UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

UNDERGROUND INJECTION CONTROL PERMIT NUMBER PAS2R420BMCK
AUTHORIZATION TO OPERATE A CLASS II-R INJECTION WELL

In compliance with provisions of the Safe Drinking Water Act, as amended, 42 U.S.C. §§ 300f – 300j-11, ("SDWA"), and the SDWA implementing regulations promulgated by the U.S. Environmental Protection Agency ("EPA") at Sections 144 – 147 of Title 40 of the Code of Federal Regulations, this permit authorizes

Sandstone Development LLC
557 Interstate Parkway
Bradford, PA 16701

as the Permittee, to construct and operate a Class II-R enhanced recovery injection well, Moody Lot 5 #17, API # 37-083-53736, (hereinafter, "Injection Well" or "Facility") for the purpose of injecting fluids produced solely in association with oil and gas production from Sandstone Development LLC ("Permittee"), in accordance with the provisions of this permit. The Injection Well will be located at the Moody Lot, in Bradford Township, McKean County, Pennsylvania, into the Bradford Third sandstone reservoir. The coordinates for this Injection Well are: Latitude 41° 54' 34.4" Longitude -78° 35' 15.7".

All references to Title 40 of the Code of Federal Regulations are to all regulations that are in effect on the date that this permit becomes effective.

This permit shall become effective on _____, 2021.

This permit and its authorization to inject shall remain in effect for the operational life of the Facility, which includes the proper plugging and abandonment of the Injection Well when operations cease.

_____
Catherine A. Libertz, Director
Water Division

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Customer Service Hotline: 1-800-438-2474

PART I

A. Effect of Permit

Sandstone Development LLC ("the Permittee") is authorized to engage in underground injection at the Injection Well in accordance with the conditions of this permit number PAS2R420BMCK ("Permit"). The Permittee shall not allow underground injection activity, otherwise authorized by this Permit, to cause or contribute to the movement of fluid containing any contaminant(s) into any underground source(s) of drinking water ("USDW"), if the presence of any such contaminant may cause a violation of any primary drinking water regulation under 40 C.F.R. Part 141 or if it may otherwise adversely affect the health of any persons. Any underground injection activity not authorized in this Permit or otherwise authorized by rule is prohibited. Issuance of this Permit does not convey property rights or mineral rights of any sort or any exclusive privilege; nor does it authorize any injury to any persons or property, any invasion of other private rights, or any infringement of State or local law or regulations. Compliance with the terms of this Permit does not constitute a defense to any action brought under Part C of the SDWA, or the imminent and substantial endangerment provisions in Part D of the SDWA, or any other common or statutory law for any breach of any other applicable legal duty.

B. Permit Actions

This Permit can be modified, revoked, and reissued or terminated for cause, or upon request, as specified in 40 C.F.R. §§ 144.12, 144.39, and 144.40. This Permit is subject to the minor modification provisions specified in 40 C.F.R. § 144.41. The filing of a request for a Permit modification, revocation and reissuance, or termination, or the notification of planned changes, or anticipated noncompliance on the part of the Permittee shall not stay the applicability or enforceability of any Permit condition.

C. Severability

The provisions of this Permit are severable and if any provision of this Permit is held invalid, the remainder of this Permit shall not be affected thereby.

D. General Requirements

1. Duty to Comply. The Permittee shall comply with all applicable Underground Injection Control ("UIC") Program regulations, including 40 C.F.R. §§ 124, 144-146, and 147.1950-1955, and with the conditions of this Permit, except to the extent and for the duration that the EPA authorizes any noncompliance by an emergency permit issued under 40 C.F.R. § 144.34. Any Permit noncompliance not authorized by the EPA constitutes a violation of the SDWA and is grounds for enforcement action, Permit termination, revocation, and reissuance, modification, or for denial of a Permit renewal application.

2. 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.

