

AQUIFER STORAGE AND RECOVERY
REGULATION UNDER THE UTAH
UNDERGROUND INJECTION CONTROL
PROGRAM

CURRENT PERMITS IN UTAH AND
APPLICATION PROCESS

Groundwater Protection Council
Wednesday, September 23, 2021



UTAH DEPARTMENT of
ENVIRONMENTAL QUALITY

WATER
QUALITY

Basis for ASR Class V Permits

Safe Drinking Water Act 1974, 1996

Title 40 Code of Federal Regulations

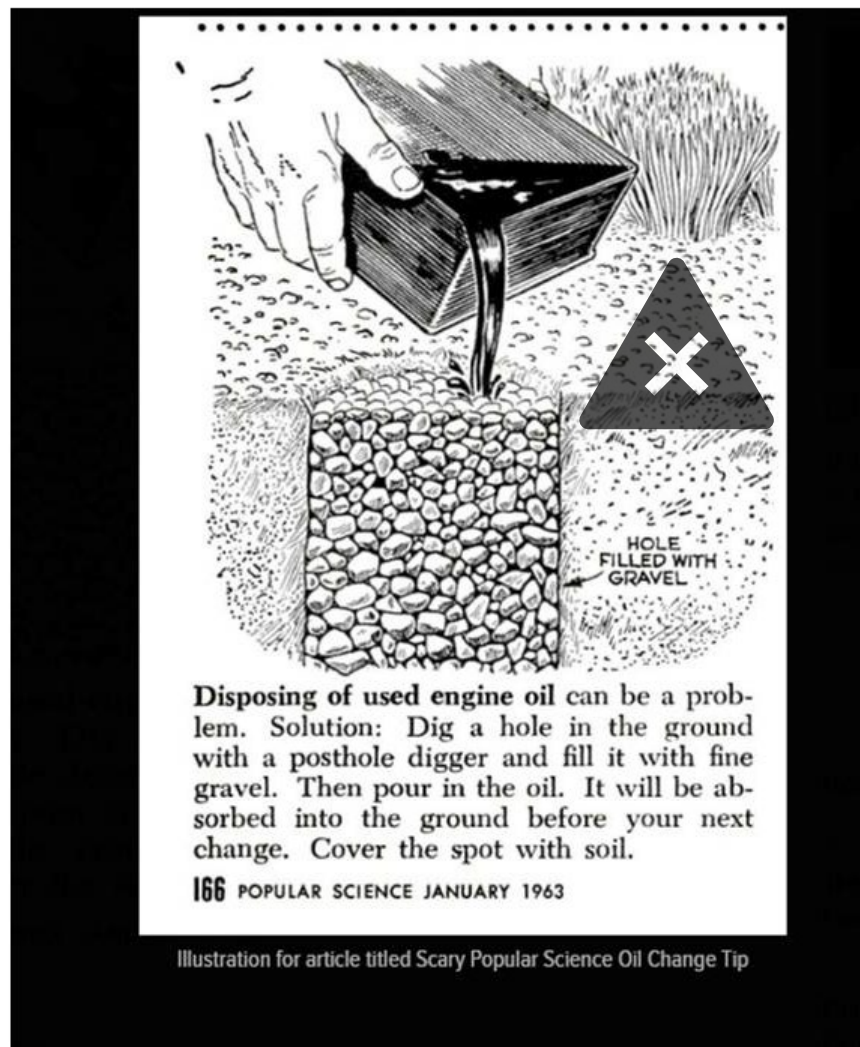
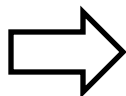
Utah Administrative Code (R317-7)

- Utah has a state primacy UIC program under an MOA with EPA Region 8 for Class I, II (DOGM), III, IV, V wells including Class V ASR injection wells regulated by the Utah Department of Environmental Quality, Division of Water Quality
- Utah UIC administrative rules in Utah Administrative Code R317-7 et. seq. and federal regulations in Title 40 of the Code of Federal Regulations (CFR) incorporated by R317-7-1

UIC Regulations Enacted to Protect Underground Sources of Drinking Water (USDW)

UIC regulations set forth minimum requirements, technical criteria and standards protection underground sources of drinking water (USDW) from endangerment by subsurface emplacement of fluids (40 CFR Parts 144-148) via “wells.”

- Regulations developed by well class for selected operations, ASR injections wells are beneficial (5B) 5B1 according to the EPA
- Many other types of Class V wells:
 - Example: Construction of Class V motor vehicle waste disposal wells prohibited under UIC regulations in 2000



UIC Regulations only Regulate ASR via Wells not Recharge Infiltration Basins etc.

Well – CFR 144.3

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**.

