

US EPA ARCHIVE DOCUMENT

U.S. EPA Underground Injection Control Program

FINAL PERMIT

Class III Injection Well

Permit No. R9UIC-AZ3-FY08-1

Well Name: Roach-Baker (RB) #5

Morton Salt, Inc. Glendale Facility
13000 West Glendale Avenue
Glendale, Arizona 85307-2408

Issued to:

Morton Salt, Inc. Inc.
123 North Wacker Drive
Chicago, Illinois 60606-1743

Table of Contents

Part I. AUTHORIZATION TO INJECT 5

Part II. SPECIFIC PERMIT CONDITIONS 6

A. REQUIREMENTS PRIOR TO DRILLING, TESTING, CONSTRUCTING, OR OPERATING 6

 1. Financial Assurance..... 6

 2. Field Demonstration Submittal, Notification, and Reporting 6

B. WELL CONSTRUCTION..... 6

 1. Location of Injection Well RB #5 6

 2. Testing during Drilling and Construction 7

 3. Drilling and Work-over Procedures..... 7

 4. Casing and Completion Specifications..... 8

 5. Cement Evaluation Analysis 9

 6. Injection Intervals..... 9

 7. Monitoring Devices 9

 8. Final Well Construction Report and Completion of Construction Notice 10

 9. Proposed Changes and Workovers 10

C. CORRECTIVE ACTION 11

D. WELL OPERATION 11

 1. Demonstrations Required Prior to Injection..... 11

 2. Mechanical Integrity..... 12

 3. Injection Pressure Limitation 13

 4. Injection Volume (Rate) Limitation 14

 5. Injection Fluid Limitation 14

 6. Ratio of Injected Volume to Produced Volume Limitation 15

 7. Salt Cavern Roof..... 15

 8. Subsidence monitoring program 16

 9. Emergency Removal of Tubing and Packer 16

 10. Contingency Plan for Well Failure..... 16

E. MONITORING, RECORDKEEPING, AND REPORTING OF RESULTS 16

 1. Injection Well Monitoring Program 16

 2. Monitoring Information 17

 3. Monitoring Devices 18

4. Recordkeeping..... 18

5. Reporting 19

F. PLUGGING AND ABANDONMENT 21

1. Notice of Plugging and Abandonment 21

2. Plugging and Abandonment Plan..... 21

3. Cessation of Injection Activities 21

4. Plugging and Abandonment Report 21

G. FINANCIAL RESPONSIBILITY 22

1. Demonstration of Financial Responsibility 22

2. Insolvency of Financial Institution 22

3. Insolvency of Owner or Operator 22

H. DURATION OF PERMIT 23

Part III. GENERAL PERMIT CONDITIONS..... 24

A. EFFECT OF PERMIT 24

B. PERMIT ACTIONS 24

1. Modification, Revocation and Reissuance, or Termination..... 24

2. Transfers..... 25

C. SEVERABILITY 25

D. CONFIDENTIALITY 25

E. GENERAL DUTIES AND REQUIREMENTS 25

1. Duty to Comply 25

2. Penalties for Violations of Permit Conditions 26

3. Need to Halt or Reduce Activity Not a Defense 26

4. Duty to Mitigate 26

5. Proper Operation and Maintenance 26

6. Property Rights 26

7. Duty to Provide Information..... 26

8. Inspection and Entry 27

9. Signatory Requirements..... 27

10. Additional Reporting 27

APPENDICES

APPENDIX A – Project Maps

APPENDIX B – Well Schematic

APPENDIX C – EPA Reporting Forms

APPENDIX D – Temperature Logging Requirements, USEPA Region IX

APPENDIX E – Plugging and Abandonment Plan

APPENDIX F – Casing Inspection Log Guidance

Part I. AUTHORIZATION TO INJECT

Pursuant to the Underground Injection Control (UIC) regulations of the U.S. Environmental Protection Agency (EPA) codified at Title 40 of the Code of Federal Regulations (CFR), §§124, 144, 145, 146, 147, and 148,

Morton Salt, Inc.
123 North Wacker Drive
Chicago, Illinois 60606-1743

is hereby authorized, contingent upon Permit conditions, to construct and operate a Class III solution mining injection well consisting of one (1) new injection well, known as Roach-Baker (RB) #5. This well is to be located in Section 2, Township 2N, Range 1W, on Morton Salt facilities in Glendale, Maricopa County, Arizona. The exact location of the new well will be established and approved as outlined in this permit.

Authorization to drill and construct the new well will be issued by EPA after the requirements of Financial Responsibility in Part II, Section G of this permit have been met. EPA will grant authorization to inject in the new well after the requirements of Part II Sections B-D of this permit have been met. Operation of the well will be limited to maximum volume and pressure as stated in this permit. Total amounts must not exceed specified limits.

If approved, injection will be authorized into the Luke Salt Body for the purpose of solution mining of salt upon the express condition that the Permittee meet the restrictions set forth herein.

All conditions set forth herein are based on Title 40 §§124, 144, 145, 146, 147 and 148 of the Code of Federal Regulations.

This permit consists of twenty-eight (28) pages plus the appendices, and includes all items listed in the Table of Contents. Further, it is based upon representations made by Morton Salt, Inc. and on other information contained in the administrative record. It is the responsibility of the Permittee to read, understand, and comply with all terms and conditions of this permit.

This permit and the authorization to construct, test, and inject are issued for the operating lifetime of the well, unless terminated under the conditions set forth in Part III, Section B.1 of this permit.

The EPA shall review this permit at least once every five years from the date of issuance to determine whether it should be modified, revoked and reissued, terminated, or a minor modification made as provided in 40 CFR §§144.39, 144.40, and 144.41.

This permit is issued and becomes effective on _____.

Alexis Strauss, Director
Water Division, EPA Region IX

Final Permit No. R9UIC-AZ3-FY08-1
Page 5 of 28

Part II. SPECIFIC PERMIT CONDITIONS

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

1. Financial Assurance

The Permittee shall supply evidence of financial assurance prior to commencing Injection Well Drilling and Construction, in accordance with Section G of this part.

2. Field Demonstration Submittal, Notification, and Reporting

- a. Prior to each demonstration required in the following Sections B through D, the Permittee shall submit plans for procedures and specifications to the U.S. Environmental Protection Agency Region IX Ground Water Office (“EPA”) for review, possible editing and approval. The submittal address is provided in Section E, paragraph 5. No demonstration in these sections may proceed without prior written approval from EPA.
- b. The Permittee must notify EPA at least thirty (30) days prior to performing any required field demonstrations after EPA approves the demonstration workplan, in order to allow EPA to arrange to witness if so elected.
- c. The Permittee shall submit results of each demonstration required in this section to EPA within sixty (60) days of completion.

B. WELL CONSTRUCTION

1. Location of Injection Well RB #5

Injection well, RB #5 authorized under this permit, will be located at the Morton Salt facility at 13000 West Glendale Avenue, in Glendale, Maricopa County, Arizona (See Appendix A, Figure 1).

