



west virginia department of environmental protection

Office of Oil and Gas
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Jim Justice, Governor
Austin Caperton, Cabinet Secretary
www.dep.wv.gov

November 30, 2017

UIC Permit

ENERVEST OPERATING, L.L.C., A LIMITED LIABILITY CO.
1001 FANNIN STREET
SUITE 800
HOUSTON, TX 77002

Re: Permit approval for Underground Injection Control (UIC) Permit # 2D10902703002
Date Issued: November 30, 2017

Enclosed you will find the above referenced Underground Injection Control Permit. This permit will expire in five (5) years from the date of issuance.

Be advised that all conditions established by this Permit either expressly or incorporated by reference, must be strictly adhered to. All monitoring forms shall be submitted to the Office of Oil and Gas in the matter and frequency prescribed. The monitoring forms will be compared with the scope of permitted activity to verify compliance.

Please review the permit carefully and be aware of all permit conditions. Compliance with all permit conditions will be strictly enforced.

The operation of this injection well facility in general, including maintenance of all related surface equipment, shall be conducted so as to preclude any unlawful discharge.

James A. Martin
Chief
Office of Oil and Gas

Enclosures as stated

Promoting a healthy environment.

UNDERGROUND INJECTION CONTROL PERMIT

For

Enervest Operating, L.L.C.
A Limited Liability Company

Permit Number 2D10902703002

November 30, 2017

**AUTHORIZATION TO OPERATE AN
UNDERGROUND INJECTION CONTROL
(UIC) CLASS II INJECTION WELL
PERMIT NUMBER # UIC 2D10902703002**

In compliance with provisions of the West Virginia Code, Chapter 22, Article 6, Article 11 and Article 12, as well as Legislative Rules, Title 47, Series 13, Series 55, Series 58, and Title 35 Series 1 and Series 4.

PERMITTEE / OPERATOR

NAME	Enervest Operating L.L.C. A Limited Liability Company	FACILITY TYPE	Non-Commercial Waste Disposal
ADDRESS	1001 Fannin Street, Suite 800	WELL API #	<u>47-109-02703</u>
ADDRESS	Houston, TX 77002	FIELD NAME	NA

is authorized by this permit to inject Class II fluids that are brought to the surface in connection with conventional oil or natural gas production and may be commingled with waste waters from gas plants which are an integral part of production operations, unless those waters are classified as a hazardous waste at the time of injection into the **Weir** formation in accordance with the conditions set forth herein. The permitted injection depth shall be 3,170 feet to 3,226 feet. The injection well is located in Slab Fork District, **Wyoming** County, 7.5' **McGraws** Quadrangle. The coordinates for this injection well are:

UTM NAD 83 Northing 4173147.9 and Easting 462949 (meters). Latitude 37.70482 Longitude -81.42042

The maximum permitted wellhead injection pressure is established as 1,034 psi.

The maximum permitted injection rate is established at 425 bbl/hr.

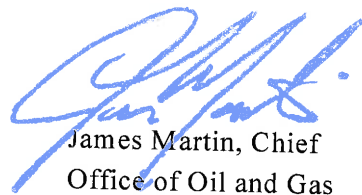
All references to West Virginia Regulations are to those that are in effect on the date that this permit becomes effective.

Any person who holds a permit shall pay an annual permit fee in accordance with the provisions of Title 47 Series 9 section 7 of the Legislative Rule. The first annual permit fee shall be remitted to the Office of Oil and Gas one (1) calendar year from the date of permit issuance; subsequent annual permit fees shall be remitted on or before the anniversary date of the permit issuance. The annual permit fee for a Class II disposal well is twenty-five dollars (\$25). The permit becomes void if the annual permit fee has not been paid within one hundred eighty (180) days of the due date. The Chief shall not reissue a permit until all annual permit fees due during prior terms have been paid in full.

Failure to pay the annual groundwater fee of seventy-five dollars (\$75) for Class IID as required by the West Virginia Code, Chapter 22, Article 11 and/or Article 12, shall be cause for revocation of this permit. The annual permit fee is due and shall be paid on the anniversary date of permit issuance.

Non-compliance with the terms of this permit shall be cause for revocation of Certification under the terms of Chapter 22, Article 12, and revocation of the permit under Chapter 22, Article 11 of the West Virginia Code.

This permit and its authorization to inject shall remain in effect for five (5) years from the date of issuance of the final permit provided all terms of the permit are met.


James Martin, Chief
Office of Oil and Gas

PART I

A. REAPPLICATION

If the Permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the Permittee must submit an administratively complete application, along with application fee payment, for a new permit at least one hundred and eighty (180) days before this permit expires.

B. IMMEDIATE REPORTING

The Permittee shall report any noncompliance which may endanger human health or the environment immediately after becoming aware of the circumstances by using the **WVDEP Emergency Spill line number 1-800-642-3074**. Written submission shall also be provided 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, and if the noncompliance has not been corrected, Permittee shall provide the anticipated time it is expected to continue; and the steps taken or planned to be taken to reduce, eliminate, and prevent reoccurrence of the noncompliance. The following shall be included as information which must be reported immediately:

- i. Any monitoring or other information which indicates that any contaminant may cause an endangerment to an underground source of drinking water (USDWs).
- ii. Any non-compliance with a permit condition or malfunction of the injection system which may cause fluid migration into or between the USDWs, or failure of mechanical integrity test demonstrations.

C. RIGHT OF APPEAL

Notice is hereby given of your right to appeal the terms and conditions of this permit by which you are aggrieved to the State Environmental Quality Board by filing a NOTICE OF APPEAL on the form prescribed by such Board for this purpose, with the Board, in accordance with the provisions of Chapter 22 Article 11, Section 21 of the code of West Virginia within thirty (30) days after the date of issuance of this permit.

D. EFFECT OF PERMIT

The Permittee is allowed to engage in underground injection in accordance with the conditions of this permit based on an approved permit application. The Permittee shall not allow the underground injection activity authorized by this permit to cause or allow the movement of fluid containing any contaminant into underground sources of drinking water and may not cause a violation of any primary drinking water regulation or any health-based limit promulgated under 40 CFR Chapter 1, Part 142, of the Code of Federal Regulations, or of any water quality standard promulgated by the West Virginia Department of Environmental Protection/Division of Water and Waste Management. Any underground injection activity not authorized in this permit is prohibited. Compliance with the terms of this permit does not constitute a defense to any action brought under Part C and the imminent and substantial endangerment provisions in Part D of the Safe Drinking Water Act (SDWA) or any other common or statutory law for a breach of another applicable legal duty.

