

Regulation 121-8.0 through 121-8.28

Oil and Gas Exploration, Drilling, and Production

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SC DEPARTMENT of
**ENVIRONMENTAL
SERVICES**

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121-8.0. Purpose.

The purpose of these regulations is to prevent waste of oil and gas, to protect correlative rights and to prevent pollution of the water, air, and land by oil or gas exploration or production.

121-8.1. Applicability.

A. These regulations shall apply to all lands however owned, including submerged lands, both inland and offshore to the three mile territorial limit, tidelands and wetlands located within the jurisdictional limits of the State and any lands owned or administered by any government agency or political subdivision thereof, over which the State, under its police power has jurisdiction.

B. These regulations are general and statewide in application. Special or field rules, regulations, and orders may be issued when required and shall prevail over general rules, regulations, and orders if in conflict therewith.

121-8.2. Definitions.

Unless the context otherwise requires, the terms below shall be defined as follows:

A. “Act” means Act 179 of 1977, Part 1 (Section 48-43-10, et seq., Code of Laws of South Carolina, 1976, as amended).

B. “Barrel of Oil” means forty-two gallons of 231 cubic inches per gallon at sixty degrees Fahrenheit (60°F).

C. “Blow-out preventer” means a heavy casinghead control that may be closed around the drill string or that completely closes the top of the casing if the pipe is withdrawn.

D. “Casing shoe” means a reinforcing collar of steel screwed onto the bottom joint of casing to prevent abrasion or distortion of the casing as it forces its way past obstructions on the wall of the borehole.

E. “Casinghead gas” means any gas or vapor, or both gas and vapor, indigenous to an oil stratum and produced from such stratum with oil.

F. “Circulation” means the passing of fluid down through the drill stem and up to the surface in the process of rotary drilling, or down the casing and up to the surface in the setting of casing.

G. “Class II Well” means an injection well which is used (1) to inject brine or other fluids which are brought to the surface in connection with oil or natural gas production operations, and which 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; (2) for enhanced recovery of oil or natural gas; (3) to inject other fluids associated with drilling or production operations as the Commission may deem appropriate; or (4) for storage of hydrocarbons which are liquid at standard temperature and pressure.

H. “Commission” means the South Carolina Water Resources Commission, or its authorized representatives.

I. “Common Source of Supply” (See pool).

J. “Completion” means that a well has been fully developed and tested for production of oil or gas, or for non-producing wells, that the well has been plugged and abandoned according to provisions of these regulations.

K. “Condensate” means liquid hydrocarbons that were originally in the gaseous phase in the reservoir.

L. “Cubic Foot of Gas” means the volume of gas contained in one cubic foot of space at a standard pressure base of 14.73 pounds per square inch absolute (psia) and a standard temperature base of 60°F.

M. “Drilling unit” means the area which can be efficiently and economically drained by one well, which is recognized as such for the purpose of drilling or production as approved by the Commission.

N. “Exploration” means significant physical activities conducted for the purpose of obtaining geological, geophysical, or geochemical information about oil or gas on or under the lands and waters of the State, including seismic activities but not including exploratory well drilling.

O. “Exploratory well”, also known as a wildcat well, means any well that is drilled outside of known oil or gas producing areas. A well within known producing areas that is drilled deeper than the deepest producing pool is also an exploratory well.

P. “Field” means the general area which is underlain or appears to be underlain by at least one pool; and field shall include the underground reservoir or reservoirs containing crude oil or natural gas, or both. The words field and pool mean the same thing when only one underground reservoir is involved; however, field, unlike pool, may relate to two or more pools.

Q. “Fluid” means a material or substance which flows or moves whether in a semi-solid, liquid, sludge, gas, or any other form or state.

R. “Gas” means all natural gas and all other hydrocarbons not herein defined as oil, and its production can include condensate.

S. “Just and Equitable Share” means, as to each person, that part of the authorized production from the pool that is substantially in the proportion that the amount of recoverable oil or gas or both in the developed area of his tract or tracts in the pool bears to the recoverable oil or gas or both in the total of the developed areas in the pool.

T. “Oil” means crude petroleum oil and all other hydrocarbons, regardless of gravity, that are produced in liquid form by ordinary production methods, but does not include liquid hydrocarbons that were originally in a gaseous phase in the reservoir.

U. “Operator” means any person who, duly authorized, is in charge of the development of a lease or the operation of an exploration or producing well, and, in addition, for the purpose of assigning responsibility, may also be the person indicated as operator by the most current records of the Commission.

V. “Owner” means any person who has the right to drill into and produce from a pool and to appropriate the oil or gas that he produces therefrom, either for himself or for himself and others.

W. “Person” means any natural person, corporation, association, partnership, receiver, trustee, executor, administrator, guardian, fiduciary, or other representatives of any kind, and includes any government or any political subdivision or any agency thereof.

X. "Pollution" means the act of emitting pollutants into the air or water or onto the land.

Y. "Pool" means a common accumulation of oil, or gas, or both, which is located within the interconnected porous spaces in a rock formation beneath the surface of the earth. Common Source of Supply, and Reservoir, are terms used interchangeably with "Pool."

Z. "Property line" as used herein means the boundary dividing tracts on which mineral rights, royalty, or leases are separately owned, except that where such tracts or leases have been unitized the boundaries of the unit shall be considered the "property line."

AA. "Prorated Pool" means a pool designated by the Commission which has been assessed and for which allowables have been assigned to each well within the pool.

BB. "Protect correlative rights" means that the action or regulation by the Commission should afford a reasonable opportunity to each person entitled thereto to recover or receive the oil or gas in his tract or tracts or the equivalent thereto, without being required to drill unnecessary wells or to incur other unnecessary expense to recover or receive such oil or gas or its equivalent.

CC. "Special field rules" means those rules promulgated for, and which are limited in their application to, individual pools and fields within the State of South Carolina.

DD. "Spudding" means to begin the actual drilling of the well.

EE. "State" means the State of South Carolina.

FF. "Submerged lands" means all lands, whether public or private, overlain by water within the territorial jurisdiction of South Carolina.

GG. "Temporary abandonment" means, for purposes only of compliance with requirements herein, that a well is to be considered temporarily abandoned when it has not been used for six (6) consecutive months and cannot be operated, whether because it was drilled as a dry hole or has ceased to produce, or operations have not been conducted thereon, or for some other reasons; provided, however, such definition shall not be construed to require the plugging of a well that has been approved for future utility by the Commission. The operator of a temporarily abandoned well shall submit a letter to the Commission every six (6) months to describe the future utility of such well.

HH. "Underground Source of Drinking Water (USDW)" means an aquifer or its portion: 1) which supplies any public water system; or, 2) which contains a sufficient quantity of ground water to supply a public water system; and, a) currently supplies drinking water for human consumption; or b) contains water with fewer than ten thousand milligrams per liter total dissolved solids.

II. "Unit" means an area of land, deposit, or deposits of minerals, stratum or strata, or pool or pools, or a part or parts thereof, as to which parties with interests therein are bound to share minerals produced on a specific basis and as to which those having the right to conduct drilling or mining operations therein are bound to share investment and operating costs on a specified basis. A unit may be formed by agreement of the parties involved or by order of the Commission or an agency of the federal government empowered to do so. A unit formed by order of a governmental agency is termed a "compulsory unit."

JJ. "Waste" means and includes: physical waste, as that term is generally understood in the oil and gas industry; (2) the inefficient, excessive, or improper use, or the unnecessary dissipation of, reservoir energy; (3) the inefficient storing of oil or gas; (4) the locating, drilling, equipping, operating, or producing of any

oil or gas well in a manner that causes, or tends to cause, reduction in the quantity of oil or gas ultimately recoverable from a pool under prudent and proper operations, or that causes or tends to cause unnecessary or excessive surface loss or destruction of oil or gas; (5) the production of oil or gas in excess of: (a) transportation or marketing facilities; (b) reasonable market demand; (c) the amount reasonably required to be produced in the proper drilling, completing or testing of the well from which it is produced; or (d) gas otherwise usefully utilized, except gas produced from an oil well pending the time when with reasonable diligence, the gas can be sold or otherwise usefully utilized on terms and conditions that are just and reasonable, and the production of such gas has been approved by order of the Commission; and (6) underground or above ground waste in the production or storage of oil, gas, or condensate, however caused, and whether or not defined in other subdivisions hereof.