- a. The proposed field coordinates of the well are Township 2 North, Range 1 West, SW 1/4, Section 2.

- b. After drilling is completed, the Permittee must submit final field coordinates (Section, Township, Range, with latitude/longitude) of the well constructed under this permit with the Final Well Construction Report required under paragraph 8.a of this section. Pre-approval by EPA for any changes in coordinates from those proposed under paragraph 1a. above is required.

2. Testing during Drilling and Construction

Open Hole logs shall be conducted over the entire open hole sequence below the conductor casing. Permittee shall conduct Formation Evaluation wireline logging operations and shall provide and use those results to estimate and report values for lithology, rock mechanical properties for both the salt body and the overlying confining anhydrite beds identified within the permitted geological sequence.

After each casing is set and cementing is completed, a spherically focused cement bond evaluation log (CBL) will be run over the course of the entire cased hole sequence, except for the 22" and 18 5/8" casing (See Section B, paragraph 5 of this part).

3. Drilling and Work-over Procedures

Drilling and work-over procedures must comply with applicable portions of the Arizona Oil and Gas Conservation Commission of the Arizona Administrative Code, found in Title 12, Natural Resources, Chapter 7, Article I, R12-7-108 to R12-7-127. Drilling and work-over procedures shall be submitted to EPA for approval. Once approved, a 30 day advance notice shall be submitted to EPA for witnessing purposes. Drilling procedures shall also include the following:

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

Procedures provided on reporting forms such as EPA Form 7520-9, Completion of Construction, or EPA Form 7520-12, Well Rework Record (Refer to Appendix C) may be acceptable provided all required information as specified above is included. The Permittee must also comply with the requirements of the Arizona Department of Water Resources minimum construction standards of the Arizona

Administrative Code found in Title 12, Chapter 15, Article 8, Well Construction and Licensing of Drillers.

4. Casing and Completion Specifications

- a. Notwithstanding any other provisions of this permit, the Permittee shall case and cement the well to prevent the movement of fluids into or between USDWs. Cement evaluation analyses shall be performed as described in Section B, paragraph 5 of this part. The casing shall be maintained throughout the operating life of the wells. See Appendix B, Figure 1, for the approximate construction specifications pertaining to the proposed injection well RB #5.

EPA may require minor alterations to the construction requirements for well RB #5 based upon the information obtained during well drilling and related operations. Changes may sometimes be made in the field and if EPA approves, these changes shall be considered minor for this permit.

Final depths will be determined by the field conditions, well logs, and other input from the drilling consultant and geologists. EPA approval will be obtained, in advance, for any revisions prior to installation, and these changes will be documented in the well completion report (EPA Form 7520-9) and shall be considered minor for this permit (See paragraph 8.a below).

- b. A casing inspection log (CIL) to the final depth should be completed once the well is installed to determine the initial condition of the 13^{3/8}" casing. A second CIL shall then be conducted after the well has operated for five (5) years. Subsequent CILs will be conducted as outlined below (see Appendix F for Casing Inspection Log Guidance), or when otherwise requested by EPA:
- i. If metal loss of nominal casing thickness is greater than 70%, Permittee shall repair the casing or plug and abandon the well. After the casing is repaired, Permittee shall verify the integrity of the casing by conducting a Water Brine Interface Test (WBIT) or equivalent, and an additional CIL subject to EPA approval prior to recommencing injection in the repaired well. The required WBIT procedure shall be submitted to EPA for approval prior to the conduct of the test.

- ii. If metal loss of nominal casing thickness is between 40 and 70%, Permittee shall conduct a WBIT as described in the previous paragraph and shall monitor casing loss by conducting additional CILs every three (3) years.
- iii. If the metal loss of nominal casing thickness is between twenty (20) and forty (40) percent (%), Permittee shall monitor casing loss by conducting additional CILs every five (5) years.
- iv. If the metal loss of nominal casing thickness is twenty (20) percent (%) or less, Permittee may continue normal injection operations. Permittee shall conduct a follow-up CIL in ten (10) years.

5. Cement Evaluation Analysis

After casing is installed, after conducting a cement squeeze job in an open hole, or after any well cement repair for the well constructed under this permit, the Permittee shall submit cementing records and cement evaluation logs that demonstrate the isolation of the injection interval. The analysis shall include a spherically-focused tool, run after the long-string casing is set and cemented, which enables the evaluation of the bond between cement and casing as well as of the bond between cement and formation. The Permittee may not commence or recommence injection until it has received written notice from EPA that such a demonstration is satisfactory.

6. Injection Intervals

Injection for well RB #5 shall be permitted for the Luke Salt Body at depths between approximately 2,000 feet bgs and 3,500 feet bgs. The entire injection unit is approximately 1,500 feet thick. The Permittee must demonstrate that the well has mechanical integrity, in accordance with Section D paragraphs 1.a and 2 of this part, before any initial injection is authorized or before injection is recommenced after a workover has compromised the seal. In no event shall the roof of the solution cavern be developed in such a manner that dissolution of the overlying anhydrite beds takes place or that injection brines or blanket fluids are allowed to migrate into any formation overlying the Luke Salt Body.

7. Monitoring Devices

The Permittee shall install and maintain in good operating condition:

- a. A tap on the discharge line between the injection pump and the wellhead for the purpose of obtaining representative samples of injection fluids; and

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

8. Final Well Construction Report and Completion of Construction Notice

- a. The Permittee must submit a final well construction report, including logging, and other results, with a schematic diagram and detailed description of construction, including driller's log, materials used (i.e., tubing tally, cement and other volumes), to EPA within sixty (60) days after completion of injection well RB #5.
- b. The Permittee must also submit a notice of completion of construction to EPA (refer to EPA Form 7520-9 in Appendix C). Injection operations may not commence until EPA has inspected or otherwise reviewed the injection well and notified the Permittee that it is in compliance with the conditions of the permit.

9. Proposed Changes and Workovers

The Permittee shall give advance notice to EPA, as soon as possible, of any planned physical alterations or additions to the permitted injection well. Any changes in well construction require prior approval of EPA and may require a permit modification under the requirements of 40 CFR §§ 144.39, unless they are specified as minor in this permit. In addition, the Permittee shall provide all records of well workovers, logging, or other subsequent test data, including required mechanical integrity testing, to EPA within sixty (60) days of completion of the activity. Appendix C contains names of the appropriate reporting forms. Demonstration of mechanical integrity shall be performed within thirty (30) days of completion of workovers or alterations and prior to resuming injection activities, in accordance with Section D paragraphs 1.a and 2 of this part.

C. CORRECTIVE ACTION

No corrective action plan is currently required. The wells in the Area of Review that also penetrate the injection zone are the two operating Morton injection wells (RB#3 and 4); and three gas storage wells (Plains Well #1, 2 and 3), and Morton's former injection wells (RB#1 and 2). There is no hydrologic connection between any of the operating four wells and RB #5 due to the impermeability of the salt formation. The two former Morton injection wells (RB #1 and RB #2) are plugged and abandoned.