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

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

5. Duty to Provide Information. The Permittee shall furnish to the Director of the Water Division, EPA Region 3 ("Director"), within a time specified by the Director, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Permit, or to determine compliance with this Permit. The Permittee shall also furnish to the Director, upon request, copies of records required to be kept by this Permit. If the Permittee becomes aware of any incomplete or incorrect information in the supporting Permit Application, or subsequent reports, the Permittee shall promptly submit information addressing these deficiencies to the Director. For purposes of this Permit, unless otherwise specified herein, all reports, notices/notifications and information that are required to be submitted "in writing," or in "written" format, shall contain the certification and signature required under Paragraph I.D.9, below, and may be submitted via email in portable document format (*i.e.*, as a "pdf" document), in accordance with the instructions set forth in Paragraph II.A of this Permit.

6. Inspection and Entry. The Permittee shall allow the Director or a duly-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 the Facility or injection activity is located or conducted, or where records must be kept under the conditions of this Permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Permit;

c. Inspect at reasonable times the Facility, Facility equipment (including monitoring and control equipment) and any practices and/or operations regulated or required under this Permit; and

d. Sample or monitor at reasonable times any substances or parameters, at any location, for the purposes of assuring Permit compliance or as otherwise authorized by SDWA.

7. Penalties. Any person who violates a requirement of this Permit is subject to administrative or civil penalties, fines and other enforcement actions under the SDWA. Any person who willfully violates conditions of this Permit may be subject to criminal prosecution.

8. Transfer of Permits. This Permit is not transferable to any person except after notice is submitted to the Director (pursuant to Paragraph II.A., below) on EPA Form 7520-7 (Application to Transfer Permit), approval is received from the Director, and the requirements of 40 C.F.R. § 144.38 are satisfied. The Director may require modification or revocation of this Permit to change the name of the permittee and incorporate such other requirements as may be necessary under the SDWA or under its implementing regulations. The transferee is not authorized to inject under this Permit unless and until the Director notifies the transferee that the transferee is so authorized through issuance of a revised permit identifying the transferee as the permittee.

9. Signatory Requirements.

a. The Permittee shall sign all reports required by this Permit, all notices/notifications pertaining to this Permit and other information requested by the Director as follows:

(1) for a corporation, by a responsible corporate officer of at least the level of vice-president;

(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 or a ranking elected official.

b. A duly authorized representative of the person designated in Paragraph a. above may also sign only if:

(1) the authorization is made in writing by a person described in Paragraph a. above;

(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 a 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. If an authorization under Paragraph b. of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the Facility, a new authorization satisfying the requirements of Paragraph b. of this section must be submitted to the Director prior to or together with any reports, information or applications to be signed by an authorized representative.

d. Any person signing a document under Paragraph a. or b. of this section shall make the following certification:

> I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person(s) who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

10. Confidentiality of Information.

a. In accordance with 40 C.F.R. Part 2 (Public Information) and 40 C.F.R. § 144.5, any information submitted to the Director 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 information will be treated in accordance with the procedures in 40 C.F.R. Part 2.

b. EPA will deny claims of confidentiality for the following information:

(1) The name and address of any permit applicant or permittee.

(2) Information which deals with the existence, absence, or level of contaminants in drinking water.

11. State Laws. Nothing in this Permit shall be construed to preclude the institution of any legal action or relieve the Permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation.

PART II

A. General

The Permittee shall sign and certify copies of all reports and notifications required by this Permit in accordance with the requirements of Paragraph I.D.9. of this Permit and shall submit such information to the Director in hard copy, by mail, and in portable document format (*i.e.,* as a ".pdf" file), via e-mail, at the following mailing and/or e-mail addresses:

Source Water & UIC Section (3WD22)
Drinking Water & Source Water Protection Branch
U.S. Environmental Protection Agency
Region III

1650 Arch Street
Philadelphia, Pennsylvania 19103
R3_UIC_Mailbox@epa.gov

B. Record Retention

1. The Permittee shall retain records of all monitoring and other information required by this Permit, including the following (if applicable), for a period of at least five (5) years from the date of the sample, measurement, report, or application, unless Paragraph II.B.2., below, requires that the Permittee retain such records for a longer period of time. The Director may extend the record retention period at any time. If the Director extends the record retention period, the Permittee shall comply with the new record retention period.

a. All data required to complete the Permit Application form for this Permit and any supplemental information submitted under 40 C.F.R. § 144.31;

b. Calibrations and maintenance records and all original strip chart recordings for continuous monitoring instrumentation; and

c. Copies of all reports required by this Permit.