Well Injection – CFR 144.3

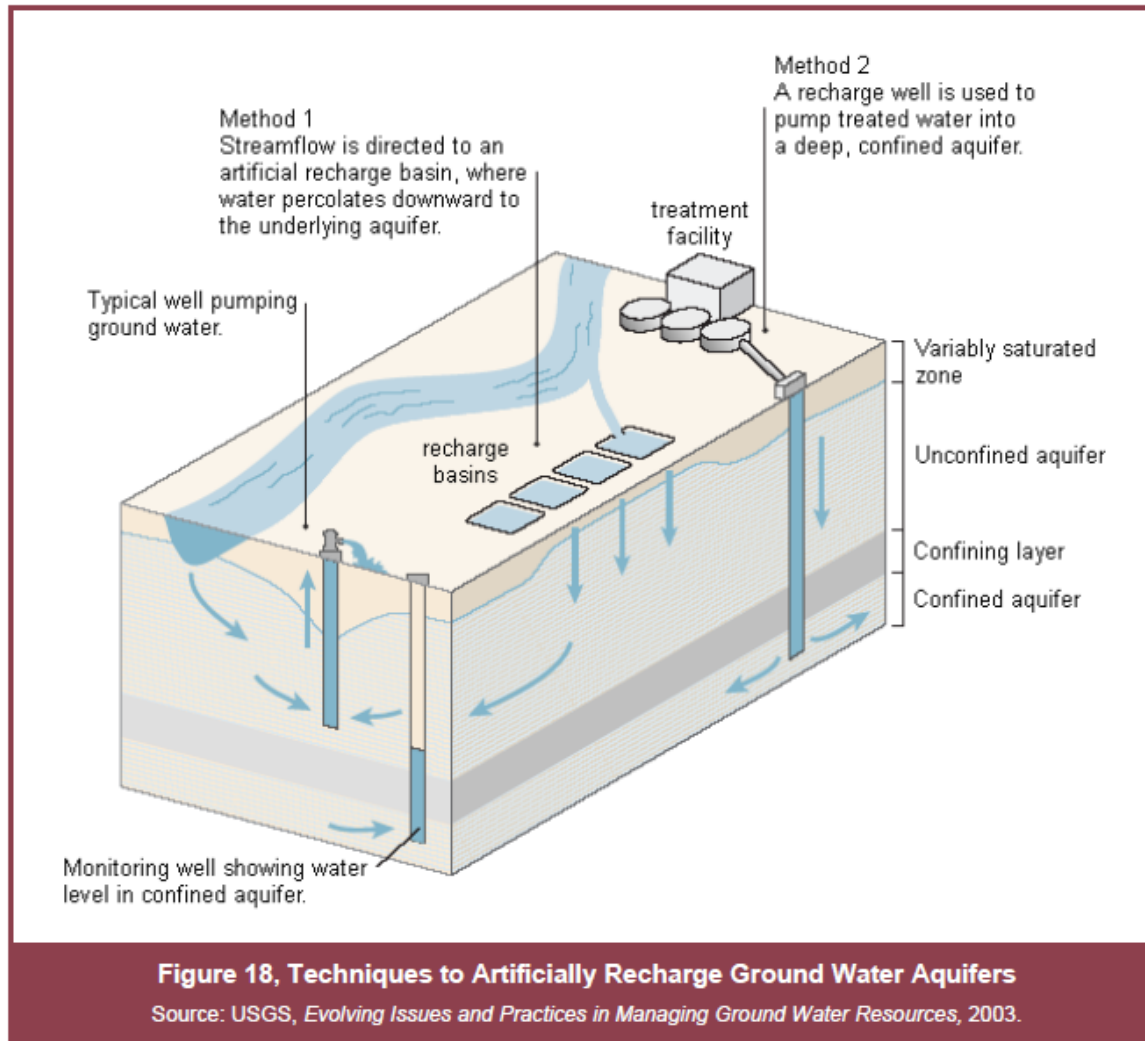
The subsurface emplacement of fluids through a well.

Note: Artificial recharge via infiltration basins etc. are permitted by rule under UAC R317-6-6 but a permit may be required if the discharge may cause impacts to groundwater.