E. PERMIT ACTIONS

1. **Permit Status Change.** This permit can be modified, revoked and reissued or terminated for cause specified in Chapter 22, Article 11 (hereafter WV Code §22-11), and Chapter 22, Article 12 (hereafter WV Code §22-12) of the West Virginia Code, and Title 47, Series 13 (hereafter Legislative Rule 47 CSR 13) of the Legislative Rules. The filing of a request by the Permittee for a permit modification, revocation and reissuance, suspension or revocation, or notification of planned changes or anticipated noncompliance, does not stay any permit condition.
2. **Transfer of Permits.** This permit is not transferable to any person unless notice is first provided to the Office of Oil and Gas and the Permittee complies with requirements of Legislative Rule 47 CSR 13-13.17. The Office of Oil and Gas 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 Safe Drinking Water Act (SDWA).

F. SEVERABILITY

The provisions of this permit are severable, and if any condition of this permit or the Permittee's application of any provision of this permit to any person or circumstance is held invalid, such invalidity shall not affect other provisions or applications of other provisions of the permit and the remainder of this permit shall not be affected.

G. DURATION OF PERMIT

This permit and the authorization to inject are issued for a period of five (5) years unless terminated under Part I Section H paragraph 11 of this permit. However, when through no fault of the Permittee the West Virginia Department of Environmental Protection does not issue a new permit with an effective date on or before the expiration date of the previous permit and the Permittee has submitted a timely administratively complete application as required in Part I section A of this permit, which is a complete application for a new permit, the expired permit shall continue to remain fully effective and enforceable.

H. GENERAL REQUIREMENTS

1. **Duty to Comply.** The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the SDWA and the State Act and is grounds for enforcement action; for permit suspension or revocation, revocation and reissuance, or modification; or for denial of a permit renewal application. (Legislative Rule 47 CSR 13-13.12.a) Copies of UIC Program regulations (WV Code §22-11) may be obtained from the West Virginia Legislature's Website <http://www.legis.state.wv.us/WVCODE/Code.cfm>, and (Legislative Rule 47 CSR 13) may be obtained from the West Virginia Secretary of State's Website at <http://www.sos.wv.gov/>.
2. **Duty to Reapply.** If the Permittee wishes to continue activity regulated by this permit after the expiration date of this permit, the Permittee must apply for and obtain a new permit as required in Part I section A of this permit at least one hundred and eighty (180) days before this permit expires.
3. **Duty to Halt or Reduce Activity Not a Defense.** It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

4. **Duty to Mitigate.** The Permittee shall take all reasonable steps to minimize or correct any adverse impact on health of persons or 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, systems of treatment and control, and related equipment 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 operating staffing and training, adequate security at the facility to prevent unauthorized access, adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facility 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 Chief within a reasonable time, any information which the Chief may request to determine whether cause exists for modifying, revoking and reissuing, or revoking this permit, or to determine compliance with this permit. The Permittee shall also furnish to the Chief, 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 report(s), the Permittee shall promptly submit information addressing these deficiencies to the Chief.
7. **Inspection and Entry.** The Permittee shall allow the Chief, or an authorized representative, upon the presentation of credentials and other documents as may be required by law to:
 - a. Enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
 - b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
 - c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
 - d. Sample or monitor, at reasonable times, for the purposes of assuring permit compliance for any substances or parameters at any location.
8. **Penalties.** Any person who violates a permit requirement is subject to civil penalties, criminal penalties, fines and other enforcement actions under WV Code §22-11 and WV Code §22-12.
9. **Signatory Requirements.** Only a duly authorized person may sign documents and reports associated with this permit.
 - a. All reports required by this permit and other information requested by the Chief shall be signed 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 official 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, and;
 - (3) The written authorization is submitted to, and approved by, the Chief.
- c. If an authorization under paragraph (b) of this section is no longer accurate because a different individual 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 Chief 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 (b) of this section shall make the following certification: (Legislative Rule 47 CSR 13-13.11.d). "I certify under 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."

10. **Property Rights.** 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, any infringement of Federal, State or local law or regulations, or any exclusive privilege.

11. **Permit Actions.** This permit may be modified, revoked and reissued, suspended, or revoked for cause. The filing of a request by the Permittee for a permit modification, revocation and reissuance, suspension or revocation, or notification of planned changes or anticipated noncompliance, does not stay any permit condition.

12. **Confidentiality of Information.** In accordance with Legislative Rule 47 CSR 13-13.21, any information submitted to the State pursuant to this rule may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or instructions, or in the case of other submissions, by stamping the words "CONFIDENTIAL BUSINESS INFORMATION" on each page containing such information. An affidavit or written request stating the need for requested confidential documents to remain confidential must also be submitted with the documents.

- a. If no claim is made at the time of submission, the State may make the information available to the public without further notice.
- b. Claims of confidentiality for the following information will be denied:
 - i. The name and address of any permit applicant or Permittee.
 - ii. Information which deals with the existence, absence, or level of contaminants in drinking water.

13. **Monitoring Reports.** Monitoring results shall be reported at the intervals specified under Part II Section B of this permit.
14. **Compliance Schedules.** Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than thirty (30) days following each schedule date.
15. **Other Information.** Where a Permittee becomes aware that he/she failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Chief, he/she shall promptly submit such facts or information.
16. **Prohibited Activity.** It shall be unlawful for any person, unless an authorization has been issued by a groundwater regulatory agency, to allow crude oil, or any petroleum product derived from crude oil, or seepage, or natural gas, or condensate, or salt water, or any chemical mixture which may impact groundwater quality to escape from any well, pipeline, impoundment, storage tank, treatment unit, or storage container, or be allowed to flow onto or under the land surface or in such a manner that could impact surface or groundwater quality.
17. **State or Federal Laws.** Nothing in this permit shall be construed to preclude the institution on any legal action or relieve the Permittee from any responsibilities, liabilities, or penalties established pursuant to any State or Federal law or regulation.

PART II

A. RECORD RETENTION

1. **Required Records.** The Permittee shall retain all records concerning the permitted underground injection well until three (3) years after completion of any plugging and abandonment. The Chief may require the Owner or Operator to deliver the records to the Chief at the conclusion of the retention period.

B. MONITORING REQUIREMENTS

1. **Sampling and Measurement.** Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The method used to obtain a representative sample of the fluid to be analyzed and the procedure for analysis of the sample shall be in accordance with test procedures approved under Code of Federal Regulations 40 CFR 136.3, unless otherwise approved by the Chief. The Permittee shall identify the types of tests and methods used to generate the monitoring data.
2. **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 obtaining representative samples of injection fluids; and
 - b. Devices to continuously measure and record injection pressure, flow rates, injection and production volumes.

