UNDERGROUND INJECTION CONTROL PROGRAM

PERMIT

Draft Area Permit No. CO52393-00000

Class V Aquifer Storage and Recovery Wells

Meridian Metropolitan District

Issued To

Meridian Metropolitan District
6380 South Fiddlers Green Circle Suite 400
Greenwood Village, Colorado 80111

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PART I. AUTHORIZATION TO CONSTRUCT AND OPERATE

Under the authority of the Safe Drinking Water Act (SDWA) and Underground Injection Control (UIC) Program regulations of the U. S. Environmental Protection Agency (EPA) codified at Title 40 of the Code of Federal Regulations (40 CFR) parts 2, 124, 144, 146, and 147, and according to the terms of this Area UIC Permit (Permit) CO52393-00000

Meridian Metropolitan District
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hereinafter referred to as the "Permittee," is authorized to construct and to operate Class V Aquifer Storage and Recovery (ASR) injection wells according to the terms and conditions of this Permit in the portion of the Meridian Metropolitan District Utility Service District further described as and henceforth referred to as the Authorized Permit Area:

Township 6 South, Range 67 West, Section 1

E/2 NW/4, ¾ of the W SW/4, SE/4

Township 6 South, Range 67 West, Section 11

Township 6 South, Range 67 West, Section 12

Township 6 South, Range 67 West, Section 13

NW NW/4, ¾ SE NW/4

Township 6 South, Range 67 West, Section 14

E/2 NE/4

Township 6 South, *Range 66 West, Section 18*

SW SE/4, ¾ of NW NW/4

Township 6 South, Range 66 West, Section 19

W/2, SE/4, NW/2 NE/4, ¾ SW NE/4, NE/4 NE/4, SE NE/4

Township 6 South Range 67 West, Section 20

SW/4 NW/4, SE/2 NW/4, SW/2 NE/4

¾ of NW SW/4, NE SW/4, S/2 SW/4

W/2 SE, SE/4 SE/4

See the corresponding figure below that denotes the area of the Permit.

Currently only wells DE-1R and A-4 are authorized for injection.

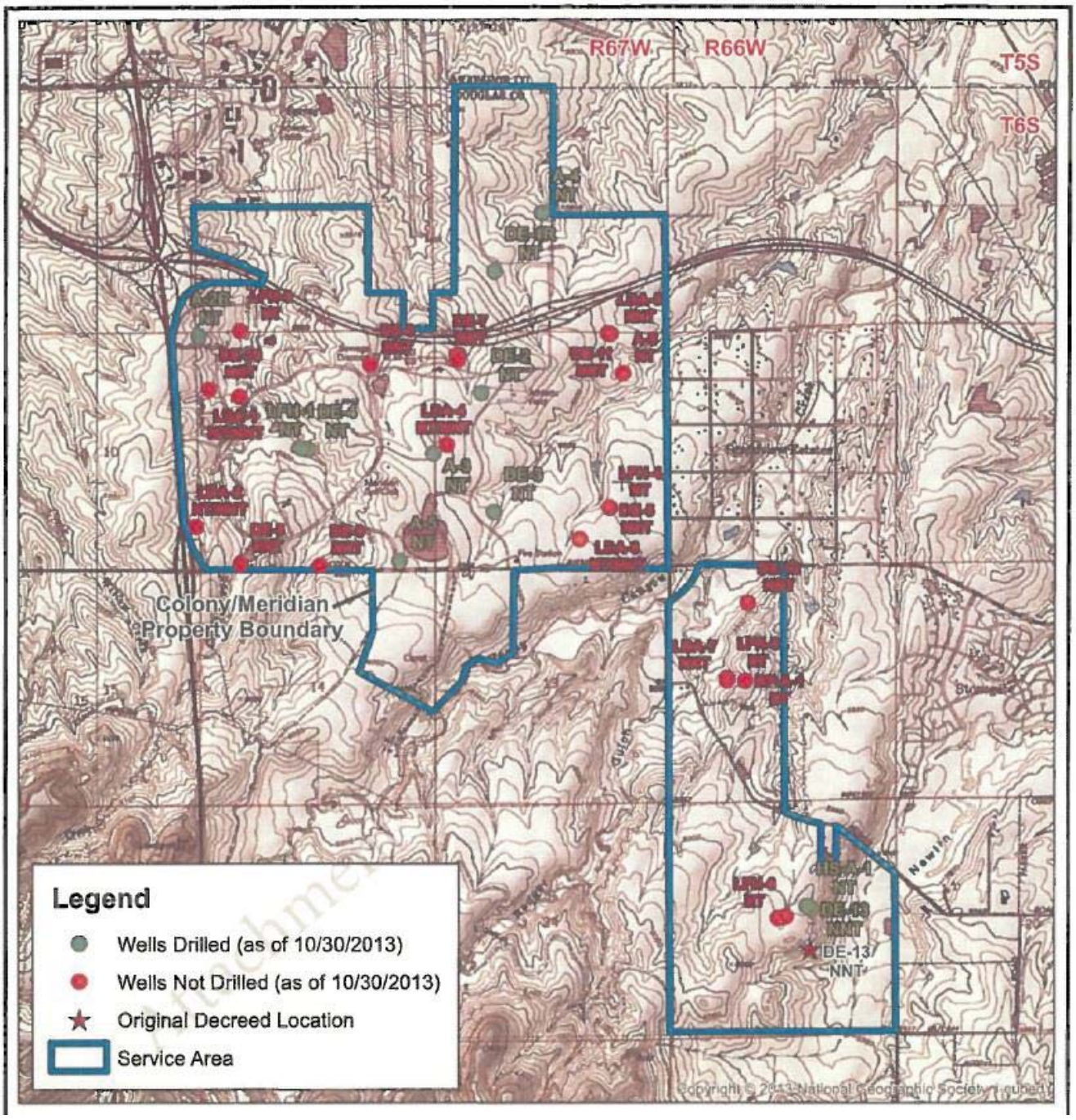


Exhibit A. Meridian Metropolitan District Utility Service Area

This is an Area Permit allowing construction or conversion of wells within the Meridian Utility Service Area (Exhibit A). Additional wells can be included following the EPA UIC program's procedures for Area Permits, in accordance with Part II, Section B. The wells shown in Exhibit A are existing and proposed drinking water wells used to supply Meridian. As part of this application, two of these existing wells are proposed to be converted to ASR wells, which can both recover and store water. Other wells can be converted as mentioned above.

This Permit is based on representations made by the applicant and on other information contained in the administrative record. Misrepresentation of information or failure to fully disclose all relevant information may be cause for termination, revocation and reissuance, or modification of this Permit and/or formal enforcement action. It is the Permittee's responsibility to read and understand all provisions of this Permit.

Where a state or tribe is not authorized to administer the UIC program under the SDWA, the EPA regulates underground injection of fluids into wells so that injection does not endanger Underground Sources of Drinking Water (USDWs). The EPA UIC permit conditions are based on authorities set forth at 40 CFR parts 144 to 147, and address potential impacts to USDWs. Under 40 CFR part 144, subpart D, certain conditions apply to all UIC permits and may be incorporated either expressly or by reference. Regulations specific to injection wells in Colorado are found at 40 CFR sections 147.301 and 147.305.

The Permittee is authorized to engage in underground injection 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 a fluid containing any contaminant into USDWs, except as authorized by 40 CFR part 146. Any underground injection activity not authorized by this Permit or by rule is prohibited.

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 any other federal, state or local law or regulations. Compliance with the terms of this Permit does not constitute a defense to any enforcement action brought under the provisions of Section 1431 of the SDWA or any other law governing protection of public health or the environment, for any imminent and substantial endangerment to human health or the environment. Nothing in this Permit relieves the Permittee of any duties under applicable regulations.

This Permit is issued for three (3) years, unless modified, revoked and reissued, or terminated under 40 CFR §§ 124.5, 144.12, 144.39, 144.40 or 144.41.

Issue Date: ____DRAFT_____ Effective Date _____DRAFT_____

_____

Darcy O'Connor
Assistant Regional Administrator*
Office of Water Protection

* Throughout this Permit the term "Director" refers to either the Assistant Regional Administrator for the Office of Water Protection (OWP) or the Assistant Regional Administrator of Enforcement, Compliance, and Environmental Justice (ECEJ) or his/her designee.

PART II. SPECIFIC PERMIT CONDITIONS

Section A. LIST OF WELLS (LW)

Injection wells regulated by the EPA and subject to the terms and conditions of this Permit are listed below:

1. DE-1R Well
   Permit No. CO50000-11383
   1300 feet (ft) from the south line and 1300 ft from the west line, SW/4, Section 1, Township 6 South, Range 67 West, 6th PM
   Douglas County, Colorado

2. A-4 Well
   Permit No. CO50000-11384
   2780 ft from the north line and 2450 ft from the west line, NE/4 of the SW/4, Section 1 Township 6 South, Range 67 West, 6th PM
   Douglas County, Colorado

The EPA Region 8 will maintain a List of Wells (LW) that are added to this permit. This list will be available to the Permittee and the public upon request. Injection wells regulated by the EPA and subject to the terms and conditions of this Permit are listed in the LW with the EPA Permit No. CO52393 and are assigned a unique well identification number by the EPA.

Section B. REQUIREMENTS FOR ADDING INJECTION WELLS

The Permittee shall not convert drinking water supply wells to injection wells or commence injection into wells until the Permittee has been approved to do so in accordance with the following procedures:

1. Authorization to Construct

Prior to converting an existing drinking water supply well to an injection well, the Permittee shall submit the following materials to the Director:

(a) a cover letter requesting authorization to convert the well referencing Area UIC Permit CO52393-00000 and the name and Colorado Division of Water Resources Permit number of the well;
(b) a completed EPA 7520-6 injection well application form with the applicable attachments;
(c) evidence and/or written statement that water feed lines have been installed to the requested well(s) and that the Permittee has the ability and intention to convert the drinking water supply well to an injection well within thirty (30) calendar days of receiving the EPA authorization or by a specified timeframe;
(d) a laboratory analysis, using Appendix G Parameters, of formation water drawn from the subject well(s) proposed to be added;
(e) a topographic map extending to at least ¼ mile radius Area of Review (AOR) for the well;
(f) a listing of all wells penetrating the confining zone within the ¼ mile AOR. Cement Bond Logs or cementing records for any new wells within the ¼ mile AOR not previously evaluated by the EPA; and
(g) a well location plat map for the requested injection well.