2. The Permittee shall retain records concerning the nature and composition of all injected fluids, as required in Paragraphs II.C.4. and IIC.5. of this Permit, until at least three (3) years after the plugging and abandonment procedures are complete. The Permittee shall continue to retain these records after the three-year retention period unless the Permittee delivers the records to the Director or obtains written approval from the Director to discard the records.

3. Records of monitoring information shall include:

a. The date, exact place, and the time of sampling or measurements;

b. The individual(s) who performed the sampling or measurements;

c. A precise description of both sampling methodology and the handling (custody) of samples;

d. The date(s) analyses were performed;

e. The individual(s) who performed the analyses;

f. The analytical techniques or methods used; and

g. The results of such analyses.

C. Injection Well Monitoring Requirements

1. Samples and measurements taken from the Injection Well for the purpose of monitoring shall be representative of the monitored activity. The Permittee shall obtain representative sample(s) of the fluid to be analyzed and conduct analysis(es) of the sample(s) in

accordance with the approved methods and test procedures provided in 40 C.F.R. § 136.3 and EPA's SW-846 Compendium, or other methods and test procedures otherwise approved by the Director. The Permittee shall identify in its monitoring records the types of tests and methods used to generate the monitoring data.

2. The Permittee shall continuously monitor and record surface injection pressure, annular pressure, flow rate, and cumulative volume in the Injection Well beginning on the date on which the Injection Well commences operation and concluding when the Injection Well is plugged and abandoned. The Injection Well shall be equipped with automatic shut-off devices which would be activated in the event of a mechanical integrity failure. The Permittee shall compile the monitoring data monthly to complete the Annual Report referenced in, and required pursuant to, Paragraph II.D.9. of this Permit.

3. The Permittee shall monitor the nature and composition of the injection fluid injected into the Injection Well by sampling, analyzing, and recording the injection fluid for the parameters listed below at the initiation of the injection operation and every two (2) years thereafter, or whenever the operator observes or anticipates a change in the injection fluid.

- pH
- Specific Gravity
- Specific Conductance
- Sodium
- Iron
- Magnesium
- Chloride
- Total Organic Carbon (TOC)
- Manganese
- Total Dissolved Solids
- Barium
- Hydrogen Sulfide
- Dissolved Oxygen
- Alkalinity
- Hardness

The Permittee shall report the results of such monitoring to the Director in accordance with Paragraph II.A, above, and as provided in Paragraphs II.D.9. and II.D.10., below, of this Permit.

4. The Permittee shall make a demonstration of mechanical integrity, in accordance with 40 C.F.R. § 146.8, at least once every five (5) years after the initial demonstration required by Paragraph III.A.4. of this Permit. Subsequent five-year demonstrations shall be conducted within five (5) years of the date that the previous demonstration was made. In addition to the above requirement, the Permittee shall conduct a mechanical integrity test demonstration on the Injection Well when the protective casing or tubing is removed from the well, the packer is reseated, a well failure is likely, or as requested by the Director. The Permittee may continue operation of the Injection Well only if the Permittee has demonstrated the mechanical integrity of the Injection Well to the Director's satisfaction. The Permittee shall cease injection operations if a loss of mechanical integrity becomes evident or if the Permittee cannot demonstrate mechanical integrity. The Injection Well shall be equipped with automatic shut-off devices which would be activated in the event of a mechanical failure.

5. All environmental measurements required by this Permit, including, but not limited to measurements of pressure, temperature, mechanical integrity (as applicable), and chemical analyses shall be done in accordance with EPA guidance on quality assurance.

D. Reporting and Notification Requirements

1. Notification of Permit Review. Within thirty (30) calendar days of receipt of this Permit, the Permittee shall ensure that the person designated pursuant to Paragraph I.D.9., above, of this Permit notifies the Director, in writing and pursuant to the requirements of Paragraph II.A., above, that he or she has read and is personally familiar with all terms and conditions of this Permit.

