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State of Utah

UTAH DIVISION OF WATER QUALITY
CLASS V AREA PERMIT
FOR AQUIFER STORAGE AND RECOVERY
UNDERGROUND INJECTION CONTROL (UIC) PROGRAM

UIC Permit Number: UTU-35AP-38871EB

Salt Lake County, Utah

Permit Issued to:

Jordan Valley Water Conservancy District
8215 South 1300 West
West Jordan, Utah 84088

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[Attachment A](#) - General Location Map of the Jordan Valley Water Conservancy District Project, Salt Lake County

[Attachment B](#) - Map of the UIC Area of Review including the Class V ASR Wells and the Project Area

[Attachment C](#) - Corrective Action Plan for Artificial Penetrations into Injection Zone within Area of Review

[Attachment D](#) - Driller’s Log and Injection Well Construction Details of Each Injection Well

[Attachment E](#) - Injection Well Operating Plan and Procedures

[Attachment F](#) - Monitoring, Recording, and Reporting Plan

[Attachment G](#) - Monitoring Parameters and Schedule

PART I. AUTHORIZATION TO INJECT

Pursuant to the Utah Underground Injection Control (UIC) Program Regulations codified in the Utah Administrative Code (Utah Admin. Code) R317-7,

Jordan Valley Water Conservancy District
8215 South 1300 West
West Jordan, Utah 84088

hereafter, referred to as the Permittee, is hereby authorized to construct and operate Class V Aquifer Storage and Recovery (ASR) wells in Salt Lake County, Utah. A general location map is included as Attachment A.

Water is taken from Deer Creek Reservoir, the Provo River, and six Salt Lake County mountain streams, and then treated via a combination of four water treatment plants prior to injecting it. Injection is explicitly limited to the Quaternary age sediments located in Salt Lake County at approximately 6800 to 9800 South and 700 to 2700 East. The 19 wells currently authorized under this area permit are located at approximately:

- (1) 7700 South 700 East
- (2) 8200 South 700 East
- (3) 7800 South 1000 East
- (4) 8200 South 1000 East
- (5) 8518 South 960 East
- (6) 7800 South 1300 East
- (7) 1800 East Creek Road
- (8) 1200 East 9400 South
- (9) 1200 East 9400 South – “Webster”
- (10) 8600 South 1300 East
- (11) 8200 South 1300 East
- (12) 9390 South Solena Way
- (13) 2090 East 8600 South
- (14) 2400 East Creek Road
- (15) 2400 East 9800 South
- (16) 1600 East Siesta Drive
- (17) 1453 East 9400 South
- (18) 1526 East 8600 South
- (19) 2700 East 9000 South (9003 South Quail Hollow Drive)

A map showing the area of review including the Class V ASR wells and the project area is included as Attachment B.

The legal description of the area to be included in the UIC Area Permit lies within the following bounds:

Latitude 40° 33' 30" N to 40° 37' 10" N and Longitude 111° 48' 30" E to 111° 53' 00" E. Injection is subject to the condition that the Permittee meets the requirements set forth herein.

References to Utah Admin. Code R315-2-3, Utah Admin. Code R317-7, and to Title 40 of the Code of Federal Regulations (40 CFR) are to all regulations that are in effect on the date this permit becomes effective. The following are incorporated as enforceable attachments to this permit:

- Attachment A - General Location Map of the Jordan Valley Water Conservancy District Project, Salt Lake County.
- Attachment B - Map of the UIC Area of Review including the Class V ASR Wells and the Project Area
- Attachment C - Corrective Action Plan for Artificial Penetrations into Injection Zone within Area of Review
- Attachment D - Driller's Log and Injection Well Construction Details of Each Injection Well
- Attachment E - Injection Well Operating Plan and Procedures
- Attachment F - Monitoring, Recording, and Reporting Plan
- Attachment G - Monitoring Parameters and Schedule

This modification of the original permit is based upon representations made by the Permittee and other information contained in the administrative record. **It is the responsibility of the Permittee to read and understand all provisions of this permit.**

Any person who violates the Utah Water Quality Act (UWQA) or any permit, rule, or order adopted under it, is subject to the provisions of section UCA 19-5-115 of the UWQA governing violations.

This permit shall become effective at ****.

This permit and the authorization to inject shall be issued for 5 years, unless terminated, and will expire on ****.

John K. Mackey, P.E.
Director
Utah Division of Water Quality

PART II. GENERAL PERMIT CONDITIONS

A. EFFECT OF PERMIT

The Permittee is allowed to engage in underground injection in accordance with the conditions of this permit. The Permittee, authorized by this permit, shall not construct, operate, maintain, convert, plug, abandon or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant into Underground Sources of Drinking Water (USDW), if the presence of that contaminant may cause a violation of any primary drinking water standard under the Utah Public Drinking Water Administrative Rules, Utah Admin. Code R309-200 and 40 CFR Part 141, or may otherwise adversely affect the health of persons. Any underground injection activity not explicitly authorized in this permit is prohibited unless otherwise authorized by rule or by another UIC permit. Compliance with this permit does not constitute a defense of any action brought under the Utah Water Quality Act (UWQA) Title 19, Chapter 5 Utah Code Annotated 1953, or any other common or statutory law or regulation. Issuance of this permit does not authorize any injury to persons or property, any invasion of other private rights, or any infringement of State or local law or regulations. Nothing in this permit shall be construed to relieve the Permittee of any duties under applicable regulations.

B. SEVERABILITY

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

C. CONFIDENTIALITY

In accordance with Utah Code 19-1-306 (Records of the Department of Environmental Quality), Utah Code 63G-2-309 (Confidentiality Claims), and Utah Code 19-5-113 (DWQ Records and Reports Required by Owners/Operators) any information deemed by the Permittee to be entitled to trade secret protection submitted to the Division of Water Quality (hereafter, referred to as 'the Division') pursuant to this permit may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission by stamping the words "Confidential Business Information" on **each** page containing such information. If no claim is made at the time of submission, the Division may make the information available to the public without further notice. Claims of confidentiality may be denied by the Division according to the procedures detailed in Utah Code 63G-2 and the federal Freedom of Information Act (FOIA). Claims of confidentiality for the following information will be denied as per Utah Admin. Code R317-7-9(9.7):

1. The name and address of the Permittee.
2. Information that deals with the existence, absence or level of contaminants in drinking water.

D. **CONDITIONS APPLICABLE TO ALL UIC PERMITS (40 CFR §144.51)¹**

The following conditions are required for all UIC permits. Specific requirements for implementing these conditions are included in Part III of this permit, as applicable.

1. Duty to Comply (40 CFR §144.51(a))

The Permittee shall comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Safe Drinking Water Act and UWQA and is grounds for enforcement action; permit termination, revocation and re-issuance, 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 issued in accordance with Utah Admin. Code R317-7-8 (40 CFR §144.34). Such noncompliance may also be grounds for enforcement action under the Utah Solid and Hazardous Waste Act (USHWA), Title 19, Chapter 6, Utah Code Annotated 1979.

2. Duty to Reapply (40 CFR §144.51(b))

If the Permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the Permittee must apply for and obtain a new permit. The Permittee shall submit a complete permit renewal application at least 180 days prior to permit expiration.

3. Need to Halt or Reduce Activity Not a Defense (40 CFR §144.51(c))

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

4. Duty to Mitigate (40 CFR §144.51(d))

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

5. Proper Operation and Maintenance (40 CFR §144.51(e))

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 backup or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this permit.

¹ Parenthetical references to the Code of Federal Regulations (CFR §) and / or the Utah Administrative Code (Utah Admin. Code) for the UIC Program indicate the requirement for inclusion in the permit.

6. Permit Actions (40 CFR §144.51(f), 40 CFR §124.5, 40 CFR §144.38, 40 CFR §144.39, 40 CFR §144.40, 40 CFR §144.41)

This permit may be modified, revoked and reissued, or terminated either at the request of any interested person (including the Permittee) or upon the Director's initiative. However, permits may only be modified, revoked and reissued, or terminated for the reasons specified in Parts II.D.6.A and II.D.6.B below. All requests shall be in writing and shall contain facts or reasons supporting the request. The filing of a request for a permit modification, revocation and re-issuance, or termination on the part of the Permittee, does not stay any permit condition. This permit may be transferred according to the procedures outlined in Part II.D.6.d.

a) Modify or Revoke and Re-Issue Permits

When the Director of the Utah Division of Water Quality (hereafter, referred to as 'the Director') receives any information (for example, inspects the facility, receives information submitted by the Permittee as required in the permit, receives a request for modification or revocation and reissuance, or conducts a review of the permit file), the Director may determine whether or not one or more of the causes listed in Parts II.D.6.a.1 and II.D.6.a.2 for modification or revocation and reissuance or both exist. If cause exists, the Director may modify or revoke and reissue the permit accordingly, subject to the limitations of Part II.D.6.a.3 of this section and may request an updated application if necessary. When a permit is modified, only the conditions subject to modification are reopened. If a permit is revoked and reissued, the entire permit is reopened and subject to revision and the permit is reissued for a new term. If cause does not exist under Parts II.D.6.or II.D.6.c, the Director shall not modify or revoke and reissue the permit. If a permit modification satisfies the criteria for minor modifications under Part II.D.6.c the permit may be modified without a draft permit or public review. Otherwise, a draft permit must be prepared and other procedures in 40 CFR §124, incorporated by reference into the Utah UIC Program rules (hereafter referred to as '40 CFR §124'), must be followed.

- (1) Causes for modification. For Class V wells the following may be causes for revocation and reissuance as well as modification if the Permittee requests or agrees.
 - i. Alterations. There are material and substantial alterations or additions to the permitted facility or activity which occurred after permit issuance which justify the application of permit conditions that are different or absent in the existing permit.
 - ii. Information. The Director has received information. For UIC area permits, this cause shall include any information indicating that cumulative effects on the environment are unacceptable.
 - iii. New regulations. The standards or regulations on which the permit was based have been changed by promulgation of new or amended standards or regulations, or by judicial decision, after the permit was issued. Permits for

Class V wells may be modified during their permit terms for this cause only as follows:

- (1) For promulgation of amended standards or regulations, when:
 - (A) The permit condition requested to be modified was based on a promulgated part 146 regulation; and
 - (B) EPA has revised, withdrawn, or modified that portion of the regulation on which the permit condition was based, and
 - (C) A Permittee requests modification in accordance with §124.5 within ninety (90) days after Federal Register notice of the action on which the request is based.
 - (2) For judicial decisions, a court of competent jurisdiction has remanded and stayed EPA promulgated regulations if the remand and stay concern that portion of the regulations on which the permit condition was based, and a request is filed by the Permittee in accordance with §124.5 within ninety (90) days of judicial remand.
 - iv. Compliance schedules. The Director determines good cause exists for modification of a compliance schedule, such as an act of God, strike, flood, or materials shortage, or other events over which the Permittee has little or no control and for which there is no reasonably available remedy. See also Part II.D.6.c.3 – Minor Modification of Permit.
- (2) Causes for modification or revocation and reissuance. The following are causes to modify or, alternatively, revoke and re-issue a permit:
- i. Cause exists for termination under Part II.D.6.b, and the Director determines that modification or revocation and re-issuance is appropriate.
 - ii. The Director has received notification (as required in the permit, Part II.D.6.c.4. A permit also may be modified to reflect a transfer after the effective date of an automatic transfer (see Part II.D.6.d.2) but will not be revoked and re-issued after the effective date of the transfer except upon the request of the new Permittee.
 - iii. A determination that the waste being injected is a hazardous waste as defined in 40 CFR §261.3 either because the definition has been revised, or because a previous determination has been changed.
- (3) Facility Siting. Suitability of the facility location will not be considered at the time of permit modification or revocation and reissuance unless new information or standards indicate that a threat to human health or the environment exists which was unknown at the time of permit issuance.
- b) Termination of Permit
- (1) The Director may terminate a permit during its term, or deny a permit renewal application for the following causes:

- i. Noncompliance by the Permittee with any condition of the permit;
 - ii. The Permittee's failure in the application or during the permit issuance process to disclose fully all relevant facts, or the Permittee's misrepresentation of any relevant facts at any time; or
 - iii. A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or termination;
- (2) The Director shall follow the applicable procedures in 40 CFR §124 in terminating any permit under this section.

c) Minor Modification of Permit

Upon the consent of the Permittee, the Director may modify a permit to make the corrections or allowances for changes in the permitted activity listed in this section, without following the procedures of 40 CFR §124. Any permit modification not processed as a minor modification under this section must be made for cause and with 40 CFR §124 draft permit and public notice, as required in Permit Part II.D.6.a. Minor modifications may only:

- (1) Correct typographical errors;
- (2) Require more frequent monitoring or reporting by the Permittee;
- (3) Change an interim compliance date in a schedule of compliance, provided the new date is not more than 120 days after the date specified in the existing permit and does not interfere with attainment of the final compliance date requirement; or
- (4) Allow for a change in ownership or operational control of a facility where the Director determines that no other change in the permit is necessary, provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new Permittees has been submitted to the Director.
- (5) Change quantities or types of fluids injected which are within the capacity of the facility as permitted and, in the judgment of the Director, would not interfere with the operation of the facility or its ability to meet conditions described in the permit and would not change its classification.
- (6) Change construction requirements approved by the Director pursuant to 40 CFR §144.52(a)(1) (establishing UIC permit conditions), provided that any such alteration shall comply with the requirements of 40 CFR §144 and 40 CFR §146.
- (7) Amend a plugging and abandonment plan which has been updated.

d) Transfer of Permit

- (1) Transfers by Modification. Except as provided in Part II.D.6.d.2, a permit may be transferred by the Permittee to a new owner or operator only if the permit has been modified or revoked and reissued, or a minor modification to identify the new

Permittee and incorporate such other requirements as may be necessary under the Safe Drinking Water Act.

(2) Automatic Transfers. As an alternative to transfers under Part II.D.6.d.2.i, of this section, any UIC permit for a well not injecting hazardous waste or injecting carbon dioxide for geologic sequestration may be automatically transferred to a new Permittee if:

- i. The current Permittee notifies the Director at least 30 days in advance of the proposed transfer date;
- ii. The notice includes a written agreement between the existing and new Permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them, and the notice demonstrates that the following financial responsibility requirements of 40 CFR §144.52(a)(7) will be met by the new Permittee:

The Permittee, including the transferor of a permit, is required to demonstrate and maintain financial responsibility and resources to close, plug, and abandon the underground injection operation in a manner prescribed by the Director until:

- (A) The well has been plugged and abandoned in accordance with an approved plugging and abandonment plan and submitted a plugging and abandonment report; or
- (B) The well has been converted, or
- (C) The transferor of a permit has received notice from the Director that the owner or operator receiving transfer of the permit, the new Permittee, has demonstrated financial responsibility for the well.

The Permittee shall show evidence of such financial responsibility to the Director by the submission of a surety bond, or other adequate assurance, such as a financial statement or other materials acceptable to the Director.

- iii. The Director does not notify the existing Permittee and the proposed new Permittee of the intent to modify or revoke and re-issue the permit. A modification under this paragraph may also be a minor modification under Part II.D.6.c. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in Part II.D.6.2.ii.

7. Property Rights (40 CFR §144.51(g))

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

8. Duty to Provide Information (40 CFR §144.51(h))

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 re-issuing, or terminating this permit, or to determine compliance with this permit. The

Permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

9. Inspection and Entry (40 CFR §144.51(i))

The Permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by the 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 are 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 and / or UWQA any substances or parameters at any location.

10. Monitoring and Records (40 CFR §144.51(j))

- a) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
- b) The Permittee shall retain records of all monitoring information, including the following:
 - (1) 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 application for this permit, for a period of at least 3 years from the date of the sample, measurement, report, or application. This period may be extended by request of the Director at any time; and
 - (2) The nature and composition of all injected fluids until three years after the completion of any plugging and abandonment as appropriate. The Director may require the owner or operator to deliver the records to the Director at the conclusion of the retention period.
- c) Records of monitoring information shall include:
 - (1) The date, exact place, and time of sampling or measurements;
 - (2) The individual(s) who performed the sampling or measurements;
 - (3) The date(s) analyses were performed;
 - (4) The names of individual(s) who performed the analyses;
 - (5) The analytical techniques or methods used, and
 - (6) The results of such analyses.

11. Signatory Requirements (40 CFR §§144.51(k))

All reports or other information submitted as required by this permit or requested by the Director, shall be signed and certified as follows:

a) Applications. All permit applications shall be signed as follows:

- (1) For a corporation: by a responsible corporate officer². For the purpose of this section, a responsible corporate officer means:
 - i. A president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or
 - ii. the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
- (2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or
- (3) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:
 - i. The chief executive officer of the agency, or
 - ii. A senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

b) Reports. All reports required by permits and other information requested by the Director shall be signed by a person described in section a), or by a duly authorized representative of that person. A person is a duly authorized representative only if:

- (1) The authorization is made in writing by a person described in Part II.D.11.a;
- (2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility. A duly authorized representative may thus be either a named individual or any individual occupying a named position, and
- (3) The written authorization is submitted to the Director.

c) Changes to authorization. If an authorization under Part II.D.11.b is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Part II.D.11.b must be

² DEQ does not require specific assignments or delegations of authority to responsible corporate officers identified in 40 CFR §144.32(a)(1)(i). DEQ will presume that these responsible corporate officers have the requisite authority to sign permit applications unless the corporation has notified the Director to the contrary. Corporate procedures governing authority to sign permit applications may provide for assignment or delegation to applicable corporate positions under 40 CFR §144.32(a)(1)(ii) rather than to specific individuals.

submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.

- d) Certification. Any person signing a document under Part II.D.11.a or Part II.D.11.b shall make the following certification:

“I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHER AND EVALUATE THE INFORMATION SUBMITTED BASED ON MY INQUIRY OF THE PERSON OR PERSONS WHO MANAGE THE SYSTEM, OF THOSE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION SUBMITTED IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS.”

12. Reporting Requirements (40 CFR §144.51(l))

Specific requirements for reporting the following items are included in Part III of the permit.

- a) Planned Changes

The Permittee shall give written notice to the Director, as soon as possible, of any planned physical alterations or additions to the UIC-permitted facility. Notification of planned changes on the part of the Permittee does not stay any permit condition.

- b) Anticipated Noncompliance

The Permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity that may result in noncompliance with permit requirements. Notification of anticipated noncompliance on the part of the Permittee does not stay any permit condition.

- c) Permit Transfers

This permit is not transferable to any person except in accordance with Part II.D.6.d. The Director may require modification or revocation and re-issuance of the permit to change the name of the Permittee and incorporate such other requirements as may be necessary under the Safe Drinking Water Act and / or the UWQA.

- d) Monitoring Reports

Monitoring results shall be reported at the intervals specified in Part III of this permit.

- e) Compliance Schedule

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule specified in Part III B of this permit shall be submitted no later than 30 days following each schedule date.