KK. “Well” means any excavation that is cored, bored, drilled, jetted, or dug for the purpose of exploring for or producing oil or gas or for the purpose of enhanced recovery or for the disposal of oil-field wastes or for the storage of hydrocarbons.

LL. “Well spacing” shall mean the pattern of minimum distances from property boundary lines, and from other wells drilling to or producing from the same pool, and which wells may be located on the surface as established by laws, rules, regulations or orders of the Commission.

121-8.3. General.

A. Any person operating wholly or partially within this State for the purpose of oil and gas exploration, drilling or operating any oil or gas well, or transporting, storing, or refining oil or gas produced within the state shall file an Affidavit of Ownership and an Organizational Report on forms provided by the Commission. Within ten (10) days following any change in the facts stated on these forms, a revised form which reflects such change shall be filed with the Commission.

B. The Commission or its authorized representatives shall have access to all well, production, transport, storage, and refinery records for all oil and gas produced within the State; and shall be permitted access to any lease or property to inspect well records and to gauge any and all wells, storage and transport facilities, and refineries referred to herein at all reasonable times. All operators of oil or gas wells, drilling rigs, storage and intrastate transport facilities, and refineries utilizing instate produced oil or gas are required to allow and assist authorized representatives of the Commission in making tests authorized by these regulations or by the Act. Tests required by the Commission may be performed by the operator in accordance with specifications of the Commission. The Commission’s access to records and properties shall be limited to those facilities located within the jurisdictional limits of the State of South Carolina.

C. The results of all well, production, transport, storage, and refinery records for all oil and gas produced within the State shall be considered public information, except as otherwise authorized in Section 121-8.14.

D. Fields and pools shall be classified according to common source of supply from which they produce and common sources of supply shall be determined and named by the Commission as sufficient data become available.

121-8.4. Exploration Permits.

A. No person shall commence exploration for oil or gas in the State without first obtaining an exploration permit from the Commission. In order to obtain an exploration permit, an applicant shall submit the following information:

(1) A letter or statement describing the nature of the proposed activity, including the procedure to be followed in conducting the activity;

(2) A map, plat, or drawing sufficient in scale to show the location(s) of the activity;

(3) Proof of insurance or other financial coverage in an amount sufficient to cover personal or property damage which might reasonably be expected to occur in such operations;

(4) An application fee of fifty (50) dollars, in cash, certified check, or bank draft made payable to the South Carolina Water Resources Commission;

(5) For activities to occur on a State highway right-of-way, a letter or right-of-way agreement from the Department of Highways and Public Transportation permitting the use of such highway right-of-way and agreement to comply with necessary highway standards; and

(6) Such additional illustrations or narrative material necessary to sufficiently describe, to the satisfaction of the Commission, the activity and its impact on public health and safety.

B. An exploration permit will be issued by the Commission with such conditions and restrictions as it deems necessary within thirty (30) days of receipt of all required information if it is determined that the proposed exploratory activity does not endanger public health or safety and that the applicant has shown adequate financial responsibility for the conduct of the proposed work. An exploration permit does not discharge the duty of the permittee to obtain consent from private property owners for operations on privately-owned lands.

121-8.5. Well Drilling Permits.

A. No person shall drill any well, as defined in Section 121-8.2 without first obtaining a well drilling permit from the Commission. A separate application and permit shall be required for each well drilled.

B. In order to obtain a well drilling permit, an applicant, who shall be the operator or operators of the well, shall submit the following information:

(1) A properly completed application, on forms to be provided by the Commission;

(2) An Affidavit of Ownership for each well and an Organizational Report for each operator, as described in Section 121-8.3(A) unless such affidavit or report has been previously filed as required in the same section;

(3) A plat or plats prepared by a professional land surveyor licensed to practice in the State of South Carolina showing:

(a) The exact location including latitude and longitude and surface elevation of the proposed well;

(b) The distance and direction from the proposed well to the two closest property lines;

(c) All highways and roads, railroads, or watercourses within one half mile of the proposed well and all buildings whether public or private (the most recent U.S. Geological Survey quadrangle maps, S.C. Department of Highways and Public Transportation county highway maps, county tax maps, and the county auditor's list of real property may be used in fulfillment of this requirement); and

(d) All operating water wells, except wells used exclusively for single-family domestic purposes, within a radius of one (1) mile from the proposed well;

(4) A performance bond in the amount and form as described in Section 121-8.6;

(5) Such additional information as the Commission shall require to fully evaluate the proposed permit.

C. Deepening a well below its permitted depth shall require prior approval of the Commission. A well being drilled under an existing permit may be deepened by amending the existing permit. A new well drilling permit will be required to reopen and deepen a plugged and abandoned well.

D. No well drilling permit shall be issued within the corporate limits of any municipality unless the governing authority of the municipality shall have first approved such activity by resolution. No well drilling permit shall be issued by the Commission for drilling on any beach. Well drilling platforms in the Atlantic Ocean shall not be located within one (1) mile of the mean high water mark of any beach within the territorial jurisdiction of the State of South Carolina.

121-8.6. Performance Bond.

A. Before any person shall be granted a well drilling permit, such person shall file with the Commission a reasonable performance bond in an amount as hereinafter set forth, as provided in Section 121-8.5(b). Such bond shall be payable to the State of South Carolina for each well, executed by such person as principal, and by some surety approved by the Commission. The bond shall be conditioned to secure the faithful performance of all requirements of the Act, these rules and regulations, and any permit conditions and restrictions. If the operator fails to comply with requirements of the Act, these rules and regulations, or any permit conditions or restrictions, said bond shall be forfeited and the Commission shall expend the proceeds of the bond to fulfill the operator's responsibilities to protect the State and its citizens from any injury which may result from such failure. The bond shall remain in effect for a period of two years from the date of receipt of all data required by these rules and regulations, whichever occurs last. The amount of such bond shall be in accordance with the following relationship with proposed bottom depth for onshore wells.

	Amount of
Depth in feet	bond required
to 10,000	\$20,000
10,000-15,000	\$30,000
15,000-20,000	\$40,000
20,000 or more	\$50,000

The amount of bond required for each well on submerged lands shall be one hundred thousand (\$100,000) dollars.

B. The Commission, in its discretion for good cause, after notice and hearing may require a different amount of bond because of environmentally sensitive conditions at the drill site or for other justifiable reasons and may determine any existing bond to be inadequate and require the filing of a new and different bond or an appropriate amendment to a previously filed bond.

C. Any such bond filed with the Commission, including any amendment or addendum thereto, must set forth the correct legal name and address of the principal and the surety thereto and must be countersigned

by a South Carolina agent of such surety, setting forth the correct legal name of such agent and such agent's company affiliation and correct business address.

D. The Commission in its discretion may allow the filing of a blanket bond (except for wells on submerged lands) by an operator in the amount of one hundred thousand (\$100,000) dollars. The Commission, after notice and hearing may for good cause, require the filing of a new blanket bond of a different amount superseding any previous order by the Commission regarding a blanket bond, and any blanket bond shall require and have the same requirements as set forth hereinabove for single well bonds except that blanket bonds may apply to more than one well and the amount of such blanket bond may not be required to be in accordance with the aforesaid relationship of footage.

E. Failure to comply with any of the conditions of this section shall not be cause for avoidance of any of the obligations and conditions set forth herein by any principal or surety.

121-8.7. Permit Actions.

A. The Commission shall, as expeditiously as possible and in all instances within (30) days of the receipt of a properly completed application and all other required information for a well drilling permit either issue or deny the well permit. If the completed application and supporting information are satisfactory and the proposed well is consistent with the provision of Section 121-8.0, a permit will be issued by the Commission. The permit shall contain such conditions and restrictions as the Commission deems necessary for the applicant to operate in accordance with the Act and these rules and regulations. The Commission on its own motion or at the request of interested persons may hold a hearing on any well construction permit application. The Commission shall promptly fix a date for such hearing and shall give public notice. Should a hearing be held, the Commission shall make its final order with respect to the application within thirty (30) days after the conclusion of the hearing.

B. If an application for a well permit is denied by the Commission, the applicant may request and will be granted a hearing. Such request must be submitted in writing to the Commission within thirty (30) days from the date of the denial of the permit.

C. An operator may request modification of any permit condition. Such request must be submitted in writing to the Commission and be properly documented. The Commission may grant such modification if it is satisfied that the request is justified and if the modification will allow the operator to remain in compliance with the Act and these rules and regulations.