- c. Pressure gauges shall be of a design that provides a full pressure range of at least fifty (50) percent (%) greater than the anticipated operating pressure; and a certified deviation accuracy of five (5) percent (%) or less throughout the operating pressure range.
 - d. 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.
- 3. **Wellhead Pressure Gauge.** A wellhead pressure gauge shall be installed and maintained on the injection tubing to facilitate inspection and ensure compliance of the maximum injection pressures as approved on Oil and Gas Form WR-37. A daily reading of the injection pressure shall be taken and reported on Form WR-40.
- 4. **Daily Monitoring.** The Permittee shall daily monitor all the casing annuli with pressure sensitive devices or with such a method as approved or required by the Office of Oil and Gas to allow early detection of any leaks from the packer, injection zone or casing. The Permittee shall also monitor the daily maximum injection pressure, volume, and rate daily. This information shall be reported monthly using the Office of Oil and Gas electronic WR-40 Form. Submittal shall be through the current WVDEP Electronic Submittal System (ESS): <https://apps.dep.wv.gov/eplogin.cfm>.
- 5. **Injection Well Mechanical Integrity Testing (MIT).** The Permittee shall conduct a mechanical integrity test of the injection well at a minimum frequency of once every five (5) years per Legislative Rule 35 CSR 4-7.7.b. The Permittee shall notify the Chief of his or her intent to conduct a mechanical integrity test no less than twenty-four (24) hours prior to such demonstration. The Permittee must submit a WR-37 Form to the Office of Oil and Gas within thirty (30) days of each mechanical integrity test conducted. When a pressure test is conducted, the Permittee must submit a pressure recording graph/chart as an attachment to the WR-37 Form. The pressure requirement of a mechanical integrity test on a well is a pressure of at least 150% or 1.5 times the maximum injection pressure. The pressure must be held for a period of at least 20 minutes with no more than 5% pressure loss to be approved for injection operations. Upon failure of a mechanical integrity test or expiration of the five (5) year mechanical integrity test regulatory period, the Permittee shall cease operation/injection and shut-in the well immediately until successfully repaired, tested or permanently plugged and abandoned per regulation. Each mechanical integrity test failure must be documented on the WR-37 Form and submitted with any pressure recording graph/chart. Corrective action for repairs shall be completed for approval by the Office of Oil and Gas and be conducted within ninety (90) days of the failure date. If repaired, the well must be re-tested and an updated WR-37 Form with any pressure recording graph/chart must be submitted to the Office of Oil and Gas for approval.
- 6. **Pipeline Mechanical Integrity Testing (MIT).** All pipeline(s) from the injection pump to the injection well shall be tested for integrity at least once every five (5) years with the results reported on the WR-37 Form along with the pressure test recording graph/chart and then submitted to the Office of Oil and Gas within thirty (30) days. The pipeline integrity test shall pressurize the injection pipeline(s) to 100 psi greater than the maximum permitted wellhead injection pressure for a minimum of twenty (20) minutes, allowing for no more than five (5) percent loss after completion. The Permittee shall notify the Chief of his or her intent to conduct an integrity test of the pipeline(s) no less than twenty-four (24) hours prior to such test. Upon failure of a mechanical integrity test or expiration of the five (5) year mechanical integrity test regulatory period, the Permittee shall cease operation/injection and shut-in the well immediately until successfully repaired, replaced and then tested. Repairs shall be completed by the Permittee and approved by the Office of Oil and Gas prior to resuming operations. All repairs shall be completed within ninety (90) days of the failure date. If repaired, the line must be re-tested and an updated WR-37 Form with pressure recording graph/chart must be submitted to the Office of Oil and Gas for approval. Any change made to the pipeline fittings or piping will require integrity pressure testing. All Office of Oil and Gas forms, including the WR-37 form can be found on the Office of Oil and Gas webpage: <http://www.dep.wv.gov/oil-and-gas/GI/Forms/Pages/default.aspx>.

7. **Additional MIT Requirements.** In addition to the above requirement, a mechanical integrity test demonstration shall be conducted whenever protective casing or tubing is removed from the well, the packer is replaced or resealed, if a well failure is likely, or as requested by the Chief. The Permittee may continue operation only if he or she has successfully demonstrated to the Chief the mechanical integrity of the permitted well. The Permittee shall cease injection operations if a loss of mechanical integrity becomes evident or if mechanical integrity cannot be demonstrated. The Permittee must send a written notification to WVDEP Office of Oil and Gas within 24 hours if mechanical integrity of the well is lost. The notification must include a plan to address the failure within 90 days. The plan must either outline a repair and retest of the well or to plug the well within 90 days.
8. **Environmental Measurements.** All environmental measurements required by the permit, including but not limited to, measurements of pressure, temperature, mechanical, and chemical analyses shall be done in accordance with state guidance on quality assurance. All analysis must be performed by a West Virginia certified laboratory. Certified laboratories can be found on the WVDEP webpage at <http://www.dep.wv.gov/WWE/Programs/lab/Pages/default.aspx>.
9. **Monitoring Records.** Records of monitoring information shall include:
- a. The date, exact place, and time of sampling or measurements;
 - b. The individual(s) who performed the sampling or measurements;
 - c. The date(s) analysis(es) were performed;
 - d. Individual(s) who performed the analyses;
 - e. The analytical techniques or methods used; and
 - f. The results of such analyses.
10. **Authorized Injection Fluids.** This permit is for authorization of injection of only fluids as defined for Class II wells in Legislative Rule 47 CSR 13-4.2. The fluids to be injected shall only be from those sources listed in the permit application. Additional sources of fluids may be approved upon written request by the Permittee. However, Permittee's acceptance of additional sources of fluid(s) shall be deemed approved if such fluid(s) meet all Class II injection standards and the Permittee reports within five (5) business days the source, API number and formation(s) for the sources added during the previous week. Accepting any fluid that does not meet Class II injection standards is grounds for enforcement action and/or revocation of this permit.
11. **Manifest Records.** The Permittee shall maintain a record (manifest) of every load of fluid received. The record shall include the hauler's name and signature, the Operator's name and signature, API number for the well the fluid was collected, the location from where the load was obtained and the volume of the load and whether the load of fluid delivered was a split load. If the load was a split load, each Operator's name and location shall be listed and, if possible, the volumes of fluid received from each Operator documented. This information shall be maintained on the Class II disposal manifest attached to this permit.