Once the EPA has confirmed that the proposed injection well meets the Permit conditions, the Director will authorize construction by email or other written communication to the Permittee.

2. Injection Well Construction

Area UIC Permit CO52393-00000 authorizes the Permittee to construct and test wells only in accordance with the terms and conditions of this Permit. The Permittee shall construct a requested injection well within thirty (30) calendar days of the EPA construction authorization date, and shall notify the Director of the completed construction of an injection well as soon as possible but no later than thirty (30) calendar days after the completion of construction. Notification of well construction shall include:

(a) A cover letter referencing Area UIC Permit CO52393-00000 and the name and Colorado Division of Water Resources Permit number of the constructed injection well;
(b) An updated wellbore schematic diagram; and
(c) The results of prior to injection testing requirements presented in Appendix B.

The EPA will review these materials to ensure that Permit conditions were complied with during well construction and that planned operating parameters are in full compliance with the Permit. The Director will authorize injection by email or other written correspondence when satisfied that all permit conditions have been met. The EPA may notify the Permittee of the need to perform additional testing requirements such as performing Water Chemistry and/or Pilot Cycle Testing.

3. Commencement of Injection

Initial injection shall commence no later than thirty (30) calendar days following the receipt of the EPA's injection authorization. The Permittee shall notify the Director as soon as possible, but no more than thirty (30) calendar days after commencing injection. Such notification shall include:

(a) The date the well commenced injection;
(b) The Maximum Allowable Injection Pressure (MAIP) for the well; and
(c) Any required injection logs or tests that will be conducted, as required by the EPA, see Appendix B.

Once injection has commenced, the results of Water Chemistry and Pilot Cycle Tests, following procedures in Appendices H and I, shall be submitted to the Director no later than thirty (30) calendar days following the completion of all test procedures.

Section C. WELL CONSTRUCTION REQUIREMENTS

These requirements specify the approved minimum construction standards for well casing and cement. The constructed well shall comply with all applicable construction requirements presented in 40 CFR 147.305.

The EPA-approved well construction plan is incorporated into this Permit as APPENDIX A. Changes to the approved construction plan prior to authorization to inject must be approved through permit modification by the Director, prior to being physically incorporated.

1. Casing and Cement

The well or wells shall be cased and cemented to prevent the movement of fluids into or between USDWs, and shall be in accordance with well construction regulations found in 40 CFR § 147.305.

Remedial construction measures may be required if the well is unable to demonstrate mechanical integrity.

2. Sampling and Monitoring Devices

The Permittee shall install and maintain in good operating condition:

(a) a pressure actuated shut-off device attached to the injection flow line set to shut-off the injection pump when or before the MAIP is reached at the wellhead;

(b) one-half (1/2) inch female iron pipe fitting, isolated by shut-off valves and located at the wellhead at a conveniently accessible location, for the attachment of a pressure gauge capable of monitoring pressures ranging from normal operating pressures up to the MAIP described in Part II, Section D.4 on the wellhead casing;

(c) a sampling port such that samples are collected at a location that ensures they are representative of the injected/recovered fluid; and

(d) a non-resettable cumulative volume recorder attached to the injection line and a method for accounting for the volume of recovered fluid through either documentation or a separate line with a non-resettable cumulative volume recorder.

3. Pre-Injection Tests

Well testing requirements prior to receiving authorization to inject are found in APPENDIX B. Well tests shall be performed according to current EPA-approved procedures, or alternate procedures approved by the Director. The Director may stipulate specific test methods and criteria best suited for a specific well construction and injection operation. Limited injection can be authorized by the Director specifically for the purposes of conducting the initial well tests required in APPENDIX B.

4. Postponement of Construction or Conversion to Injection Wells

Within two years of authorization of any additional well, the Permittee is subject to the conditions found in Part II, Section G.5., *Wells Not Actively Injecting,* or may elect to convert the well to a non-UIC well found in Part III, Section B.3., *Conversion to Non-UIC Well*.

Section D. WELL OPERATION

1. Outermost Casing Injection Prohibition

Injection between the outermost casing protecting USDWs and the well bore is prohibited.

2. Requirements Prior to Receiving Authorization to Inject

Well injection may commence only after all well construction and pre-injection requirements have been met and a written authorization to commence injection has been obtained from the Director.

To obtain written authorization to inject, the following must be satisfied:

(a) The Permittee has:

(i). submitted to the Director a notice of completion of construction and a completed EPA Form 7520-10 and required attachments. If the well construction is different than the approved construction found in APPENDIX A, the Permittee shall also provide a revised well diagram and a description of the modification to the well construction;

(ii). conducted all applicable testing required prior to authorization to inject found in APPENDIX B and submitted required records to the Director. The testing requirements include demonstration of mechanical integrity pursuant to 40 CFR § 146.8, in accordance with the conditions found in Part II, Section E of this permit; and

(iii). satisfied requirements for corrective action in APPENDIX F, if applicable.

(b) The Director has received and reviewed the documentation associated with the requirements in Paragraph 2(a) of this section and finds it complies with the conditions of the Permit.

(c) The Director has inspected the injection well and finds it complies with the conditions of the Permit. If the Permittee has not received notice from the Director of his or her intent to inspect the injection well within 13 days of the date of the notice in Paragraph 2(a)(i) above, then prior inspection is waived.

3. Injection Zone and Fluid Movement

Injection zone means "a geological formation, group of formations, or part of a formation receiving fluids through a well."

Injection and perforations are permitted only within the approved injection zone specified in APPENDIX C. Injected fluids shall remain within the injection zone. If monitoring indicates the movement of fluids from the injection zone, the Permittee shall notify the Director within twenty-four (24) hours and submit a written report that documents circumstances that resulted in movement of fluids beyond the injection zone.

Additional individual injection perforations may be added, if they remain within the approved injection zone(s), fracture gradient data submitted is representative of the portion of the injection zone to be perforated, and the Permittee provides notice to the Director in accordance with Part II, Section D.8 for workovers. The Permittee shall also follow the requirements found in Part II Section D.4, *Injection Pressure Limitation*, that may result in a change to the permitted MAIP.

4. Injection Pressure Limitation

(a) Injection pressure at the wellhead shall not initiate new fractures or propagate existing fractures in the confining zone. In no case shall injection pressure cause the movement of injectate or formation fluids outside of the specified injection zone.

(b) Injection pressure shall not exceed the MAIP identified in Appendix C, Operating Requirements.

(c) Prior to authorization to inject, the Permittee shall submit for review the pump rate test results and a well diagram to determine the MAIP. The Director will review the information and provide the MAIP in the written authorization to commence injection.

(d) During the life of the Permit, the fracture gradient, depth to top perforation, and specific gravity may change. When the Permittee adds new perforations to the injection zone, the Permittee shall demonstrate that the MAIP previously submitted is also appropriate for the new interval within the injection zone. It may be necessary to run a new pump rate test to gather information from the new interval proposed for injection. Upon submission of monitoring reports, tests, or well workover records that indicate one of these parameters has changed, the MAIP calculation will be reviewed by the Director.

5. Injection Volume Limitation

There is no volume limit associated with this Permit.

6. Injection Fluid Limitation

Injected fluids are limited to fluids from those public water systems sampled and submitted as part of the application, which are: water treated and supplied from the East Cherry Creek Valley Quebec Street Water Treatment Plant and the three Aurora Water Treatment Plants (Binney, Griswold and Wemblinger). New water sources may be added to the list of allowed injection fluid water sources in accordance with the procedures presented in Part II. Section D.7, *Addition of a New Water Source*, and in accordance with the procedures in 40 CFR § 144.41. The permittee must obtain prior written approval from the Director before injecting fluids from a new source.

7. Addition of a New Water Source

(a) It is anticipated that other public water systems will be included in the future as part of the Water Infrastructure and Supply Efficiency (WISE) Partnership, which is a regional water supply project between Aurora Water, Denver Water and South Metro Water Supply Authority. Water from public water systems and/or water treatment plants not approved under Part II. Section D.6 would be considered new sources. Requirements for the addition of a new water source are as follows:
    (i). Prior to the introduction of a new water source (e.g. different public water system or treatment plant within that system), the Permittee shall provide notification to the Director;
    (ii). The notification shall identify the new water source, describe the treatment process with a written narrative and diagram(s), and include a representative sample analysis of the new injection fluid collected using the baseline constituent list provided in Appendix G;
    (iii). The EPA may require the performance of additional tests, including testing in accordance with Appendices H and I, following review of the submittal;

(b) The EPA will review the submission to ensure it meets permit conditions. Any additional authorizations to inject a new water source will be in the form of an email or other written communication to the Permittee; and

(c) The Permittee shall perform monitoring in accordance with Appendix D.

8. Alterations and Workovers

Alterations and workovers shall meet all conditions of the Permit. Alterations and workovers include any activity that physically changes the well construction or injection formation.

Prior to beginning any addition or physical alteration to an injection well's construction or injection formation, the Permittee shall give advanced notice to the Director. Additionally, the Director's written approval must be obtained if the addition or physical alteration to the injection well modifies the approved well construction. Substantial alterations or additions may be cause for modification to the permit and may include additional testing or monitoring requirements.

The Permittee shall record all alterations and workovers on a Well Rework Record (EPA Form 7520-12) and submit a revised well construction diagram when the well construction has been modified. The Permittee shall provide this and any other record of well workover or test data to the EPA within thirty (30) days of completion of the activity.

9. Well Testing

Well testing requirements are found in APPENDIX B. The Permittee shall ensure the test requirements are performed within the time frames specified in APPENDIX B. Well tests shall be performed according to current EPA-approved procedures. The Director may stipulate specific test methods and criteria best suited for a specific well construction and injection operation.

10. *Exceedances of Permit Limits*

If exceedance(s) of a permit limit listed in APPENDIX G is observed in the injectate and/or recovered water during normal operations and/or the Pilot Cycle Testing, the Permittee shall re-sample the fluid source within 14 days. Should a second exceedance be observed, the applicant must shut in the well until the problem is resolved to the Director's satisfaction.

11. Reopening Permit for Modification or Revocation and Reissuance

a. If concentrations of the nitrosamine, N-nitrosodimethylamine (NDMA), in two consecutive quarterly (i.e., every 90 day) samples of either or both the injectate or recovered water exceed 7 ng/L (i.e., the Integrated Risk Information System (IRIS) based value for 10^{-5} increased cancer risk), the Permittee shall commence monthly monitoring and agrees that the Director may open the Permit for modification or revocation and reissuance.
b. If exceedance(s) as described above in Part II Section D.10 is observed, the Permittee agrees that the Director may open the Permit for modification or revocation and reissuance.