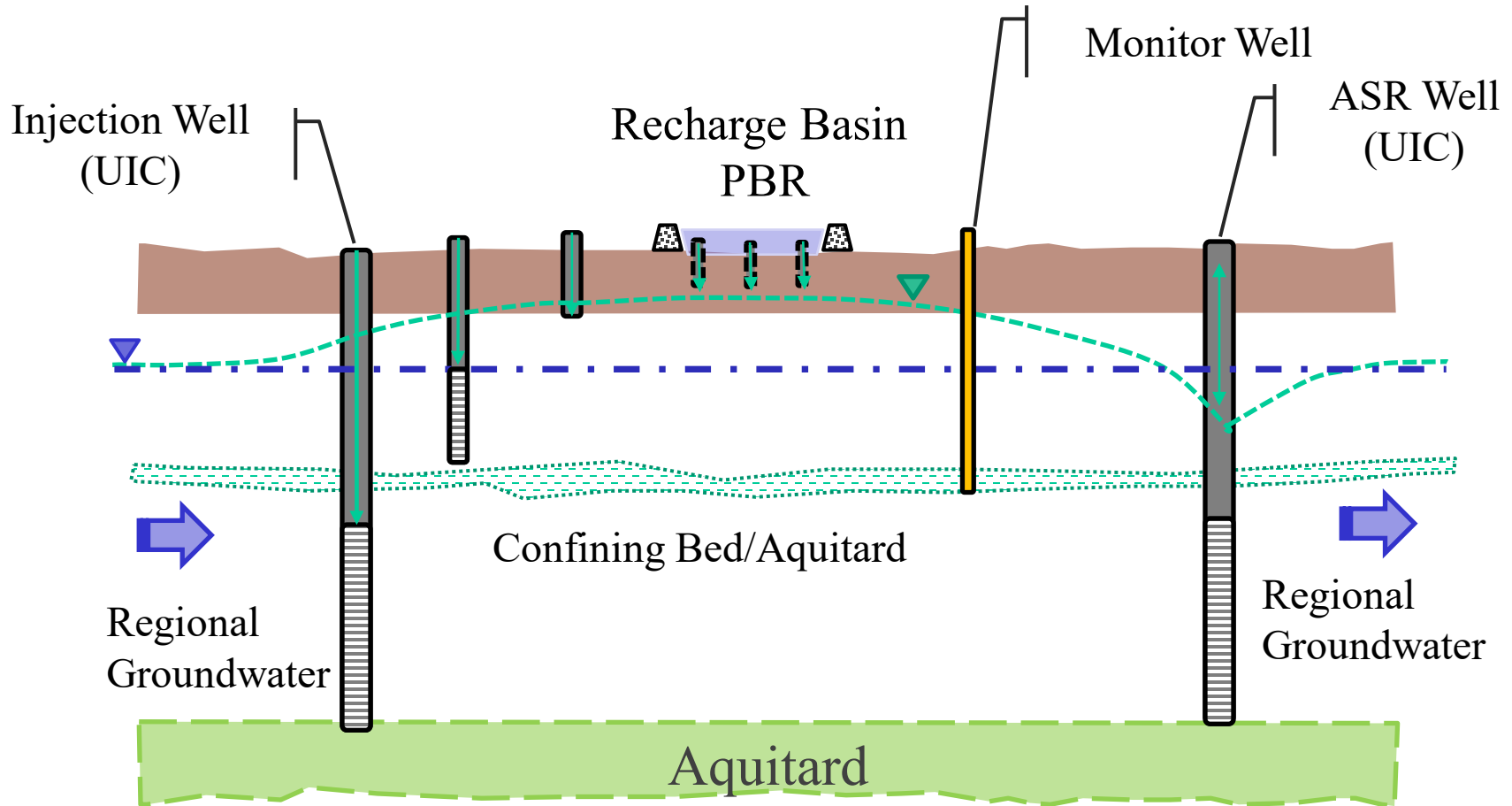


UIC Well

UIC Regulations only Regulate ASR via Wells not Recharge Infiltration Basins etc.



UIC Regulations only Regulate ASR via Wells (including shallow drainage wells etc.) but NOT Artificial Recharge Infiltration Basins (RIBs) etc.



UIC Class V ASR Permits and ABR Projects

UIC Class V ASR Well and Area Permits and Pilot Projects Authorized by Rule

Municipality or District	No. of ASR Wells	Established	Permit Type
Brigham City	4	2000	Area Permit
Jordan Valley Water Conservation District	19	2000	Area Permit
Leamington Town Corporation	1	2015	Individual Permit
Provo City Pilot ASR Project	2	2019	Authorized by Rule
Coalville Pilot ASR Project	1	2016	Authorized by Rule
Millville ASR Pilot Project	2	2013	Authorized by Rule, Permit denied in 2018
Draper Irrigation Company, Valle Di Villa Project	1	2012	Authorized by Rule
Metropolitan Water District of Salt Lake and Sandy	1	2005	Authorized by Rule
Salt Lake City/ High Plains States Demonstration Project	3	1992	? EPA Sponsored, completed 1994

