



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

**UNDERGROUND INJECTION CONTROL PERMIT NUMBER VAS2D937BDIC
AUTHORIZATION TO OPERATE CLASS II-D (DISPOSAL) INJECTION WELL**

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

EnerVest Operating, L.L.C.
809 Happy Valley Drive
Clintwood, VA 24228

to inject fluids through a Class II-D (produced fluid disposal) Injection Well (hereinafter, "EnerVest Injection Well No. P-171" or "Facility") and to operate the Facility for the purpose of continuing to inject fluids produced in association with oil and gas production operations in accordance with the provisions of this permit. The Facility is located in the Nora and Oakwood Fields in the Ervinton District, Dickenson County, VA, and will continue to inject into the Weir and Big Lime Formations in accordance with the conditions set forth herein. The coordinates for the EnerVest Injection Well No. P-171 are: Latitude - 37° 05' 23"N; Longitude - 82° 16' 25"W.

All references to Title 40 of the Code of Federal Regulations (C.F.R.) are to regulations that are in effect on the date that this permit is effective.

This permit shall become effective on January 18, 2018.

This permit shall remain in effect until midnight January 18, 2028.

Signed this 18 day of January, 2018.

A handwritten signature in black ink, appearing to read "Catharine McManus", is positioned above the printed name.

Catharine McManus, Acting Director
Water Protection Division

PART I. EFFECT OF PERMIT

A. Effect of Permit

EnerVest Operating, LLC (the "Permittee") is authorized to engage in underground injection at the EnerVest Injection Well No. P-171 in accordance with the conditions of this permit. The Permittee shall not allow the underground injection activity, otherwise authorized by this permit, to cause or contribute to the movement of fluid containing any contaminant into any underground source(s) of drinking water (USDW), if the presence of that 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 persons. Any underground injection activity not authorized in this permit or otherwise authorized by permit or 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 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 or D of the SDWA, 42 U.S.C. §§ 300h-300i-4, 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. Also, this permit is subject to minor modifications as 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 shall not stay the applicability or enforceability of any permit condition.

C. Severability

The provisions of this permit are severable from one another, and if any provision of this permit or the Permittee's application (dated February 12, 2016), and the supplemental submission (dated June 28, 2016) (collectively referred to as "the Application") is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

D. General Requirements

1. Duty to Comply. The Permittee shall comply with all conditions of this permit, and applicable UIC regulations, including 40 C.F.R. Parts 124, and 144-147. Any

permit noncompliance constitutes a violation of the SDWA and is grounds for enforcement action; permit termination, revocation and reissuance or modification; or for denial of a permit renewal application; except that the permittee need not comply with the provisions of this permit to the extent and for the duration such noncompliance is authorized in an emergency permit under §144.34.

2. Reapplication. If the permittee wishes to continue an activity regulated by this permit after the expiration date of the permit, the permittee must submit a complete application for a new permit at least 100 days before this permit expires.
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 or 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, adequate security to prevent unauthorized access and operation of the EnerVest Injection Well No. P-171 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. Duty to Provide Information. The Permittee shall furnish to the Director of the EPA Region III Water Protection Division ("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 Permit Application or subsequent reports, the Permittee shall promptly submit information addressing these deficiencies.
7. Inspection and Entry. The Permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by the law to:

- a. Enter upon the Permittee's premises where the Facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
 - b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
 - c. Inspect, at reasonable times, the Facility, equipment (including monitoring and control equipment), practices, 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 the SDWA.
8. 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 is subject to criminal prosecution.
9. Transfer of Permits. This permit is not transferable to any person except after notice is sent on EPA Form 7520-7 ("Completion Report for Brine Disposal, Hydrocarbon Storage, or Enhanced Recovery") (available at https://www.epa.gov/sites/production/files/2016-01/documents/7520-10_508c.pdf), 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 the permit to change the name of the Permittee and incorporate such other requirements as may be necessary under the SDWA or 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.
10. Signatory Requirements.
- a. The Permittee shall sign all reports required by 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 officer 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 the 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."

11. Confidentiality of Information.

- a. In accordance with 40 C.F.R. Part 2 (Public Information), and § 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 any 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.