- f) Noncompliance

The Permittee shall report to the Director any noncompliance that may endanger health or the environment, as follows:

- (1) Twenty-four Hour Reporting

Noncompliance information shall be provided orally within 24 hours from the time the Permittee becomes aware of the circumstances. Such reports shall include, but not be limited to, the following information:

- i. Any monitoring or other information that indicates any contaminant may cause an endangerment to a USDW, or
- ii. Any noncompliance with a permit condition, or malfunction of the injection system, which may cause fluid migration into or between USDWs.

(2) Five-day Reporting

A written submission shall be provided within five days of the time the Permittee becomes aware of the circumstances of the endangering noncompliance. The written submission shall contain a description of the noncompliance and its cause, the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

g) Other Noncompliance

The Permittee shall report all instances of noncompliance not reported under Parts II.D.12.d, II.D.12.e, and II.D.12.f of this section in the next Monitoring Report. The reports shall contain a description of the noncompliance and its cause, the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

h) Other Information

When the Permittee becomes aware of a failure to submit any relevant facts in the 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 within 10 days after becoming aware of the failure to submit relevant facts.

13. Requirements Prior to Commencing Injection (40 CFR §144.51(m))

a) For a new injection well authorized by individual permit, a new injection well may not commence injection until construction is complete, and

- (1) The Permittee has submitted notice of completion of construction to the Director; and
- (2) Either of the following:
 - i. The Director has inspected or otherwise reviewed the new injection well and finds it complies with the conditions of the permit; or
 - ii. The Permittee has not received notice from the Director of his or her intent to inspect or otherwise review the new injection well within 13 days of the date of the notice in Part II.D.13.a, in which case prior inspection or review is waived and the Permittee may commence injection. The Director shall include in his notice a reasonable time period in which the well shall be inspected.

- b) For new injection wells authorized by an area permit under Utah Admin. Code R317-7-7 (40 CFR §144.33), requirements prior to commencing injection shall be specified in Part III of the permit.
14. Notification Prior to Conversion or Abandonment. (40 CFR §144.51(n))
The Permittee shall notify the Director at such times as the permit requires before conversion or abandonment of the well or in the case of area permits before closure of the projects.
15. Plugging and Abandonment Requirements. (40 CFR §144.51(o))
A Class V permit may include conditions for developing a plugging and abandonment plan that meets the applicable requirements of Utah Admin. Code R317-7 to ensure that plugging and abandonment of the well will not allow the movement of fluids into or between USDWs. If the plan meets the plugging and abandonment requirements of Utah Admin. Code R317-7, the Director shall incorporate it into the permit as a permit condition. Where the review of the plan submitted in the permit application indicates the plan is inadequate, the Director may require the applicant to revise the plan, prescribe conditions meeting the requirements of this paragraph, or deny the permit. For purposes of this paragraph, temporary or intermittent cessation of injection operations is not abandonment. Requirements for implementing the approved plugging and abandonment plan are specified in Part III of this permit.
16. Plugging and Abandonment Report. (40 CFR §144.51(p))
If a plugging and abandonment plan is required, requirements for submitting a plugging and abandonment report are specified in Part III of this permit.

PART III. SPECIFIC PERMIT CONDITIONS

A. DURATION OF PERMIT
(R317-7-9.5 and 40 CFR §144.36)

This UIC Class V ASR permit shall be issued for 5 years.

B. COMPLIANCE SCHEDULE
(40 CFR §144.53)

There are no compliance items at this time.

C. CONSTRUCTION REQUIREMENTS

This permit does not authorize the construction of new ASR wells. If the Permittee wishes to construct a new ASR well, an application for a major permit modification will be required.

D. REQUIREMENTS PRIOR TO INJECTION
(40 CFR §146.34(b))

For this permit, there are no additional requirements prior to the commencement of injection.

E. OPERATING REQUIREMENTS
(R317-7-10.2(A))

1. Class V ASR Injection Well Operation Standards

Class V ASR wells shall be operated to meet the performance standard (R317-7-5(5.3) and 40 CFR §144.12(a)) for the UIC Program which states that:

No owner or operator of an injection well 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 or may otherwise adversely affect the health of persons.

2. Operating Plan

The approved and enforceable Operating Plan that meets all the operating requirements of this section is included as Attachment E of this permit.

3. Injection Zone

Injection is explicitly limited to the Quaternary age sediments located in Salt Lake County at approximately 6800 to 9800 South and 700 to 2700 East which is bounded by the following latitudes and longitudes: Latitude 40° 33' 30" N to 40° 37' 10" N and Longitude 111° 48' 30" E to 111° 53' 00" E.

4. Injection Pressure and Rate Limitation

Injection pressure and injection rate shall be limited to prevent flowing artesian conditions in any well within the 2-mile radius of review around each well being used for injection.

5. Injection Volume Limitation

The injection volume is limited by the Ground Water Recharge Permit issued by the Utah Division of Water Rights. No additional restrictions on the injection volume are imposed by the Utah UIC Program.

6. Injection Fluid Limitations

- a) Fluid injected through all wells is expressly limited to water from:
Deer Creek Reservoir,
Provo River,
Bell Canyon Creek,
Middle Fork Dry Creek,
South Fork Dry Creek,
Big Willow Creek,
Rocky Mouth Creek,
Central Water Project, and
Southwest Groundwater Project
- b) Prior to injection the water shall be fully treated by the Jordan Valley Water Treatment Plant, the Southeast Regional Water Treatment Plant, the Southwest Water Treatment Plant, the Little Cottonwood Water Treatment Plant, the Don A. Christiansen Water Treatment Plant or the Point of the Mountain Water Treatment Plant.
- c) Injected water shall meet all Federal and State Maximum Contaminant Levels for Drinking Water (MCLs), and State Ground Water Quality Standards. The maximum total dissolved solids (TDS) of injected water shall not exceed 500 milligrams per liter (mg/l).
- d) The Permittee shall not inject any hazardous waste as defined by Utah Admin. Code R315- 2-3 or 40 CFR §261 at any time during the operation of the facility.
- e) All additives introduced into the injection stream must meet all Utah Rules for Public Drinking Water Systems in Utah Admin. Code R309-525-11.
- f) The Permittee shall notify the Director in writing within 10 days of any changes in the injection fluid or process additives that may alter the quality or chemical composition of the injection fluid.

- g) Upon notification of a spill or dumping incident which may adversely affect the quality of the injectate or any finding by the Permittee or the Director that the injection fluid has exceeded Federal or State MCLs, State Ground Water Quality Standards, TDS of 500 mg/l, or may otherwise affect the health of persons, the Permittee shall stop injection immediately. Injection shall not re-commence until approval has been received by the Director.

7. Security

- a) At the 9800 South 2400 East injection well site: The fiberglass enclosure over the wellhead shall be maintained in good condition, kept in place and padlocked shut except during times of maintenance work by the Permittee personnel. The gate in the six-foot high fence shall be kept locked except during site visits by the Permittee personnel.
- b) At all other well sites: For shaft-driven well pumps, wellheads shall be inside a locked, brick pump building. For submersible motor-driven pumps where the wellhead is outside a pump building, the wellhead shall be kept closed with bolted flange connections. Each of these wellheads shall be kept behind six-foot high fences with locked gates except during site visits by the Permittee personnel.

F. MONITORING AND RECORDING REQUIREMENTS
(R317-7-10(10.3.B), 40 CFR §§144.54, and 40 CFR §§146.34)

1. Class V ASR Injection Well Monitoring and Recording Standards

Monitoring and recording requirements for UIC permits are set forth in 40 CFR §§144.54 details of which are included in the following permit conditions.

2. Monitoring, Recording, and Reporting Plan

The approved and enforceable Monitoring, Recording and Reporting Plan that meets all the monitoring and recording requirements of this section is included as Attachment F of this permit.

3. Monitoring Equipment and Methods

All monitoring equipment shall be properly selected, installed, used, and maintained according to the manufacturer's specifications so as to yield data which is representative of the monitored activity. All monitoring methods shall be properly selected and implemented at appropriate intervals and frequency so as to yield data which are representative of the monitored activity. Documentation verifying, if applicable, the proper selection, installation, use, and maintenance of monitoring equipment and the proper implementation of monitoring methods shall be made available to the Director upon request.

4. Injectate Characterization

Injectate water shall be analyzed for the parameters listed in Attachment G of the permit. Utilizing proper chain-of-custody procedures, monitoring samples must be sent to a State-certified environmental lab for analyses. Sample analysis shall comply with applicable analytical methods cited and described in Table IB of 40 CFR §136.3 or in Appendix III of 40 CFR §261 or in certain circumstances by other methods that have been approved by the Director.

Field parameters shall be determined immediately prior to collection of all water quality samples and shall include: pH, temperature, and specific conductivity.

Recharge water samples shall be collected and analyzed according to the sampling schedule in Attachment G of the permit.

5. Injection Pressure, Injection Rate, and Injection Volume

During an injection event, the Permittee shall monitor the injection pressure and either the injection rate or injection volume semi-monthly, or metering and daily recording of injected and produced fluid volumes as appropriate.

6. Injection Zone Fluid Level

The Permittee shall monitor the fluid level in the injection zone immediately before and after each injection event, where appropriate, or semi-monthly for injection events of sufficient duration.

G. REPORTING REQUIREMENTS
(R317-7-10.4(B) and 40 CFR §144.54)

1. Quarterly Monitoring Reports

The Permittee is required to submit a report to the Director for each calendar quarter.

a) Schedule for Submitting Quarterly Monitoring Report

<u>Quarter</u>		<u>Report Due On:</u>
1 st Quarter	Jan 1 – Mar 31	June 15
2 nd Quarter	Apr 1 – Jun 30	September 15
3 rd Quarter	Jul 1 – Sep 30	December 15
4 th Quarter	Oct 1 – Dec 31	March 15

b) Content of Quarterly Monitoring Reports

For any quarter during which water is not injected, reporting may consist of a written statement (letter) declaring that injection did not occur. When injection did occur, monitoring data for the following shall be included in the quarterly monitoring report:

- (1) Injectate Characterization

- (2) Injection Pressure, Rate, Volume
- (3) Injection Zone Fluid Level
- (4) Noncompliance Not Previously Reported – Such reports shall contain a description of the noncompliance and its cause, the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.
- (5) Other Required Monitoring

2. Noncompliance Reporting

The Permittee shall report to the Director any noncompliance that may endanger health or the environment, as follows:

a) Twenty-four Hour Reporting

Noncompliance information shall be provided orally within 24 hours from the time the Permittee becomes aware of the circumstances. Such reports shall include, but not be limited to, the following information:

- (1) Any monitoring or other information that indicates any contaminant may cause an endangerment to a USDW, or
- (2) Any noncompliance with a permit condition, or malfunction of the injection system, which may cause fluid migration into or between USDWs.

b) Five-day Reporting

A written submission shall be provided within five days of the time the Permittee becomes aware of the circumstances of noncompliance. The written submission shall contain a description of the noncompliance and its cause, the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

3. Planned Changes

The Permittee shall give written notice to the Director, as soon as possible, of any planned physical alterations or additions to the UIC-permitted facility. Notification of planned changes on the part of the Permittee, does not stay any permit condition.

4. Anticipated Noncompliance

The Permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity that may result in noncompliance with permit requirements. Notification of anticipated noncompliance on the part of the Permittee, does not stay any permit condition.

5. Permit Transfers

This permit is not transferable to any person except in accordance with Part II.D.6.d of this permit. The current Permittee shall notify the Director at least 30 days in advance of the

proposed transfer date. Notification shall comply with the requirements in Part II.D.6.d of this permit.

6. Compliance Schedule Reporting

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule specified in Part III B of this permit shall be submitted no later than 30 days following each schedule date.

7. Permit Review Report

Within 30 days after receipt of this permit, the Permittee shall report to the Director that the person(s) responsible for implementing this permit has read and is personally familiar with all terms and conditions of this permit.

8. Electronic Reporting

In addition to submission of the hard copy data, the Permittee shall submit the required monitoring data in the electronic format specified by the Director.

H. PLUGGING AND ABANDONMENT REQUIREMENTS
(40 CFR §146.10 and R317-7-10(10.5))

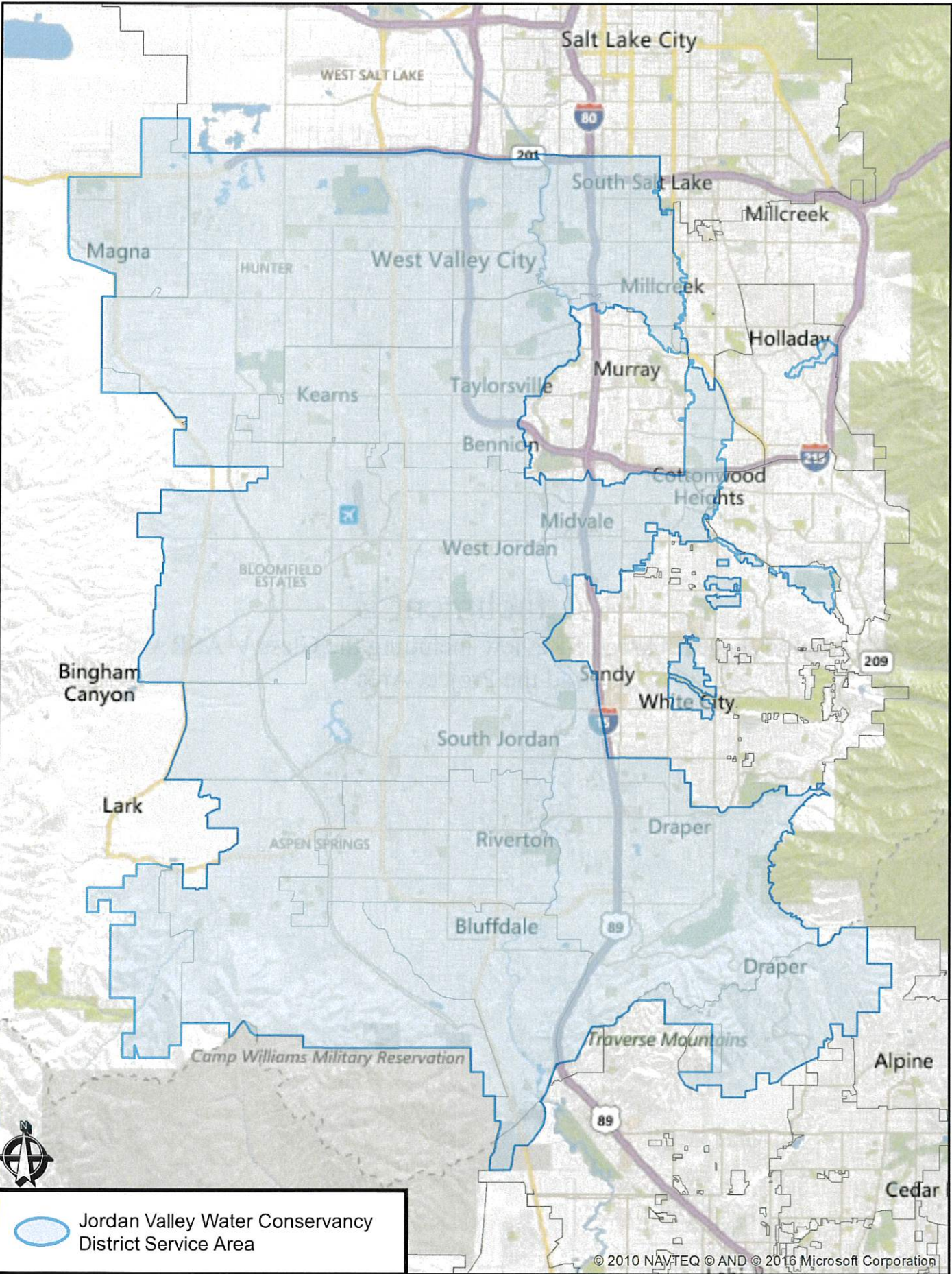
In the event any of the Permittee's water wells are required to be plugged and abandoned, it shall be done so in such a manner as to be protective of any USDW and according to the requirements of the Utah Divisions of Water Rights and Drinking Water.


I. FINANCIAL RESPONSIBILITY
(R317-7-9.1(24) and 40 CFR §144.52)

The Permittee is not required to maintain financial responsibility and resources to plug and abandon the permitted injection well facilities beyond that which is required by the Utah Divisions of Water Rights and Drinking Water.