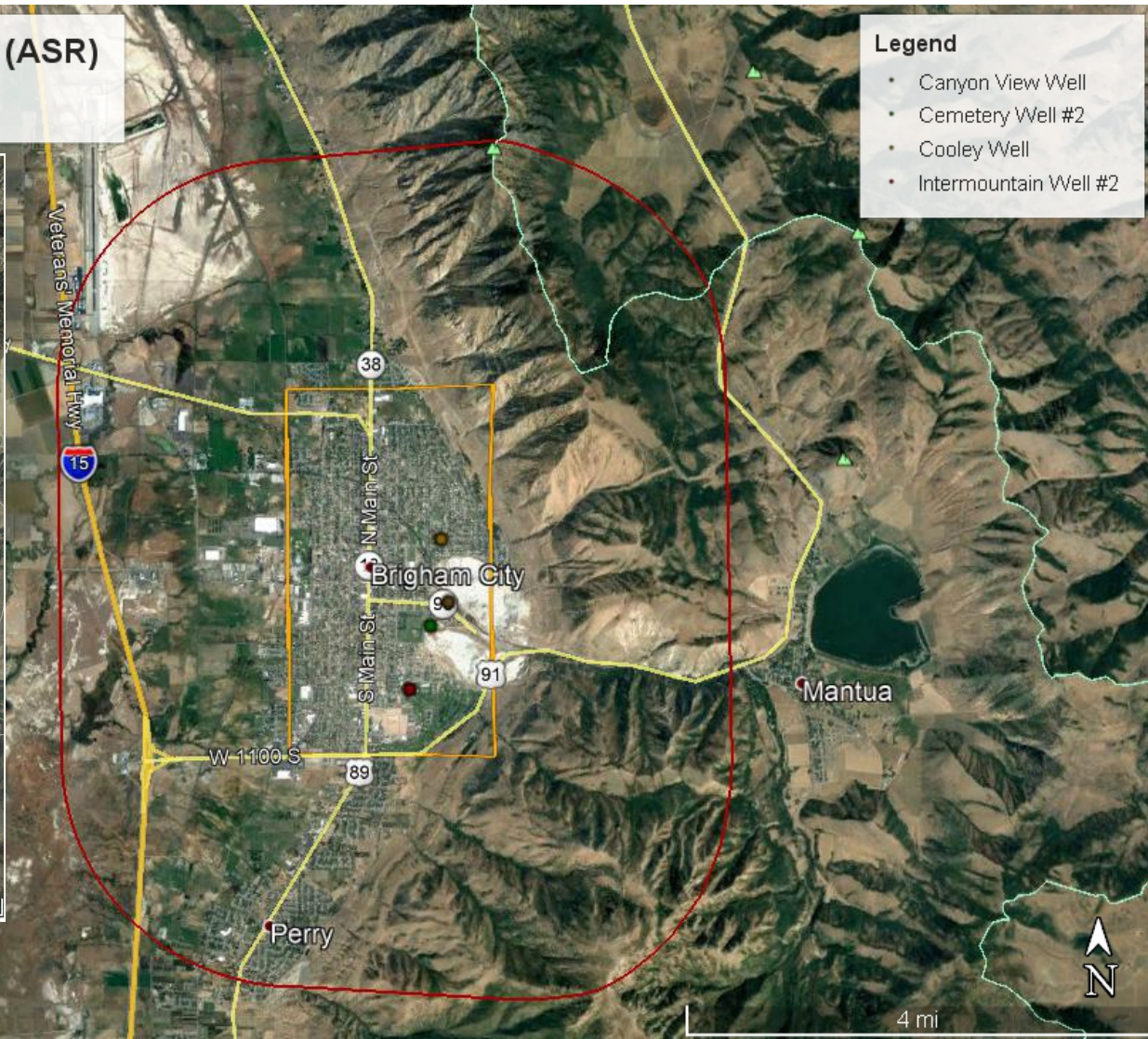
Brigham City Class V UIC Permit

Brigham City Aquifer Storage Project (ASR)

UIC Class V ASR Permit Area of Review (Red)
UIC Class V ASR Area Permit Boundary (Orange)