2. Commencing Injection. The Permittee shall not commence injection operations until construction or well rework is complete and all of the following conditions have been satisfied, including those specified in Paragraph III.A., below, of this Permit:

a. The Permittee has properly notified the Director of its completion of Injection Well construction by submitting the Report entitled "Completion Report for Injection Wells" (EPA Form 7520-18), to the Director in accordance with the requirements of Paragraph II.A., above;

b. The Permittee has demonstrated to EPA that the Injection Well has mechanical integrity in accordance with 40 C.F.R. § 146.8 and the Permittee has received written notice from the Director that such demonstration is satisfactory; and

c.(1) The Director, or the Director's duly-authorized designee, has inspected or otherwise reviewed the Injection Well and finds it is in compliance with the conditions of this Permit; or

c.(2) The Permittee has not received notice from the Director of his or her intent to inspect or otherwise review the Injection Well within thirteen (13) calendar days of the date that the Permittee submits its Completion Report for Injection Wells (EPA Form 7520-18), pursuant to Paragraph II.D.2.a., above, of this Permit, in which case, prior inspection or review is waived and the Permittee may commence injection operations.

3. Twenty-Four Hour Reporting.

a. The Permittee shall report to the Director any Permit noncompliance which may endanger, or which has endangered, human health or the environment. The Permittee shall provide such report orally to the EPA Region 3 UIC Hotline at 215-814-2816 within twenty-four (24) hours from the time the Permittee becomes aware, or otherwise has reason to know, of such noncompliance. The Permittee shall include the following information in the oral report:

(1) Any monitoring or other information which indicates that any contaminant may endanger or has endangered an USDW.

(2) Any noncompliance with a Permit condition, or malfunction of the injection system, which may cause or has caused fluid migration into or between USDW, or failure of mechanical integrity test demonstrations.

b. The Permittee shall provide a written submission to the Director within five (5) business days of the time the Permittee becomes aware of the circumstances described in

Paragraph II.D.3.a, above. The written submission shall contain a description of the noncompliance and its cause(s); the period(s) of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time that any such noncompliance is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

4. Activities or Changes that May Result in Noncompliance. The Permittee shall give advance written notice to the Director, pursuant to Paragraph II.A, above, prior to initiating any activity or of making any planned changes at the permitted Facility which may result in noncompliance with Permit requirements.

5. Other Noncompliance. The Permittee shall report all other instances of noncompliance to the Director in writing and pursuant to Paragraph II.A, above, within ten (10) calendar days of when the Permittee initially becomes aware, or otherwise has reason to know, of such noncompliance. Each report shall contain the information listed in Paragraph II.D.3., above, of this Permit.

6. Well Rework. If the Injection Well is reworked as a result of noncompliance or well failure, the Permittee must complete and submit a Well Rework Record (EPA Form 7520-19, entitled "Well Rework Record, Plugging and Abandonment Plan, or Plugging and Abandonment Affidavit") to the Director. The Permittee shall submit the Well Rework Record, in accordance with Paragraph II.A., above, after completing the Injection Well rework, but prior to resuming injection operations. The Permittee shall therein specify the procedures used to correct the well failure and the results of the mechanical integrity test performed after the rework.

7. Physical Alterations to the Facility. The Permittee shall provide written notice to the Director prior to making any physical alterations or additions to the permitted Facility. Such written notice shall be submitted to the Director, pursuant to Paragraph II.A, above, as far in advance of the Permittee's initiation of any planned or proposed physical alterations and/or additions at the permitted Facility as is reasonably practicable. Such notice shall fully and accurately describe all physical alterations and/or additions planned and/or proposed by the Permittee at the Facility and shall identify the proposed start and completion dates for each such activity.

8. Conversion. The Permittee shall provide written notice to the Director, pursuant to Paragraph II.A, above, at least thirty (30) calendar days prior to any proposed conversion to, and operation of, the Injection Well as anything other than an "injection well," within the meaning and definition of 40 C.F.R. § 144.3.