D. A permit shall expire one (1) year from the date of issuance of same if spudding operations have not begun. If spudding has occurred, the Commission shall extend the permit for a period reasonably necessary to complete drilling operations. Noncompliance with any provision of the Act or these rules and regulations or any permit condition or restriction may be grounds for the revocation, suspension, or modification of the permit.

121-8.8. Change of Operator.

A. Any person or persons requesting to become the new operator of any permitted well or wells shall submit to the Commission the following:

- (1) A properly completed application, on forms provided by the Commission;
- (2) An Affidavit of Ownership and Organizational Report as described in Section 121-8.3(A);

(3) A bond in complete compliance with Section 121-8.6 of these regulations; and

(4) A letter from the present operator requesting the Commission to approve the applicant as new operator of such well or wells, unless the present operator has been removed as operator in accordance with a unit operating agreement.

B. The Commission shall approve or deny the application for change of operator within thirty (30) days of receipt of the above information. In the event the permit is denied, the applicant may request and will be granted a hearing, provided such request is made to the Commission in writing within fifteen (15) days of the denial of the permit.

121-8.9. Spacing of Wells.

A. Wells drilled in search of oil or gas in areas not covered by field rules shall not be located nearer than three hundred thirty (330) feet from every lease boundary. Wells drilled in search of oil shall not be located nearer than nine hundred (900) feet from any other well completed in, drilling to, or for which a permit has been granted to drill to, the same pool. Wells drilled in search of gas shall not be located nearer than two thousand (2,000) feet from any other well completed in, drilled to, or for which a permit has been granted, to drill to the same pool.

The Commission may grant exceptions to the general spacing requirement if the applicant can demonstrate that such exception is justified. Any well at an exceptional location shall be allowed to produce on a test basis until the Commission creates a drilling unit for said exceptional location.

Spacing requirements as required in this section shall not apply to wells for the purpose of fluid injection or disposal.

B. If a well is completed as a producer, the Commission, as specified in 121-8.20, shall consider, at a public hearing, the establishment of temporary field rules. Those rules shall include the establishment of the allowable, the production unit, if applicable, well spacing requirements, and other matters incidental to hydrocarbon production, as soon as is reasonably possible after sufficient technical data become available to establish such temporary field rules. A public hearing to establish temporary field rules shall be called either by the Commission or upon application by any interested person. Prior to the establishment of temporary field rules, drilling of permitted exploratory wells within the pool area may continue, and wells may produce according to temporary allowables established by the Commission. Temporary field rules may be changed by the Commission on the basis of sufficient technical information after notice and hearing.

C. The Commission may grant exceptions to established field rules if the Commission determines, after notice and public hearing, that such exceptions are necessary to prevent the waste of oil or gas or to protect correlative rights.

121-8.10. Identification of Wells.

A. The operator of any oil or gas well in South Carolina shall post and keep posted in a conspicuous place near the well the name of the person drilling, operating, owning, or controlling the well, the name and number of the well, and the number of the permit of the well. Such identification shall be posted so long as such well produces and until such well is properly plugged and the location is restored to the conditions satisfactory to the Commission. In the event of a change of operator, well name, or number, a new sign reflecting such change shall be posted.

121-8.11. Notice of Operations.

A. The Commission shall be notified, orally or in writing, prior to performing any of the following operations:

- (1) Spudding;
- (2) Setting surface casing;
- (3) Coring;
- (4) Logging;
- (5) Drill-stem testing;
- (6) Running intermediate or production pipe;
- (7) Perforating;
- (8) Swabbing and/or cleaning of wells;
- (9) Well treatment;
- (10) Testing of well;
- (11) Plugging;
- (12) Recompletion or rework operations; and
- (13) Any other operations the Commission may designate.

The well operator must file a well history report with the Commission within thirty (30) days of the completion of the above operations showing the results of the operations.

B. The Commission may send a duly authorized representative to the location to witness such operation at the specified time.

C. The Commission shall receive weekly notice, by the well operator, of drilling progress for wells actively being drilled. Notification will be by telephone by 12:00 p.m. each Monday.

121-8.12. Casing and Cementing.

A. The operator of any oil or gas well shall case and cement all wells with a sufficient number of strings of casing in a manner necessary to:

- (1) Prevent release of fluids from any stratum through the well bore (directly or indirectly) into the ground waters, surface water, or onto the surface, except into pits or tanks provided for this purpose;
- (2) Prevent communication between separate hydrocarbon bearing strata (except where such strata have been approved for commingling) and between hydrocarbon and water-bearing strata;

- (3) Prevent contamination of freshwater strata;
- (4) Support unconsolidated sediments; and
- (5) Otherwise provide a means to control formation pressures and fluids.

B. Suitable and sufficient surface casing shall be run and cemented to a depth not less than fifty feet below all USDW's encountered in the well. Sufficient cement shall be used to fill the annular space behind the surface casing from the base thereof to the surface of the ground. Cement shall be added from the bottom upward and circulated back to the surface. All cement shall be allowed to set 12 hours before the cement plug is drilled or tests initiated. During the 12 hour setting period, the cement shall be maintained in the annular space. If circulation is lost, a temperature or cement bond log shall be run to determine whether the casing is properly cemented. If the annular space is not properly cemented by the primary operation, the operator shall perform supplementary cementing operations to assure a seal across any gradational freshwater-saltwater contact or contacts as determined by subsurface control.

C. All producing wells shall be completed with a production string of casing that shall be properly cemented at a sufficient depth to adequately protect the hydrocarbon-bearing stratum. Casing shall be cemented in place with a sufficient amount of cement to fill the calculated annular space to a point at least five hundred (500) feet above either the top of the producing interval or the top of the casing shoe, to be determined by the Commission. Cement shall be allowed to stand a minimum of twelve (12) hours before drilling the plug and tested at a pressure in pounds per square inch (psi), calculated by multiplying the length of the producing string by two-tenths (2/10) or any other pressure required by the Commission. The maximum test pressure required shall not exceed fifteen hundred (1,500) pounds per square inch. If, at the end of thirty (30) minutes, the pressure gauge shows a drop of ten percent (10%) of the test pressure or more, such corrective measures shall be taken as will ensure that the producing string of casing is so set and cemented that it will hold the pressure for thirty (30) minutes without a drop of more than ten percent (10%) of the test pressure on the gauge.

121-8.13. Plugging.

A. All oil wells or gas wells shall be plugged within thirty (30) days after temporary abandonment, unless special provisions have been approved by the Commission. Prior to commencing to plug or abandon any oil or gas well, the operator thereof shall notify the Commission orally and in writing of his intent to plug and abandon such well. Upon receiving approval, the operator shall be free to begin plugging said well provided the plugging shall be done in accordance with these rules and regulations. The Commission may send a duly authorized representative to the location specified, to be present at the time of plugging, and to observe the plugging of such well. Such representative shall have access to electrical logs and any other well records to determine if the proposed depths and lengths of plugs are adequate.

B. The method and procedure for plugging a well shall be as follows:

(1) The bottom of the hole shall be filled with mud-laden fluid weighing at least 9.0 pounds per gallon with not less than thirty-six (36) viscosity API full funnel method, to the top of the hole. Each producing formation shall be sealed off with a cement plug which extends either from the bottom of the hole or from a point twenty-five (25) feet below the base of each producing formation upward to a point at least fifty (50) feet above the top of each producing formation.

(2) A cement plug not less than fifty (50) feet in length shall be placed below all USDW's, and such plug shall extend downward to a point at least twenty-five (25) feet below the base of the surface string of casing.

(3) A thirty (30) foot cement plug shall be placed at the surface of the ground in each hole plugged in such a manner so as not to interfere with soil cultivation.

(4) The interval between plugs shall be filled with mud-laden fluid weighing at least 9.0 pounds per gallon, with not less than thirty-six (36) viscosity API full funnel method.

(5) An uncased rotary drilled hole or a hole in which the production string has been recovered during abandonment procedures shall be plugged with heavy mud-laden fluid up to the base of the surface string. A cement plug shall be placed in the hole extending from a point at least fifty (50) feet below the base of the surface string upward to a point at least twenty-five (25) feet above the base of a surface string. Each producing formation shall be sealed off with a cement plug which extends from twenty-five (25) feet below the base of the formation to fifty (50) feet above the top of the formation. The hole shall also be capped as provided above in Subsection B(3).

C. Within thirty (30) days after the plugging of any well, a plugging report shall be filed with the Commission setting forth in detail the method used in plugging the well. Such report shall be made on a form provided by the Commission.