D. WELL OPERATION

1. Demonstrations Required Prior to Injection

For the well, injection operations may not commence until construction is complete, and the Permittee has complied with following paragraphs (a) and (b):

a. Mechanical Integrity

The Permittee shall demonstrate that the well has and maintains mechanical integrity consistent with CFR §146.8 and with paragraph 2 of this section. The Permittee shall demonstrate that there are not significant leaks in the casing and tubing and that there is not significant fluid movement into or between USDWs through the casing wellbore annulus or vertical channels adjacent to the injection wellbore. The Permittee may not commence initial injection into the well nor recommence injection after a workover which has corrected any loss of well integrity until it has received written notice from EPA that the demonstration provided is satisfactory.

b. Injectate Hazardous Waste Determination

The Permittee shall perform an injectate Hazardous Waste Determination of the fluid being injected into well RB #5, according to 40 CFR §262.11. The results of this determination shall demonstrate that the injectate does not meet the definition of hazardous waste as defined in 40 CFR §261.

- i. The Permittee will be required to submit a letter to EPA confirming that the "Hazardous Waste Determination" was carried out according to 40 CFR §261 within sixty (60) days of its having been completed.

- ii. The Permittee shall perform an additional “Hazardous Waste Determination” whenever there is a process change or a change in fluid chemical constituents or characteristics.

2. Mechanical Integrity

Additional mechanical integrity monitoring is required as follows:

- a. Water Brine Interface Tests (“WBITs”)

Mechanical integrity testing shall conform to the following requirements throughout the life of the injection well:

A demonstration of the absence of significant leaks in the casing or tubing shall be made by performing a WBIT or equivalent test. Sixty (60) days prior to conducting a mechanical integrity test by the WBIT or equivalent method, the Permittee shall submit to the EPA for approval, the procedures for conducting this test. The test shall not proceed until the Permittee receives EPA’s written permission.

- b. Continuous pressure monitoring

The tubing/casing and injection pressure shall be monitored and recorded continuously by a digital instrument with a resolution of one tenth (0.1) psi. The average, maximum, and minimum monthly results shall be included in the quarterly report to EPA per Section E, paragraph 5 of this part unless more detailed records are requested by EPA.

- c. Continuous Monitoring of Injection and Production Ratios

Continuous monitoring of the injection and production volumes is required as described in Section E.3(a). The ratio between these two volumes is also required to be reported in accordance with Section E, paragraph 6 below.

- d. Subsequent WBITs

At least once every five (5) years during the life of the well, a water brine interface test (WBIT), or equivalent shall be conducted on the injection well authorized under this permit in accordance with 40 CFR §146.8 and paragraph (a)(i) above. Sixty (60) days prior to conducting a WBIT, the Permittee shall submit to the EPA for approval a plan to conduct a WBIT. Tests shall not proceed until the Permittee receives EPA approval.

e. Loss of Mechanical Integrity

The Permittee shall notify EPA, in accordance with Part III, Section E of this permit, under any of the following circumstances:

- i. The well fails to demonstrate mechanical integrity during a WBIT, or equivalent test;
- ii. An abnormal change in the ratio of the injected vs. produced volume as described in paragraph 6 below; or
- iii. A loss of mechanical integrity becomes evident during operation.

Furthermore, in the event of i, ii or iii, injection activities shall be terminated immediately and operation shall not be resumed until the Permittee has taken necessary actions to restore mechanical integrity to the well, and EPA gives approval to recommence injection.

f. Prohibition without Demonstration

After the permit effective date, injection into the well may continue only if:

- i. The well has passed a WBIT, or equivalent test, in accordance with paragraphs 2(a) and 2 (d) of this section; and
- ii. The Permittee has received written notice from EPA that the WBIT or equivalent demonstration is satisfactory.

3. Injection Pressure Limitation

- a. Injection pressure at the wellhead shall not exceed a maximum which shall be calculated so as to assure that the pressure in the salt body during injection does not initiate new fractures or propagate existing fractures. In no case shall injection pressure initiate fracturing in the confining zone or cause the movement of injection fluids into an underground source of drinking water. The injection pressure shall not exceed that amount determined to be appropriate through the demonstrations conducted in this section. EPA will provide written notification of the maximum injection pressure allowed under this permit prior to any injection conducted.

- b. In the event of an increased salt cavity ceiling height or modification of the injection tubing length, the Permittee shall notify EPA. A reduced maximum injection pressure shall be calculated based on these changes and injection shall not commence until such calculations have been submitted to and approved by EPA.

4. Injection Volume (Rate) Limitation

- a. The injection rate shall not exceed the volume determined appropriate through the demonstrations conducted in this section. EPA will provide written notification of the maximum injection volume allowed under this permit prior to any injection conducted.
- b. The Permittee may request an increase in the maximum rate allowed in paragraphs (a) above. Any such request shall be made in writing and appropriately justified to EPA.
- c. Any request for an increase in injection rate shall demonstrate to the satisfaction of EPA that the increase in volume will not interfere with the operation of the facility, its ability to meet conditions described in this permit, change its well classification, or cause migration of fluids, or cause an exceedance of the maximum authorized injection pressure.

5. Injection Fluid Limitation

Injection fluids in well RB#5 consists of water supplied by water wells AmeriGas 2 and Morton 3 (see Appendix A, Figure 2) along with a small amount of recycled water from the plant's scrubbers. This fluid is stored in a 20,000 gallon stainless steel tank on the suction side of the pumps.

In addition, an oil blanket will be injected into RB #5 after a small cavern has developed above the bottom of the cemented 13³/₈" casing. The oil is used as a blanket to control the shape and height of the cavern. It may take up to six years of normal operation to develop the cavern to this point. The oil blanket will be food grade mineral oil. The oil will be pumped down the annulus of the 13³/₈" x 10³/₄" casing, followed by enough water to flush the oil into the cavern behind the 13³/₈" casing where it will be trapped and float on the water/brine in the cavern. Up to 4,000 gallons of oil may be injected. The pressure of the water filled annulus between the 13³/₈" and the 10³/₄" will be monitored. If additional oil is needed, a request to EPA must be submitted for approval.

Any proposed modification of the sources of the injectate must be analyzed and submitted to EPA for approval prior to injection.

In addition,

- a. The Permittee shall not inject any hazardous waste, as defined by 40 CFR Part 261, at any time. See also paragraph 1(b) of this section.
- b. Injection fluids shall be limited to only fluids authorized by this permit. No fluids shall be accepted from other sources.
- c. Any well stimulation or treatment procedure performed at the discretion of the operator shall be proposed and submitted to EPA for approval prior to implementation.

6. Ratio of Injected Volume to Produced Volume Limitation

If over a calendar month period (as determined by a review of the monthly ratio during the last five days of the calendar month) the average ratio of injected to produced brine falls outside the range of 0.95 to 1.1, a written explanation shall be included in the quarterly report. If over a calendar month period the ratio of injected to produced brine averages higher than 1.15, the Permittee must report this condition to EPA within 24 hours, and immediately cease injection into RB #5. In this circumstance, the Permittee shall conduct an investigation to determine the cause of this abnormal ratio. The Permittee shall submit to EPA a report of the investigation within 15 days of cessation of injection into the well.

