines, based on site-specific geology, that such methods are not appropriate.
4. 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 any other 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 methods are not appropriate.
5. Any additional requirements requested by the Director designed to ensure protection of USDWs above and below the injection zone(s).

**Table 1: Applicable Standards National Primary Drinking Water Regulations**

Contaminant	MCL <sup>1</sup> (mg/L) <sup>2</sup>
Alachlor	0.002
Alpha/photon emitters	15 picocuries per Liter (pCi/L)
Antimony	0.006
Arsenic	0.010
Asbestos (fibers>10 micrometers)	7 million fibers per Liter (MFL)
Atrazine	0.003
Barium	2
Benzene	0.005
Benzo(a)pyrene (PAHs)	0.0002
Beryllium	0.004
Beta photon emitters	4 millirems per year
Bromate	0.010
Cadmium	0.005
Carbofuran	0.04
Carbon tetrachloride	0.005
Chlordane	0.002
Chlorite	1.0
Chlorobenzene	0.1
Chromium (total)	0.1
Cyanide (as free cyanided)	0.2
2,4-D	0.07
Dalapon	0.2
1,2-Dibromo-3-chloropropane (DBCP)	0.0002
o-Dichlorobenzene	0.6
P-Dichlorobenzene	0.075
1,2-Dichloroethane	0.005
1,1-Dichloroethylene	0.007
Cis-1,2-Dichloroethylene	0.07
Trans-1,2-Dichloroethylene	0.1
Dichloromethane	0.005

1,2-Dichloropropane	0.005
Di(2-ethylhexyl) adipate	0.4
DI(2-ethylhexyl) phthalate	0.006
Dinoseb	0.007
Dioxin (2,3,7,8-TCDD)	0.00000003
Diquat	0.02
Endothall	0.1
Endrin	0.002
Ethylbenzene	0.7
Ethylene dibromide	0.00005
Fecal coliform and <i>E. coli</i>	MCL <sup>3</sup>
Fluoride	4.0
Glyphosate	0.7
Haloacetic acids (HAA5)	0.060
Heptachlor	0.0004
Heptachlor epoxide	0.0002
Hexachlorobenzene	0.001
Hexachlorocyclopentadiene	0.05
Lindane	0.0002
Mercury (inorganic)	0.002
Methoxychlor	0.04
Nitrate (measured as Nitrogen)	10
Nitrite (measured as Nitrogen)	1
Oxamyl (Vydate)	0.2
Pentachlorophenol	0.001
Picloram	0.5
Polychlorinated biphenyls (PCBs)	0.0005
Radium 226 and Radium 228 (combined)	5 pCi/L
Selenium	0.05
Simazine	0.004
Styrene	0.1
Tetrachloroethylene	0.005
Thallium	0.002
Toluene	1
Total Coliforms	5.0 percent <sup>4</sup>
Total Trihalomethanes (TTHMs)	0.080
Toxaphene	0.003
2,4,5-TP (Silvex)	0.05
1,2,4-Trichlorobenzene	0.07
1,1,1-Trichloroethane	0.2
1,1,2-Trichloroethane	0.005
Trichloroethylene	0.005
Uranium	30µg/L
Vinyl chloride	0.002
Xylenes (total)	10

## NOTES

<sup>1</sup> Maximum Contaminant Level (MCL) – The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to MCLGs as feasible using the best available treatment technology and taking cost into consideration. MCLs are enforceable standards.

<sup>2</sup> Units are in milligrams per liter (mg/L) unless otherwise noted. Milligrams per liter are equivalent to parts per million (ppm).

<sup>3</sup> A routine sample that is fecal coliform-positive or *E. coli*-positive triggers repeat samples-if any repeat sample is total coliform-positive, the system has an acute MCL violation. A routine sample that is total coliform-positive, and fecal coliform-negative or *E. coli*-negative triggers repeat samples – if any repeat sample is fecal coliform-positive or *E. coli*-positive, the system has an acute MCL violation. See also Total Coliforms.

<sup>4</sup> No more than 5.0 percent samples total coliform-positive in a month. (For water systems that collect fewer than 40 routine samples per month, no more than one sample can be

total coliform-positive per month.) Every sample that has total coliform must be analyzed for either fecal coliforms or *E. coli*. If two consecutive TC-positive samples, and one is also positive for *E. coli* or fecal coliforms, system has an acute MCL violation.

## **Primary Arizona SDWA-UIC Rules**

Arizona Administrative Code

Title 18 – Environmental Quality

Chapter 14 – Department of Environmental Quality – Permit and Compliance Fees

Article 1 – Water Quality Protection Fees

**ARIZONA ADMINISTRATIVE CODE**

**TITLE 18. ENVIRONMENTAL QUALITY**

**CHAPTER 14. DEPARTMENT OF ENVIRONMENTAL QUALITY  
WATER QUALITY PERMIT AND COMPLIANCE FEES**

**ARTICLE 1. WATER QUALITY PROTECTION FEES**

Section

R18-14-101. Definitions  
R18-14-102. Hourly Rate and Maximum Fees for Water Quality Protection Services  
R18-14-103. Initial Fees  
R18-14-104. Annual Fees for Water Quality Protection Services  
R18-14-105. Fee Assessment and Collection  
R18-14-106. Reconsideration of a Bill; Appeal Process  
R18-14-107. Effect on County Fees  
R18-14-108. APP Water Quality Protection Services Flat Fees  
R18-14-109. AZPDES Water Quality Protection Services Flat Fees  
R18-14-110. Reclaimed Water Flat Fees  
R18-14-111. UIC Flat Fees  
~~R18-14-111.~~ R18-14-112. Other Flat Fees  
~~R18-14-112.~~ R18-14-113. Implementation  
~~R18-14-113.~~ R18-14-114. Annual Report  
R18-14-115. UIC Fees Review

**ARTICLE 1. WATER QUALITY PROTECTION FEES**

**R18-14-101. Definitions**

In addition to the definitions in A.R.S. §§ 49-201, 49-241.02, 49-255, 49-331, and A.A.C. R18-9-101, A.A.C. R18-9-701, and A.A.C. R18-9-A901, the following terms apply to this Article:

1. “APP” means an Aquifer Protection Permit.
2. “Complex modification” means:
  - a. A revision of an individual Aquifer Protection Permit for a facility within a mining sector as defined in A.R.S. § 49-241.02(F)(1); and
  - b. A revision of an individual Aquifer Protection Permit for a facility within a non-mining sector due to any of the following:
    - i. An expansion of an existing pollutant management area requiring a new or relocated point of compliance
    - ii. A new subsurface disposal including injection or recharge, or new wetlands construction;
    - iii. Submission of data indicating contamination, or identification of a discharging facility or pollutants not included in previous applications that requires reevaluation of BADCT; or
    - iv. Closure of a facility that cannot meet the clean closure requirements of A.R.S. § 49-252 and requires post-closure care, monitoring, or remediation.
3. “Courtesy review” means a design review service that the Department performs within 30 days from the date of receiving the submittals, of the 60 percent completion specifications, design report, and construction drawings for a sewage collection system.
4. “Priority review” means a design review service for an APP Type 4 permit application that the Department completes using not more than 50 percent of the total review time-frame for the applicable Type 4 permit application as specified in 18 A.A.C. 1, Table 10.
5. “Request” means a written application, notice, letter, or memorandum submitted by an applicant to the Department for water quality protection services. The Department considers a request made on the date it is received by the Department.

6. "Review hours" means the hours or portions of hours that the Department's staff spends on a request for a water quality protection service. Review hours include the time spent by the project manager and technical review team members, and if requested by the applicant, the supervisor or unit manager.
7. "Review-related costs" means any of the following costs applicable to a specific request for water quality protection service:
  - a. Presiding officer services for public hearings on a permitting decision,
  - b. Court reporter services for public hearings on a permitting decision,
  - c. Facility rentals for public hearings on a permitting decision,
  - d. Charges for laboratory analyses performed during the review, and
  - e. Other reasonable and necessary review-related expenses documented in writing by the Department and agreed to by an applicant.
8. "Standard modification" means an amendment to an individual Aquifer Protection Permit that is not a complex modification.
9. "UIC" means Arizona's Underground Injection Control Program.
10. "Water quality protection service" means:
  - a. Reviewing a request for an APP determination of applicability;
  - b. Issuing, renewing, amending, modifying, transferring, or denying an aquifer protection permit, an AZPDES permit, a UIC permit, a UIC application for an aquifer exemption or an injection depth waiver or a reclaimed water permit;
  - c. Reviewing supplemental information required by a permit condition, including closure for an APP;
  - d. Performing an APP clean closure plan review;
  - e. Issuing or denying a Certificate of Approval for Sanitary Facilities for a Subdivision;
  - f. Registering or transferring registration of a dry well;
  - g. Conducting a site visit;
  - h. Reviewing proprietary and other reviewed products under A.A.C. R18-9-A309(E);
  - i. Reviewing, processing, and managing documentation related to an AZPDES general permit, including a notice of intent, notice of termination, certificate of no exposure, and waiver;
  - j. Registering and reporting land application of biosolids; or
  - k. Pretreatment program review, inspection, or audit.

**R18-14-102. Hourly Rate and Maximum Fees for Water Quality Protection Services**

- A. The Department shall assess and collect an hourly rate fee for a water quality protection service, except for APP minor permit amendments specified under A.A.C. R18-9-A211(C)(1), (2) and (3) and A.A.C. R18-9-B906(B), unless a flat fee is other-wise designated in this Article-, and UIC minor modifications specified under A.A.C. R18-9-C633(A).
- B. Hourly rate fees. The Department shall calculate the fee using an hourly rate of \$122; except for the UIC program, where the Department shall calculate the fee using an hourly rate of \$145. These rates shall then be multiplied by the number of review hours to provide a water quality protection service, plus any applicable review-related costs, up to the maximum fee specified in subsection (C). The Department shall not charge an applicant for the first 60 minutes of Department pre-application consultation time costs for the project manager.
- C. Maximum fees for a water quality protection service assessed at an hourly rate are as follows:

**Table 1. Maximum Fees**

Program Area	Permit Type	Maximum Fee
APP	Individual or area-wide	\$200,000
APP	Complex modification to individual or area-wide	\$150,000
APP	Clean closure of facility	\$50,000
APP	Standard modification to individual or area-wide (per modification up to the maximum fee, and modification can be reassigned under A.A.C. R18-1-516): <ul style="list-style-type: none"> <li>• Maximum fee (cumulative per submittal)</li> <li>• Modification under A.A.C. R18-9-A211(C)(1) through (3)</li> </ul>	\$150,000 No fee \$5,000

	<ul style="list-style-type: none"> <li>• Modification under A.A.C. R18-9-A211(C)(4) through (6)</li> <li>• Modification under A.A.C. R18-9-A211(C)(7), (D)(2)(b) through (i), and (k) through (l)</li> <li>• Modification under A.A.C. R18-9-A211(D)(2)(a) and (j)</li> <li>• Modification under A.A.C. R18-9-A211(B) that is not classified as complex modification under R18-14-101(2)</li> </ul>	\$15,000 \$25,000 \$25,000
APP	<p>For an APP issued before July 1, 2011, the fee for a submittal required by a compliance schedule is assessed per submittal and cumulative up to the maximum fee. The applicable maximum fee for all compliance schedule submissions shall be according to one of the three maximum fee categories listed below. The maximum fee is for the lifetime of the APP unless a new compliance schedule is established in the APP due to a modification that is classified as both a significant amendment under A.A.C. R18-9-A211(B) and a complex modification under R18-14-101(2)</p> <ul style="list-style-type: none"> <li>• For a permit with a compliance schedule where one or more submissions require a permit modification that requires a determination or reevaluation of BADCT, the fee is assessed as described above for each standard modification, with a maximum fee for the permit's entire compliance schedule of:</li> <li>• For a permit with a compliance schedule where one or more submissions require a permit modification, but no determination or reevaluation of BADCT is required, the fee is assessed as described above for each standard modification, with a maximum fee for the permit's entire compliance schedule of:</li> <li>• For a permit with a compliance schedule requiring one or more submissions that require ADEQ review but do not require a permit modification, the maximum fee for the permit's entire compliance schedule is:</li> </ul>	\$150,000 \$100,000 \$100,000
APP	For an APP issued on or after July 1, 2011, the fee for a submittal required by a compliance schedule is assessed per submittal and cumulative up to the maximum fee for the lifetime of the APP	\$100,000
APP	Determination of applicability	\$15,000
APP	Reviewing proprietary and other reviewed products under A.A.C. R18-9-A309(E)	\$15,000
AZPDES	Individual permit for municipal separate storm sewer system	\$40,000
AZPDES	Individual permit for wastewater treatment plant (based on gallons of discharge per day) <ul style="list-style-type: none"> <li>• 3,000 to 99,999</li> </ul>	\$15,000



	<ul style="list-style-type: none"> <li>100,000 to 999,999</li> <li>1,000,000 to 9,999,999</li> <li>10,000,000 or more</li> </ul>	\$20,000 \$30,000 \$50,000
AZPDES	Individual permit for a facility or activity that is not a wastewater treatment plant or a municipal separate storm sewer	\$30,000
AZPDES	Amendment to an individual permit	\$12,500
AZPDES	Approval of a new or revised pretreatment program under AZPDES	\$10,000
AZPDES	Consolidated individual permit for multiple AZPDES individual permits, as allowed under A.A.C. R18-9-B901(C)	Aggregate of the applicable maximum fees
Reclaimed	Reclaimed water individual permit	\$32,000
<u>UIC</u>	<u>Area</u>	<u>\$200,000</u>
	<u>Area Modification / Renewal</u>	<u>\$150,000</u>
<u>UIC</u>	<u>Classes I, II, III, V Individual</u>	<u>\$200,000</u>
	<u>Classes I, II, III, V Modification / Renewal</u>	<u>\$150,000</u>
<u>UIC</u>	<u>Classes VI Individual</u>	<u>No Max</u>
	<u>Classes VI Modification</u>	<u>No Max</u>

#### **R18-14-104. Annual Fees for Water Quality Protection Services Subject to Hourly Rate Fee**

A. Annual Registration Fees. The annual registration fee required under A.R.S. § 49-242 is in Table 2:

**Table 2. APP Annual Registration Fees**

Discharge or Influent per Day under the Individual APP or Notice of Disposal (in Gallons)	Annual Registration Fee	Annual Registration Fee if New Facility Under New APP Not Yet Constructed
3,000 to 9,999	\$500	\$250
10,000 to 99,999	\$1,000	\$250
100,000 to 999,999	\$2,500	\$500
1,000,000 to 9,999,999	\$6,000	\$625
10,000,000 or more	\$8,500	\$750

B. The Department shall assess an annual fee for an AZPDES-related water quality protection service subject to an hourly rate fee as listed in Table 3:

**Table 3. AZPDES Annual Registration Fees**

Permit Type	Annual Fee	Annual Fee if New Facility Under New AZPDES Not Yet Constructed
Municipal separate storm sewer system	\$10,000	N/A
Wastewater treatment plant (based on gallons of discharge per day): <ul style="list-style-type: none"> <li>Less than 99,999</li> <li>100,000 to 999,999</li> <li>1,000,000 to 9,999,999</li> <li>10,000,000 or more</li> </ul>	\$250 \$500 \$2,500 \$4,000	\$250 \$500 \$625 \$750
Facility or activity that is not a wastewater treatment plant or municipal separate storm sewer and designated in the permit as either: <ul style="list-style-type: none"> <li>Major</li> <li>Minor</li> </ul>	\$2,500 \$500	\$625 \$500
Pretreatment program	\$3,000	N/A

Consolidated individual permit for multiple AZPDES individual permits, as allowed under A.A.C. R18-9-B901(C)	Aggregate of the applicable annual fees of each individual permit	Aggregate of the applicable annual fees of each individual permit
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- C. The Department shall assess an annual fee of \$500 for an individual reclaimed water permit.
- D. The Department shall assess an annual fee and an annual waste disposal fee as applicable to UIC regulated facilities, subject to an hourly rate fee, as listed in Tables 3.1 and 3.2:

**Table 3.1. UIC Annual Fees**

Permit Type	Annual Registration Fee	Annual Waste Disposal Fee
Area	\$10,000 (and not subject to any other annual registration fee in Tables 3.1 and 3.2)	N/A
Class I	No Annual Registration Fee	\$0.002/gallon. Minimum Fee: \$10,000/year Maximum Fee: \$25,000/year
Class II	See Table 3.2	N/A
Class III	See Table 3.2	N/A
Class V "Individual"	See Table 3.2	N/A
Class VI	No Annual Registration Fee	\$0.08/ton Minimum Fee: \$10,000/year

**Table 3.2. UIC Annual Registration Fees**

Design Injection Flow Rate in Gallons per day <sup>1, 2</sup>	Annual Registration Fee
3,000 to 9,999	\$600
10,000 to 99,999	\$1,200
100,000 to 999,999	\$3,000
1,000,000 to 9,999,999	\$7,000
10,000,000 or more	\$10,000

<sup>1</sup> A Class II, III or V Individual UIC permittee with multiple wells or multiple permits may consolidate their same-class wells for the purpose of "design injection flow rate in gallons per day" under Table 3.2.

<sup>2</sup> An Area permit is not subject to Table 3.2.

#### **R18-14-111. UIC Flat Fees**

The Department shall assess a flat fee for the following UIC regulated facility services:

1. Well installation in an Area Permit, \$200 per well installation.
2. Class V authorization by rule, \$200 per well inventory.
3. Class V authorization by rule, \$100 per well transfer.

#### **R18-14-111, R18-14-112. Other Flat Fees**

Flat fees. The Department shall assess a flat fee for the following water quality protection services:

1. Dry well registration, \$100 per dry well until:
  - a. The fees in R18-14-111 are applicable, and
  - b. A.R.S Title 49, Chapter 2, Article 8 is removed.
2. Dry well transfer of registration, \$50 per transfer until:
  - a. The fees in R18-14-111 are applicable, and
  - b. A.R.S Title 49, Chapter 2, Article 8 is removed.

3. Certificate of Approval for Sanitary Facilities for Subdivisions.
  - a. Subdivision with public sewerage system: \$800 for every increment of 150 lots or less;
  - b. Subdivision with individual sewerage system:
    - i. \$500 for less than 10 lots;
    - ii. \$1,000 for greater than 10 lots but less than 50 lots;
    - iii. \$1,000 for each additional increment of 50 lots or less.
  - c. If water from a central system is not provided to the lot, the fee is one and one-half the applicable fee stated in subsection (3)(a) or (b).
  - d. Condominium subdivision: \$1,000 for every increment of 150 units or less.

**~~R18-14-112.~~ R18-14-113. Implementation**

The fees in this Article apply on July 1, 2011. For fees related to the AZPDES program:

1. A person shall submit the applicable fee when requesting a water quality protection service as specified in an AZPDES General Permit or in 18 A.A.C. 9, Article 9; and
2. A person is responsible for paying the annual fee for an AZPDES general permit, even if the person filed for coverage before the effective date of these rules.

**~~R18-14-113.~~ R18-14-114. Annual Report**

By December 1 of each year, the Department shall publish an accounting of Water Quality Fee Fund revenue and expenditure activity for the prior fiscal year.

**~~R18-14-115.~~ UIC Fees Review**

The department shall review the revenues derived from the implementation of the UIC program from the date of primacy through June 30, 2025. By September 30, 2025, the department shall determine the adequacy of the fees in comparison to the relevant data from the time period. The department shall repeat the review every three years based on the initial review date of June 30, 2025.

## **Appendix 4 – Aquifer Exemption Checklist**

# Aquifer Exemption Checklist

Reviewed by: \_\_\_\_\_ Date \_\_\_\_\_

## A- Regulatory Background and Purpose

An aquifer or a portion thereof which meets the criteria for an "underground source of drinking water" in § 146.3 may be determined to be an "exempted aquifer". The aquifer exemption criteria at 146.4 must be met as follows:

- Class I-V wells must meet criteria **146.4(a) and 146.4(b)(1)**; or **146.4(a) and 146.4(b)(2)**; or **146.4(a) and 146.4(b)(3)**; or **146.4(a) and 146.4(b)(4)**; or **146.4(a) and 146.4(c)**.
- Class VI wells must meet the criteria **146.4(d)**<sup>1</sup>.

Regardless of the AE request or the type of injection activity, in all cases, first and foremost a demonstration that the aquifer or portion thereof does not currently serve as a source of drinking water is the required first step in the process. **EPA must evaluate each AE request to ensure the criteria are met prior to approval. EPA should also document its rationale for approving or disapproving each AE request in its statement of basis and, in case of exemptions that are substantial program revisions, EPA must provide public notice and an opportunity for the public to comment and request a public hearing.**

The purpose of this checklist is to ensure that appropriate and adequate information is collected to facilitate review of AE requests, and documentation of AE decisions. Some information described here may not apply to all AE requests.

## B- General Information

AE request received by EPA on \_\_\_\_\_

Is the aquifer exemption Substantial \_\_\_\_\_ Non-Substantial \_\_\_\_\_

Describe basis for substantial/non-substantial determination \_\_\_\_\_

Is the aquifer exemption Complex? (Existence of drinking water wells, populated area ...) \_\_\_\_\_

Did the state or tribe provide public notice and opportunity for public hearing on the aquifer exemption request (144.7(b)) Y/N \_\_\_\_\_

Were there any public comments? Y/N If yes, identify where they may be located \_\_\_\_\_

Date(s) of notice(s) published \_\_\_\_\_, Public meeting(s) held \_\_\_\_\_, Hearing held \_\_\_\_\_, any notable findings or pending litigation \_\_\_\_\_

Describe the notice and comment process and the final decision \_\_\_\_\_

Describe the basis for the decision to exempt the aquifer or the basis for the decision to withhold or deny approval of the exemptions request \_\_\_\_\_

Any anticipated issues associated with EPA approval or disapproval of the AE request Y/N \_\_\_\_\_

Any meetings between EPA/States/Tribes/Operator to discuss issues Y/N list \_\_\_\_\_

Is the request submitted by a primacy state or tribe? Y/N If yes name the State/Tribe/Agency \_\_\_\_\_

Contact: \_\_\_\_\_

AE identified by the Primacy State or tribe and submitted for EPA review and final determination on \_\_\_\_\_

Name of the Owner/operator \_\_\_\_\_

Well/Project Name: \_\_\_\_\_ Well Class \_\_\_\_\_

Purpose of injection: \_\_\_\_\_ (mineral mining/oil and gas/other)

Where is the proposed aquifer exemption located? Township, Section, Range, Quarter Section or other method used to identify the area \_\_\_\_\_ Latitude and longitude information \_\_\_\_\_ County \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Add information about distance to nearest Town, County \_\_\_\_\_

Name of aquifer or portion of aquifer to be exempted \_\_\_\_\_

<sup>1</sup> Additional Class VI only requirements in 40 CFR 144.7(d)(1) and (2) apply. This checklist does not address those requirements.



Areal extent of the area proposed for exemption \_\_\_\_\_  
Depth and thickness of the aquifer \_\_\_\_\_  
Discuss the total dissolved solid (TDS) content of the aquifer, including the TDS at the top and bottom of the exempted zone, and the locations and depths of all fluids samples taken. \_\_\_\_\_

### C- Regulatory Criteria

An aquifer or a portion thereof may be determined to be an exempted aquifer for Class I-V wells if it meets the criteria in paragraphs (a) –(c) below. Other than EPA approved aquifer exemption expansions that meet the criteria set forth in 146.4(d), new aquifer exemptions for Class VI wells shall not be issued.

#### 146.4: ( ) (a) *Not currently used as a drinking water source and:*

- ( ) (b)(1) 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 Class II operation to contain minerals or hydrocarbons that considering their quantity and location are expected to be commercially producible; or
  - ( ) (b)(2) It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical; or
  - ( ) (b)(3) It is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption; or
  - ( ) (b)(4) It is located over a Class III well mining area subject to subsidence or catastrophic collapse; or
  - ( ) (c) TDS is more than 3,000 and less than 10,000 mg/l and it is not reasonably expected to supply a public water system.
- ( ) (d) *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 § 144.7(d) if it does not currently serve as a source of drinking water; and the TDS is more than 3,000 mg/l and less than 10,000 mg/l; and it is not reasonably expected to supply a public water system.*

#### 1- Demonstration that the aquifer or portion thereof does not currently serve as a source of drinking water per 146.4(a)

Describe the proposed exempted area and how it was determined: \_\_\_\_\_

TDS: \_\_\_\_\_ Top: \_\_\_\_\_ Bottom: \_\_\_\_\_

Lithology: \_\_\_\_\_

Permeability: \_\_\_\_\_ Porosity: \_\_\_\_\_ Groundwater flow direction: \_\_\_\_\_

Upper and Lower Confining Zone(s) and description of vertical confinement from USDWs: \_\_\_\_\_

Oil or mineral production history: \_\_\_\_\_

***Are there any public or private drinking water wells within and nearby the proposed exempted area for which the proposed exempted portion of the aquifer might be a source of drinking water Y/N If yes, list all those wells***

- ***Include:*** pertinent map(s) visually showing the areal extent of exemption boundary, depth and thickness of the aquifer proposed for exemption, all known subsurface structures such as faults affecting the aquifer, and each of the inventoried water well locations by well # or owner name.
- ***Include:*** Table of all inventoried water wells showing: Well Name/#, Owner, (Private/Public), Contact information, Purpose of well (Domestic, Irrigation, Livestock, etc.), depth of source water, name of aquifer, well completion data, age of well (if known), and the primary source of well data (Applicant/State/Tribe/EPA).
- ***Include:*** Map showing the areal extent of exemption boundary, all domestic water wells considered potentially down gradient of the exemption and hydraulically connected to the exemption. If wells are deemed horizontally and/or vertically isolated from the exemption, this should be foot noted on the Table as well. Use arrow(s) to indicate the direction and speed of GW in the aquifer proposed for exemption.



- Describe the evidence presented in the application and/or methodology used to conclude GW direction and speed when relevant.
- Include: any source water assessment and/or protection areas and designated sole source aquifers located within the delineated area.

***What is the appropriate area to examine for drinking water wells? Although guidance 34 says it should be a minimum of 1/4 mile, the determination of the appropriate area is on a case by case basis. Describe area and give a rationale.***

***Are there any public or private drinking water wells or springs capturing (or that will be capturing) or producing drinking water from the aquifer or portion thereof within the proposed exemption area? Y/N\****

- Evaluate the capture zone of the well (s) in the area near the proposed project (i.e., the volume of the aquifer(s) or portion(s) thereof from within which groundwater is expected to be captured by that well).
- A drinking water well's current source of water is the volume (or portion) of an aquifer which contains water that will be produced by a well in its lifetime. What parameters were considered to determine the lifetime of the well?

- 
- (\*) If the answer to this question is Yes, therefore the aquifer currently serves as a source of drinking water.