Section E. MECHANICAL INTEGRITY (MI)

1. Requirement to Maintain Mechanical Integrity

The Permittee is required to ensure the injection well maintains MI at all times. Injecting into a well that lacks MI is prohibited.

An injection well has MI if:

(a) there is no significant leak in the casing (internal Part I); and

(b) there is no significant fluid movement into a USDW through vertical channels adjacent to the injection well bore (external Part II).

2. Demonstration of Mechanical Integrity

The conditions under which the Permittee shall conduct the MI testing follows:

(a) Internal Part I MI shall be demonstrated as follows:
  (i). The Permittee shall apply the MAIP or a pressure approved by the Director on the long-string casing and monitor and record, every 5 minutes, the pressure levels on the casing for 45 minutes. If, over the test duration, the pressure changes by more than 10% of the starting test pressure, the well shall be considered to have failed its test of internal Part I MI. If it passes, then the on-going monitoring below is used to evaluate the internal Part I MI of the well.
  (ii). If the initial casing pressure test demonstrates internal Part I MI of the long-string casing, the operator shall monitor injection pressures and rates simultaneously at least once per week during injection for the operational UIC life of the well. These paired

readings will be used to generate a pressure curve for injection operations for each well over time. The permittee shall monitor temperature and atmospheric pressure, as well.

(iii). The Permittee shall collect data near the wellhead for injection rate and wellhead pressure. This data will be collected during normal operations on a weekly basis. A baseline injection rate vs wellhead pressure curve shall be established by plotting seven weeks of data using seven different rates in the ascending order of the range rates and pressures expected during normal operating conditions. Each constant rate data shall be maintained for a week and the average rate and pressure achieved over this timeframe shall be plotted. The Permittee shall contact the EPA should they encounter problems with creating this pressure curve. The baseline data shall be submitted to the EPA with a summary within thirty (30) days following the completion of the test.

(iv). If, over the course of operation, there is a deviation of twenty (20) or more percent from the baseline pressure vs. rate curve described above in (iii), then the EPA must be notified and the well must be evaluated for a potential loss of MI. Variables such as temperature, atmospheric pressure, or geologic reservoir properties may be possible explanations, but those must be evaluated as part of the cause.

(b) External Part II MI shall be demonstrated with a cement bond log (CBL). A CBL that the Director determines to show a sufficient interval of 80 percent cement bond index compressive strength or greater within the designated Confining Zone is required for authorization to inject or some other method as determined by the Director.

During periods of injection, the Permittee shall monitor injection rate, and injection volume, and the wellhead tubing pressure for each well, as specified in APPENDIX D.

The Director may require additional or alternative tests if the results presented by the Permittee are not satisfactory to the Director to demonstrate there is no movement of fluid into or between USDWs resulting from the injection activity.

Results of any MI tests required by this Permit shall be submitted to the Director as soon as possible but no later than thirty (30) calendar days after the test is complete.

3. Mechanical Integrity Test Methods and Criteria

The Director may stipulate specific test methods and criteria best suited for a specific well construction and injection operation. The Director may review and issue a determination for any request to perform an alternate MIT method.

4. Notification Prior to Testing

The Permittee shall notify the Director at least thirty (30) calendar days prior to implementing any EPA approved MIT methods. The Director may allow a shorter notification period if it would be sufficient to enable the EPA to witness the MIT or the EPA declines to witness the test. Notification may be in the form of a yearly or quarterly schedule of planned MITs, or it may be on an individual basis. The EPA may witness any ongoing MI testing at any time.

5. Loss of Mechanical Integrity

If the ratio of injection rate to wellhead pressure deviates lesser or greater than twenty (20) percent from the calculated curve described in subsection 2 of this section or a loss of MI becomes evident during operation (such as presence of water flowing at the surface, etc.), the Permittee shall notify the Director within twenty-four (24) hours (see Part III, Section E.11(e) of this Permit), cease injection and shut-in the well within forty-eight (48) hours unless the Director requires immediate shut-in.

Within five (5) calendar days, the Permittee shall submit a follow-up written report that documents circumstances that resulted in the MI loss and how it was addressed. If the MI loss has not been resolved, the Permittee shall provide a report with the proposed plan and schedule to reestablish MI. A demonstration of MI shall be re-established within ninety (90) calendar days of any loss of MI unless written approval of an alternate time period has been given by the Director.

Injection operations shall not resume until the MI loss has been resolved, the well has demonstrated MI pursuant to 40 CFR § 146.8, and the Director has provided written approval to resume injection.

Section F. ONGOING MONITORING, RECORDKEEPING, AND REPORTING OF RESULTS

1. Monitoring Parameters and Frequency

Ongoing monitoring parameters are specified in APPENDIX D. The listed parameters are to be monitored, recorded and reported at the frequency indicated in APPENDIX D for the operating life of each ASR well. In the event the well has not injected during the reporting period or is no longer injecting, the monitoring report must still be submitted and will reflect the well status. Sampling data shall be submitted if the well has been injecting or recovering water at any time during the reporting period.

Records of monitoring information shall include:

(a) the date, exact place, and time of the observation, sampling, or measurements;

(b) the individual(s) who performed the observation, sampling, or measurements;

(c) the date(s) of analyses and individuals who performed the analyses;

(d) the analytical technique or method used; and

(e) the results of such analyses.

2. Monitoring Methods

Observations, measurements, and samples taken for monitoring purposes shall be representative of the monitored activity and include:

(a) Methods used to monitor the nature of the injected fluids, which must comply with analytical methods cited and described in Table 1 of 40 CFR § 136.3 or by other methods that have been approved in writing by the Director;

(b) Injection rate, injected/recovered volume, cumulative injected/recovered volume, and wellhead pressure observed and recorded at the wellhead. All parameters shall be observed simultaneously to provide a clear depiction of well operation;

(c) Pressures measured in pounds per square inch (psi);

(d) Fluid volumes measured in gallons; and

(e) Injection rates measured in gallons.

3. Records Retention

The Permittee shall retain records of all monitoring information, including the following:

(a) Calibration and maintenance records and all original recordings for continuous monitoring

instrumentation, copies of all reports required by this Permit, and records of all data used to complete the Permit application, for the duration of this permit.

(b) Nature and composition of all injected fluids until three (3) years after the completion of any plugging and abandonment (P&A) procedures specified under 40 CFR § 144.52(a)(6). The Permittee shall continue to retain the records after the three-year (3) retention period unless the Permittee delivers the records to the Director, or his/her authorized representative, or obtains written approval from the Director, or his/her authorized representative, to discard the records.

4. Annual Reports

Regardless of whether the well is operating, the Permittee shall submit an Annual Report to the Director that:

(a) summarizes the results of the monitoring required in Part II, Section E and F and APPENDIX D;

(b) includes a summary of any major changes in characteristics or sources of injected fluid. The report of fluids injected during the year must identify each new fluid source by water treatment plant; and

(c) includes a list of wells added or identified within the area of review that have not previously been submitted.

The first Annual Report shall cover the period from the effective date of the Permit through December 31 of that year. Subsequent Annual Reports shall cover the period from January 1 through December 31 of the reporting year. Annual Reports shall be submitted by February 15 of the year following data collection. EPA Form 7520-8 or 7520-11 may be used or adapted to submit the Annual Report. However, the monitoring requirements specified in this Permit are mandatory even if the EPA form indicates otherwise. An electronic form may be obtained from the EPA to aid with reporting.

5. Well Logging and Testing

Well logging and testing requirements are found in APPENDIX B. The Permittee shall ensure the log and test requirements are performed within the time frames specified in APPENDIX B. Well logs and tests shall be performed according to current EPA-approved procedures and/or procedures included in this Permit. Well log and test results shall be submitted to the Director within thirty (30) days of completion of the logging or testing activity, and shall include a report describing the methods used during logging or testing and an interpretation of the test or log results.

Section G. PLUGGING AND ABANDONMENT

1. Notification of Well Abandonment

The Permittee shall notify the Director in writing at least thirty (30) days prior to plugging and abandoning an injection well.

2. Well Plugging Requirements

Prior to abandonment, the injection well shall be plugged with cement in a manner which isolates the injection zone and will not allow movement of fluids outside of the injection zone. Additional

federal, state or local laws or regulations may also apply.

3. Approved Plugging and Abandonment Plan

The approved Plugging and Abandonment Plan and required tests are incorporated into this Permit as APPENDIX E.

4. Plugging and Abandonment Report

Within sixty (60) days after plugging a well, the Permittee shall submit a report (EPA Form 7520-14) to the Director or his/her authorized representative. The plugging report shall be certified as accurate by the person who performed the plugging operation. Such report shall consist of a statement that the well was plugged in accordance with current regulations.

5. Wells Not Actively Injecting

After any period of two (2) years during which there is no injection, the Permittee shall plug and abandon the well in accordance with the requirements in this Section and APPENDIX E of this Permit unless the Permittee:

(a) provides written notice to the Director or his/her authorized representative, prior to the two-year (2) period;

(b) describes actions or procedures, satisfactory to the Director or his/her authorized representative, that the Permittee 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 or his/her authorized representative; and

(c) receives written notice by the Director or his/her authorized representative to temporarily waive plugging and abandonment requirements.

The permittee of a well that has been temporarily abandoned shall notify the Director prior to resuming operation of the well.

PART III. CONDITIONS APPLICABLE TO ALL PERMITS

Section A. 40 CFR 144.12 REQUIREMENTS

Injection wells authorized under this permit shall comply with the requirements of 40 CFR § 144.12.

1. Prohibition of movement of fluids into an underground source of drinking water

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 underground sources of drinking water, if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 CFR part 142 or may otherwise adversely affect the health of persons.

2. Identification of a Violation, 40 CFR 144.12(c)

If at any time the Director learns that a Class V well may cause a violation the Director may

(a) Order the Permittee to take such actions (including, where required, closure of the injection well) as may be necessary to prevent the violation or

(b) Take enforcement action.