D. Any hole permitted under Sections 121-8.4 and 121-8.5 of these regulations for seismic, core, or other exploratory purposes which penetrates below any freshwater formation shall be plugged in such manner as to properly protect all water bearing formations. Within ninety (90) days after such plugging, a report shall be filed with the Commission by the operator, setting forth the method used in protecting the water bearing formations in the plugging of such hole and the locations of the holes drilled and plugged.

121-8.14. Reports, Logs and Samples.

A. During the drilling of every permitted well, the owner, operator, contractor, driller or other person responsible for the conduct of drilling operations shall keep at the well a detailed and accurate written record of the well which shall be accessible to the Commission at all times. A well completion report shall be filed on forms provided by the Commission within thirty (30) days after well completion.

B. A copy of all electrical, sonic, radioactive, or mechanical logs together with a set of continuous cuttings or core chips taken in thirty (30) foot intervals beyond the base of the surface casing, correctly labeled and identified by depth and well number shall be submitted to the Commission within one (1) year after completion of an exploratory or wildcat well. Earlier submission is recommended. Logs and cuttings for production wells, for wells drilled for enhanced recovery or disposal of oil-field wastes shall be submitted to the Commission within forty-five (45) days of completion of such wells.

C. An inclination survey shall be conducted on all permitted wells under Section 121-8.5 with the first shot point at a depth not greater than that of the surface casing seat and succeeding shot points not more than four thousand (4,000) feet apart or as otherwise directed by the Commission. The results of such a survey shall be submitted to the Commission within thirty (30) days after well completion.

D. At the request of an operator, logs, cuttings and cores obtained from any exploratory or wildcat well shall be held confidential for one year from the date of filing and, if requested in writing, for one additional year if deemed appropriate by the Commission.

121-8.15. Blow-out Prevention.

Adequate blow-out preventers and high pressure fittings for keeping the well under control shall be attached to properly anchored and cemented casing strings. The blow-out preventers must meet the approval of the Commission and shall be tested regularly unless such approval has been waived by the Commission, and the results recorded in the driller's log.

121-8.16. Drilling Fluid.

In rotary drilling operations requiring drilling fluids, the operator shall continuously maintain drilling fluid in the hole, from top to bottom, of sufficient weight to control any pressure which may be encountered; provided, however, an operator may use other appropriate methods to control any pressure which may be encountered, without the use of drilling fluids, upon the approval of the Commission.

121-8.17. Directional Drilling.

A. All wells must be drilled with due diligence to maintain a reasonably vertical well bore; however, upon application by an operator to drill a well that is to be intentionally deviated and directionally controlled, a permit may be issued by the Commission, provided that the location of the deviated well at the depth of the proposed producing zone is in compliance with the applicable spacing rules. The application for a permit to drill a directionally controlled well shall be made in the manner prescribed above, and in addition thereto the survey plat must show the proposed bottom hole location in addition to the surface location.

B. If an operator desires to deviate or plug back and sidetrack a well previously permitted, he shall first request permission of the Commission and shall file a written report to the Commission within thirty (30) days from the completion of said deviation setting forth the facts of the operation.

C. If an operator desires to deviate so as to straighten the well he shall first obtain verbal or written permission of the Commission and shall file a written report to the Commission within thirty (30) days from the completion of said deviation setting forth the facts of the operation.

D. In the event an operator, in good faith, commences and proceeds with the drilling of a straight well and thereafter decides to directionally deviate the well, he may do so at his own risk, first notifying the Commission and confirming in writing the fact thereof, and the operator must comply with the provisions governing intentionally deviated wells as hereinabove provided.

E. A complete angular deviation and directional survey of a directionally deviated well must be run and the results of such survey shall be filed with the Commission upon completion. After processing such survey reports, the Commission may set the allowable of the well, or take such other action as the facts may require.

F. In the event the proposed, or the final location of the producing interval of the directionally deviated well is not in accordance with the spacing rules of the Commission applicable to the reservoir, proper applications shall be made to obtain approval or exceptions to such rules. Such approval shall be granted, or denied, at the discretion of the Commission, and shall be accorded the same consideration and treatment as if the well had been drilled vertically to the producing interval.

121-8.18. Chemical Treatment and Fracturing.

A. Wells shall not be chemically treated, or fractured, until the permission of the Commission is obtained. Each well shall be treated, or fractured in such a manner as will not cause injury to the formation, or result

in water encroachment into the oil or gas formation, or cause injury to any USDW, and necessary precautions shall be taken to prevent injury to the casing. Routine chemical treatments for corrosion control shall be excluded from this requirement. If chemical treating, or fracturing results in irreparable injury to the well, the well shall be properly plugged and abandoned.

B. Within thirty (30) days after the chemical treatment or fracturing of a well, a report shall be filed by the operator, on forms provided by the Commission, setting forth in detail the method used in treating or fracturing the well.

121-8.19. Production Operations.

A. Before any oil or gas well is completed as a producer, the producing horizons shall be sealed or separated in order to prevent their contents from passing into other strata.

B. All flowing wells shall be produced through tubing anchored by a packer and shall be equipped with a master valve and shall be equipped with adequate chokes to properly control the flow from such well, unless otherwise specified by the Commission. Christmas tree fittings or wellhead connections must have a working pressure greater than any pressure which may be encountered.

C. An operator shall provide twenty-four (24) hour notice to the Commission before testing any well for production. The test or tests, other than drill-stem testing, shall be conducted in a manner agreeable to the Commission. Cleaning of a well into a pit shall not be considered as a test for the purpose of determining capacity. Results of the test shall be filed with the Commission not less than ten (10) days after the test is completed. All tests may be witnessed by the Commission or its authorized representative.

D. Wells shall be permitted to produce under temporary or test allowables established by the Commission prior to the establishment of permanent allowables. Permanent allowables shall be established only after notice and hearing.

E. The multiple zone completion of a well and the production of oil or gas from more than one pool from one well without segregation of such production are permitted only upon order of the Commission pursuant to an application thereto.

The application shall set forth the manner and method of completion proposed, and be accompanied by the following:

(1) Geophysical logs with tops and bottoms of producing zones and perforated intervals shown and marked;

(2) Diagrammatic sketch of mechanical installation;

(3) Plat showing all wells on the applicant's lease which have penetrated the same pool or pools in which multiple completion is to be attempted as well as offset wells which have penetrated the same pool or pools;

(4) Names of all interested owners in the area.

(5) Evidence that notice of application has been given by the applicant to all interested owners in the area. In the event a written protest is received within fifteen (15) days of the date of the application, then a hearing shall be held as soon as practicable. If no protests are received within fifteen (15) days then the application shall be approved.

F. All multiple completion wells shall be equipped, operated, produced, and maintained so that there will be no commingling of the production, unless otherwise permitted by the Commission. Upon request of the Commission, any multiple completion well shall be tested at any time, to demonstrate the effectiveness of the separation of sources of supply. Such test may be witnessed by representatives of the Commission.

G. An initial production test shall be conducted, and reported, on all new wells and on all recompleted wells. The test shall not commence until a volume of oil equivalent to or greater than the amount of load oil or other liquids introduced into the well has been recovered. Such tests shall show oil, gas, and water production, gas-oil ratio, and API gravity of the oil.

(1) The volume of production of oil shall be computed in terms of barrels of clean oil on the basis of properly calibrated meter measurements or tank measurements of oil-level differences, made and recorded to the nearest quarter inch of 100% capacity tables, subject to the following corrections:

(a) Corrections for Impurities—the percentage of impurities (water, sand and other foreign substances not constituting a natural component part of oil) shall be determined to the satisfaction of the Commission, and the observed gross volume of oil shall be corrected to exclude the entire volume of such impurities;

(b) Temperature Correction—the observed volume of oil corrected for impurities shall be further corrected to the standard volume of 60°F in accordance with A.S.T.M. D-1250 Table 6 or any revisions thereof, and any supplements thereto or to any close approximation thereof approved by the Commission;

(c) Gravity Determination—the gravity of oil at 60°F shall be determined in accordance with A.S.T.M. D-1250 Table 5, or any revisions thereof and any supplements thereto or any close approximation thereof approved by the Commission.