7. Salt Cavern Roof

Within ninety (90) days of the effective date of the permit, the Permittee shall submit a plan to EPA to measure the salt roof thickness and salt cavern ceiling depth below ground surface. Plans shall include description of devices that will be used to obtain these values.

The Permittee shall maintain a salt cavern roof thickness of a minimum of 200 feet between the overlying anhydrite layer and salt cavern ceiling unless a written request to deviate from this requirement is submitted to the EPA and written permission is given. Measurement of the salt cavern roof thickness shall be taken once every three (3) years, with an initial measurement taken before the solution mining commences. This value shall be measured from the ceiling of the salt cavern to the bottom of the overlying anhydrite layer. Methods to control dissolution of the cavern ceiling may include injection of food grade mineral oil to act as a fluid blanket to control the shape and height of the cavern.

8. Subsidence monitoring program

Within ninety (90) days of the effective date of this permit, the Permittee shall submit a plan to EPA for approval to develop a monitoring well network especially for the purpose of monitoring subsidence.

Implementation of a subsidence monitoring program shall begin within one year of the date of the completion of cavern construction.

9. Emergency Removal of Tubing and Packer

In the event of emergency removal of the tubing or packer in which the removal was not planned or calculated, the EPA shall be notified verbally within 24 hours and in writing within 5 days of the emergency removal. Upon re-installation of the tubing and packer, and prior to recommencing injection, an EPA approved mechanical integrity demonstration shall be made and the results submitted within fifteen (15) days of such demonstration. Injection may recommence upon demonstration of mechanical integrity and approval by EPA. EPA, upon review of the submitted results may request further testing.

10. Contingency Plan for Well Failure

EPA requires the following actions be implemented when any well failures or other conditions that may cause the migration of fluids into any USDW are identified by testing, or are indicated by operations data:

- a. Stop injection into identified well
- b. Investigate well failure
- c. Report as required
- d. Take corrective action to repair or plug well and protect USDW

E. MONITORING, RECORDKEEPING, AND REPORTING OF RESULTS

1. Injection Well Monitoring Program

Injection fluids from sources as specified in D.5 will be analyzed to yield representative data on their physical, chemical, or other relevant characteristics. The Permittee shall take samples at or before the wellhead for analysis. Test results shall be submitted to EPA on an annual basis (see paragraph 5 below).

Samples and measurements shall be representative of the monitored activity. The Permittee shall utilize applicable analytical methods described in Table I of 40

CFR §136.3 or in EPA Publication SW-846, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," unless other methods have been approved by EPA.

- a. Summary of acceptable analytic Methods:
 - i. Inorganic Constituents – appropriate USEPA methods for Major Anions and Cations (including an anion/cation balance).
 - ii. Solids – Standard Methods 2540C and 2540D for Total Dissolved Solids and Total Suspended Solids.
 - iii. General and Physical Parameters – appropriate USEPA methods for Temperature, Turbidity, pH, Conductivity, Hardness, Specific Gravity, Alkalinity, and Biological Oxygen Demand ("BOD"); and Density and Viscosity (See EPA Bulletin 712-C-96-032) under standard conditions.
 - iv. Trace Metals – USEPA Method 200.8.

- b. Analysis of injection fluids.

Whenever there is a significant change in injection fluids, injectate sampling and analyses shall be performed as outlined in paragraph (a) above.

2. Monitoring Information

Records of monitoring activity required under this permit shall include:

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

3. Monitoring Devices

a. Continuous monitoring devices

Temperature and injection pressure shall be measured at the wellhead using equipment of sufficient precision and accuracy. All measurements must be recorded at minimum to a resolution of one tenth of the unit of measure, except temperature (e.g. injection and production rates and volumes must be recorded to a resolution of a tenth of a gallon; pressure must be recorded to a resolution of a tenth of a psig; injection fluid temperature must be recorded to a resolution of one degree Fahrenheit). Exact dates and times of measurements, when taken, must be recorded and submitted. Injection and production rates shall be measured at or near the wellhead. The Permittee shall continuously monitor and record the following parameters at the prescribed frequency:

Monitoring Parameter	Frequency	Instrument
Injection rate (gallons per minute)	continuous	digital recorder
Injection volume (gallons)	continuous	digital totalizer
Total Cumulative Injection Volume (gallons)	daily	digital totalizer
Injection pressure (psig)	continuous	digital recorder
Injection fluid temperature (degrees Fahrenheit)	daily	digital recorder
Produced fluid volume (gallons)	continuous	digital recorder
Produced fluid temperature (degrees Fahrenheit)	daily	digital recorder

b. Calibration and Maintenance of Equipment

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

4. Recordkeeping

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

- a. All monitoring information, including required observations, calibration and maintenance records, recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the permit application;
- b. Information on the nature and composition of all injected fluids;
- c. Results of the injectate "Hazardous Waste Determination" according to 40 CFR §262.11. Analytical results shall demonstrate that the injectate does not meet the definition of hazardous waste as defined in 40 CFR §261; and
- d. Records and results of WBITs, any other tests required by EPA, and any well workovers completed.
- e. The Permittee shall maintain copies (or originals) of all records described in paragraphs (a) through (d) above during the operating life of the well and shall make such records available at all times for inspection at the facility.
- f. The Permittee shall only discard the records described in paragraphs (a) through (d) if:
 - i. the records are either delivered to the Ground Water Office, or
 - ii. written approval from the Regional Administrator to discard the records is obtained.

5. Reporting

Quarterly, the Permittee shall submit accurate reports to EPA containing, at minimum, the following information:

- a. Monthly cumulative total volumes, (in electronic and written format), as well as monthly average, minimum, and maximum values for the continuously monitored rate, pressure; and temperature parameters specified for the injection well in paragraph 3.a of this section, unless more detailed records are requested by EPA; and daily and monthly ratio of injected to produced fluid volume.
- b. Other analyses, to be included in the next quarterly report following completion:
 - i. Injection fluid characteristics for parameters specified above;

- ii. When appropriate, Injectate Hazardous Waste Determination according to Section D.1.b.; and
- iii. To be included with the next quarterly report immediately following completion, results of a WBIT or equivalent test to be conducted every five years as required by EPA; and following completion, results of any subsequent WBITs or equivalent tests required by EPA, or any well workovers completed.
- c. To be included in the quarterly report due in January each year, the following additional information: Annual reporting summary (EPA Form 7520-11, Appendix C).
- d. A narrative description of any non-compliance, including an explanation of any injection to production ratio abnormalities, (as described above in D. 6), as well as any other non-compliance that occurred during the reporting period.