12. **Injectate Samples.** Injection fluids from sources will be analyzed at least once every five (5) years, or upon request of the Chief, to yield representative data on their physical, chemical, or other relevant characteristics. The Permittee shall take samples at or before the wellhead for analysis. Samples and measurements shall be representative of the monitored activity. The Permittee shall utilize applicable analytical methods. The Permittee shall sample, analyze and record the nature of all the injected fluid for the parameters listed in TABLE 1 below at the initiation of the injection operation, and upon request by the Chief or whenever the operator observes or anticipates a change in the injection fluid. Test results shall be submitted to the Office of Oil and Gas with laboratory analysis data sheets (report). Any analysis of injectate with a specific gravity result greater than 1.2 shall be reported to the Chief within twenty-four (24) hours of the results.

TABLE 1

Chloride	TPH-GRO
Bromide	TPH-DRO
Strontium	TPH-ORO
Barium	Benzene
Iron	Ethylbenzene
Manganese	Toluene
Aluminum	Total Xylenes
Arsenic	Total Dissolved Solids (TDS)
Sodium	Total Organic Carbon (TOC)
Calcium	Total Suspended Solids (TSS)
Sulfate	pH
Specific Gravity	NORM

13. **Stream Samples.** Permittee shall sample Lewis Fork, one upstream location above the holding pits but below the confluence of the two small tributary streams and one downstream of the injection well location, for the parameters listed in TABLE 2 below. The sampling will be on a nine (9) month schedule with the first sampling conducted before the end of February 2018. The results will be reported to the WVDEP Office of Oil and Gas, accompanied by a map identifying the sampling points and corresponding coordinates.
14. **Monitoring Well Samples.** Monitoring wells MW-1/B-1, MW-2/B-2, MW-3/B-3, MW-4/B-4, MW-5/B-5 shall be rehabilitated, cleaned out and the depth, condition, and static water level of these wells shall be reported to the WVDEP Office of Oil and Gas within 30 days of issuance of this permit. Water levels in these wells shall be reported monthly. Any groundwater found in the monitoring wells that is present in sufficient quantity to acquire a competent sample shall be sampled on the same nine (9) month schedule as the stream samples described above using the parameters listed in Table 2. The Chief shall have the discretion to modify, discontinue, or require additional sampling based on the condition of the monitoring well(s).

TABLE 2

Chloride	TPH-GRO
Bromide	TPH-DRO
Strontium	TPH-ORO
Barium	Benzene
Iron	Ethylbenzene
Manganese	Toluene
Aluminum	Total Xylenes
Arsenic	Total Dissolved Solids (TDS)
Sodium	Total Organic Carbon (TOC)
Calcium	Total Suspended Solids (TSS)
Sulfate	pH

15. **Holding Pit Inspections.** Holding Pit / Impoundment inspections must be conducted at least once a week recording integrity using the inspection form IR-11B (attached). Inspection forms shall be submitted monthly. In addition to the IR-11B form, the Operator may also submit any other inspection records as a supplement. An inspection must be conducted within 24 hours of any significant rain event. A significant rain event is defined as rainfall of two (2) inches or more within a 6-hour period. The inspection results must be retained and produced upon request. Should a potential hazard be observed, then the WVDEP Office of Oil and Gas must be contacted within twenty-four (24) hours. A written narrative report and all inspections must be submitted to WVDEP Office of Oil and Gas within five (5) business days from the inspection date in which the potential hazard was observed. A freeboard of no less than twenty-four (24) inches must be maintained at all times.

16. **Disposal of Holding Pit Solids.** All solids/sludge removed from holding pits shall be disposed of in compliance with applicable laws and regulations and taken to an approved landfill. Records of chemical characteristics and disposal manifests must be retained by the permittee for a period of three (3) years and must be available for inspection at the discretion of the Chief.

C. REPORTING AND NOTIFICATION REQUIREMENTS

1. **Anticipated Noncompliance.** The Permittee shall give advance notice to the Chief of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.
2. **Other Noncompliance.** The Permittee shall report all instances of noncompliance not reported under paragraphs Part I Section B, and Part II Section C Paragraph 3 of this permit, at the time monitoring reports are submitted. The report shall contain the information listed in Part I Section B of this permit. The Permittee shall report all other instances of noncompliance in writing within ten (10) days of the time the Permittee becomes aware of the circumstances. The reports shall contain the information listed in this permit.

3. **Planned Changes.** The Permittee shall give notice to the Chief as soon as possible of any planned physical alterations, additions to the permitted facility, and/or any changes planned in the operation of the facility.
4. **Conversion and Abandonment Notification.** The Operator shall provide written notification to the Chief prior to conversion or abandonment of the well or in the case of area/enhanced recovery permits before closure of the project, per Legislative Rule 47 CSR 13-13.6.e. Notice should be given at least thirty (30) days prior to any conversion, abandonment or alteration. Notice shall also be given prior to the addition, reduction or conversion of wells within an area/enhanced recovery permit.
5. **Cessation of Injection Activity.** Any well which is not in use for a period of twelve (12) consecutive months shall be presumed to have been abandoned and shall promptly be plugged by the Operator in accordance with the provisions in Chapter 22, Article 6 Section 24 of the West Virginia Code, unless the Operator furnishes satisfactory proof to the Chief that there is a bona fide future use for such well. All lines shall be completely drained of all fluids and the wellhead shut-in anytime injection operations cease for a period of greater than ninety (90) days. The WVDEP-Office of Oil and Gas must be contacted at least twenty-four (24) hours prior to the cessation shut-in process.
6. **Certification of Permit Review.** Within thirty (30) days of receipt of this permit, the Permittee shall report to the Chief that he or she has read and understands and accepts all terms and conditions of the permit. The Certification Document is included as an attachment of this permit, and must be signed, dated and submitted to WVDEP-Office of Oil and Gas.
7. **Duty of Owner/Operator to Report Discharges.** The Owner or Operator or person in charge of a facility subject to this rule from which a reportable discharge, as described in subsection 3.3 of Legislative Rule 35 CSR 1, occurs shall notify the Office of Oil and Gas by calling **1-800-642-3074** immediately; but in no case, later than twenty-four (24) hours after becoming aware of the discharge.