(2) Production of gas of all kinds shall be measured by meter unless otherwise agreed to by the Commission. For computing the volume of gas to be reported to the Commission, the standard pressure base shall be 14.73 pounds per square inch absolute (psia) regardless of atmospheric pressure at the point of measurement, and the standard temperature base shall be 60°F. All volumes of gas to be reported to the Commission shall be adjusted by temperatures at which the gas was actually measured, unless otherwise authorized by the Commission. The unit to be used for reporting gas production shall be thousand cubic feet (Mcf) and gas condensate production shall be reported in barrels (BBL). Meter charts and records shall be kept in a permanent file for a period of at least two years and such information shall be made available to the Commission. No bypass connected around any meter will be authorized if such bypass allows for or results in the illegal taking of gas or liquid hydrocarbons.

H. The Commission may occasionally require the presentation of such data and facts as may be necessary to indicate reservoir performance and conditions in any pool. The Commission may also, through its representatives, witness or supervise the taking of such reservoir performance tests and keep such records as it deems necessary to properly regulate the operation of any pool. Any tests required by the Commission may be witnessed by representatives of the Commission. Where special field rules require bottom hole pressure tests, the test shall be reported to the Commission.

I. The Commission may, after notice and hearing, determine that the efficient producing rate should be less or greater than the allowable as determined by any other rule establishing allowables, and grant such an allowable consistent with sound engineering and conservation practices as may be justified by the circumstances and evidence submitted.

J. Except as in accordance with R.121-8.22 herein, gas may be used for the artificial lifting of oil, provided that all the gas returned to the surface with the oil is used without waste. Where the returned gas is not to be so used, the artificial gas lifting of oil is prohibited unless otherwise ordered and authorized by the Commission.

K. The installation of any device for the purpose of imposing a vacuum at the well head on any oil or gas well or any oil or gas bearing reservoir is prohibited, except upon approved application, notice and hearing. Notice of application shall be given by applicant by certified or registered mail to all interested owners in the area. In the event no written objections by the interested owners in the area are filed within fifteen (15) days of the date of application, said application shall be approved. If any written objection is filed within fifteen (15) days of the date of application, then a hearing shall be held as soon as practicable.

121-8.20. Pool Classification and Determination of Allowables.

A. Upon discovery of each new field or pool, the Commission shall assign to it a name consisting of:

- (1) A landmark designation with appropriate directional symbol; and
- (2) The geologic name of the producing reservoir.

B. The Commission shall classify, and reclassify, the oil pools of the State, in the following categories:

- (1) Pools on Temporary Allowable;
- (2) Prorated Pools; and
- (3) Pools under Pressure Maintenance or Secondary Recovery.

The Commission shall classify and reclassify the gas pools of the State in the following categories:

- (1) Dry Gas Pools;
- (2) Gas Condensate Pools; and
- (3) Gas Condensate Pools under Cycling.

C. Each well completed which discovers a new pool may, upon approval by the Commission, be assigned a temporary allowable, not subject to market demand, and determined by the Commission to be reasonable and to prevent waste. The temporary allowable shall be assigned to all subsequent wells completed in said pool until a specified time as determined by the Commission, has elapsed from the date of completion of the discovery well. Subsequently, the pool shall enter the classification of a prorated pool.

A well discovering more than one new pool shall be entitled to a temporary allowable in each new pool, provided the well is completed to produce from such new pool prior to the time such pool is reclassified as a prorated pool.

At the same time as a temporary allowable is assigned to any well, the Commission may issue an order promulgating temporary field rules for such new pool, including a rule providing for well spacing so that in the early stage of development of such pool no unnecessary wells may be drilled, and the limit and characteristics of the reservoir and its fluid content may be determined with the least number of wells in the shortest possible time.

An operator desiring a temporary allowable shall furnish the Commission the following:

- (1) An electric log or radioactivity log of the well in question, if taken;
- (2) A map of the area, including the location of all oil and gas wells within the pool being produced by the subject well; showing total depth of such wells, and whether dry or productive, name of the producing interval, and the top and bottom of such interval;
- (3) An affidavit setting out the following:
 - (a) The exact location of the well (legal description);
 - (b) The lease name;
 - (c) The suggested pool name (to include the producing interval);
 - (d) The top and bottom depths of the producing interval;
 - (e) The results of production tests and/or GOR tests;
 - (f) The date of first production;
 - (g) The names and addresses of the purchasers to whom oil is to be delivered;
 - (h) The name and address of each operator within one-half ($\frac{1}{2}$) mile of the well and an affidavit that notice in writing of the request for the temporary allowable was mailed to each operator named;
 - (i) A description of onsite storage facilities and means of transporting the produced oil or gas; and
 - (j) Any other data the Commission may deem pertinent, such as bottom hole pressure, core data, etc.

Prior to termination of the temporary allowable status of a pool, the Commission may require the submission of all reservoir data obtained and will hold a hearing to secure further evidence and the recommendations of operators for the future operations of such pool.

D. The Commission, after notice and hearing, may assign a temporary allowable to any well or promulgate temporary field rules for any new pool, based upon review of all known relevant information including, but not limited to the following: chemical composition of the production; size of the tract; distance of the well from property lines; information submitted to the Commission pursuant to (C) above; and any proposed allowable or field rules suggested by the operator. The Commission will exercise its discretion in establishing a temporary allowable or temporary field rules consistent with one of the three alternative methods for establishing temporary drilling units, as follows:

(1) Establishment of statewide spacing standards. Such standards and temporary allowables shall be determined with reference to a state-wide grid system suitable to this State. The Commission shall also consider the type of production, depth of production, well spacing, and producing practices.

(2) Test period and shut-in. This method authorizes a test period of between thirty (30) to ninety (90) days prior to the shutting-in of the well. During the shut-in period, the Commission will adopt temporary field rules, specifying unit size, allowables, well spacing, and production practices.

(3) Production on a lease basis. This method authorizes a well to be drilled and produced on a lease basis, according to state-wide rules concerning well spacing, allowables, and production practices.

The operator of each new well brought on to production shall file a production test with the Commission not later than thirty (30) days after completion of the well. Each individual well will be tested for not less than six (6) hours, and not more than twenty-four (24) hours, and the production reported at a daily rate (24 hours). The test may be witnessed by a representative of the Commission.

E. The Commission shall encourage and may exercise the authority, in its discretion, to order a pool-wide unit under the following circumstances:

(1) It is demonstrated to the Commission that a pool-wide unit is the best way to develop the pool and to achieve maximum efficiency;

(2) To maintain the pressure of the reservoir after it is fully developed;

(3) Secondary or other enhanced recovery methods are utilized; and

(4) Any other reason or good cause shown by the Commission that units on the pool should be on a pool-wide basis.

The Commission shall issue an order establishing a pool-wide unit after notice and hearing. After such notice and hearing, the Commission shall assign a pool-wide allowable. In determining the total pool allowable the following factors shall be considered:

(a) Productive capacity of the wells in said pool;

(b) Effective pay thickness of the producing zones;

(c) Size and content of the reservoir; and

(d) Reservoir performance, including the bottom hole pressure, gas-oil ratios, average depth of the pay zone, type of drive, permeability, water encroachment and water production, porosity, productivity indices and proper withdrawal rates from the reservoir as a whole.

The total pool allowable shall then be distributed to each separate leasehold or pooled unit so as to allow each tract an opportunity to produce ultimately the liquid hydrocarbons which underlie it. In allocating oil allowables to pools, the Commission will have the right to consider nominations of purchasers.

F. When it is shown that no avoidable waste or violation of correlative rights will result, the Commission may authorize the operation of a pool under a limiting gas-oil ratio in excess of 2,000 cubic feet of gas per barrel of oil produced.

Any oil well producing with a gas-oil ratio in excess of two thousand (2,000) cubic feet of gas per barrel of oil produced shall be allowed to produce daily only that volume of gas obtained by multiplying its top daily oil allowable, which could have been assigned to such well prior to application of this rule, by two thousand (2,000). The gas volume thus obtained shall be known as the daily gas limit of the well. The daily oil allowable of the well shall then be determined by dividing its daily gas limit, obtained as herein provided, by its producing gas-oil ratio in cubic feet per barrel of oil produced.

Any gas well producing from the same reservoir in which oil wells are completed and producing shall be allowed to produce daily only that amount of gas which is the volumetric equivalent in reservoir displacement of the gas and oil produced from the oil well in the reservoir that withdraws the maximum amount of gas in the production of its daily oil allowable.

If gas produced from an oil reservoir is returned to the same reservoir from which it was produced, only the volume of gas not returned to the reservoir shall be considered in applying the rule stated.