## **2- Demonstration that the aquifer or portion thereof is mineral, hydrocarbon or geothermal energy producing per 146.4(b)(1)**

***Did the permit applicant for a Class II or III operation demonstrate as part of the permit application that the aquifer or portion thereof contains minerals or hydrocarbons that, considering their quantity and location are expected to be commercially producible? Did the permit applicant furnish the data necessary to make the demonstration as required by 40 C.F.R. 144.7(c)(1) and (2)? Summarize this demonstration and data*** \_\_\_\_\_

- Include narrative statement, logs, maps, data and state issued permit.
- If the proposed exemption is to allow a Class II enhanced oil recovery well operation in a field or project containing aquifers from which hydrocarbon were previously produced, commercial producibility shall be presumed by the Director upon a demonstration of historical production having occurred in the project area or field. Many times it may be necessary to slightly expand an existing Class II operation to recover hydrocarbons and an aquifer exemption for the expanded area may be needed. If the expanded exemption for the Class II EOR well is for a well field or project area where hydrocarbons were previously produced, commercial producibility would be presumed.
- For new or existing Class II wells not located in a field or project containing aquifers from which hydrocarbons were previously produced, information such as logs, core data, formation description, formation depth, formation thickness and formation parameters such as permeability or porosity shall be considered by the Director, to the extent available.
- Many Class II injection well permit applicants may consider much information concerning production potential to be proprietary. As a matter of policy, some states/tribes do not allow any information submitted as part of a permit application to be confidential. In those cases where potential production information is not being submitted, EPA would need some record basis for concluding that the permit application demonstrates that the aquifer contains commercially producible minerals or hydrocarbons. For example, the permit application may include the results of any R & D pilot project. In this case, the applicant should state the reasons for believing that there are commercially producible quantities of minerals within the expanded area. Also, exemptions relating to new or existing Class II wells not located in a field or project containing aquifers from which hydrocarbons were previously produced should include the following types of information:
  - a- Production history of the well if it is a former production well which is being converted.
  - b- Description of any drill stem tests run on the horizon in question. This should include information on the amount of oil and water produced during the test
  - c- Production history of other wells in the vicinity which produce from the horizon in question.
  - d- Description of the project, if it is an enhanced recovery operation including the number of wells and there location.

For Class III wells, the Director must require an applicant to furnish data necessary to demonstrate that the aquifer is expected to be mineral or hydrocarbon producing and the Director must consider information 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. Information to be provided may also include: a summary of logging which indicates that commercially producible quantities of minerals or hydrocarbons are present.

**3- Demonstration that the aquifer or portion thereof is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical per 146.4(b)(2)**

*Is the aquifer or portion thereof situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical?* \_\_\_\_\_

- List evidence in the application showing how this demonstration was made.
- EPA consideration of an aquifer exemption request under this provision would include information related to:  
The availability of less costly and more readily available alternative supplies, the adequacy of alternatives to meet present and future needs, and costs for treatment (including cost of disposal of treatment residuals) and or development associated with the use of the aquifer.
- The economic evaluation, submitted by the applicant, should consider the above factors, and these that follow:
  1. Distance from the proposed exempted aquifer to public water supplies.
  2. Current sources of water supply for potential users of the proposed exempted aquifer.
  3. Availability, quantity and quality of alternative water supply sources.
  4. Analysis of future water supply needs within the general area.
  5. Depth of proposed exempted aquifer.
  6. Quality of the water in the proposed exempted aquifer.

**4- Demonstration that the aquifer or portion thereof is too contaminated per 146.4(b)(3)**

*Is the aquifer or portion thereof proposed for exemption so contaminated that it would be economically or technologically impractical to render that water fit for human consumption* \_\_\_\_\_

- List evidence in the application showing that the area to be exempted is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption.
- Economic considerations would also weigh heavily in EPA's decision on aquifer exemption requests under this section. Unlike the previous section, the economics involved are controlled by the cost of technology to render water fit for human consumption. Treatment methods can usually be found to render water potable. However, costs of that treatment may often be prohibitive either in absolute terms or compared to the cost to develop alternative water supplies.
- EPA's evaluation of aquifer exemption requests under this section will consider the following information submitted by the applicant:
  - (a) Concentrations, types, and source of contaminants in the aquifer.
  - (b) If contamination is a result of a release, whether contamination source has been abated.
  - (c) Extent of contaminated area.
  - (d) Probability that the contaminant plume will pass through the proposed exempted area.
  - (e) Ability of treatment to remove contaminants from ground water.
  - (f) Current and alternative water supplies in the area.
  - (g) Costs to develop current and future water supplies, cost to develop water supply from proposed exempted aquifer. This should include well construction costs, transportation costs, water treatment costs, etc.
  - (h) Projections on future use of the proposed aquifer.

**5- Demonstration that the aquifer or portion thereof is located over a Class III well mining area subject to subsidence or catastrophic collapse per 146.4(b)(4)**

*Is the aquifer or portion thereof proposed for exemption located over a Class III well mining area subject to subsidence or catastrophic collapse?* \_\_\_\_\_

- List evidence in the application showing that the area to be exempted is located over a Class III well mining area subject to subsidence or catastrophic collapse \_\_\_\_\_



- Discuss the mining method and why that method necessarily causes subsidence or catastrophic collapse. The possibility that non-exempted underground sources of drinking would be contaminated due to the collapse should also be addressed in the application.

**6- Demonstration that the aquifer or portion thereof has TDS more than 3,000 and less than 10,000 mg/l and it is not reasonably expected to supply a public water system per 146.4(c)**

*Is the TDS of the aquifer or portion thereof proposed for exemption more than 3,000 and less than 10,000 mg/l? \_\_\_\_\_*

*Is the aquifer proposed for exemption or portion thereof not reasonably expected to supply a public water system? \_\_\_\_\_*

- Identify and discuss the information on which the determination that the total dissolved solids content of the ground water in the proposed exemption is more than 3,000 and less than 10,000 mg/l and the aquifer is not reasonably expected to supply a public water system.
- Include information about the quality and availability of water from the aquifer proposed for exemption. Also, the exemption request must analyze the potential for public water supply use of the aquifer. This may include: a description of current sources of public water supply in the area, a discussion of the adequacy of current water supply sources to supply future needs, population projections, economy, future technology, and a discussion of other available water supply sources within the area.

**7- Demonstration that a Class II aquifer exemption may be expanded to Class VI per**

**146.4(d)** *(Refer to additional requirements in EPA's regulations for Class VI aquifer exemptions for this demonstration)*

*May the areal extent of an aquifer exemption for a Class II enhanced oil recovery or enhanced gas recovery well be expanded for the exclusive purpose of Class VI injection for geologic sequestration under § 144.7(d)? \_\_\_\_\_*

- List evidence in the application showing an existing Class II operation associated with AE that is being converted into Class VI \_\_\_\_\_

## **Appendix 5 – Aquifer Exemptions**

**Florence Copper Project Aquifer Exemption**

**EPA Permit # AZ396000001**

**May 1997**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street

San Francisco, CA 94105-3901

UNDERGROUND INJECTION CONTROL AQUIFER EXEMPTION  
FOR

EPA PERMIT #AZ396000001

In compliance with provisions of the Safe Drinking Water Act, as amended, (42 USC 300f-300j-9, commonly known as the SDWA) and attendant regulations incorporated by the U.S. Environmental Protection Agency under Title 40 of the Code of Federal Regulations (CFR), the zone located:

- (1) in the subsurface interval of approximately 400 feet to 1600 feet below ground surface (bgs); and
- (2) below the upper aquifer exemption boundary which is 200 feet above the oxide zone, or the base of the Middle Fine-Grained Unit (MFGU), whichever is further below ground surface; and
- (3) above the lower aquifer exemption boundary which is the base of the reactive interval amenable to copper leach solutions, encompassing the oxide zone, which contains an economical amount of copper, and copper in the sulfide zone that is leachable; and
- (4) laterally within 500 feet of the mine zone boundary delineated in Appendix A of EPA Permit #AZ396000001, and within the line connecting the following coordinate system points:

From a point (point 1) in the southwest of the northwest of Section 28, Range 9 East, Township 4 North of the GS & R meridian at Arizona Coordinate system Northing 748028.6 and easting 646937.7

To a point (point 2) in the southeast of the northwest of Section 28, Range 9 East, Township 4 North of the GS & R meridian at Arizona Coordinate system Northing 748042.1 and easting 648619.5

To a point (point 3) in the southeast of the northwest of Section 28, Range 9 East, Township 4 North of the GS & R meridian at Arizona

Coordinate system Northing 747656.9 and easting 648617.4

To a point (point 4) in the southeast of the northeast of Section 28,  
Range 9 East, Township 4 North of the GS & R meridian at Arizona  
Coordinate system Northing 747675.3 and easting 650811.6

To a point (point 5) in the southeast of the northeast of Section 28,  
Range 9 East, Township 4 North of the GS & R meridian at Arizona  
Coordinate system Northing 747216.3 easting 650662.8

To a point (point 6) in the southeast of the northeast of Section 28,  
Range 9 East, Township 4 North of the GS & R meridian at Arizona  
Coordinate system Northing 747230.7 and easting 651548.8

To a point (point 7) in the southeast of the southeast of Section 28,  
Range 9 East, Township 4 North of the GS & R meridian at Arizona  
Coordinate system Northing 745379.4 and easting 651309.7

To a point (point 8) in the southeast of the southeast of Section 28,  
Range 9 East, Township 4 North of the GS & R meridian at Arizona  
Coordinate system Northing 745369.4 and easting 651019.1

To a point (point 9) in the northeast of the northeast of Section 33,  
Range 9 East, Township 4 North of the GS & R meridian at Arizona  
Coordinate system Northing 743926.7 and easting 650758.8

To a point (point 10) in the northwest of the northeast of Section 33,  
Range 9 East, Township 4 North of the GS & R meridian at Arizona  
Coordinate system Northing 743922.9 and easting 649898.8

To a point (point 11) in the northwest of the northeast of Section 33,  
Range 9 East, Township 4 North of the GS & R meridian at Arizona  
Coordinate system Northing 743543.9 and easting 649897.6

To a point (point 12) in the northwest of the northwest of Section 33,  
Range 9 East, Township 4 North of the GS & R meridian at Arizona  
Coordinate system Northing 743520.7 and easting 647281.7

To a point (point 13) in the southwest of the southwest of Section 28,  
Range 9 East, Township 4 North of the GS & R meridian at Arizona  
Coordinate system Northing 744512.8 and easting 649939.6

To a point (point 14) in the southwest of the southwest of Section 28, Range 9 East, Township 4 North of the GS & R meridian at Arizona Coordinate system Northing 745392.3 and easting 646862.4

To a point (point 15) in the southwest of the southwest of Section 28, Range 9 East, Township 4 North of the GS & R meridian at Arizona Coordinate system Northing 745391.8 and easting 646552.4

To a point (point 16) in the southwest of the northwest of Section 28, Range 9 East, Township 4 North of the GS & R meridian at Arizona Coordinate system Northing 747466.7 and easting 646824.3

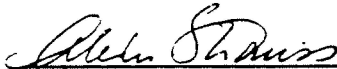
To a point (point 17) in the southwest of the northwest of Section 28, Range 9 East, Township 4 North of the GS & R meridian at Arizona Coordinate system Northing 747468.8 and easting 646938.8

is exempted as an underground source of drinking water (USDW).

This aquifer exemption is granted in conjunction with the Class III Underground Injection Control permit issued to BHP Copper, for the injection of an acidic solution for the purpose of copper production at the Florence In-Situ Project, Pinal County, Arizona.

This aquifer exemption has no expiration date.

Signed this 1<sup>st</sup> day of May, 1997.

  
\_\_\_\_\_  
Alexis Strauss, Acting Director  
Water Division, EPA Region 9

**Florence Copper Project Aquifer Exemption Correction**

**EPA Permit # AZ396000001**

**August 2022**



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**  
**REGION 9**  
**75 Hawthorne Street**  
**San Francisco, California 94105**

From: Tomás Torres, Water Division Director  
Region 9

To: File

Re: Corrected Delineation of the 1997 Aquifer Exemption Boundary  
for the Florence In-Situ Project in Pinal County, Arizona

Date and Signature : **TOMAS TORRES** Digitally signed by TOMAS  
TORRES  
Date: 2022.08.10 09:40:13 -07'00'

**Memo to File**

On May 1, 1997, EPA issued an aquifer exemption (the “1997 Aquifer Exemption”) in conjunction with the Class III UIC Area Permit # AZ396000001 issued to BHP Copper, Inc. (the “1997 BHP Permit”) for the injection of an acidic solution for the purpose of in-situ copper recovery in Pinal County, Arizona pursuant to the Underground Injection Control (“UIC”) regulations under the Safe Drinking Water Act (“SDWA”). The 1997 Aquifer Exemption describes the lateral aquifer exemption boundary as “laterally within 500 feet of the mine zone boundary delineated in Appendix A of the [1997 BHP Permit], and within the line connecting the following coordinate systems points.”<sup>1</sup>

This Memo to File corrects the coordinate point description in the 1997 Aquifer Exemption boundary and provides an accurate map of the 1997 Aquifer Exemption. EPA made this correction because EPA determined 1) that the coordinate points in the 1997 Aquifer

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<sup>1</sup> The coordinate by coordinate description in the 1997 Aquifer Exemption does not articulate whether the points are connected by straight lines.



Exemption contain typographical errors that even if fixed would not consistently depict the lateral boundary as “500 feet from the mine zone boundary” as stated in the 1997 Aquifer Exemption, and 2) that Appendix A to the 1997 BHP Permit does not actually contain the map referenced in the 1997 Aquifer Exemption<sup>2</sup> and previous maps used by EPA do not accurately depict the lateral aquifer exemption boundary as 500 feet beyond the mine zone boundary.

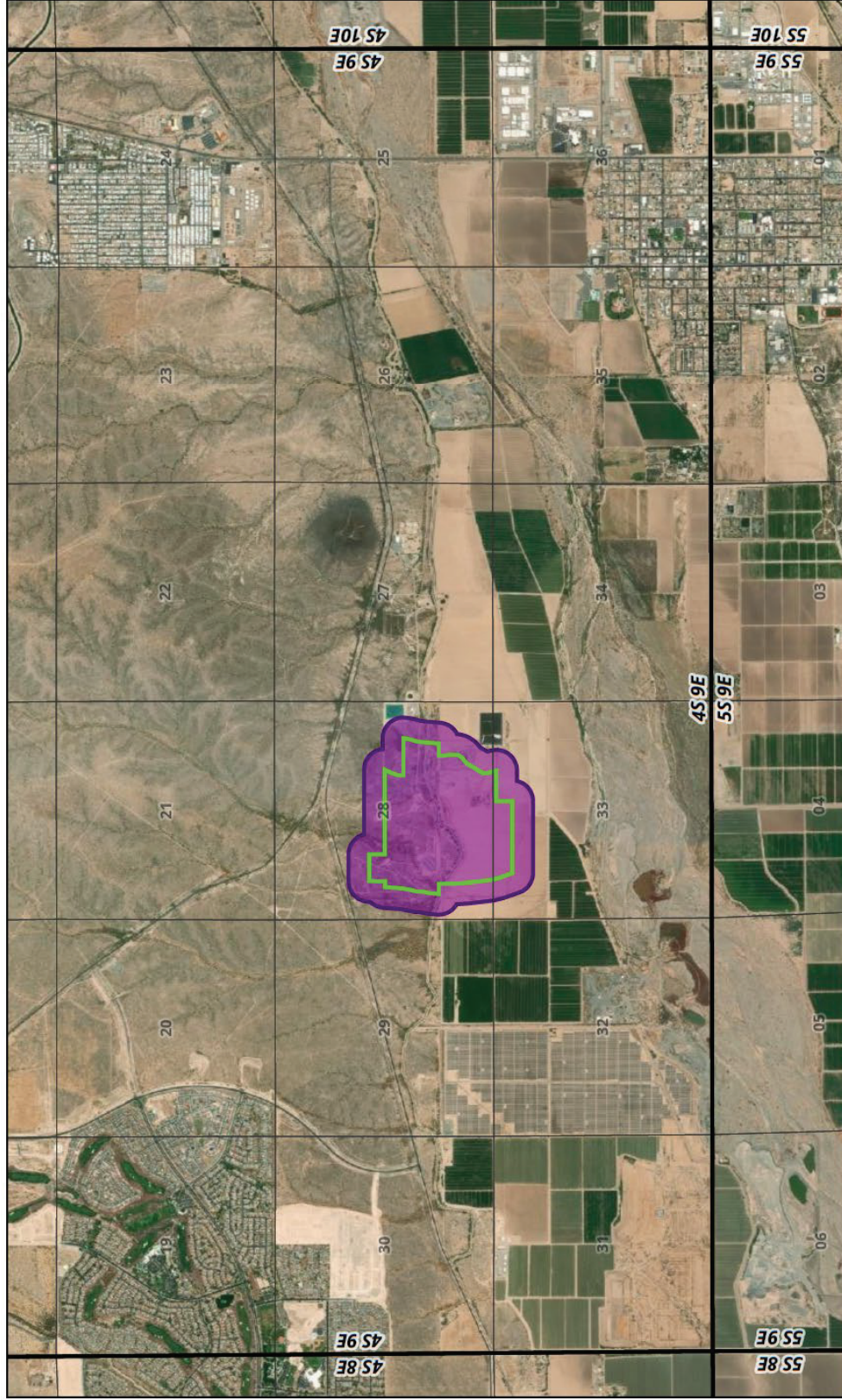
FCI provided shapefiles (the “Shapefiles”), pursuant to its amended permit application, which are incorporated into the Administrative Record for the 1997 Aquifer Exemption by this Memo to File. The correction to the 1997 Aquifer Exemption in this Memo to File does not require public notice and comment pursuant to the UIC regulations under SDWA because this Memo to File is not a new aquifer exemption<sup>3</sup> and merely corrects the existing aquifer exemption which contained an incorrect coordinate point description and provides an accurate map of the 1997 Aquifer Exemption.

In summary, this Memo to File corrects the 1997 Aquifer Exemption to 1) replace the inaccurate coordinate points with Shapefiles that accurately correspond to the approved 500-foot distance from the mine zone boundary, and 2) attaches Figure 1 to this Memo as the map depicting the 1997 Aquifer Exemption.

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<sup>2</sup> The 1997 BHP Permit contains some maps, but it does not contain the map referred to in the 1997 Aquifer Exemption depicting the lateral aquifer exemption boundary.

<sup>3</sup> *See*, 40 C.F.R. §144.7(b)(3) (requiring public notice and comment for new aquifer exemptions).

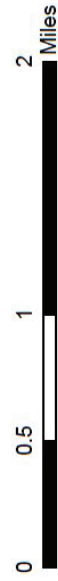






Data source: Florence Copper, Inc.  
Aquifer Exemption GIS files, 2022-0309.



WTR-22-04487  
March 31, 2022

**Florence Copper Aquifer Exemption Location Map**  
Florence, Pinal County, Arizona



-  ISCR Well Field
-  Aquifer Exemption Area
-  PLSS Section
-  PLSS Township

**Gunnison Copper Project Aquifer Exemption**

**EPA Permit # R9UIC-AZ3-FY16-1**

**June 2018**





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street  
San Francisco, CA 94105-3901

June 22, 2018

Stephen Twyerould, Ph.D.  
Chief Executive Officer and President  
Excelsior Mining Arizona, Inc.  
Concord Place, Suite 300  
2999 North 44th Street  
Phoenix, Arizona 85018

**Re: Aquifer Exemption Request for the Gunnison Copper Project Site,  
Cochise County, Arizona**

Dear Mr. Twyerould:

Based on a thorough review of the material submitted by Excelsior Mining Arizona, Inc. as part of the Underground Injection Control Permit application for the Gunnison Copper Project, the United States Environmental Protection Agency, Region 9 (EPA) hereby provides notice of approval of an aquifer exemption request for portions of the aquifer in the oxide ore body in which the Gunnison Copper Project will be located and portions of the basal fill above it and the sulfide zone below it in Cochise County, Arizona.

The approved aquifer exemption boundaries and depths, along with EPA's analyses and rationale in support of the approval, are detailed in the enclosed Record of Decision, also available at: <https://www.epa.gov/uic/uic-permits-pacific-southwest-region-9>. In accordance with applicable regulations at 40 C.F.R. Parts 144, 145, and 146, EPA finds that this aquifer exemption request is a non-substantial program revision, and the requested formations meet federal exemption criteria:

- The portions of the formations proposed for exemption do not currently serve as a source of drinking water; and
- The portions of the formations proposed for exemption cannot now and will not in the future serve as a source of drinking water because they contain minerals that are expected to be commercially producible.

If you have any questions, please contact David Albright, Manager, Drinking Water Protection Section, at (415) 972-3971.

Sincerely,

June 22, 2018

Tomás Torres  
Director, Water Division

Enclosure

cc (via email): Dave Dunaway, Arizona Department of Environmental Quality  
Rebecca Sawyer, Excelsior

**US Environmental Protection Agency (EPA) Region 9**  
**Underground Injection Control (UIC) Program**  
**AQUIFER EXEMPTION RECORD OF DECISION**

This Record of Decision (ROD) provides the United States Environmental Protection Agency, Region 9's (EPA's) aquifer exemption (AE) decision, background information concerning the AE request, and the basis for the AE decision for the Gunnison Copper Project site in Cochise County, Arizona.

**Primacy Agency:** The EPA directly implements the UIC program under Section 1422 of the Safe Drinking Water Act for the State of Arizona.

**Date of AE Request:** February 2016 (Revised July 2017)

**Substantial or Non-Substantial Program Revision:** Non-Substantial

The approval process for this action differs depending on whether EPA determines the decision is a major or minor program revision. Because the AE decision is not a state-wide programmatic change or a revision with implications for the national UIC program, EPA has determined that this proposed action is a non-substantial program revision. The determination that this AE is a non-substantial program revision is consistent with the state program revision process described in EPA's "Guidance for Review and Approval of State Underground Injection Control (UIC) Programs and Revisions to Approved State Programs" ("Guidance 34").

**Exemption Criteria:** Excelsior Mining Arizona, Inc. requests this exemption based on the criteria at 40 CFR § 146.4(a) and § 146.4(b)(1).

**Operator:** Excelsior Mining Arizona, Inc. (Excelsior).

**Project Name:** Gunnison Copper Project.

**Project Permit Number:** UIC Class III area permit number R9UIC-AZ3-FY16-1.

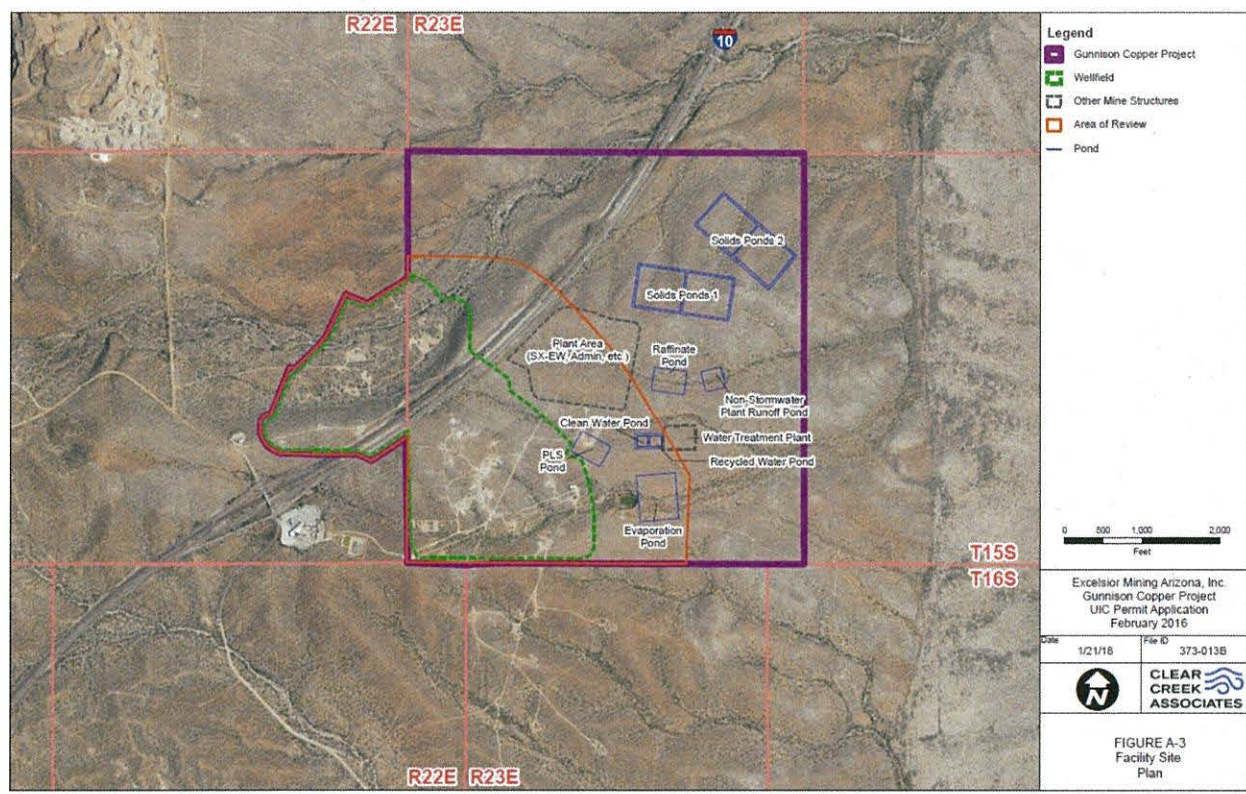
**Project Location:** The AE is located in portions of Township 15 South Range 22 East Section 36 and all of Township 15 South Range 23 East Section 31. [Refer to Figure A-3.]

**County:** Cochise

**State:** Arizona

**Well Class/Type:** Class III in-situ recovery (ISR) wells for Copper.





## DESCRIPTION OF PROPOSED AQUIFER EXEMPTION

**Aquifer to be Exempted:** The aquifer to be exempted is in the oxide ore body in which the ISR wellfield will be located and portions of the basal fill above it and the sulfide zone below.

**Areal Extent of Aquifer Exemption:** The proposed aquifer exemption encompasses 332 acres. This includes the area of the wellfield associated with the mining project plus approximately 1,200 feet to the east (the direction of ground water flow) and at least 250 feet to the north. The extent of the exempted area coincides with the area of review (AOR) delineated for the Class III permit application. The AOR represents the area where injected fluids may endanger an underground source of drinking water (USDW), based on modeling of fluid movement performed by the applicant. This modeling approach, evaluated by the EPA as part of the Class III permit application evaluation, incorporates the geologic and operational characteristics of the proposed project.

**Lithology, Total Dissolved Solids (TDS), Depth, Thickness, Porosity, and Hydraulic Conductivity of the Aquifer:** Sampling data provided in the operator's Class III permit application reflects samples taken between 2012 and 2015 at various depths within the basin fill, oxide zone, and sulfide zone. The following table presents the lithology, TDS levels, depth, thickness, and average porosity and hydraulic conductivity information about the formations that comprise the aquifer proposed for exemption.