9. Annual Report. The Permittee shall submit a written Annual Report (EPA Form 7520-11, entitled "Annual Disposal/Injection Well Monitoring Report") to the Director, pursuant to Paragraphs II.A. and II.D.9, above, summarizing the results of Injection Well monitoring required by Paragraph II.C. of this Permit. This Annual Report shall include monthly monitoring records of injected fluids, the results of any mechanical integrity test(s), and any major changes in characteristics or sources of injected fluids. This Annual Report shall also list the additives used in the operation of the Injection Well. The Permittee shall complete and submit this information with its Annual Report. The Permittee shall submit the Annual Report to the

Director not later than January 31st of each calendar year, summarizing the activity of the calendar year ending the previous December 31st.

10. Expedited Reporting of Injection Fluid Analysis. If the Permittee monitors the injection fluid injected into the Injection Well under Paragraph II.C.4. because the Permittee has observed or anticipated a change in the injection fluid, the Permittee shall submit the associated monitoring records to the Director within thirty (30) calendar days of initiating any such monitoring.

11. Plugging and Abandonment Reports and Notifications.

a. The Permittee shall notify the Director, in writing and in accordance with Paragraph II.A., above, at least forty-five (45) calendar days before initiating any Injection Well plugging and abandonment activities, as described in Paragraph III.C., below, of this Permit. The Director may allow a shorter notice period upon written request.

b. The Permittee shall submit any proposed revisions to the Plugging and Abandonment Plan attached to, and incorporated within, this Permit to the Director, in writing and in accordance with Paragraph II.A., above, no less than forty-five (45) calendar days prior to initiating any Injection Well plugging and abandonment activities at the Facility. Any such Plugging and Abandonment Plan revisions shall be submitted on EPA Plugging and Abandonment Form 7520-19 (entitled "Well Rework Record, Plugging and Abandonment Plan, or Plugging and Abandonment Affidavit"). The Permittee shall not commence any plugging and abandonment activities at the Facility until such time as it receives written approval of its revised Plugging and Abandonment Plan from the Director.

c. To the extent that any unforeseen circumstances occur during plugging and abandonment of the Injection Well which cause the Permittee to believe that the Plugging and Abandonment Plan that is attached to this Permit, or which has been revised pursuant to the preceding Paragraph, should be further revised and/or modified, the Permittee shall immediately notify the Director, in writing and in accordance with Paragraph II.A., above, of its Plugging and Abandonment Plan revision/modification proposal and request, pursuant to the procedures set forth in the preceding Paragraph. The Permittee shall obtain written approval from EPA of any proposed and requested Plugging and Abandonment Plan revisions/modifications prior to resuming Injection Well plugging and abandonment activities at the Facility.

d. Within sixty (60) calendar days after plugging the Injection Well, the Permittee shall submit a Plugging and Abandonment Report to the Director in writing and in accordance with Paragraph II.A., above, which shall consist of either:

(1) A statement that the Injection Well was plugged in accordance with the EPA-approved Plugging and Abandonment Plan; or

(2) Where actual plugging procedures differed, in any material respect(s), from the Plugging and Abandonment Plan procedures previously approved by EPA, the Permittee shall provide to the Director an updated version of EPA Form 7520-19, in accordance with Paragraph II.A., above, specifying the different procedures used and providing a

detailed, written explanation of the reason(s) why procedures other than those previously approved by EPA were employed by the Permittee at the Facility.

e. The Permittee shall ensure that the Plugging and Abandonment Report is certified as accurate by the person who performed the plugging operation.

12. Mechanical Integrity Tests. The Permittee shall notify the Director in writing and in accordance with Paragraph II.A., above, at least thirty (30) calendar days prior to conducting Mechanical Integrity Testing on the Injection Well.

13. Cessation of Injection Activity. Upon having ceased all fluid injection operations at the Facility and into the Injection Well for a period of two (2) years, thus constituting a "temporary abandonment" of the Injection Well, the Permittee shall plug and abandon the Injection Well in accordance with the Plugging and Abandonment Plan in Attachment 1, unless:

a. The Permittee provides written notice to the Director, in accordance with Paragraph II.A., above, describing those actions and/or procedures, including compliance with the technical requirements applicable to the Injection Well, that are necessary to ensure that the Injection Well will not endanger USDW during any period of temporary abandonment, unless waived, in writing, by the Director.

b. The Permittee receives approval from the Director that the actions and/or procedures described in the notice are satisfactory; and

c. The Permitee implements such EPA approved actions and/or procedures.