12. 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. MONITORING AND RECORDKEEPING

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.10 of this Permit and shall submit such information to the Director at the following address:

Ground Water & Enforcement Branch (Mail Code 3WP22)
Office of Drinking Water and Source Water Protection
U. S. Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

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 years from the date of the sample, measurement, report or application, unless such records are required to be retained for a longer period of time under paragraph II.B.2 below. This period may be extended by the Director at any time. If the period is extended, the Permittee shall comply with the new 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;
 - c. Copies of all reports required by this permit;
- 2. The Permittee shall retain records concerning the nature and composition of all injected fluids, in accordance with the requirements of paragraphs II.C.4 and C.5 of this permit, until at least three years after the plugging and abandonment procedures are complete. The Permittee shall continue to retain these records after the three-year retention period unless he or she 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;
 - g. The results of such analyses including supporting documentation.

C. Monitoring Requirements

- 1. Samples and measurements taken 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 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 EnerVest Injection Well No. P-171 beginning on the date that the EnerVest Injection Well No. P-171

commences operation and concluding when the EnerVest Injection Well No. P-171 is plugged and abandoned. The Permittee shall compile the monitoring data monthly to complete the Annual Report referenced in paragraph II.D.8 of this permit.

3. The Permittee shall monitor the nature and composition of the injected fluid by sampling, analyzing and recording the injected fluid for the parameters listed below, at the initiation of the injection operation and every two years thereafter, and whenever the operator anticipates a change in the injection fluid (e.g., from different geologic formations, geographic regions, different customers, etc.).

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

4. If at any point during this permit term the Permittee learns of analytical results for specific gravity in the EnerVest Injection Well No. P-132 that are greater than the following values, it shall follow the procedures for reporting noncompliance described at Section II.D.3 herein: 1.08 for specific gravity or greater than 250 mg/l for TOC.
5. The Permittee shall make an initial demonstration of mechanical integrity by demonstrating both that: (1) there is no significant leak in the casing, tubing or packer; and (2) there is no significant fluid movement into an underground source of drinking water through vertical channels adjacent to the injection well bore. The Permittee shall make such demonstration in accordance with any of the methods identified at 40 C.F.R. § 146.8. Following the initial demonstration of mechanical integrity, the Permittee shall make an additional demonstration of mechanical integrity in accordance with 40 C.F.R. § 146.8 at least once every two (2) years from the date of the initial demonstration. The Permittee shall conduct subsequent two (2) year demonstrations no more than thirty (30) days prior to the anniversary date of the effective date of this permit.
6. In addition to the above requirement, the Permittee shall conduct a mechanical integrity test demonstration on the EnerVest Injection Well No. P-171 at any time that the protective casing or tubing is removed from the well, the packer is resealed, or a well failure is likely, or as requested by the Director. In such a case, the Permittee may continue operation of the EnerVest Injection Well No. P-171 only if the Permittee has demonstrated the mechanical integrity of the EnerVest Injection Well No. P-171 to the Director's satisfaction. If at any point during the

term of this permit a loss of mechanical integrity becomes evident or if the Permittee cannot demonstrate mechanical integrity, the Permittee shall cease injection into the EnerVest Injection Well No. P-171.

7. For the duration of the permit period, the Permittee shall equip the EnerVest Injection Well No. P-171 with an automatic shut-off device which would be activated in the event of a mechanical integrity failure.
8. The Permittee shall perform all measurements required by the permit, including, but not limited to: measurements of pressure, temperature, mechanical integrity (as applicable) and chemical analyses in accordance with EPA guidance on quality assurance.

D. Reporting and Notification Requirements

1. Report on Permit Review. Within 30 days of the effective date of this permit, the Permittee shall ensure that the person designated pursuant to paragraph I.D.10 of this permit reports to the Director that he or she has read and is personally familiar with all terms and conditions of this permit.
2. Authorized Injection. The Permittee is not authorized to inject into the EnerVest Injection Well No. P-171 until construction or well rework is complete and all of the following conditions have been satisfied:
 - a. The Permittee has submitted notice of completion of construction (EPA Form 7520-10) to the Director;
 - b. The Permittee has demonstrated to EPA that the EnerVest Injection Well No. P-171 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. The Director has inspected or otherwise reviewed the Injection Well and finds that it is in compliance with the conditions of this permit; or The Permittee has not received notice from the Director of his or her intent to inspect or otherwise review the EnerVest Injection Well No. P-171 within 13 days of the date of the notice in paragraph II.D.2.a of this permit, in which case, prior inspection or review is waived and the Permittee may commence injection.
3. Twenty-four Hour Reporting.
 - a. The Permittee shall report to the Director any noncompliance with this permit which may endanger, or has endangered, health or the

environment. The Permittee shall provide such report orally (phone number: ((215) 814-5469) within 24 hours from the time the Permittee becomes aware of the circumstances. The Permittee shall include the following information in the oral report:

- (1) Any monitoring or other information which indicates that any contaminant may cause an endangerment, or has endangered, an underground source of drinking water.
- (2) Any noncompliance with a permit condition, malfunction of the injection system which may cause, or has caused, fluid migration into or between underground sources of drinking water, or failure of mechanical integrity test demonstrations.

b. In addition to the oral report required in II.D.3.a herein, the Permittee shall provide a written submission to EPA at the address in Paragraph II.A. of this permit herein within five days of the time the Permittee becomes aware of the circumstances described above. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and -- if the noncompliance has not yet been corrected -- the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

4. Anticipated Noncompliance. The Permittee shall give 30 days advance notice to the Director of any planned changes in the permitted Facility or activity which may result in noncompliance with permit requirements.
5. Other Noncompliance. The Permittee shall report all other instances of noncompliance for which noncompliance was not anticipated to the Director in writing within ten (10) days of the time the Permittee becomes aware of the circumstances. The report shall contain the information listed in paragraph II.D.3 of this permit.
6. Planned Changes. The Permittee shall provide immediate written notice to the Director of any planned physical alterations or additions to the permitted Facility.
7. Conversion. The Permittee shall submit to EPA for review and approval 30 days prior to the conversion of the EnerVest Injection Well No. P-171 to an operating status other than an injection well. Permittee shall not commence conversion of the well for any purpose until it receives written approval from EPA.
8. Annual Report. The Permittee shall submit a written Annual Report to the Director summarizing the results of all monitoring required in this Permit. This

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. The report shall list any additives used in the operation of the well. The Permittee shall complete and submit this information with its Annual Report EPA Form 7520-11 (Annual Disposal Injection Well Monitoring Report) (available at: https://www.epa.gov/sites/production/files/2016-01/documents/7520-11_508c.pdf). The Permittee shall submit the Annual Report to the Director no later than January 31st of each year, summarizing the activity of the calendar year ending the previous December 31st.

9. Plugging and Abandonment Reports and Notifications.

- a. Prior to abandoning the EnerVest Injection Well No. P-171, the Permittee shall prepare, maintain, and comply with a plan for plugging and abandonment (hereinafter, "Plugging and Abandonment Plan") that: (i) meets the requirements of 40 C.F.R. § 146.10; (ii) is acceptable to the Director; and (iii) contains the following information: (A) The nature and quantity and material to be used in plugging; (B) The location and extent (by depth) of the plugs; (C) Any proposed test or measurement to be made; (D) The amount, size, and location (by depth) of casing to be left in the well; (E) The method and location where casing is to be parted; and (F) The estimated cost of plugging the well. The EPA-approved Plugging and Abandonment Plan, included as Attachment 1 hereto, will be incorporated herein.
- b. The Permittee shall notify the Director in writing at least 45 days before plugging and abandonment of the EnerVest Injection Well No. P-171 as described in condition in Part III.C of this permit. The Director may allow a shorter notice period upon written request.
- c. The Permittee shall submit any revisions to the EPA-approved Plugging and Abandonment Plan to the Director on EPA Form 7520-14 (EPA Plugging and Abandonment Form) no less than 45 days prior to commencing plugging and abandonment. The Permittee shall not commence plugging and abandonment until it receives written approval of the revisions to the Plan from the Director.
- d. To the extent that any unforeseen circumstances occur during plugging and abandonment of the Injection Well that cause the Permittee to believe the Plugging and Abandonment Plan should be modified, the Permittee shall obtain written approval from EPA of any changes to the Plugging and Abandonment Plan prior to plugging the Injection Well.