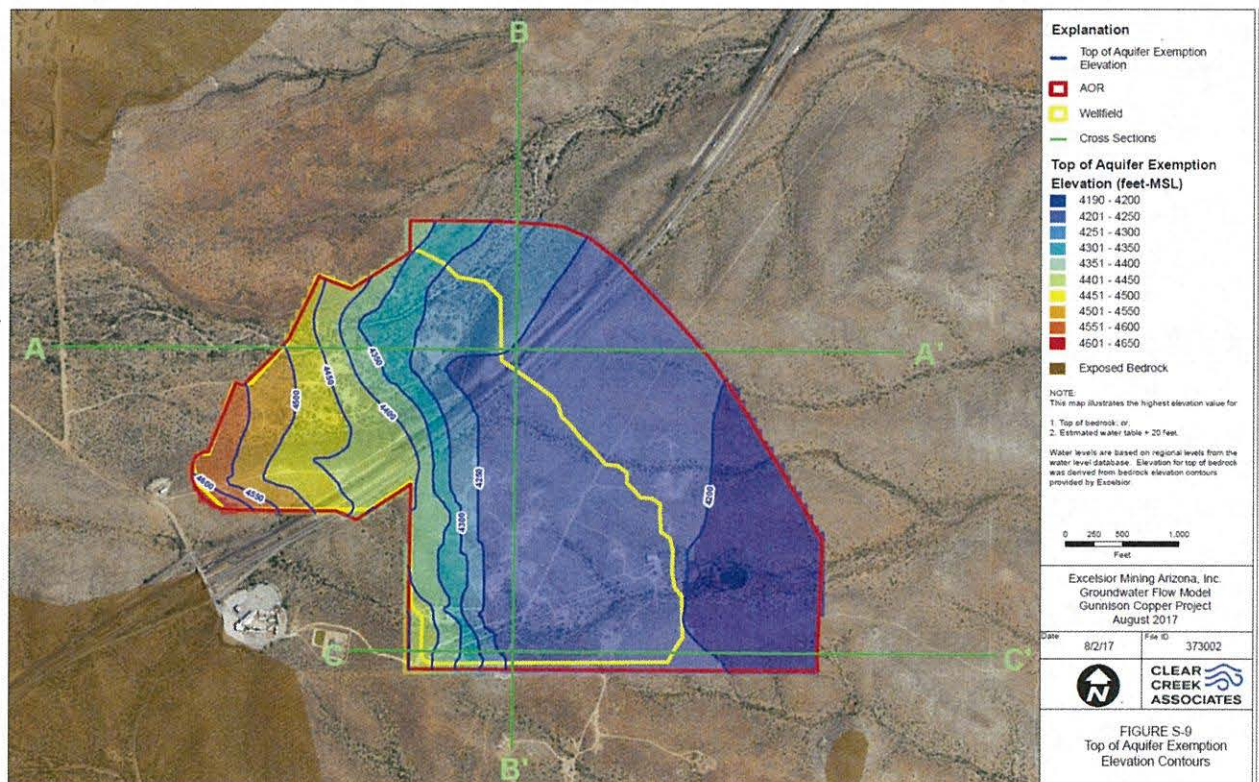
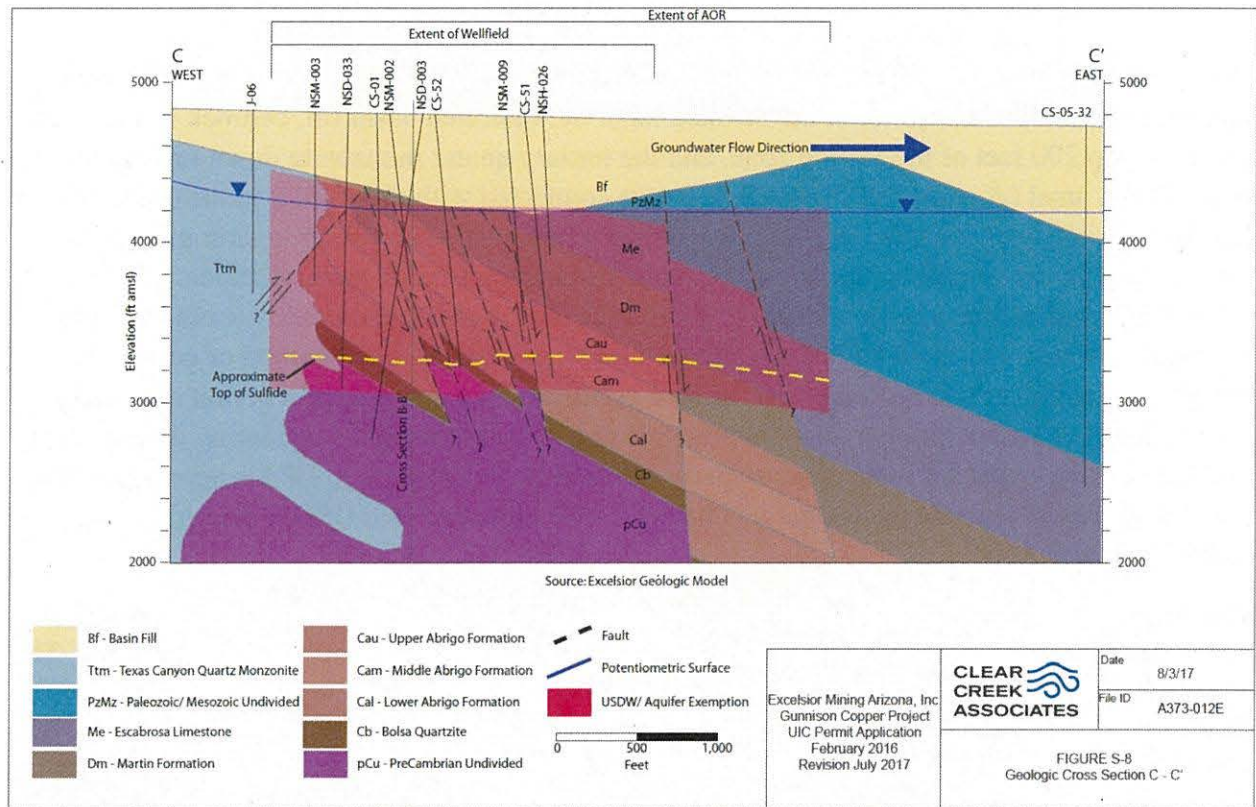
<i>Aquifer</i>	<i>Lithology</i>	<i>TDS (mg/L)</i>	<i>Elevation of the Top (feet, amsl)</i>	<i>Thickness (feet)</i>	<i>Average Porosity and Hydraulic Conductivity</i>
Basin fill/ saturated zone	Unconsolidated to semi-consolidated conglomerate, sand, and fine-grained lake deposits.	Average: 267.3 (range: 238- 284)	4,190 to 4,650 feet (top of the saturated zone)	Variable from approx. 0- 200 feet	Porosity: 10-20 % Hydraulic conductivity: 1-2 ft./day
Oxide zone	Occurs mainly as chrysocolla and/or malachite that formed as coatings on rock fractures and as vein fill. Azurite and secondary chalcocite are also present. The remainder of the oxide mineralization occurs as replacement patches and disseminations.	Average: 270.8 (range: 210- 324)	Variable from approx. 4,000 to 4,600 feet	Variable from approx. 600 to 1,000 feet	Porosity: 2.77% Hydraulic conductivity: 1.1 ft./day avg. (range: 0.01-9.8 ft./day)
Sulfide zone	Comprised of primarily consolidated carbonate bedrock ranging in age from Precambrian to Mississippian, from west to east in the AE area.	622 (based on a single value)	Variable from approx. 3,800 to 2,800 feet from west to east	200 feet	Porosity: less than 1% Hydraulic conductivity: 0.001- 0.03 ft./day
Sources of information: Excelsior's UIC Class III permit application, Attachments A-1 (AOR Methods), A-2 (Groundwater Modeling Report, Gunnison Copper Project), and I (Formation Testing Program).					

**Exempted Zone(s):** The aquifer proposed for exemption is contained laterally by high hydraulic gradient (to the west) and hydraulic control wells (to the south, east, and north). The top of the exempted area is defined as the top of the saturated zone in the basin fill formation that overlies the injection zone for the wellfield. Below the injection zone, the aquifer proposed for exemption extends 200 feet into a low-permeability sulfide zone, below which it does not contain a sufficient quantity of ground water to be considered feasible for use as a public water system due to its poor hydraulic conductivity. [Refer to Figures S-6, S-7, S-8, and S-9.]







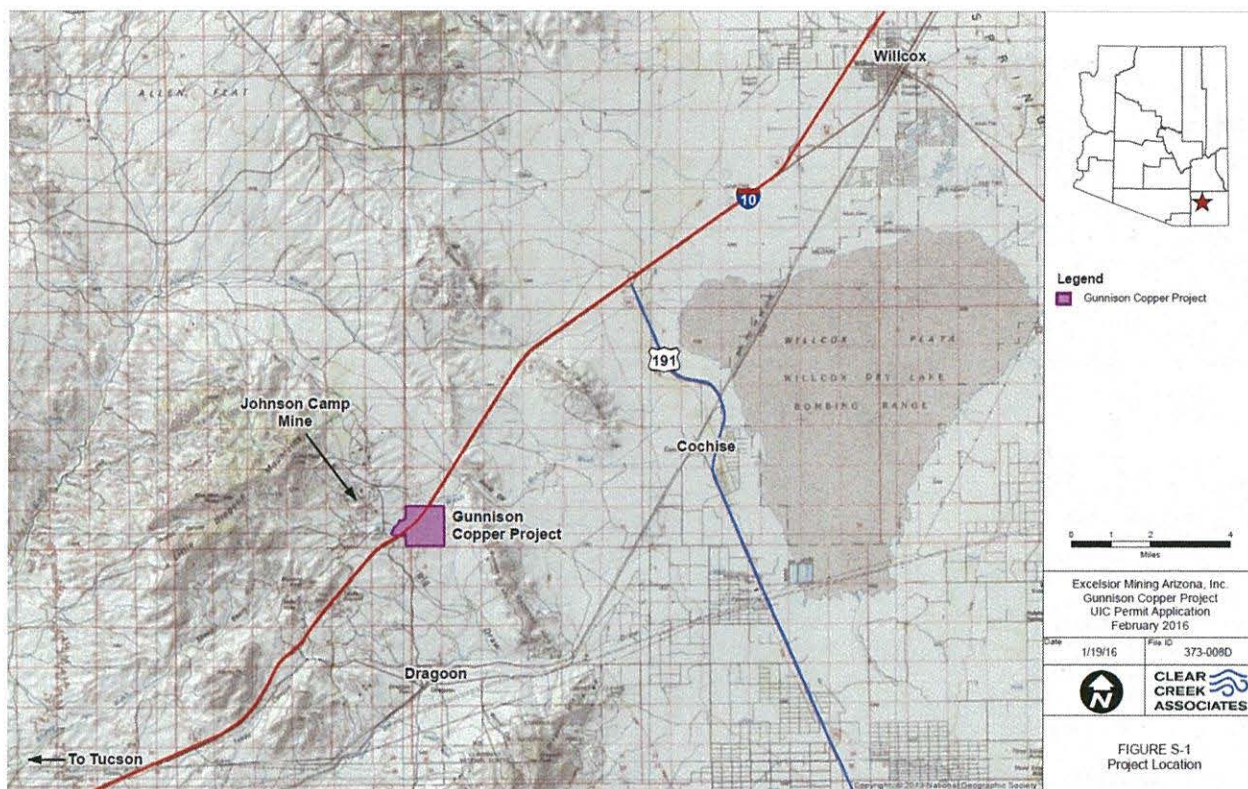




## **BACKGROUND**

On February 2, 2016 (as revised in July 2017), Excelsior submitted a request for EPA Region 9 approval to exempt the aquifer in the formations of the saturated basin fill, bedrock in the oxide zone, the top 200 feet of the sulfide zone, and the tertiary quartz monzonite down to an elevation of 3100 feet amsl (as shown in Figure S-8) that is connected with the aquifer in the oxide zone or has the possibility of fracture connections with the oxide zone. The tertiary quartz monzonite present only in the southwest corner of the AOR also contains oxide mineralization. The AE request is based on the criteria at 40 CFR § 146.4(a): that it does not currently serve as a source of drinking water; and at 40 CFR § 146.4(b)(1): that 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. Subsequent to EPA's approval of the AE, the exempt aquifer in the formations would not be protected as a USDW under the Safe Drinking Water Act.

Concurrent with the request to exempt the aquifer, Excelsior is applying to the EPA for a UIC Class III area permit to install a wellfield for ISR of copper at the Gunnison Copper Project. The Project is a proposed ISR copper mine located in Cochise County, Arizona, approximately 62 miles east of Tucson and 17 miles west of Willcox (see Figure S-1). The location is along Interstate 10 (I-10) on the southeastern flank of the Little Drought Mountains, in the Cochise Mining District.





The wellfield will consist of Class III injection wells, recovery wells, hydraulic control wells, observation wells, and monitoring wells. A sulfuric acid solution will be injected into the copper oxide deposit, and pregnant leach solution will be pumped from the recovery wells and routed to a solvent extraction/electrowinning (SX-EW) plant where copper cathode will be produced. Injection and recovery wells will be interspaced approximately 71 feet apart in an alternating and repeating pattern throughout the wellfield. In addition, the ISR wellfield will be bounded in downgradient areas by a series of hydraulic containment wells that will provide net positive pumping throughout the life of the project. Observation wells at the wellfield perimeter will be used to monitor water levels and electrical conductivity of formation fluids; additionally, monitoring wells will be placed between the active mine blocks and the wellfield perimeter to monitor and facilitate the reversal of ISR fluid movement from active mine blocks.

## **BASIS FOR DECISION**

### **Regulatory Criteria under which the AE is Requested and Approved**

**40 CFR § 146.4(a):** *It does not currently serve as a source of drinking water.*

To demonstrate this, Excelsior modeled ground water flow in the area to predict the extent to which injected fluids will move within the oxide zone and other formations that are potentially hydraulically connected to aquifers that supply domestic or public water supply wells within the area. Excelsior also searched database records and performed follow-up research to examine nearby wells that may serve as drinking water supply wells. These reviews demonstrate that the aquifers identified for exemption do not currently serve as a source of drinking water because there are no identified current drinking water supply wells, public or private that currently would draw water from the aquifer proposed for exemption, the formation/portions of formations are vertically and laterally contained (separated) from other USDWs, and no aquifers that serve as sources of drinking water are hydraulically connected to the aquifer.

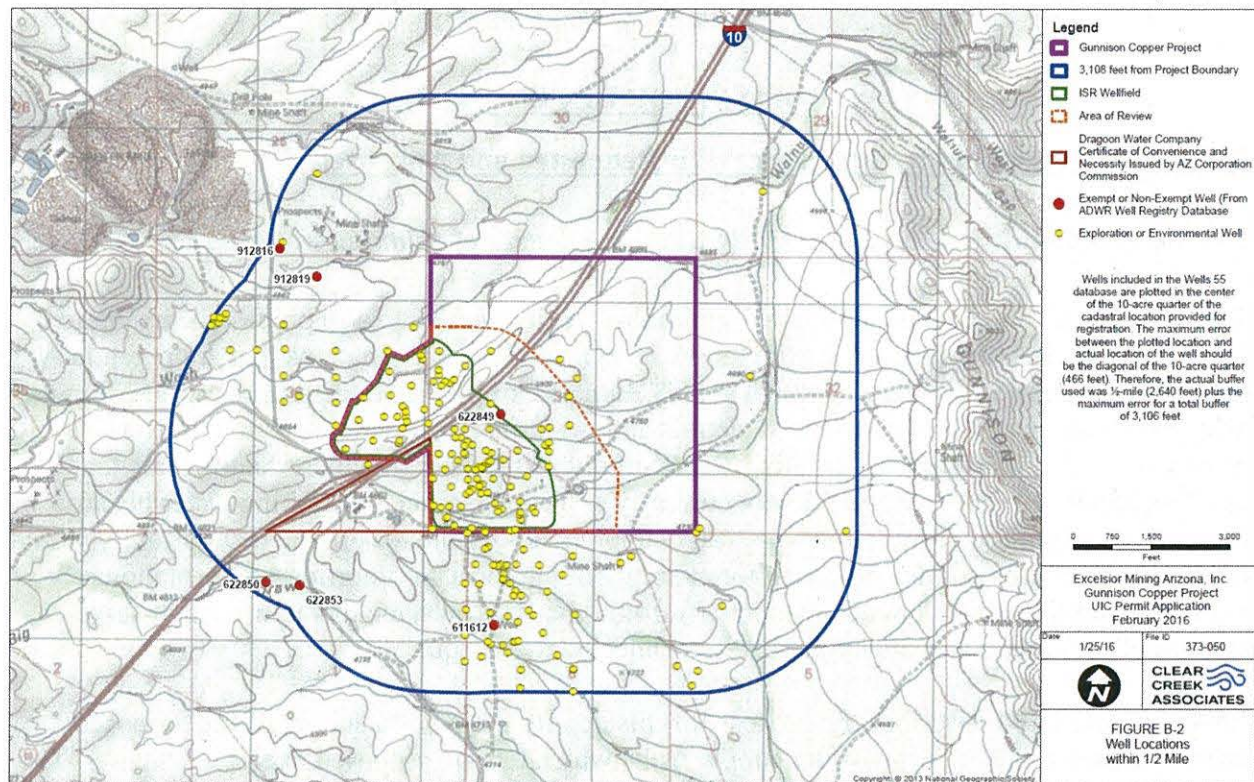
EPA's Guidance 34 describes the process for this determination as a survey of the proposed exempted area to identify any water supply wells which tap the proposed exempted aquifer. The area to be surveyed should cover the exempted zone and a buffer zone outside the exempted area. Although Guidance 34 recommends a buffer zone of a minimum of a 1/4 mile from the boundary of the exempted area, the determination of the appropriate area is on a case-by-case basis. EPA decided that one-half mile from the proposed exempted area was sufficient in this case because of the minimal groundwater development in the area as described in the following section.

**Water Supply Wells:** Based on the survey of the area, the aquifer does not currently serve as a source of drinking water. As described in Attachment B to the Class III permit application (Maps of Wells in the AOR), Excelsior examined the area within one-half mile from the property boundary by reviewing the USGS Dragoon 7.5 minute quadrangle map, searching the Arizona Department of Water Resources (ADWR's) Well Registry Database (Wells 55), searching the ADWR Groundwater Site Inventory (GWSI), and reviewing borehole data. Based on this review of records, Excelsior identified 201 wells within one-half mile of the project boundary. Of these wells, 195 are monitoring, exploration, or other well types; one well is listed as non-exempt; and



five wells are listed as exempt. There are no active, producing water supply wells (at any depths) within this one-half mile of the project boundary. [Refer to Figure B-2 for Well Locations within ½ Mile.]

Excelsior further investigated each of the six wells and determined that none of them serve as public water supply wells. Three of the wells are used by Excelsior for water level monitoring. Another well is on mine property and there are no buildings or potential users nearby. The remaining two wells were installed by Cyprus Copper Company when it operated the site between 1970 and 1973; Excelsior has been unable to locate these wells, however there are no residences near these wells that would indicate potential use of the wells for water supply.



According to the Aquifer Protection Permit application for the Gunnison Copper Project that Excelsior submitted to the Arizona Department of Environmental Quality (ADEQ) in December 2015, the project will be located in a sparsely populated area with minimal groundwater development. Few wells in the area have been drilled for purposes of water use; most were drilled for mineral exploration or hydrogeologic investigations in and around the project.

The closest water production wells to the AE boundary are located more than 2 miles northeast of the project property, providing an operating water supply for the Johnson Camp Mine. The nearest public drinking water wells operated by the Dagoon Water Company are more than 3.3 miles southeast of the project, near the town of Dagoon. EPA believes that an evaluation of the capture zone for these wells is not necessary because EPA's review of hydrogeologic conditions (i.e., groundwater elevations, groundwater flow direction and velocity) and the wells' considerable distance from the project boundary supports that groundwater from the project



would not be captured by the Dragoon public drinking water wells. (Sources of information: The Excelsior's UIC Class III permit application Attachment A-2, Groundwater Modeling Report, and Attachment B, Table B-1 lists all well locations in the area.)

**Ground Water Flow Patterns:** Based on hydrogeologic evaluations, water level data, and modeling studies, ground water flow in the area is to the east. Therefore, the exempted area includes the wellfield where Class III injection will occur, plus an area extending approximately 1,200 feet to the east of the wellfield.

As noted above, the area of the aquifer proposed for exemption coincides with the Class III AOR. The applicant predicted ground water flow under the proposed operating conditions using MODFLOW-NWT, a Newton Formulation of MODFLOW 2005. MODFLOW-NWT is a numerical code that was constructed using a number of extensive datasets, including detailed mapping of fracture intensity, which is key to groundwater flow in the project area. This model also supports the Aquifer Protection Permit application that Excelsior submitted to ADEQ.

The EPA evaluated the modeling approach and the site-specific geologic and hydrogeologic information and planned operational data that served as inputs, in connection with other information in the Class III UIC permit application (including geologic maps, logs, hydrologic information, etc.). Based on this, the EPA determined that the model accurately represents the extent of fluid movement and demonstrates that the aquifer to be exempted is not in contact with any formations that serve as a drinking water supply within one-half mile of the aquifer exemption boundary.

**Containment of Fluids to the AE Boundaries:** Modeling of ground water flow at the proposed site demonstrates that the use of hydraulic control wells will contain the mining fluids to the AE area, preventing migration to any surrounding aquifers. The lateral and vertical boundaries of the exempted aquifers are described in Attachment A-1 to the Class III UIC permit application (AOR Methods).

The proposed lateral distance of the AE boundaries from the wellfield is based on existing hydraulic gradients and modeled predictions of the areas of influence of the hydraulic control wells on the east side of the wellfield. These lateral boundaries are as follows:

- West: The western boundary of the area proposed for exemption is the boundary of the Gunnison Mine property, which is approximately 100 feet from the nearest proposed injection well. Ground water flows from the west into the wellfield along its western boundary. Due to the high eastward hydraulic gradient, injection flows will be contained by the extraction and hydraulic control wells.
- East and North: The area proposed for exemption extends approximately 1,200 feet to the east and at least 250 feet north of the outermost wells in the ISR wellfield. The northeastern boundary of the area proposed for exemption is based on the maximum capture zones for hydraulic control wells on the east and northeastern sides of the wellfield. These hydraulic control wells serve as a barrier to contain pollutants, and the hydraulic control wells' areas of influence, which are critical to pollutant containment,



are also predicted by groundwater modeling to be within the AE area along the northeastern and eastern boundaries.

- South: The southern boundary of the area proposed for exemption is the south side of the wellfield, which coincides with the property boundary. Modeling predicts that hydraulic containment wells along this boundary will provide containment. Eastward flow gradients and the hydraulic control wells are predicted to provide adequate containment.

The top of the exempted zone is the top of the saturated zone in the basin fill formation, at a depth of 4,190 to 4,650 feet above mean sea level. See Figure S-9 above. This elevation is based on water level mapping of the project area and groundwater levels in wells NSH-006 and NSD-020, which are the only two wells screened solely in the basin fill that have saturated alluvium.

The bottom of the exempted zone is within the low-permeability sulfide zone that occurs below the Class III injection zone. The upper 200 feet of the sulfide zone is incorporated into the exemption area. This is based primarily on poor hydraulic conductivity and aquifer characteristics and on the depth to the bottom of the transition zone (where copper oxide deposits transition to primarily copper sulfide deposits). The sulfide zone is less fractured; therefore, its use as a public water supply is not considered feasible. However, there is a possibility of fracture connections between the oxide and sulfide zones that were not identified by aquifer testing, and such connections would make portions of the sulfide zone a USDW. For this reason, the upper 200 feet of the sulfide zone are proposed for exemption.

The EPA reviewed the analyses in the AE application and the UIC permit application as described above, and accordingly, the EPA concludes that the aquifer does not currently serve as a source of drinking water, pursuant to 40 CFR § 146.4(a).

**40 CFR § 146.4(b)(1): *It cannot now and will not in the future serve as a source of drinking water because 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.***

The EPA evaluated available information on mineral resource estimates as informed by samples from core and reverse circulation drill holes that support a demonstration of the presence of producible mineral deposits in the area of the aquifer proposed for exemption.

The project is in a district where copper, zinc, silver and tungsten mining have occurred since the 1880s. The deposit was discovered in the 1960s, when exploratory drilling was conducted following detection of a magnetic anomaly. Several million tons of low-grade acid soluble copper mineralization were identified by early 1974. Since that time, extensive exploration has occurred, including 55 coreholes drilled between 2010 and 2014. No mining has occurred at the project site. However, the project does fall within an active mining district.

As Excelsior describes in their aquifer exemption request, the project area contains commercially-producible grades of copper. A Prefeasibility Study (PFS) of the process and infrastructure design, capital cost, operating cost, and an independent Technical Report was issued in 2014. The PFS was updated and re-issued in January, 2017. Excelsior submitted this



report to demonstrate that commercially producible minerals are present, pursuant to §146.4(b)(1).

Excelsior's Probable Mineral Reserve is defined from a copper resource estimate developed in 2015. The estimation of copper resources within the proposed aquifer exemption area is based on 6,427 assay samples from 96 core and reverse circulation drill holes totaling 140,034 linear feet. Forty-two of the contributing drill holes were drilled by Excelsior between 2011 and 2015; the remainder were drilled by other companies between 1970 and 1997. Excelsior controls and has verified the historical drill data.

The table below summarizes the reserve within the oxide zone. To create the reserve, the mineral resource estimate was constrained and evaluated in accordance with Excelsior's mining plan. The conservative estimate includes material from the Measured and Indicated categories of the mineral resource and excludes Inferred mineral resources. It does not include material from the sulfide zone. The estimate assumes the use of in-situ recovery as a mining method, which requires a wellfield (injection and recovery wells) and pumping of pregnant leach solution to an SX/EW plant to recover the copper. The boundaries of the Probable Mineral Reserve were defined using economic parameters. Excelsior developed a wellfield/production schedule for the Project. The mineral reserve estimate is the sum of the production schedule within the proposed aquifer exemption area.

#### **Mineral Reserves Within the Oxide Zone**

	Tons	Total Cu (%)	Metal (lbs.)	Recovered Metal (lbs.)
Total	307,314,401	0.33	2,002,432,410	989,101,608

Based on a review of information such as historical drilling data and copper resource estimates and given the long history of mineral production and the implementation of in situ recovery techniques, the EPA has determined that the aquifer in the area proposed for exemption meets the criteria at 40 CFR § 146(b)(1).

#### **PUBLIC NOTICE AND COMMENT**

EPA provided public notice of the proposed AE on October 25, 2017 and notice for a public hearing on January 24, 2018. EPA concurrently provided notice on the Draft UIC Area Permit, No. R9UIC-AZ3-FY16-1, for Excelsior Mining Arizona, Inc.'s Gunnison Copper Project Permit and held a public hearing on February 27, 2018. The public comment period ended on February 27, 2018.

Since EPA held a concurrent public comment process for the proposed AE and the Draft UIC Area Permit, the Agency is issuing a response to comments that addresses all significant comments submitted in writing and orally at the public hearing. The EPA's Response to Comments document, the Public Hearing transcript, and this Aquifer Exemption Record of Decision are available on EPA's web page at <https://www.epa.gov/uic/uic-permits-pacific-southwest-region-9>.

### **CONCLUSION AND DECISION**

Based on a review of the entire record, including all the written and oral comments submitted to EPA during the public comment process, the EPA finds that the exemption criteria at 40 CFR §§ 146.4(a) and 146.4(b)(1) have been met and the EPA approves the aquifer exemption request as a non-substantial program revision.