G. All gas wells shall be tested initially and annually unless otherwise waived by the Commission. Proration of gas production and/or the establishment of maximum allowable withdrawal rates shall be determined by use of appropriate procedures of the Interstate Oil Compact Commission's "Manual of Back Pressure Testing of Gas Wells" or Commission approved improvements, modifications, or substitutes.

H. Whenever necessary to assure the equitable taking of gas from a pool, or to prevent waste, the Commission, after notice and hearing, shall regulate the taking of gas from such pool by establishing a reasonable and equitable allocation formula with which to allocate production among wells.

I. Special field rules adopted for such pool shall provide that the total gas allowable of the pool shall be distributed among the separate leasehold or pooled units in said pool so as to allow each tract an opportunity to produce ultimately the gaseous hydrocarbons which underlie it.

J. Before gas from a non-associated gas pool may be utilized for production of carbon black, a special permit must be obtained for such use from the Commission.

K. Operators of wells and pools capable of producing carbon dioxide, nitrogen, hydrogen sulfide, or other gases, or combinations thereof, shall be required to secure approval of operating practices from the Commission.

L. Upon granting of an exception to well spacing required by these regulations, or in a special field rule, promulgated by the Commission, and it appearing that such exception location gives the applicant more than his just and equitable share of the hydrocarbons in the reservoir, the agency shall take such action, by allowable penalty or otherwise, as to offset the advantage over other owners in the pool occasioned by the granting of the exception location, after notice and hearing. In addition, whenever exceptional location is granted, a directional survey must be conducted and the results must be reported to the Commission.

M. If a prorated gas or oil well, or leasehold, during the proration period determined by the Commission, does not produce as much oil or gas as is allocated to it by the order of the Commission, the operator of the well, or leasehold, shall be permitted to carry such underproduction forward to the next succeeding balancing period, as future allowable credit to be produced during that period.

N. No gas or oil well, or leasehold, shall be overproduced, except by order of the Commission. All other overproduction, during the proration period determined by the Commission, shall be deducted from the lease allowable for the second succeeding proration period.

O. The commission, upon application, notice and hearing, may permit the transfer of an allowable of a high gas-oil ratio or high water-oil ratio well, after proper adjustment, partially or entirely to any other well or wells on the same lease having a lower gas-oil ratio or water-oil ratio, producing from the same common source of supply.

121-8.21. Transportation.

A. No pipeline shall be used to transport oil or gas across a property line within the state without a permit from the Commission. Application for the permit shall be accompanied by a map showing:

- (1) The proposed location of the pipeline or gathering system;
- (2) The diameter and total length of the pipeline or gathering system;
- (3) The center line of the right-of-way;
- (4) The total distance and width of the right-of-way;
- (5) The initial and terminal point of the right-of-way accurately located by latitude and longitude;
- (6) Connecting facilities;
- (7) Water depth if submerged;
- (8) Burial depth if buried; and
- (9) The name and license number of the surveyor or engineer preparing the document.

B. All pipelines shall be designed and maintained to protect the land and waters from environmental damage, and shall be inspected monthly for indication of leakage. Records of these inspections shall be maintained by the operator and made available to the Commission upon request.

C. The operator shall notify the Commission when installation of the pipeline is completed.

D. All lines shall be hydrostatically tested to 1.25 times the designated working pressure for a minimum of two (2) hours prior to placing the line in service. Thereafter, all lines shall be hydrostatically tested annually. Submittal of the hydrostatic pressure test including procedure, test pressure, hold time, and results is required.

E. The operator of each pipeline shall file annually with the Commission a certificate indicating compliance with the permit and including revised maps showing any extensions to or abandonment of any previously permitted pipelines.

F. The permit shall be revoked at any time after notice and hearing if the agency determines that the line is so unsafe, so improperly equipped or so managed as likely to result in waste; or if the operator of said pipeline is willfully violating or contributing to the violation of laws or regulations concerning pollution or the production, transportation, processing, refining, and/or marketing of crude oil or gas.

G. No pipeline operated as a common carrier shall be connected with any oil or gas well nor shall any oil or gas be removed from a lease, by truck or other means of transport, until the well operator shall furnish a certificate provided by the Commission certifying that said operator has complied with the conservation laws of the State and that the pipeline is authorized by the well operator to transport oil or gas from the lease. This requirement shall not prevent the temporary connection with any well for the time necessary to take care of emergency situations, or to prevent waste.

H. No pipeline operator shall disconnect a pipeline from any well until receiving approval from the Commission and from the well owner.

I. Whenever the operator of any oil or gas well shall have failed to comply with all laws and all rules and regulations of the Commission applicable to that well, the certificate of compliance shall be revoked. After the certificate of compliance is revoked, the pipeline company connected to such well and to such property shall cease upon notice to do so from the Commission to accept oil or gas for transport until authorized to resume.

J. No transporter shall transport any oil or gas from any lease or wells after said transporter has been notified in writing by the Commission that the owner or operator of said lease or wells has violated any state law, rule, regulation, or order of the Commission.

K. In order to carry out the spirit and purpose of this and other regulations tending to provide orderly production of crude oil without waste and to give equal opportunity to market oil to all operators bringing wells into production in said field, all pipeline companies are hereby directed to make connection of their lines to the lease tanks on properties or leases in rotation as wells are completed, regardless of ownership. Connections shall be accepted and taken by the pipeline companies which by geographical location and least expense are the logical connection unless some other line is willing to accept the same.

121-8.22. Underground Injection for Enhanced Recovery, Saltwater and Oil-Field Wastes, and Hydrocarbon Storage.

A. The Commission, upon notice and hearing, may authorize the following activities:

- (1) Operations to increase ultimate recovery, such as cycling of gas, maintenance of pressure, and the introduction of gas, water, or other substances into a producing formation;
- (2) The disposal of saltwater and oil-field wastes; and
- (3) Underground storage of hydrocarbons.

All injection wells associated with any such activities shall be classified as Class II wells. All Class II wells must be permitted and operated in accordance with the following paragraphs.

B. Fluids injected into Class II well shall be stored, transported and injected in such a manner as may be approved by the Commission. Underground injection that causes or allows movement of fluid into an underground source of drinking water is prohibited, unless the underground source of drinking water is an exempted aquifer.

C. Immediately following the initiation of production in any field or pool, all saltwater shall be disposed of into an approved underground formation or otherwise disposed of as approved by the Commission where such saltwater can not damage or pollute underground sources of drinking water, oil, gas, or other minerals.

D. Injection wells may be drilled for the purpose of Class II operations or existing wells may be converted to injection wells. Class II wells shall be completed in a manner that will insure injection into zones approved by the Commission.

E. Wells drilled or converted for injection purposes shall be properly constructed to prevent the loss of injected fluids into any zone not approved by the Commission. The surface casing of all Class II wells shall be seated in an aquiclude below the deepest USDW and shall be grouted from the base of the surface casing

to the ground surface. All Class II wells shall be completed with a long string of casing that shall be properly cemented with neat Portland cement at a sufficient depth to adequately protect the oil-bearing stratum. Casing shall be cemented in place with a sufficient amount of cement to fill the annular space to a point at least five hundred (500) feet above either the top of the injection interval, or the top of the casing shoe, to be determined by the Commission. Cement shall be allowed to stand a total of eighteen (18) hours before pressure testing.

F. The casing shall be tested at a pressure in pounds per square inch (psi), calculated by multiplying the depth (in feet) of the mid-point of the injection interval by two-tenths ($2/10$) or any other pressure required by the Commission. The maximum test pressure required shall not exceed fifteen hundred (1,500) pounds per square inch. If, at the end of thirty (30) minutes, the pressure gauge shows a drop of ten percent (10%) of the test pressure or more, such corrective measures shall be taken as will insure that the long string of casing is so set and cemented that it will hold the pressure for thirty (30) minutes without a drop of more than ten percent (10%) of the test pressure of the gauge. Cement-bond logs or temperature logs shall be run to verify the gauge. Cement-bond logs or temperature logs shall be run to verify the seal on all wells drilled or converted for injection purposes.

G. All injections shall be through tubing anchored by a packer unless otherwise approved by the commission. The injection of fluids into an underground source of drinking water containing fluids of less than 10,000 milligrams per liter total dissolved solids is hereby prohibited, unless it can be demonstrated before the Commission after notice and hearing that the disposal zone has no use as a drinking water source due to contamination of the zone or other reasons. The injection of fluids into the annular space between strings of casing is prohibited, except as may be approved by the Commission.