- e. Within 60 days after plugging the EnerVest Injection Well No. P-171, the Permittee shall submit a Plugging and Abandonment Report to the Director which shall consist of either:
 - (i) A statement that the EnerVest Injection Well No. P-171 was plugged in accordance with the EPA-approved Plugging and Abandonment Plan; or
 - (ii) Where actual plugging differed from the Plugging and Abandonment Plan previously submitted, the Permittee shall provide to the Director an updated version of form 7520-14 specifying the different procedures used.
 - f. The Permittee shall ensure that the Plugging and Abandonment Report is accurate and certified as complete by the person who performed the plugging operation.
10. Compliance Schedules. The Permittee shall submit reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit no later than 30 days following each schedule date.
11. Mechanical Integrity Tests. The Permittee shall notify the Director in writing at least 30 days prior to conducting Mechanical Integrity Testing on the EnerVest Injection Well No. P-171.
12. Cessation of Injection Activity. Two years after the Permittee has ceased injection into the EnerVest Injection Well No. P-171, the Permittee shall plug and abandon the EnerVest Injection Well No. P-171 in accordance with the EPA-approved Plugging and Abandonment Plan unless the Permittee:
- a. Provides written notice to the Director describing actions and/or procedures, necessary to ensure that the Injection Well will not endanger any USDW during the period of temporary abandonment. These actions and procedures shall include compliance with the requirements of this permit applicable to active injection wells unless waived, in writing, by the Director;
 - b. Receives approval from the Director that the actions and/or procedures described in the notice are satisfactory; and
 - c. Implements such EPA-approved actions and/or procedures.

E. Mechanical Integrity

1. Standards. 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 and the Permittee shall comply with the Director's request.

PART III. CONSTRUCTION, OPERATION AND FINANCIAL RESPONSIBILITY

The Permittee is not authorized to inject into the EnerVest Injection Well No. P-171 until all of the following conditions have been satisfied:

A. Construction Requirements

1. Confining Zone. The Area of Review (AOR) for this permit is the one-half mile fixed radius from EnerVest Injection Well No. P-171. Notwithstanding any other provision of this permit, the Permittee shall inject through the Injection Well only into formations which are separated from any Underground Source of Drinking Water by a confining zone, as defined in 40 C.F.R. § 146.3, that is free of known open faults or fractures within the Area of Review as required in 40 C.F.R. § 146.22.
2. Casing and Cementing. The Permittee shall maintain the following conditions in the Injection Well at all times that this permit is in effect:
 - a. casing and cementing to prevent the movement of fluids into or between underground sources of drinking water and in accordance with 40 C.F.R. §§ 146.22(b) and 147.1955(b);
 - b. the casing and cementing used shall maintain its integrity for the life expectancy of the Injection Well;
 - c. surface casing that has been installed from the surface to 2,277 feet below land surface and cemented back to the surface;
 - d. the long string casing installed from the surface to 6,223 feet and cemented back to approximately 3,532 feet below land surface to isolate the injection zone; and
 - e. a tubing string set on a packer at approximately 3,960 feet placed above the injection zone's perforated intervals which begin at approximately 4,013 feet (Big Lime) and 4,599 feet (Weir).

3. Logs and Tests. In accordance with 40 C.F.R. § 146.22(f), the Permittee shall prepare logs and perform tests as applicable 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. The Permittee is not authorized to inject under this permit until it has demonstrated that it has submitted to the Director cement records, a narrative report that interprets the well log(s) and test results which specifically relate to the results of the cementing operation, and 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 and at his sole discretion.

4. Mechanical Integrity. The Permittee is prohibited from continuing injection operations into the EnerVest Injection Well No. P-171 unless it has demonstrated that it has maintained mechanical integrity in accordance with 40 C.F.R. Part 146 and it has received notice from the Director that such a demonstration is satisfactory in accordance with paragraph II.D.2 of this permit.

5. Corrective Action Plan. The Permittee shall take the following corrective action if any of the following situations occur at the EnerVest Injection Well No. P-171 at any point during this permit term:
 - (a) an abandoned well is identified within the Area of Review as described herein; or
 - (b) the maximum surface injection pressure exceeds 976 psi at any point in time (except where injection has been limited to the Weir foundation as specified in Part III.B.1.b, in which case the maximum injection pressure which triggers corrective action is 1119 psi).
 If either of these situations occur, the Permittee shall:
 - a. Immediately cease injecting into the Injection Well to allow the well to stabilize;
 - b. Notify the Director verbally upon discovery;
 - c. Within five (5) days of discovery, submit to the Director for review and approval a Corrective Action Plan consistent with 40 C.F.R. § 146.7.
 - d. Upon receipt of approval of the Corrective Action Plan by the Director, the Permittee shall implement the approved plan immediately.
 - e. If the well cannot be stabilized to the satisfaction of EPA and Virginia Division of Gas & Oil, plug the well as otherwise described herein;

6. Completion Reports. Prior to the commencement of injection operations, the Permittee shall prepare a written Completion Report that summarizes the activities and the results of the testing required in Condition A.1 through 5 of Part

III of this permit and submit the Completion Report to the Director for review and approval.