**Effective Date:** June 22, 2018



**Santa Cruz Project Aquifer Exemption**

**EPA Permit # AZ397000001**

**October 1997**

# UNDERGROUND INJECTION CONTROL AQUIFER EXEMPTION

FOR

EPA PERMIT #AZ397000001

In compliance with provisions of the Safe Drinking Water Act, as amended, (42 USC 300f-300j-9, commonly known as the SDWA) and attendant regulations incorporated by the U.S. Environmental Protection Agency under Title 40 of the Code of Federal Regulations (CFR), the zone located:

- (1) in the subsurface interval of approximately 1000 feet to 4000 feet below ground surface (bgs); and
- (2) below the upper aquifer exemption boundary which is 200 feet below the top of the conglomerate unit; and
- (3) above the lower aquifer exemption boundary which is the base of the reactive interval amenable to copper leach solutions, encompassing the copper oxide, chalcocite, and primary sulfide zones; and
- (4) laterally as delineated in Appendix A of Permit #AZ397000001, which is in Pinal County, Arizona and is described by the following township, range, and section--  
Gila and Salt River Base Line and Meridian:

S1/2 SE1/4 SE1/4, section 12, T. 6 S., R. 4 E. (20 acres)  
S1/2 SW1/4 SE1/4, section 12, T. 6 S., R. 4 E. (20 acres)  
SE1/4 SE1/4 SW1/4, section 12, T. 6 S., R. 4 E. (10 acres)  
NE1/4, section 13, T. 6 S., R. 4 E. (160 acres)  
E1/2 NE1/4 NW1/4, section 13, T. 6 S., R. 4 E. (20 acres)  
E1/2 SE1/4 NW1/4, section 13, T. 6 S., R. 4 E. (20 acres)  
E1/2 NE1/4 SW1/4, section 13, T. 6 S., R. 4 E. (20 acres)  
E1/2 SE1/4 SW1/4, section 13, T. 6 S., R. 4 E. (20 acres)  
SE1/4, section 13, T. 6 S., R. 4 E. (160 acres)  
N1/2 NE1/4, section 24, T. 6 S., R. 4 E. (80 acres)  
N1/2 SW1/4 NE1/4, section 24, T. 6 S., R. 4 E. (20 acres)  
N1/2 SE1/4 NE1/4, section 24, T. 6 S., R. 4 E. (20 acres)

E1/2 NE1/4 NW1/4, section 24, T. 6 S., R. 4 E. (20 acres)  
NE1/4 SE1/4 NW1/4, section 24, T. 6 S., R. 4 E. (10 acres)

S1/2 SW1/4 SW1/4, section 7, T. 6 S., R. 5 E. (20 acres)  
W1/2 NW1/4, section 18, T. 6 S., R. 5 E. (80 acres)  
SW1/4, section 18, T. 6 S., R. 5 E. (160 acres)  
W1/2 NW1/4 SE1/4, section 18, T. 6 S., R. 5 E. (20 acres)  
W1/2 SW1/4 SE1/4, section 18, T. 6 S., R. 5 E. (20 acres)  
NW1/4 NW1/4, section 19, T. 6 S., R. 5 E. (40 acres)  
N1/2 SW1/4 NW1/4, section 19, T. 6 S., R. 5 E. (20 acres)

is exempted as an underground source of drinking water (USDW).

This aquifer exemption is granted in conjunction with the Class III Underground Injection Control permit issued to Santa Cruz Joint Venture (SCJV), consisting of ASARCO Santa Cruz, Inc. and Freeport-McMoRan Copper & Gold Inc., for the injection of an acidic solution for the purpose of copper production at the Santa Cruz In-Situ Project.

This aquifer exemption has no expiration date.

Signed this 13<sup>th</sup> day of October, 1999.



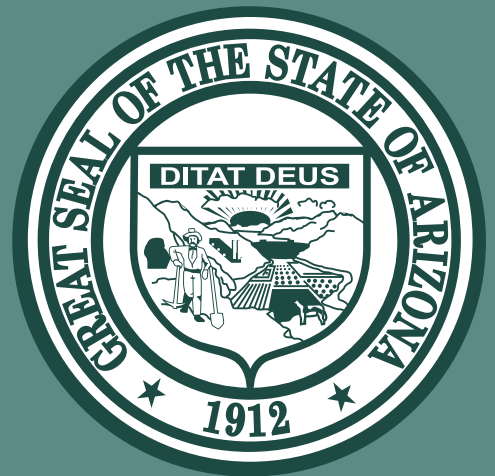
Alexis Strauss, Director  
Water Division, EPA Region 9

## **Appendix 6 – 2023 ADEQ Compliance & Enforcement Handbook**



ARIZONA DEPARTMENT OF  
ENVIRONMENTAL QUALITY

# COMPLIANCE HANDBOOK





***Statement required pursuant to Arizona Revised Statutes (A.R.S.) § 41-1091***

*“This substantive policy statement is advisory only. A substantive policy statement does not include internal procedural documents that only affect the internal procedures of the agency and does not impose additional requirements or penalties on regulated parties or include confidential information or rules made in accordance with the Arizona Administrative Procedure Act. If you believe that this substantive policy statement does impose additional requirements or penalties on regulated parties, you may petition the agency under A.R.S. § 41-1033 for a review of the statement.”*

***Statement from the Arizona Department of Environmental Quality***

*This Compliance Handbook is considered a substantive policy because it explains the agency’s current practice and approach to requirements of particular Arizona laws, consistent with the definition of "substantive policy statement" in A.R.S. § 41-1001(24). References to internal standard work, forms, metrics, and other references within this Compliance Handbook are not part of this substantive policy statement and may be changed without changing this substantive policy, at the discretion of ADEQ.*

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## Definitions

**AGO:** Arizona's Attorney General's Office.

**Alleged Deficiency:** An assessment by ADEQ that there is a failure to meet a legal requirement. Alleged deficiencies may also be called potential deficiencies, violations, or potential violations because laws and rules inconsistently use these terms.

**AZURITE:** The Arizona Unified Repository for Informational Tracking of the Environment (AZURITE) database stores ADEQ's information, including:

- Places (i.e., the facilities, sites, or objects that ADEQ regulates)
- Customers (i.e., the businesses and people with whom ADEQ interacts)
- Permit issuance and actions
- Compliance and enforcement actions

**Action Update:** A written notice to a regulated party concerning the status of any action resulting from an inspection. The notice is provided at least once every month, in accordance with A.R.S. § [41-1009\(J\)](#), until the regulated person is notified that no agency action will result from the inspection or after the completion of an agency action resulting from the agency inspection. The completion of an agency action is when a formal enforcement tool is effective or an NOC or NOV has been closed, dismissed, or rescinded without reserving further action.

**Administrative Order:** An order issued by ADEQ, such as a consent order, compliance order, abatement order, or stop use order.

**Case Manager:** ADEQ employee responsible for working with the regulated community to resolve compliance issues.

**Consent Order:** A formal enforcement bilateral administrative order issued with the written agreement of the RP and ADEQ. ADEQ has authority within individual programs to issue orders, and an RP has the ability to negotiate, consent to the order, and waive their right to appeal the order pursuant to A.R.S. §§ [41-1004](#) and [41-1092.07\(F\)\(5\)](#).

**Compliance/Abatement Order:** A formal enforcement unilateral administrative order issued by ADEQ. ADEQ has authority within individual programs to issue orders.

**Electronic Signature Tool:** A web-based software application used by the agency to route any and all documents (i.e., orders, letters, agreements, templates, etc.) through the internal and/or external signatory process. The agency's electronic signature tool eliminates the need to print and physically sign documents and provides a more efficient way to route documents for signature. It also tracks when recipients receive, open, and sign a document.

**Environmental Complaint:** Reporting and feedback received by ADEQ about a possible violation of environmental law or rule, through any reporting mechanism, including complaints from the general

public, the media, businesses, and government representatives, as well as internal complaint referrals between staff. Inquiries, requests for information, and complaints about issues that are not environmental in nature are not processed as environmental complaints.

**Exit Debrief Form:** A form provided to facility personnel on inspection day when an inspection report cannot be provided either prior to leaving a field inspection site or on the same day of an inspection.

**Field-Issued Document:** A document prepared by the Inspector that is issued to facility personnel on-site prior to the Inspector leaving the facility site. These include field-issued NOCs, NOVs, inspection reports, and exit debrief forms. In order to support inspector safety, the document is also considered field-issued if it is issued to the facility the same day but off-site and an exit debriefing form is provided to the facility prior to the Inspector leaving the site.

**File Review:** A review of ADEQ records for a facility, site, or responsible party that is separate from an on-site or virtual inspection.

**ICE Database:** Inspections, Compliance, and Enforcement (ICE) module of the AZURITE database that tracks and documents facility inspections and compliance.

**Inspection Report:** A report that documents the Inspector's observations of compliance and/or potential noncompliance during an inspection of the facility, pursuant to A.R.S. § [41-1009\(D\)](#) and [\(E\)](#).

**Inspector:** ADEQ employee or contractor who conducts inspections of the regulated community. In some programs, Inspectors are also Case Managers.

**Media:** Environmental media (or medium) refers to the affected component of the natural environment, including air, water, soil, or any other parts of the environment that can contain contamination.

**NOC:** A Notice of Opportunity to Correct Deficiencies (NOC) is an informal compliance assurance tool issued by ADEQ in accordance with A.R.S. § [41-1009\(E\)](#) and [\(K\)](#) that provides a responsible party an opportunity to correct a deficiency.

**NOIR:** The Notice of Inspection Rights Form (NOIR) is the written notice provided at the time of an inspection to inform the responsible party of its statutory rights pursuant to A.R.S. §§ [41-1009\(A\)](#) and [\(B\)](#) and [41-1001.01\(C\)](#).

**NOV:** A Notice of Violation (NOV) is an informal compliance assurance tool issued by ADEQ in accordance with A.R.S. §§ [41-1009\(E\)](#) and [\(K\)](#) and [41-1092.12\(F\)\(4\)](#). An NOV provides a responsible party notice that ADEQ believes a significant violation of environmental law has occurred. An NOV may be issued in response to an inspection when ADEQ documents in writing as part of the inspection report that the deficiency meets one or more of the criteria in A.R.S. § [41-1009\(E\)](#).

**OAC:** ADEQ's Office of Administrative Counsel.

**On-Site Inspection:** An inspection conducted by ADEQ staff who are physically within the property boundary of the location being inspected. Observations from outside of the property boundary are not considered an on-site inspection.

**RP or PRP:** A responsible party (RP) or potentially responsible party (PRP) is any person or entity that is or may be regulated by an environmental law, statute, rule, or permit.

**Shall/Should:** When “shall” is used, it references a requirement in law. When “should” is used, it references internal agency requirements.

**SW:** Standard work (SW) is the documented current single best way to perform a process, which is always subject to review and revision.

**Unit/Value Stream/Division:** Hierarchy of ADEQ management that implements the regulatory requirements for a particular media. Units are within Value Streams, and Value Streams are within the Air, Water, and Waste Divisions.

**Virtual Inspection:** An inspection conducted by ADEQ staff from an off-site location, using electronic devices to communicate with facility personnel who are on-site.

## Introduction

This handbook provides direction for appropriate, consistent, and timely evaluations of compliance and escalations of enforcement by the Arizona Department of Environmental Quality (ADEQ). The primary audience of this handbook is ADEQ employees who implement compliance management. The secondary audience is the regulated community that must maintain compliance. Local authorities who have compliance and enforcement responsibilities through delegation agreements with ADEQ may choose to use this handbook. This handbook supersedes and nullifies the previous version issued in 2015.

To make the handbook easier for staff to use, contents include links to other documents including standard work, templates, and other guidance. Linked documents are not incorporated herein as part of this substantive policy and are subject to revision without notice or amendment of this handbook.

Links to internal documents are in orange text and cannot be viewed by external parties through the handbook. Copies of internal documents may be obtained by submitting a [Public Records Request to ADEQ](#).

ADEQ is required by law to implement A.R.S. [Title 49](#) to protect the environment. ADEQ's mission is to protect and enhance public health and the environment in Arizona. ADEQ's core functions are: planning, permitting, compliance management, monitoring, assessment, cleanups, and outreach. This handbook addresses compliance management.

See the [Compliance Flowchart](#) for a general overview of the compliance process from beginning to end.

ADEQ's compliance management focuses on three performance measures to evaluate environmental compliance in the regulated community:

- The number of inspections completed.
- Facility compliance at the time of inspection.
- The time it takes for a facility to return to compliance.

Compliance management starts with an inspection, a file review, or a complaint. ADEQ will issue an inspection report for any field or virtual inspection. ADEQ also conducts file reviews based on monitoring and reporting data. ADEQ can take informal or formal enforcement action against a facility when appropriate.

ADEQ prefers to resolve any deficiencies using its informal action tools: Notice of Opportunity to Correct Deficiencies (NOC) and Notice of Violation (NOV). When issues cannot be resolved in the short-term, or the violations are severe, ADEQ may require the use of formal enforcement tools, such as an administrative consent order, an administrative compliance order, and civil enforcement. When there is a possible intent to deceive or violate the law, ADEQ may refer cases for criminal prosecution. The primary

goal for any compliance action is to assist the facility to return to compliance as quickly as possible. The secondary goals are to maintain compliance and deter noncompliance in the future. ADEQ's decision whether to use informal or formal tools is discretionary and fact-specific, based on observations during the inspection and file review.

ADEQ staff should follow the agency [Escalation Matrix](#) that prescribes how to escalate issues in a timely manner, and staff should utilize the agency's daily huddle escalation process.

**Imminent dangers to public health should be escalated immediately.**

ADEQ strives to help the regulated community understand and comply with regulatory requirements and to promote positive environmental practices. ADEQ appreciates the work done by businesses, facilities, and the people of Arizona, to protect public health and the environment. Please reach out to ADEQ for questions about regulatory concerns. For compliance assistance resources, visit [azdeq.gov/compliance\\_assistance](https://azdeq.gov/compliance_assistance).

ADEQ also recognizes and awards incentives to Arizona businesses, municipalities, and other organizations that demonstrate a willingness to go above and beyond what is legally required to protect public health and the environment. Participants in the Voluntary Environmental Stewardship Program (VESP) receive public recognition of the organization's stewardship commitment, get advanced notification of inspections and enforcement, and may have reduced reporting requirements. For more information, visit [azdeq.gov/VESP](https://azdeq.gov/VESP).

This handbook is intended solely as guidance to provide consistency and does not create any rights enforceable by any party. Timeframes noted in the handbook that are not in law or rule are agency goals and do not create additional rights, and the listed agency goals are designed to be met for 80 percent of the cases. Nothing in this handbook is intended to limit the enforcement discretion of ADEQ. Case-specific deviations from this handbook are permitted with management approval. Failure to follow this handbook will not prevent ADEQ from bringing an enforcement action that is otherwise appropriate for the violation.

Lastly, the handbook provides guidance on the number of days a particular action or event should take to complete. **All references to days contained in the handbook are calendar days.** If the last day falls on a Saturday, Sunday, or Arizona recognized holiday, the compliance date is the next business day. The agency's internal complaint response timeframes will always begin and continue to be counted starting on the calendar day a complaint is received.

Thank you for your efforts to protect and enhance public health and the environment in Arizona.

## Chapter 1: Complaints & Responses

ADEQ staff should use the following complaint receipt and response procedures, along with the referenced standard work, when receiving and processing complaint information about potential violations of environmental laws, statutes, rules, permits, or other environmental concerns.

Acute risks should be mitigated as soon as possible (see [Table 1](#)).

Complaint intake and response is an important part of protecting public health and the environment. Arizonans have the ability to identify potential concerns quickly, and ADEQ's prompt response is the best way to minimize risk and solve problems fast. Every ADEQ employee is responsible for assisting the public to accurately and promptly file complaints.

This chapter begins by providing complaint and feedback resources, explains the [environmental complaint](#) intake and response procedures, and highlights important standard work for closing complaints.

### COMPLAINT & FEEDBACK RESOURCES:

- Dial 911 for immediate health and safety concerns. ADEQ employees who need to report an ADEQ employee safety issue should complete the [Incident Tracker](#).
- Visit the ADEQ [Environmental Complaints webpage](#) for a complete and up-to-date list of environmental complaint tools and phone numbers. The online Environmental Complaint Form is the best way for members of the public to file a complaint about a possible violation of environmental law or rule.
- Visit the [Facility Reporting webpage](#) for industrial emergency spills.
- Use the online [Vehicle Emissions Complaint Form](#) to file a vehicle emissions complaint.
- Visit the [Civil Rights webpage](#) for information about filing a Civil Rights complaint.
- Complete the [online Feedback Tracker](#) to comment on ADEQ's performance and customer service.
- Visit the [Arizona Ombudsman-Citizens' Aide website](#) for information about contacting the Arizona Ombudsperson who helps citizens resolve ongoing issues with state agencies.

### AGENCY GOALS:

- Mitigate acute risks as soon as possible (see [Table 1](#)).
- Three days to initially respond to the complainant from receipt of complaint.
- Seven days to inspect a complaint (when determined necessary) that is not a known acute risk to public health and the environment.
- 15 days from complaint received to close and, if necessary, recommend a case.

Table 1: Acute Risks and Corresponding Mitigation

*At the time of discovery ADEQ employees should escalate these acute risks through management to their Division Director and follow the corresponding initial mitigation.*

ACUTE RISK	INITIAL MITIGATION ASAP
<b>Air Quality:</b> <ul style="list-style-type: none"> <li>Discharge of pollutants that pose a potential imminent threat to public safety</li> <li>Windblown dust or smoke with potential for significant public health &amp; safety concerns (e.g., highway &amp; road visibility)</li> <li>Monitored ambient data that represents a significant National Ambient Air Quality Standards (NAAQS) exceedance</li> </ul>	<b>Mitigation:</b> <ul style="list-style-type: none"> <li>For discharges that pose an imminent threat during business hours: contact the Air Quality Facility Emissions Control (FEC) Unit, which will assess &amp; refer ongoing threats to the Emergency Response Unit (ERU)</li> <li>For discharges that pose an imminent threat during non-business hours: contact the ERU hotline</li> <li>For windblown dust or smoke: contact FEC during business hours, or ERU during non-business hours</li> <li>Notify AZ Department of Public Safety &amp; Department of Transportation (for sheltering in place or road safety)</li> <li>Conduct an inspection, if necessary</li> <li>Contact the property or facility owner to stop the discharge of pollutants</li> <li>Notify impacted residents</li> </ul>
<b>Drinking Water:</b> <ul style="list-style-type: none"> <li><i>E. coli</i> Maximum Contaminant Level (MCL) exceedance</li> <li>Nitrate MCL exceedance</li> <li>Other MCL exceedances requiring immediate action</li> <li>Water outage greater than four (4) hours</li> </ul>	<b>Mitigation:</b> <ul style="list-style-type: none"> <li>For <i>E. coli</i>: ensure Boil Water Notice is sent to customers</li> <li>For other MCL exceedances: work with management to determine what other actions must be taken, e.g., Exceedance Notice sent to customers</li> <li>Require alternative drinking water sources, if necessary</li> <li>For water outages: deploy <a href="#">Water Emergency Team Standard Work*</a></li> </ul>
<b>Waste/Water:</b> <ul style="list-style-type: none"> <li>Discharge of a hazardous substance that poses an imminent threat to a drinking water source or public safety</li> <li>Sanitary sewer overflows (SSOs)</li> <li>Impacted Surface Water</li> </ul>	<b>Mitigation:</b> <ul style="list-style-type: none"> <li>For hazardous substances: contact ERU</li> <li>For SSOs: contact the property or facility owner to stop the discharge of pollutants</li> <li>Follow <a href="#">SSO Response Standard Work*</a></li> <li>Notify impacted residents when there is an ongoing threat</li> <li>For an impacted surface water: escalate immediately to stop &amp; contain any discharge</li> <li>Notify AZ Departments of Public Safety, Transportation, &amp; Health Services, if necessary</li> </ul>

## STANDARD WORK:

- [Environmental Complaint Process Flow Chart\\*](#)
- [AZURITE Reference Guide — Complaints](#)
- [Multimedia Inspections](#)
- [ADEQ Information List](#)
- [Complaint Media Definitions](#)
- [SSO Response\\*](#)
- [Water Emergency Team\\*](#)
- [Compliance Handbook Metrics — Complaints](#)

## FORMS:

- [Online Environmental Complaint Form](#)

## Receipt Procedures for Phone, In-Person, or Emailed Environmental Complaints

Upon becoming aware at any time that a complaint involves an acute risk to public health and the environment (see [Table 1](#)), **escalate to management as soon as possible**.

### STEP 1 — INTRODUCE YOURSELF TO COMPLAINANT

If a person wishes to make a complaint by **phone or in person**: an ADEQ employee should state their name, job title, and Value Stream so the complainant has a contact reference for the conversation.

If the complaint is received via **email or voicemail** and does not contain sufficient information to enter the complaint: the employee will contact the complainant; state their name, job title, and Value Stream; and request necessary information (see [Step 3](#)).

*Every employee is responsible for assisting with complaints.*

### STEP 2 — IDENTIFY AFFECTED MEDIA & IMMEDIATELY RECORD COMPLAINT INFORMATION

The ADEQ employee intaking the complaint will identify the affected media to determine which of the following methods of documenting the complaint is appropriate:

- **If the complaint concerns media addressed by the employee's unit:**  
The employee will immediately enter the required complaint information into the AZURITE Complaint module during the conversation, and assign the complaint to an employee in accordance with the employee's unit standard work. *A Complaint ID will be generated and an email sent to the assigned employee.* Communicate about the complaint at the next standup and always before a weekend or holiday. If an employee is unfamiliar with the AZURITE Complaint module, enter the complaint in the [online Environmental Complaint Form](#) (see [Steps 3 – 10](#)).
- **If the complaint involves media best addressed by a different ADEQ Unit or the ADEQ employee is unsure of the media involved:**  
The employee will enter the information into the [online Environmental Complaint Form](#) during the conversation instead of entering the complaint into AZURITE, which eliminates the need to assign a specific employee from a different unit to a complaint. AZURITE Complaint Staging is populated



when the online complaint is entered. *A Complaint ID is not generated until the complaint is reviewed and assigned in AZURITE Complaint Staging.* Once a complaint is in Complaint Staging, a Complaint ID must be generated. An email notice is automatically sent to the corresponding Unit email based on the media selected, and to the Office of Administrative Counsel (OAC) when there is no media selected. See [AZURITE Reference Guide — Complaints](#).

- **If there is no complaint about a possible violation of environmental law or rule:**

Provide additional relevant information, if possible, communicate that this is not an environmental complaint, and then do not proceed to process an environmental complaint. Inquiries, requests for information, and complaints about issues that are not environmental in nature are not processed as environmental complaints. Review the [ADEQ Information List](#) to provide a person with other appropriate referrals and contact either OAC or the Front Desk for further assistance.

Once a matter has a Staging ID or Complaint ID created, as a result of being entered into the AZURITE system, follow [AZURITE Reference Guide — Complaints](#) to properly close that complaint in the complaint module.

**Complaint Intake:** When a complaint is being made in any fashion and at any time, an ADEQ employee should assist the complainant by entering the complaint into AZURITE Complaint or the [online Environmental Complaint Form](#). When using the online Environmental Complaint Form, offer the option of entering the complaint for the complainant or assisting them while they enter the complaint.

### STEP 3 — OBTAIN COMPLAINT INFORMATION

The ADEQ employee should obtain as much information as possible, including, but not limited to:

- Detailed location information, such as street address, nearest cross streets, city, and county.
- Time and date of occurrence.
- Substance and quantity involved.
- A list of the evidence verifying the complaint, including photographs, documents, and witnesses.

Because AZURITE Complaint Staging, Complaints, and the online Environmental Complaint Form do not accept attachments at this time, the employee entering the complaint should make a note of available evidence and then the assigned employee should follow-up with the complainant to receive that evidence by email. Inspectors or Case Managers may always contact the complainant to obtain evidence, if not previously provided.

Electronic and hard copies of information should be placed in the facility file according to program standard work.

If there is not enough specific information to follow up on the complaint, a complaint may be “closed without an inspection,” if “contact with complainant” is first selected and a comment added about why the complainant could not be contacted.

#### **STEP 4 — ENTER THE MEDIA AFFECTED**

If using AZURITE Complaints, enter the Media or Medium Affected.

If using the online Environmental Complaint Form, enter the Type of Pollutant.

#### **STEP 5 — INFORM COMPLAINANT OF CONFIDENTIALITY PROCEDURE**

After obtaining the complaint information, the ADEQ employee shall read the disclaimer based upon A.R.S. § [41-1010](#):

“Arizona law requires you to provide your name during the course of reporting an alleged violation of law or rule. Under the law, your name will be placed in the public file unless the release of your name may result in substantial harm to any person, including yourself, or to the public health or safety. However, if you intend on remaining anonymous, ADEQ may not force you to identify yourself.”

The disclaimer is at the bottom of the online complaint form in bold or a pop-up when the complaint is entered in AZURITE Complaints. See [AZURITE Reference Guide — Complaints](#).

The ADEQ employee receiving a complaint directly by email should respond by email or phone with the disclaimer, ask for any potential harm posed to the complainant, and request any missing contact or complaint information. Enter the complaint into AZURITE Complaints.

#### **STEP 6 — ASK FOR COMPLAINANT'S NAME**

Ask for the complainant’s contact information, including name, address, phone number, and email. *If the complainant wishes to remain anonymous, explain they will receive no follow-up information.*

#### **STEP 7 — IF CONFIDENTIALITY IS REQUESTED, DOCUMENT THE CLAIMED HARM**

If a complainant provides a name and wishes to remain confidential, document the specific potential harm posed to the complainant. *ADEQ cannot guarantee confidentiality but will make every reasonable attempt to protect the complainant’s contact information if there is a potential for harm to the complainant.* An ADEQ employee intaking the complaint should document the request for confidentiality by checking the confidentiality box in AZURITE, checking the potential harm statement box, and adding text supporting the claim of potential harm. See [AZURITE Reference Guide — Complaints](#).

**Request for Complainant Information:** Contact OAC if there is a specific request for information about a complainant.

## STEP 8 — EXPLAIN COMPLAINT FOLLOW-UP PROCEDURES

Explain that ADEQ will evaluate the complaint, conduct an inspection if warranted, and engage in compliance management if necessary.

Explain that by entering this complaint, an ADEQ employee will be assigned to be the point of contact, and the ADEQ staff member will contact the complainant to discuss the resolution of the complaint, unless the complainant has declined to be contacted.

Explain that ADEQ may be able to provide ongoing status updates to the complainant.

## STEP 9 — COMPLETE THE COMPLAINT ENTRY

If using AZURITE Complaints, click the “save” button after completing the form to create the complaint.

If using the online Environmental Complaint Form, “Submit.”

## Receiving Environmental Complaints via the Online Environmental Complaint Form

When a complaint is entered into the online Environmental Complaint Form by a complainant or ADEQ employee, an email will be automatically sent to the corresponding Unit’s email based upon the media that is selected on the form.