PART III

A. OPERATING REQUIREMENTS

1. **Permit Documents On-Site.** The UIC Permit and all attachments must be kept on location at all times.
2. **Authorized Injection Fluids.** The Permittee shall not inject any hazardous substances, as defined by Code of Federal Regulations 40 CFR 261, or any other fluid, other than the Class II fluids produced solely in association with oil and gas production operations. This permit is for authorization of injection of only fluids as defined for Class II wells in Legislative Rule 47 CSR 13-4.2. The fluids to be injected shall only be from those sources listed in the permit application. Additional sources of fluids may be approved upon written request by the Permittee. However, Permittee's acceptance of additional sources of fluid(s) shall be deemed approved provided that such fluid(s) meet all Class II injection standards and the Permittee reports within five (5) business days the source, API number and formation(s) for the sources added during the previous week. Accepting any fluid that does not meet Class II injection standards is grounds for enforcement action and/or revocation of this permit.
3. **Required Barrel Counter.** The Permittee shall install and maintain a barrel counter, or other means of flow volume metering, on the injection line. The results are to be recorded and reported on the WR-40.

4. **Duty to Monitor or Plug Non-Cemented Wells That Penetrates the Injection Zone Within the AOR.** Any well that penetrates the injection zone with an inactive and/or abandoned status within the permitted Area of Review (AOR), that does not have cement casing through the injection zone, shall be monitored immediately by a method approved by the WVDEP-Office of Oil and Gas, as well as properly plug and abandon such wells, as necessary.
5. **Annulus Injection Prohibited.** Injection between the outermost casing protecting underground sources of drinking water and the wellbore is prohibited, as is injection into any USDW.
6. **Corrective Action.** The applicant must satisfy the requirements of the Office of Oil and Gas regarding any corrective action needed on all known wells penetrating the injection zone within the permitted Area of Review. This must be done in a manner which satisfies the requirements of Legislative Rule 47 CSR 13-13.9.
7. **Cement Evaluation Analysis.** 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(s). 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 the Office of Oil and Gas that such a demonstration is satisfactory.
8. **Loading/Unloading stations.** Loading and unloading stations shall have spill prevention and control facilities and procedures as well as secondary containment. Spill containment and cleanup equipment shall be readily accessible.
9. **Above Ground Storage Tanks.**
 - a. The Permittee shall ensure that secondary containment for existing above ground storage tank(s) shall be adequately designed and constructed to be sufficiently impervious to prevent the released substance from penetrating the containment structure until the release can be detected and recovered, but in no case, shall that time be less than seventy-two (72) hours. The secondary containment structure shall have capacity to contain 110% volume of the largest tank. If tank batteries or tanks are connected in series by manifold, the combined volume of the tanks must be considered if the tanks are capable of simultaneous release. The combined capacity of the tanks connected by manifold shall be considered unless the tanks are operated in a manner that prevents fluids from flowing from one tank to another under any conditions.
 - b. Above ground tanks connected in series by a manifold shall utilize a system where valves are closed and locked to isolate tanks when their combined volume exceeds the secondary containment capacity. At no time, shall the combined volume of the tanks be accessible through the manifold system exceed the capacity of the secondary containment without someone being on site to monitor.
 - c. All above ground storage tanks within the floodplain, as defined by the Federal Emergency Management Agency "FEMA" 100-year floodplain map, shall be anchored significantly enough to prevent movement in the case of a high-water flood event. The Permittee should contact the contact the county floodplain manager to confirm the floodplain status of the tank(s) location(s).
10. **Wellhead Reinforcement.** All wellheads shall be reinforced or otherwise armored to protect against accidental collisions, if so positioned where collision could be possible.

11. **Pumps and Ancillary Equipment.** Pumps and ancillary equipment (e.g. valves, flanges, filters, condensate lines and instrumentation) handling materials that have the potential to contaminate groundwater shall be selected and installed to prevent or contain any spills or leaks.
12. **Sumps.** Sumps containing materials which have the potential to contaminate groundwater shall be designed, constructed and operated utilizing secondary containment, or other appropriate controls that can prevent groundwater contamination.
13. **Third Party Haulers.** No third-party haulers shall be permitted without approval by the WVDEP-Office of Oil and Gas. For approval, the Permittee shall designate by letter to the WVDEP-Office of Oil and Gas, any third-party hauler proposed to be used for the transportation of fluids to the facility. The third-party hauler may not commence transportation of fluids to the facility until approved by the WVDEP-Office of Oil and Gas.
14. **Air Quality Permit Determination.** Within thirty (30) days of issuance of the final version of this permit, the Permittee shall contact the WVDEP-Division of Air Quality to complete a permit determination, if a recent determination has not been completed. The following web link will provide access for filing: <http://www.dep.wv.gov/daq/permitting/Pages/nsr-forms.aspx>.
15. **Facility Security.** The gate on the access road to the site shall be closed and locked at all times when there is not a company representative at the facility. All valves, water drains, containment areas, and storage areas shall be secured and locked utilizing locking devices and/or plugs. All gates and access points shall be secured and locked while no representative is at the facility. All visitors must check in upon arriving at the facility. Haulers (if used) shall not be allowed to off load without the proper paperwork and documentation.
16. **Duty to Drain Injection Pipelines.** All lines shall be completely drained of all fluids and the wellhead shut-in anytime injection operations cease for a period of greater than ninety (90) days. The Office of Oil and Gas must be contacted at least twenty-four (24) hours prior to the cessation shut-in process.