Legend

- Canyon View Well
- Cemetery Well #2
- Cooley Well
- Intermountain Well #2



Google Earth

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Image Landsat / Copernicus



Wasatch Front Hydrogeology

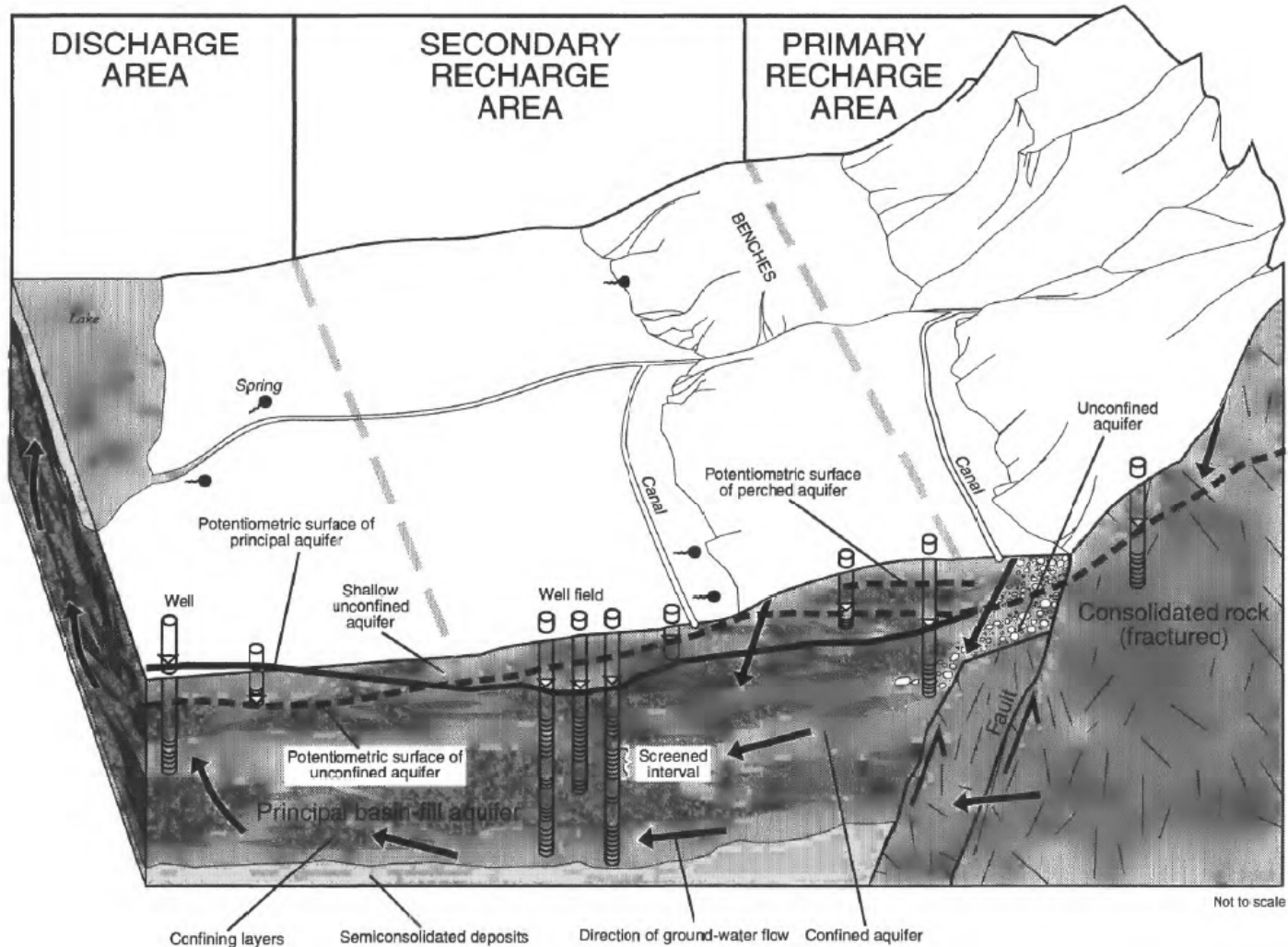


Figure 3. Generalized block diagram showing relation of recharge areas and the basin-fill aquifer system along the Wasatch Front, Utah.

Anderson et al.. 1994. USGS Water-Resources Investigation Report 93- 4221

Mantua Valley Springs, Utah



Brigham City Canyon View ASR Well



Utah Administrative Code (R317-7)

UIC Class V Area and Individual Permits

- Part I of the permit is the Authorization to Construct and Inject. Part II includes all general permit conditions required in all UIC permits. Part III contains all the specific permit conditions required of ASR permits.
 - i. Definition of permit area, area of review injection activity.
 - ii. Duty to comply, reapply (5 year cycle), modify or transfer, suspend or terminate, monitor, inspect, report and mitigate, maintain mechanical integrity and plug and abandon wells as necessary to protect USDWs and public health.
 - iii. Director specified permit conditions for the safe injection and containment of solutions and appropriate measures to establish and insure mechanical integrity of wells, compliance, monitor water quality, plug and abandon wells. Wellfield closure is ensured by a Financial Surety sufficient to cover all costs (NA in case of some ASRs for municipal water supply).

Utah Administrative Code (R317-7)

The Division of Water Quality does not have the authority to regulate beyond the governing UIC statute and regulations, including but not limited to such possible concerns as:

- Utah Division of Water Quality and Utah Department of Natural Resources, Permit Status and Compliance
- Federal NEPA Permit Status and Compliance
- Property, Mineral or Water Rights (Utah Department of Natural Resources Division of Water Rights)
- Financial or Tax Status
- Third Party Legal Disputes
 - However the applicant must be a legal entity that is clearly defined in the permit application
- Other non-UIC Related Permits or Local Ordinances etc.

Permit Specific Conditions

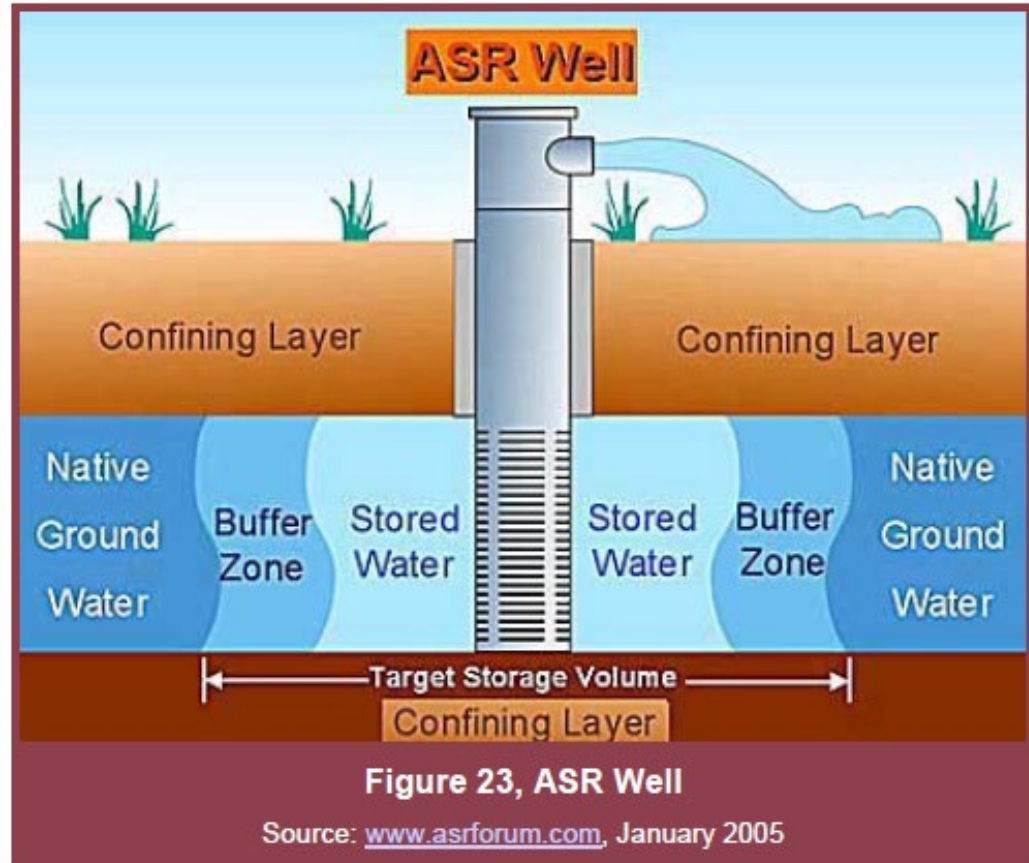
- New ASR Projects Require Hydrogeologic (Formation Testing etc.) and Geochemical Assessment Reports:
 - Potential for mobilization of metals and other contaminants from matrix
 - Potential for adverse reactions such as corrosion and plugging
- Municipal Water Well Construction Standards etc.
- Only Allow Injection of Treated Water in Most Cases
- Standard Operating Procedures
 - No artesian flow or exceedance of fracture pressure
- Monitoring, Recording, and Reporting Plan
 - Monitor water levels
 - Drinking water parameters (= Division of Drinking Water in most cases)
 - Quarterly reporting
- Plugging and Abandonment Required by Division of Water Rights and Division of Drinking Water in Most Cases
- Usually no Financial Assurance for ASR Well Plugging and Abandonment if Covered by other Agencies etc.