H. Application for permits for Class II wells shall be considered as a two-step process. An applicant seeking the Commission's approval for the injection of fluids as described in paragraphs B through H above shall submit the following and any additional information as may be required by the Commission.

(1) Step 1:

(a) Well permit forms for the drilling or conversion of a well for injection purposes;

(b) A plat showing the location and surface elevation of the proposed injection well; all other injection wells; all water wells; and the location of all oil and gas wells, including abandoned wells and dry holes within one-fourth ($1/4$) mile of the proposed injection well. Such plat shall be drawn to a scale of one inch to five hundred feet and shall show distance from the proposed well to the nearest lease lines;

(c) A tabulation of well data for all wells within the review area which penetrate the proposed injection zone or, in the case of Class II wells operating over the fracture pressure of the injection formation, all known wells within the area of review which penetrate formations affected by the increase in pressure (to include depth, elevation, well construction and plugging data);

(d) A cross section illustrating detailed geologic structure and formation, lithology, and physical characteristics of the general area;

(e) A list of the following geologic and physical characteristics of the injection interval and confining formation:

1) Thickness;

2) Areal extent;

- 3) Lithology;
 - 4) Porosity;
 - 5) Permeability;
 - 6) Storativity;
 - 7) Location, extent, and effects of known or suspected faulting, fracturing, and natural solution channels;
 - 8) Formation and fluid pressure; and
 - 9) Fracturing gradients;
- (f) A list of the following engineering data:
- 1) Diameter of the hole, and the total depth of the well;
 - 2) Type, size, weight and strength of all casing strings;
 - 3) Specifications and proposed installation of tubing and packers;
 - 4) Proposed cementing procedures and type of cement;
 - 5) Proposed artificial fracturing or stimulation program;
 - 6) Plans of the surface and subsurface construction details of the system including engineering drawings and specifications;
 - 7) Plans for monitoring;
 - 8) Expected changes in pressure, rate of native fluid displacement by injection fluid, direction and extent of dispersion of the injected fluid; and
 - 9) Contingency plans to cope with all shut ins or well failures in a manner that will obviate any environmental degradation;
- (g) A complete electric and/or gamma log through the injection zone of the injection well, or if an injection well is to be drilled, a complete electric and/or gamma log through the injection zone from a nearby well. Such log shall be annotated to identify the estimated greatest depth of an USDW; significant aquicludes, and the injection formation;
- (h) A statement specifying the proposed source of injection fluids and chemical constituents of the proposed fluids to be injected and the fluids in the injection zone (if an analysis of the water in the proposed injection zone is not available such application shall include a determination of the chlorides by accepted log interpretation methods. Such data used in that calculation and the calculation shall be included in the application), a statement specifying any proposed treatment of the injected fluids;

(i) The estimated minimum and maximum amount of fluids to be injected daily and anticipated injection pressures with resultant and anticipated bottom hole pressures and the known or calculated fracturing pressure of the injection zone. All determinations included in this application shall be supported by basic data and calculations; and

(j) Proof of public notification as set forth in Paragraph R below.

(2) Step 2:

(a) Permit application for the injection of fluids;

(b) A schematic diagram of the surface injection system and its appurtenances;

(c) A revised well-bore sketch containing the information requested in Step 1(f)(1) and 1(f)(7) above or a statement verifying that the well-bore sketch submitted in Step 1(f)(7) is accurate and unchanged; and the method and results of casing tests before use of the injection well;

(d) A complete electric and/or gamma log through the injection zone of the injection well annotated to identify the estimated greatest depth of an USDW, significant aquicludes, and the injection formation unless previously submitted in Step 1;

(e) An affidavit specifying the source of injected fluids, an analysis of the fluids to be injected and the fluids in the injection zone, and a statement specifying any proposed treatment of the injected fluids.

I. In reviewing an application for a permit to drill a Class II injection well, the extent of the area of review surrounding the well shall be $\frac{1}{4}$ mile, unless otherwise determined by the Commission after consideration of the following:

(1) Hydrogeology of the area;

(2) Population density;

(3) Ground-water use;

(4) Previous disposal within the area;

(5) Proposed well construction;

(6) Physical and chemical characteristics of the injection fluids; and

(7) Injection volume, rate, and pressure.

J. Application for Class II permits shall be submitted in writing to the Commission in accordance with Paragraph H above. Conceptual approval may be granted by the Commission after submittal and consideration of the information required under Section H(1) above (Step 1). Approval to inject fluids may be granted by the Commission after submittal and consideration of the information required under Section H(2) above (Step 2).

K. The operator may apply for a fieldwide permit for injection wells for enhancement of oil and gas production, or for pressure maintenance. Such fieldwide application shall include all of the information required by Paragraph H above. If a permit has been issued for a fieldwide injection program, the operator

will be required on each injection well, whether it be drilled or converted, to submit in an application the information required under H(1)(b), H(1)(f), H(2)(a), H(2)(b), and H(2)(c) above.

L. Applications for permits to inject fluids (Step 2) shall be approved or rejected by the Commission on the basis of the information provided in accordance with Paragraph H above in conjunction with a thorough evaluation of the endangering influences posed by any defective wells that may exist within the area of review. In the event a defective well is determined to exist within the area of review, the applicant shall submit to the Commission a plan for corrective action with the permit application. If the Commission determines that the plan is inadequate, the Commission shall require the applicant to revise the plan, prescribe a plan to be a condition of the permit, or deny the permit application. In determining the adequacy of such plan and any additional corrective actions needed to prevent the movement of fluids into or between underground sources of drinking water, the following factors shall be considered by the Commission:

- (1) Formation characteristics of each formation penetrated, including porosity and permeability;
- (2) Volume of injected fluids;
- (3) Chemical composition of the injection fluids;
- (4) Chemical composition of the formation fluids of the injection zone;
- (5) Previous injection activities within the area; and
- (6) Construction and plugging records of the defective well(s).

The Commission may require, as a part of corrective action, that injection pressure of the injection zone be so limited that pressure in the injection zone does not exceed the hydrostatic pressure at the site of any defective well(s). If corrective action is determined to be unfeasible, the Commission may reject the application or conditionally approve the application subject to stated constraints which will minimize the risk of fluid migration from the injection zone. In all cases, injection of fluids shall not begin until such approval is obtained.

M. A permit shall expire one (1) year from the date of issuance of same if no fluids have been injected, unless otherwise approved by the Commission.

N. The well shall be operated at all times so that mechanical integrity and injectivity of the injection operation can be verified and determined. The well shall be equipped so the injection rate, injection pressure, and tubing-casing annulus pressure data may be recorded for each well. All injection wells will be subject to a five (5) year review for mechanical integrity.

The operator of any Class II well shall submit to the Commission;

(1) Injection-volume, injection-pressure, and tubing-casing annulus pressure data for each well monthly. The injected volumes shall be recorded weekly for produced fluids disposal operations, monthly for enhanced recovery operations, and daily for other types of operations involving Class II wells. The information for each month shall be submitted to the Commission in an annual report by March 1 each year for the preceding calendar year.

A chemical analysis of the injected fluids shall be submitted by the first day of January of each year following initial approval. The Commission may extend the period of time between analyses upon receipt and approval of justification.

O. The permittee shall be responsible for maintaining surface equipment to be used in the event of malfunction, including rapid shutoff and standby facilities. The permittee shall maintain records of all shut-in periods when contingency measures are used, and shall file such records with the Commission.

P. The operator of any Class II well shall, in addition to submitting the data required under N(1) and N(2), maintain the following and any additional monitoring records as may be required by the Commission:

(1) All calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation;

(2) Injection and tubing-casing annulus pressure data recorded on a daily or weekly basis and copies of the reports submitted to the Commission; and

(3) Nature and composition of injection fluids.

Q. All records of monitoring activities shall include for all samples:

(1) The date, place and time of sampling;

(2) The dates analyses were performed;

(3) Who performed the analyses;

(4) The analytical techniques/methods;

(5) The result of such analyses.