B. PLUGGING AND ABANDONMENT

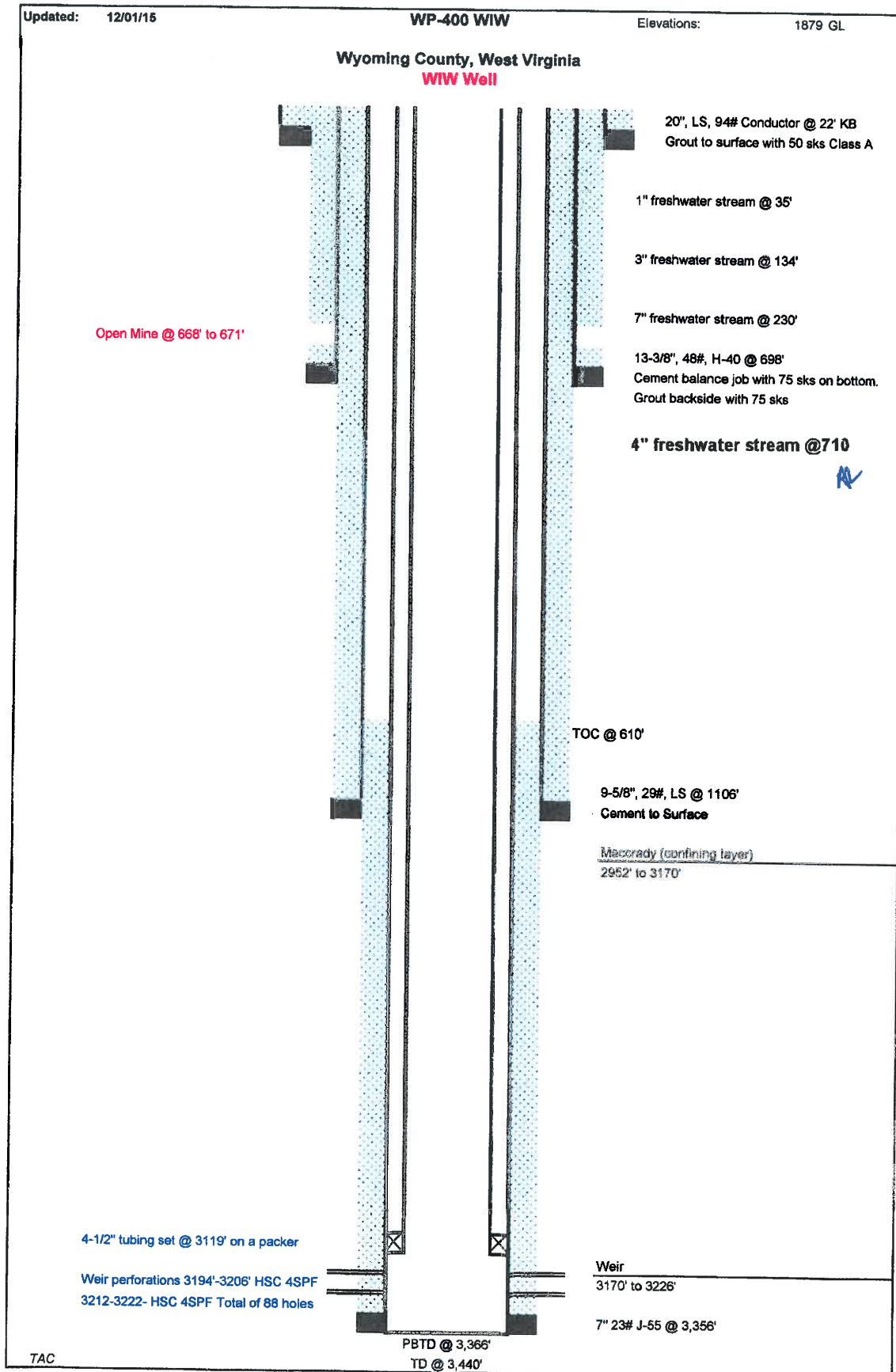
1. Any well which is not in use for a period of twelve (12) consecutive months shall be presumed to have been abandoned and shall promptly be plugged by the Operator in accordance with the provisions of Chapter 22, Article 6, of the West Virginia Code, unless the Operator furnishes satisfactory proof to the Chief that there is a bona fide future use for such well.
2. Plugging and abandonment shall be conducted in a manner to prevent movement of fluids into or between USDWs (underground sources of drinking water).
3. Pursuant to Legislative Rule 47 CSR 13-13.7.f, the Permittee's plugging and abandonment plan shall be incorporated into the UIC permit. See Attachment 1.
4. Prior to well plugging, the Permittee shall apply for and receive a plugging permit from the WVDEP-Office of Oil and Gas to plug and abandon the well in accordance with an approved plugging and abandonment plan.
5. The Operator shall submit a closure and reclamation plan for the holding pits for approval by the WVDEP-Office of Oil and Gas prior to their closure. The plan shall describe the methods and practices to be used to remove the holding pits, disposal of the liner, disposal of the sediment, and site remediation.

PART IV

A. SITE SPECIFIC CONDITIONS

1. Appendix A: Specific Operational Conditions / Well Construction.
2. Appendix H: Groundwater Protection Plan (GPP) shall be maintained and updated as necessary to protect groundwater quality.
3. Appendix I: Requirement for Financial Responsibility to plug/abandoned an injection well.
4. Attachment 1: Plugging and Abandonment Plan.
5. Attachment 2: Site/Facility Diagram.
6. Attachment 3: Manifest Document
7. Attachment 4: Impoundment Inspection Form (IR-11B)

Appendix A



APPENDIX A (cont.)

12. Casing and Tubing Program

TYPE	Size	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu. Ft.)
Conductor	20"	New	LS	94	22'	22'	To Surface
Fresh Water	13 3/8"	New	H-40	48	698'	698'	To Surface
Coal							
Intermediate 1	9 5/8"	New	LS	29	1106'	1106'	To Surface
Intermediate 2							
Production	7"	New	J-55	23	3366'	3366'	3366' to 610'
Tubing	4 1/2"	New	M-65	9.5		3119'	
Liners							

TYPE	Wellbore Diameter	Casing Size	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./sk)	Cement to Surface ? (Y or N)
Conductor		20"	0.876"	?	Class A	1.18	Y
Fresh Water	17 1/2"	13 3/8"	0.66"	1,730 psi	Class A w/ 2% Salt	1.19	Y
Coal							
Intermediate 1	12 3/8"	9 5/8"	~0.562"	?	Class A w/ additives	1.35	Y
Intermediate 2							
Production	8 7/8"	7"	0.634"	4,360 psi	Class A w/ additives	1.82	N
Tubing		4 1/2"	0.41"	5180 psi			N
Liners							

PACKERS	Packer #1	Packer #2	Packer #3	Packer #4
Kind:	Production			
Sizes:	7" x 4.5"			
Depths Set:	3119'			

OCT 14 2016

State of West Virginia
Division of Environmental Protection
Section of Oil and Gas

Well Operator's Report of Well Work

Farm Name Georgia Pacific CorporationOperator Well No.: WP-400 WWLOCATION: Elevation: 1879Quadrangle: McGraws 7 1/2District: Slab ForkCounty: WyomingLatitude: 1320 Feet South of 37 Deg. 42 Min. 30 Sec.Longitude: 1100 Feet West of 81 Deg. 25 Min. 00 Sec.