B. Operating Requirements

1. Injection Formations.

- a. The Permittee shall inject only into the Big Lime Formation at depths between 4,013 to 4,018 feet, and into the Weir Formation at depths between 4,599 to 4,636 feet.
- b. During the term covered by this permit, EnerVest may seek to limit its injection to the Weir Formation. If EnerVest modifies the injection operation to limit injection to the Weir Formation, and if EnerVest meets all of the following requirements:
 - i. It demonstrates to the satisfaction of EPA that it has fully sealed off the injection interval of 4,013 to 4,018 feet;
 - ii. it is in compliance with all conditions of this permit; and
 - iii. it limits injection to depths between 4,599 to 4,636 feet;

and EPA notifies EnerVest that EnerVest has satisfied these requirements, then, once notification is received, the following requirements apply:

- 1) EnerVest shall inject only into Weir Formation;
- 2) the maximum injection pressure allowed is 1119 psi; and
- 3) the maximum bottom hole fracture pressure allowed is 3270 psi.

2. Injection Fluid. The Permittee shall not inject into the Injection Well any hazardous waste as defined in 40 C.F.R. Part 261 or any fluid, other than fluids produced solely in association with oil and gas production operations and additives necessary to maintain the integrity of the well.
3. Injection Volume Limitation. Injection volume shall not exceed 30,000 barrels per month. A barrel consists of 42 gallons.
4. Injection Pressure Limitation. The Permittee shall not exceed a surface injection pressure maximum of 976 psi and a bottom-hole injection pressure maximum of 2853 psi (except where injection has been limited to the Weir Formation as specified in Part III.B.1.b, in which case the maximum injection pressure is 1119 psi and the maximum bottom-hole injection pressure is 3270 psi). These pressures were calculated based on a maximum injection fluid specific gravity of 1.08. If the specific gravity of the injection fluid exceeds 1.08, then the Permittee shall dilute the injection fluid so that its specific gravity is no greater than 1.08. The Permittee shall not inject fluid at a pressure which initiates fractures in the

confining zone, as defined in 40 C.F.R. § 146.3, adjacent to underground sources of drinking water (USDW) or causes the movement of injection or formation fluids into an USDW.

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

C. Plugging and Abandonment.

1. Plugging and Abandonment. The Permittee shall plug and abandon the Injection Well as provided in the EPA-approved Plugging and Abandonment Plan (EPA Form 7520-14) (Attachment 1), which is incorporated herein.
2. The Permittee shall plug and abandon the Injection Well to prevent movement of fluids into or between USDWs.

D. Financial Responsibility

1. The Permittee shall maintain continuous compliance with the requirement to 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 \$35,000. The well may not be constructed, reworked or operated if the financial responsibility for that well has not been established. Further, the Permittee must provide documentation to the Director that financial responsibility has been established for the Injection Well prior to construction, rework or operation. The Permittee will provide a Surety Bond and Standby Trust Agreement assuring the plugging costs for the Injection Well. The Permittee shall not substitute this Surety Bond with an alternative demonstration of financial responsibility, unless it has previously submitted evidence of that alternative demonstration to the Director and the Director notifies it that the alternative demonstration of financial responsibility is acceptable. 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.
2. The Permittee shall continue to demonstrate and maintain financial responsibility and resources to close, plug, and abandon the underground injection operation in the manner required herein until:
 - a. The well has been plugged and abandoned in accordance with an approved plugging and abandonment plan pursuant to §§ 144.51(o), 146.10, and 146.92 of

this chapter, and submitted a plugging and abandonment report pursuant to § 144.51(p); or

b. The well has been converted in compliance with the requirements of § 144.51(n); or

c. The transferor of a permit has received notice from the Director that the owner or operator receiving transfer of the permit, the new permittee, has demonstrated financial responsibility for the well.

3. Insolvency of Financial Institution. In the event of the bankruptcy of the trustee or issuing institution of the financial mechanism, or a suspension or revocation of the authority of the trustee institution to act as a trustee or the institution issuing the financial mechanism to issue such an instrument, the Permittee shall immediately notify the Director in writing and submit an alternative demonstration of financial responsibility acceptable to the Director within sixty days after such an event.