3. Adversely Affect Human Health, 40 CFR 144.12(d)

Whenever the Director learns that a Class V well may be adversely affecting the health of persons, he or she may prescribe such actions as may be necessary to prevent the adverse effect, including any actions prescribed in Part III. Section A.2

Section B. CHANGES TO PERMIT CONDITIONS

1. Modification, Revocation and Reissuance, or Termination

The Director may, for cause, modify, revoke and reissue, or terminate this Permit in accordance with 40 CFR §§ 124.5, 144.12, 144.39, 144.40, and 144.41. The filing of a request for modification, revocation and reissuance, termination, or the notification of planned changes or anticipated noncompliance on the part of the Permittee does not stay the applicability or enforceability of any condition of this Permit.

2. Conversion to Non-UIC Well

The Director may allow conversion of the well to a non-injection well. Conversion may not proceed until the Permittee receives written approval from the Director. Once converted to a non-injection well under this Part, the Permittee may not recommence injection into the well until the Requirements for Adding Injection Wells in Part II Section B. of this Permit have been met.

Requirements for conversion to a non-injection well shall include approval of the proposed well rework, demonstration of mechanical integrity, and documentation that the well is authorized by another regulatory agency.

3. Transfer of Permit

Under 40 CFR § 144.38, this Permit may be transferred by the Permittee to a new owner or operator only if:

(a) the Permit has been modified or revoked and reissued (under 40 CFR § 144.39(b)(2)), or a minor modification made (under 40 CFR § 144.41(d)), to identify the new permittee and incorporate such other requirements as may be necessary under the SDWA; or

(b) the Permittee provides written notification (EPA Form 7520-7) to the Director at least thirty (30) days in advance of the proposed transfer date and submits a written agreement between the existing and proposed new permittees containing a specific date for transfer or permit responsibility, coverage, and liability between them. If the Director does not notify the Permittee and the proposed new permittee of his or her intent to modify or revoke and reissue, or modify, the transfer is effective on the date specified in the written agreement. A modification under this paragraph may also be a minor modification under 40 CFR § 144.41.

4. Permittee Change of Address

Upon the Permittee's change of address, or whenever the operator changes the address where monitoring records are kept, the Permittee must provide written notice to the Director within thirty (30) days.

Section 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. Additionally, in a permit modification, only those conditions to be modified shall be reopened. All other aspects of the existing permit shall remain in effect for the duration of the permit.

Section D. CONFIDENTIALITY

In accordance with 40 CFR part 2 and 40 CFR § 144.5, information submitted to the EPA pursuant to these regulations 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, the EPA 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 40 CFR part 2 (Public Information). Claims of confidentiality for the following information will be denied:

- the name and address of the Permittee; and
- information which deals with the existence, absence or level of contaminants in drinking water.

Section E. ADDITIONAL PERMIT REQUIREMENTS

1. Duty to Comply

The Permittee must comply with all conditions of this Permit. Any permit noncompliance constitutes a violation of the SDWA and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application; except that the Permittee need not comply with the provisions of this Permit to the extent and for the duration such noncompliance is authorized in an emergency permit under 40 CFR § 144.34. All violations of the SDWA may subject the Permittee to penalties and/or criminal prosecution as specified in Section 1423 of the SDWA.

2. Need to Halt or Reduce Activity Not a Defense

The Permittee shall not use as a defense 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.

3. Duty to Mitigate

The Permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this Permit.

4. 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.

5. Permit Actions

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.

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 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.

8. Inspection and Entry

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 the SDWA, any substances or parameters at any location.

9. Signatory Requirements

All applications, reports or other information submitted to the Director or his/her authorized

representative shall be signed and certified according to 40 CFR § 144.32. This section explains the requirements for persons duly authorized to sign documents, and provides wording for required certification.

10. Continuation of Expiring Permits

(a) Duty to Reapply. If the Permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the Permittee shall submit a complete application for a new permit at least one hundred eighty (180) days before this permit expires.

(b) Permit Extensions. The conditions of an expired permit may continue in force in accordance with 5 U.S.C. 558 until the effective date of a new permit, if:

(i). The Permittee has submitted a timely application which is a complete application for a new permit; and

(ii). 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 previous permit.

(c) Enforcement. When the Permittee is not in compliance with the conditions of the expiring or expired permit the Director may choose to do any of the following:

(i) Initiate enforcement action based upon the permit which has been continued;

(ii) Issue a notice of intent to deny the new permit. If the permit is denied, the owner or Permittee would then be required to cease the activities authorized by the continued permit or be subject to enforcement action for operating without a permit;

(iii) Issue a new permit under 40 C.F.R. part 124 with appropriate conditions; or

(iv) Take other actions authorized by the regulations found in 40 C.F.R. parts 144-147.

11. Reporting Requirements

Copies of all reports and notifications required by this Permit shall be signed and certified in accordance with the requirements under Part III, E.9 of this Permit and shall be submitted to the EPA:

UIC Enforcement, Mail Code: 8ENF-W-SDW
U.S. Environmental Protection Agency
1595 Wynkoop Street
Denver, CO 80202-1129

All correspondence should reference the well name and location and include the EPA Permit number.

(a) *Monitoring Reports.* Monitoring results shall be reported at the intervals specified elsewhere in this Permit.

(b) *Planned changes.* The Permittee shall give notice to the Director as soon as possible of any planned changes, physical alterations or additions to the permitted well, and prior to commencing such changes.

(c) *Anticipated noncompliance.* The Permittee shall give advanced notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with Permit requirements.

(d) *Compliance schedules.* 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 thirty (30) calendar days following each schedule date.

(e) *Twenty-four-hour reporting.* The Permittee shall report to the Director any noncompliance which may endanger human health or the environment, including:

(i) any monitoring or other information, which indicates that any contaminant may cause an endangerment to a USDW; or

(ii) any noncompliance with a permit condition or malfunction of the injection system which may cause fluid migration out of the approved injection zone.

Information shall be provided, either directly or by leaving a message, within twenty-four (24) hours from the time the Permittee becomes aware of the circumstances by telephoning (800) 227-8917 and requesting the EPA Region 8 UIC Program SDWA Enforcement Supervisor, or by contacting the EPA Region 8 Emergency Operations Center at (303) 293-1788.

In addition, a follow up written report shall be provided to the Director within five (5) calendar 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 the steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

(f) *Other Noncompliance.* The Permittee shall report all instances of noncompliance not reported under Paragraphs 11(c), 11(d), or 11(e) of this Section at the time the monitoring reports are submitted. The reports shall contain the information listed in Paragraph 11(e) of this Section.

(g) *Other information.* 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, the Permittee shall submit such facts or information to the Director within thirty (30) days of discovery of failure.

(h) *Oil Spill and Chemical Release Reporting.* The Permittee shall comply with all reporting requirements related to the occurrence of oil spills and chemical releases by contacting the National Response Center (NRC) at (800) 424-8802 or NRC@uscg.mil.

APPENDIX A

WELL CONSTRUCTION REQUIREMENTS

Wells shall be cased and cemented to prevent the movement of fluids into or between USDWs, and in accordance with the requirements in this Permit. General requirements include:

The casing and cement used in the construction of each well shall be designed for the life expectancy of the well. Details regarding the construction of the injection wells DE-1R and A-4 are presented below:

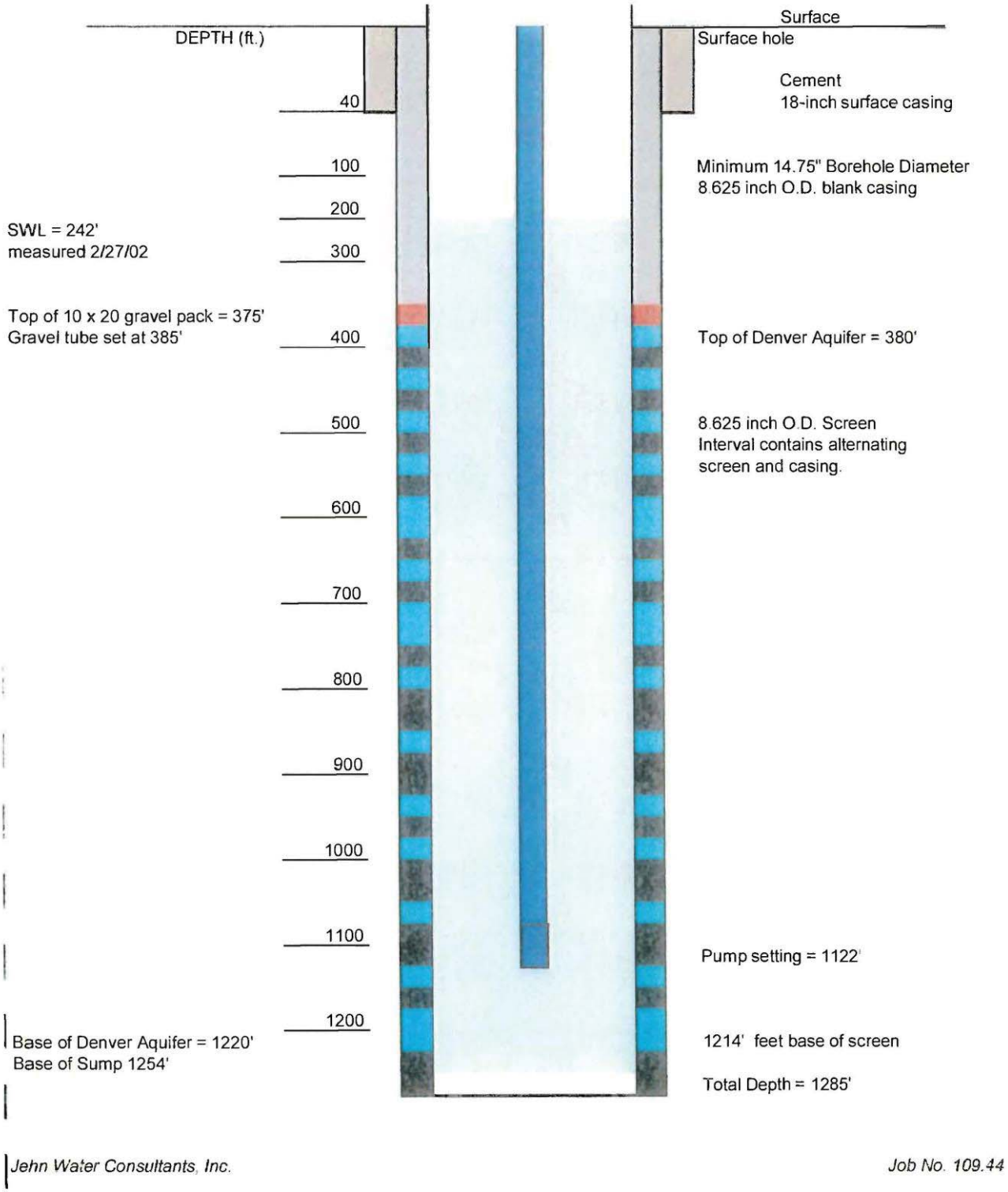
Denver Well DE-1R

Well DE-1R is drilled to a total depth of 1,285 feet with 8.625-inch outside diameter (OD) steel casing and a wall thickness of 0.365 inches, and 8.625-inch OD 0.35-inch slot.