Company:

Penn Virginia Oil & Gas Corporation

	Casing and Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.
Address: <u>2550 East Stone Drive, Suite 110</u>	<u>20"</u>	<u>22</u>	<u>22</u>	<u>59 cu ft</u>
<u>Kingsport, TN 37890</u>	<u>13 3/8"</u>	<u>698</u>	<u>698</u>	<u>89 cu ft</u>
Agent: <u>Bryant Bowman</u>	<u>8 5/8"</u>	<u>1106</u>	<u>1106</u>	<u>407 cu ft</u>
Inspector: <u>Berry Stollings</u>	<u>7"</u>	<u>3356</u>	<u>3356</u>	<u>342 cu ft</u>
Date Permit issued: <u>06/06/2006</u>				
Date Well Work Commenced:				
Date Well Work Completed: <u>08/01/2006</u>				
Verbal Plumber:				
Date Permission granted on:				
Rotary X Cable Rig				
Total Depth (feet): <u>3,350</u>				
Fresh Water Depth (ft):				
<u>35' - 1" stream, 134' - 3" stream; 230' - 7" stream, 710' 1"</u>				
Salt Water Depth (ft):				
<u>None Reported</u>				
Is coal being mined in area (N/Y)? <u>N</u>				
Coal Depths (ft):				
<u>134-138, 220-224, 302-304, 484-487, 658-671 (open mine), 678-681, 1021-1022</u>				

OPEN FLOW DATA

Producing formation SI - No Zones Completed

Pay zone depth (ft) _____

Gas: Initial open flow _____ MCF/d Oil: Initial open flow _____ Bbl/d

Final open flow _____ MCF/d Final open flow _____ Bbl/d

Time of open flow between initial and final tests: _____ Hours

Static rock pressure _____ psig (surface pressure) after _____ Hours

Second producing formation _____

Pay zone depth (ft) _____

Gas: Initial open flow _____ MCF/d Oil: Initial open flow _____ Bbl/d

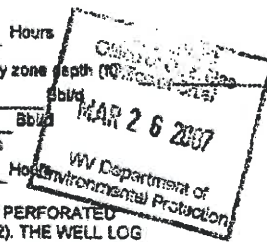
Final open flow _____ MCF/d Final open flow _____ Bbl/d

Time of open flow between initial and final tests: _____ Hours

Static rock pressure _____ psig (surface pressure) after _____ Hours

NOTE: ON BACK OF THIS FORM PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANE, TEC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

Signed: _____

By: William M. RyanDate: 12/13/06

WV D 2703

FORM WR-35R
(REVERSE)

PERMIT #4710902703
WELL #: WP-400 WIW

DETAILS OF PERFORATIONS, FRACTURING, OR PHYSICAL CHANGE, ETC.

<u>FORMATIONS</u>	<u>TOP</u>	<u>BOTTOM</u>	<u>REMARKS</u>
Sand, Shale & Coal	0	1095	
Sand & Shale	1095	1391	
Sand	1391	1423	
Shale	1423	1534	
Ravencroft Sand	1534	1566	
Shale	1566	1586	
Avis Lime Stone	1586	1625	
Shale & Red Rock	1625	2010	
Sand	2010	2029	
Shale	2029	2075	
Sand	2075	2310	
Sand & Shale	2310	2418	
Little Lime	2418	2517	
Lime & Shale	2517	2529	
Big Lime	2529	2852	
Shale	2852	3169	
Weir Sand	3169	3226	
Shale	3226	TD	

APPENDIX H

GROUNDWATER PROTECTION PLAN

Facility Name: WF-400 WiW

County: Wyoming

Facility Location:

Postal Service Address:	300 Capitol Street, Suite 200		
	Charleston, WV 25301		
Latitude :	37.704905	Longitude:	-81.421473

Contact Information:

Person:	Chris Veazey
Phone Number:	304-343-5505
E-mail Address:	cveazey@enervest.net

Date: 12/01/2015

1. A list of all operations that may contaminate the groundwater.

- Water trucks unloading produced fluids (oil, glycols, road salt, diesel fuel)
- Produced fluids (chlorides, metals, and petroleum)
 - Possible leaks from the UIC and associated supply pipeline
 - Possible leaks from injectate storage tanks
 - Possible leaks from the lined injectate storage pits

2. A description of procedures and facilities used to protect groundwater quality from the list of potential contaminant sources above.

- Lined filtration ponds
- Secondary containment for all tanks.
- Use of concrete unloading bays with cameras.
- All bag filters located in secondary containment unit.
- Proper disposal of all solid waste (filtered/bag filters)
- Periodic mechanical integrity testing of the well and the associated supply pipeline

3. List procedures to be used when designing and adding new equipment or operations.

- Provide site security to prevent unauthorized entry.
- Use of real time security cameras and alarms.
- Design for secondary containment for all pipelines and storage tanks.
- Consult with WVDEP.

4. Summarize all activities at your facility that are already regulated for groundwater protection.

-AST Act
-This permit

5. Discuss any existing groundwater quality data for your facility or an adjacent property.

See Section 7 of this report, creeks sampled monthly, no groundwater monitoring wells within a mile of the site.

6. Provide a statement that no waste material will be used for deicing or fill material on the property unless allowed by another rule.

it is Enervest operating policy that any and all wastes generated at this facility will be properly managed Enervest currently maintains a 2 year blanket permit with the Raleigh County Solid Waste Authority.

7. Describe the groundwater protection instruction and training to be provided to the employees. Job procedures shall provide direction on how to prevent groundwater contamination.

- Enervest provides and conducts monthly environmental meetings for all employees.
- UIC well is inspected two - three times while in operations.
- All waste generated will be placed in containers to prevent surface water or precipitation to affect surficial soils.
- Tank battery has overfill and spill alarms that prohibit overfills.
- All contract drivers and employees have understood and agreed to Enervest's operational environmental policies.

8. Include provisions for inspections of all GPP elements and equipment. Inspections must be made quarterly at a minimum.

- Enervest employees are on-site daily. Any leaks are repaired immediately. Tank battery has overfill and spill alarms that prohibit unauthorized delivery.
- Pipeline is inspected monthly and injection pressure is monitored in real time.

Signature: _____

Benny K. [Signature]

Date: _____

7/22/16

CCT 1 0.5

APPENDIX I

Requirement for Financial Responsibility to Plug/Abandon an Injection Well

To: WV Department of Environmental Protection
Office of Oil and Gas
601 57th Street, SE
Charleston, West Virginia 25304-2345
ATTN: Underground Injection Control Program

From: Enervest Operating, LLC
A Limited Liability Company
1001 Fannin Street, Suite 800
Houston, TX 77002

Date: _____

Subject: Underground Injection Control (UIC) Permit Application
UIC2D1092703
Requirement for Financial Responsibility

I, Barry Lay, verify in accordance with 47CSR13-13.7.g., that I will maintain financial responsibility and resources to close, plug, and abandon underground injection wells(s) in a manner prescribed by the Chief of the Office of Oil and Gas.