Attachment A

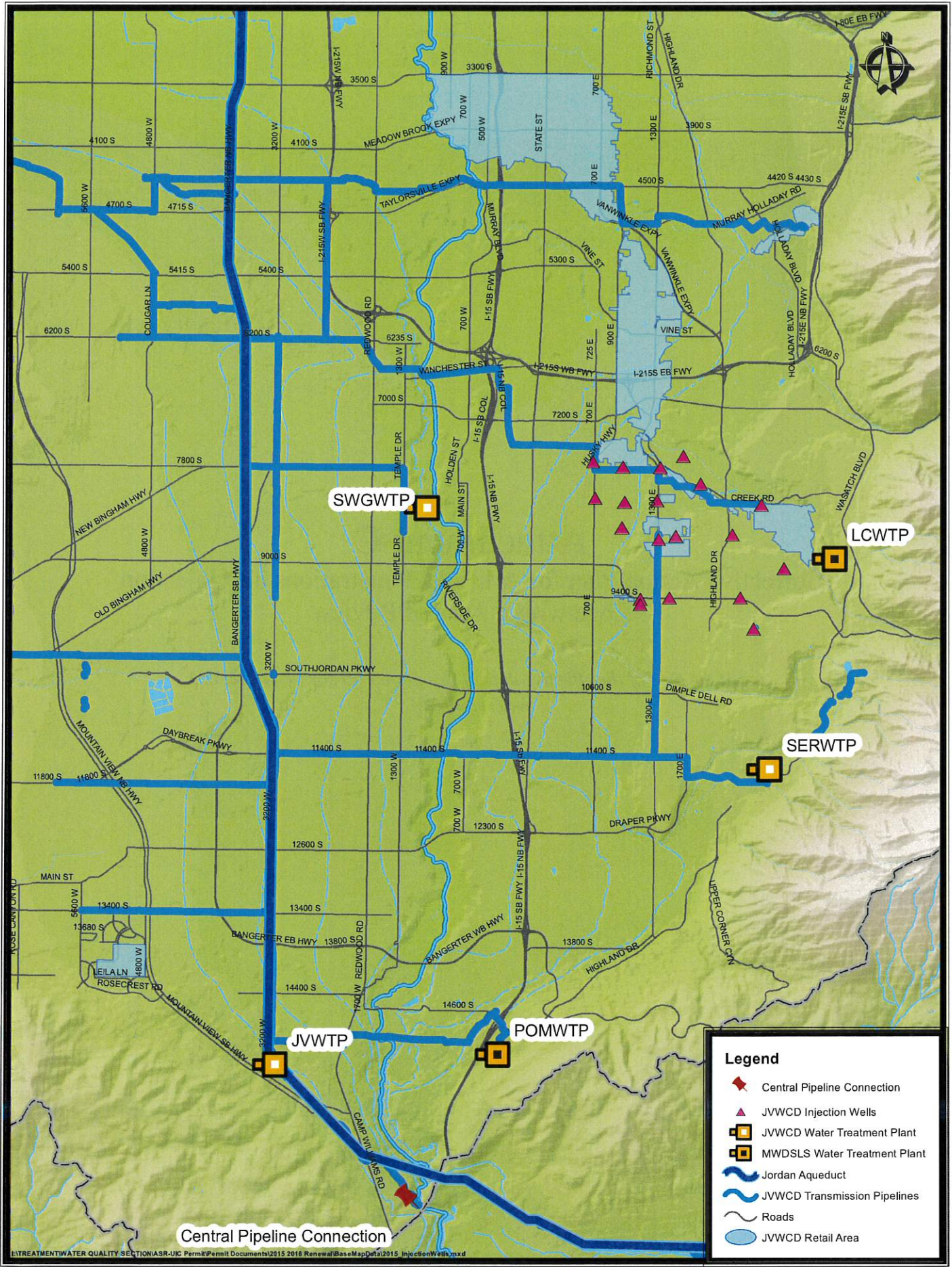
General Location Map of the Jordan Valley Water Conservancy
District Project, Salt Lake County



 Jordan Valley Water Conservancy District Service Area

Attachment B

Map of the UIC Area of Review including the Class V ASR Wells
and the Project Area



Legend

- ◆ Central Pipeline Connection
- ▲ JWWCD Injection Wells
- JWWCD Water Treatment Plant
- MWDSLS Water Treatment Plant
- Jordan Aqueduct
- JWWCD Transmission Pipelines
- Roads
- JWWCD Retail Area

Central Pipeline Connection

Attachment C

Corrective Action Plan for Artificial Penetrations into Injection Zone within Area of Review

*(At the time of the effective date of this permit no corrective action
was required.)*

Attachment D
Driller's Log and Injection Well Construction
Details of Each Injection Well

Utah Division of Water Rights



WELLPRT Well Log Information Listing

Version: 2003.09.18.00 Rundate: 10/11/2003 03:24 PM

Utah Division of Water Rights

Water Well Log

LOCATION:

N 560 ft W 313 ft from S4 CORNER of SECTION 32 T 2S R 1E BASE SL Elevation: feet

DRILLER ACTIVITIES:

ACTIVITY # 1 NEW WELL
 DRILLER: HUMBOLDT DRILLING & PUMP CO INC LICENSE #: 699
 START DATE: 01/10/1998 COMPLETION DATE: 02/27/1998

BOREHOLE INFORMATION:

Depth(ft)		Diameter(in)	Drilling Method	Drilling Fluid
From	To			
0	85	40	REVERSE CIRCULATION	H 2 O
85	767	28	REVERSE CIRCULATION	H 2 O

LITHOLOGY:

Color	Depth(ft)	Lithologic Description
From	To	Rock Type
0	6	CLAY
		CLAY
6	14	SILT, SAND
		SILTY SAND
14	20	CLAY
BROWN		SOFT BROWN CLAY
20	28	SAND
		COARSE TO FINE SAND
28	35	CLAY
BROWN		BROWN CLAY
35	50	SAND, GRAVEL
		SAND AND GRAVEL
50	52	SAND
		FINE SAND
52	57	SAND, GRAVEL, COBBLES
		SAND, GRAVEL W/COBBLES
57	64	SAND
		FINE TO MED. SAND
64	85	CLAY, SAND, GRAVEL
		SAND W/SMALL GRAVEL W/LITTLE CLAY
85	101	CLAY, SAND, GRAVEL
		SAND & GRAVEL W/CLAY
101	111	SAND, GRAVEL
		SAND & SMALL GRAVEL
111	113	CLAY, SAND, GRAVEL
BROWN		SAND & GRAVEL W/BROWN CLAY
113	118	SAND, GRAVEL

WELL DRILLER'S REPORT

State of Utah

Division of Water Rights

For additional space, use "Additional Well Data Form" and attach

Well Identification: CHANGE APPLICATION: a21807(57-2231) PRODUCTION WELL
1145 E. WEBSTER DRIVE WELL ✓

Owner: Salt Lake County Water Conservancy District
P.O. Box 70
West Jordan, UT 84084-0070

Contact Person/Engineer: Hansen, Allen & Luce, Inc.

Well Location: COUNTY: Salt Lake
SOUTH 512 feet EAST 1278 feet from the N $\frac{1}{4}$ Corner of
SECTION 8, TOWNSHIP 3S, RANGE 1E, SLE&M.

Location Description: (address, proximity to buildings, landmarks, ground elevation, local well #). 1145 E. Webster Drive Well
Sandy, Utah

Drillers Activity: Start Date: June 25, 1998 Completion Date: September 22, 1998

Check all that apply:
 New Repair Deepen Abandon Replace Public Nature of Use: Production Well

DEPTH (feet) FROM	TO	BOREHOLE DIAMETER (in)	DRILLING METHOD	DRILLING FLUID
0	40	42	Auger	Bentonite
0	1122	28	Reverse Air Rotary	Bentonite

Well Log	DEPTH (feet) FROM	TO	WATER	PERMEABILITY high low	UNCONSOLIDATED					CONSOLIDATED		ROCK TYPE	COLOR	DESCRIPTIONS AND REMARKS (include comments on water quality if known.)
					CLAY	SILT	SAND	GRAVEL	COBBLES	OTHER	BOULDER			
	0	2												Top soil
	2	50			X	X	X						tan	Clay w sand & gravel
	50	75			X	X							tan	Sandy with clay
	75	95					X	X						Gravel with small cobbles
	95	100			X								tan	Soft tan clay
	100	115			X	X							tan	Soft tan clay w/ small amount of sand
	115	145			X								tan	Sticky tan clay
	145	150					X	X						Gravel with cobbles
	150	175				X	X							Sandy with gravel
	175	200				X	X							Sand and small gravels

Static Water Level: Date: September 21, 1998 Water Level: 284 feet Flowing? Yes No
Method of Water Level Measurement: sounder If Flowing, Capped Pressure: N/A PSI
Point to Which Water Level Measurement was Referenced: Top of casing
Height of Water Level reference point above ground surface: 1 feet Temperature: 65 °C °F

SLCWCD-10

Copied 11-9-55
Exam. & Recorded 1-13-55
Exam. for filing 1-13-55
Final Copy checked
Indexed 2-9-55
Well No. D-3-1) 8 a 69-1

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Report No. 11116
Filed Nov. 19, 1954
Rec. By mm
Ret'd

Report of Well and Tunnel Driller STATE OF UTAH

(Separate report shall be filed for each well or tunnel)

GENERAL INFORMATION:

Report of well or tunnel driller is hereby made and filed with the State Engineer, in compliance with Sec. 100-3-22, Utah Code Annotated, 1943. (This report shall be filed with the State Engineer within 30 days after the completion or abandonment of well or tunnel. Failure to file such report constitutes a misdemeanor.)

- Name and address of person, company or corporation boring or drilling well or tunnel.
(Strike words not needed)
J. S. Lee and Sons 4091 South State Street Salt Lake City, Utah
- Name and address of owner of well or tunnel.
(Strike words not needed)
County water System
- Source of supply is in Salt Lake County;
(Leave blank) drainage area; (Leave blank) artesian basin
- The number of approved application to appropriate water is 24398
- Location of well or mouth of tunnel is situated at a point 94 th South 13 th East
S. 55 ft. and W. 1340 ft. from NE Cor. Sec. 8, T. 2 S., R. 1 E., S. L. B. & M.
(Describe by rectangular co-ordinates or by one course and distance with reference to U. S. Government Survey Corner - Copy description from well owner's approved application)
- Date on which work on well or tunnel was begun May 10, 1964
(Strike words not needed)
- Date on which work on well or tunnel was completed or abandoned May 31, 1964
(Strike words not needed)
- Maximum quantity of water measured as flowing, pumped or on completion of well or tunnel in sec. ft.; or in gals. per minute. Date.

DETAIL OF COLLECTING WORKS:

- WELL: It is drilled, dug, flowing or pump well. Temperature of water °F.
(Strike words not needed)
 - Total depth of well is 531 ft. below ground surface.
 - If flowing well, give water pressure (hydrostatic head) above ground surface ft.
 - If pump well, give depth from ground surface to water surface before pumping; during pumping.
 - Size and kind of casing 16" steel
(If only partially cased, give details)
 - Depth to water-bearing stratum
(If more than one stratum, give depth to each)
 - If casing is perforated, give depth from ground surface to perforations 243'-531'
 - Log of well 0'-4' Top soil, 48'-65' fine sand, 65'-106' Blue clay, 105'-123' sand and water, 123'-163' clay, 163'-172' sand and water, 172'-185' clay, 185'-216' dirty gravel, 216'-254' fine sand, 254'-257' clay, 257'-266' fine sand, 266'-271' clay, 271'-283' fine sand, 283'-312' sand hard clay, 312'-330' sandy clay, 330'-343' coarse sand, 343'-375' sandy clay, 375'-395'
 - Well was equipped with cap, valve, or to control flow.
(Strike words not needed)
sand 395'-410' clay 410'-475' sand, 475'-490' water gravel, 490'-509' clay and sand, 509'-531' water gravel.

(Over)

SLC WCD-5

POSTMASTER
Exam. & Recorded 12-17-58
Exam. for filing 12-24-58
Final Copy checked
Indexed 12-16-58
Well No. 10-2-118 18cc-3

2 copies
PAGE _____
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Report No. 12697
Filed Dec 24 1958
Rec. By DMC
Ret'd _____

Report of Well and Tunnel Driller

STATE OF UTAH

(Separate report shall be filed for each well or tunnel)

GENERAL INFORMATION:

Report of well or tunnel driller is hereby made and filed with the State Engineer, in accordance with the laws of Utah. (This report shall be filed with the State Engineer within 30 days after the completion or abandonment of well or tunnel. Failure to file such reports constitutes a misdemeanor.)

- Name and address of person, company or corporation boring or drilling well or tunnel.
(Strike words not needed)
J. S. Lee and Sons, 4031 South State Street, Salt Lake City, Utah
- Name and address of owner of well or tunnel.
(Strike words not needed)
S. L. Mott, Cassavady District, Salt Lake City, Utah
- Source of supply is in Salt Lake County;
drainage area: _____
(Leave blank) (Leave blank) artesian basin
- The number of approved application to appropriate water is A-26318 & a-3166 #1
- Location of well or mouth of tunnel is situated at a point.
N. 295 ft. & E. 440 ft. from SW Cor. Sec. 28, T2S, R1E, SLBAM.
(Describe by rectangular co-ordinates or by one course and distance with reference to U. S. Government Survey Corner - Copy description from well owner's approved application)
- Date on which work on well or tunnel was begun 29, 1956
(Strike words not needed)
- Date on which work on well or tunnel was completed or abandoned Aug. 28, 1956
(Strike words not needed)
- Maximum quantity of water measured as flowing, pumped or _____ on completion of well or tunnel in sec.-ft. _____; or in gals. per minute 1460 Date 8/28/56
(Strike words not needed)

DETAIL OF COLLECTING WORKS:

- WELL: It is drilled, dug, flowing or pump well. Temperature of water _____ °F.
(Strike words not needed)
 - Total depth of well is 619 ft. below ground surface.
 - If flowing well, give water pressure (hydrostatic head) above ground surface _____ ft.
 - If pump well, give depth from ground surface to water surface before pumping 192 _____; during pumping 219
 - Size and kind of casing 16" Steel
(If only partially cased, give details)
 - Depth to water-bearing stratum _____
(If more than one stratum, give depth to each)
 - If casing is perforated, give depth from ground surface to perforations 515-530
535-555 592-670
 - Log of well 0-10 Sand and Boulders, 10-30 Sand and Gravel, 30-65 Sandy Clay, 65-69 Cong. 69-135 Sand Clay and Gravel, 135-178 Gravel and Sand, 178-230 Sand and Gravel, 230-287 Sand and Clay, 287-290 Sand and Gravel, 290-315 Sand, 315-393 Sand Clay, 393-403 Cong. 403-459 Sand and Gravel 459-482 Sand, 482-515 Clay and Gravel, 515-525 Cong. 525-530 Water Gravel, 530-535 Sandy Clay, 535-545 Water Gravel, 545-550 Caly and Gravel, 55-559 Cong. 559-569 Caly and Gravel, 569-576 Cong. 576-583 Water Gravel 583-663 Water Gravel and Cong. 663-665 Clay 665-679 Clay and Gravel 679-680 Clay 680-686 Sand and Gravel 686-691 Clay.
 - Well was equipped with cap, valve, or _____ to control flow.
(Strike words not needed)

Do not copy

(Over)

well.

57-2893

REPORT OF WELL DRILLER STATE OF UTAH

Application No. 29908 Claim No. Coordinate No. (D-2-1) 666

GENERAL STATEMENT: Report of well driller is hereby made and filed with the State Engineer, in accordance with the laws of Utah. (This report shall be filed with the State Engineer within 30 days after the completion or abandonment of the well. Failure to file such reports constitutes a misdemeanor.)

(1) WELL OWNER: Name Sall Lake County Conservancy Dist. Address 3383 South 3rd East

(2) LOCATION OF WELL: County Sall Lake Ground Water Basin (leave blank) East 70 feet from NW Corner of Section 4 T. 3 R. 1 E SLBM

(3) NATURE OF WORK (check): New Well [X] Repair [] Abandon []

(4) NATURE OF USE (check): Domestic [] Industrial [] Municipal [X] Stockwater []

(5) TYPE OF CONSTRUCTION (check): Rotary [] Dug [] Jetted [] Cable [X] Driven [] Bored []

(6) CASING SCHEDULE: Threaded [] Welded [X] 24" Diam. from 0 feet to 36 feet Gage 375 20" Diam. from 0 feet to 904 feet Gage 375

(7) PERFORATIONS: Perforated? Yes [X] No [] Type of perforator used Mills Blade Type Size of perforations 3/8 inches by 1 1/2 inches

(8) SCREENS: Well screen installed? Yes [X] No [] Manufacturer's Name Type Model No. Diam. Slot size Set from ft. to

(9) CONSTRUCTION: Was well gravel packed? Yes [] No [X] Size of gravel: Gravel placed from feet to feet Was a surface seal provided? Yes [X] No [] To what depth? 80 feet Material used in seal: Cement

Was surface casing used? Yes [X] No [] Cemented in place? Yes [X] No []

(10) WATER LEVELS: Static level 345 feet below land surface Date 7-25-67 Artesian pressure feet above land surface Date

(11) FLOWING WELL: Controlled by (check) Valve [] Cap [] Plug [] No Control [] Does well leak around casing? Yes [] No []

(12) WELL TESTS: Drawdown is the distance in feet the water level is lowered below static level. Was a pump test made? Yes [X] No [] If so, by whom J. S. Lee & Sons Yield: 2500 gal./min. with 40 feet drawdown after 55 hours

(13) WELL LOG: Diameter of well 20 inches Depth drilled 904 feet Depth of completed well 904 feet

NOTE: Place an "X" in the space or combination of spaces needed to designate the material or combination of materials encountered in each depth interval. Under REMARKS make any desirable notes as to occurrence of water and the color, size, nature, etc., of material encountered in each depth interval. Use additional sheet if needed.

Table with columns: DEPTH (From, To), MATERIAL (Clay, Silt, Sand, Gravel, Cobbles, Boulders, Hardpan, Conglomerate, Bedrock, Other), and REMARKS. Includes entries like 'Course Blue Granite Hard Cemented, Streaks of S', 'Cemented Sandy', 'Fine Sandy', 'Cemented', 'With Streaks of Clay', 'OVER'.

Work started June 6, 1967 Completed August 1, 1967

(14) PUMP: Manufacturer's Name Type: Depth to pump or bowles feet

Well Driller's Statement: This well was drilled under my supervision, and this report is true to the best of my knowledge and belief. Name J. S. Lee & Sons Address 4091 South State Street (Signed) Robert E. Lee (Well Driller) License No. 11 Date August 14, 1967



Utah Division of Water Rights



WELLPRT Well Log Information Listing

Version: 2003.09.18.00 Rundate: 10/11/2003 04:59 PM

Utah Division of Water Rights

Water Well Log

LOCATION:

N 112 ft E 1000 ft from SW CORNER of SECTION 4 T 3S R 1E BASE SL Elevation: feet

DRILLER ACTIVITIES:

ACTIVITY # 1 NEW WELL
 DRILLER: ZIM INDUSTRIES INC LICENSE #: 697
 START DATE: 08/03/1998 COMPLETION DATE: 11/13/1998

BOREHOLE INFORMATION:

Depth(ft)		Diameter(in)	Drilling Method	Drilling Fluid
From	To			
0	91	46	AUGER	BENTONITE
91	1134	32	REVERSE AIR ROTARY	BENTONITE

LITHOLOGY:

Color	Depth(ft)		Lithologic Description Rock Type
	From	To	
	0	5	CLAY, SAND TOP SOIL
	5	10	CLAY, SILT, SAND SILTY SAND
BROWN	10	13	CLAY
			CLAY
BROWN	13	45	CLAY, SAND
			CLAY AND SAND
	45	85	SAND, GRAVEL, COBBLES SAND, GRAVEL W/COBBLES
BROWN	85	90	CLAY
			CLAY
	90	140	SAND SAND
	140	145	CLAY, SAND, GRAVEL SAND, CLAY AND GRAVEL
	145	150	SAND SAND
	150	165	CLAY, SAND SAND W/SMALL STREAKS OF CLAY
	165	170	SAND SAND
	170	180	CLAY, SAND SAND W/STREAKS OF CLAY
	180	185	CLAY, SAND, COBBLES SAND W/ SOME COBBLES AND CLAY
	185	200	CLAY, SAND

WELL DRILLER'S REPORT

State of Utah
Division of Water Rights

For additional space, use "Additional Well Data Form" and attach

Well Identification

Change Application: a24821 (57-2508)

WIN: 30366

Owner Note any changes

Jordan Valley Water Conservancy District
P.O. Box 70
West Jordan UT 84084-0070

Contact Person/Engineer: David Hansen Hansen Allen & Co.

Well Location Note any changes

N 283 E 144 from the SW corner of section 28, Township 2S, Range 1E, SL B&M

1784 E Crack Rd, Sandy UT

Location Description: (address, proximity to buildings, landmarks, ground elevation, local well #)

Drillers Activity

Start Date: 9-18-04 Completion Date: 9

Check all that apply: New Repair Deepen Clean Replace Public Nature of Use: _____

If a replacement well, provide location of new well. _____ feet north/south and _____ feet east/west of the existing well.