E. Mechanical Integrity Standards

1. The Permittee shall maintain the mechanical integrity of the permitted Injection Well pursuant to 40 C.F.R. § 146.8.

2. Request from Director. The Director may, by written notice, require the Permittee to demonstrate mechanical integrity at any time during the term of this Permit.

PART III

A. Construction Requirements

1. Confining Zone. Notwithstanding any other provision of this Permit, the Permittee shall inject through the Injection Well only into a formation which is separated from any USDW by a confining zone, as defined by 40 C.F.R. § 146.3, and is free of unknown open faults or fractures within the ¼ mile-radius Area of Review, as required by 40 C.F.R. § 146.22.

2. Casing and Cementing. The Permittee shall:

a. ensure that the Injection Well is cased and cemented to prevent the movement of fluids into or between USDW, in accordance with 40 C.F.R. § 146.22;

b. ensure that the casing and cement used in the Injection Well are designed for the life expectancy of the Injection Well;

c. ensure that the Injection Well has surface casing installed from the ground surface to a depth of approximately 502 feet below ground surface, and cemented back to the ground surface;

d. ensure that the Injection Well has long string casing installed from the ground surface to a depth of approximately 1,860 feet below ground surface, and cemented back to the ground surface; and

e. install in the Injection Well, and inject fluids through, a tubing string which is set on a packer and placed above the injection zone interval at approximately 1,855 feet below ground surface.

3. Logs, Tests and Reports. In accordance with 40 C.F.R. § 146.22(f), the Permittee shall prepare the following well logs and tests, as follows, during the period of well conversion and Injection Well construction and/or during any rework of the Injection Well: electric, gamma ray and caliper logs in the open hole; a cement bond, temperature or density log on the surface casing (if cement returns are not achieved); and a cement bond log/variable density log on the long string casing. In accordance with Paragraph II.A., above, the Permittee shall submit to the Director all Injection Well cement records, a narrative report that interprets the well log(s) and test results and which specifically relate to the results of the cementing operation, along with a detailed description of the rationale used to make these interpretations. The narrative report shall be prepared by a knowledgeable log analyst and submitted to the Director. The Director may prescribe additional logs or waive logging requirements in the future should field conditions so warrant.

4. Mechanical Integrity. The Permittee is prohibited from conducting injection operations in the Injection Well until it: (i) demonstrates the mechanical integrity of the Injection Well, in accordance with 40 C.F.R. § 146; and, (ii) receives notice from the Director that such a demonstration is satisfactory, in accordance with Paragraph II.D.2. of this Permit.

5. Corrective Action. If an abandoned well is discovered within the ¼ mile-radius Area of Review after injection operations commence, the Permittee shall stop the injection operations and notify the Director in writing upon discovery. Within five (5) business days of such discovery and in accordance with Paragraph II.A., above, the Permittee shall submit to the Director, for approval, a written plan for corrective action that is consistent with the requirements of 40 C.F.R. §§ 144-147. The Permittee cannot resume injection operations until the Director approves the plan for corrective action and the Permittee takes the actions specified by the plan as preconditions to resumption of the injection operations.

6. Completion Reports. The results of those activities required in Paragraphs III.A.1-5, of this Permit must be summarized and submitted to the Director, in writing and in accordance with Paragraph II.A., above, prior to the commencement of Facility injection operations as part of the completion reports required under Paragraph II.D.2.

B. Operating Requirements

1. Injection Formation. The Permittee shall inject only into the Bradford Third sandstone formation in the subsurface interval between approximately 1,863 feet to 1,963 feet below ground surface.

2. Injection Fluid. The Permittee shall not inject any hazardous waste, as defined by 40 C.F.R. § 261, nor any other fluid, other than the fluids produced solely in association with the Permittee's oil and gas production activity, and additives necessary to maintain the integrity of the Injection Well.