Complaints that do not have a selected media will be automatically sent to the OAC for review and distribution to the appropriate program Unit Manager; in some cases OAC will manage the complaint until closure.

See the [Environmental Complaint Process Flow Chart](#).\*

## Environmental Complaint Response

### STEP 1 — REVIEW FOR ACUTE RISK & ASSIGN CASE MANAGER OR INSPECTOR

**Within one day of receipt**, the Unit Manager or other employee reviewing an email containing the online environmental complaint should assign a Case Manager or Inspector.

Upon reviewing the complaint for assignment, if the complaint involves an acute risk to public health and the environment (see [Table 1](#)), escalate through management to the Division Director as soon as possible.

If a Unit Manager or other employee determines that the complaint was received by the incorrect program, the Unit Manager should consult with another program Unit Manager and assign the complaint to the Unit Manager. The new Unit Manager should then assign an appropriate Case Manager or Inspector. Use the [ADEQ Information List](#) to locate the correct program contact.

*All complaints should have a Complaint ID generated in AZURITE. See [AZURITE Reference Guide — Complaints](#).* No complaints should be left in AZURITE Complaint Staging.

Contact [oad@azdeg.gov](mailto:oad@azdeg.gov) for assistance handling large volumes of complaints.

## STEP 2 — CONTACT COMPLAINANT &/OR POTENTIALLY RESPONSIBLE PARTY (PRP)

Within **two days** of the assignment or reassignment, the Inspector or Case Manager should make contact with the complainant, if known, and the [PRP](#), if appropriate.

If the complaint lacks sufficient information to determine appropriate follow-up for the case (i.e., referral, inspection, closure without inspection), the Inspector or Case Manager should attempt to obtain this information from the complainant.

The Inspector or Case Manager should update the AZURITE Complaints screen with the appropriate database actions throughout each step of the complaints process.

See [AZURITE Reference Guide — Complaints](#).

As a reminder, ADEQ should obtain as much information as possible, including, but not limited to:

- Detailed location information, such as street address, nearest cross streets, city and county.
- Time and date of occurrence.
- Substance and quantity involved.
- Documentation verifying the complaint, including photographs, documents, and witnesses.

Inspectors or Case Managers may contact the complainant to obtain documentation, if not previously provided. Electronic and hard copies of information should be placed in the facility file according to program standard work. A complaint may be “closed without an inspection” and a comment added if there is not enough specific information to follow up on the complaint.

**Contact with Complainant:** Contact with complainant is considered achieved whether or not contact has been made if at least two attempts have been made by phone or email, if no phone is provided, and a voicemail and email are sent if possible. Enter “Contact with Complainant” as an action in AZURITE when contact has been achieved. At the conclusion of an inspection or other complaint resolution, Inspectors and Case Managers should make additional contact with the complainant to explain the next steps and then enter a second “Contact with Complainant” into AZURITE.

**Repeat Complaints:** In general, when an Inspector or Case Manager receives a complaint that is similar to previous complaints and the complaint has already been investigated, the Inspector or Case Manager should notify the complainant that ADEQ has investigated the complaint and should inform the complainant of the outcome of the investigation. The complaint should be managed as an independent complaint.

**Duplicate Complaints:** Occasionally, AZURITE may produce two identical records for the same complaint. In those situations, create separate Complaints and then enter “Duplicate Complaint” for one of the Complaint IDs to close that complaint.

Contact [oad@azdeq.gov](mailto:oad@azdeq.gov) for questions about handling large volumes of similar complaints or frequently repeating complaints.

### STEP 3 — DETERMINE & EXECUTE APPROPRIATE COMPLAINT FOLLOW-UP

Generally, all complaints will result in one of the following actions:

- **Inspection:** The Inspector should conduct the inspection as soon as practicable, but **no later than 10 days** from the date the complaint was received, with consideration given to the potential risk to public health and the environment.

An inspection is warranted if ADEQ has jurisdiction and ADEQ believes there may be a violation of an environmental law, statute, rule, permit, or another environmental community concern. See [Chapter 2: Inspections](#).

The Inspector or Case Manager should select the “Inspection Recommended” action in AZURITE Complaints in order to create an Inspection ID number.

After the inspection, enter “Inspection Completed” in AZURITE Inspections.

Enter “Case Recommended” in AZURITE Inspections if there are potential violations, in order to begin tracking the resolution of those potential violations in AZURITE.

Contact the complainant to discuss findings and next steps.

Close the complaint by selecting “Closed After Inspection” and entering a comment.

- **Referral to an Outside Agency:** Within **two days** of the complaint assignment, the Inspector or Case Manager should refer the case to the appropriate agency using the Inspector or Case Manager’s program standard work and inform the complainant of the referral. For any referral not addressed by standard work, the Inspector or Case Manager should email the complaint to the appropriate agency.

ADEQ should provide the complainant the referred agency’s contact information after confirming that the referred agency will be addressing the complaint concerns.

When referring a complaint where the complainant wishes to remain confidential, verify that the confidential box is checked in AZURITE and that potential harms are entered, and then generate a complaint form to send as a PDF in the referral; verify this form hides the complainant’s identity.

Work with the referred-to agency and the complainant to provide the complainant's contact information if necessary.

Close the complaint by selecting “Complaint referred to other agency” and entering a comment with details of the referral.

- **Case Closure Without Inspection:** Complaints can be closed without an inspection for the following situations:
  - Not enough specific information exists to follow up on the complaint.
  - The complaint is resolved without a site visit.
  - The complaint is not within our jurisdiction and ADEQ does not have a formal referral process for the situation or does not know the proper referral.

The Inspector or Case Manager should make reasonable attempts to obtain the necessary information before making the decision to close the complaint; if the complainant does not include a name or contact information, however, obtaining the necessary information may not be possible.

Close the complaint by selecting “Closed with No Inspection.”

See [AZURITE Reference Guide — Complaints](#).

**Delegated Programs:** ADEQ delegates some regulatory programs to counties and cities. The current Delegation Agreements can be found by visiting [azdeq.gov/final-delegation-agreements](http://azdeq.gov/final-delegation-agreements). The Inspector or Case Manager should work with the Unit Manager on the appropriate follow-up action based on the protocol in the delegation agreement and should coordinate with the delegated authority, if necessary, to encourage compliance management consistency.

**Multimedia Inspection:** If a complaint requires the response of more than one ADEQ unit, a multimedia inspection may be required. Multimedia inspections take place when the regulatory authority for an environmental or public health concern is present in multiple media types. An inspection from two or more units may be required. See [Multimedia Inspections](#).

#### STEP 4 — FOLLOW UP WITH COMPLAINANT

**Within 5 days** after the completion of the inspection report, follow up with the complainant for:

- any subsequent resolution of compliance conditions directly related to the complaint, and
- any other important update to the complainant’s issue.

If a complainant is not satisfied with ADEQ’s response, provide them with the contact information for the [Arizona Ombudsman-Citizens’ Aide](#).

Inform the ADEQ Records Center if any records are provided to the complainant by emailing [recordscenter@azdeq.gov](mailto:recordscenter@azdeq.gov) and contact [oac@azdeq.gov](mailto:oac@azdeq.gov) for any questions regarding records disclosure.

**Complaint Closure & Case Follow-Up:** ADEQ recognizes that a complainant values having a complaint fully resolved as fast as possible and receiving updates about the complaint. If a complaint results in a violation, the complaint will be closed in AZURITE Complaints and the violations tracked for resolution through the AZURITE Informal and/or Enforcement screens. The public may request information on the status of the violation(s).

**Customer Service:** ADEQ is here to serve the public. Providing great customer service not only helps us solve problems, it instills confidence in the public that ADEQ is fulfilling its missions to protect public health and the environment. When you are interacting with customers, treat them with respect, listen to their issues, and do whatever you can to help resolve their concerns.

**Potential Criminal Activity:** If the Inspector or Case Manager determines, at any time during the complaint process, that the complaint involves potential criminal activity, the Inspector or Case Manager should notify OAC as soon as possible. OAC will refer the case to the AGO, if appropriate after consulting with the agency Director and Division Directors. See [Chapter 4, Criminal Referral](#).

**The Importance of Accurate Data Management:** Update AZURITE and other databases within two days of an event. Data are essential to fact-based decisions. ADEQ mission decisions rely on accurate and reliable data. Correct names, accurate Place IDs, and updated public records files are examples of essential data. Please follow standard work for managing data, including agency and other specific SW for public records, directives in this handbook, and the [AZURITE Reference Guide](#).

## Chapter 2: Inspections

The primary purpose of an inspection is to evaluate compliance with environmental laws, rules, and permits. Conducting an adequate number of inspections is therefore essential for the evaluation of compliance. An inspection also provides an opportunity for ADEQ to provide compliance assistance to facilities. ADEQ strives not only to identify all instances of noncompliance, but also to provide education through compliance assistance in order to avoid future noncompliance. This chapter explains how to prepare for and conduct an inspection, issue an inspection report, and use Case Recommended in AZURITE to identify any violations for informal or formal enforcement.

### INSPECTOR ROLES & RESPONSIBILITIES:

- Represent ADEQ professionally.
- Determine compliance with regulations.
- Document compliance issues.
- Provide technical and compliance assistance.

### AGENCY GOALS:

- Inspector Safety First
- Number of inspections conducted meets agency goals.
- 80 percent of inspection reports field-issued when practical.
- Seven days to office-issue inspection reports.
- Quality Inspection Reports
- Exit debrief form issued same day if not issuing an inspection report.
- Closing conference conducted for all inspections when an RP representative is present.

### STANDARD WORK:

- [AZURITE Reference Guide — Inspections and File Reviews](#)
- [Program Specific Inspection\\*](#)
- [Multimedia Inspection](#)
- [Site Access\\*](#)
- [Virtual Inspection](#)
- [Compliance Documents Notice and Receipt Requirements](#)
- [Compliance Handbook Metrics — Inspections](#)

### FORMS:

- [Notice of Inspections Rights](#)
- [Inspection Report Templates\\*](#)
- [Facility Inspection Checklists\\*](#)
- [Exit Debriefing Form](#)
- [Action Update Letter](#)
- [Compliance Assistance Form](#)
- [Compliance Forms\\*](#)



## What is an Inspection

### An inspection occurs when:

- ADEQ or its contractor is entering the premises for the purpose of collecting evidence for compliance.

Inspections must follow the procedures of A.R.S. § [41-1009](#), including using a [Notice of Inspections Rights](#) from the CEC Templates.

### The following is NOT an inspection:

- A file review where there is no entry to the premises.
- Observations from off-site that are not part of an on-site inspection.
- A facility tour where both parties agree that compliance will not be formally reviewed.
- A compliance assistance visit (log into the AZURITE Compliance Assistance Module).
- A meeting at the facility that does not collect additional evidence.

Contact management if significant violations may exist to determine if an inspection is necessary.

## Number of Inspections Conducted

Conducting an adequate number of inspections is essential for the evaluation of compliance.

Determine the number of inspections necessary each year by considering:

- United States Environmental Protection Agency (EPA) programmatic requirements.
- The total number of known regulated facilities and the potential for new regulated facilities.
- The frequency of inspection necessary and reasonable based on risk, capacity, and other priorities.
- Complaint Inspections.

Prioritize inspections to inspect facilities that pose the greatest risk to public health and the environment.

## Inspection Process

The following procedures should be followed to promote consistent and thorough inspections.

Case-specific deviations from these procedures may be necessary in certain circumstances. Compliance assistance visits that are not part of an official inspection should follow the [compliance assistance visit procedure](#) at the end of this chapter.

## STEP 1 — PREPARE FOR INSPECTION

Pre-inspection research should include **all** of the following:

- Review of all relevant information, including AZURITE, myDEQ, electronic and hard copy facility files, and previous inspection reports.
- Review of past inspections and enforcement actions to determine compliance history. The Inspector should recommend an NOV if there is evidence of a pattern of noncompliance as demonstrated by alleged deficiencies previously identified in an inspection report or other written notice at the same premises.

Obtain facility and RP contact information. Contact OAC for assistance in identifying the RP if needed.

Use the facility-specific inspection checklist if one has been developed.

ADEQ Permitting Units should provide at least a general inspection checklist when each permit is issued.

Determine whether an on-site or virtual inspection will be conducted:

- On-site inspections are the preferred method for compliance inspections.
- Conduct an on-site inspection if required by regulations or programmatic agreements, or if a virtual inspection will not be effective for completely evaluating compliance (e.g., in the case of an investigation of a complaint where no other reporting data have been received by ADEQ).
- Conduct a virtual inspection if it will allow for a review of compliance that would otherwise not be possible because of capacity.
- If a virtual inspection will be conducted, follow unit SW and the agency [Virtual Inspection](#).

Schedule an inspection with the RP unless an unannounced inspection is warranted:

- Offer the RP the opportunity to be present at the time of inspection.
- Follow Unit standard work when scheduling.
- Providing a specific date and time is not necessary; you may provide a reasonably near-term time period (e.g., the next 30 days).
- Get permission to enter the property and inquire about any property access restrictions.
- **Do not enter private property without receiving specific authorization from the RP or obtaining a search warrant with the AGO.**

Develop a sampling plan and seek guidance from the laboratory regarding sampling methodologies and chain of custody if necessary.

Review the site layout on AZMapper, Google Maps or Google Earth.

Request documents from the RP for review **prior to** the inspection:

- ADEQ employees should request and review documents prior to the inspection in order to enhance the efficiency of the inspection.
- ADEQ employees should ask relevant questions about documents prior to the on-site or virtual inspection, if appropriate, and should use the on-site or virtual inspection to confirm and further clarify an RP's information.

Review and practice the virtual inspection technology with the RP, if necessary, including confirming internet connectivity.

Prepare documents and materials required for the inspection:

- Prepare the Survey123 application.
- Prepare the [NOIR](#).
- For virtual inspections, review the NOIR with the facility prior to the virtual inspection to provide sufficient time for receiving the facility representative's signature of acknowledgment. The signature can be provided to ADEQ electronically prior to conducting the inspection.
- Begin preparing the inspection report to help with field-issuing the report, including documenting findings during the file review and developing questions for the inspection report.

Coordinate with other programs when the issue affects more than one media and follow the standard work for [Multimedia Inspections](#).

**Announced vs. Unannounced Inspections:** ADEQ has authority to perform both announced and unannounced inspections. Unannounced inspections comply with requirements in A.R.S. § [41-1009](#). Utilize an unannounced inspection if announcing an inspection may frustrate the purpose of the inspection, i.e., if there is a concern that evidence will no longer be available or that an announced inspection will not allow the agency to accurately assess compliance. In all cases, access must be granted by the property owner or a search warrant secured.

**Complaint Inspections:** Consider whether identifying information about a complainant should remain confidential prior to inspecting a facility or site. In some cases it may be helpful to bring a copy of the complaint form to show the facility. Complaint inspections may be narrow in focus but consider whether additional information warrants a more comprehensive inspection or a follow-up inspection. Repeat complaints may be best addressed by a Community Liaison or the ADEQ Ombudsperson. Escalate when complaints have unique circumstances, such as complaints that involve the media, other government entities, or the legislature, or when complaints indicate a significant risk to public health and the environment.

## Pre-Inspection Safety Requirements

- Consider if law enforcement personnel are necessary to accompany an Inspector to ensure the safety of the Inspector or if you believe access will be denied. If so, utilize the standard work for [Site Access](#).
- Ensure your manager is aware of where you are going prior to conducting the inspection.
- Seek approval from your manager to have a second Inspector accompany you if you believe it would be beneficial for documenting site conditions or if you have safety concerns.
- Review each relevant Job Hazard Analysis (JHA). See [JHA Matrix](#).
- Obtain necessary Personal Protective Equipment (PPE) and ensure PPE is in good working condition. See [PPE Webpage](#).
- Ensure completion of the ADEQ Field Safety and Inspector Safety training within the past 12 months.
- Verify all job-specific required training is current.
- Check the weather conditions for the location of the inspection and the route to the inspection. Dress and pack appropriately based on the potential weather conditions for the time of year and forecasted weather. Hydrate well with fluids.
- Verify medical surveillance and respirator fit test is current if required for your field activity.
- Review the site layout using aerial views from AZMapper, Google Maps, or Google Earth.
- Contact the facility personnel to determine if additional safety equipment or training is needed if it is an announced inspection, or discuss safety requirements with ADEQ staff if it is an unannounced inspection.
- Review the facility's safety policies and protocols if available.
- Carry the "Reporting an Injury or Illness Card" along with your badge at all times.
- Review routes and plan to use the appropriate vehicle with necessary equipment, including four-wheel drive.

For more information, see [ADEQ Safety Resources Center](#).

### STEP 2 — IDENTIFY YOURSELF AT THE SITE

Present your ADEQ photo identification.

Identify your name, job title, and ADEQ Value Stream.

Explain the reason for your visit, the scope of your inspection, and statutory authority as listed in the NOIR to conduct the inspection.

### STEP 3 — GAIN SITE ACCESS

If the on-site representative refuses entry, the Inspector should vacate to a public right-of-way and immediately contact the Unit Manager. The Unit Manager should escalate and contact OAC for assistance in determining how to proceed, including obtaining a search warrant, if necessary. See [Site Access](#).

Upon initiating the inspection, the Inspector shall afford an opportunity for the RP to have an authorized on-site representative accompany the Inspector on the premises.

If a decision to inspect is made outside of the normal notice period established by the program, if possible and unless an unannounced inspection is appropriate, the Inspector should contact the RP a reasonable amount of time before the inspection to allow for the RP to be present. Allowing the RP to be present for the inspection ensures an opportunity for the Inspector to provide more effective compliance assistance if needed.

If no one is available on-site, the Inspector may proceed with the inspection if it is determined to be safe and the property owner has granted access. Contact your management if you have concerns.

If “No Trespassing” signs are present, the Inspector may enter the property only to obtain consent but should leave the property if consent cannot be obtained. The Inspector should note the “No Trespassing” on the NOIR and sign the NOIR.

An Inspector should not enter a gated and locked property without consent.

If an Inspector does not feel safe, leave the premises and contact the Unit Manager.

#### **STEP 4 — EXPLAIN INSPECTION RIGHTS**

Review and complete the NOIR with the on-site representative.

Obtain the on-site representative’s signature on the NOIR.

If the on-site representative refuses to sign the NOIR but will allow the inspection to continue, note the decision on the NOIR, sign the NOIR as the ADEQ representative, and proceed with the inspection.

If the on-site representative is not present, the Inspector may proceed with the inspection if access has been granted; note in the NOIR that access has been granted and that the on-site representative is not present and then sign the NOIR and proceed with the inspection.

The completed NOIR shall be provided to the facility regardless of whether there was a facility representative on-site.

If conducting a virtual inspection, prior to the inspection, explain the NOIR to the facility, obtain their electronic or scanned signature, and email the document to the facility.

See the [Compliance Documents Notice and Receipt Requirements](#) for more information about sending, confirming, and filing the NOI.

**When to Use the Notice of Inspection Rights (NOIR) Form:** A.R.S. § [41-1009](#) establishes the requirements for an agency to conduct an inspection. A NOIR is used to document permission from the facility to inspect and to document that ADEQ followed inspection requirements. An RP's signature is not required on the NOIR. Utilize the Notice of Inspection Rights Form in the CEC Templates for the most up-to-date form. The NOIR does not need to be completed if there is no on-site or virtual inspection, such as when observations are made off-site during a file review or without entry onto the facility property, or when ADEQ is accompanying another authority without also conducting an ADEQ inspection. Contact [oad@azdeq.gov](mailto:oad@azdeq.gov) with any NOIR questions.

## STEP 5 — CONDUCT INSPECTION

Always use the current versions of the NOIR, facility-specific inspection checklist, inspection report, and exit debrief form. Current versions are located in the CEC Templates folder and in Unit SW.

Conduct the site inspection professionally and efficiently.

- Respect operating hours and be mindful of the impact on business operations.
- Allow for break periods.
- End the inspection on-time.

Be relatable and non-confrontational.

Conduct the opening conference.

- Reiterate the purpose and focus of the inspection and list documents that you will need to review.
- Review the facility's health and safety plan (HASP) if you have safety concerns.

If possible, conduct the inspection with an on-site representative to provide compliance assistance when appropriate.

Leave the site immediately if you believe it is unsafe, and call your Unit Manager or 911 if necessary. After resolving safety issues, make arrangements to ensure the site is properly secured, e.g., lids and doors are closed.

Visually inspect the facility. Areas that may be inspected include, but are not limited to, permitted facility locations, facility processes, waste or material storage areas, sampling locations, or areas of concern from a previous inspection.

Conduct necessary interviews with facility personnel. Document the person's name, title, any required license information, and other pertinent information that was obtained from the interview.

Document violations, deficiencies, and/or compliance issues with photographs and create a photo log containing all relevant photos to accompany the inspection report. Photos that will help facilitate

compliance should be included in the inspection report. Maintain identifying metadata for photographs, including GPS coordinates and time stamps.

Ensure all observations are factually documented without supposition, either in the inspection report or field notes. Use professional language.

Complete relevant facility document review, if applicable, and not previously conducted.

Request supporting documentation, required by law or rule, that is necessary to form a complete record.

If the facility requests that documents remain confidential, contact OAC to discuss next steps.

Conduct a closing conference as required by A.R.S. § [41-1009\(A\)\(8\)](#):

- Give the facility an opportunity to discuss the findings of the inspection and provide additional information if necessary.
- The Inspector should make revisions to the inspection report prior to issuing the report if additional information is relevant.
- **If the inspection report is not field-issued, provide an exit debrief form prior to leaving the site detailing any compliance issues for the facility representative.** Providing the RP with an understanding of the violations and/or deficiencies prior to leaving the site allows for a quicker return to compliance.

If conducting a virtual inspection, also conduct a closing conference at the conclusion of the inspection, and provide an exit debrief form if an inspection report will not be provided during the same day.

**Temporary Restraining Order:** If there is imminent and substantial harm to public health and the environment, ADEQ should seek a temporary restraining order requiring a facility to cease a harmful operation immediately. Contact OAC immediately for assistance. See [Temporary Restraining Order](#).<sup>\*</sup>  
**Escalate imminent and substantial harms to public health and the environment immediately.**

**Think KOUI:** ADEQ is committed to identifying, prioritizing, and addressing sites with Known, Ongoing, Unauthorized, Impacts (KOUI) in order to further our mission to protect and enhance public health and the environment. KOUI sites are often identified during the inspection process. All Inspectors should be familiar with the KOUI definition. An introduction to the KOUI definition may be found on the [Office of Environmental Excellence page](#).

During an inspection, if you discover evidence of a release or obtain data indicating a possible exceedance of a regulatory standard, consider whether the site is a KOUI. Inspectors should use the KOUI Assessment and Reporting Tool ([KART](#)) in order to determine if the site is a potential or actual KOUI.

## STEP 6 — ISSUE INSPECTION REPORT

Document the scope of the inspection and alleged deficiencies in the inspection report.

- **If there are no alleged deficiencies found during the course of the inspection:**  
The report should include a statement that no ADEQ action will result from the inspection. *Action Update Letters (AULs) are NOT required if the inspection report notes that no action will result from the inspection.*
- **If there are alleged deficiencies that are corrected before ADEQ leaves the facility:**  
Document the alleged deficiencies in the inspection report. Issue an Open and Closed NOV when NOV violations exist. See CEC Templates — Open and Closed Cover Letter. If ADEQ does not initiate informal or formal enforcement and the same violation or deficiency is discovered at the next inspection of the facility, an NOC or NOV should be issued or formal enforcement utilized.
- **If alleged deficiencies are found:**  
Document the alleged deficiencies in the inspection report. Identify the alleged deficiencies in the Results of Inspection section. An NOC or NOV may be field-issued (preferred) or office-issued. See [Chapter 3: Informal Enforcement](#). AULs are required until the deficiencies are closed with no further action.

The report may include ADEQ recommendations and shall clearly differentiate between recommendations and alleged deficiencies.

Use a photograph log to document alleged deficiencies, including areas of compliance that may not have been in compliance at the last inspection, areas of concern, or photos of alleged deficiencies regulated by other ADEQ programs.

- In addition, the Inspector should include a narrative describing what is portrayed in the photograph.
- The inspection report will note that photographs were collected, relevant photos are included in the inspection report and photo log, and all photos will be made available upon request, if not already included in the report.

An inspection report is not required if photographs are taken off-site of the property and not during the course of an inspection.

Reference any documents reviewed that indicate alleged deficiencies.

Include a narrative section that describes pertinent facts, including who was there, what was said by whom, a description of important sights, sounds, and smells, and any other details that will be helpful in supporting compliance assistance and enforcement.

Transfer all relevant inspection notes to the inspection report.

Draft notes need not be retained if all of the information is transferred to the inspection report and records destruction protocol is followed.



**Inspection reports should be field-issued, if possible.** If an inspection report cannot be issued in the field, conduct a closing conference and provide an exit debrief form to the on-site contact before leaving the site. For virtual inspections, if an inspection report cannot be issued the same day, provide an exit debrief form the same day as the virtual inspection.

A copy of the inspection report should be sent to the RP, if different than the on-site contact.

**Within seven days or less**, send office-issued inspection reports to the RP by email with a read receipt, by standard mail if no email exists, or through the agency's electronic signature tool.

Inspection reports must be issued **no later than 30 working days** pursuant to A.R.S. § 41-1009(D). If an inspection report cannot be issued within 30 days of the inspection, an action update letter must be sent to the RP advising them that the report is still pending and will be issued.

An Inspector may issue an inspection report from the office for any of the following reasons:

- Inspector safety concerns, including driving long distances and at night.
- Customer or Inspector time constraints (i.e., facility business hours are approaching the end of the day).
- Additional research is needed.
- Management review is needed.
- No ability to send the report electronically.

**Within two days of the Inspector identifying alleged deficiencies associated with another ADEQ program**, the Inspector should complete the online Environmental Complaint Form for internal referral.

**Within two days of amending a previously issued inspection report**, the Inspector should issue the revised report to the RP. If the revision contains previously undisclosed alleged deficiencies, the Inspector should call the RP to inform them of the change.

**Using the Term "Alleged Deficiencies":** ADEQ will generally refer to noncompliance as "alleged deficiencies" consistent with A.R.S. § 41-1009. Deficiencies that are confirmed by a court can formally be referred to as violations, although ADEQ may also informally refer to alleged deficiencies as violations or potential violations.

**AZURITE Entry:** Update the AZURITE ICE Inspection screen module with the appropriate action events **within two days** of the inspection or any other case action. See [AZURITE Reference Manual - Inspections](#).

## Results of Inspection Documentation

A.R.S. § [41-1009\(E\)](#) requires that a regulated person be provided an opportunity to correct alleged deficiencies unless the agency makes one of four specific findings in the inspection report.

ADEQ provides an opportunity to correct through the issuance of an NOC, and has the option to issue an NOV when one of four specific findings has been documented in the inspection report.

To justify a decision to issue an NOC or NOV, Inspectors should document the specific findings in the “Results of Inspection” section of the inspection report, in addition to specific observations contained elsewhere in the report.