Quarterly reports shall be submitted by the respective due dates as listed below:

<u>Reporting Period</u>	<u>Report Due</u>
Jan, Feb, Mar	Apr 28
Apr, May, Jun	July 28
July, Aug, Sep	Oct 28
Oct, Nov, Dec	Jan 28

Monitoring results and all other reports required by this permit shall be submitted to the following address, in hard copy and electronic format:

U.S. Environmental Protection Agency, Region IX
 Water Division
 Ground Water Office (Mail Code WTR-9)
 75 Hawthorne St.
 San Francisco, CA 94105-3901

Copies of all reports shall also be provided to the following:

Arizona Department of Environmental Quality
 Groundwater Section
 1110 West Washington Street
 Phoenix, Arizona 85007

F. PLUGGING AND ABANDONMENT

1. Notice of Plugging and Abandonment

The Permittee shall notify EPA no less than sixty (60) days before conversion, workover, or abandonment of any well authorized by this permit. EPA may require that the plugging and abandonment be witnessed by an EPA representative.

2. Plugging and Abandonment Plan

The Permittee shall plug and abandon the well as provided in Appendix E, the general Plugging and Abandonment (P&A) Program submitted as Attachment Q to the application, and consistent with the requirements of 40 CFR §146.10. Approximately 75% of the mineral oil blanket shall also be removed and disposed of properly. EPA reserves the right to change the manner in which the well will be plugged if the well is modified during its permitted life or if the well is not consistent with EPA requirements for construction or mechanical integrity. EPA may require the Permittee to update the estimated plugging cost periodically. Such estimates shall be based upon costs which a third party would incur to plug the wells, including mud and disposal costs, with appropriate contingencies.

3. Cessation of Injection Activities

After a cessation of injection operations for two (2) years, the Permittee shall plug and abandon the well in accordance with the Plugging and Abandonment Plan, unless it:

- a. Provides notice to EPA;
- b. Has demonstrated that the well will be used in the future; and
- c. Has described actions or procedures, satisfactory to EPA, that will be taken to ensure that the well will not endanger underground sources of drinking water during the period of temporary abandonment.

4. Plugging and Abandonment Report

Within sixty (60) days after plugging the well, the Permittee shall submit a report on Form 7520-14, as referred to in Appendix C, to EPA. The report shall be certified as accurate by the person who performed the plugging operation and shall consist of either:

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

G. FINANCIAL RESPONSIBILITY

1. Demonstration of Financial Responsibility

The Permittee is required to demonstrate and maintain financial responsibility and resources sufficient to close, plug, and abandon the underground injection operation as provided in the Plugging and Abandonment Plan and consistent with 40 CFR §144 Subpart D, which the Director has chosen to apply.

- a. The Permittee shall post an approved financial instrument in the amount of \$286,000 to guarantee closure of RB#5. Continued authority to inject and operate RB #5 under the authority of this permit will be granted only after the financial instrument has been posted and approved by EPA.
- b. The financial responsibility mechanism shall be reviewed and updated periodically, upon request of EPA. The Permittee may also be required to change to an alternate method of demonstrating financial responsibility. Any such change must be approved in writing by EPA prior to the change.

2. Insolvency of Financial Institution

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

- a. The institution issuing the bond or other financial instrument files for bankruptcy; or
- b. The authority of the trustee institution to act as trustee, or the authority of the institution issuing the financial instrument, is suspended or revoked.

Failure to submit an acceptable financial demonstration will result in the termination of this permit pursuant to 40 CFR §144.40(a)(1).

3. Insolvency of Owner or Operator

An owner or operator must notify EPA by certified mail within ten (10) business days of the commencement of voluntary or involuntary proceedings under U.S.

Code Title 11 (Bankruptcy), naming the owner or operator as debtor. A guarantor of a corporate guarantee must make such a notification if he/she is named as debtor, as required under the terms of the guarantee.

H. DURATION OF PERMIT

This permit and the authorization to inject shall continue for the operating lifetime of the well, unless terminated as described below under III.B.1.

Part III. GENERAL PERMIT CONDITIONS

A. EFFECT OF PERMIT

The Permittee is allowed to engage in underground injection well construction and operation in accordance with the conditions of this permit. The Permittee shall not construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant (as defined by 40 CFR §144.3) into underground sources of drinking water (as defined at 40 CFR §§144.3, 146.3).

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

Furthermore, any underground injection activity not specifically authorized in this permit is prohibited. The Permittee must comply with all applicable provisions of the Safe Drinking Water Act ("SDWA") and 40 CFR Parts 144, 145, 146, and 124. Such compliance does not constitute a defense to any action brought under Section 1431 of the SDWA, 42 U.S.C. § 300(i), or any other common law, statute, or regulation other than Part C of the SDWA. Issuance of this permit does not convey property rights of any sort or any exclusive privilege; nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of State or local law or regulations. Nothing in this permit shall be construed to relieve the Permittee of any duties under all applicable laws or regulations.

B. PERMIT ACTIONS

1. Modification, Revocation and Reissuance, or Termination

EPA may, for cause or upon request from the Permittee, modify, revoke and reissue, or terminate this permit in accordance with 40 CFR §§124.5, 144.12, 144.39, and 144.40. The permit is also subject to minor modifications for cause as specified in 40 CFR §144.41. The filing of a request for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance by the Permittee, does not stay the applicability or enforceability of any permit condition. EPA may also modify, revoke and reissue, or terminate this permit in accordance with any amendments to the SDWA if the amendments have applicability to this permit.

2. Transfers

This permit is not transferable to any person unless notice is first provided to EPA and the Permittee complies with requirements of 40 CFR §144.38. EPA may require modification or revocation and reissuance of the permit to change the name of the Permittee and incorporate such other requirements as may be necessary under the SDWA.

C. SEVERABILITY

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

D. CONFIDENTIALITY

In accordance with 40 CFR §§2 and 144.5, any information submitted to EPA 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, EPA may make the information available to the public without further notice. If a claim is asserted, the validity of the claim will be assessed in accordance with the procedures contained in 40 CFR §2 (Public Information). Claims of confidentiality for the following information will be denied:

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

E. GENERAL DUTIES AND REQUIREMENTS

1. Duty to Comply

The Permittee shall comply with all applicable UIC Program regulations and all conditions of this permit, except to the extent and for the duration such noncompliance is authorized by an emergency permit issued in accordance with 40 CFR §144.34. Any permit noncompliance constitutes a violation of the SDWA and is grounds for enforcement action; permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. Such noncompliance may also be grounds for enforcement action under the Resource Conservation and Recovery Act ("RCRA").

2. Penalties for Violations of Permit Conditions

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

3. Need to Halt or Reduce Activity Not a Defense

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

4. Duty to Mitigate

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

5. Proper Operation and Maintenance

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

6. Property Rights

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

7. Duty to Provide Information

The Permittee shall furnish to EPA, within a time specified, any information which EPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The Permittee shall also furnish to EPA, upon request, copies of records required to be kept by this permit.

8. Inspection and Entry

The Permittee shall allow EPA, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

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

9. Signatory Requirements

All applications, reports, or other information submitted to EPA shall be signed and certified by a responsible corporate officer or duly authorized representative according to 40 CFR §144.32.