DEPTH (feet) FROM	DEPTH (feet) TO	BOREHOLE DIAMETER (in)	DRILLING METHOD	DRILLING FLUID
0	50	48"	Auger	Water Bentonite
50'	240'	30"	Reverse Rotary	Water, Bentonite, Drispec
240'	1155	28"	Reverse Rotary	Water Bentonite, Drispec

Well Log

DEPTH (feet) FROM	DEPTH (feet) TO	WATER	ANALYSIS		UNCONSOLIDATED						CONSOLIDATED		ROCK TYPE	COLOR	DESCRIPTION AND REMARKS (e.g., relative %, grain size, sorting, angularity, bedding, grain composition density, plasticity, shape, cementation, consistency, water bearing, odor, fracturing, mineralogy, texture, degree of weathering, hardness, water quality, etc.)	
			High	Low	CLAY	SAND	GRAVEL	COBBLES	BOULDER	OTHER						
0	50'														Brown	
60	70				X										gray	
70	105				X										gray	
105	180				X											
120	265							X	X							
245	295				X											
295	300				X	X	X									
300	335				X	X	X									
335	360				X											
360	430					X										

Static Water Level

Date: 12-28-04 Water Level: 314.49 feet Flowing? Yes No
 Method of Water Level Measurement: Electric Sounder If Flowing, Capped Pressure: _____ PSI
 Point to Which Water Level Measurement was Referenced: Brand level Elevation: _____
 Height of Water Level reference point above ground surface: _____ feet Temperature: _____ degrees C F

Examined 1-5-68 H.C. [Signature]
Recorded: B. C. [Signature]
Inspection Sheet JAN 20 1968

REPORT OF WELL DRILLER
STATE OF UTAH

Application No. 26318 #2
Claim No.
Coordinate No. D-2-133aba

GENERAL STATEMENT: Report of well driller is hereby made and filed with the State Engineer, in accordance with the laws of Utah. (This report shall be filed with the State Engineer within 30 days after the completion or abandonment of the well. Failure to file such reports constitutes a misdemeanor.)

(1) WELL OWNER:
Name SALT LAKE CO. CONSERV. DIST.
Address CRICK ROAD

(2) LOCATION OF WELL:
County Salt Lake Ground Water Basin
North 512.88 feet East 175.0 feet from NE Corner
South 512.88 feet West 175.0 feet from NE Corner
of Section 33 T. 2 N. R. 1 E SLBM

(3) NATURE OF WORK (check):
New Well [X]
Replacement Well [] Deepening [] Repair [] Abandon []

(4) NATURE OF USE (check):
Domestic [] Industrial [] Municipal [] Stockwater []
Irrigation [] Mining [] Other [] Test Well []

(5) TYPE OF CONSTRUCTION (check):
Rotary [] Dug [] Jetted []
Cable [X] Driven [] Bored []

(6) CASING SCHEDULE: Threaded [] Welded [X]
2.0" Diam. from 0 feet to 404.7 feet Gage 3/16"
1.6" Diam. from 380 feet to 726 feet Gage 3/16"
1.4" Diam. from 705 feet to 904 feet Gage 3/16"

(7) PERFORATIONS: Perforated? Yes [X] No []
Types of perforator used Mills
Size of perforations 28 inches by 28 inches
perforations from 904 feet to 923 feet
perforations from 923 feet to 935 feet
perforations from 935 feet to 947 feet
perforations from 947 feet to 955 feet
perforations from 955 feet to 968 feet
perforations from 968 feet to 975 feet

(8) SCREENS: Well screen installed? Yes [] No [X]
Manufacturer's Name
Type Model No.
Diam. Slot size Set from ft. to
Diam. Slot size Set from ft. to

(9) CONSTRUCTION:
Was well gravel packed? Yes [] No [X] Size of gravel:
Gravel placed from feet to feet
Was a surface seal provided? Yes [X] No []
To what depth feet
Material used in seal: CEMENT
Did any strata contain unusable water? Yes [] No [X]
Type of water: G.O.C.D. Depth of strata
Method of sealing strata off:

Was surface casing used? Yes [X] No []
Was it cemented in place? Yes [X] No []

(10) WATER LEVELS:
Static level 20.4 feet below land surface Date
Artesian pressure 1.7 feet above land surface Date

LOG RECEIVED: (11) FLOWING WELL:
Controlled by (check) Valve []
Capi [] Plug [] No Control []
Does well leak around casing? Yes [] No [X]

(12) WELL TESTS: Drawdown is the distance in feet the water level is lowered below static level.
Was a pump test made? Yes [X] No [] If so, by whom? J.S. Lewis & Sons
Yield: 359.1 gal./min. with 3.0 feet drawdown after 1.00 hours

(13) WELL LOG: Diameter of well 8.0" - 16" - 14" inches
Depth drilled 904 feet. Depth of completed well 904 feet.

NOTE: Place an "X" in the space or combination of spaces needed to designate the material or combination of materials encountered in each depth interval. Under REMARKS make any desirable notes as to occurrence of water and the color, size, nature, etc., of material encountered in each depth interval. Use additional sheet if needed.

Table with columns: DEPTH (From, To), MATERIAL (Clay, Silt, Sand, Gravel, Cobbles, Boulders, Hardpan, Conspicuous, Bedrock, Other), REMARKS. Includes data rows from 0 to 904 feet depth.

Work started AUG 20 1968 Completed DEC 13 1968

(14) PUMP:
Manufacturer's Name
Type H. P.
Depth to pump or bowles feet

Well Driller's Statement:
This well was drilled under my supervision, and this report is true to the best of my knowledge and belief.
Name J.S. Lewis & Sons
Address 4924 S. 59th ST.
(Signed) J.S. Lewis (Well Driller)
License No. 11 Date DEC 30 1968

REC 30 1968
STATE ENGINEER
SUMNER

SLCWCD-22

W410E 0600S Well

Form 113-3M-11-60

(57-8451)

Examined
Recorded: B. C. T. B.
Inspection Sheet
Copied

REPORT OF WELL DRILLER
STATE OF UTAH

Application No. 4-11060
Claim No.
Coordinate No.

GENERAL STATEMENT: Report of well driller is hereby made and filed with the State Engineer, in accordance with the laws of Utah. This report shall be filed with the State Engineer within 30 days after the completion or abandonment of the well. Failure to file such reports constitutes a misdemeanor.

(1) WELL OWNER:
Name S. L. County Water Conservancy-D
Address 3195 South 300 West

(2) LOCATION OF WELL:
County S. L. Ground Water Basin
North 240 feet West 80 feet from SW Corner
of Section 34 T. 2 S. R. 1 E SLBM

(3) NATURE OF WORK (check):
New Well [X]
Replacement Well [] Deepening [] Repair [] Abandon []

(4) NATURE OF USE (check):
Domestic [] Industrial [] Municipal [X] Stockwater []
Irrigation [] Mining [] Other [] Test Well []

(5) TYPE OF CONSTRUCTION (check):
Rotary [] Dug [] Jetted []
Cable [X] Driven [] Bored []

(6) CASING SCHEDULE:
2 1/2" Diam. from 0 feet to 120 feet Gage 3/8
2 1/2" Diam. from 0 feet to 772 feet Gage 3/8

(7) PERFORATIONS:
Type of perforator used Miller
Size of perforations 1/4 inches by 3 inches
perforations from 435 feet to 461 feet
perforations from 595 feet to 650 feet
perforations from 740 feet to 762 feet

(8) SCREENS:
Well screen installed? Yes [X] No []
Manufacturer's Name Johnson
Type Stainless Steel Model No.
Diam. 18" Slot size 100 Set from 762 ft. to 845
Diam. Slot size Set from ft. to

(9) CONSTRUCTION:
Was well gravel packed? Yes [] No [X] Size of gravel:
Gravel placed from feet to feet
Was a surface seal provided? Yes [X] No []
To what depth 120 feet
Material used in seal: Cement
Did any strata contain unusable water? Yes [] No [X]
Type of water: Depth of strata
Method of sealing strata off:

Was surface casing used? Yes [X] No []
Was it cemented in place? Yes [X] No []

(10) WATER LEVELS:
Static level 375 feet below land surface Date 27-80
Artesian pressure feet above land surface Date

LOG RECEIVED: (11) FLOWING WELL:
Controlled by (check) Valve []
Cap [X] Plug [] No Control []
Does well leak around casing? Yes [] No [X]

(12) WELL TESTS:
Was a pump test made? Yes [X] No [] If so, by whom J. S. Leach & Son
Yield 3024 gal./min. with 60 feet drawdown after 131.5 hours
Bailer test gal./min. with feet drawdown after hours
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? No [] Yes []

(13) WELL LOG:
Diameter of well inches
Depth drilled 875 feet Depth of completed well 875 feet
NOTE: Place an "X" in the space or combination of spaces needed to designate the material or combination of materials encountered in each depth interval. Under REMARKS make any desirable notes as to occurrence of water and the color, size, nature, etc., of material encountered in each depth interval. Use additional sheet if needed.

Table with columns: DEPTH (From, To), MATERIAL (Clay, Silt, Sand, Gravel, Cobbles, Boulders, Hardpan, Conglomerate, Bedrock, Other), and REMARKS. Includes entries for Top Soil, Blue, Fine First Water, Brown, and Gray.

Work started 7-1-80 Completed 5-27-80

(14) PUMP:
Manufacturer's Name
Type H. P.
Depth to pump or bowles feet

Well Driller's Statement:
This well was drilled under my supervision, and this report is true to the best of my knowledge and belief.

Name J. S. Leach & Son Inc.
Address 4001 So. State St.
(Signed) (Well Driller)
License No. 1 Date 6-21-80

Utah Division of Water Rights



WELLPRT Well Log Information Listing

Version: 2003.09.18.00 Rundate: 10/08/2003 10:20 PM

Utah Division of Water Rights

Water Well Log

LOCATION:
 S 2370 ft E 190 ft from N4 CORNER of SECTION 10 T 3S R 1E BASE SL Elevation:
 4948.00 feet

DRILLER ACTIVITIES:
 ACTIVITY # 1 NEW WELL
 DRILLER: LANG EXPLORATORY DRILLING INC LICENSE #: 568
 START DATE: 07/06/1991 COMPLETION DATE: 08/06/1991

BOREHOLE INFORMATION:

Depth(ft)	Diameter(in)	Drilling Method	Drilling Fluid
From 0 To 960	20	ROTARY	

LITHOLOGY:

Color	Depth(ft)	Lithologic Description
	From To	Rock Type
	0 15	SAND, COBBLES
	15 110	SAND, COBBLES
	110 115	CLAY
	115 310	SAND, GRAVEL
	310 370	CLAY, SAND, GRAVEL, COBBLES
	370 430	SAND, GRAVEL
	430 600	CLAY, SAND, GRAVEL
	600 630	SAND
	630 640	CLAY
	640 660	SAND, GRAVEL
	660 690	CLAY, SAND, GRAVEL
	690 710	SAND, GRAVEL, COBBLES
	710 780	CLAY, SAND, GRAVEL
	780 850	CLAY
	850 960	CLAY, SAND, GRAVEL HARD ROCK

WATER LEVEL DATA:

Date	Time	Water Level (feet)	Status
07/25/1991		492.00	STATIC

ADDITIONAL DATA AVAILABLE, USE OTHER PRINT OPTION

CONSTRUCTION - CASING:

Depth(ft)	Material	Gage (in)	Diameter (in)
From To			
0 35		.375	32
+3 610		.375	20
630 650		.375	20
750 870		.375	20

2400 E. Creek Rd, SLCWCO-3

PHOTOSTATED
 Exam. & Recorded 6-17-58
 Exam. for filing 5/22/58
 Final Copy checked
 Indexed 5/22/58
 Well No. (U-2-1)341bb-1

Report No. 13271
 Filed 4-22-58
 Rec. By. A.C.T.
 Ret'd

PAGE (Leave blank)

Report of Well and Tunnel Driller 57-2793/57-2794
STATE OF UTAH
 hjs
 8/9/93

(Separate report shall be filed for each well or tunnel)

GENERAL INFORMATION:

Report of well or tunnel driller is hereby made and filed with the State Engineer, in accordance with the laws of Utah. (This report shall be filed with the State Engineer within 30 days after the completion or abandonment of well or tunnel. Failure to file such reports constitutes a misdemeanor.)

1. Name and address of person, ~~company or corporation~~ ~~drilling~~ well or tunnel.
 (Strike words not needed)
Eldon Comer Lehi, Utah

2. Name and address of owner of well ~~or tunnel~~.
 (Strike words not needed) Happy Valley Inc.
222 South (Willowcreek) Sandy, Salt Lake City, Utah

3. Source of supply is in Sandy Salt Lake County;
 (Leave blank) drainage area; (Leave blank) artesian basin

4. The number of approved application to appropriate water is 11-29271

5. Location of well ~~or mouth of tunnel~~ is situated at a point
No. 2025. ft. and E. 155. ft. from S. 1/4 Cor. Sec. 34, T2S, R1E, S. 1/4 NW

(Describe by rectangular coordinates or by one course and distance with reference to U. S. Government Survey Corner - Copy description from well owner's approved application)

6. Date on which work on well ~~or tunnel~~ was begun January 18, 1958
(Strike words not needed)

7. Date on which work on well, ~~or tunnel~~ was completed ~~or abandoned~~. March 19, 1958
(Strike words not needed)

8. Maximum quantity of water measured ~~as flowing~~, pumped ~~or~~ on completion of
 (Strike words not needed) well ~~or tunnel~~ in sec. ft. 3000; or in gals. per minute. 3000 Date April 17-58

DETAIL OF COLLECTING WORKS:

9. WELL: It is drilled, dug, ~~flowing~~ ~~or~~ pump well. Temperature of water °F.
(Strike words not needed)

- (a) Total depth of well is 400 ft. below ground surface.
- (b) If flowing well, give water pressure (hydrostatic head) above ground surface ft.
- (c) If pump well, give depth from ground surface to water surface before pumping 277 ft.
 ; during pumping
- (d) Size and kind of casing 16 inch o.d. seamless plain end
 (If only partially cased, give details)
- (e) Depth to water-bearing stratum 285 ft.
 (If more than one stratum, give depth to each)
- (f) If casing is perforated, give depth from ground surface to perforations

(g) Log of well 0-20 Boulders, 20-105 Sand, 105-115 Sand & Gravel, 115-152 Sand
152-159 Clay, 159-169 Boulders, 169-190 Sand & Clay, 190-210 Clay Gravel 210-240 Sand
240-255 Sand & Granite Boulders, 265-285 Boulders, 285-365 Gravel (Water)
365-410 Hard Cong., 410-430 Cemented Granite Boulders, 430-450 Sand, 450-460 Gravel
460-464 Sand, 464-520 Hard Conglomerate, 520-630 Clay & Sand, 630-679 Gravel
679-699 Clay, 699-700 Sand,

(h) Well was equipped with cap, valve, or to control flow.
(Strike words not needed)

(Over)

WLI

WELL DRILLER'S REPORT

State of Utah
Division of Water Rights

For additional space, use "Additional Well Data Form" and attach

RECEIVED

MAR 02 1998

**WATER RIGHTS
SALT LAKE**Well Identification CHANGE APPLICATION: a19836(57-8339)

Owner *Note any changes*
Salt Lake County Water Conservancy District
P.O. Box 70
West Jordan, UT 84084-0070

Contact Person/Engineer: _____

Well Location *Note any changes*
COUNTY: Salt Lake
NORTH 1290 feet WEST 500 feet from the S $\frac{1}{4}$ Corner of
SECTION 28, TOWNSHIP 2S, RANGE 1E, SLB&M.

Location Description: (address, proximity to buildings, landmarks, ground elevation, local well #)
1600 East Siesta Drive

Drillers Activity Start Date: 12/02/97 Completion Date: 01/30/98

Check all that apply:

New Repair Deepen Abandon Replace Public Nature of Use:

DEPTH (feet)		BOREHOLE DIAMETER (in)	DRILLING METHOD	DRILLING FLUID
FROM	TO			
0	130	40"	Reverse Rotary	Water
130	877	28"	Reverse Rotary	Water

Well Log		W A T E R	P E R M E A B I L I T Y	UNCONSOLIDATED							CONSOLIDATED	ROCK TYPE	COLOR	DESCRIPTIONS AND REMARKS (include comments on water quality if known.)
DEPTH (feet)	FROM TO			C L A Y	S I L T	S A N D	G R A V E L	C O B B L E S	B L O C K S	O T H E R				
0	2			X									Top soil	
2	11						X	X					Cobbles & gravel	
11	15								X				Concrete blocks; rebar	
15	18						X	X					Cobbles & gravel	
18	24			X	X							gray	Sandy clay	
24	119					X	X	XX					Sand, gravel, cobbles some boulders	
119	133			X	X								Clay w/sand	
133	140			X								brown	Soft clay	
140	152					X							Coarse sand	
152	158					X	X						Coarse sand w/small gravel	

Static Water Level

Date 01/04/98 Water Level 186 feet Flowing? Yes No

Method of Water Level Measurement Electric Sounder If Flowing, Capped Pressure _____ PSI

Point to Which Water Level Measurement was Referenced Ground Level

Height of Water Level reference point above ground surface _____ feet Temperature °C °F

Well Log

Construction Information

DEPTH (feet)		CASING			DEPTH (feet)		SCREEN <input checked="" type="checkbox"/>		PERFORATIONS <input type="checkbox"/>
FROM	TO	CASING TYPE AND MATERIAL/GRADE	WALL THICK (in)	NOMINAL DIAM. (in)	FROM	TO	SLOT SIZE OR PERF SIZE (in)	SCREEN DIAM. OR PERF LENGTH (in)	SCREEN TYPE OR NUMBER PERF (per round/interval)
0	130	Steel	.375	36" OD	440.00	455.00		20" OD	S.S.wire wrap
0	437.00	Steel	3/8"	20" OD	545.66	555.66		20" OD	S.S.wire wrap
437.00	440.00	Steel	1/2"	20" OD	572.72	592.72		20" OD	S.S.wire wrap
455.00	458.00	Steel	1/2"	20" OD	669.12	769.12		20" OD	S.S.wire wrap
458.00	542.56	Steel	3/8"	20" OD	793.18	803.18		20" OD	S.S.wire wrap
542.66	545.66	Steel	1/2"	20" OD	831.48	851.48		20" OD	S.S.wire wrap

Well Head Configuration: _____ Access Port Provided? Yes No

Casing Joint Type: Butt & Collar Perforator Used: _____

DEPTH (feet)		FILTER PACK / GROUT / PACKER / ABANDONMENT MATERIAL		
FROM	TO	ANNULAR MATERIAL, ABANDONMENT MATERIAL and/or PACKER DESCRIPTION	Quantity of Material Used (if applicable)	GROUT DENSITY (lbs./gal., # bag mix, gal./sack etc.)
0	130	13.5 Bag, sand cement	16 yds.	18.4
0	375	13.5 Bag, sand cement	40 yds.	18.3, 18.4, 18.4
375	380	Hole plug	10 bags	
380	877	Colorado Silica 6x9	50 yds.	

Well Development / Pump or Bail Tests

Date	Method	Yield	Units Check One		DRAWDOWN (ft)	TIME PUMPED (hrs & min)
			GPM	CFS		
1/29&30/98	Pumping	4300	X		112'	24hrs.5min.