R. In order to afford the public an opportunity to participate in the permitting process for any of the above described wells the following shall apply:

(1) The applicant for a permit shall cause to be placed in a newspaper having general circulation in the county in which the proposed Class II well is located, a notice setting forth the details of the permit sought, and the Commission is to be provided proof of publication of such notice;

(2) The notice shall provide an adequate description of the proposed action and a description of the location of the proposed well, and the notice shall be placed one time in the newspaper at least 15 days prior to the date that the Commission may approve the permit;

(3) The notice shall state that interested parties may obtain additional information concerning the proposed well from the South Carolina Water Resources Commission;

(4) The notice shall state that a public hearing may be requested by any interested party at any time during the 15 day comment period;

(5) If no public hearing has been requested at the expiration of the 15 day period, and if the permit application meets all of the requirements of the herein above rule, the Commission may grant the permit; and

(6) If there are requests for a public hearing and in the opinion of the Commission the requests are justified, the Commission will publish a notice for public hearing. The application for the Class II well will either be granted, denied, or modified by the Commission after the hearing.

S. The operator of any Class II well shall immediately notify the Commission in the event of any mechanical or downhole problems resulting from the operation of the well which may endanger an underground source of drinking water.

T. A permit for a Class II well may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:

- (1) The underground injection endangers underground drinking water sources;
- (2) Violation of any material terms or conditions of the permit;
- (3) Obtaining a permit by misrepresentation or failure to disclose fully all relevant facts; or
- (4) A change in any condition that may indicate failure of the underground injection system.

U. Modifications of the permit can only be made after notice in writing to and approval of the Commission. Significant modifications, as determined by the Commission, will require the operator to publish notice in accordance with Paragraph R above prior to obtaining the Commission's approval.

V. The owner and operator of any Class II injection well shall be jointly and severally liable and responsible for the plugging thereof in accordance with these rules.

W. Notification of intention to plug any Class II injection well shall be given to the Commission at least fifteen (15) days prior to the commencement of plugging operations.

X. Each plugging operation for a Class II injection well may be witnessed by a representative of the Commission. A report of the plugging operation shall be submitted by the owner or operator of the well to the Commission within thirty (30) days after the well has been plugged.

Y. The methods and procedures for plugging a Class II injection well shall be as follows:

(1) The well shall be filled from the bottom to the top with a mud-laden fluid weighing at least 9.0 pounds per gallon, with not less than thirty-six (36) viscosity API full funnel method;

(2) Each injection zone shall be sealed off with a cement plug which will extend either from the bottom of the hole or from a point twenty-five (25) feet below the base of the injection zone to a point at least fifty (50) feet above the top of each injection zone;

(3) Each production zone shall be sealed off with a cement plug which will extend either from the bottom of the hole or from a point twenty-five (25) feet below the base of the production zone to a point at least fifty (50) feet above the top of each production zone;

(4) All underground sources of drinking water shall be sealed off with a cement plug of a length not less than fifty (50) feet which will extend from a point not less than twenty-five (25) feet below the base of the surface string of casing to a point at least twenty-five (25) feet above the base of the surface string of casing;

(5) A cement plug shall be placed from the surface and extend to a depth of thirty (30) feet; and

(6) The interval between plugs shall be filled with a mud-laden fluid weighing at least 9.0 pounds per gallon, with not less than thirty-six (36) viscosity API full funnel method.

Z. The permittee shall during normal working hours allow the Commission or its authorized representative to:

(1) Enter the permittee's premises in which injection source or system is located and in which any records are required to be kept under terms and conditions of the permit;

(2) Have access to and copy records required to be kept under terms and conditions of the permit;

(3) Inspect the permittee's facilities, including any monitoring equipment or analytical devices;

(4) Sample any fluids being injected and the fluids of the injection zone.

AA. Before any person shall be granted a permit to drill an underground injection well, such person shall file with the Commission a performance bond in accordance with Section 121-8.6.

121-8.23. Water Wells.

Any water well used in connection with the drilling of an oil or gas well shall be constructed in such a manner that will ensure proper protection from contamination of the fresh water aquifers. Said well shall be grouted to a depth of at least 50 feet or until the first impermeable layer is encountered (where applicable). Upon completion of said well, a complete well construction report and a driller's log, or lithologic log, shall be submitted to the Commission within thirty (30) days and before beginning drilling operations for the oil or gas well. After drilling and/of production operations have ceased, the water well shall be properly plugged or when the well to be plugged may safely be used for a fresh water well, or as an observation well to be maintained by the Commission, a written agreement for such use shall be secured from the landowners, or the Commission and filed with the agency. (NOTE: Any water well drilled in connection with an oil or gas well, which might be used as a drinking water source, may require a permit from the South Carolina Department of Health and Environmental Control as a public supply well).

121-8.26. Environmental Protection and Safety.

A. All water shall be confined to its respective strata and shall be adequately protected in any exploration or production operations.

B. All drillers, owners, operators, and individuals having control of the operation of any oil or gas well, or well used for the disposal of saltwater and/or oil or gas field waste products, or pipeline through which oil, gas, saltwater, or oil or gas field waste products are piped or transported, or receiving tank, storage tank, or receiving tank, storage tank or receiving and storage receptacle into which crude oil, saltwater, or oil or gas field waste products are produced, received or stored, or through which oil, saltwater, or oil or gas field waste products are transported, shall immediately notify the Commission giving full details concerning any fires that occur at oil or gas wells or tanks or receptacles owned, operated, or controlled by them or on property controlled or leased by them, and all such persons shall immediately report to the Commission any and all tanks or receptacles struck by lightning and any fire that destroys oil or gas, and shall immediately report any breaks or leaks in or from tanks, pits, or other receptacles and pipelines from which oil, gas, saltwater, or oil or gas field waste products are escaping or have escaped. In all such reports of fire, breaks, leaks, blow-outs, escapes, or other accidents of such nature, the location of the well, tanks, pits, receptacles, and line breaks shall be given. Such reports shall specify what steps have been taken or are in progress to remedy the situation reported and shall detail the quantity (estimated, if no accurate measurement can be

obtained, in which the report shall show the same is an estimate) of oil, gas, saltwater, or oil or gas field waste products lost, destroyed, or allowed to escape. In case any tank, pit or receptacle is allowed to run over, the escape thus occurring shall be reported as in the case of a leak. Following the initial notice required herein, a written report must be filed with the Commission within fifteen (15) days documenting the circumstances of all fires, breaks, leaks, or blow-outs. Such report hereby required as to oil, saltwater, or oil or gas field waste products losses shall be necessary only in the case such losses exceed two (2) barrels in the aggregate. Furthermore, if other agencies, federal or state, require notification of spills in accordance with standards other than those set forth herein, then duplicates of notification given to such other agencies shall immediately be given to the Commission, to be followed within fifteen (15) days by a written report documenting the initial report.

C. Before commencing to drill, the operator shall inform the Commission of the intended construction for pits and tanks for drilling mud or deleterious substances used in the drilling, completion, and recompletion of wells. Said pits and tanks shall be constructed and maintained so as to prevent pollution of surface and subsurface freshwater and shall be in accordance with applicable South Carolina Department of Health and Environmental Control Regulations. Under no circumstances shall said pits be used for the disposal, dumping or storage of fluids, wastes and other debris not used in drilling operations.

After a well is completed or plugged and abandoned, all drilling mud remaining in such pits shall be safely returned to the well on location or an acceptable adjacent well, or removed to a lawfully approved landfill, or disposed of as directed by the Commission, within ninety (90) days of completion of the well, except as otherwise approved by the Commission. Pits shall be backfilled with earth and leveled in such a manner as to be returned to a near natural state. The construction and operation of such tanks and pits shall be in complete compliance with all relevant rules, regulations, and requirements of other local, state, and federal agencies.

D. Within ninety (90) days, except as otherwise approved by the Commission, after a well is completed or plugged and abandoned, all pits and sumps shall be properly filled, compacted, and leveled, in such a manner so as to be returned to a near natural state.

121-8.27. Hearings.

A. All hearings conducted by the Commission or persons designated by the Commission to hold hearings on behalf of the Commission, whether to obtain public views or to hear contested cases shall be preceded by thirty (30) days notice as applicable, either by written notice by mail to interested parties or newspaper publication in a newspaper of general circulation in the county or counties in which the case may occur.

B. The conduct of hearings held on contested cases shall be governed by the South Carolina Administrative Procedures Act.

C. The Commission shall have the right to call a prehearing conference at any time prior to a scheduled hearing if such a conference would resolve or narrow the issues in controversy or assist in the conduct of the hearing.

121-8.28. Enforcement.

In addition to those penalties provided in Sections 48-43-810 through 48-43-850, Code of Laws of South Carolina, 1976, as amended, the Commission or its authorized representative may order the immediate suspension of all or any part of the exploration, drilling, production or other operation determined not to be in compliance with the Act or regulations of the Commission.