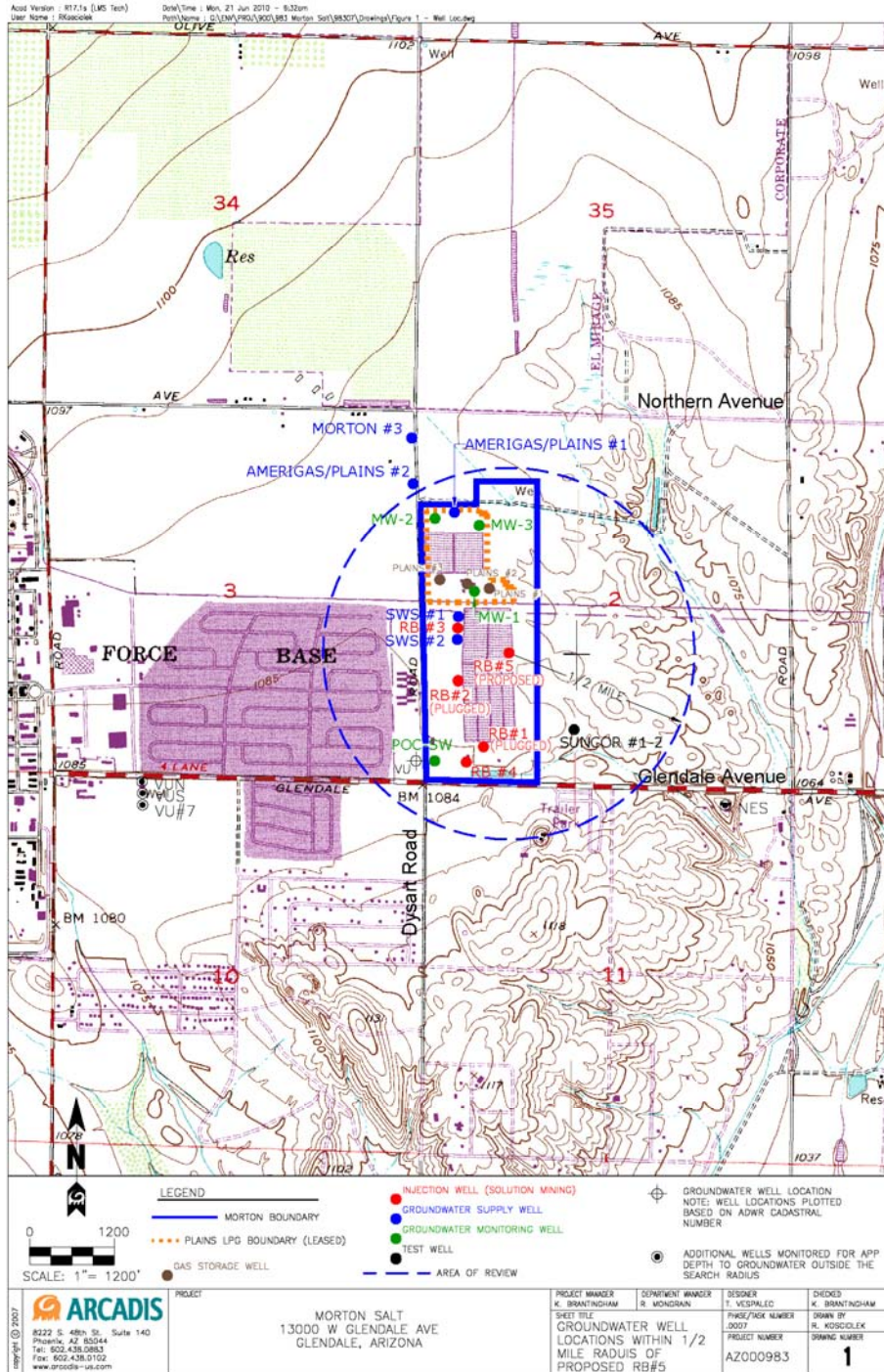
10. Additional Reporting

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

- d. Twenty-four Hour Reporting
- i. The Permittee shall report to EPA any noncompliance which may endanger health or the environment. Information shall be provided orally within twenty-four (24) hours from the time the Permittee becomes aware of the circumstances. The following information must be reported orally within twenty-four (24) hours:
- 1) Any monitoring or other information which indicates that any contaminant may cause an endangerment to an underground source of drinking water; and
 - 2) Any noncompliance with a permit condition, or malfunction of the injection system, which may cause fluid migration into or between underground sources of drinking water; and
- ii. A written submission of all noncompliance as described in paragraph d.i. shall also be provided to EPA within five (5) days of the time the Permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times; 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.
- e. Other Noncompliance - At the time monitoring reports are submitted, the Permittee shall report in writing all other instances of noncompliance not otherwise reported.
- f. Other Information – If the Permittee becomes aware that it failed to submit all relevant facts in the permit application, or submitted incorrect information in the permit application or in any report to EPA, the Permittee shall submit such facts or information within two (2) weeks of the time such facts or information becomes known.