Pump (Permanent)

Pump Description: _____ Horsepower: _____ Pump Intake Depth: _____ feet

Approximate maximum pumping rate: _____ Well disinfected upon completion? Yes No

Comments: Description of construction activity, additional materials used, problems encountered, extraordinary circumstances, abandonment / procedures. Use additional well data form for more space.

Well Driller Statement

This well was drilled or abandoned under my supervision, according to applicable rules and regulations, and this report is complete and correct to the best of my knowledge and belief.

Name Humboldt Drilling & Pump Co., Inc. License No. 699
(Person, Firm, or Corporation - Print or Type)

Signature [Signature] Date 2/24/98
(Licensed Well Driller)

ADDITIONAL WELL DATA FORM

Water Right # 219836657-8339

OWNER NAME Salt Lake County Water Conservancy District

Page 2 of 4

Well Log		WATER	PERMEABLE high low	UNCONSOLIDATED					CONSOLIDATED		ROCK TYPE	COLOR	DESCRIPTIONS AND REMARKS (include comments on water quality if known.)
DEPTH (feet) FROM	TO			CLAY	SILT	SAND	GRAVEL	COBBLES	BOULDER	OTHER			
158	170				X	X	X					Gravel w/sand & rocks to 2½"	
170	183							X				Rocks to 3½"	
183	206							X				Rocks to 3" w/sand	
206	241			X							brown	Clay	
241	243			X	X	X						Sand w/small gravel ½ w/little clay	
243	244				X							Sand	
244	260				X	X						Sand w/gravel to ½"	
260	266				X							Fine sand	
266	280				X	X						Sand w/gravel	
280	288				X	X						Rocks w/small gravel	
288	301			X	X	X						Sand & small gravel & little clay	
301	309					X	X					Rocks, small cobbles 3"	
309	315			X	X						brown	Sandy clay	
315	323			X							brown	Clay	
323	325				X	X						Coarse sand w/small gravel to 1½"	
325	331			X							brown	Clay	
331	339			X	X							Coarse to med. sand w/little clay	
339	341				X	X						Sand & gravel to 2"	
341	348			X	X	X						Sand & gravel w/layers of clay	
348	354			X	X						brown	Coarse sand w/streaks of soft clay	
354	372				X	X						Fine to coarse sand w/sm. gravel to ½"	
372	375			X	X							Clay w/trace of sand	
375	381			X							brown	Clay	
381	390			X	X	X						Fine to med. sand rocks to 1" w/clay	
390	409				X	X	X					Fine to med. sand rocks to 2½"	
409	417				X	X	X					Sand, gravel, rocks to 1"	
417	425			X	X							Small to fine gravel w/little clay	
425	427			X	X						brown	Clay w/little gravel	
427	429			X	X						brown	Sandy clay	
429	431			X	X							Gravel & rock w/little clay	
431	457					X	X					Gravel & rock w/cobbles to 3"	
457	469			X	X	X	X					Sand, gravel, rocks, cobbles w/clay	

Well Log		WATER	PERMEABLE		UNCONSOLIDATED							CONSOLIDATED	ROCK TYPE	COLOR	DESCRIPTIONS AND REMARKS (include comments on water quality if known.)
DEPTH (feet) FROM	TO		high	low	CLAY	SILT	SAND	GRAVEL	COBBLES	BOULDER	OTHER				
469	473				X	X	X								Sand w/small gravel, trace of clay
473	494				X										Soft gray clay
494	498				X		X							brown	Clay w/gravel, rock to 1"
498	502				X	X	X							brown	Sand w/sm.gravel, rock to 1" w/streaks of brown clay
502	511					X	X	X							Fine to coarse sand, rocks to 3"
511	536				X									gray	Clay
536	563					X	X	X							Sand, gravel, rocks
563	570				X		X							gray	Clay & gravel
570	597						X	X							Gravel, rocks to 3½
597	607				X	X	X	X							Sand, gravel, cobbles, w/little clay
607	611				X	X	X	X							Clay w/rocks, little sand
611	617				X	X	X	X							6" rocks w/sand, gravel w/little brown clay
617	635					X	X	X							Rocks to 4" gravel, & coarse sand
635	638				X	X	X	X							Sand & gravel, rocks w/brown clay
638	647					X	X	X							Sand & gravel, rocks to 4"
647	654				X	X	X	X							Sand & gravel, rocks to 3" w/streaks of brown clay
654	656				X	X	X								Brn. clay w/little sand & gravel
656	659				X	X									Brn. clay w/sand
659	690					X	X	X							Gravel w/sand, rocks to 1½
690	711					X	X								Sand gravel to 1½
711	778					X	X	X							Sand, gravel, cobbles to 3½ occasional rocks to 6"
778	779				X									brown	Clay
779	788				X									red	Clay
788	790				X	X	X	X							Gravel w/rocks, sand w/little red clay
790	810					X	X	X							Gravel w/sand & rocks to 3"
810	813				X	X	X								Sand, gravel w/little clay
813	814						X	X							Small gravel w/rock
814	816				X		X								Brown clay w/little gravel



Utah Division of Water Rights



WELLPRT Well Log Information Listing

Version: 2003.09.18.00 Rundate: 10/11/2003 11:53 AM

Utah Division of Water Rights

Water Well Log

LOCATION:

S 55 ft W 30 ft from E4 CORNER of SECTION 3 T 3S R 1E BASE SL Elevation:
feet

DRILLER ACTIVITIES:

ACTIVITY # 1 WELL REPAIR	
DRILLER: LAYNE CHRISTENSEN COMPANY	LICENSE #: 188
START DATE: / /	COMPLETION DATE: / /
ACTIVITY # 2 NEW WELL	
DRILLER: ZIM INDUSTRIES INC	LICENSE #: 697
START DATE: 07/08/1997	COMPLETION DATE: 09/09/1997

BOREHOLE INFORMATION:

Depth(ft)	Diameter(in)	Drilling Method	Drilling Fluid
From	To		
0	60	AUGER RIG	
60	1000	REV RIG	POLYBORE

LITHOLOGY:

Depth(ft)	Lithologic Description
Color	Rock Type
From	To
60	200 CLAY, GRAVEL, COBBLES
COBBLES	
	KEPT V I S AT 47 TO 50
	COBBLES
200	345 SAND, GRAVEL, COBBLES, BOULDERS, OTHER
	BOULDERS/GRINITE
345	370 CLAY, COBBLES
BRN	
	COBBLES
370	455 GRAVEL, COBBLES, BOULDERS
	BOULDERS/GRANITE
455	470 CLAY, COBBLES
	COBBLES
470	605 CLAY, SAND, GRAVEL, COBBLES, BOULDERS
	BOULDERS/GRANITE
605	655 CLAY, COBBLES
	COBBLES
655	730 CLAY, SAND, GRAVEL, COBBLES
	COBBLES
730	780 CLAY, COBBLES
	COBBLES
780	795 CLAY, COBBLES
	COBBLES
795	800 CLAY, SAND, GRAVEL
BRN	
800	805 SAND, GRAVEL
BRN	

BRN 805 860 CLAY, SAND, GRAVEL
 BRN 860 865 CLAY, SAND, GRAVEL, COBBLES
 BRN 865 880 CLAY, SAND, GRAVEL
 BRN 880 885 CLAY, SAND, GRAVEL, COBBLES
 BRN 885 890 CLAY, SAND, GRAVEL
 BRN 895 985 CLAY, SAND, GRAVEL
 BRN 985 995 CLAY, SAND, GRAVEL
 BRN 995 1010 CLAY, SAND, GRAVEL
 BRN CEMENTED
 BRN CEMENTED

WATER LEVEL DATA:

Date	Time	Water Level (feet) (-)above ground	Status
09/05/1997		583.00	STATIC

CONSTRUCTION - CASING:

Depth(ft) From To	Material	Gage(in)	Diameter(in)
0 60	3"	.375	30.0
60 745	20" A53B	.375	20.0
775 850	20" A53B	.375	20.0
990 1000	20" A53B	.375	20.0

CONSTRUCTION - SCREENS/PERFORATIONS:

Screen Type/#	Depth(ft) From To	Screen(S) or Perforation(P) Perf.	Slot/Perf. siz	Screen Diam/Length Perf(in)
SS WW	745 775	PERFORATION	.025	20.0
SS WW	850 990	PERFORATION	.025	20.0

CONSTRUCTION - FILTER PACK/ANNULAR SEALS

Depth(ft) From To	Material	Amount	Density(pcf)
0 500	CEMENT/SAND MIX	15	17
500 1010	16/30 CELICA SAND	41.5	

WELL TESTS:

Date	Test Method	Yield (CFS)	Drawdown (ft)	Time Pumped (hrs)
09/09/1997	VERT TURBIN PUMP	2.228	744	24

GENERAL COMMENTS:

CONSTRUCTION INFORMATION:
 Well head configuration: 20" 1 foot above ground
 Casing Joint Type: Butt Weld
 Perforator used: N/A
 Well disinfected: Yes
 Comments: 2" gravel tube installed from 0 to 510' 2" dia, .21 a53
 grade b cement on outside of casing 2" plug cap at top.
 Additional data not available

CONSTRUCTION - SCREENS/PERFORATIONS:						
Screen Type/#	Depth(ft)	Screen(S) or Perforation(P)	Slot/Perf. siz	Screen Diam/Length	Perf(in)	
	From	To				
JOHNSON HI	610	630	SCREEN	.050	20	
JOHNSON HI	650	750	SCREEN	.050	20	
JOHNSON HI	870	950	SCREEN	.050	20	

CONSTRUCTION - FILTER PACK/ANNULAR SEALS				
Depth(ft)	Material	Amount	Density(pcf)	
From	To			
0	220	BENTONITE, NEAT CEMENT		
220	960	8-12, 6-9 SIZE GRAVEL		

WELL TESTS:					
Date	Test Method	Yield (CFS)	Drawdown (ft)	Time Pumped (hrs)	
/ /	PUMP	1.203	22.67	1.5	
/ /	PUMP	2.270	45.18	3	
/ /	PUMP	3.291	76.42	5	
/ /	PUMP	4.456	107.05	7	
/ /	PUMP	5.096	129.40	9	

WATER QUALITY DATA AVAILABLE

Cruck Rd

Construction Information

DEPTH (feet)		CASING			DEPTH (feet)		<input type="checkbox"/> SCREEN <input type="checkbox"/> PERFORATIONS <input type="checkbox"/> OPEN BOTTOM		
FROM	TO	CASING TYPE AND MATERIAL/GRADE	WALL THICK (in)	NOMINAL DIAM. (in)	FROM	TO	SCREEN SLOT SIZE OR PERF SIZE (in)	SCREEN DIAM. OR PERF LENGTH (in)	SCREEN TYPE OR NUMBER FT (per round/interval)
0	625	Well casing	.375	20"	625	655	.050	20"	CONTINUED WIRE WIRE
655	720	Well casing	.375	20"	720	890	.050	20"	CWW 55
890	905	Well casing	.375	20"	905	935	.050	20"	CWW 55
935	955	Well casing	.375	20"	955	1015	.050	20"	CWW 55
1015	1040	Well casing	.375	20"	1040	1100	.050	20"	CWW 55

Well Head Configuration: _____ Access Port Provided? Yes No
 Casing Joint Type: *Collared Welded* Perforator Used: *ND*
 Was a Surface Seal Installed? Yes No Depth of Surface Seal: *201* feet Drive Shoe? Yes No
 Surface Seal Material Placement Method: *Grout pump through trench pipe*

DEPTH (feet)		SURFACE SEAL / INTERVAL SEAL / FILTER PACK / PACKER INFORMATION		
FROM	TO	SEAL MATERIAL, FILTER PACK and PACKER TYPE and DESCRIPTION	Quantity of Material Used (if applicable)	GROUT DENSITY (lbs./gal., # bag mix, gal./sack etc.)
0	201	Neat Cement	43 yds	16.4 23.5 sec
201	1121	8x12 Colorado Silica	2105 cu ft	
1121	1155	10x16 Colorado Silica	120 cu ft	

Well Development and Well Yield Test Information

DATE	METHOD	YIELD	Units Check One		DRAWDOWN (ft)	TIME PUMPED (hrs & min)
			GPM	CFS		
1-6-05	Turbine Pump	11.2	3636		324.06	63.5 hr

Pump (Permanent)

Pump Description: _____ Horsepower: _____ Pump Intake Depth: _____ feet
 Approximate Maximum Pumping Rate: _____ Well Disinfected upon Completion? Yes No

Comments

Description of construction activity, additional materials used, problems encountered, extraordinary Circumstances, abandonment procedures. Use additional well data form for more space.

Well Driller Statement

This well was drilled and constructed under my supervision, according to applicable rules and regulations, and this report is complete and correct to the best of my knowledge and belief.

Name BEYLIK DRILLING I& PUMP SERVICE INC.

License No. 471

Signature _____

Date _____

220	230	GRAVEL COMPACT
230	235	SAND
235	240	SILTY SAND SILT, SAND
240	245	SILTY SAND SILT, SAND
245	255	SOME CLAY CLAY, SILT, SAND
255	260	CLAY, SILT, SAND SILTY SAND/SOME CLAY
260	270	SAND SOME ROCK/FINE SAND
270	275	SILT, SAND, GRAVEL
275	280	SAND
280	285	FINE SAND SAND
285	290	FINE SAND
290	300	SAND SILT, SAND
300	315	SOME ROCK GRAVEL
315	320	SOME ROCK SAND, GRAVEL
320	345	CLAY
345	350	SAND
350	355	CLAY
355	360	SAND FINE SAND
360	365	SAND
365	370	CLAY
370	375	SAND SOME ROCK
375	380	CLAY, SAND
380	385	CLAY, SAND
385	390	CLAY
390	400	CLAY, SAND
400	410	SAND
410	415	CLAY, SAND ROCKS
415	425	SAND FINE SAND
425	430	CLAY, SAND FINE SAND
430	435	CLAY, SAND ROCKS
435	445	CLAY, SAND SANDY CLAY
445	450	SAND, GRAVEL FINE SAND
450	460	CLAY FINE
460	465	CLAY, GRAVEL ROCKS
465	470	SILT, SAND ROCKS
470	485	SILT
485	490	CLAY
490	500	CLAY, SAND
500	505	SAND
505	510	CLAY, SAND
510	525	CLAY, SAND
525	530	CLAY
530	535	CLAY ROCKS
535	540	CLAY
540	545	CLAY, SAND FINE SAND
545	560	SAND
560	565	SAND FINE SAND
565	570	CLAY, SAND
570	575	CLAY, SAND
575	580	CLAY, SAND
580	585	SAND
585	590	SAND FINE SAND
590	600	CLAY, GRAVEL
600	625	CLAY, SAND
625	640	CLAY, GRAVEL ROCK

640	650	SAND, GRAVEL ROCK
650	670	SAND ROCK
670	675	SAND, GRAVEL
675	680	CLAY, SAND
680	685	SAND ROCK
685	695	SAND
695	700	SAND
700	720	SAND, GRAVEL
720	730	GRAVEL
730	745	SAND, GRAVEL
745	750	GRAVEL ROCKS
750	755	SAND, GRAVEL
755	760	SAND, GRAVEL
760	765	SAND, GRAVEL ROCK
765	770	SAND, GRAVEL ROCK
770	775	SAND, GRAVEL ROCKS
775	780	GRAVEL ROCKS
780	785	SILT, SAND, GRAVEL ROCKS
785	790	GRAVEL ROCKS
790	800	SILT, GRAVEL
800	810	SILT
810	815	SILT, COBBLES ROCKS
815	870	GRAVEL ROCKS
870	875	SAND, GRAVEL ROCKS
875	880	CLAY, SAND
880	890	SAND, GRAVEL ROCKS
890	895	GRAVEL ROCKS
895	905	CLAY
905	910	SAND, GRAVEL
910	915	CLAY, GRAVEL
915	920	GRAVEL
920	930	CLAY, SAND
930	940	SAND, GRAVEL

WATER LEVEL DATA:

Date	Time	Water Level (feet) (-)above ground	Status
11/10/1997		371.00	STATIC

CONSTRUCTION - CASING:

Depth(ft) From	To	Material	Gage(in)	Diameter(in)
0	50	A53B	.375	30.0
+2	640	A53B	.375	20.0
670	690	A53B	.375	20.0
790	820	A53B	.375	20.0
840	855	A53B	.375	20.0
895	915	A53B	.375	20.0

CONSTRUCTION - SCREENS/PERFORATIONS:

Screen Type/#	Depth(ft) From	To	Screen(S) or Perforation(P)	Slot/Perf. siz	Screen Diam/Length Perf(in)
CWW 304SS	640	670	PERFORATION	.040	20.0
CWW 304SS	690	790	PERFORATION	.040	20.0
CWW 304SS	820	840	PERFORATION	.040	20.0
CWW 304SS	855	895	PERFORATION	.040	20.0

CONSTRUCTION - FILTER PACK/ANNULAR SEALS

Depth(ft) From	To	Material	Amount	Density(pcf)
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0	50	CEMENT	26
0	230	CEMENT	12.6
230	920	CO SILICA SAND 10X20	

WELL TESTS:

Date	Test Method	Yield (CFS)	Drawdown (ft)	Time Pumped (hrs)
11/10/1997	PUMP	8.913	104	10

GENERAL COMMENTS:

CONSTRUCTION INFORMATION:
Well head configuration: No data
Casing Joint Type: Welded
Perforator used: N/A
Access Port Provided: No data
Additional data not available

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200	205	SANDY CLAY CLAY, SAND
		SAND AND SOME CLAY
205	210	CLAY, SAND, GRAVEL
		SAND AND CLAY AND SMALL ROCKS
210	235	SAND, GRAVEL, COBBLES
		SAND AND SMALL ROCKS
235	315	SAND, GRAVEL
		SAND AND GRAVEL
315	335	CLAY, SAND, GRAVEL, COBBLES
		SAND, GRAVEL W/ CLAY LAYERS & COBBLES
335	345	SAND, GRAVEL, COBBLES
		COARSE SAND, GRAVEL AND SMALL COBBLE
345	360	SAND, GRAVEL
		COARSE SAND AND GRAVEL
360	365	CLAY, SAND, GRAVEL
		SANDY CLAY W/ COARSE SAND AND GRAVEL
365	395	CLAY, SAND
BROWN		
		SANDY BROWN CLAY
395	400	SAND, GRAVEL
		SANDY GRAVEL
400	410	SAND, GRAVEL, COBBLES
		SAND GRAVEL AND COBBLES
410	425	CLAY, SAND, GRAVEL
		SANDY CLAY AND GRAVEL
425	440	CLAY, SAND
BROWN		
		SANDY BROWN CLAY
440	455	CLAY, SAND
		SAND AND CLAY
455	465	CLAY, SILT, SAND, GRAVEL
		VERY SANDY CLAY W/ SMALL AMOUNT OF GRAVEL
465	510	CLAY
TAN		
		TAN CLAY
510	525	CLAY, SAND, GRAVEL
TAN		
		TAN CLAY W/COARSE SAND & GRAVEL
525	535	SAND, GRAVEL, COBBLES
		SAND, GRAVEL AND COBBLES
535	560	CLAY, GRAVEL
BROWN		
		BROWN CLAY AND GRAVEL
560	570	BOULDERS
		BOULDERS
570	580	CLAY, GRAVEL
BROWN		
		BROWN CLAY AND GRAVEL
580	620	CLAY, SAND, GRAVEL, COBBLES
BROWN		
		BROWN CLAY, SAND AND BOULDERS
620	680	CLAY, COBBLES
		COBBLES AND CLAY
680	720	CLAY, SAND, GRAVEL, COBBLES
		COBBLES, SAND, GRAVEL AND CLAY
720	755	SAND, GRAVEL, COBBLES
		SAND, GRAVEL AND COBBLES
755	770	CLAY, SAND, GRAVEL, COBBLES
		SMALL COBBLES, SAND AND CLAY
770	820	SAND, GRAVEL, COBBLES
		SAND, GRAVEL AND COBBLES
820	835	SAND
		CEMENTED GRAVEL
835	840	BOULDERS
		BOULDERS
840	865	SAND, GRAVEL, COBBLES
		CEMENTED SAND AND GRAVEL
865	910	SAND, GRAVEL
		SAND AND GRAVEL
910	930	CLAY, SAND, GRAVEL, COBBLES
BROWN		
		BROWN CLAY, SAND, GRAVEL & SOME COBBLES
930	950	SAND, GRAVEL, COBBLES
		SAND, GRAVEL AND COBBLES
950	1015	CLAY, GRAVEL, COBBLES
		GRAVEL, CLAY AND COBBLES
1015	1025	GRAVEL, COBBLES
		GRAVEL AND COBBLES
1025	1030	GRAVEL, BOULDERS
		BOULDERS AND GRAVEL