Name: Barry Lay

Signature: 

Date: 9/22/16

OCT 14 2016

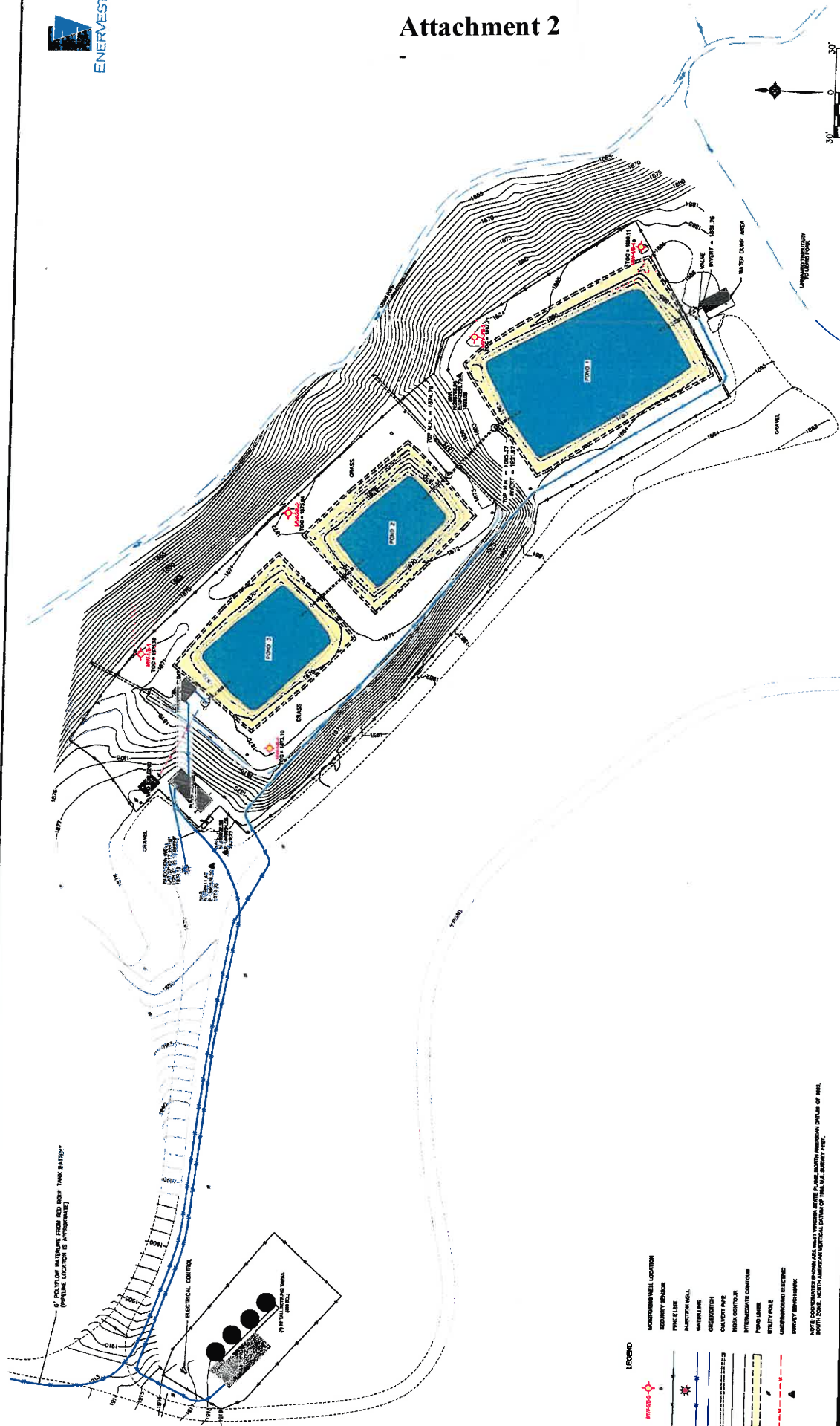
Attachment 1

Section 12 -Plugging and Abandonment

After completion of injection fluids or in the event the well inspection data concludes that a well integrity issue may occur, the injection well will be plugged and abandoned in accordance with all applicable WVDEP regulations. Prior to abandonment, the small building on-top of the well ahead will be inspected for asbestos containing materials (ACM) and will be properly demolished per applicable regulations. The plan is to have the well in static condition, remove the 4-1/2", 9.5# tubing and packer. Run a CBL to determine the top of cement and a production backoff point. Tubing will then be ran back into the hole with cement plugs balanced over all perforated intervals in the well spacing from 50 feet below the perforations to 50 feet above the perforations. The cement plugs will then be displaced with freshwater and the tubing removed from the well. The 7" production casing shall then be backed off at free point and a 100 foot balanced cement plug shall be set at the backoff point and a ~~50~~ ¹⁰⁰ foot cement plug set at the surface. Upon completion of the well abandonment, the well head will be removed, cemented to surface and permanent abandonment monument will be erected. Finally, a completed WR-38 form will be submitted to the OOG within 30 days of well abandonment.

Surface plug to be set at 100 feet per regulatory requirement.

Attachment 2



	 <i>EnviroCheck, Inc.</i>	NO. DATE	REVISION	APPROVED NO. DATE	REVISED	DESIGNED:	JLR FL JLR	EJC1001	SHEET 1 OF 1
							DRAWN: CHECKED: DATE: 09/07/2016 FILE NO.: EJC1001 OFFICE LOC.: BLUEFIELD, VA	ENERVEST OPERATING "AS-BUILT" UIC 10802703 "WP-400WVW" GLEN ROGERS, WYOMING COUNTY WEST VIRGINIA	

Attachment 3

[illegible]

Make as many copies of the document as necessary to comply with the UIC permit. Page numbers should be maintained sequentially to provide an adequate record.

RIGHT OF APPEAL

Notice is hereby given of your right to appeal the terms and conditions of this permit of which you are aggrieved to the Environmental Quality Board by filing a NOTICE OF APPEAL, on the form prescribed by such Board for this purpose, in accordance with the provisions of Section 21, Article 11, Chapter 22 of the Code of West Virginia within thirty (30) days after the date of receipt of this permit.

Underground Injection Control Permit

CERTIFICATION DOCUMENT

West Virginia Department of Environmental Protection
Office of Oil and Gas

Permit Id: **2D10902703002**

Permit Name: **Enervest Operating L.L.C.
A Limited Liability Company**

In accordance with Part II, Reporting and Notification Requirements, I hereby certify that I have read and am personally familiar with all the terms and conditions of this permit.

I understand that the underground injection of any waste streams other than those provided for in this permit is strictly prohibited. I understand that failure to pay the Annual Permit Fee or any other associated fees required by West Virginia Code, Chapter 22, Articles 11 and 12 shall be cause for revocation of this Permit. I further understand that reporting is required, and noncompliance with the terms of this permit will be cause for revocation of the permit and subject me to significant penalties including the possibility of fines and imprisonment.

Signature

Name and Title (Type or Print)

Date