DE-1R Well Construction

Casing Type	Hole Size, inch (in)	Casing Size, in	Cased Interval, ft	Cemented Interval, ft	Perforations, ft
Surface	22	18	0 - 40	0 - 40	
Long string	14 ¾	8 5/8	0 - 385	40 - 375	
Screen	14 ¾	8 5/8			385 - 1214

MERIDAN METROPOLITAN DISTRICT
WELL DIAGRAM
DE-1R



Jehn Water Consultants, Inc.

Job No. 109.44

Arapahoe Well A-4
Well A-4 is drilled to a total depth of 1,812 feet and completed with 12.75-inch OD steel casing and a wall thickness of 0.375 inches.

Table 3.1B, A-4 Well Construction

Casing Type	Hole Size, inch (in)	Casing Size, in	Cased Interval, ft	Cemented Interval, ft	Perforations, ft
Surface	36	24	0 - 24	0 – 24	
Long string	20	12 3/4	0-1285	0-1285	
Screen	20	12 3/4	1285 - 1812		1285 - 1740

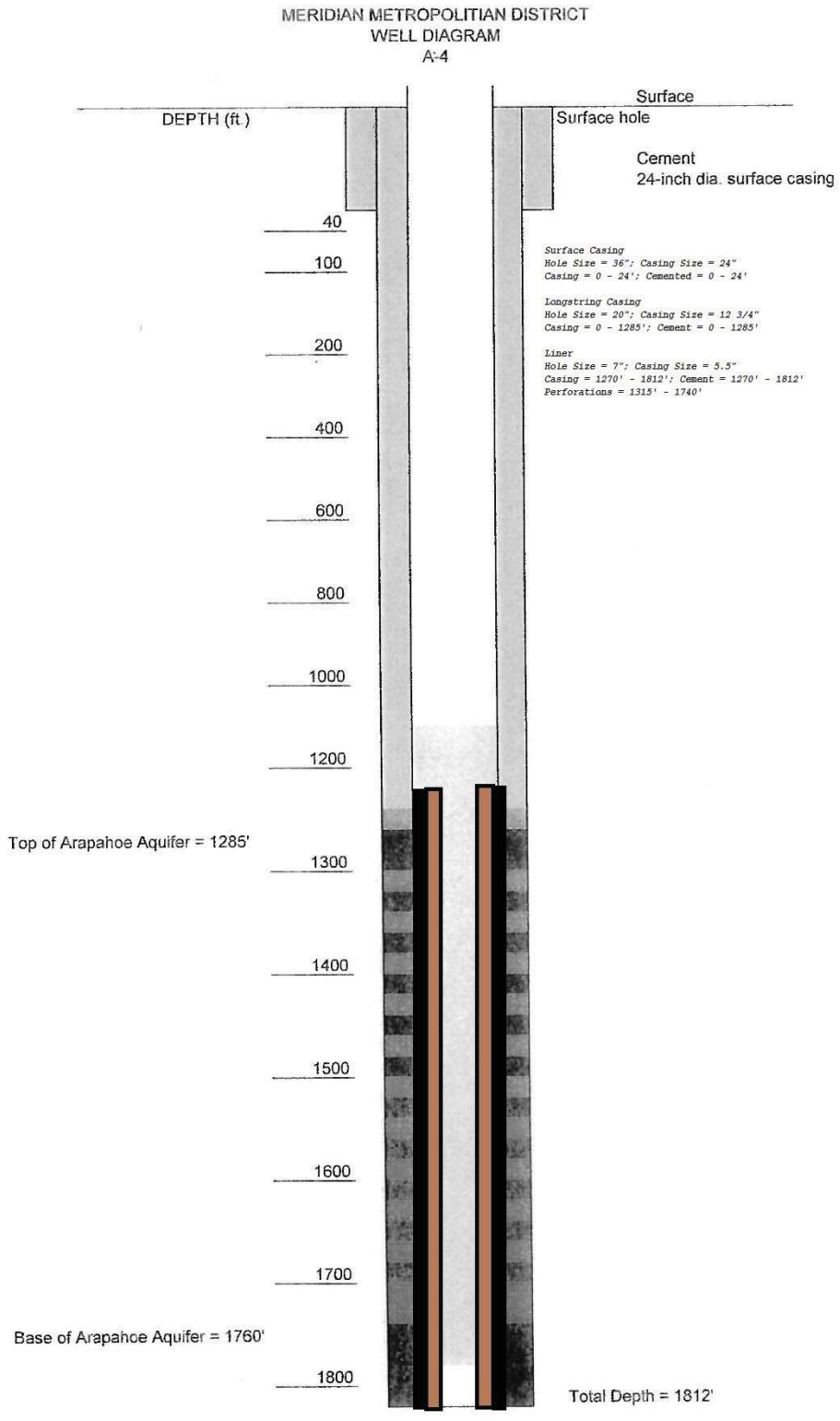


Figure A.2 - Construction Diagram for the A-4 Injection/Recovery Well

APPENDIX B

WELL LOGGING & TESTING REQUIREMENTS

Well tests shall be performed according to the EPA approved procedures. It is the responsibility of the Permittee to obtain and use these procedures prior to conducting any well testing required as a condition of this permit. These procedures can be found at http://www2.epa.gov/region8/logs-and-tests-documents.

Well test results shall be submitted to the Director within thirty (30) calendar days of completion of the testing activity, and shall include a report describing the methods used during testing and an interpretation of the test results. When applicable, the report shall include a descriptive report prepared by a knowledgeable analyst, interpreting the results of that portion of those tests which specifically relate to (1) a USDW and the confining zone adjacent to it, and (2) the injection zone and adjacent formations.

TYPE OF WELL TESTS/LOGS	TEST/LOG REQUIREMENTS
All test and log results shall be submitted to the Director within thirty (30) calendar days of completion of the testing activity.	
Baseline Water Analysis for the constituents found in Appendix G for new water sources proposed for injection (Part II Section D.7) and when wells are added to the Permit (Part II Section B.1(d))	• Collect a representative fluid sample of the proposed new water source prior to receiving authorization to inject. • Collect a representative fluid sample of the formation water from the proposed new well prior to receiving authorization to inject.
Cement Bond Logs (CBL) for Part II MI Demonstration (Part II Sections B and E.2(b))	Submit CBL prior to receiving Authorization to Inject and following the completion of any cement work performed on any authorized well.
Well Pressure Test for the first step of Part I MI Demonstration (Part II Section E.2)	Perform test by applying MAIP to well's long string casing prior to receiving Authorization to Inject.
Wellhead Injection Pressure vs. Rate Test for second step of Part I MI Demonstration (Part II Section E.2)	Perform test to create a wellhead injection pressure vs. rate curve after: 1) collecting samples for the Bench Scale Water Chemistry Test; and 2) receipt of Authorization to Inject.
Pump Rate Test (Part II Section D.4)	Perform test prior to receiving Authorization to Inject for all new and existing wells.
Bench Scale Water Chemistry and Pilot Cycle Tests for the constituents found in Appendix J following procedures in Appendices H and I (Part II Sections B and D.7(a)(iii))	1. Perform tests on existing wells following Authorization to Inject and completion of wellhead injection pressure vs rate test. 2. Perform tests following Authorization to Inject for a new water source and/or new well, if required by the Director through written correspondence.

APPENDIX C

OPERATING REQUIREMENTS

INJECTION ZONE:
Injection is permitted only within the approved injection zones listed below.

FORMATION/ STRATIGRAPHIC UNIT NAME	APPROVED INJECTION ZONE (GL, ft) TOP*	BOTTOM*
DE-1R (Denver Formation Well)	380	1,220
A-4 (Arapahoe Formation Well)	1,285	1,760

MAXIMUM INJECTION PRESSURE:
The injection pressure shall be limited to a maximum allowable injection pressure (MAIP) of 200 psi. In no case shall injection pressure exceed the MAIP.

MAXIMUM INJECTION VOLUME:
There is no limitation on the fluid volume permitted to be injected into this well.

APPENDIX D

ONGOING MONITORING AND REPORTING REQUIREMENTS

Consistent with requirements in Part II Sections D and F of this Permit, this is a listing of ongoing monitoring activities to be conducted, recorded and reported for the life of this ASR project once baseline samples have been taken for constituents in Appendix G. All water quality samples shall be taken from a sampling port location that ensures the samples are representative of the injected/recovered water.

EPA Form 7520-8 or 7520-11 may be used or adapted to submit the Annual Report, however, the monitoring requirements specified in this Permit are mandatory even if EPA Form 7520-11 indicates otherwise. An electronic form may be obtained from the EPA to aid with reporting.

OBSERVE WEEKLY AND RECORD AT LEAST ONCE EVERY THIRTY DAYS	
OBSERVE AND RECORD	Wellhead tubing pressure (psi)
	Injection pressure versus wellhead tubing pressure
	Injection and recovery rate (gallons/day)
	Injected and recovery volume (gallons)
	Cumulative fluid volume injected and cumulative fluid volume recovered (since injection began) (gallons)

QUARTERLY/ANNUAL SAMPLING AND ANALYSIS	
NDMA EVALUATIONS	Obtain and analyze injectate and recovered water (from both the Denver and Arapahoe Formations) for NDMA on a quarterly (i.e., every 90 days) basis for the duration of this permit. This analysis may be coordinated with other sampling requirements.
ANNUAL SAMPLING	Obtain and analyze injectate and recovered water (Denver and Arapahoe formations) on an annual basis using the parameter list in Appendix J.
NEW WATER SOURCE	Obtain and analyze injectate and recovered water from the aquifers (Denver and/or Arapahoe formations) as part of the baseline testing procedures in Appendix G. If baseline testing shows an increase of concentrations over current levels for any constituents listed in Appendix J, then quarterly (i.e., every 90 days) sampling of those elevated constituents will be conducted. The Director may change the sampling frequency following the review of the quarterly (i.e., every 90 days) analysis.
NEW WELL	Obtain and analyze the recovered water from the new well (Denver and/or Arapahoe Formations) on a quarterly (i.e., every 90 days) basis using the constituent list in Appendix G. The Director may change the sampling frequency following the review of the quarterly (i.e., every 90 days) analysis.