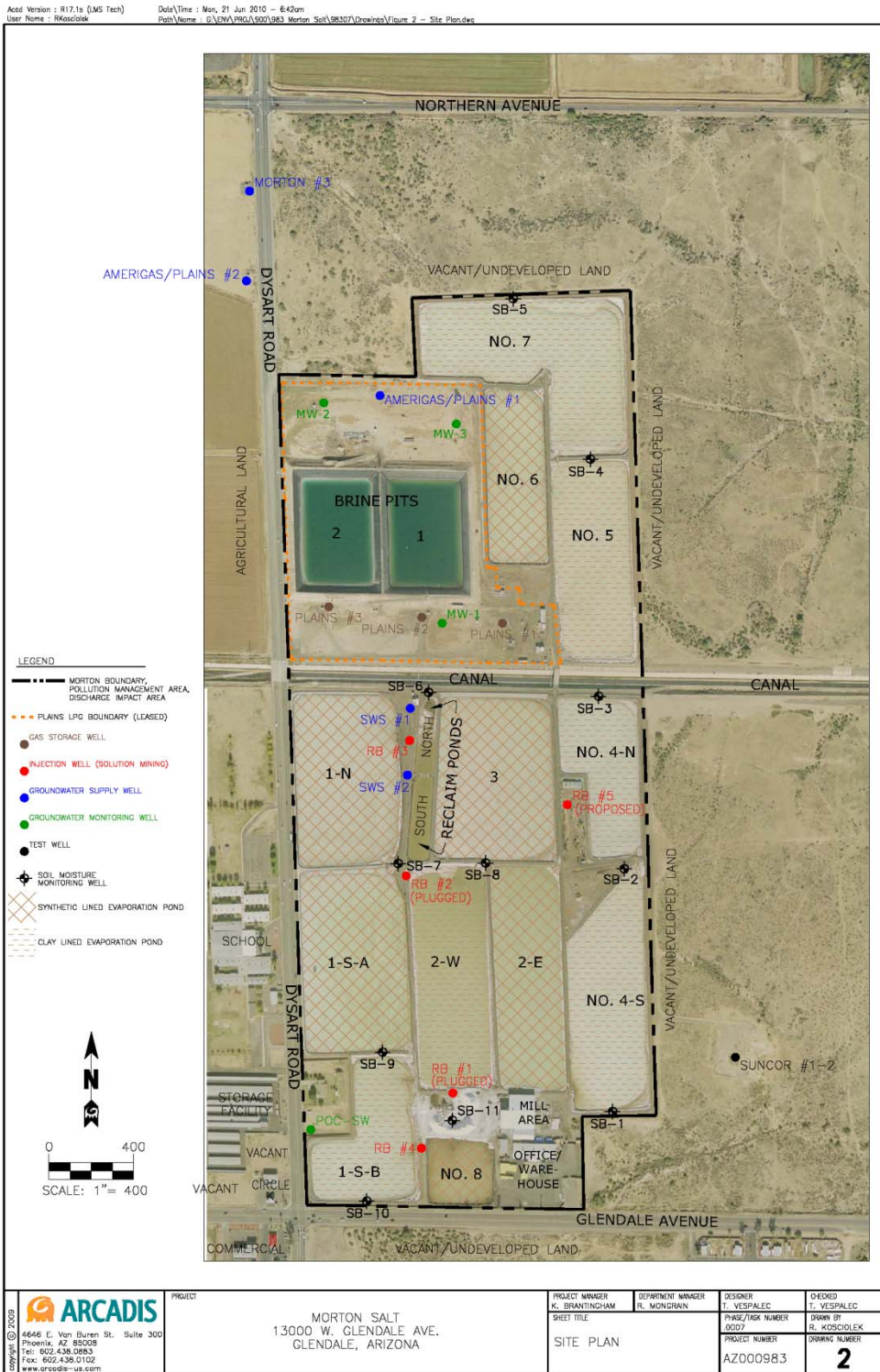
APPENDIX A – Project Maps

Figure 1. Project vicinity (from Attachment B of the Permit Application)



US EPA ARCHIVE DOCUMENT

Figure 2. Site Plan (from Attachment B of the Permit Application)



APPENDIX B – Well Schematic

Attachment M- RB 5 Construction Details
EPA ID # AZR 000000240

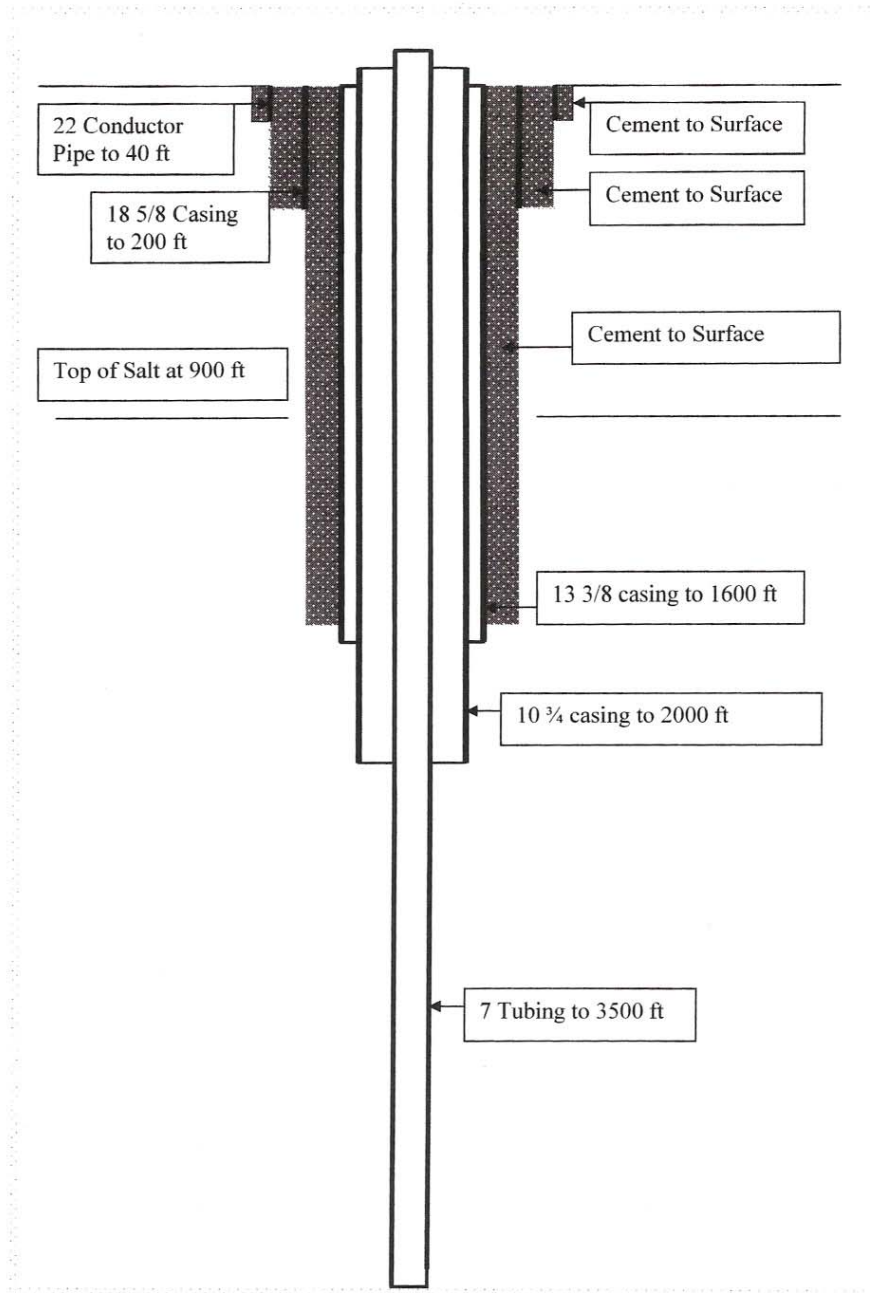


Figure 1. Proposed construction specifications for well RB #5

APPENDIX C – EPA Reporting Forms

(Check the EPA website for the most current version of these forms)

Form 7520-7:	Application to Transfer Permit
Form 7520-9:	Completion of Construction
Form 7520-11:	Annual Well Monitoring Report
Form 7520-12:	Well Rework Record
Form 7520-14:	Plugging and Abandonment Plan

**APPENDIX D – TEMPERATURE LOGGING REQUIREMENTS
U.S.E.P.A. REGION IX**

A Temperature “Decay” Log (two separate temperature logging passes) must satisfy the following criteria to be considered a valid Mechanical Integrity Test (“MIT”) as specified by 40 CFR §146.8(c)(1). Variances to these requirements are expected for certain circumstances, but they must be approved prior to running the log. As a general rule, the well shall inject for approximately six (6) months prior to running a temperature decay progression sequence of logs.