Monitoring, Recording, and Reporting

- Continuous monitoring of ASR wells and quarterly reporting:
 - Injection and recovery volumes (Division of Water Rights)
 - Injection pressures and flows - daily averages
 - Injection zone fluid level (must be below ground surface)
 - Monitoring/municipal supply wells according to monitoring plan of permit:
 - Exceedance of water quality standards (UAC R317-6-2)
 - Degradation of background water quality is not permitted
 - Noncompliance Not Previously Reported
 - Twenty-four Hour Reporting
 - Five-day Reporting

ASR Well Design and Mechanical Integrity Testing

- Municipal water well design and construction standards
- Highly variable for ASR wells that are not part of a municipal water supply system
- Usually **no** requirements for internal and external MITs when well is constructed and every 5 years after by approved methods
- Mechanical integrity testing requirements are set forth in 40 CFR 146.8 etc.



Utah UIC Permit Application and Process

<https://deq.utah.gov/division-water-quality>

Utah DEPARTMENT of ENVIRONMENTAL QUALITY WATER QUALITY

Utah Division of Water Quality

Help Me Find

[Interactive Map](#) [E-Z Records Search](#)

Water Quality

- Water Quality Board (+)
- Water Quality & Health (+)
- Laws & Rules
- Public Notices (+)
- Info & Data Requests
- Integrated Report Program (+)
- Nutrient Pollution (+)
- Monitoring (+)
- Engineering
- Ground Water Protection/...

News and Announcements

Visit the SARS-CoV-2 Sewage Monitoring Page

UTAH SCIENTISTS USING SEWAGE TO TRACK CORONAVIRUS

In April, a pilot program was launched to determine whether monitoring sewage for coronavirus could provide a useful tool for public health officials for early detection of rising infections, monitoring overall community infection trends, and confirmation of low infection rates.

- Visit the Monitoring Page
- Read the News Release (294 KB)
- Read the April News Story

Integrated Report: Approved by Environmental Protection Agency

Erica Gaddis, Director

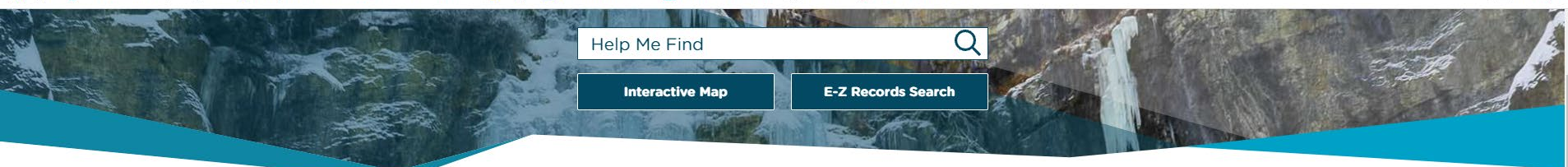
P.O. Box 144870
Salt Lake City, Utah
84114-4870

Phone: (801) 536-4300
FAX: (801) 536-4201

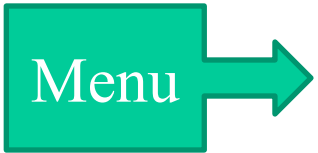


Utah UIC Permit Application and Process

<https://deq.utah.gov/division-water-quality>



Water Quality	
Water Quality Board	+
Water Quality & Health	+
🔗 Laws & Rules	
Public Notices	+
Info & Data Requests	
Integrated Report Program	+
Nutrient Pollution	+
Monitoring	+
Engineering	
Ground Water Protection/ Underground Injection Control	-
Current Permits	
Ground Water Quality Protection Program	+
Underground Injection Control (UIC)	+
Water Quality Permitting	+
Standards & Technical Support	+
Storm Water	
Wastewater	+



News and Announcements

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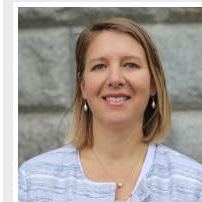
Integrated Report: Approved by Environmental Protection Agency (EPA)

DWQ is pleased to announce that the Combined 2018/2020 Integrated Report (IR) was approved by EPA on August 8, 2021. More on the IR...