ANNUAL PEAK SURFACE WATER MONTH SAMPLING	Obtain an injectate sample from the tap at the wellhead and analyze injectate for NDMA on an annual basis during the month where flows from surface water sources are at their maximum level. The peak month shall be determined by evaluating three years of monthly production rates at the supplying water systems.

QUARTERLY* AND ANNUALLY**	
REPORT	Each month's maximum and averaged injection pressures (psi)**
	Each month's maximum and minimum wellhead pressures (psi)**
	Each month's injected/recovered volume (gallons)**
	Fluid volume injected/recovered since the well began injecting (gallons)**
	The results of any quarterly (i.e., every 90 days) sampling analysis obtained for the injectate and/or recovered waters, including for NDMA, elevated constituents from new wells or water sources, and any other constituents required by the Director *
	Written results of annual injected/recovered fluid analysis**
	Sources of all fluids injected during the year, including the WTP and public water system, noting any major changes in characteristics of injected fluid **

In addition to these items, additional testing results may be required periodically. For a list of those items and their due dates, please refer to APPENDIX B –TESTING REQUIREMENTS.

APPENDIX E

PLUGGING AND ABANDONMENT (P&A) REQUIREMENTS

All wells shall be plugged with cement in a manner which isolates the injection zone and will not allow the movement of fluids either into or between USDWs in accordance with 40 CFR § 146.10. Additional federal, state or local law or regulations may also apply.

APPENDIX F
CORRECTIVE ACTION PLAN

No corrective action is required at this time, as EPA's evaluation did not identify migration pathways within the area of review.

APPENDIX G

ASR BASELINE CONSTITUENT LIST

Appendix G contains a list of constituents to be analyzed for baseline evaluations, and the permit limit for each contaminant. Injection activities will not be authorized if a contaminant exceeds a permit limit. This list shall also be used to analyze the injectate whenever a new water source is added and/or to analyze the formation water whenever a new well is authorized under this permit. All analytical testing must be done in a state certified laboratory to ensure that permit limits can be met.

General

Parameter Name	Regulatory Limit (mg/l) or specified unit	Standard Type	Analytical Methods
Ph	6.5 – 8.5	secondary	150.1
Electricity Conductivity			SM 2510B, 120.1
Total Dissolved Solids	500	secondary	
Total Organic Carbon			
Alkalinity, Total	Mg/l as $CaCO_3$	0.006	

Anions

Parameter Name	Regulatory Limit (mg/l) or specified unit	Standard Type	Analytical Methods
Aluminum	200 ug/l		
Carbonate			SM 2330B
Chloride	250	secondary	
Cyanide	0.2	MCL	EPA 335.4
Nitrate (as N)	10	MCL	353.2
Nitrite (as N)	1	MCL	353.2
Nitrate-Nitrite (both as N)			
Bicarbonate			SM2330B
Sulfate	250	secondary	
Fluoride	4	MCL	SM4500-F C

Cations

Parameter Name	Regulatory Limit (mg/l) or specified unit	Standard Type	Analytical Methods
Ammonia	30 mg/l	HA - Lifetime	EPA 350.1, 350.2, 350.3
Calcium			
Magnesium			
Potassium			
Sodium			

Metals

Parameter Name	Regulatory Limit (mg/L)	Standard Type	Analytical Methods
Asbestos (fibers/1>10 um in length)	7 million fibers/L	MCL	EPA 100.1, 100.2
Antimony	0.006	MCL	EPA 200.8, 200.9
Arsenic	0.01	MCL	EPA 200.7, 200.8, 200.9
Barium	2	MCL	EPA 200.7, 200.8
Beryllium	0.004	MCL	EPA 200.7, 200.8, 200.9
Boron	6	HA-Lifetime	EPA 200.7, 212.3
Cadmium	0.005	MCL	EPA 200.7, 200.8, 200.9
Chromium (total)	0.1	MCL	EPA 200.7, 200.8, 200.9
Copper	1.3	MCL-TT	EPA 200.7, 200.8, 200.9
Iron	5	Region 8 Permit Limit	EPA 200.7, 200.9
Lead	0.015	MCL-TT	EPA 200.8, 200.9
Manganese	0.3	HA-Lifetime	EPA 200.7, 200.8, 200.9
Mercury (inorganic)	0.002	MCL	EPA 245.1, 245.2, 200.8
Molybdenum	0.04	HA-Lifetime	EPA 200.7, 246.1, 246.2
Nickel	0.1	HA-Lifetime	EPA 200.7, 200.8, 200.9
Selenium	0.05	MCL	EPA 200.8, 200.9
Silver	0.1	HA-Lifetime	EPA 200.7, 200.8, 200.9
Strontium	4	HA-Lifetime	EPA 272.1, 272.2, 200.7
Thallium	0.002	MCL	EPA 200.8, 200.9
Zinc	2	HA-Lifetime	EPA 200.7, 200.8

Inorganics

Parameter Name	Regulatory Limit (mg/l) or specified unit	Standard Type	Analytical Methods
Ammonia	30 mg/L	HA-Lifetime	EPA 350.1, 350.2, 350.3
Asbestos (fibers/1>10µm in length)	7 million fibers/L	MCL	EPA 100.1,100.2
Cyanide	0. 2 mg/L	MCL	EPA 335.4
Fluoride	4 mg/L	MCL	EPA 300.0
Nitrate (as N)	10 mg/L	MCL	EPA 300.0

Nitrate-Nitrite (both as N)	10 mg/L	MCL	EPA 300.0
Nitrite (as N)	1 mg/L	MCL	EPA 300.0

Radionuclides

Parameter Name	*Regulatory Limit (mg/l) or specified unit*	Standard Type	Analytical Methods
Radium 226 & 228 combined	5 pCi/L	MCL	Standard Method 304
Gross alpha particle activity (excluding Ra-226, radon, and uranium)	15 pCi/L	MCL	EPA 900.0
Uranium	0.03 mg/L	MCL	EPA 908.0, 908.1

Volatile Organics using EPA Method 524.2 or 8260

Parameter Name	CAS No	Regulatory Limit (mg/l) or specified unit	Standard Type
1,1,1,2-Tetrachloroethane	630-20-6	0.07	HA-Lifetime
1,1,1-Trichloroethane	71-55-6	0.2	MCL
1,1,2,2-Tetrachloroethane	79-34-5	0.04	Region 8 Permit Limit 10^{-4} Cancer Risk
1,1,2-Trichloroethane	79-00-5	0.005	MCL
1,1-Dichloroethylene	75-35-4	0.007	MCL
1,2-(cis)Dichloroethylene	156-59-2	0.07	MCL
1,2-(trans)Dichloroethylene	156-60-5	0.1	MCL
1,2,3-Trichloropropane	96-18-4	0.02	Region 8 Permit Limit
1,2,4-Trichlorobenzene	120-82-1	0.07	MCL
1,2-Dibromomethane (Ethylene Dibromide EDB)	106-93-4	0.00005	MCL
1,2-Dichlorobenzene o-	95-50-1	0.6	MCL
1,2-Dichloroethane	107-06-2	0.005	MCL
1,2-Dichloropropane	78-87-5	0.005	MCL
1,3-Dichlorobenzene m-	541-73-1	0.6	HA-Lifetime
1,4-Dichlorobenzene p-	106-46-7	0.075	MCL
2-Chlorotoluene (o-)	95-49-8	0.1	HA-Lifetime
4-Chlorotoluene (p-)	106-43-4	0.1	HA-Lifetime
Acetone	67-64-1	6	Region 8 Permit Limit
Acrylonitrile	107-13-1	0.006	Region 8 Permit Limit 10^{-4} Cancer Risk
Benzene	71-43-2	0.005	MCL
Bromobenzene	108-86-1	0.06	HA-Lifetime
Bromochloromethane	74-97-5	0.09	HA-Lifetime
Bromodichloromethane (THM)	75-27-4	0.02	Region 8 Permit Limit

Parameter Name	CAS No	Regulatory Limit (mg/l) or specified unit	Standard Type
Bromoform (THM)	75-25-2	0.2	Region 8 Permit Limit
Bromomethane	74-83-9	0.01	HA-Lifetime
Carbon tetrachloride	56-23-5	0.005	MCL
Chlorobenzene (Monochlorobenzene)	108-90-7	0.1	MCL
Chlorodibromomethane (Dibromochloromethane) (THM)	124-48-1	0.06	HA-Lifetime
Chloroform (THM)	67-66-3	0.07	HA-Lifetime
Chloromethane	74-87-3	0.4	10-day HA for a 10 kg child
Cyanogen Chloride (testing not needed if cyanide is present in source water and alkaline chlorination is used, pH 8.5)	506-77-4	0.4	Region 8 Permit Limit
Dichlorodifluoromethane	75-71-8	1	HA-Lifetime
Dichloromethane (Methylene chloride)	75-09-2	0.005	MCL
Ethylbenzene	100-41-4	0.7	MCL
Hexachlorobutadiene	87-68-3	0.002	Region 8 Permit Limit
Hexachloroethane	67-72-1	0.001	HA-Lifetime
Isopropylbenzene (cumene)	98-82-8	0.8	Region 8 Permit Limit
Methyl Ethyl Ketone	78-93-3	4	HA-Lifetime
Naphthalene	91-20-3	0.1	HA-Lifetime
Perchloroethylene (PCE) (Tetrachloroethylene)	127-18-4	0.005	MCL
Styrene	100-42-5	0.1	MCL
Toluene	108-88-3	1	MCL
Total Trihalomethanes		0.08	MCL
Trichloroethylene (TCE)	79-01-6	0.005	MCL
Trichlorofluoromethane	75-69-4	2	HA-Lifetime
Vinyl chloride	75-01-4	0.002	MCL
Total Xylenes	1330-20-7	10	MCL

Semi-volatile Organics using EPA Method 525.2

Parameter Name	CAS No	Regulatory Limit (mg/l) or specified unit	Standard Type
1,2,4-Trichlorobenzene	120-82-1	0.07	MCL
1,2-Dichlorobenzene	95-50-1	0.6	MCL
1,3-Dichlorobenzene	541-73-1	0.6	HAL