1030 1035 CLAY, GRAVEL, BOULDERS
 BOULDERS, GRAVEL AND SMALL AMOUNT CLAY
 1035 1045 GRAVEL, BOULDERS
 BOULDERS AND GRAVEL
 1045 1095 CLAY, GRAVEL, BOULDERS
 BOULDERS, GRAVEL AND SMALL AMOUNT CLAY
 1095 1110 CLAY, GRAVEL, COBBLES
 CLAY, GRAVEL & COBBLES
 1110 1134 COBBLES
 COBBLES

WATER LEVEL DATA:

Date	Time	Water Level (feet)	Status
11/12/1998		(-)above ground 464.00	STATIC

CONSTRUCTION - CASING:

Depth (ft)	Material	Gage (in)	Diameter (in)
From To			
0 88	ASTM A-53 GRADE B	.375	36.0
0 670	ASTM A-53 GRADE B	.500	24.0
700 720	ASTM A-53 GRADE B	.500	24.0
740 750	ASTM A-53 GRADE B	.500	24.0
780 790	ASTM A-53 GRADE B	.500	24.0
810 820	ASTM A-53 GRADE B	.500	24.0
840 850	ASTM A-53 GRADE B	.500	24.0
870 885	ASTM A-53 GRADE B	.500	24.0
915 960	ASTM A-53 GRADE B	.500	24.0
1000 1020	ASTM A-53 GRADE B	.500	24.0

CONSTRUCTION - SCREENS/PERFORATIONS:

Screen Type/#	Depth (ft)	Screen(S) or Perforation(P)	Slot/Perf. siz	Screen Diam/Length	Perf (in)
	From To				
	670 700	SCREEN	.050	24.0	
HOUSTON WIRE	720 740	SCREEN	.050	24.0	
WOUND	750 780	SCREEN	.050	24.0	
HOUSTON WIRE	790 810	SCREEN	.050	24.0	
WOUND	820 840	SCREEN	.050	24.0	
HOUSTON WIRE	850 870	SCREEN	.050	24.0	
WOUND	885 915	SCREEN	.050	24.0	
HOUSTON WIRE	960 1000	SCREEN	.050	24.0	
WOUND	1020 1100	SCREEN	.050	24.0	
HOUSTON WIRE					

CONSTRUCTION - FILTER PACK/ANNULAR SEALS

Depth (ft)	Material	Amount	Density (pcf)
From To			
0 91	14.5 BAG SAND SLURRY	33 CY	14.5
91 300	12BAGSANDSLRYCEMENTGRT	34 CY	12
300 1134	COLORADO SILICA SAND	144 TONS	12

WELL TESTS:

Date	Test Method	Yield (CFS)	Drawdown (ft)	Time Pumped (hrs)
11/12/1998	TURBINE PUMPTEST	3.342	20	3
11/12/1998	TURBINE PUMPTEST	6.684	41	3
11/12/1998	TURBINE PUMPTEST	10.027	65	3

GENERAL COMMENTS:

CONSTRUCTION INFORMATION:
 CASING: 1100-1120': Type: ASTM A-53 Grade B; Wall Thick: .500"
 Nominal Diam: 24"
 0-320': Type: ASTM A-53 Grade B; Wall Thick: Sch 40 (.216")
 Nominal Diam: 3"
 0-665': Type: ASTM A-53 Grade B; Wall Thick: Sch 40 (.154")
 Nominal Diam: 2"
 Well Head Configuration: Steel Plate welded at surface
 Casing Joint Type: Butt weld
 Perforator Used: N/A
 FILTER:

Depth: 0-91': Material: 14.5 bag sand slurry cement grout (conductor)
Density: 14.5 bag cement/6 gal H2O
Depth: 0-300': Material: 12 bag sand slurry cement grout
Density: 12 bag cement/6 gal water
Depth: 300-1134': Grout Density: 8012 mix
Additional data not available

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10. TUNNEL: It is timbered, tiled, piped, open, bulkheaded, covered or.....
(Strike words not needed)
 (a) Dimensions.....; total length.....; temperature of water.....°F.
 (b) Position of water bearing stratum or strata with reference to mouth of tunnel.....

 (c) Log of tunnel.....

 11. GENERAL REMARKS: (Note any general or detailed information not covered above).



STATE OF UTAH,
 COUNTY OF Salt Lake } ss.

I, J. G. Lee, being first duly sworn,
 do hereby certify that I am the driller of the aforesaid well or tunnel who furnished the foregoing
 statement of facts; that I have read said statement and each and all of the items therein contained
 are true to the best of my knowledge and belief.

J. G. Lee
 Driller

Subscribed and sworn to before me this 19 day of November, 19 54.

(SEAL)

L. E. Morrison
 Notary Public

My Commission Expires:

July 18, 1956

(190)

a21807

ADDITIONAL WELL DATA FORM

Water Right # (57-2231)

OWNER NAME Salt Lake County Water Conservancy District

Page 1 of 3

Well Log		WATER	PERMEABLE		UNCONSOLIDATED/CONSOLIDATED						ROCK TYPE	COLOR	DESCRIPTIONS AND REMARKS (include comments on water quality if known.)
DEPTH (feet) FROM	TO		high	low	CLAY	SILT	SAND	GRAVEL	COBBLES	BOULDER			
200	205					X	X						Fine sand with small gravel
205	220					X	X						Silty sand
220	225				X	X	X						Sand gravel and clay
225	230				X	X							Sand & red clay
230	235				X	X	X						Silty sand small gravel and red clay
235	240				X	X		X					Silt small cobbles & red clay
240	245				X	X							Sand & gray clay
245	250				X								Mushy grey clay
250	260				X			X					Sticky grey clay w/small cobbles
260	265				X	X							Grey clay w/some sand
265	275					X	X						Sand & small gravel
275	285					X							Coarse sand
285	300					X		X					Sand and small cobble
300	305					X	X						Sand and gravel
305	315						X	X					Gravel small cobbles
315	335							X	X				Cobbles and boulders
335	350					X		X					Sand and small cobbles
350	370					X							Sandy
370	375				X	X	X						Silt sand and clay
375	385				X	X							Sand and clay
385	390				X								Soft clay
390	395				X			X					Clay w/ cobbles
395	400				X	X							Clay w/ sand
400	405					X							Fine sand
405	410				X	X							Sand & clay
410	415				X	X							Sand w/ some clay
415	420				X	X							Clay w/ sand streaks
420	425					X							Sand
425	480					X		X					Sand & small cobbles
480	485					X							Sand
485	510				X	X							Sandy clay
510	515					X							Sand

(3 of 6)

a21807

ADDITIONAL WELL DATA FORM

Water Right # (57-2231)

OWNER NAME Salt Lake County Water Conservancy District

Page 2 of 3

Well Log		WATER	PERMEABLE high low	UNCONSOLIDATED						CONSOLIDATED		ROCK TYPE	COLOR	DESCRIPTIONS AND REMARKS (include comments on water quality if known.)
DEPTH (feet) FROM	TO			CLAY	SILT	SAND	GRAVEL	COBBLES	BOULDER	OTHER				
515	520			X	X								Sandy and clay	
520	530					X	X						Sandy gravel	
530	555					X	X						Gravel and cobbles	
555	560			X	X	X							Sand gravel & clay	
560	565			X		X							Clay w/ some gravel	
565	570			X		X	X						Small gravel & cobbles tad bit of clay	
570	580					X	X						Gravle and cobbles	
580	590					X	X						Sandy & cobbles	
590	595					X	X						Sandy & gravel	
595	630			X	X	X							Sandy clay & gravel	
630	635					X	X						Sandy & gravel	
635	640			X		X	X						Sand & gravels with clay balls	
640	645			X			X						Clay and cobbles	
645	650			X		X							Sandy clay	
650	675					X	X						Sandy gravel	
675	680			X		X	X						Clay & sandy gravel	
680	690			X		X							Sandy clay	
690	710					X	X						Sandy gravel	
710	720					X							Coarse gravel	
720	730					X	X						Gravel w/ small cobbles	
730	735					X	X						Gravel & sand	
735	740			X		X	X						Sand gravel & cobbles w/streaks of clay	
740	745					X	X						Gravel and sand	
745	750					X	X						Sandy gravel	
750	755					X	X						Gravel & cobbles	
755	770					X	X						Sand & cobbles	
770	775					X	X	X					Sand gravel and cobbles	
775	790			X			X						Cobbles & clay balls	
790	795			X		X							Sand w/ clay	
795	800					X	X						Sand w/ cobbles	
800	835					X	X						Gravel w/ cobbles	
835	840					X							Sandy	

(776)

a21807

ADDITIONAL WELL DATA FORM

Water Right # (57-2231)

OWNER NAME Salt Lake County Water Conservancy District

Page 3 of 3

Well Log		WATER	PERMEABLE High low	UNCONSOLIDATED						CONSOLIDATED	ROCK TYPE	COLOR	DESCRIPTIONS AND REMARKS (include comments on water quality if known.)
DEPTH (feet) FROM	TO			CLAY	SILT	SAND	GRAVEL	COBBLES	BOULDER	OTHER			
840	860			X	X							Sand with clay	
860	865			X	X							Clay w/ sand streaks	
865	875					X	X					Sand & gravel	
875	885			X								Brown clay	
885	890			X			X	X				Brown clay w/ cobbles & gravel	
890	895			X			X					Gravel w/ clay streaks	
895	900			X				X				Clay w/ cobbles	
900	905			X								Big clay balls	
905	910			X			X					Clay w/ gravel streaks	
910	915			X				X				Clay w/ cobbles	
915	925			X	X							Clay w/ sand	
925	935			X			X					Clay w/ streaks of gravel	
935	950			X			X					Gravel w/ clay streaks	
950	970						X	X				Gravel cobbles	
970	980			X			X	X				Gravel cobbles streaks of clay	
980	990			X	X							Sandy clay	
990	995			X	X							Sticky clay with sand	
995	1000			X			X					Gravel w/ clay streaks	
1000	1010			X			X					Clay w/ gravel	
1010	1015			X			X	X				Gravel and sandy clay	
1015	1040						X	X				Gravel and cobbles	
1040	1065			X			X					Gravel clay	
1065	1070						X	X				Sandy cobbles	
1070	1075						X	X				Gravel & cobbles	
1075	1080			X	X							Sandy clay	
1080	1090			X			X					Clay & gravel	
1090	1095			X			X	X				Gravel cobbles & clay	
1095	1100						X	X				Gravel & cobbles	
1100	1105			X			X	X				Gravel cobbles & clay	
1105	1122						X	X	X			Gravel cobbles & sand	

Construction Information

DEPTH (feet)		CASING			DEPTH (feet)		SCREEN <input checked="" type="checkbox"/>		PERFORATIONS <input type="checkbox"/>
FROM	TO	CASING TYPE AND MATERIAL GRADE	WALL THICK (in)	NOMINAL DIAM. (in)	FROM	TO	SLOT SIZE OR PERF SIZE (in)	SCREEN DIAM. OR PERF LENGTH (in)	SCREEN TYPE OR NUMBER PERF (per round/interval)
0	40	ASTM A-53 Grade B	.375	36	515	555	.040	20	Houston wire wound
0	515	ASTM A-53 Grade B	.375	20	570	600	.040	20	"
555	570	"	.375	20	650	670	.040	20	"
600	650	"	.375	20	690	770	.040	20	"
670	690	"	.375	20	795	845	.040	20	"
770	795	"	.375	20	945	985	.040	20	"

Well Head Configuration: Steel plate welded at surface Access Port Provided? Yes No

Casing Joint Type: Butt weld Perforator Used: N/A

DEPTH (feet)		FILTER PACK / GROUT / PACKER / ABANDONMENT MATERIAL		
FROM	TO	ANNULAR MATERIAL, ABANDONMENT MATERIAL and/or PACKER DESCRIPTION	Quantity of Material Used (if applicable)	GROUT DENSITY (lbs./gal., # bag mix, gal./suck etc.)
0	300	14.5 bag sand slurry cement grout	37 CY	14.5 bag cement/6 gal H2
300	1122	Colorado silica sand	144 tons	8-16 mix
0	40	11 bag sand grout (conductor)	9 CY	11 bag cement/6 gal H2O

Well Development / Pump or Bail Tests

Date	Method	Yield	Units Check One		DRAWDOWN (ft)	TIME PUMPED (hrs & min)
			GPM	CFS		
9-21-98	Turbine test pump	3000	x		46	1 hr 20 min
9-21-98	"	3850	x		62.5	1 hr 10 min
9-21-98	"	4500	x		73.5	1 hr 10 min

Pump (Permanent)

Pump Description: _____ Horsepower: _____ Pump Intake Depth: _____ feet

Approximate maximum pumping rate: _____ Well disinfected upon completion? Yes No

Comments | Description of construction activity, additional materials used, problems encountered, extraordinary circumstances, abandonment / procedures. Use additional well data form for more space.

Well Driller Statement | This well was drilled or abandoned under my supervision, according to applicable rules and regulations, and this report is complete and correct to the best of my knowledge and belief.

Name Zim Industries, Inc.
(Person, Firm, or Corporation - Print or Type)

License No. 697

Signature Robert J. Zimmerman
(Licensed Well Driller)

Date 12/9/98

- 546 - 547 GRAVEL
- 547 - 558 STICKY CLAY & GRAVEL
- 558 - 562 CONGLOMERATE
- 562 - 590 STICKY CLAY & GRAVEL
- 590 - 615 SANDY CLAY
- 615 - 618 BROWN CLAY
- 618 - 626 CONGLOMERATE
- 626 - 632 GRAVEL
- 632 - 641 STICKY CLAY
- 641 - 650 CONGLOMERATE
- 650 - 720 STICKY CLAY & GRAVEL
- 720 - 729 CONGLOMERATE
- 729 - 762 CLAY & GRAVEL
- 762 - 766 CONGLOMERATE
- 766 - 772 CLAY & GRAVEL
- 772 - 777 CONGLOMERATE
- 777 - 827 STICKY CLAY & GRAVEL
- 827 - 831 SAND & GRAVEL
- 831 - 867 CLAY & GRAVEL
- 867 - 872 GRAVEL
- 872 - 881 Blue CLAY & GRAVEL

~~881~~

		SAND W/GRAVEL TO 1"
118	137	SAND, GRAVEL
		SAND & GRAVEL ROCKS TO 2"
137	160	SAND, GRAVEL, COBBLES
		SAND & GRAVEL COBBLES TO 4"
160	163	CLAY
BROWN		
		SOFT BROWN CLAY
163	169	CLAY, SAND
		SANDY CLAY
169	174	SILT, SAND, GRAVEL
		SMALL GRAVEL W/SAND ROCKS TO 2"
174	182	SAND
		FINE TO MED. SAND
182	188	CLAY, SAND
		FINE TO COARSE SAND W/CLAY
188	193	SAND, GRAVEL
		COARSE SAND W/SMALL GRAVEL
193	216	SAND, GRAVEL, COBBLES
		COARSE SAND W/GRAVEL ROCKS TO 6"
216	236	CLAY, SAND, GRAVEL
		SAND & GRAVEL W/LITTLE CLAY
236	247	SAND, GRAVEL
		SAND & GRAVEL
247	257	CLAY, SAND, GRAVEL
BROWN		
		SAND & GRAVEL W/BROWN CLAY
257	266	SAND, GRAVEL
		COARSE SAND W/LITTLE CLAY
266	268	SAND, GRAVEL
BROWN		
		SAND GRAVEL W/BROWN CLAY
268	287	CLAY
BROWN		
		BROWN CLAY
287	298	CLAY, SAND
BROWN		
		SANDY BROWN CLAY
298	302	CLAY, SAND, GRAVEL
GRAY		
		SANDY GRAY CLAY W/SMALL GRAVEL
302	315	CLAY
GRAY		
		SOFT GRAY CLAY
315	319	CLAY, SAND
GRAY		
		SOFT GRAY CLAY W/LITTLE SAND
319	328	SAND, GRAVEL
		SAND MED. W/SMALL GRAVEL
328	348	SAND, GRAVEL
		COARSE SAND W/MED. GRAVEL TO 1/2"
348	350	CLAY, GRAVEL
GRAY		
		GRAY CLAY W/LITTLE GRAVEL
350	358	CLAY
BROWN		
		BROWN CLAY
358	360	CLAY, SAND, COBBLES
BROWN		
		SAND, BROWN CLAY SMALL COBBLES TO 3"
360	364	SAND, COBBLES
		FINE TO COARSE SAND ROCKS TO 3"
364	373	SAND, GRAVEL, COBBLES
		SAND, GRAVEL ROCKS TO 3"
373	376	CLAY
BROWN		
		BROWN CLAY
376	382	SAND, GRAVEL
		SAND & GRAVEL TO 1 1/2"
382	390	SAND, GRAVEL
		SAND & GRAVEL TO 1 1/2"
390	424	CLAY
BROWN		
		BROWN CLAY
424	436	CLAY, SAND, GRAVEL
BROWN		
		BROWN CLAY W/SAND & GRAVEL TO 3/4"
436	445	CLAY, SAND, GRAVEL
BROWN		
		SAND, GRAVEL W/LITTLE BROWN CLAY
445	452	SAND, GRAVEL, COBBLES