- EPA Approval Letter [\(364 KB\)](#)

Utah Inland Port Storm Water Sampling and Analysis Plan

This Sampling and Analysis Plan was prepared by DWQ for the collection of storm water samples required to establish baseline water quality conditions associated with the Utah Inland Port (UIP) and quantify impacts to water quality before, during and following development. This information will help direct the implementation of best management



Erica Gaddis, Director

P.O. Box 144870
Salt Lake City, Utah
84114-4870

Phone: (801) 536-4300
FAX: (801) 536-4301
Contacts

Environmental Incidents
(801) 536-4123

Location

Multi-Agency State Office
Building
195 North 1950 West
Salt Lake City, Utah



Utah UIC Permit Application and Process

<https://deq.utah.gov/division-water-quality>



The screenshot shows the website deq.utah.gov/division-water-quality. On the left is a navigation menu with the following items: Nutrient Pollution (+), Monitoring (+), Engineering, Ground Water Protection/Underground Injection Control (-), Current Permits, Ground Water Quality Protection Program (+), Underground Injection Control (UIC) (-), Overview, Compliance Assistance, Class V Inventory Review Fee, Forms and Applications, Glossary, Large-Capacity Cesspools, Motor Vehicle Waste Disposal Wells (MVWDs), Permit Application Fees, Resources, Rules, Related Rules, SIC and NAICS Codes, Storm Water Drainage Wells, Well Classes, Contacts, Water Quality Permitting (+), and Standards & Technical Support (+). The main content area features a 'TRACK CORONAVIRUS' banner, an 'Integrated Report: Approved by Environmental Protection Agency (EPA)' section with a link to the EPA approval letter (364 KB), a 'Utah Inland Port Storm Water Sampling and Analysis Plan' section with a link to the plan (10 MB), an 'Electronic Documents Submissions' section with a link to the submission portal, and a 'Public Notices' section listing several permit-related notices with their respective comment period closing dates. On the right side, there is contact information for the Salt Lake City office, including a P.O. box, phone, and fax numbers, as well as links for 'Environmental Incidents', 'Location' (Multi-Agency State Office Building), 'Hours' (Monday-Friday, 8:00 a.m. to 5:00 p.m.), 'Feedback', and 'Organization Chart'.

Utah UIC Permit Application and Process (cont.)

<https://deq.utah.gov/water-quality/forms-and-applications-utah-underground-injection-control-uic-program>

The screenshot shows a web browser window with the URL deq.utah.gov/water-quality/forms-and-applications-utah-underground-injection-control-uic-program. The left sidebar contains a navigation menu with the following items: Integrated Report Program, Nutrient Pollution, Monitoring, Engineering, Ground Water Protection/Underground Injection Control, Current Permits, Ground Water Quality Protection Program, Underground Injection Control (UIC), Overview, Compliance Assistance, Class V Inventory Review Fee, **Forms and Applications**, Glossary, Large-Capacity Cesspools, Motor Vehicle Waste Disposal Wells (MVWDs), Permit Application Fees, Resources, Rules, Related Rules, SIC and NAICS Codes, Storm Water Drainage Wells, Well Classes, Contacts, and Water Quality Permitting. The main content area is titled 'Forms and Applications' and lists various permit classes and forms. A green arrow points to the link for 'Class V Permit Application Package for Aquifer Storage and Recovery', which is highlighted with a green 'Download' button. The 'Download' button is a green rectangle with the word 'Download' in white text.

Class I Forms and Applications
Permit application fees apply to Class I injection wells. Read more ...

- Class I Non-Hazardous Injection Well Permit Application Package

Class III Forms and Applications
Permit application fees apply to Class III injection wells. Read more ...

- Class III Permit Application Package for Solution Mining of Salts or Potash
- Class III Permit Application Package for In Situ Copper Recovery

Class IV Forms
None.

Class V Forms and Applications

- Class V General Permit Application Package

Note: Permit fees will be based on \$100 per hour of staff time in reviewing permit application and preparing permit.

- Class V Permit Application Package for Aquifer Storage and Recovery

Permit application fees apply to Class V Aquifer Storage and Recovery injection wells. Read more ...

- Class V Authorized-By-Rule Change of Operating Status Form
- Class V Pre-Closure Notification Form

Class V Inventory Information Forms
Beginning on July 1, 2012 a UIC inventory review fee of \$200 will be required at the time the UIC Inventory Information Form is submitted. Read more ...