Parameter Name	CAS No	Regulatory Limit (mg/l) or specified unit	Standard Type
1,4-Dichlorobenzene	106-46-7	0.075	MCL
2,4,6-Trichlorophenol	88-06-2	0.002	Region 8 Permit Limit
2,4-Dichlorophenol	120-83-2	0.02	HA-Lifetime
2,4-Dinitrotoluene	121-14-2	0.005	Region 8 Permit Limit 10^{-4} Cancer Risk
2,6-Dinitrotoluene	606-20-2	0.005	Region 8 Permit Limit 10^{-4} Cancer Risk
2-Chlorophenol	95-57-8	0.04	HA-Lifetime
4-Nitrophenol	100-02-7	0.06	HA-Lifetime
Acenaphthene	83-32-9	0.4	Region 8 Permit Limit
Aldrin	309-00-2	0.0002	Region 8 Permit Limit 10^{-4} Cancer Risk
Anthracene	120-12-7	2	Region 8 Permit Limit
Benzo(a)pyrene	50-32-8	0.0002	MCL
bis(2-Ethylhexyl) phthalate	117-81-7	0.006	MCL
Butyl benzyl phthalate	85-68-7	1	Region 8 Permit Limit
Chlordane	57-74-9	0.002	MCL
Dieldrin	60-57-1	0.0002	Region 8 Permit Limit 10^{-4} Cancer Risk
Diethyl phthalate	84-66-2	6	Region 8 Permit Limit
Di-n-butyl phthalate	84-74-2	0.8	Region 8 Permit Limit
Endrin	72-20-8	0.002	MCL
Fluorene	86-73-7	0.2	Region 8 Permit Limit
Heptachlor	76-44-8	0.0004	MCL
Heptachlor epoxide	1024-57-3	0.0002	MCL
Hexachlorobenzene	118-74-1	0.001	MCL
Hexachlorobutadiene	87-68-3	0.002	Region 8 Permit Limit
Hexachlorocyclopentadiene	77-47-4	0.05	MCL
Hexachloroethane	67-72-1	0.001	HA-Lifetime
Isophorone	78-59-1	0.1	HA-Lifetime
Lindane	58-89-9	0.0002	MCL
Naphthalene	91-20-3	0.1	HA-Lifetime
Pentachlorophenol	87-86-5	0.001	MCL
Phenol	108-95-2	2	HA-Lifetime
Pyrene	129-00-0	0.2	Region 8 Permit Limit
Toxaphene	8001-35-2	0.003	MCL

Pesticides and Herbicides

Parameter Name	CAS No	Regulatory Limit (mg/l) or specified unit	Standard Type	Analytical Methods
Alachlor	15972-60-8	0.002	MCL	EPA 505, 507, 525
Aldicarb	116-06-03	0.003	MCL	EPA 531.1
Aldicarb sulfone	1646-87-4	0.002	MCL	EPA 531.1
Aldicarb sulfoxide	1646-87-3	0.004	MCL	EPA 531.1
Aldrin	309-00-2	0.0002	Region 8 Permit Limit 10^{-4} Cancer Risk	EPA 505, 508
Ametryn	834-12-8	0.06	HA-Lifetime	EPA 507
Atrazine	1912-24-9	0.003	MCL	EPA 505, 507
Bromacil	314-40-9	0.07	HA-Lifetime	EPA 507
Butylate	2008-41-5	0.4	HA-Lifetime	EPA 507
Carbaryl	63-25-2	0.08	Region 8 Permit Limit	EPA 531.1
Carbofuran	1563-66-2	0.04	MCL	EPA 531.1
Carboxin	5234-68-4	0.7	HA-Lifetime	EPA 507
Chlordane	57-74-9	0.002	MCL	EPA 505, 508, 525
Chlorothalonil	1897-45-6	0.1	Region 8 Permit Limit	EPA 508
DCPA (Dactyl)	1861-32-1	0.07	HA-Lifetime	EPA 508
Diazinon	333-41-5	0.001	HA-Lifetime	EPA 507
Dieldrin	60-57-1	0.0002	Region 8 Permit Limit 10^{-4} Cancer Risk	EPA 505, 508
Diphenamid	957-51-7	0.2	HA-Lifetime	EPA 507
Disulfoton	298-04-4	0.0007	HA-Lifetime	EPA 507
Endrin	72-20-8	0.002	MCL	EPA 505, 508, 525.1
Fenamiphos	22224-92-6	0.0007	HA-Lifetime	EPA 507
Heptachlor	76-44-8	0.0004	MCL	EPA 505, 508
Heptachlor epoxide	1024-57-3	0.0002	MCL	EPA 505, 508
Hexachlorobenzene	118-74-1	0.001	MCL	EPA 505, 508, 525.1
Hexachlorocyclopentadiene	77-47-4	0.05	MCL	EPA 505, 525.1
Hexazinone	51235-04-2	0.4	HA-Lifetime	EPA 507
Lindane	58-89-9	0.0002	MCL	EPA 505, 508
Methomyl	16752-77-5	0.2	HA-Lifetime	EPA 531.1
Methoxychlor	72-43-5	0.04	MCL	EPA 505, 508, 525
Metolachlor	51218-45-2	0.7	HA-Lifetime	EPA 507
Metribuzin	21087-64-9	0.07	HA-Lifetime	EPA 507
Oxamyl (Vydate)	23135-22-0	0.007	MCL	EPA 531.1
Prometon	1610-18-0	0.4	HA-Lifetime	EPA 507
Pronamide	23950-58-5	0.1	Region 8 Permit Limit 10^{-4} Cancer Risk	EPA 507
Propachlor	1918-16-7	0.1	Region 8 Permit Limit	EPA 508

Parameter Name	CAS No	Regulatory Limit (mg/l) or specified unit	Standard Type	Analytical Methods
			10^{-4} Cancer Risk	
Propazine	139-40-2	0.01	HA-Lifetime	EPA 507
Simazine	122-34-9	0.004	MCL	EPA 505, 507, 525.1
Tebuthiuron	34014-18-1	0.5	HA-Lifetime	EPA 507
Terbacil	5902-51-2	0.09	HA-Lifetime	EPA 507
Terbufos	13071-79-9	0.0004	HA-Lifetime	EPA 507
Trifluralin	1582-09-8	0.01	HA-Lifetime	EPA 508

Disinfectants and Disinfection Byproducts

Parameter Name	Regulatory Limit (mg/l) or specified unit	Standard Type	Analytical Method
Bromate	0.01	MCL	EPA 317.0, Revision 2 321.8, 326.0
Chloramine (as free chlorine)	4	MCL	
Chlorine (free chlorine, combined)	4	MCL	Standard Methods 20th edition: 4500-Cl D 4500-Cl F 4500-Cl G 4500-Cl H
Chlorine dioxide	0.8	MCL	EPA 327, Revision 1 Standard Method 20th edition: 4500-ClO_2 D 4500-CLO_2 E
Chlorite	1.0	MCL	EPA 300.0, 300.1
Total Haloacetic Acids (HAA5s) Bromoacetic acid Dibromoacetic acid Dichloroacetic acid Monochloroacetic acid Trichloroacetic acid	0.06	MCL	EPA 552.3
Total Trihalomethanes (TTHMs) Chloroform Bromodichloromethane Dibromocloromethane Bromoform	0.08	MCL	EPA 502.2, 524.2

Nitrosamines

Parameter Name	Reporting Limit (ug/L) or specified unit	Analytical Method
N-nitroso-dimethylamine (NDMA)	0.002	EPA Method 521
N-nitroso-diethylamine (NDEA)	0.005	EPA Method 521
N-nitroso-di-n-butylamine (NDBA)	0.004	EPA Method 521
N-nitroso-di-n-propylamine (NDPA)	0.007	EPA Method 521
N-nitroso-methylethylamine (NMEA)	0.003	EPA Method 521
N-nitroso-pyrrolidine (NPYR)	0.002	EPA Method 521

MCL: Maximum Contaminant Level. The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLG as feasible using the best available analytical and treatment technologies and taking cost into consideration. MCLs are enforceable standards.

MCLG: Maximum Contaminant Level Goal. A non-enforceable health goal which is set at a level at which no known or anticipated adverse effect on the health of persons occurs and which allows an adequate margin of safety.

TT: Treatment Technique. A required process intended to reduce the level of a contaminant in drinking water.

HA: Health Advisory. An estimate of acceptable drinking water levels for a chemical substance based on health effects information; a Health Advisory is not a legally enforceable Federal standard, but serves as technical guidance to assist Federal, State, and local officials.

HA-Lifetime: The concentration of a chemical in drinking water that is not expected to cause any adverse non-carcinogenic effects for a lifetime of exposure. The Lifetime HA is based on exposure of a 70-kg adult consuming 2 liters of water per day. The Lifetime HA for Group C carcinogens includes an adjustment for possible carcinogenicity.

Region 8 Permit Limit: Permit limit calculated by Region 8 Drinking Water Toxicologist based on human health criteria.

10^{-4} Cancer Risk: The concentration of a chemical in drinking water corresponding to an excess estimated lifetime cancer risk of 1 in 10,000

10^{-6} Lifetime Cancer Risk: The concentration of a chemical in drinking water corresponding to an excess estimated lifetime cancer risk of 1 in 1,000,000

HA-Ten Day: The concentration of a chemical in drinking water that is not expected to cause any adverse non-carcinogenic effects for up to ten days of exposure for a 10 kg child consuming 1 liter per day.

APPENDIX H

BENCH SCALE WATER CHEMISTRY TEST PROCEDURES FOR NITROSAMINES

This Appendix provides a procedure for implementing a bench scale water chemistry test for the Meridian's ASR Project. The procedure will be performed for Meridian's DE-1R, A-4, and any additional wells that are authorized under this Permit, if required. The Director may also require that this test be performed for a new water source through additional written correspondence.

Samples for the test shall be obtained prior to performing the Part I MI and Pilot Cycle Test. Testing of water chemistry shall be performed on the injectate and recovered formation water. Prior to the start of testing, a detailed sampling protocol shall be obtained from the contract laboratory. This protocol shall include a written description of sampling methods for use by field personnel and for inclusion in reporting to the Colorado State Engineers Office and the EPA. Sampling shall adhere to protocols as specified by the water quality testing laboratory for sampling methods, sample preservation, sample handling times, and chain-of-custody records.

Section A. Analysis of the Formation Water

Meridian shall arrange for analytical data prepared by the laboratory to be submitted to them and the EPA, simultaneously.