Each inspection report should contain the following section:

### Results of Inspection:

- ☐ No alleged deficiencies were noted during the course of the inspection. No ADEQ action will result from this inspection.
- ☐ Alleged deficiencies were noted during the course of the inspection and all deficiencies were corrected by the close of business on the final day of inspection. No ADEQ action will result from this inspection.
- ☐ Alleged deficiencies were noted during the course of the inspection. Additional correspondence regarding this inspection may be forthcoming.

If applicable, ADEQ documents its initial determination that the alleged deficiencies are:

- ☐ Committed intentionally.
- ☐ Not correctable within a reasonable period of time as determined by the agency.
- ☐ Evidence of a pattern of noncompliance as demonstrated by alleged deficiencies previously identified in an inspection report or other written notice at the same premises.
- ☐ A significant risk to any person, the public health, safety or welfare or the environment.

### Directions for Determining the Results of Inspection:

1. Select one of the three main checkboxes:

- ☐ No alleged deficiencies were noted during the course of the inspection. No ADEQ action will result from this inspection.
  - Checking this box indicates the agency will not pursue informal or formal enforcement.
  - Checking this box will complete the compliance and communication requirements between ADEQ and the facility.
- ☐ Alleged deficiencies were noted during the course of the inspection and all deficiencies were corrected by the close of the inspection. No ADEQ action will result from this inspection.
  - Checking this box indicates the agency will not pursue informal or formal enforcement for these deficiencies.

- Do not check this box if the agency may take further action even though the alleged deficiencies were corrected.
  - Do not check this box if the alleged deficiencies have been determined to be one of the four types in the boxes below.
  - Checking this box will complete the compliance and communication requirements between ADEQ and the facility.
  - ☐ Alleged deficiencies were noted during the course of the inspection. Additional correspondence regarding this inspection may be forthcoming.
    - Checking this box indicates the agency may pursue informal or formal enforcement.
    - Checking this box indicates ADEQ will continue to provide communication until it indicates no further ADEQ action will result from this inspection.
2. Select any of the four specific findings if alleged deficiencies are found, to provide the agency the option to issue an NOV if appropriate:
- ☐ Committed intentionally.
    - Checking this box indicates there is evidence that the violation was committed intentionally. Intentional determinations can also be made at a later date. Intentional determinations may be considered for criminal referral. Also check the “Intentional” box in AZURITE Case.
  - ☐ Not correctable within a reasonable period of time as determined by the agency.
    - Checking this box indicates return to compliance will generally take more than 120 days.
  - ☐ Evidence of a pattern of noncompliance as demonstrated by alleged deficiencies previously identified in an inspection report or other written notice at the same premises.
    - Checking this box indicates the alleged deficiencies were previously identified in an inspection report or other written notice at the same premises at the most recent past inspection. The pre-inspection file review should provide this information.
  - ☐ A significant risk to any person, the public health, safety, or welfare, or the environment.
    - Checking this box indicates ADEQ has categorized the alleged deficiencies in AZURITE as “Major” or “Major Discretionary” or there is other supporting evidence that the alleged deficiencies could be a “significant risk.”
    - For example, intentional noncompliance, a pattern of noncompliance, or a lack of cooperation from a facility may elevate a deficiency to being a significant risk.
    - Supporting evidence includes utilizing the program’s Enforcement Matrix.
3. Regardless of any determinations made under this section, ADEQ may take lawful agency actions necessary to abate an imminent and substantial endangerment to public health and the environment. A.R.S. § [41-1009\(L\)](#).

### STEP 7 — UPDATE AZURITE WITH CASE RECOMMENDED IF APPLICABLE

Select the “Case Recommended” action in the AZURITE inspections screen **as soon as possible** if an NOC or NOV is recommended.

- This begins the process of tracking alleged deficiencies to ensure they will be resolved and creates a case ID.
- **If there is an acute risk to public health or the environment (see [Table 1](#)), escalate immediately.** Do not wait to complete AZURITE actions or to issue an NOC or NOV.

Input any relevant AZURITE actions (e.g., Inspection Completed, File Review Completed, Report Received, Air Quality Test Report Received).

### STEP 8 — POST-INSPECTION SAFETY REVIEW

**Within 24 hours**, the Inspector should report any employee safety incidents to the ADEQ Safety Officer and report incidents in the [ADEQ Incident Tracker](#). Report any new hazards or issues encountered at the site that are not represented in the current Job Hazard Analysis to the ADEQ Safety Office.

## File & Report Reviews

- A file review can be an excellent tool to identify compliance problems while saving field inspection resources. Utilize existing data and information.
- Utilize file reviews to review monitoring and reporting submittals for compliance.
- A file or report review is not an inspection covered by A.R.S. § [41-1009](#), and therefore an NOIR and inspection report are not provided to the facility.
- Consider discussing the results of the file or report review with the customer for faster return to compliance.
- If a file or report review reveals alleged deficiencies, the Inspector or Case Manager should also enter the “Case Recommended” event in AZURITE.

**Importance of Selecting Case Recommended:** Select “Case Recommended” in the AZURITE inspections screen **as soon as possible** if an NOC or NOV is recommended, if an order will be necessary because return to compliance timeframes will be longer than 120 days, or if other formal enforcement is necessary. Selecting Case Recommended begins the process of tracking violations and deficiencies to ensure they will be resolved after the inspection or file review.

## Compliance Assistance Visits

A site visit may be conducted to provide compliance assistance only, and is not conducted as part of an official inspection.

- Coordinate the compliance assistance visit with the facility.
- Review the hard copy and electronic facility file, myDEQ, and AZURITE prior to going on site to learn about facility processes and any relevant history.
- Upon arrival at the site, verbally inform the facility personnel that this site visit is not an inspection or audit and that ADEQ is here to provide education and compliance assistance.
- **No NOIR should be provided or signed because this is not an inspection.**
- Inform the facility that if alleged deficiencies are found, ADEQ may return to conduct a full follow-up inspection.
- **If alleged deficiencies that warrant an NOV are found during the compliance assistance visit, take note of the issue and escalate it with your management after the visit to determine next steps.**
- **All alleged deficiencies that warrant an NOV that are found during a compliance assistance visit should result in ADEQ follow-up to ensure the alleged deficiencies are resolved.**
- It may be necessary to officially inspect the facility at a later date if the compliance assistance visit reveals alleged deficiencies that warrant an NOV.
- Consider a virtual follow-up inspection to ensure the problem is resolved.
- Document the compliance assistance using the [Compliance Assistance Form](#).
- Compliance assistance visits and follow-up should be logged in the AZURITE Assistance Module; describe the scope of the visit and any alleged deficiencies that are observed.
- All official inspections should be logged in AZURITE Inspections; compliance assistance visits do not count as required or official inspections and are not logged in AZURITE Inspections.

## Chapter 3: Informal Enforcement

The majority of alleged deficiencies ADEQ discovers are resolved through the use of informal compliance tools such as an NOC and an NOV. The goal of using informal compliance tools is to provide timely notice of alleged deficiencies so that a facility can return to compliance as soon as possible. Generally, an NOV rather than an NOC is issued when the alleged deficiencies are deemed a significant risk to public health and/or the environment. Programs should utilize SW when determining which notice is appropriate. Inspection reports should always note whether alleged deficiencies are a significant risk. See [Chapter 2: Inspections — Results of Inspection Documentation section](#).

This chapter provides guidance on when and how to issue NOCs and NOVs, how to provide case management after notices are issued, and how to close notices or escalate to formal enforcement. The term [alleged deficiency](#) is synonymous with “deficiency,” “violation,” or “potential violation.”

These informal compliance tools are not typical appealable agency actions, however, a new law passed in 2022 [allows an NOV to be appealed under certain circumstances](#). ADEQ also has formal enforcement tools and reserves the right to use them at any time, if appropriate. ADEQ has the discretion to use formal tools instead of informal tools when necessary. See [Chapter 4: Formal Enforcement](#).

ADEQ strives to issue NOCs and, if appropriate, NOVs in the field to provide timely notice to a facility so the facility can act quickly to return to compliance. All NOCs should be field-issued unless there are additional alleged deficiencies that are not approved for field-issuance. ADEQ’s daily escalation process should be used to escalate decisions regarding NOCs and NOVs in order to meet agency goals for timely issuance.

**All significant risks to public health or the environment should result in an NOV, regardless of whether an order will be issued or whether the timeframe for compliance will exceed 120 days.** The Division Director may approve exceptions allowing Value Streams to enter into [consent orders](#) without issuing an NOV when compliance timeframes exceed 120 days. Exception approval from a Division Director must be provided to OAC.

### AGENCY GOALS:

- Determine the appropriate RP.
- Field Issue 80 percent of NOCs when inspections are field-issued.
- Field Issue 80 percent of NOVs that are approved for field issuance.
- Significant alleged deficiencies should result in an NOV or formal enforcement.
- 10 days to office-issue NOCs and NOVs from inspection.
- Five days to send closure letters from return to compliance documentation.

### STANDARD WORK:

- [AZURITE Reference Guide — Informal Enforcement Cases](#)
- [Enforcement Action Matrices](#)
- [Legal Review and Representation](#)

- [High Priority Violation Designation](#)
- [Adding Violations](#)
- [Compliance Documents Notice and Receipt Requirements](#)
- [Compliance Handbook Metrics — Informal Enforcement](#)

**FORMS:**

- Compliance and Enforcement Community (CEC) Templates — K:Drive
- [Consent Order Negotiation Guidelines](#)
- [Action Update Letter](#)

**Compliance Enforcement Templates:** ADEQ compliance staff should use the compliance and enforcement templates located in the CEC Templates folder of the K:Drive for Microsoft Word. These templates are frequently updated and include missed deadline letters, closure letters, consent orders, compliance orders, termination letters, and the case referral memorandum template. If templates need to be added or revised, please contact OAC.

## Legal Representation

When subject to an informal enforcement tool, some RPs may choose to be represented by legal counsel. If an RP notifies ADEQ that they are represented by legal counsel at any point in the case management process or if ADEQ is contacted by an outside attorney, the Inspector or Case Manager should engage OAC or the AGO prior to any additional communication. See standard work for [Legal Review and Representation](#).

## Determining the Appropriate Tool – NOC or NOV

- **An NOV should be issued if there are alleged deficiencies that are a significant risk to any person, the public health, safety, or welfare, or the environment.**
- An NOC should be issued if there are no alleged deficiencies that are a significant risk, unless the deficiencies have been elevated based on standard work like an enforcement matrix, such as when they are repetitive or intentional.
- An alleged deficiency is a significant risk if:
  - It has been categorized in AZURITE as “Major”;
  - It has been categorized in AZURITE as “Major Discretionary” and management review confirms it is significant; or
  - The violation is deemed significant after review with management, which should include review of the program’s enforcement matrix and of the Results of Inspection, if applicable.
- Violations categorized in AZURITE as “Minor” are not a significant risk unless other findings have been made.

- Pursuant to A.R.S. §§ [41-1009\(E\)](#) and [41-1092.12\(F\)\(4\)](#), when an inspection is conducted, an NOV may only be issued if the inspection report Results of Inspection section contains one of four specific findings about the alleged deficiencies, as discussed in [Chapter 2: Inspections — Results of Inspection Documentation](#):
  - Committed intentionally.
  - Not correctable within a reasonable period of time as determined by the agency.
  - Evidence of a pattern of noncompliance as demonstrated by alleged deficiencies previously identified in an inspection report or other written notice at the same premises.
  - A significant risk to any person, the public health, safety, or welfare, or the environment.
- Amend an inspection report if necessary if an NOV should be issued but the inspection report does not contain the appropriate finding in the Results of Inspection section.
- If at least one significant alleged deficiency is identified, an NOV should be issued.
- Review any questions with your manager or OAC.
- Change the designation of violations in AZURITE when necessary to align the violations with a different risk level after management review.
- For new alleged deficiencies or major discretionary deficiencies, programs should utilize SW, such as enforcement matrices, to determine which type of notice is appropriate, an NOC or NOV.
- Uncheck “significant” in AZURITE to designate a major discretionary violation as **NOT** significant
- Add new alleged deficiencies to AZURITE using the standard work for [Adding Violations](#).
- Permit conditions entered into AZURITE as violations are **NOT** labeled “significant” by default. Significant must be checked if the alleged deficiency is significant.
- An NOV will be generated if AZURITE has labeled a violation “significant,” “intentional,” or “repeat.”
- The Division Director may approve certain NOC and NOV alleged deficiencies to be field-issued, and that written approval must be kept by each program and provided to OAC.
- If there are alleged deficiencies in multiple program areas or divisions, contact [oac@azdeq.gov](mailto:oac@azdeq.gov) to coordinate case development prior to issuing any notices.
- If case recommended action has been entered into AZURITE and the agency determines that an NOC or NOV is not warranted, the Case Manager should update AZURITE to reflect case dismissed and add a comment explaining the decision.
- Approval from OAC is not required to close a recommended case.

**Sending & Serving Documents:** Providing actual notice to an affected party is essential in order for a fast return to compliance. NOCs, NOVs, AULS, and consent orders should be sent by email read receipt or using standard mail if email is not possible. The date of receipt is the earliest date of either an email receipt or another confirmation of receipt. Compliance orders and other appealable agency actions should be sent by mail certified return receipt if email delivery cannot be confirmed. For more information, see [Compliance Documents Notice and Receipt Requirements](#).



## NOCs

An NOC provides an RP the opportunity to correct a deficiency that is not significant prior to ADEQ taking action on the deficiency. See A.R.S. §§ [41-1009\(E\)](#) and [\(K\)](#). **NOCs are not appealable agency actions.**

### The NOC:

- Cites the laws, rules, or permit that ADEQ believes may have been violated.
- Identifies any documents that ADEQ relied on when determining noncompliance.
- Describes the facts known to ADEQ at the time the NOC is issued.
- Provides an opportunity to discuss the alleged violation with the agency.
- Provides the RP an opportunity to resolve the deficiency in a reasonable period of time, not to exceed 120 days.
- Should be resolved **within 120 days**, and if not, an NOV or formal enforcement may be appropriate.

### Procedure for Field-Issued NOCs & NOVs

- The Inspector should issue a field-generated NOC for any deficiencies that are approved to be issued in the field. All other deficiencies should be issued from the office.
- Field-issued NOCs are preferred because the Inspector has the opportunity to discuss the deficiencies with the RP and facilitate a quicker return to compliance.
- If the case contains at least one deficiency that is not approved for field-issuance, the Inspector or Case Manager will issue the NOC from the office.
- If the case contains at least one NOV violation, the Inspector or Case Manager will issue an NOV and include the NOC deficiencies therein. The NOV should be field-issued if the violation is approved for field-issuance.
- A copy of a field-issued NOC or NOV should also be emailed to the RP's designated contact if that person was not on-site at the time of inspection.

**Responsible Party:** It is important to issue an inspection report, NOC, or NOV to the correct RP to provide adequate notice. Failure to do so may delay ADEQ's enforcement action. An RP should be a high-ranking person at a company, such as the President, CEO, or manager. Before issuing, review myDEQ, AZURITE, or the Arizona Corporation Commission website to determine who is the RP. If questions arise about the RP, contact OAC. Provide copies of documents to the RP, in addition to any on-site representative.

**Procedure for Office-Issued NOCs:**

- **Within five days after the inspection**, the Inspector or Case Manager should consult with the Unit Manager on the deficiency and evaluate the deficiency using the program's enforcement action matrix as a guide for consistent and equitable decisions, and draft the NOC if appropriate.
- **Within four days after the inspection**, the Inspector or Case Manager should obtain manager approval (if necessary).
- **Within one day after management approval**, issue the NOC from the ADEQ office (along with the inspection report if it was not issued on-site) by email, standard mail, or through the agency's electronic signature tool; certified mail is not necessary. Update AZURITE when the NOC is issued.

**Determining Deadlines:** The Inspector or Case Manager should work with the RP to establish deadlines to return the facility to compliance as quickly as practicable. Multiple deadlines may be appropriate. To determine a reasonable deadline for a facility to come into compliance, Inspectors or Case Managers should ask the facility contact how quickly the facility can reasonably correct any deficiencies, discuss with internal staff and management, and then **set a compliance deadline that is reasonable**.

As always, good professional judgment should be used when working with the facility to recommend an appropriate deadline for each compliance condition. Deadlines should be timely, achievable, and generally consistent with agency practice. When available for the program, standard language should be used to describe the return to compliance conditions. Utilize peer and management review when necessary.

**Recommendations:** The NOC may include recommendations designed to assist the RP in correcting the deficiencies. All recommendations should be clearly designated as such in the compliance conditions section and should not include deadlines. ADEQ may not escalate enforcement based on an RP's failure to implement a recommendation.

**Outreach/Follow-Up:** The Inspector or Case Manager is responsible for following up with the facility on compliance conditions described in the NOC until the NOC is closed. **Within 10 days of issuing the NOC or sooner if it has been received**, the Inspector or Case Manager should call the appropriate responsible person for the facility to discuss the deficiency and ensure that the RP received the NOC and understands the compliance conditions.

While the RP is wholly responsible for meeting each deadline without ADEQ assistance, it is good case management practice to call the RP prior to each deadline.

**Action Updates:** The Inspector or Case Manager is responsible for providing action update letters (AUL) to the facility. See [Action Update Letters](#) section.

**Closure:** **Within five days of all deficiencies being corrected**, the Inspector or Case Manager should issue a letter by mail or email (certified mail is not necessary) to the RP acknowledging that the deficiencies have been corrected and that ADEQ will take no further action. Action events are entered into the ICE Case Module as appropriate. The closure may also be emailed with a read receipt to the RP as a courtesy or sent through the agency's electronic signature tool.

If deficiencies or violations have been resolved before an NOC or NOV can be issued, an Inspector and manager may still choose to issue and close an NOC or NOV to document non-compliance, and should include the open-close cover letter in the CEC Templates.

**Rescinding an NOC:** If an NOC is issued in error, such as an NOC sent to the wrong RP, dismiss the NOC in AZURITE and add a comment and send the RP an “NOC Rescinding Letter” from the CEC Templates. The AZURITE action for rescinding is the same as for dismissing an NOC: “Case Dismissed.”

**Missed Deadline:** Within one day after the first missed NOC deadline, the Inspector or Case Manager should call the RP to notify them of the missed deadline, and may follow up with an email. The Case Manager may send a missed deadline letter but the letter is not required. The Inspector or Case Manager should make reasonable attempts to speak with the RP or otherwise communicate through email.

**Failure to Comply with NOC or Dismissing Without Compliance:** An NOC may be escalated if it has been determined that there is a significant risk to public health and the environment. Escalate to an NOV by conducting a file review to create a new Inspection ID and Case ID, creating an NOV, and then merging the NOC case with the NOV case.

An NOC may be closed without compliance in the rare circumstance when compliance is no longer necessary or possible given the facility operations, or a determination has been made that the deficiency is not a risk to public health and the environment and pursuing compliance is not appropriate at this time. The Unit Manager should obtain approval from OAC to close an NOC without compliance and should demonstrate that a record of the deficiency has been created. If the same deficiency is discovered at the next inspection of the facility, an NOV may be issued or formal enforcement may be utilized. Program SW will be used to make this determination. The Inspector or Case Manager should consider the length of time before the next inspection and whether an inspection should be scheduled sooner to verify the RP has resolved the deficiency.

**Case Management Works!** Active case management works to achieve the goal of returning the facility to compliance as soon as possible. It means helping the facility understand the deficiencies and compliance conditions, and reminding the facility of deadlines in a professional manner. It also means quickly escalating unresolved issues internally using the agency’s daily escalation process.

## NOVs

Pursuant to A.R.S. §§ [41-1009\(E\) and \(K\)](#) and [41-1092.12\(F\)\(4\)](#), an NOV is an informal compliance assurance tool used by ADEQ to put an RP on notice when ADEQ believes a significant alleged deficiency has occurred. **NOVs are not appealable agency actions unless contested.** See [NOV Appeals process](#). ADEQ's goal is to issue all NOVs **within 10 days of identifying a violation.**

### The NOV:

- Cites the laws, rules, or permit that ADEQ believes may have been violated.
- Identifies any documents that ADEQ relied on when determining noncompliance.
- Describes the facts known to ADEQ at the time the NOV is issued.
- Provides an opportunity to discuss the alleged violation with the agency.
- Provides the RP an opportunity to resolve the violation(s) in a reasonable period of time, **not to exceed 120 days.**
- Provides the RP an opportunity to do any of the following before ADEQ takes formal enforcement action:
  - Meet with ADEQ to discuss the facts surrounding the violation.
  - Demonstrate to ADEQ that no violation has occurred.
  - Document that the violation has been corrected.

All NOVs are office-issued unless the violation is pre-approved for field issuance by the Division Director. NOVs issued in the field should follow the [field-issued guidance](#).

### Procedure for Office-Issued NOVs:

- After an inspection, the Inspector or Case Manager and Unit Manager decide whether an NOV is appropriate.
- The Inspector or Case Manager drafts the NOV and reviews it with the Unit Manager.
- If the violation results in an imminent and substantial endangerment to public health or the environment, the Division Director should call the RP to determine how quickly the violation can be corrected. If the RP does not indicate that the violation will be corrected in an expedited manner, the matter may be escalated for formal enforcement. See [Chapter 4](#).
- All violations are listed in one case document. If the case contains at least one violation identified as a significant violation, an NOV will be issued. The NOV should differentiate between NOC and NOV violations.
- If there are violations in multiple programs, contact OAC to determine the best way to issue the NOV, including combining violations into one NOV.
- **Within three days of the inspection**, the NOV should be drafted.
- **Within three days of receiving the draft NOV**, the NOV should be approved by the Value Stream Manager and Division Director unless otherwise delegated.
- **Within one day of Division Director approval**, the NOV should be issued to the facility. The Value Stream Manager directs the Unit Manager and Inspector or Case Manager to issue the NOV.

- The NOV should be issued to the RP by email with read receipt, standard mail if email is not available or through the agency's electronic signature tool. If no receipt is confirmed within three days, send the NOV by mail.
- **The Case Manager or Inspector should call the RP to ensure the notice was received and understood.**
- **An NOV is considered received and can be entered as received in AZURITE upon the earliest date of any of the following:**
  - Date of field-issuance.
  - Certified mail receipt signed.
  - Date email confirmation receipt is received.
  - Date RP opens the document sent through the electronic signature tool.
  - Verbal confirmation of receipt.

## Determining Compliance Conditions & Deadlines

NOV deadlines should require the facility to return to compliance as quickly as practicable. Multiple deadlines may be appropriate.

To establish a reasonable deadline for a facility to come into compliance, Inspectors and Case Managers should ask the facility contact how quickly the facility can reasonably correct any violations. If an NOV is issued as a result of a file review, the Inspector or Case Manager should call the facility to discuss reasonable deadlines. As always, good professional judgment should be used when working with the facility to recommend an appropriate deadline for each compliance condition. Deadlines should be timely, achievable, and generally consistent with agency practice. Utilize peer and management review when necessary.

The time allowed for a facility's return to compliance **should not exceed 120 days** from the date of issuance of the NOV. An NOV should be issued for all situations, even when compliance may take longer than 120 days.

### When compliance with an NOV will likely take longer than 120 days:

- Issue the NOV using up to 120 days for return to compliance with the understanding that additional time may be negotiated in a consent order.
- Follow-up with the facility **within 10 days** to explain the NOV and before the first NOV deadline to understand if the deadline will be met.
- If the facility cannot meet the NOV deadlines and ADEQ agrees that other timeframes are reasonable, enter into a [consent order](#) **within 60 days** of the date of the inspection.
- If a deadline is missed, a facility is not signing the consent order, or there is not sufficient evidence provided to ADEQ that the facility will meet the deadline, issue a [compliance order](#).

NOV conditions remain open until resolved, regardless of whether formal enforcement is effective. NOVs should request that a facility contact ADEQ within 30 days to discuss the status of returning to

compliance. Inspectors and Case Managers should escalate the case if a facility has not contacted ADEQ to consider whether additional actions are necessary.

An NOV should contain compliance conditions that result in the facility completely returning to compliance. An NOV should not list “enter a consent order” as a compliance condition. The notice should state that ADEQ will agree to extend the time frames for achieving and documenting compliance for the violation(s) alleged in this Notice only in a compliance schedule negotiated in the context of an administrative consent order or civil consent judgment.

**Recommendations:** The NOV may include recommendations designed to assist the RP in correcting the violations. All recommendations should be clearly designated as such and should not include deadlines. ADEQ may not escalate enforcement based on an RP's failure to implement a recommendation.

**EPA Designated Violations:** EPA tracks certain significant noncompliance violations. ADEQ may have a responsibility to note those violations in AZURITE to ensure they are reported appropriately to EPA. For Air Quality, a violation that is designated as a “Federally Reportable Violation” (FRV) and/or “High Priority Violation” (HPV) should be marked as such in AZURITE. For information on what constitutes an FRV and HPV see [High Priority Violation Designation](#).

ADEQ may also report “Significant Noncompliance” (SNC) for the Clean Water Act and Resource Conservation and Recovery Act, and “Serious Violators” for the Safe Drinking Water Act program.

**NOV Outreach/Follow-Up:** The Inspector or Case Manager is responsible for following up with the facility on compliance conditions described in the NOV until the NOV is closed. **Within 10 days of issuing the NOV**, or sooner if it has been received, the Inspector or Case Manager should call the appropriate responsible person for the facility to discuss the violation(s) and ensure that the RP received the NOV and understands the compliance conditions. If the RP states that the NOV has not yet been received, the Inspector or Case Manager should explain what is contained in the NOV and verify that the NOV was mailed and emailed to the correct address.

If the Inspector or Case Manager has not received evidence of compliance before each deadline listed in the NOV, the Inspector or Case Manager should call the RP to remind the RP of the upcoming deadline. If there is evidence that the RP is not working in good faith to comply, immediate escalation to formal enforcement may be appropriate. It is not necessary to wait until the last compliance date is missed before escalating.

## Action Update Letters

The Inspector or Case Manager is responsible for providing Action Update Letters (AULs) to the facility. As defined under A.R.S. § [41-1009\(J\)](#) a state agency shall provide the regulated party an update on the status of any action resulting from an inspection **at least once a month**. ADEQ shall continue to send action updates until, “the regulated person is notified that no agency action will result from the agency inspection or after the completion of agency action resulting from the agency inspection.” AULs may be

sent via email or through the agency's electronic signature tool if there is a valid and confirmed email address, or by standard mail.

AULs **do not need to be sent** after any of the following notifications or actions have occurred:

- Issuing an NOC or NOV closure letter that states no further action will be taken (the agency will not seek penalties).
- Dismissing or rescinding the NOC or NOV.
- An effective compliance or consent order.
- A civil complaint has been filed in Superior Court.

If an AUL is being sent because an NOV closure letter reserving further action was sent, decisions should be made about further action, including seeking civil penalties, within one year or after the next inspection shows the facility in compliance.

Utilize the AUL Generator or email templates to more easily generate AULs for each active case that is not in formal enforcement. See AUL Generator.

Failure to issue an AUL does not prevent ADEQ from pursuing an action to address noncompliance.

**Missed Deadline or NOV Extensions:** Within one day after the first missed NOV deadline, the Inspector or Case Manager should call the RP to notify them of the missed deadline and may send a missed deadline letter along with the consent order Negotiation Guidelines. The missed deadline letter may be issued by email with read receipt or through the agency's electronic signature tool or by standard mail if email is not available. If no read receipt is received, the letter should be mailed to the RP the next day. The Inspector or Case Manager should make reasonable attempts to speak with the RP or otherwise communicate through email. Await return to compliance if reasonably expected (15 days or less).