3. Injection Volume Limitation. Injection volume shall not exceed 40 barrels per day.

4. Injection & Injection Pressure Limitations.

a. The Permittee shall not inject fluid: (1) adjacent to any USDW; (2) at a pressure which initiates new fractures or propagates existing fractures in the confining zone, as defined in C.F.R. §146.3; or at a pressure which causes the movement of injection or formation fluids into any USDW.

b. Injection pressure shall not exceed a surface maximum allowable injection pressure ("MAIP") of 1,235 psi and a bottom-hole pressure ("BHP") of 2,106 psi. This BHP calculation is based on the specific gravity of the injection fluid not exceeding 1.08. If the specific gravity of the injection fluid is greater than 1.08, the Permittee shall reduce the surface MAIP, as calculated pursuant to the following formula, such that the BHP does not exceed 2,106 psi and the Permittee must refer to Paragraph II.C.4. for associated notification requirements.

The **MAIP** (measured at the surface) must be calculated using the following equation:

$$\mathbf{MAIP} = [\mathbf{BHP} - (0.433 * \mathbf{SG} * \mathbf{D})]$$

The values used in the equation are defined as:

"BHP" is the bottom-hole pressure in pounds per square inch (psi) and was calculated based on the specific gravity of the injection fluid not exceeding 1.08. The permitted value for BHP will always be **2,106 psi**.

"SG" is the specific gravity of the injection fluid.

"D" is the true vertical depth in feet. The value for D will always be **1,863 feet**, or the top of the Bradford 3rd Formation.

5. The Permittee shall inject fluids into the Injection Well through the tubing string installed inside the long string casing. The Permittee is prohibited from injecting between the outermost casing protecting USDW and the well bore, and from injecting into any USDW.

C. Plugging and Abandonment

1. The Permittee shall plug and abandon the Injection Well in accordance with the EPA-approved plugging and abandonment plan in Attachment 1 and any EPA-approved modifications and/or revisions thereto.

2. The Permittee shall plug and abandon the Injection Well in such a manner that fluids shall not move into or between USDW.

D. Financial Responsibility

1. The Permittee shall continuously maintain financial responsibility and resources to close, plug, and abandon the Injection Well in accordance with 40 C.F.R. § 144.52(a)(7) in the amount of at least $5,500.00. The Permittee shall not construct, rework, or operate the Injection Well until it establishes the financial responsibility for the Injection Well.

2. The Permittee must provide a Standby Trust Agreement assuring the plugging costs for the Injection Well prior to the initiation of any Injection Well construction or the commencement of injection operations. The Permittee shall not substitute this Standby Trust Agreement with an alternative demonstration of financial responsibility unless the Permittee has previously submitted evidence of that alternative demonstration to the Director and the Director notifies the Permittee that the alternative demonstration of financial responsibility is acceptable to EPA. The Director may require the Permittee to submit a revised demonstration of financial responsibility if the Director has reason to believe that the original demonstration is no longer adequate to cover the costs of plugging and abandonment.

3. The Permittee shall continue to demonstrate and maintain financial responsibility and resources to close, plug, and abandon the underground injection operations at the Facility in the manner required herein until:

a. The Injection Well has been plugged and abandoned in accordance with an EPA-approved plugging and abandonment plan, pursuant to 40 C.F.R. §§ 144.51(o), 146.10, and 146.92, and the Permittee has submitted a written plugging and abandonment report and it has been approved by the Director pursuant to § 144.51(p); or

b. The Injection Well has been converted in compliance with the requirements of 40 C.F.R. § 144.51(n); or

c. The Permittee has transferred this Permit to another party and has received notice from the Director that the new Facility owner or operator, *i.e.*, the new permittee, has demonstrated financial responsibility for the Injection Well.

4. Insolvency of Financial Institution. In the event of the bankruptcy of the trustee or of the institution issuing the financial assurance mechanism, or suspension or revocation of the authority of the trustee institution to act as a trustee or of the institution issuing the financial assurance mechanism to issue such an instrument, the Permittee must immediately notify the Director, in writing and in accordance with Paragraph II.A., above, and submit an alternative demonstration of financial responsibility acceptable to the Director within sixty (60) calendar days after such an event.

ATTACHMENT 1

PLUGGING AND ABANDONMENT PLAN