1. With the printed log, also provide raw data for both logging runs (at least one data reading per foot depth) unless the logging truck is equipped with an analog panel as the processing device.
2. The heading on the log must be complete and include all the pertinent information, such as correct well name, location, elevations, etc.
3. The total shut-in times must be clearly shown in the heading. Minimum shut-in time for active injectors is twelve (12) hours for running the initial temperature log, followed by a second log, a minimum of four (4) hours later. These two log runs will be superimposed on the same track for final presentation.
4. The logging speed must be kept between twenty (20) and fifty (50) feet per minute (30 ft/min optimum) for both logs. The temperature sensor should be located as close to the bottom of the tool string as possible (logging downhole).
5. The vertical depth scale of the log should be one (1) or two (2) inches per one-hundred (100) feet to match lithology logs (see 7(b)). The horizontal temperature scale should be no more than one Fahrenheit degree per inch spacing.
6. The right hand tracks must contain the "absolute" temperature and the "differential" temperature curves with both log runs identified and clearly superimposed for comparison and interpretation purposes.
7. The left hand tracks must contain (unless impractical, but EPA must pre-approve any deviations):
 - (a) a collar locator log,
 - (b) a lithology log which includes either:
 - (i) an historic Gamma Ray that is "readable", i.e. one that demonstrates lithologic changes without either excessive activity by the needle or severely dampened responses; or
 - (ii) a copy of an original spontaneous potential (“SP”) curve from either the subject well or from a representative, nearby well.
 - (c) A clear identification on the log showing the base of the lowermost Underground Source of Drinking Water (“USDW”). A USDW is basically a formation that contains less than ten thousand (10,000) parts per million (“ppm”) Total Dissolved Solids (“TDS”) and is further defined in 40 CFR §144.3.

APPENDIX E – Plugging and Abandonment Plan

Upon completion of injection activities the well shall be abandoned according to State and Federal regulations to ensure protection of Underground Sources of Drinking Water.

OMB No. 2040-0042 Approval Expires 12/31/2011

United States Environmental Protection Agency
Washington, DC 20460

PLUGGING AND ABANDONMENT PLAN

Name and Address of Facility
Morton Salt Inc., 13000 W Glendale Ave.
Glendale, AZ 85307

Name and Address of Owner/Operator
Morton Salt Inc., 13000 W Glendale Ave.
Glendale, AZ 85307

Locate Well and Outline Unit on Section Plat - 640 Acres

State: Arizona County: Maricopa Permit Number: _____

Surface Location Description:
1/4 of SE 1/4 of NW 1/4 of SW 1/4 of Section 2 Township 2N Range 1W

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location _____ ft. from (N/S) _____ Line of quarter section
and _____ ft. from (E/W) _____ Line of quarter section.

TYPE OF AUTHORIZATION

Individual Permit
 Area Permit
 Rule

Number of Wells 1

WELL ACTIVITY

CLASS I
 CLASS II
 Brine Disposal
 Enhanced Recovery
 Hydrocarbon Storage
 CLASS III

Lease Name _____ Well Number RB #5

CASING AND TUBING RECORD AFTER PLUGGING

SIZE	WT (LB/FT)	TO BE PUT IN WELL (FT)	TO BE LEFT IN WELL (FT)	HOLE SIZE
18 5/8	87.5	200	200	21
13 3/8	61	1600	1600	17.5

METHOD OF EMPLACEMENT OF CEMENT PLUGS

The Balance Method
 The Dump Baller Method
 The Two-Plug Method
 Other

CEMENTING TO PLUG AND ABANDON DATA:		PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7
Size of Hole or Pipe in which Plug Will Be Placed (inches)		12.515	12.515	12.515				
Depth to Bottom of Tubing or Drill Pipe (ft)		1500	1000	500				
Sacks of Cement To Be Used (each plug)		272	272	272				
Slurry Volume To Be Pumped (cu. ft.)		427	427	427				
Calculated Top of Plug (ft.)		1000	500	0				
Measured Top of Plug (if tagged ft.)								
Slurry Wt. (Lb./Gal.)		13.1	13.1	13.1				
Type Cement or Other Material (Class III)		50/50poz	50/50poz	50/50poz				

LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED (if any)

From	To	From	To

Estimated Cost to Plug Wells
\$95,460 See the attached cost estimate

Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

Name and Official Title (Please type or print)
Melissa Hadley, Facility Manager

Signature

Date Signed
10/22/10

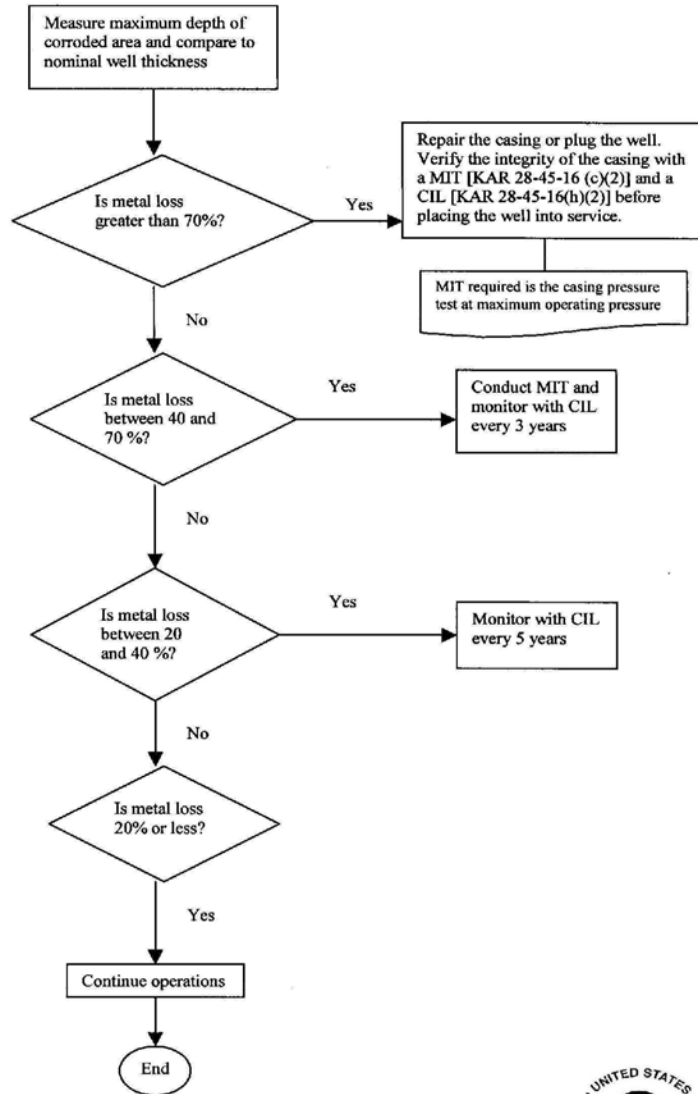
EPA Form 7520-14 (Rev. 12-08)

Figure 1. General Plugging and Abandonment Plan for well Roach Baker #5

US EPA ARCHIVE DOCUMENT

APPENDIX F – Casing Inspection Log Guidance

EPA Region 9 Guidance for Casing Inspection Log Results UIC Underground Injection Wells



U.S. Environmental Protection Agency, Region 9
Underground Injection Control Program
October 2008

Adapted from Kansas Dept. of Health and Environment
Bureau of Water/Geology Section, July 2003