**Proceed with formal enforcement (consent order) within 15 days if return to compliance is not reasonably expected.** The Inspector or Case Manager should obtain approval from ADEQ management on initiating formal enforcement.

**Documenting Compliance:** The Inspector or Case Manager reviews any response from the facility and documents the response in AZURITE. The Inspector or Case Manager consults with the Unit Manager about whether a facility's response adequately demonstrates compliance and if the NOV can be closed. If so, an NOV closure letter is drafted and forwarded to the Unit Manager or Value Stream Manager for NOV closure.

If a facility disputes a violation but has not provided evidence to support the dispute, communicate ADEQ's continued expectation that the violations be resolved within the time periods listed on the NOV.

If an NOV was issued incorrectly, refer to the Amending an NOC/NOV section or Rescinding an NOC/NOV section.

**Change of Ownership:** In most cases, a new owner will be responsible for a continuing discharge. Issue a new NOV to a new owner and then close the existing NOV without compliance with a comment



referencing the new ownership and new case, after consulting OAC. If the new owner enters into a consent order, close the outstanding NOV conditions without compliance after consulting OAC.

**NOV Closure:** If the violation is resolved within the time allowed by the NOV or within the reasonable extension timeframe of 15 days or less, ADEQ should issue a closure letter to the RP either:

- Stating no further action (including seeking civil penalties) will be taken, or
- Reserving further action (the right to seek a civil penalty regardless of whether the RP achieves or demonstrates compliance).

To determine whether ADEQ should reserve the right to seek civil penalties, the Inspector or Case Manager should consider the factors set forth in [Chapter 5: Penalties](#). If the Inspector or Case Manager believes ADEQ should reserve the right to seek penalties, approval should be obtained from the Unit Manager.

For cases where an NOV was issued and then closed, reserving further action, decisions should be made about further action, including seeking civil penalties, within one year or after the next inspection shows the facility in compliance.

**Within five days from ADEQ confirming compliance**, the NOV closure letter should be issued to the RP by email with read receipt or through the agency's electronic signature tool. If sent by email, request confirmation of receipt. If no receipt is received within **two business days**, send the letter by standard mail.

An NOV may be closed without compliance and with approval by OAC and program management if compliance with the violation can no longer be achieved based on a change in the facility conditions making compliance impractical or impossible.

**Rescinding an NOV:** An NOV may be rescinded if any of the following apply:

- The NOV was issued to an incorrect party.
- The RP demonstrates that the violation never occurred and ADEQ agrees with the demonstration.

If an NOV is issued in error, such as an NOV sent to the wrong RP, dismiss the NOV in AZURITE, add a comment, and send the recipient of the NOV an "NOV Rescinding Letter" from the CEC Templates. The AZURITE action for rescinding is the same as for dismissing an NOV: "Case Dismissed."

The Inspector or Case Manager should prepare the NOV rescinding letter for the Value Stream Manager to approve, sign, and issue through mail and/or email with read receipt, or through the agency's electronic signature tool. Call to confirm receipt of the NOV letter if no read receipt is received. Save the letter in the facility file.

See [Compliance Document Notice and Receipt Requirements](#) for more information about what is required for sending, confirming and saving compliance documents.

**Amending an NOV or NOC:** Contact your management and OAC if an NOV or NOC is issued with an error(s). OAC will work with the program and the Business Intelligence Team to correct the notice in the



database based on the particular case circumstance, which may include making clarifying comments, deleting or adding certain violations, and contacting U.S. EPA if necessary to correct their databases.

The Inspector or Case Manager should prepare an NOV amendment letter for the Value Stream Manager to approve, sign, and issue through mail and/or email with read receipt, or through the agency's electronic signature tool. Call to confirm receipt of the NOV amendment letter if no read receipt is received. Save the NOV amendment letter in the facility file.

**NOV Appeals:** Issuance of an NOV is not an appealable agency action and appealable agency action language does not need to be included with the issuance of an NOV.

However, pursuant to A.R.S. § [41-1092.12](#), issuance of an NOV may be appealed as an appealable agency action if:

- A party notifies ADEQ in writing of its intent to file a claim pursuant to this statute **within 10 days** of receiving the NOV;
- Describes why the NOV issuance is arbitrary, capricious or not in accordance with law; and
- ADEQ does not amend or rescind the NOV **within 10 days**.

Escalate to management and OAC immediately upon receiving notice pursuant to A.R.S. § [41-1092.12](#)

**Failure to Comply with NOV or Dismissing without Compliance:** If the violation is not corrected within the timeframe stated in the NOV or the reasonable extension of 15 days or less, the program should initiate formal enforcement after approval by an ADEQ Division Director. A formal enforcement tool such as a [consent order](#) can provide for reasonable extensions of NOV timeframes. **Within seven days of the missed NOV compliance condition**, an escalation decision should be made to determine the appropriate formal enforcement action. After the decision is made, “formal enforcement recommended” should be selected in AZURITE and the corresponding timeframes for formal enforcement should be followed. See [Chapter 4: Formal Enforcement](#).

**Attorney General’s Office:** Inspectors and Case Managers may utilize the AGO in certain circumstances when engagement by the AGO may be helpful to facilitate compliance with NOV compliance conditions.

## Chapter 4: Formal Enforcement

ADEQ is able to resolve the majority of violations through informal compliance assurance tools such as the previously discussed NOCs or NOV, and with the willing cooperation of the RP. ADEQ has a variety of escalated or “formal” enforcement tools that are used when informal actions are inappropriate because informal action has not achieved the desired results, compliance will take longer than 120 days, or it is necessary to abate an imminent and substantial endangerment to public health or the environment. This chapter provides information about working with the AGO, guidance on when and how to issue consent or compliance orders, and guidance on how to initiate and manage civil and criminal court enforcement.

Although most ADEQ programs share a common set of formal enforcement tools, there are a few minor differences. For example, some programs have the ability to assess civil administrative penalties or issue stop use orders, while others do not. This chapter describes the various formal enforcement tools available to ADEQ along with how and when they may be used. Refer to the Formal Enforcement Statutory Authority List for specific program authority.

### AGENCY GOALS:

- Consent orders should be used when return to compliance will take longer than 120 days.
- Enter into an effective consent order within 60 days of the first missed NOV deadline or when it is determined that a consent order is warranted.
- Consent orders are the agency's preferred formal enforcement tool.

### STANDARD WORK:

- [AZURITE Reference Guide — Formal Enforcement Cases](#)
- [Case Referral Memorandum](#)
- [Service of Process](#)
- [Appeals](#)
- [How to Execute a Consent Order](#)
- [Docketing](#)
- [Temporary Restraining Order\\*](#)
- [Criminal Referral](#)
- [Consent Order Involvement Matrix\\*](#)
- [Legal Review and Representation](#)
- [Compliance Handbook Metrics — Formal Enforcement](#)

### FORMS:

- CEC Templates — K:Drive
- [Appealable Agency Action Language](#)
- [Consent Order Negotiation Guidelines](#)
- [Formal Enforcement Statutory Authority List](#)
- [Confidentiality Log](#)

## Legal Representation

When subject to a formal enforcement tool, some RPs may choose to be represented by legal counsel. If an RP notifies ADEQ that they are represented by legal counsel at any point in the case management process or if contacted by an outside attorney, the Inspector or Case Manager should engage OAC or the AGO prior to any conversation. See [Legal Review and Representation](#).

## Litigation Holds

A litigation hold is a notice received from an authorized Arizona State Department (AGO, Risk Management, or another unit which is involved in responses to complaints or lawsuits) advising custodians of certain documents and electronically-stored information (“ESI”) to preserve potentially relevant evidence in anticipation of future litigation. These notices may be received verbally, or by letter or email. When a litigation hold is in place, OAC and the ADEQ Information Technology department will coordinate and direct the identified ADEQ staff members to identify and locate the records pertaining to the matter described. In addition, when a litigation hold is in effect, staff shall not delete, remove, or destroy records pertaining to the matter and routine document retention/destruction policies related to the identified records shall be suspended. ADEQ and/or the identified staff may be subject to potential liability and sanctions if these obligations are not met.

## Confidential Documents, Attorney-Client Privilege, & Drafts

Facility and case files should have an accompanying confidential file if necessary and a confidentiality log that notes what is contained in the confidential file. Also ensure that the naming convention of any confidential records stored electronically includes the word “CONFIDENTIAL” at the beginning of the title. Documents prepared by ADEQ for case development, like a Case Referral Memorandum (CRM), should be retained in the confidential file until the case has concluded. A confidentiality log should be provided upon request.

Generally, all communication between ADEQ and the AGO is Attorney-Client Privileged, including when that information is passed along to other ADEQ employees. Privileged information should always be kept in the confidential file and marked confidential.

Drafts of orders or other internal documents may be deleted when a final has been created unless ADEQ believes civil or criminal litigation may occur, in which case all documents must be maintained.

## Facility Environmental Audit Privilege

A.R.S. § [49-1401, et. seq.](#) provides a mechanism for organizations to conduct an environmental audit to evaluate compliance with environmental laws and incentivize organizations to identify, correct, and/or report violations. When an environmental audit is conducted pursuant to law, a privilege attaches to the environmental audit report. The privilege is limited as described in A.R.S. § [49-1401, et. seq.](#) Consult OAC or the AGO when you encounter an environmental audit or the assertion of such privilege.

## Personal Service of Documents

On occasion, ADEQ may need to personally serve documents on an RP instead of sending certified mail. If personal service is necessary, the Inspector or Case Manager should follow standard work. Apart from a consent order, formal enforcement documents and appealable agency actions should be sent using email read receipt and then by certified mail with a return receipt if a read receipt is not returned. See [Compliance Document Notice and Receipt Requirements](#). If necessary, a process server may be used. See [Service of Process](#).

## Appealable Agency Actions

As defined in A.R.S. § [41-1092\(4\)](#), an appealable agency action means an action that determines or affects the legal rights, duties, or privileges of an individual party. In the context of enforcement, unilateral administrative orders are appealable agency actions and may be appealed pursuant to A.R.S. § [41-1092.03](#). Appealable agency actions must include language providing a right to appeal. See [Appealable Agency Action Language](#).

A Notice of Appeal shall be sent to ADEQ in writing **within 30 days** of receiving the order. Upon receipt of a timely appeal, ADEQ will notify the Office of Administrative Hearings (OAH). OAH will schedule a hearing to be held within 60 days after the notice of appeal is filed. If not initially requested by the RP, ADEQ may reach out to the RP to determine whether they would like to participate in an informal settlement conference with ADEQ. **The informal settlement conference shall be held within 15 days** unless the RP requests a different date. ADEQ and the RP may stipulate to extending or temporarily deferring any OAH dates by filing a notice with OAH. See the standard work for [Appeals](#).

Following the hearing, ADEQ will issue a Final Decision of the Director accepting, rejecting, or modifying the recommended decision from OAH. The Final Decision of the Director may be appealed to the Superior Court. If not appealed to the Superior Court within 30 days of receipt by the RP, the Final Decision of the Agency Director becomes effective and enforceable. A.R.S. §§ [41-1092.08\(B\) and \(H\)](#), [41-1092.09](#). In some cases, the Agency Director may not issue the Final Decision. For example, the Water Quality Appeals Board issues Final Decisions on many water quality appeals. See A.R.S. § [49-323](#).

## Voluntary Remediation Program

Prior to initiating the consent order process, the Inspector or Case Manager should consider whether the site may be eligible to participate in the [Voluntary Remediation Program \(VRP\)](#). In general, VRP is available to property owners who commit to work with ADEQ to clean up a contaminated site in an expedited manner. VRP participants may receive a determination of no further action by ADEQ if all requirements in the approved remediation work plan are met. The following sites are generally not eligible for VRP: sites listed on the [Water Quality Assurance Revolving Fund \(WQARF\)](#) registry, permitted

hazardous waste facilities, sites utilizing underground storage tank revolving fund monies, and sites already under a court or administrative order. Contact VRP to discuss eligibility.

## Consent Orders

A consent order is a formal enforcement action that is mutually agreed upon by ADEQ and the RP, rather than unilaterally issued by ADEQ. An RP has statutory authority to waive its appeals rights and enter into an order with ADEQ by consent. See A.R.S. §§ [41-1004](#) and [41-1092.07\(F\)\(5\)](#). As part of the consent order process, ADEQ and the RP negotiate to determine reasonable expectations and timelines. The RP can negotiate the terms of the compliance schedule or strategy. The recitals, jurisdiction, and agency's findings are designed to be fair but are generally non-negotiable. Contact OAC if questions arise about the template. See [Consent Order Negotiation Guidelines](#).

A consent order is appropriate when:

- The RP fails to meet an NOV deadline and is willing to resolve the problem and work with ADEQ to establish a reasonable compliance schedule.
- The violation cannot be resolved within 120 calendar days.
- The circumstances of the violation do not warrant seeking civil penalties, or ADEQ determines that civil penalties should be addressed at a later date. See [Chapter 5: Penalties](#).

**Consent Order Involvement Matrix\*:** Consent orders allow a facility to return to compliance over a period of time. Value Stream Managers normally approve consent orders. In certain circumstances, it may be necessary for additional ADEQ leadership to review and approve a consent order. Case Managers and Value Stream Managers should refer to the Consent Order Involvement Matrix to determine who should be consulted prior to executing any consent order.

## Consent Order Process

ADEQ's goal is to have an effective consent order, signed by both parties, **within 60 days** of either:

- The first missed NOV deadline.
- The date of inspection if an NOV has been issued and compliance will take longer than 120 days.
- The date of inspection or file review if no informal enforcement was issued.

When developing the compliance conditions and deadlines, ADEQ strives for a comprehensive order. However, if in the process of developing the compliance conditions some remedies are unknown, ADEQ and the RP should use available information to determine compliance conditions and deadlines with the understanding that the consent order may need to be amended in the future as more information is known. Timeframes for compliance should be reasonable.

All consent orders should require return to compliance as expeditiously as practicable. The Case Manager should understand any statutory limitations on the duration of the consent order applicable to the program. Consent order conditions should be specific, operationally practical, and require return to compliance with environmental laws and permits by a specified date. See [How to Execute a Consent Order](#) and Consent Order Template.

#### STEP 1 — DRAFT CONSENT ORDER

**Within 15 days** of the first missed NOV deadline or after a decision to pursue a consent order, the Case Manager should escalate to management for approval to draft a consent order and should complete a consent order draft. If a consent order is being used instead of an NOC or NOV, the Case Manager should begin drafting **within seven days** of the selection of “Case Recommended” in AZURITE. **Within seven days** of drafting the consent order, the VSM should approve the draft.

Reference the [Consent Order Involvement Matrix\\*](#) to determine who should review and approve the consent order prior to its execution.

All remaining compliance conditions, whether NOV or NOC, should be included in the consent order.

**The NOV or NOC compliance conditions should remain open until the compliance conditions are resolved.**

See Chapter 3: Formal Enforcement section [Determining Compliance Conditions & Deadlines](#) for determining appropriate deadlines in the consent order.

Peer review of an order can be a valuable tool to ensure a quality order is written. Contact [oac@azdeq.gov](mailto:oac@azdeq.gov) for assistance drafting consent orders. See [How to Execute a Consent Order](#).

#### STEP 2 — NEGOTIATE CONSENT ORDER

Upon approval of the draft consent order, the Case Manager should provide the RP with the approved draft consent order with a proposed compliance schedule. A follow-up meeting should be scheduled with the RP to discuss the compliance conditions in the draft order.

ADEQ should meet with the RP **no later than 30 days after the first missed NOV deadline, or within 30 days of issuing an NOV for compliance conditions longer than 120 days**. Proposed edits to the consent order may be made in this meeting with the goal of both parties signing the order at the meeting. ADEQ may also negotiate the compliance schedule and conditions with the RP through emails, phone calls, or other communications as necessary.

**A person with authority to bind the RP and sign the consent order should be in attendance. ADEQ attendees should also include the ADEQ person with authority to make decisions about the order.**

Check the [Arizona Corporation Commission website](#) to determine who can bind the RP:

- If the person’s name appears in the information for the entity, that person can negotiate and sign for the RP unless you have been provided with other information.
- If the person’s name does not appear in the information for the entity, that person cannot bind the agency unless ADEQ receives additional information that is confirmed by OAC or AGO.

- Refer any questions about who can negotiate and sign for an RP to [oac@azdeq.gov](mailto:oac@azdeq.gov).

Prior to execution of the order, ADEQ staff should obtain the appropriate review and approval of the order pursuant to the [Consent Order Involvement Matrix](#).\*

**Who Can Sign a Consent Order for an RP?** ADEQ should always verify with the RP that the individual signing the Consent Order has the authority to bind the entity. In general the following have authority, however, bylaws may designate someone different:

Member-managed LLC – Member (only one required unless bylaws state otherwise)

Manager-managed LLC – Manager (only one required unless bylaws state otherwise)

Corporation – Officer

Municipal Corporation (i.e., towns and cities) – Mayor or City/Town Manager

Sole proprietorships or DBA businesses – Individual owner

Statutory agents can not bind an entity unless he or she is also the authorized signatory.

### STEP 3 — EXECUTE CONSENT ORDER

If the final version of the consent order is not provided in the meeting, the order should be sent to the RP **within three days** through the agency's electronic signature tool. See standard work for [Electronic Signature](#). After the RP receives the consent order, the consent order should be signed and returned to ADEQ **within seven days**. Follow up with the RP, as necessary, to ensure they meet this timeframe. Utilize electronic signature tools to create a deadline for the RP to sign.

Upon receipt of the consent order signed by the RP, the consent order should be signed by the Value Stream Manager **within three days**.

It is not necessary to have original signatures. Scanned signatures may be sent by either party.

### STEP 4 — DOCKET CONSENT ORDER

If not routed through the electronic signature tool, once signed by both parties, the Case Manager should route the original document to OAC. OAC will docket the order **within two days**, send a copy of the effective order to the RP, return the original to the Case Manager, and ensure the order documents are saved in the K:Drive. The final executed consent order should be sent by email read receipt or by standard mail if email is not available. See standard work for [Docketing](#).

### STEP 5 — PROVIDE ACTION UPDATE LETTERS, AS NEEDED

Until the consent order is effective, the Case Manager should continue to send action update letters **at least once a month**. See [Action Update Letters](#) section.



**STEP 6 — CASE MANAGEMENT**

Although not legally required, it is helpful for the Case Manager to remind the RP of upcoming compliance due dates by phone or email and to assist the RP with any questions and determine if the deadline(s) will be met. Case management works!

**STEP 7 — NOTIFY RP OF MISSED DEADLINES**

**Within one day after the first missed deadline**, the Case Manager should call the RP to notify them of the missed deadline and send a missed deadline letter. The missed deadline letter may be issued by email with read receipt or sent through the agency's electronic signature tool. If no read receipt is received, the letter should be mailed to the RP. The Case Manager should make reasonable attempts to speak with the RP, or otherwise communicate through email. See the Consent Order Missed Deadline Letter Template.

**STEP 8 — TERMINATE CONSENT ORDER**

**Within 10 days of all conditions being achieved**, the Case Manager should provide documentation for management review that demonstrates all conditions have been met and the case is appropriately documented in the facility file. See the Termination of Administrative Order Template.

Termination of a consent order should be approved and signed by the same level of management that approved issuance of the order and should be routed for signature through the agency's electronic signature tool. See standard work for [Electronic Signature](#).

If not routed through the electronic signature tool, once approved, the Case Manager should route the termination through OAC who will docket the termination **within two days**, send a copy to the RP, and return the original to the Case Manager. See standard work for [Docketing](#).

**When the order is terminated, close any applicable NOV or NOC conditions in AZURITE that are also resolved. Conditions that cannot be resolved should be closed without compliance after contacting OAC.**

**Violation of a Consent Order**

Appropriate responses may include one or more of the following:

- A phone call with the RP, with a follow-up email, to determine if they can reasonably return to compliance **within 15 days** and therefore no amendment is necessary.
- Amendment of the consent order may be appropriate when the RP requires more than 15 days to come into compliance with the consent order, the RP has made a good faith effort to comply with the compliance schedule, and ADEQ and the RP agree to new compliance deadlines. The Case Manager should follow the same procedures and timeframes for an amendment as discussed above for consent orders. See the Amended Consent Order Template.
- If an amendment is not appropriate because the RP is not making a good faith effort to comply, consult with the OAC for escalation options, which may include referring the case to the AGO. See



Civil Referral section. The path forward will be determined by the particulars of the RP and the case.

- **When there is an imminent and substantial risk to public health and/or the environment, immediately escalate through ADEQ management.**

**Amending Consent Orders to Provide for Extensions:** Ideally the Case Manager should be checking with the RP and amending the consent order as soon as it is determined that the RP will miss the compliance date by more than 15 days. The Case Manager should also verify that the RP made a good faith attempt to meet the consent order deadline and that additional time is warranted due to unforeseen circumstances. The Case Manager should work with the RP to determine a reasonable amount of additional time necessary to meet the compliance condition.

## Compliance, Abatement, and Stop Use Orders

ADEQ has statutory authority within specific programs to issue compliance, abatement, and stop use orders. A compliance order is issued unilaterally by ADEQ without input from the RP and is an appealable agency action. The order must only contain compliance conditions that are required by law. ADEQ's Air Quality Division issues abatement orders, which are generally the equivalent of a compliance order except that an abatement order shall inform the RP of the right to an expedited hearing at OAH. ADEQ's UST program has the authority to issue a stop use order that becomes effective immediately and prohibits the use of the UST until the violations are resolved. The Air Quality abatement and UST stop use orders follow the compliance order process and are also appealable agency actions.

The Case Manager should consider whether a compliance order or civil action is appropriate when an RP fails to meet a deadline within an NOV and the consent order negotiation is unsuccessful or not finalized within 60 days of the missed deadline letter. Consult with OAC when the 60-day timeline is approaching and no progress has been made. The Case Manager should consider whether the RP is likely to comply with a compliance order, and the risk to public health and the environment.

A compliance order may not be appropriate when the violation is creating an immediate and substantial risk to public health and/or the environment. In such cases, referral to the AGO for a temporary restraining order or preliminary injunction may be appropriate. Further, a compliance order may not be appropriate if the RP is unlikely to comply with a compliance order. In such cases, referral to the AGO for a civil judgment or criminal enforcement may be appropriate.

## Compliance Order Process

### STEP 1 — DRAFT COMPLIANCE ORDER

**Within seven days** of ADEQ determining that the RP is not willing to enter into a consent order, or if the RP fails to sign a consent order within 60 days, the Case Manager should seek approval from the Value Stream Manager and draft a compliance order. Only the remaining compliance conditions that are specifically required by law, rule, or permit, whether in an NOV or NOC, should be included in the compliance order. The compliance order should contain compliance deadlines that are reasonably calculated to allow for the RP to return to compliance within the least amount of time. See the Compliance Order Template.

### STEP 2 — OBTAIN COMPLIANCE ORDER APPROVAL

The Unit Manager and the Value Stream Manager should review the compliance order and the Division Director should approve and sign the compliance order **within two days through the agency's electronic signature tool**.

### STEP 3 — DOCKET COMPLIANCE ORDER

The Case Manager routes the compliance order to OAC where it should be docketed **within one business day**. A copy of the order should be sent to the RP by email read receipt or by certified mail with a return receipt if email receipt confirmation is not received. A copy should also be sent to the RP's statutory agent. The original should be returned to the Case Manager. See standard work for [Docketing](#). The email read receipt or certified mail return receipt should be added to the docketed order after it is received. It is important to confirm that the compliance order has been received.

### STEP 4 — EFFECTIVE DATE AND APPEAL

The RP has the right to appeal the compliance order. See [Appealable Agency Actions section](#). NOV and NOC conditions remain open until they are satisfied.

**Compliance Order Effective Date:** If an appeal of the compliance order is not requested, the compliance order becomes effective **30 days** after it is received by the RP. Where provided for by law, some orders may be effective upon issuance (e.g., an abatement order issued by the Air Quality Division and a stop use order issued by the Waste Division).

### STEP 5 — CASE MANAGEMENT

The Case Manager should call the RP to discuss the order immediately after it is issued, regardless of any confirmation of receipt. The Case Manager should also remind the RP of upcoming compliance due dates by phone or email to assist the RP with any questions and determine if the deadline will be met.

**STEP 6 — NOTIFY RP OF MISSED DEADLINES**

Within one day after the first missed deadline, the Case Manager will call the RP to notify them of the missed deadline and will send a missed deadline letter. The missed deadline letter may be issued by email with read receipt or through the agency's electronic signature tool. If no read receipt is received, the letter should be mailed to the RP. The Case Manager should make reasonable attempts to speak with the RP, or otherwise communicate through email. See the Compliance Order Missed Deadline Letter Template.

Within 15 days of noncompliance with a compliance order, the Case Manager should refer the case to the AGO following the [civil referral process](#).

**STEP 7 — TERMINATE COMPLIANCE ORDER**

Within five days of all conditions having been met, the Case Manager should provide documentation for management review that demonstrates that all conditions have been met and appropriately documented in the facility file. A termination should be sent to the RP. See the Termination of Compliance Order Template.

Termination of a compliance order should be approved and signed by the Division Director through the agency's electronic signature tool.

The Case Manager should route the termination order to OAC where it should be docketed within two days with a copy sent to the RP and the original returned to the Case Manager. See standard works for [Docketing](#) and [Electronic Signature](#).

**Close any applicable NOC or NOV conditions after terminating the Compliance Order.**

## Compliance and Consent Orders with Civil Administrative Penalties: Drinking Water and Hazardous Waste

### Drinking Water

Pursuant to A.R.S. § [49-354\(C\)](#), ADEQ may issue a compliance order or negotiate a consent order imposing a civil administrative penalty for drinking water violations, using the same procedures previously described. See templates for Consent Order with Civil Admin Penalties and Compliance Order with Civil Administrative Penalty. A consent order may also contain agreed-upon stipulated penalties to be imposed in the event of noncompliance. In the event an RP fails to pay the penalty or stipulated penalties in accordance with the consent order, the matter will be referred to the AGO for collection.

In determining the amount of a civil administrative penalty, ADEQ shall consider the factors set forth in A.R.S. § [49-354\(D\)](#). ADEQ shall not seek a civil penalty and administrative penalty for the same violation pursuant to A.R.S. § [49-354\(H\)](#).

### Hazardous Waste

ADEQ's Hazardous Waste program may issue a consent or compliance order for a violation of statute, rule, or permit pursuant to A.R.S. § [49-923\(A\)](#). The order may include stipulated penalties to be imposed

in the event of noncompliance with the order. Upon violation of the order, ADEQ may issue a subsequent administrative order assessing a civil penalty of not more than \$1,000 per day, or the agreed-upon stipulated penalty amount, for each day of continued noncompliance with the compliance or consent order. A.R.S. § [49-923\(B\)](#). Before assessing a civil penalty, ADEQ shall give reasonable notice of its intent to issue the order and the circumstances of the case to the AGO. A.R.S. § [49-923\(C\)](#). See templates for Consent Order with Civil Admin Penalties and Compliance Order with Civil Administrative Penalty.