	452	454	SAND, GRAVEL W/ROCKS TO 3 1/2" CLAY, GRAVEL, COBBLES
BROWN			
	454	462	BROWN CLAY W/GRAVEL & ROCK TO 3" SAND, GRAVEL, COBBLES
	462	480	SAND, GRAVEL W/ROCKS TO 2 1/2" CLAY, SAND, GRAVEL
BROWN			
	480	484	SAND, GRAVEL W/BROWN CLAY SAND, GRAVEL
	484	491	SAND & GRAVEL TO 1" SAND, GRAVEL
	491	494	COARSE SAND 7 GRAVEL TO 3/8" CLAY, GRAVEL
BROWN			
	494	501	BROWN CLAY W/LITTLE GRAVEL CLAY, SAND
BROWN			
	501	504	SANDY BROWN CLAY CLAY, SAND, GRAVEL
BROWN			
	504	518	SANDY BROWN CLAY W/SMALL GRAVEL TO 1/8" SAND, GRAVEL, COBBLES
	518	520	COARSE SAND W/SMALL GRAVEL TO 1/2" OCCASIONALLY ROCKS TO 3" CLAY
BROWN			
	520	522	BROWN CLAY SAND, COBBLES
	522	525	COARSE SAND W/GRAVEL ROCKS TO 3" CLAY
BROWN			
	525	527	BROWN CLAY CLAY, SAND, GRAVEL
BROWN			
	527	554	BROWN CLAY W/LITTLE SAND AND GRAVEL CLAY
BROWN			
	554	555	STICKY BROWN CLAY SAND
	555	556	FINE TO COARSE SAND CLAY
BROWN			
	556	560	BROWN CLAY SAND, GRAVEL
	560	564	FINE TO COARSE SAND W/SMALL GRAVEL 1/4" CLAY, SAND, GRAVEL
BROWN			
	564	569	BROWN CLAY W/SAND AND GRAVEL TO 1/8" SAND
	569	579	FINE TO COARSE SAND SAND, GRAVEL, COBBLES
	579	581	FINE TO COARSE SAND W/SMALL GRAVEL ROCKS TO 2" CLAY
BROWN			
	581	588	BROWN CLAY CLAY, SAND, COBBLES
BROWN			
	588	594	SANDY BROWN CLAY, GRAVEL ROCKS TO 2" CLAY
BROWN			
	594	596	BROWN CLAY CLAY, GRAVEL
BROWN			
	596	597	BROWN CLAY W/GRAVEL SAND, GRAVEL
	597	611	SAND & GRAVEL TO 1" CLAY
BROWN			
	611	621	BROWN CLAY CLAY, SAND, GRAVEL
BROWN			
	621	633	SAND, GRAVEL & CLAY CLAY, SAND
BROWN			
	633	635	SANDY BROWN CLAY CLAY, SAND, GRAVEL
GRAY			
	635	648	GRAY CLAY W/SAND & SMALL GRAVEL CLAY

GRAY

648 653 GRAY CLAY
CLAY, SAND, GRAVEL

653 669 SAND, GRAVEL W/LITTLE CLAY
SAND, GRAVEL, COBBLES

669 678 SAND, GRAVEL, COBBLES
SAND, GRAVEL, ROCKS TO 2"

678 681 SAND, GRAVEL, ROCKS TO 4"
CLAY, SAND, GRAVEL, COBBLES

BROWN

681 693 SAND, GRAVEL, ROCKS TO 3" W/LAYERS OF BROWN CLAY
CLAY, SAND, GRAVEL

BROWN

693 695 SAND & GRAVEL W/CLAY
CLAY, SAND, GRAVEL

BROWN

695 697 SAND & GRAVEL W/LITTLE CLAY
SAND, GRAVEL

697 701 SAND & GRAVEL TO 1 1/2"
CLAY, SAND, GRAVEL

BROWN

701 710 SAND & GRAVEL TO 1 1/2" W. LITTLE BRN. CLAY
CLAY, SAND, GRAVEL

BROWN

710 712 BROWN CLAY W/LITTLE SAND & GRAVEL 3/4"
CLAY, SAND, GRAVEL

BROWN

712 720 SAND & GRAVEL W/BROWN CLAY
SAND, GRAVEL, COBBLES

720 725 SAND 7 GRAVEL ROCKS TO 3"
CLAY, SAND, GRAVEL, COBBLES

725 748 SAND & GRAVEL ROCKS TO 5" W/LTL. CLAY
CLAY

BROWN

748 749 BROWN CLAY
SAND, GRAVEL

749 750 COARSE SAND W/SMALL GRAVEL
SAND, GRAVEL

750 760 COARSE SAND W/ GRAVEL TO 3/4"
SAND, GRAVEL, COBBLES

760 763 SAND & GRAVEL ROCKS TO 4"
CLAY, SAND, GRAVEL

BROWN

763 765 SAND & GRAVEL W/BROWN CLAY
CLAY

BROWN

765 767 BROWN CLAY
CLAY, SAND, GRAVEL

BROWN

SAND & GRAVEL W/ BROWN CLAY

WATER LEVEL DATA:

Date	Time	Water Level (feet)	Status
01/25/1998		(-)above ground 204.60	STATIC

CONSTRUCTION - CASING:

Depth(ft)	Material	Gage(in)	Diameter(in)
From To			
0 85	STEEL	0.50	36
0 455	STEEL	.375	20
455 458	STEEL	.050	20
478 481	STEEL	.050	20
481 502	STEEL	.375	20
502 505	STEEL	0.50	20
518 521	STEEL	0.50	20
521 559	STEEL	.375	20
559 562	STEEL	0.50	20
572 575	STEEL	0.50	20

CONSTRUCTION - SCREENS/PERFORATIONS:

Screen Type/#	Depth(ft)	Screen(S) or Perforation(P)	Slot/Perf. siz	Screen Diam/Length	Perf(in)
	From To				
	458 578	SCREEN	.080	20	
SS WIRE WRAP	505 518	SCREEN	.080	20	
SS WIRE WRAP	562 572	SCREEN	.080	20	
SS WIRE WRAP					

SS WIRE WRAP	649	679	SCREEN	.080	20
SS WIRE WRAP	704	724	SCREEN	.080	20

CONSTRUCTION - FILTER PACK/ANNULAR SEALS

Depth(ft)		Material	Amount	Density(pcf)
From	To			
0	85	GROUT SAND & CEMENT	8 YD.	13.5
0	356	GROUT SAND 7 CEMENT	50 YD.	13.5
356	360	HOLE PLUG	10 BAGS	
360	767	COLORADO SILLICA 6X9	33 YDS.	

WELL TESTS:

Date	Test Method	Yield (CFS)	Drawdown (ft)	Time Pumped (hrs)
02/26/1998	TEST PUMP	6.239	166.66	24

GENERAL COMMENTS:

CONSTRUCTION INFORMATION:
 Additional Casing Data: 575-646': steel: wall thick: 3/8":
 Nominal: 20" OD
 646-649': steel: wall thick: 1/2": Nominal: 20" OD
 679-682': steel: wall thick: 1/2": Nominal: 20" OD
 682-701': steel: wall thick: 3/8": Nominal: 20" OD
 701-704': steel: wall thick: 1/2": Nominal: 20" OD
 Well Head Configuration: cap welded on
 Casing Joint Type: Butt/collar
 Perforator Used: no
 PUMP: no data
 GENERAL COMMENTS: Normal.
 724-734: Steel: 1/2": 20" OD
 0-361: Steel: 2" Sch 40
 Additional data not available

Perforations. SLOWED-9

www.100±,

7

✓ 475 to 588 feet - 12 holes per 12 inches 113 x 12 = 1356
✓ 604 to 616 feet - 12 holes per 12 inches
✓ 622 to 630 feet - 12 holes per 12 inches
✓ 648 to 662 feet - 12 holes per 12 inches
✓ 675 to 745 feet - 12 holes per 12 inches
✓ 764 to 833 feet - 12 holes per 12 inches
✓ 865 to 886 feet - 12 holes per 12 inches
✓ 905 to 920 feet - 12 holes per 12 inches
✓ 955 to 960 feet - 12 holes per 12 inches
✓ 960 to 996 feet - 12 holes per 12 inches.

Continuation of well log.

675 to 684 Clay and little gravel.
684 to 692 Hard cemented sand and gravel
692 to 715 Conglomerate
715 to 739 Clay and little gravel 1"
739 to 745 Hard cemented gravel 3"

745 to 764 Sticky clay
764 to 775 Cemented gravel 3"
775 to 785 Conglomerate
785 to 798 Cemented gravel 3"
798 to 822 Clay and little gravel 1"
822 to 833 Cemented gravel 3"
833 to 838 Clay and little gravel (blue) 1/2"
838 to 865 Sticky clay
865 to 886 Hard clay and gravel 1"
886 to 888 Cemented sand
888 to 905 Tough sticky clay
905 to 818 Cemented gravel, little clay 3"
918 to 935 Sticky clay, cemented sand
935 to 955 Tough sticky clay (yellow)
955 to 960 Clay and gravel 1"
960 to 972 Tough sticky clay
972 to 980 Clay and gravel 1"
980 to 996 Cemented gravel and little clay 3"
996 to 1007 Sticky clay

Perforations:

697'-718', 720'-728', 734'-742', 851'-872', 890'-915'
~~920'-925'~~, 930'-934', 949'-956, 963'-965, 971'-972',
 978'-981', 986-990.

Log Of Well (continued)

438-466, Cemented Sand, 466-510, Sticky Clay, 510-569 Sticky Clay with streaks of Conglomerate, 569-580 Hard Conglomerate, 580-608 Sticky Clay 608-617 Hard Conglomerate, 617-620 Sticky clay, 620-630 Hard Conglomerate 630-648 Sticky Clay with Sand, 648-657 Cemented Sand & Gravel, 657-660 Sticky Clay, 660-661 Cemented Sand & Gravel 661-687 Sticky Clay with gravel & fine sand, 687-689 Cemented Gravel, 689-697 Sticky Clay, 697-710 Conglomerate, 718-720 Sticky Clay, 720-728 Cemented Sand & Gravel, 728-734 Sticky Clay, 734-742 Cemented Sand & Gravel, 742-797 Sticky Clay fine sand, 797-827 Cemented Sand & Loose ~~xxxxxx~~ Sand, 827-834 Sticky Clay, 834-835 Hard Cemented Sand, 835-851 Sticky Clay 851-872 Hard Cement Sand, 872-890 Sticky Clay, 890-893 Hard Cemented Sand, 893-895 Sticky clay, 895-915 Hard Cemented Sand, 915-920 Sticky clay 920-925 Cemented Sand, 925-930 Sticky Clay 930-934 Cemented Sand, 934-949 Sticky clay, 949-956 Cemented Sand, 956-963 Sticky Clay, 963-965 Cemented Sand, 965-971 Sticky Clay, 971-972 Cemented Sand & Gravel 972-978 Sticky Clay, 978-981 Cemented Sand, 981-986 Sticky Clay, 986-990 Cemented Sand, 990-1002 Sticky Clay.

Attachment E

Injection Well Operating Plan and Procedures



JORDAN VALLEY WATER
CONSERVANCY DISTRICT

Delivering Quality Every Day

Standard Operational Procedures (SOP) for Injection and Redevelopment of Wells

Injection Procedures:

1. If well has sat idle for more than five days, operate well pump for at least 30 minutes to evacuate stagnant water in well casing prior to injection or when nephelometric turbidity unit (NTU) reaches below 3.0.
2. Prior to start-up of injection cycle, record static water level, ensure that isolation gate valve on injection piping is open, and open injection flow control valve slowly so that it takes approximately 1 minute to fully open the valve.
3. Record flow-rate and water level each minute for the first 10 minutes and every 10 minutes until 100 minutes of time has elapsed after initiating injection.
4. Record requested information on injection and redevelopment log during normal visits. Minimum of at least once per day.
5. Injection cycles at each well will last approximately 7-10 days (more or less depending on water levels).
6. At the end of an injection cycle, close the injection flow control valve slowly (approximately 1 minute to completely close the valve).

Redevelopment Procedures:

1. Following the termination of an injection cycle, allow the water level to stabilize for approximately 15 to 30 minutes (possibly even longer).
2. Record water level prior to operating the production pump.
3. Start the production pump to waste, record flow-rate (if possible) and pumping water level every minute for the first 10 minutes and every 10 minutes until 100 minutes has elapsed since starting.
4. Record turbidity every 10 minutes after starting the pump.
5. Turn off production pump after 100 minutes of operation and the NTU is below 3.0. Repeat steps 1 through 4 including at least 15 minutes or longer of idle time between starting and stopping the pump.



JORDAN VALLEY WATER
CONSERVANCY DISTRICT

Delivering Quality Every Day

6. After the second redevelopment cycle the well should be ready for a new injection cycle.

Attachment F

Monitoring, Recording, and Reporting Plan

Monitoring, Recording and Reporting Plan For UIC Permit No. UTU-35AP-38871EB

October 2025

The provisions of the UIC Permit No. UTT-35AP-38871EB issued to Jordan Valley Water Conservancy District (Jordan Valley Water) by the Utah Division of Water Quality (DWQ) specifies that Jordan Valley Water is to submit a Monitoring Recording and Reporting Plan to DWQ for approval. This plan is to detail how Jordan Valley Water will conduct the sampling, data management and reporting to meet the provisions of Part III.F and Part III.G of the permit.

Monitoring Plan

Sample Site Selection

“Samples and measurements... shall be representative of the monitoring activity” (Part II.D.10.a). Since Jordan Valley Water has nine (9) authorized surface water sources that can be in any blend ratio with each other and various groundwater sources at any given time in the Jordan Valley Water distribution system, samples will be collected on the actual injectate water at the beginning of each injection event to ensure that the samples are completely representative of the activity. Jordan Valley Water staff will select a sampling location each injection event that is representative of the actual water being injected into the given well(s). This will typically be on the same distribution pipeline that feeds the injection site(s).

Sample Frequency

Due to the nature of Jordan Valley Water's surface water supply agreements, water is typically only available for injection activity during high spring runoff seasons. Jordan Valley Water staff continuously strives to optimize power costs by running pumps for an entire power period (one month) whenever a given well is turned on. As a result, injection typically happens only during the late spring or early summer for about 4 weeks. Although, the Monitoring Schedule in Attachment G of the permit allows for a reduced analyte list for yearly sampling versus 3-year sampling, Jordan Valley Water will collect the full 3-year sample suite each monitoring event to ensure representative monitoring. Since radionuclides don't typically change rapidly, these will still be collected on the 6-year frequency as specified in the Attachment G schedule. The sample collected at the beginning of each annual injection event will be representative of the water injected during that season. If a situation arises where there is an unusual injection event that occurs separate from the typical spring event, a separate sample will be collected at the beginning of that event to acquire a representative

sample of the source blend at that time. Data submitted under the previous permit will serve as the new injectate characterization and the baseline characterization reference in Attachment G. Data submitted to satisfy compliance with the Utah Division of Drinking Water regulations will serve to meet the groundwater monitoring requirements in Attachment G.

Sample Parameters and Analysis

Attachment G of the permit provides a list of the parameters to be analyzed for each sample. Below is a table of those parameters and the analytical methods that will be used. This table also specifies which lab will run each parameter. Both the Jordan Valley Laboratory the Chemtech Ford Laboratories are state certified under TNI (The NELAC Institute) standards. Chemtech Ford outsources some analysis to other laboratories and has committed to ensure that those laboratories are also TNI certified. Documentation of these certifications is available upon request. Sampling will be conducted according to the method specific requirements, including appropriate flushing, preservation, chain-of-custody, and transportation protocols. Field analysis will be conducted by trained personnel on calibrated equipment.

Parameter	Method	Units	Analysis Lab
Inorganics and Metals - Sampled each event			
Aluminum (total)	EPA 200.7	mg/L	Chemtech Ford
Antimony (total)	EPA 200.8	mg/L	Chemtech Ford
Arsenic (total)	EPA 200.8	mg/L	Chemtech Ford
Barium (total)	EPA 200.7	mg/L	Chemtech Ford
Beryllium (total)	EPA 200.7	mg/L	Chemtech Ford
Cadmium (total)	EPA 200.8	mg/L	Chemtech Ford
Chloride	EPA 300.0	mg/L	Chemtech Ford
Chromium (total)	EPA 200.7	mg/L	Chemtech Ford
Copper (total)	EPA 200.7	mg/L	Chemtech Ford
Cyanide, Total	EPA 335.4	mg/L	Chemtech Ford
Fluoride	EPA 300.0	mg/L	Chemtech Ford
Iron (total)	EPA 200.7	mg/L	Chemtech Ford
Manganese (total)	EPA 200.7	mg/L	Chemtech Ford
Mercury (total)	EPA 200.8	mg/L	Chemtech Ford
Nickel (total)	EPA 200.7	mg/L	Chemtech Ford
Selenium (total)	EPA 200.8	mg/L	Chemtech Ford
Silver (total)	EPA 200.8	mg/L	Chemtech Ford
Sodium (total)	EPA 200.7	mg/L	Chemtech Ford
Sulfate	EPA 300.0	mg/L	Chemtech Ford
Thallium (total)	EPA 200.8	mg/L	Chemtech Ford
Total Dissolved Solids (TDS)	SM 2540 C	mg/L	Chemtech Ford
Zinc (total)	EPA 200.7	mg/L	Chemtech Ford
Nitrate/Nitrite - Sampled each event			

Parameter	Method	Units	Analysis Lab
Nitrate as Nitrogen	EPA 300.0	mg/L	Chemtech Ford
Nitrite as Nitrogen	EPA 300.0	mg/L	Chemtech Ford
Total Nitrate and Nitrite	EPA 353.1	mg/L	Chemtech Ford
Asbestos - Sampled once			
Total Asbestos	EPA 600	MFL	Chemtech Ford ¹
Volatile Organic Contaminants (VOC) - Sampled each event			
1,1,1-Trichloroethane	EPA 524.2	ug/L	Chemtech Ford
1,1,2-Trichloroethane	EPA 524.2	ug/L	Chemtech Ford
1,2,4-Trichlorobenzene	EPA 524.2	ug/L	Chemtech Ford
1,2-Dichlorobenzene	EPA 524.2	ug/L	Chemtech Ford
1,2-Dichloroethane	EPA 524.2	ug/L	Chemtech Ford
1,2-Dichloropropane	EPA 524.2	ug/L	Chemtech Ford
1,3-Dichlorobenzene	EPA 524.2	ug/L	Chemtech Ford
Benzene	EPA 524.2	ug/L	Chemtech Ford
Carbon tetrachloride	EPA 524.2	ug/L	Chemtech Ford
Chlorobenzene	EPA 524.2	ug/L	Chemtech Ford
1,1-Dichloroethylene	EPA 524.2	ug/L	Chemtech Ford
cis-1,2-Dichloroethylene	EPA 524.2	ug/L	Chemtech Ford
Ethylbenzene	EPA 524.2	ug/L	Chemtech Ford
Methylene Chloride (Dichloromethane)	EPA 524.2	ug/L	Chemtech Ford
Styrene	EPA 524.2	ug/L	Chemtech Ford
Tetrachloroethylene	EPA 524.2	ug/L	Chemtech Ford
Toluene	EPA 524.2	ug/L	Chemtech Ford
trans-1,2-Dichloroethylene	EPA 524.2	ug/L	Chemtech Ford
Trichloroethylene	EPA 524.2	ug/L	Chemtech Ford
Vinyl chloride	EPA 524.2	ug/L	Chemtech Ford
Xylene, Total	EPA 524.2	ug/L	Chemtech Ford
Pesticides - Sampled once			
2,4,5-TP (Silvex)	EPA 515.3	ug/L	Chemtech Ford
2,4-D	EPA 515.3	ug/L	Chemtech Ford
Alachlor	EPA 525.2	ug/L	Chemtech Ford
Aldicarb	EPA 531.1	ug/L	Chemtech Ford
Aldicarb sulfone	EPA 531.1	ug/L	Chemtech Ford
Aldicarb sulfoxide	EPA 531.1	ug/L	Chemtech Ford
Atrazine	EPA 525.2	ug/L	Chemtech Ford
Benzo (a) pyrene	EPA 525.2	ug/L	Chemtech Ford
Carbofuran	EPA 531.1	ug/L	Chemtech Ford
Chlordane_(Total)	EPA 525.2	ug/L	Chemtech Ford
Dalapon	EPA 515.3	ug/L	Chemtech Ford
Di(2-ethylhexyl)adipate	EPA 525.2	ug/L	Chemtech Ford
Di(2-ethylhexyl)phthalate	EPA 525.2	ug/L	Chemtech Ford

