

## **15A NCAC 02C .0225 GROUNDWATER REMEDIATION WELLS AND SYSTEMS**

(a) "Groundwater Remediation Wells" means wells that are used to inject additives, treated groundwater, or ambient air for the treatment of contaminated soil or groundwater. Only additives that the Department of Health and Human Services' Division of Public Health determines not to adversely affect human health in compliance with G.S. 130A-5 shall be approved for injection.

(b) "Groundwater Remediation Systems" include infiltration galleries and injection wells. When on-site contaminated groundwater is used, the groundwater remediation injection wells shall be permitted in accordance with G.S. 143-215.1A.

(c) Permitted by Rule. The following are permitted by rule pursuant to Rule .0217 of this Section if constructed and operated in accordance with the rules of this Section, all criteria for the specific injection system are met, hydraulic or pneumatic fracturing are not conducted, and the injection wells or injection activities do not result in the violation of any groundwater or surface water standard outside the injection zone:

- (1) Passive Injection Systems that use in-well delivery systems to diffuse injectants into the subsurface;
- (2) Small-scale Injection Operations used to inject tracers or other additives to remediate contaminant plumes located within a land surface area not to exceed 10,000 square feet;
- (3) Pilot Tests conducted to evaluate the technical feasibility of a remediation strategy in order to develop a full scale remediation plan for future implementation, if the surface area of the injection zone wells are located within an area that does not exceed five percent of the land surface above the known extent of groundwater contamination. A pilot test may involve multiple injection wells, injection events, and injectants within the specified area. An individual permit shall be required to conduct more than one pilot test on any separate groundwater contaminant plume;
- (4) Air Injection Wells used to inject ambient air to enhance in-situ treatment of groundwater and that meet the following requirements:
  - (A) The air to be injected shall not exceed the ambient air quality standards set forth in 15A NCAC 02D .0400 and shall not contain petroleum or any other constituent that would cause a violation of groundwater standards specified in Subchapter 02L; and
  - (B) Injection wells of this type shall be constructed in accordance with the well construction standards applicable to monitoring wells specified in Rule .0108 of this Subchapter.
- (5) In-situ thermal (IST) well systems shall meet the following requirements:
  - (A) Any IST systems used shall not contain petroleum or any other constituent that would cause a violation of groundwater standards specified in Subchapter 02L; and
  - (B) Injection wells of this type shall be constructed in accordance with the well construction standards applicable to monitoring wells specified in Rule .0108 of this Subchapter.

(d) Notification for Groundwater Remediation Wells described in Subparagraphs (c)(1) through (c)(3), and (c)(5) of this Rule shall be submitted to the Director two weeks prior to injection made using one form per facility supplied by the Director. Such notification shall include the following:

- (1) the name and contact information of the well owner;
- (2) the name and contact information of the person who can answer technical questions about the proposed injection system, if different from the well owner;
- (3) geographic coordinates of the injection well or well field;
- (4) maps of the injection zone indicating the known extent of contamination such as:
  - (A) contaminant plume maps with isoconcentration lines that show the horizontal extent of the contaminant plume in soil and groundwater, existing and proposed monitoring wells, and existing and proposed injection wells; and
  - (B) cross-sections to the known or projected depth of contamination that show the horizontal and vertical extent of the contaminant plume in soil and groundwater, changes in lithology, existing and proposed monitoring wells, and existing and proposed injection wells;
- (5) the purpose, scope, and goals of the proposed injection activity;
- (6) the name, volume, concentration, and Material Safety Data Sheet of each injectant;
- (7) a schedule of injection well construction and injection activities;
- (8) the plans and specifications of each injection well or well system, which include:
  - (A) the number and depth of injection wells;
  - (B) information on whether the injection wells are existing or proposed;
  - (C) the well contractor name and certification number; and