Prior to performing the Part I MI and Pilot Cycle Test, Meridian shall collect four samples of sufficient size to meet the requirements for testing of the formation water from each of the proposed ASR wells. These samples shall be obtained using the volatile organic carbon (VOC) collection method and stored on a shelf at the temperature recorded for the recovered water until analyzed. The VOC collection method requires field staff to fill the bottle to the maximum level and exclude all air pockets.

1. These samples shall be "spiked" by the laboratory with a quantity of 10 ng/L of N-nitrosodimethylamine NDMA and 10 ng/l of N-nitroso-di-n-butylamine (NDBA). The purpose of this shelf test is to observe how NDMA and NDBA react with the native formation water. The sample bottles should be stored in a dark location away from light to prevent premature breakdown.
2. Ninety (90) days following the collection of the formation samples, one sample bottle shall be removed from the shelf and analyzed for NDMA and NDBA. This analytical process shall be repeated for the next bottles on a quarterly (i.e., every 90 days) basis. Once obtained, the analytical results of NDMA and NDBA concentrations shall be reported to the Director within thirty (30) days.

Section B. Analysis of the Injectate Water

Meridian shall arrange for analytical data prepared by the laboratory to be submitted to them and the EPA, simultaneously.

1. Collect five samples of a volume needed to meet the requirements of the injectate testing on the same day within thirty (30) days following the start of the Pilot Cycle Test. These samples shall be obtained using the VOC collection method. Analyze the first sample for NDMA and NDBA. Store the other four samples on a shelf at formation temperatures until analyzed. The sample bottles should be stored in a dark location away from light to prevent premature breakdown.

2. Ninety (90) days following the collection of the injectate samples, remove one sample bottle from the shelf. Analyze this sample for NDMA and NDBA. Repeat this analytical process for the next sampling bottles on a quarterly (i.e., every 90 days) basis. Once obtained, the analytical results of NDMA and NDBA concentrations shall be reported to the Director within thirty (30) days.

APPENDIX I
ASR PILOT CYCLE TEST PROCEDURES

This Appendix provides procedures for pilot cycle testing of Meridian's two wells, A-4 (Arapahoe aquifer) and DE-1R (Denver aquifer) and any new wells for sampling and analysis of constituents listed below and in Appendix J. The intent of this procedure is to be responsive to conditions existing at the time of the pilot testing. For example, while this protocol defines one of the test cycles as a 7-day cycle (7 days of recharge/7 days of recovery), a change in the Meridian's supply or demand during the cycle may require a delay in operations to achieve the minimum recharge or recovery time frame. Additionally, since recovery rates vary from injection rates, as required by the State of Colorado, these time periods will not be the same. If there are significant changes between successive sampling events, it may be appropriate to increase sampling frequency and/or parameters. Meridian has requested and is authorized to perform the longer Cycle 4 Test that is presented in Table I.A below.

Sampling shall adhere to protocols as specified by the water quality testing laboratory for sampling methods, sample preservation, sample handling times, and chain-of-custody records.

Section A. Measurements, Instrumentation and Monitoring

The following conditions will be measured and recorded in advance of and during each round of cycle testing:

1. Static water levels (between cycles)
2. Water levels while pumping
3. Water levels while injecting or specify surface, if applicable
4. Flow rate and cumulative amount pumped while recovering, by cycle and total
5. Flow rate and cumulative amount stored while injecting, by cycle and total
6. Flow rate entering and exiting the system
7. Pressure data collected at the wellhead
8. Inflation pressure on flow control valve (FCV), pressure data collected from the pump or in the pipeline.
9. Intermittent sampling as described in the application for measurement of total organic carbon and dissolved oxygen in injectate and recovered water
10. Start/stop times and elapsed time for cycles
11. Sampling dates and sample testing protocol

Measurements 1-11 listed above in Section A will be communicated via the Meridian's SCADA system to the Meridian's control facility, where the data will be processed and archived. Measurements of wellhead pressure (item 7) will be made and recorded manually on a weekly schedule, depending on the consistency of line pressure.

The following measurements will be made and recorded after cycle testing:

1. Static water levels (between pumping periods)
2. Water levels while pumping
3. Flow rate and cumulative amount pumped while pumping and total
4. Flow rate entering and exiting the system
5. Line pressure (at the wellhead)
6. Inflation pressure on FCV
7. Nitrogen tank pressure (if present)

Section B. Cycle Testing

The applicant shall obtain an injectate sample prior to starting cycle testing if there has been a change in the water chemistry from baseline sampling previously provided to the EPA. Cycle testing will consist of progressively longer periods during which water is injected, stored, and then recovered. For purposes of this permit, one cycle consists of one period of injection, followed by storage, followed by recovery.

The cycle testing will occur according to the following schedule:

Schedule for Cycle Testing				
Cycle No.	Injection Time (days)	Storage Time (days)	Recovery Time (days)	Comments
1	3	1	3	Optimization work to be performed during implementation of Cycle 1
2	7	7	7	
3	14	14	14	
4	21	21	21	
Alternative to Cycle 4 (optional test)	45	45 - 60	45	Alternative Cycle 4 test procedure requested by Meridian

Table I.A

1. Storage Time

The storage times presented above are the minimum durations that fluids must be maintained in storage. This time may be increased at Meridian's discretion.

2. Recovery Time

The recovery times presented above are estimates. This time shall be adjusted so that: 1) recovery continues until native source water is encountered; and 2) the volume previously injected is recovered considering recovery occurs at a higher rate than injection.

3. Additional cycles may be added as needed

(a) *Analysis for Cycle 1 for Recovered Water*
Cycle 1 shall be performed to optimize the equipment for testing. Field measurements shall include: temperature, pH, TDS, electrical conductivity, dissolved oxygen, oxidation-reduction potential (ORP);

(b) *Analysis for Cycles 2 through 4 for Recovered Water*
(i). Collect data sets during Cycles 2 through 4 and any additional cycling events at the beginning, mid-stream, and end of recovery for each cycle to monitor and

record the pH, TDS, dissolved oxygen, oxidation reduction potential, and electrical conductivity;

(ii). Collect a sample after recovering 80% - 90% of the injected volume and should be based on indicator sampling if the transition from injectate to native formation water can be detected based on the water chemistry of injected fluids during each cycle. Analyze this recovered water for each of the cycles (2 – 4) using the constituent list in Attachment J.

4. Final Report

(a) Prepare a summary report for each cycle for the implementation and findings observed during the implementation of the Pilot Cycle Test. Include a copy of the analytical data collected during the Pilot Cycle Test in this report. This report shall summarize the analysis and discuss the potential for future injection activities to result in changes in groundwater chemistry; and

(b) All submitted laboratory data shall include EPA's regulatory limits (maximum contaminant levels, Region 8 limits, health advisory limits). All values which exceed the regulatory limits shall be highlighted.

(c) This report shall be submitted to the Director within thirty (30) calendar days from the completion of all test procedures and receipt of all analytical results from the last cycle conducted.

APPENDIX J
CONSTITUENT LIST FOR PILOT CYCLE TEST ANALYSIS & ONGOING MONITORING REQUIREMENTS

Appendix J requires collection of water quality data for the constituents listed below following the procedures in Appendix I for Pilot Cycle Testing. This constituent list shall also be used to collect water quality data for ongoing monitoring requirements presented in Appendix D. All analytical testing must be done in a state certified laboratory to ensure that permit limits can be met. However, other constituents may be added by written response from the Director thru email or letter following the review of baseline data collected with the constituent list presented in Appendix G and/or if there is a need to evaluate a new constituent(s). Any new constituent added to the list of constituents in Appendix J shall be evaluated following the procedures in Appendix I and/or review of monitoring results in Appendix D.

Parameter Name	Regulatory Limit (mg/l) or specified unit	Detection Limit (mg/l or ng/l if indicated)	Standard Type	Analytical Methods
pH	6.5 - 8.5		Secondary	150.1
Specific Gravity				
Temperature				
Electricity Conductivity				SM 2510B, 120.1
Total Dissolved Solids	500		Secondary	
ANIONS				
Carbonate				SM 2330B
Chloride	250		Secondary	
Nitrate (as N)	10		MCL	353.2
Nitrite (as N)	1		MCL	353.2
Nitrate-Nitrite				
Bicarbonate				SM 2330B
Sulfate	250		Secondary	
Fluoride	4		MCL	SM 4500-F C
CATIONS				
Calcium				
Magnesium				
Potassium				
Sodium				
METALS				
Antimony	0.006	0.003	MCL	200.8, 200.9
Arsenic	0.01	0.005	MCL	200.7, 200.8, 200.9
Barium	2	1	MCL	200.7, 200.8

Beryllium	0.004	0.002	MCL	200.7, 200.8, 200.9
Boron	6	0.7	HA-Lifetime	200.7, 212.3
Cadmium	0.005	0.0025	MCL	200.7, 200.8, 200.9
Chromium	0.1	0.05	MCL	200.7, 200.8, 200.9
Copper	1.3	0.65	MCL-TT	200.7, 200.8, 200.9
Total Iron	5	2.5	Region 8 Permit Limit	200.7, 200.9
Lead	0.015	0.0075	MCL-TT	200.8, 200.9
Manganese	0.3	0.4	HA-Lifetime	200.7, 200.8, 200.9
Mercury (inorganic)	0.002	0.001	MCL	245.1, 245.2, 200.8
Molybdenum	0.04	0.02	HA-Lifetime	200.7, 246.1, 246.2
Nickel	0.1	0.05	HA-Lifetime	200.7, 200.8, 200.9
Selenium	0.05	0.025	MCL	200.8, 200.9
Silver	0.1	0.05	HA-Lifetime	200.7, 200.8, 200.9
Strontium	4	2	HA-Lifetime	272.1, 272.2, 200.7
Thallium	0.002	0.001	MCL	200.8, 200.9
Zinc	2	1	HA-Lifetime	200.7, 200.8
Uranium	0.003			908.0, 908.1
Gross Alpha	15 pCi/L			900
Radium 226 & 228 combined	5 pCi/L			304
Aluminum	0.05 to 0.2		Secondary	
Total Trihalomethanes	0.08		MCL	502.2, 524.2
Turbidity	TT[3]			
Total Haloacetic acid (HAA5s)	0.06		MCL	552.2
Coliforms	5.0%[4]			
N-nitroso-dimethylamine (NDMA)		2 ng/L		521
N-nitroso-di-n-butylamine (NDBA)		6 ng/L		521