Parameter	Method	Units	Analysis Lab
Dinoseb	EPA 515.3	ug/L	Chemtech Ford
Endrin	EPA 508.1	ug/L	Chemtech Ford
Heptachlor	EPA 508.1	ug/L	Chemtech Ford
Heptachlor Epoxide	EPA 508.1	ug/L	Chemtech Ford
Hexachlorobenzene	EPA 525.2	ug/L	Chemtech Ford
Hexachlorocyclopentadiene	EPA 525.2	ug/L	Chemtech Ford
Lindane	EPA 508.1	ug/L	Chemtech Ford
Methoxychlor	EPA 508.1	ug/L	Chemtech Ford
Oxamyl	EPA 531.1	ug/L	Chemtech Ford
Pentachlorophenol	EPA 515.3	ug/L	Chemtech Ford
Picloram	EPA 515.3	ug/L	Chemtech Ford
Simazine	EPA 525.2	ug/L	Chemtech Ford
Toxaphene	EPA 508.1	ug/L	Chemtech Ford
Radionuclides - Sampled every 6 years			
Gross Alpha	EPA 900.0	pCi/L	Chemtech Ford ²
Gross Alpha LLD	EPA 900.0	pCi/L	Chemtech Ford ²
Gross Alpha Variance	EPA 900.0	pCi/L	Chemtech Ford ²
Gross Beta	EPA 900.0	pCi/L	Chemtech Ford ²
Gross Beta LLD	EPA 900.0	pCi/L	Chemtech Ford ²
Gross Beta Variance	EPA 900.0	pCi/L	Chemtech Ford ²
Radium 226	EPA 903.0	pCi/L	Chemtech Ford ²
Radium 226 LLD	EPA 903.0	pCi/L	Chemtech Ford ²
Radium 226 Variance	EPA 903.0	pCi/L	Chemtech Ford ²
Radium 228	EPA 904.0	pCi/L	Chemtech Ford ²
Radium 228 LLD	EPA 904.0	pCi/L	Chemtech Ford ²
Radium 228 Variance	EPA 904.0	pCi/L	Chemtech Ford ²
Radon 222	PAI 704	pCi/L	Chemtech Ford ²
Uranium (total)	EPA 200.8	mg/L	Chemtech Ford ²
Disinfectants and Disinfection-By-Products - Sampled each event			
Bromoform	EPA 524.2	ug/L	JV Lab
Chlorine, Free Residual	SM 4500 Cl.G	mg/L	Field Test
Chlorine Dioxide (only if used in specific injectate)	SM 4500 ClO2.E	mg/L	Field Test
Chlorite (only if Chlorine Dioxide is used in specific injectate)	EPA 300.1	mg/L	Chemtech Ford
Chloroform	EPA 524.3	ug/L	JV Lab
DBAA - Dibromoacetic Acid	EPA 552.3	ug/L	JV Lab
DCAA - Dichloroacetic Acid	EPA 552.3	ug/L	JV Lab
Dibromochloromethane	EPA 524.3	ug/L	JV Lab
Dichlorobromomethane	EPA 524.3	ug/L	JV Lab
MBAA - Monobromoacetic Acid	EPA 552.3	ug/L	JV Lab

Parameter	Method	Units	Analysis Lab
MCAA - Monochloroacetic Acid	EPA 552.2	ug/L	JV Lab
TCAA - Trichloroacetic Acid	EPA 552.2	ug/L	JV Lab
Total HAA5s	EPA 552.2	ug/L	JV Lab
Total THMs	EPA 524.3	ug/L	JV Lab
Bacteriological / Turbidity - Sampled each event			
E. coli	Colilert	Present/Absent	JV Lab
Total Coliform	Colilert	Present/Absent	JV Lab
Turbidity	SM 2130 B	NTU	Field Test
Turbidity	EPA 180.1	NTU	Chemtech Ford
Additional Parameters - Sampled each event			
Alkalinity (total, as CaCO ₃)	SM 2320 B	mg/L	Chemtech Ford
Alkalinity, as Bicarbonate	SM 2320 B	mg/L	Chemtech Ford
Alkalinity, as Carbon Dioxide	SM 2320 B	mg/L	Chemtech Ford
Alkalinity, as Carbonate	SM 2320 B	mg/L	Chemtech Ford
Alkalinity, as Hydroxide	SM 2320 B	mg/L	Chemtech Ford
Calcium (total)	EPA 200.7	mg/L	Chemtech Ford
Conductivity	FT_COND	uS/cm	Field Test
Lead (total)	EPA 200.8	mg/L	Chemtech Ford
Magnesium (total)	EPA 200.7	mg/L	Chemtech Ford
pH	FT_pH	pH units	Field Test
pH	SM 4500 H B	pH units	Chemtech Ford
Phosphate, as Ortho Phosphate	SM 4500P E	mg/L	Chemtech Ford
Potassium (total)	EPA 200.7	mg/L	Chemtech Ford
Temperature	FT_Temp	oC	Field Test
Total Hardness as CaCO ₃	SM 2340B	mg/L	Chemtech Ford

Note 1: Chemtech outsources Asbestos analysis to ALS Environmental in Cincinnati, Ohio.

Note 2: Chemtech outsources all Radiological analysis to Alliance Technical Group in Cuyahoga Falls, Ohio. Chemtech Ford Laboratories commits to only outsource samples to laboratories that are TNI certified.

Recording

Data associated with the laboratory analysis will also be recorded, kept and reported. This data shall include: the date, time and location of each sample; the name of the sampler; the date, time and analyst of each analysis; the analysis method and reporting limit for each analysis; and the sample result. Electronic copies of official lab reports and field data logs will be kept on a secured and backed-up server and the data will be entered into the Laboratory Information System. Electronical data will be kept indefinitely.

In addition to the laboratory data, Jordan Valley Water will record the injectate pressure, injectate rate for each well during each injection event and static ground water level for each injection well before and after each injection event. The total volume of injectate into each well will then be calculated from the injection rate and the duration of the event.

Reporting

All of the above data will be reported to the DWQ on a quarterly basis. Due to the long turnaround time of some of the laboratory analysis, the quarterly reports will be submitted approximately 75 days of the end of each calendar quarter if injection occurred during that quarter. The actual due dates of each quarterly report is specified in Part III.G of the permit. If no injection occurred during the reporting period a brief letter stating such will be submitted in lieu of the report. This report will include: a characterization of the injectate; injection pressure, rate and volume; injection zone water level, all associated sample collection data; and all applicable sample results.

Attachment G

Monitoring Parameters and Schedule

ATTACHMENT G
Underground Injection Control (UIC) Monitoring Parameters and Monitoring Schedule for Jordan Valley Water Conservancy District (13)

Analyte	CAS Number	Units	Maximum Contaminant Level (MCL)	Secondary Drinking Water Regulations	New Injectate Characterization (1)	Yearly Injectate	3-Year Injectate	6-Year Injectate	Baseline Well GW Characterization	Yearly Well GW	3-Year Well GW	
Inorganics and Metals:												
Aluminum	7429-90-5	mg/L		0.05 to 0.2	X		X		X		X	
Antimony	7440-36-0	mg/L	0.006		X		X		X		X	
Arsenic	7440-38-2	mg/L	0.01		X		X		X		X	
Barium	7440-39-3	mg/L	2		X		X		X		X	
Beryllium	7440-41-7	mg/L	0.004		X		X		X		X	
Cadmium	7440-43-9	mg/L	0.005		X		X		X		X	
Chloride	7647-14-5	mg/L		250	X		X		X		X	
Chromium (Total)	7440-47-3	mg/L	0.1		X		X		X		X	
Copper	7440-50-8	mg/L		1	X		X		X		X	
Cyanide (as free Cyanide)	143-33-9	mg/L	0.2		X		X		X		X	
Fluoride	7681-49-4	mg/L	4	2	X		X		X		X	
Iron	7439-89-6	mg/L		0.3	X		X		X		X	
Manganese	7439-96-5	mg/L		0.05	X		X		X		X	
Mercury (inorganic)	7487-94-7	mg/L	0.002		X		X		X		X	
Nickel	7440-02-0	mg/L			X		X		X		X	
Selenium	7782-49-2	mg/L	0.05		X		X		X		X	
Silver	7440-22-4	mg/L		0.1	X		X		X		X	
Sodium		mg/L			X		X		X		X	
Sulfate (2)	7757-82-6	mg/L	1,000	250	X		X		X		X	
Thallium	7440-28-0	mg/L	0.002		X		X		X		X	
Total Dissolved Solids (3)		mg/L	2000	500	X		X		X		X	
Zinc	7440-66-6	mg/L		5	X		X		X		X	

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Nitrate/Nitrite:											
Nitrate (as Nitrogen)	14797-55-8	mg/L	10		X	X			X	X	
Nitrite (as Nitrogen)	14797-65-0	mg/L	1		X	X			X	X	
Total Nitrate and Nitrite (as N)		mg/L	10		X	X			X	X	
Asbestos:											
Asbestos (4)	1332-21-4	million fibers/L longer than 10 microns	7		X				X		
Volatile Organic Contaminants (VOC):											
Benzene	71-43-2	mg/L	0.005		X		X		X		X
Carbon tetrachloride	56-23-5	mg/L	0.005		X		X		X		X
Dichlorobenzene o-	95-50-1	mg/L	0.6		X		X		X		X
Dichlorobenzene p-	106-46-7	mg/L	0.075		X		X		X		X
Dichloroethane (1,2-)	107-06-2	mg/L	0.005		X		X		X		X
Dichloroethylene (1,1-)	75-35-4	mg/L	0.007		X		X		X		X
Dichloroethylene (cis-1,2-)	156-59-2	mg/L	0.07		X		X		X		X
Dichloroethylene (trans-1,2-)	156-60-5	mg/L	0.1		X		X		X		X
Dichloromethane	75-09-2	mg/L	0.005		X		X		X		X
Dichloropropane (1,2-)	78-87-5	mg/L	0.005		X		X		X		X
Ethylbenzene	100-41-4	mg/L	0.7		X		X		X		X
Monochlorobenzene	108-90-7	mg/L	0.1		X		X		X		X
Styrene	100-42-5	mg/L	0.1		X		X		X		X
Tetrachloroethylene	127-18-4	mg/L	0.005		X		X		X		X
Toluene	108-88-3	mg/L	1		X		X		X		X
Trichlorobenzene (1,2,4-)	120-82-1	mg/L	0.07		X		X		X		X

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Trichloroethane (1,1,1,-)	71-55-6	mg/L	0.2		X		X		X		X
Trichloroethane (1,1,1,2-)	79-00-5	mg/L	0.005		X		X		X		X
Trichloroethylene	79-01-6	mg/L	0.005		X		X		X		X
Vinyl chloride	75-01-4	mg/L	0.002		X		X		X		X
Xylenes	1330-20-7	mg/L	10		X		X		X		X
Pesticides:											
2,4 - D (2,4 - dichlorophenoxyacetic acid)	94-75-7	mg/L	0.07		X				X		X
2,4,5-TP (Silvex)	93-72-1	mg/L	0.05		X				X		X
Alachlor	15972-60-8	mg/L	0.002		X				X		X
Aldicarb	116-06-3	mg/L	0.003		X				X		X
Aldicarb sulfone	1646-88-4	mg/L	0.003		X				X		X
Aldicarb sulfoxide	1646-87-3	mg/L	0.004		X				X		X
Atrazine	1912-24-9	mg/L	0.003		X				X		X
Benzo(a)pyrene (PAH)	50-32-8	mg/L	0.0002		X				X		X
Carbofuran	1563-66-2	mg/L	0.04		X				X		X
Chlordane	57-74-9	mg/L	0.002		X				X		X
Dalapon (sodium salt)	75-99-0	mg/L	0.2		X				X		X
Di(2-ethylhexyl) adipate	103-23-1	mg/L	0.4		X				X		X
Di(2-ethylhexyl) phthalate	117-81-7	mg/L	0.006		X				X		X
Dinoseb	88-85-7	mg/L	0.007		X				X		X
Endrin	72-20-8	mg/L	0.002		X				X		X
Heptachlor	76-44-8	mg/L	0.0004		X				X		X
Heptachlor epoxide	1024-57-3	mg/L	0.0002		X				X		X
Hexachlorobenzene	118-74-1	mg/L	0.001		X				X		X
Hexachlorocyclopentadiene	77-47-4	mg/L	0.05		X				X		X

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Analyte	CAS Number	Units	Maximum Contaminant Level (MCL)	Secondary Drinking Water Regulations	New Injectate Characterization (1)	Yearly Injectate	3-Year Injectate	6-Year Injectate	Baseline Well GW Characterization	Yearly Well GW	3-Year Well GW
Lindane	58-89-9	mg/L	0.0002		X				X		X
Methoxychlor	72-43-5	mg/L	0.04		X				X		X
Oxamyl (Vydate)	23135-22-0	mg/L	0.2		X				X		X
Pentachlorophenol	87-86-5	mg/L	0.001		X				X		X
Picloram	2/1/1918	mg/L	0.5		X				X		X
Polychlorinated biphenyls (PCBs)	1336-36-3	mg/L	0.0005		X				X		X
Simazine	122-34-9	mg/L	0.004		X				X		X
Toxaphene	8001-35-2	mg/L	0.003		X				X		X
Radionuclides:											
Gross alpha particle activity (including Radium 226 but excluding Radon and Uranium)		pCi/L	15		X			X	X		X
Radium-226 (only required if gross alpha is >= 5pCi/L)	7440-14-4	pCi/L	5					X	X		X
Radium-228	7440-14-4	pCi/L	5					X	X		X
Uranium (only if gross alpha MCL is exceeded)	7440-61-1	mg/L	0.03		X			X	X		X
Gross beta particle and photon emitters (5)		mrem/yr	4		X			X	X		X
Tritium (only if gross beta exceeds 50 pCi/L)		pCi/L	20,000		X			X	X		X
Strontium-90 (only if gross beta exceeds 50 pCi/L)		pCi/L	8		X			X	X		X
Radon	10043-92-2	pCi/L			X			X	X		X

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Analyte	CAS Number	Units	Maximum Contaminant Level (MCL)	Secondary Drinking Water Regulations	New Injectate Characterization (1)	Yearly Injectate	3-Year Injectate	6-Year Injectate	Baseline Well GW Characterization	Yearly Well GW	3-Year Well GW
Total Trihalomethanes (TTHMs): (required only if Chlorine is used as disinfectant) (6)											
Chloroform	67-66-3	mg/L	0.08		X	X			X	X	
Bromodichloromethane	75-27-4	mg/L			X	X			X	X	
Dibromochloromethane	124-48-1	mg/L			X	X			X	X	
Bromoform	75-25-2	mg/L			X	X			X	X	
Haloacetic acids (HAA5): (required only if Chlorine is used as disinfectant) (7)											
Trihaloacetic acids (THAAs)											
Trichloroacetic acid (TCAA)	76-03-9	mg/L	0.06		X	X			X	X	
Dihaloacetic acids (DHAAs)											
Dichloroacetic acid (DCAA)	76-43-6	mg/L			X	X			X	X	
Dibromoacetic acid (DBAA)	631-64-1	mg/L			X	X			X	X	
Monohaloacetic acids (MHAAs)											
Monochloroacetic acid (MCAA)	79-11-8	mg/L			X	X			X	X	
Monobromoacetic acid (MBAA)	79-08-3	mg/L			X	X			X	X	

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Analyte	CAS Number	Units	Maximum Contaminant Level (MCL)	Secondary Drinking Water Regulations	New Injectate Characterization (1)	Yearly Injectate	3-Year Injectate	6-Year Injectate	Baseline Well GW Characterization	Yearly Well GW	3-Year Well GW
Disinfectants and Their By-Products: (8)											
Chloramine (only if used as a disinfectant)	10599-90-3	mg/L	4		X	X			X	X	
Chlorine	7782-50-5	mg/L	4		X	X			X	X	
Chlorine Dioxide (only if used as a disinfectant)	10049-04-4	mg/L	0.8		X	X			X	X	
Chlorite (only if Chlorine Dioxide is used as a disinfectant)	7758-19-2	mg/L	1		X	X			X	X	
Bromide / Bromate (only if Ozone is used as a disinfectant)	24959-67-9	mg/L			X	X			X	X	
(9)											
Turbidity:		NTU	(10)		X	X			X	X	
Total Coliform:			(11)		X	X			X	monthly	
Additional Parameters for New Source Monitoring to Comply with DDW Requirements:											
Color		Color Units		15	X				X		
Corrosivity				Non-Corrosive	X				X		
Foaming Agents		mg/L		0.5	X				X		
Odor		Threshold Odor Number		3	X				X		

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pH		pH units		6.5–8.5	X	X			X	X	X
Ammonia, as N		mg/L			X				X		
Boron		mg/L			X				X		
Calcium		mg/L			X				X		
Lead		mg/L			X				X		
Magnesium		mg/L			X				X		
Potassium		mg/L			X				X		
Specific Conductivity at 25° C		µmhos/cm			X	X			X	X	X
Bicarbonate		mg/L			X				X		
Carbon Dioxide		mg/L			X				X		
Carbonate		mg/L			X				X		
Hydroxide		mg/L			X				X		
Phosphorous, Ortho as P		mg/L			X				X		
Silica, dissolved as SiO ₂		mg/L			X				X		
Surfactant as MBAS		mg/L			X				X		
Total Hardness as CaCO ₃		mg/L			X				X		
Alkalinity as CaCO ₃		mg/L			X				X		
Temperature		degrees C or F				X			X		
Total Organic Carbon (TOC)		mg/L			X				X		

(12)