- (D) information on whether the injection wells are permanent wells, "direct push" temporary injection wells, or are subsurface distribution systems; and
  - (9) a description of a monitoring plan capable of determining if violations of groundwater quality standards specified in Subchapter 02L result from the injection activity.
- (e) Notification for Air Injection Wells described in Subparagraph (c)(4) of this Rule shall be submitted to the Director two weeks prior to injection on forms supplied by the Director. Such notification shall include the following:
- (1) the facility name, address, and location indicated by either:
    - (A) the latitude and longitude with reference datum, position accuracy, and method of collection; or
    - (B) a facility site map with property boundaries;
  - (2) the name, telephone number, and mailing address of the person responsible for installation or operation of the wells;
  - (3) the ownership of facility as a private individual or organization or a federal, State, county, or other public entity;
  - (4) the number of injection wells and their construction details; and
  - (5) the operating status as proposed, active, inactive, temporarily abandoned, or permanently abandoned.
- (f) Permit Applications for all Groundwater Remediation Wells not Permitted by Rule. In addition to the permit requirements set forth in Rule .0211 of this Section, an application for all groundwater remediation wells not permitted by rule shall be submitted in duplicate to the Director made using one form per facility furnished by the Director and shall include the following:
- (1) Site Description and Incident Information. The site description and incident information shall include the following:
    - (A) the name of the well owner or person otherwise responsible for the installation or operation of injection wells, mailing address, telephone number, and whether the owner is a federal, State, private, public, or other entity;
    - (B) the name of the property owner, if different from the well owner, physical address, mailing address, and telephone number;
    - (C) the name, mailing address, telephone number, geographic coordinates of the facility for which the application is submitted, a brief description of the nature of the business, and the status of the facility such as closed, still operating, or under construction;
    - (D) a description of the contamination incident including the source, type, cause, and release dates of the contamination; a list of all contaminants in the affected soil or groundwater; the presence and thickness of free product; and the maximum contaminant concentrations detected in the affected soil and groundwater;
    - (E) the State agency responsible for management of the contamination incident, including the incident tracking number, and the incident manager's name and telephone number; and
    - (F) a list of all permits issued for the facility or contamination incident, including Hazardous Waste Management program permits or approval under the Resource Conservation and Recovery Act (RCRA), waste disposal permits issued in accordance with G.S. 143-215.1, Sewage Treatment and Disposal Permits issued in accordance with G.S. 130A, and any other environmental permits required by State or federal law.
  - (2) Soils Evaluation (For Systems Treating On-Site Contaminated Groundwater Only). For systems with proposed discharge within seven feet of land surface and above the seasonal high water table, a soil evaluation of the disposal site shall be provided to the Division by the applicant. If required by G.S. 89F, a soil scientist shall submit this evaluation. If this evaluation is submitted, it shall include the following information:

[Note: The North Carolina Board for Licensing of Soil Scientists has determined, via letter dated December 1, 2005, that preparation of soils reports pursuant to this Paragraph constitutes practicing soil science under G.S. 89F.]

    - (A) Field description of soil profile. Based on examinations of excavation pits or auger borings, the following parameters shall be described by individual horizons to a depth of seven feet below land surface or to bedrock: thickness of the horizon; texture; color and other diagnostic features; structure; internal drainage; depth, thickness, and type of restrictive horizons; pH; cation exchange capacity; and presence or absence of evidence

of any seasonal high water table. Applicants shall dig pits when necessary for evaluation of the soils at the site.

- (B) Recommendations concerning annual and instantaneous loading rates of liquids, solids, other wastewater constituents, and amendments. Annual hydraulic loading rates shall be based on in-situ measurement of saturated hydraulic conductivity in the most restrictive horizon.
- (3) Injection Zone Determination. The applicant shall specify the horizontal and vertical portion of the injection zone within which the proposed injection activity shall occur based on the hydraulic properties of that portion of the injection zone specified. No violation of groundwater quality standards specified in Subchapter 02L resulting from the injection shall occur outside the specified portion of the injection zone as detected by a monitoring plan approved by the Division. For systems treating on-site contaminated groundwater, computer modeling or predictive calculations based on site-specific conditions shall be provided to demonstrate that operation of the system shall not cause or contribute to the migration of contaminants into previously uncontaminated areas. This prescribed injection zone shall replace the compliance boundary as defined in 15A NCAC 2L .0107.
- (4) A hydrogeologic evaluation of the disposal site to a depth that includes the injection zone determined in accordance with Subparagraph (3) of this Paragraph. If required by G.S. 89E, G.S. 89C, or G.S. 89F, a licensed geologist, professional engineer, or licensed soil scientist shall prepare a hydrogeologic evaluation of the facility. The hydrogeologic evaluation shall include all of the following:
  - (A) the regional and local geology and hydrogeology;
  - (B) the changes in lithology underlying the facility;
  - (C) the depth to bedrock;
  - (D) the depth to the mean seasonal high water table;
  - (E) the hydraulic conductivity, transmissivity, and storativity of the injection zone based on tests of site-specific material, including a description of the tests used to determine these parameters;
  - (F) the rate and direction of groundwater flow as determined by predictive calculations or computer modeling; and
  - (G) the lithostratigraphic and hydrostratigraphic logs of test and injection wells.
- (5) Area of Review. The area of review shall be calculated using the procedure for determining the zone of endangering influence specified in 40 CFR 146.6(a). The applicant shall identify all wells within the area of review that penetrate the injection or confining zone and repair or permanently abandon all wells that are improperly constructed or abandoned.
- (6) Injectant Information. The applicant shall submit the following information for each proposed injectant:
  - (A) the injectant name and manufacturer, concentration at the point of injection, and percentage if present in a mixture with other injectants;
  - (B) the chemical, physical, biological, or radiological characteristics necessary to evaluate the potential to adversely affect human health or groundwater quality;
  - (C) the source of fluids used to dilute, carry, or otherwise distribute the injectant throughout the injection zone as determined in accordance with Subparagraph (f)(3) of this Rule. If any well within the area of review of the injection facility is to be used as the fluid source, then the following information shall be submitted: location or ID number, depth of source, formation, rock or sediment type, and a chemical analysis of the water from the source well, including analyses for all contaminants suspected or historically recognized in soil or groundwater on the site;
  - (D) a description of the rationale for selecting the injectants and concentrations proposed for injection, including an explanation or calculations of how the proposed injectant volumes and concentrations were determined;
  - (E) a description of the reactions between the injectants and the contaminants present, including specific breakdown products or intermediate compounds that may be formed by the injection;