Owners or operators of all Class V injection wells, existing and new, must submit inventory information according to Section R317-7-6.4(C) of the Utah Administrative Rules for the Underground Injection Control Program. Required information includes: facility name and location; name and address of legal contact; ownership of facility; nature and type of injection wells; and operating status of injection wells. Inventory information must be submitted prior to injection for new wells.

The Utah UIC Inventory Information Form is designed to assist owners or operators to comply with this requirement and to collect sufficient information regarding proposed injection activity for new wells such that authorization-by-rule status can be



Utah UIC Permit Application and Process (cont.)

<https://deq.utah.gov/water-quality/water-quality-electronic-submissions>

Water Quality

- Water Quality Board (+)
- Water Quality & Health (+)
- ↗ Laws & Rules
- Public Notices (+)
- Info & Data Requests
- Integrated Report Program (+)
- Nutrient Pollution (+)
- Monitoring (+)
- Engineering
- Ground Water Protection/Underground Injection Control (+)
- Water Quality Permitting (+)
- Standards & Technical Support (+)
- Storm Water
- Wastewater (+)
- Financial Assistance, Funds, Grants (+)
- Popular Topics (+)

Water Quality Electronic Submissions

Please use the following submission box to upload documents directly into DWQ's electronic document system. An OCR (optical character recognition) PDF format is preferred, however, other formats are acceptable. Submissions will be routed to the appropriate section, program, or staff member within the Division as addressed or determined by type of submission.

Only one file at a time may be submitted. Multiple independent submissions may be made, i.e., cover letter, report, appendices, etc. However, combining all documents into a single file is preferable.

Documents submitted from this portal may be considered public record and thus subject to Utah GRAMA requirements.

For each document submitted a number will be returned to you in the form of DWQ-2016-xxxxxx. This is your receipt and confirmation of submission. Please retain this number for your records.

Web Submission for the Utah Division of Water Quality ONLY. For submissions to other DEQ Divisions, please visit their website for information about how to submit electronic documents to other Divisions.

Purpose of Submission (255 character limit)

Submitted By:

Last Name



Utah UIC Permit Application and Process (cont.)

<https://deq.utah.gov/water-quality/water-quality-electronic-submissions>

- Application Submitted:
 - Application Review
 - Complete
 - Incomplete
 - Draft Permit and Fact Sheet, Statement of Basis Prepared by DWQ Staff
 - \$110 per hour for application review and permit preparation etc.
- Public Participation:
 - Website and local newspaper notification of DWQ intent to issue permit
 - 30 day comment period
 - Director decision to issue final permit, electronic notice of approval

Utah UIC Permit Application and Process (cont.)

<https://deq.utah.gov/water-quality/contacts-utah-underground-injection-control-uic-program>

The screenshot shows a web browser displaying the Utah Department of Environmental Quality website. The page title is "Contacts: Utah Underground Injection Control (UIC) Program". The website header includes the Utah Department of Environmental Quality logo and the text "UTAH DEPARTMENT of ENVIRONMENTAL QUALITY WATER QUALITY". A left-hand navigation menu lists various categories, with "Underground Injection Control (UIC)" expanded to show sub-sections: "Overview", "Compliance Assistance", and "Class V Inventory Review Fee". The main content area is titled "Contacts: Utah Underground Injection Control (UIC) Program" and lists contact information for three categories: "Utah For Classes I, III, and deep Class V Wells", "Utah For Class IV Wells and shallow Class V Wells", and "Utah For Class II Injection Wells". A green callout box with the text "Questions?" and a green arrow points to the email address "dearley@utah.gov" in the first contact entry. The browser's address bar shows the URL "deq.utah.gov/water-quality/contacts-utah-underground-injection-control-uic-program". The Windows taskbar at the bottom shows the time as 2:10 PM on 9/24/2021 and the temperature as 57°F Sunny.

Water Quality

- Water Quality Board (+)
- Water Quality & Health (+)
- Laws & Rules
- Public Notices (+)
- Info & Data Requests
- Integrated Report Program (+)
- Nutrient Pollution (+)
- Monitoring (+)
- Engineering
- Ground Water Protection/Underground Injection Control (-)
- Current Permits
- Ground Water Quality Protection Program (+)
- Underground Injection Control (UIC) (-)
- Overview
- Compliance Assistance
- Class V Inventory Review Fee

Contacts:
Utah Underground Injection Control (UIC) Program

Utah

For Classes I, III, and deep Class V Wells, contact:
Dusty Earley (dearley@utah.gov), (801) 536-4088
Utah Department of Environmental Quality
Division of Water Quality
Ground Water Protection Section

For Class IV Wells and shallow Class V Wells, contact:
Brianna Ariotti (bariotti@utah.gov), (801) 536-4351
Utah Department of Environmental Quality
Division of Water Quality
Ground Water Protection Section

For Class II Injection Wells, contact:
John Rogers (johnrogers@utah.gov), (801) 538-5349
Utah Department of Natural Resources
Division of Oil, Gas, and Mining
Oil and Gas Conservation

U.S. EPA Region VIII
Omar Sierra-Lopez (sierra-lopez.omar@epa.gov), (303) 312-7045
Utah 1422 UIC Program Oversight Contact
EPA Region 8 (8P-W-UIC)
1595 Wynkoop St.
Denver, CO 80202-1129

Questions?