Hazardous Waste Compliance Orders assessing civil penalties for violated administrative orders shall be issued as follows:

- **If there is a prior agreement with the RP (i.e., a consent order with stipulated penalties):**  
The penalties to be assessed for noncompliance with a consent order will be equal to the stipulated penalty provisions within the consent order. Because these penalties have already been negotiated and agreed upon by the RP, ADEQ will not engage in further negotiations before issuing a compliance order assessing a civil penalty. If an appeal is not requested, the compliance order assessing a civil administrative penalty becomes effective **30 days** after received by the RP.
- **If there is no prior agreement with the RP (i.e., ADEQ has issued a compliance order or entered into a consent order without stipulated penalties):**  
ADEQ should issue a compliance order assessing a civil penalty for an amount based upon the seriousness of the violation, good faith efforts, economic benefit, and ability to pay. If an appeal is not requested, the compliance order assessing a civil penalty becomes effective **30 days** after received by the RP.

## Environmental Nuisance Abatement Order

Pursuant to A.R.S. § [49-142](#), the agency Director may issue an abatement order requiring a person to abate the maintenance of an environmental nuisance. An environmental nuisance is defined in A.R.S. § [49-141](#) to be a condition in the soil, air, or water that causes or threatens to cause harm to public health or the environment and that is not otherwise subject to regulation by ADEQ under Title 49. Contact OAC to initiate an abatement order in response to an environmental nuisance. See the Environmental Nuisance Order Template.

## Civil Referral

ADEQ may refer a matter to the AGO for the following types of cases or situations:

- The RP has violated a consent order or compliance order.
- The violation is unlikely to be resolved through an NOV or administrative order.
- ADEQ is seeking a civil penalty.
- The violation poses an imminent and substantial threat to public health or the environment.

## Civil Referral Process

Generally, if ADEQ would like to file a civil action in superior court, ADEQ should formally request the assignment of an Assistant Attorney General (AAG) via a CRM, which describes the facts and violations in detail. See standard work for [CRM](#).

The Case Referral Process applies when ADEQ is seeking one or more of the following:

- Preliminary or permanent injunction.
- Civil Penalties.
- Cost Recovery.

The Case Referral Process does **NOT** apply for the following matters listed. For these matters, the Case Manager should immediately contact OAC, who will contact the AGO.

- Temporary restraining order (i.e., the violation poses an immediate and substantial threat to public health or the environment).
- Search warrant (i.e., access issues).
- Potential criminal activity.
- Any other matter requiring immediate assistance.

### STEP 1 — SEEK DIVISION DIRECTOR APPROVAL TO REFER

In most cases, the need to refer the matter to the AGO will arise from a violated consent order or a violated compliance order. **After 15 days of a missed consent order deadline**, the Case Manager should seek approval from the Division Director to refer the matter to the AGO, amend the order, or issue a compliance order. Case Managers seeking approval to go straight to civil enforcement should also obtain approval from the Division Director prior to starting the referral process. Division Directors should consider calling the RP prior to drafting the CRM to determine if the RP is willing to amend the consent order. Approval to draft the CRM should be obtained **within 15 days**.

### STEP 2 — SCHEDULE MEETING FOR AGENCY DIRECTOR APPROVAL

Upon receiving approval to refer the case to the AGO, and before drafting the CRM, the Case Manager should schedule a meeting with the agency Director, Division Director, OAC, and others as needed, to be held as soon as practicable, and **no later than 30 days**. The meeting will brief the agency Director (or his or her designee) in order to obtain approval to send the CRM to the AGO. Case Managers should schedule but not conduct this meeting before drafting the CRM in order to ensure the agency Director can meet when the CRM draft is complete.

### STEP 3 — DRAFT THE CRM

**Within seven days of receiving Division Director approval** to refer the case to the AGO and before meeting with the agency Director, the Case Manager should draft the CRM.

#### STEP 4 — CRM APPROVAL

The Case Manager should route the CRM to the Unit Manager, Value Stream Manager, Division Director and OAC for approval of the CRM. See standard work for [CRM](#).

The Case Manager should obtain final approval from the agency Director at the prescheduled meeting.

#### STEP 5 — CRM TRANSMITTAL

**Within one day of agency Director approval**, the Case Manager should email the CRM to the AGO Environmental Enforcement Section Chief and a copy to OAC. The Case Manager should work with the AGO Environmental Enforcement Section Chief or assigned AG to provide any additional hard copy or electronic files.

### Possible Civil Remedies

Depending on the regulatory program involved, the AGO may pursue a variety of civil and criminal enforcement remedies on behalf of ADEQ or under its own independent authority such as:

- **Temporary Restraining Order:** ADEQ may seek a temporary restraining order requiring a facility to cease a harmful operation immediately. Contact OAC for assistance. See standard work for [Temporary Restraining Order](#).
- **Preliminary and Permanent Injunction:** ADEQ may file a civil complaint seeking an injunction to require a facility to take certain action to return to compliance. The relief may also include penalties. See standard work for [CRM](#).
- **Consent Judgment:** A Consent Judgment is a negotiated settlement of a civil complaint. When ADEQ and an RP can work cooperatively to establish civil penalties and/or injunctive relief, ADEQ files a compliant and consent judgment simultaneously. A consent judgment contains a mutually agreed-upon compliance schedule and/or penalties. See standard work for [CRM](#).
- **Cost Recovery:** ADEQ may recover costs incurred from remediating environmental issues pursuant to program-specific statutes.
- **Civil Penalties:** ADEQ may determine that civil penalties are appropriate. See [Chapter 5: Penalties](#).

**Notice of Complaint:** For a drinking water system, wastewater treatment or disposal facility, or solid waste disposal facility, notice of the filing of a civil complaint should be sent to the appropriate county official(s) and if deemed appropriate, to any affected environmental justice community. Notice should also be provided to the ACC for any regulated utilities.

**Docketing Judgments and Recording Penalties:** All judgments must be provided to OAC for docketing and added to AZURITE Formal Enforcement Module. Penalties should be recorded as compliance conditions that must be fulfilled.

**Violations of Civil Judgments:** If an RP is subject to a civil judgment and has violated the judgment, ADEQ may, as applicable, seek the following:

- **Modification of Consent Judgment without Court Approval:** If the terms of the consent judgment allow for its modification by agreement of the parties, ADEQ should consult with the AGO prior to negotiating a new compliance schedule. The new schedule should be documented in writing.
- **Modification of Consent Judgment with Court Approval:** ADEQ should contact and consult the AAG assigned to the matter for assistance.
- **Stipulated Penalties/Liquidated Damages:** ADEQ may contact the AAG assigned to the matter for collection of stipulated penalties or liquidated damages.
- **Motion for Order to Show Cause:** ADEQ may contact the AAG assigned to the matter for filing a Motion for Order to Show Cause to compel a party to act in accordance with the judgment.

**Satisfaction of Consent Judgment or Consent Decree:** Upon verification by ADEQ that all terms of the Consent Judgment or Consent Decree have been fulfilled, the Case Manager should draft a memorandum to the AGO confirming that all requirements of the Consent Judgment have been fulfilled. The memorandum should be approved by the Division Director. Upon receipt, the AGO should file a Satisfaction of Judgment and send the stamped copy to the Case Manager and OAC, as well as the RP. OAC will save the Judgment or Decree in the K:Drive. See standard work for [Docketing](#).

**Collections for Unpaid Judgments:** When Judgments are not paid, consult the AAG assigned to the case or OAC and enter the appropriate action in AZURITE.

## Criminal Referral

ADEQ may refer potential criminal acts to the Criminal Division of the AGO or the Environmental Protection Agency (EPA) for review. See standard work for [Criminal Referral](#). Criminal enforcement may result in the defendant being ordered to pay penalties and/or serve prison time. Criminal referrals to the AGO are made as separate proceedings unrelated to civil referrals. A parallel civil referral is necessary when injunctive relief is sought. The specific elements for criminal liability are delineated in the different criminal statutes that are applicable to each regulatory program and the specific acts of the defendant. The following acts potentially constitute a crime:

- Performance of a prohibited act with criminal negligence.
- Knowing performance of a prohibited act.
- Reckless performance of a prohibited act.
- Knowing or reckless manifestation of an extreme indifference for human life in performance of a prohibited act.
- Fraud against ADEQ.



## License Suspension or Revocation

ADEQ may amend, revoke, or suspend a license for the following programs:

- Vehicle Emission Fleet Inspections
- Drinking water and Wastewater Operator Certification
- UST Service Provider
- Solid Waste Registrations

ADEQ will normally attempt to negotiate a permit revocation/suspension with the consent of the RP using the same procedures described previously (see [Consent Orders section](#)). If these attempts are unsuccessful or unwarranted given the circumstances, ADEQ may issue a suspension or revocation unilaterally. An RP may request an administrative appeal of ADEQ's decision. If an appeal is not requested, the suspension or revocation becomes effective **30 days** after it is received by the RP. See templates for License Revocation and License Suspension.

## Board of Technical Registration Referral

ADEQ reviews reports and other documents from engineers and geologists submitted on behalf of an RP to demonstrate compliance with environmental regulations. These engineers and geologists are required to be licensed by the Board of Technical Registration (BTR) and adhere to BTR regulations. If ADEQ has reason to believe that a person has violated a BTR requirement when dealing with ADEQ (i.e., when submitting an engineering or geological plan, report, or license application) ADEQ may refer the matter to the BTR.

As a general rule, ADEQ will only refer matters to the BTR for clear breaches of professional conduct, which may include any of the following:

- Submittal of false or misleading certifications
- Attempting to defraud the State
- Attempting to commit bribery
- Clearly practicing without a registration

ADEQ may refer the public to [BTR for complaints](#) that do not directly involve or impact ADEQ.



## Chapter 5: Penalties

ADEQ may seek civil penalties when a facility has received an economic benefit from noncompliance which provides a facility an economic advantage over other facilities. ADEQ may also seek a civil penalty to recover State costs from a violation or to provide a deterrent for future noncompliance. The environmental statutes administered by ADEQ generally contain penalty assessment criteria that a court should consider in determining an appropriate penalty at trial. The penalty amount sought in a civil complaint may be the statutory maximum penalty. ADEQ will determine what constitutes an appropriate settlement penalty on a case-by-case basis. At a minimum, the penalty amount in any settlement should be equal to any identifiable economic gain and any costs incurred by the State due to the violation. The penalty should also have a deterrent effect on the RP and for the regulated community at large. An appropriate settlement may include penalty mitigation for good-faith actions taken by the facility to return to compliance, the implementation of a Supplemental Environmental Project, or stipulated penalties to deter further noncompliance. This chapter provides guidance on when to seek a penalty, how to develop a penalty amount, and how to include a supplemental environmental project in a judgment.

### STANDARD WORK:

- [Case Referral Memorandum](#)

## Determining if a Penalty is Appropriate

### ADEQ will strongly consider penalties when a facility:

1. Intentionally misrepresents information or intentionally acts unlawfully;
2. Causes harm to human health; or
3. Has repetitive violations from consecutive inspections.

Any violation of statute, rule, order, or permit may be subject to a penalty. All decisions will be made on a case-by-case basis.

In addition to the criteria above, a decision to seek civil penalties may also use the following criteria:

- The violation was intended to result in, or actually resulted in, significant cost savings or a competitive advantage to the RP.
- The RP engaged in willful or negligent conduct leading to the violation (e.g., inadequate systems in place for detecting or preventing the violation).
- The RP previously received an NOV or administrative order for the same violation.
- ADEQ previously filed a civil complaint against the RP.
- The violation resulted in actual harm, or substantial risk of harm, to public health or the environment as determined using the following factors:
  - An actual release.
  - Violation of a water quality standard.
  - Exceedance of a soil remediation standard.

- Severe mismanagement of a pollutant.
- The amount of the pollutant involved.
- The toxicity of the pollutant involved.
- The proximity of biological or human receptors or sensitive environmental media such as a drinking water supply, populated area or surface water.
- Lack of notifying persons potentially affected by the violation if required by law.

## Settlement Adjustment Factors

Although the statutory penalty adjustment factors vary by program, the following factors are generally considered by ADEQ in assessing the appropriate penalty amount.

### Aggravating Factors

- **Seriousness of Violation:** Includes threat or actual harm to public health and/or the environment.
- **History of Repeated Violations:** A history of repeated violations of the same rules or statutes or payment of previous penalties for the same or similar violations.
- **Record of Noncompliance:** A history of violation of other environmental laws and regulations whether federal, state, or local.
- **Recalcitrance:** Refusal to comply with ADEQ requirements, including deliberate attempts to delay the settlement process by unnecessarily extending negotiations.
- **Duration of Violation:** The violation has continued over a period of time, with the RP's knowledge, and no or minimal attempts have been made to correct the violation.
- **Other Evidence of Bad Faith:** Unique bad faith factors such as ignoring past efforts to engage the RP and provide compliance assistance or acts of willful or gross negligence.
- **Other Aggravating Factors:** ADEQ may consider other factors that may indicate the need for an aggravated penalty.

### Mitigating Factors

- **Good Faith Efforts:** Timely corrective action or other evidence of good faith that results in progress towards compliance.
- **Multiple Responsible Parties:** If more than one RP is responsible for the violation, the penalty may be apportioned based on ADEQ's knowledge of the facts and professional judgment.
- **Other Mitigating Factors:** ADEQ will consider other factors which may indicate the need for a reduction in the penalty.

### Deterrence Factors

- **Economic Impact of the Penalty:** At a minimum, the penalty should deter the RP from repeated violations and recapture any identifiable economic gain.
- **Deterrence Value to Other PRPs:** Consideration should be given as to whether the penalty will deter other PRPs from similar acts.

## Ability to Pay

The ability to pay should be considered if the penalty would result in the RP's inability to remain solvent. The inability to pay should be established by the RP through clear and convincing evidence. Additionally, payment schedules are preferred over a reduction in penalties. A penalty payment schedule generally should not exceed three years and should include an interest of 10 percent per annum. ADEQ may use the following EPA financial models to analyze the financial aspects of enforcement actions: ABEL (corporations and partnerships), MUNIPAY (municipalities and utilities), and INDIPAY (individuals).

## Penalty Development Process

In developing a proposed penalty amount, the Case Manager should follow ADEQ's Penalty Standard Work. *Contact OAC to review the Penalty Standard Work.* The Case Manager begins by identifying the program's authority and calculating the statutory maximum. Next, the Case Manager should calculate the economic benefit to the RP and the additional costs incurred by the State due to the violation. Use the U.S. EPA BEN model as a starting point for calculating economic benefit. The Case Manager should also identify appropriate statutory adjustment factors applicable to that case. Applying the adjustment factors, the recommended penalty should fall somewhere in between the statutory maximum and the sum of the facility's economic benefit and additional costs incurred by the State due to the violation.

**Judgements should always recover State and agency costs and attorney fees when possible, which are costs unnecessarily paid by Arizona taxpayers for the RPs noncompliance.** Ensure that any judgment includes payment of costs and attorney fees when allowed by statutory authority, for example, under A.R.S. § [49-262\(D\)](#).

## Stipulated/Deferred/Liquidated Damages

**In general, all consent judgments should include stipulated or deferred penalties, which are also called liquidated damages.** If the RP violates a requirement of the consent judgment, the party should be required to pay an amount negotiated in the settlement. The appropriate amount of the stipulated or deferred penalty should be determined on a case-by-case basis and may differ depending on the specific requirements within the settlement agreement. The penalty should be set such that it motivates the RP to maintain compliance.

## Supplemental Environmental Projects

To further ADEQ's goal to protect and enhance public health and the environment, a Supplemental Environmental Project (SEP) may be included in a civil settlement to mitigate a portion of the civil penalty. SEPs are authorized by A.R.S. § [49-117](#). This section sets forth the types of projects that are permissible as SEPs, the penalty mitigation appropriate for an SEP, and the terms and conditions under which they may become part of a settlement. The primary purpose of an SEP is to encourage and obtain environmental and public health protection and improvements that may not otherwise have occurred without the settlement incentives provided by the use of SEPs.

When evaluating a proposed project to determine if it qualifies as an SEP and determining how much penalty mitigation is appropriate, ADEQ will use the following five-step process:

#### **STEP 1 — ENSURE THAT THE PROJECT MEETS THE BASIC DEFINITION OF AN SEP**

SEPs are environmentally beneficial projects an RP agrees to undertake in settlement of a penalty action, which the RP is not otherwise legally required to perform. When proposing an SEP, the RP should demonstrate to ADEQ that the SEP improves, protects, or reduces a risk to public health, or the environment at large. While in some cases an SEP may provide the RP with certain benefits, there should be no doubt that the project primarily benefits public health or the environment. As a result, the project or activity must have been initiated after identification of the violation by ADEQ, and should not otherwise be required by any federal, state, or local law or regulation. Furthermore, SEPs cannot include corrective actions that the RP should perform to resolve the violations at issue.

#### **STEP 2 — ENSURE THAT THE FOLLOWING GUIDELINES ARE SATISFIED**

- An SEP shall be consistent with the provisions of the statutes that are the basis of the enforcement action.
- Pursuant to A.R.S. § [49-117](#), all SEPs shall advance at least one of the objectives of the environmental statutes that are the basis of the enforcement action and shall have adequate nexus. Nexus is the relationship between the violation and the proposed project. This relationship exists only if any of the following is true:
  - The project is designed to reduce the likelihood that similar violations will occur in the future; or
  - The project reduces the adverse impact to public health or the environment to which the violation at issue contributes; or
  - The project reduces the overall risk to public health or the environment potentially affected by the violation at issue.
- ADEQ should not play any role in managing or controlling funds that may be set aside or escrowed for the performance of an SEP. In addition, ADEQ should not retain authority to manage or administer the SEP. ADEQ may perform oversight to ensure that a project is implemented pursuant to the provisions of the settlement and should have legal recourse if the SEP is not adequately performed.
- The type and scope of each project should be explicitly defined in the signed settlement agreement. The agreement should describe the specific actions to be performed by the RP and provide for a reliable and objective means to verify that the RP has completed the project in a timely manner. This may require the RP to submit periodic reports to ADEQ. A final report certified by an appropriate corporate official and evidencing completion of the SEP and documenting SEP expenditures should be required. To the extent feasible, the RP should be required to quantify the benefits associated with the project and provide ADEQ with a report setting forth how the benefits were measured or estimated. The RP should agree that whenever it publicizes an SEP or the results of an SEP, it should state in a prominent manner that the project is being undertaken as part of the settlement of an enforcement action. SEPs that require ADEQ review and comment on interim

milestone activities and other complex SEPs may not be appropriate because of the time commitment that should be made on behalf of ADEQ.

- A project cannot be used to satisfy ADEQ's statutory obligation or another state agency's obligation to perform a particular activity. Furthermore, if a state statute prohibits the expenditure of state resources on a particular activity, ADEQ cannot consider projects that would appear to circumvent that prohibition.
- A project should not provide additional resources to support specific activities performed by ADEQ employees or ADEQ contractors.

### STEP 3 — ENSURE THAT THE PROJECT FITS WITHIN ONE OR MORE DESIGNATED SEP CATEGORIES

ADEQ has identified seven specific categories of projects that may qualify as SEPs. In order for a proposed project to be accepted as an SEP, it should satisfy the requirements of at least one category.

- **Public Health:** A public health project provides diagnostic, preventative, and/or remedial components of human health care which is related to the actual or potential damage to health caused by the violation. Public health SEPs are acceptable only where the primary benefit of the project is the population that was harmed or put at risk by the violations.  
*Examples:* Epidemiological data collection and analysis, medical examinations of potentially affected persons, collection and analysis of blood/fluid/tissue samples, medical treatment, and rehabilitation therapy.
- **Pollution Prevention:** A pollution prevention project is one that reduces the generation of pollution through "source reduction," including any practice which reduces the amount of any hazardous substance, pollutant, or contaminant entering any waste stream or otherwise being released into the environment, prior to recycling, treatment or disposal. (After the pollutant or waste stream has been generated, pollution prevention is no longer possible and the waste must be handled by appropriate recycling, treatment, containment, or disposal methods.) In all cases, for a project to meet the definition of pollution prevention, there should be an overall decrease in the amount and/or toxicity of pollution released to the environment, not merely a transfer of pollution among media. This decrease may be achieved directly or through increased efficiency (conservation) in the use of energy, water, or other materials.  
*Examples:* Equipment or technology modifications, process or procedure modifications, reformulation or redesign of products, substitution of raw materials, and improvements in housekeeping, maintenance, training, inventory control, or other operation and maintenance procedures. Pollution prevention also includes any project that protects natural resources through conservation or increased efficiency in the use of energy, water, or other materials. "In-process recycling" – waste materials produced during a manufacturing process are returned directly to production as raw materials on site – is considered a pollution prevention project.
- **Pollution Reduction:** If the pollutant or waste stream has already been generated or released, a pollution reduction approach, which employs recycling, treatment, containment, or disposal techniques, may be appropriate. A pollution reduction project is one that results in a decrease in the amount and/or toxicity of any hazardous substance, pollutant, or contaminant entering any

waste stream or otherwise being released into the environment by an operating business or facility by a means, which does not qualify as “pollution prevention.”

**Examples:** Installation of more effective end-of-process control or treatment technology, improved containment, safer disposal of an existing pollutant source, or out-of-process recycling (i.e., industrial waste collected after the manufacturing process and/or consumer waste materials are used as raw materials for production off-site).

- **Environmental Restoration:** An environmental restoration project is one that enhances the condition of the ecosystem or immediate geographic area adversely affected. These projects may be used to restore natural environments (such as ecosystems) and man-made environments, such as facilities and buildings. This category also includes any project that improves the overall condition of the ecosystem.

**Examples:** Restoration of a wetland in the same ecosystem along the same avian flyway in which the facility is located, the protection of endangered species ( e.g., developing conservation programs or protecting habitat critical to the well-being of a species endangered by the violation), remediation of facilities and buildings, (provided such activities are not otherwise legally required), or removal/mitigation of contaminated materials (such as soils, asbestos and lead paint, which are a continuing source of releases and/or threat to individuals).

- **Assessments and Audits:** The following descriptions of assessments and audits are potential SEPs under this category if they are not otherwise available as injunctive relief and the RP agrees to provide ADEQ with a copy of the report documenting the assessment or audit:
  - **Pollution prevention assessments** are systematic, internal reviews of specific processes and operations designed to identify and provide information about opportunities to reduce the use, production, and generation of toxic and hazardous materials and other wastes. To be eligible for SEPs, such assessments shall be conducted using a recognized pollution prevention assessment or waste minimization procedure to reduce the likelihood of future violations. Pollution prevention assessments are acceptable as SEPs with or without an implementation commitment by the RP.
  - **Environmental quality assessments** are investigations of the condition of the environment at a site regardless of whether the site or facility is owned or operated by the RP. To be eligible as SEPs, such assessments shall be conducted in accordance with recognized protocols, if available, applicable to the type of assessment to be undertaken.
 

**Examples:** Investigations of levels or sources of contamination in any environmental media at a site, or monitoring of the air, soil, or water quality surrounding a site or facility.
  - **Environmental compliance audits** are independent evaluations of the RP's compliance status with environmental requirements. Credit is only given for the costs associated with conducting the audit. While the SEP should require all violations discovered by the audit to be promptly corrected, no credit is given for remedying the violation. In general, compliance audits are acceptable as SEPs only when the defendant/respondent is a small business or small community.

- **Environmental Compliance Promotion/Research:** An environmental compliance promotion or research project provides training, technical support, or information to other members of the regulated community to identify, achieve or maintain compliance with applicable statutory and regulatory requirements, or go beyond compliance by reducing the generation, release, or disposal of pollutants beyond legal requirements. Environmental compliance promotion/research SEPs are acceptable only where the primary impact of the project is focused on the same regulatory program requirements that were violated and where ADEQ has reason to believe that compliance in the sector would be significantly advanced by the proposed project.

**Examples:** Producing a seminar directly related to correcting widespread or prevalent violations within the RP's economic sector. Collection of baseline environmental data to be used in research improving, protecting, or reducing risks to public health and the environment. Development of new treatment technologies that could be used to reduce the generation, release, or disposal of pollutants beyond legal requirements.

- **Emergency Planning and Preparedness:** An emergency planning and preparedness project provides assistance to a responsible local emergency response or planning entity. This is to enable these organizations to fulfill their obligations under the Emergency Planning and Community Right-to-Know Act (EPCRA) to collect information to assess the dangers of hazardous chemicals present at facilities within their jurisdiction, to develop emergency response plans, to train emergency response personnel and to better respond to chemical spills.

**Examples:** Providing computers and software, communication systems, chemical emission detection and inactivation equipment, HAZMAT equipment, or training to a responsible local emergency response or planning entity.

#### STEP 4 — DETERMINE THE APPROPRIATE AMOUNT OF PENALTY MITIGATION

An SEP may be substituted for a portion of the calculated penalty or settlement amount. However, the SEP may not offset the entire calculated penalty. Generally, the net present after-tax cost of the SEP should be the equivalent of twice the remaining unpaid balance of the calculated penalty or settlement amount. Other ratios can be imposed based upon the facts and the type of SEP imposed, but should be approved in advance by OAC.

#### STEP 5 — ENSURE THAT THE PROJECT SATISFIES ALL OF THE IMPLEMENTATION & OTHER CRITERIA

Whether ADEQ decides to accept a proposed SEP as part of a settlement, and the amount of any penalty mitigation that may be given for a particular SEP is purely within ADEQ's discretion. Even though a project appears to satisfy all of the provisions of this section, ADEQ may decide, for one or more reasons, that an SEP is not appropriate (e.g., the cost of reviewing an SEP proposal is excessive, the oversight costs of the SEP may be too high, the RP may not have the ability or reliability to complete the proposed SEP, or the deterrent value of the higher penalty amount outweighs the benefits of the proposed SEP).



## Community Input During SEP Development

In appropriate cases and at the sole discretion of the agency, ADEQ may make special efforts to seek input on project proposals from the local community that may have been adversely impacted by the violations. The purpose of seeking input from the impacted community is to ensure that a SEP proposed by the RP meets the criteria for an acceptable SEP and to determine whether the community would benefit from the SEP. The seeking of input is not intended to solicit new SEPs or to entertain alternative SEP proposals from the community. Community involvement in SEPs may be most appropriate in cases where the range of possible SEPs is broad and/or multiple SEPs may be negotiated. When soliciting community input, ADEQ should follow these guidelines:

- Community input should be sought only after
  - The RP has expressed an interest in performing an SEP;
  - The RP has expressed a willingness to seek community input;
  - ADEQ knows approximately how much money will be available for an SEP; and
  - Settlement of the enforcement action is likely.
- To solicit input, ADEQ may contact local community organizations, local elected leaders, local chambers of commerce, or other groups.
- To ensure that communities have a meaningful opportunity to participate, ADEQ should provide information about what SEPs are, the opportunities and limits of such projects, the confidential nature of settlement negotiations, and the reasonable possibilities and limitations in the current enforcement action.
- When possible, the name of the RP and the status of the action should remain confidential.
- Representatives of community groups should not participate directly in the settlement negotiations due to the confidential nature of settlement negotiations.



END

of Program Description Appendices