- (F) a summary of results if modeling or testing was performed to investigate the injectant's potential or susceptibility for biological, chemical, or physical change in the subsurface; and
  - (G) an evaluation concerning the development of byproducts of the injection process, including increases in the concentrations of naturally occurring substances. Such an evaluation shall include the identification of the specific byproducts of the injection process, projected concentrations of byproducts, and areas of migration as determined through modeling or other predictive calculations.
- (7) Injection Procedure. The applicant shall submit a description of the proposed injection procedure that includes the following:
- (A) the proposed average and maximum daily rate and quantity of injectant;
  - (B) the average maximum injection pressure expressed in units of pounds per square inch (psi); and
  - (C) the total or estimated total volume to be injected.
- (8) Engineering Planning Documents (For Systems Treating On-Site Contaminated Groundwater Only). If required by G.S. 89C, a professional engineer shall prepare these documents. The following documents shall be provided to the Division by the applicant:  
 [Note: The North Carolina Board of Examiners for Engineers and Surveyors has determined, via letter dated December 1, 2005, that preparation of engineering design documents pursuant to this Paragraph constitutes practicing engineering under G.S. 89C.]
- (A) engineering plans for the entire system, including treatment, storage, application, and disposal facilities and equipment, except those previously permitted unless they are directly tied into the new units or are critical to the understanding of the complete process;
  - (B) specifications describing materials to be used, methods of construction, and means for ensuring quality and integrity of the entire groundwater remediation system;
  - (C) plans that include construction details of recovery, injection, and monitoring wells and infiltration galleries;
  - (D) operating plans that include:
    - (i) the operating schedule including any periodic shut-down times;
    - (ii) required maintenance activities for all structural and mechanical elements;
    - (iii) a list of all consumable and waste materials with their intended source and disposal locations;
    - (iv) restrictions on access to the site and equipment; and
    - (v) provisions to ensure the quality of the treated effluent and hydraulic control of the system at all times when any portion of the system ceases to function, such as standby power capability, complete system-off status, or duplicity of system components.
- (9) Fracturing Plan. If hydraulic or pneumatic fracturing is proposed, then the applicant shall submit a detailed description of the fracturing plan that includes the following:
- (A) Material Safety Data Sheets of fracturing media including information on any proppants used;
  - (B) a map of fracturing well locations indicating the known extent of groundwater contamination and all buildings, wells, septic systems, underground storage tanks, and underground utilities located within the area of review as described in Subparagraph (5) of this Paragraph;
  - (C) a demonstration that the fracturing process shall not result in the fracturing of any confining units or otherwise cause or contribute to the migration of contamination into uncontaminated areas, or otherwise cause damage to buildings, wells, septic systems, underground storage tanks, and underground utilities;
  - (D) the injection rate and volume;
  - (E) the orientation of bedding planes, joints, and fracture sets of the fracture zone;
  - (F) a performance monitoring plan for determining the fracture well radius of influence; and
  - (G) if conducted, the results of geophysical testing or a pilot demonstration of fracture behavior conducted in an uncontaminated area of the site.
- (10) Injection well construction details including:

- (A) the number and depth of injection wells;
  - (B) the number and depth of borings if using multi-level or "nested" well systems;
  - (C) information on whether the injection wells are existing or proposed;
  - (D) the depth and type of casing;
  - (E) the depth and type of screen material;
  - (F) the depth and type of grout;
  - (G) information on whether the injection wells are permanent or temporary "direct push" points; and
  - (H) the plans and specifications of the surface and subsurface construction details of each injection well or well system.
- (11) Monitoring Wells. Monitoring wells shall be of sufficient quantity and location to detect any movement of injection fluids, injection process byproducts, or formation fluids outside the injection zone as determined by the applicant in accordance with Subparagraph (f)(3) of this Paragraph. The monitoring schedule shall be consistent with the proposed injection schedule, the pace of the anticipated reactions, and the rate of transport of the injectants and contaminants. The applicant shall submit a monitoring plan that includes the following:
- (A) the target contaminants and the secondary or intermediate contaminants that may result from the injection;
  - (B) the other parameters that may serve to indicate the progress of the intended reactions;
  - (C) a list of existing and proposed monitoring wells to be used; and
  - (D) a sampling schedule for monitoring the proposed injection.
- (12) Well Data Tabulation. A tabulation of data on all existing or abandoned wells within the area of review of the injection wells that penetrate the proposed injection zone, including monitoring wells and wells proposed for use as injection wells. Such data shall include a description of each well's type, depth, record of abandonment or completion, and any additional information the Director may require to ensure compliance with G.S. 87-84.
- (13) Maps and Cross-Sections. Scaled, site-specific site plans or maps depicting the location, orientation, and relationship of facility components including the following:
- (A) an area map based on the most recent USGS 7.5' topographic map of the area, at a scale of 1:24,000 and showing the location of the proposed injection site;
  - (B) topographic contour intervals showing all facility related structures, property boundaries, streams, springs, lakes, ponds, and other surface drainage features;
  - (C) all existing or abandoned wells within the area of review of the injection wells listed in the tabulation required in Subparagraph (12) of this Paragraph that penetrate the proposed injection zone, including water supply wells, monitoring wells, and wells proposed for use as injection wells;
  - (D) potentiometric surface maps that show the direction of groundwater movement and existing and proposed wells;
  - (E) contaminant plume maps with isoconcentration lines that show the horizontal extent of the contaminant plume in soil and groundwater and existing and proposed wells;
  - (F) cross-sections to the known or projected depth of contamination that show the horizontal and vertical extent of the contaminant plume in soil and groundwater, major changes in lithology, and existing and proposed wells; and
  - (G) any existing sources of potential or known groundwater contamination, including waste storage, treatment, or disposal systems, within the area of review of the injection well or well system.
- (14) Any other information necessary for the Department to ensure compliance with G.S. 87-84.
- (g) Injection Volumes. The Director may establish maximum injection volumes and pressures necessary to ensure compliance with G.S. 87-84 and that:
- (1) fractures are not initiated in the confining zone of the injection zone determined in accordance with Subparagraph (f)(3) of this Rule;
  - (2) injected fluids do not migrate outside the injection zone or area; and
  - (3) injected fluids and fractures do not cause or contribute to the migration of contamination into uncontaminated areas.
- (h) Well Construction.
- (1) Wells shall not be located where:

- (A) surface water or runoff will accumulate around the well due to depressions, drainage ways, or other landscapes that will divert water to the well;
  - (B) a person would be required to enter confined spaces to perform sampling and inspection activities; and
  - (C) injectants or formation fluids would migrate outside the approved injection zone as determined by the applicant in accordance with Subparagraph (f)(3) of this Rule.
- (2) Wells used for hydraulic or pneumatic fracturing shall be located within the boundary of known groundwater contamination but no closer than 75 feet to this boundary unless it can be demonstrated that a lesser separation distance will not adversely affect human health or cause a violation of a groundwater quality standard as specified in Subchapter 02L, such as through the use of directional fracturing.
  - (3) The methods and materials used in construction shall not threaten the physical and mechanical integrity of the well during its lifetime.
  - (4) The well shall be constructed in a manner that surface water or contaminants from the land surface cannot migrate along the borehole annulus either during or after construction.
  - (5) The borehole shall not penetrate to a depth greater than the depth at which injection will occur unless the purpose of the borehole is the investigation, of the geophysical and geochemical characteristics of an aquifer. Following completion of the investigation the borehole beneath the zone of injection shall be grouted completely to prevent the migration of any contaminants.
  - (6) For "direct-push" temporary injection wells constructed without permanent or temporary casing, injection and well abandonment activities shall be conducted within the same working day as when the borehole is constructed.
  - (7) Drilling fluids shall contain only potable water and may be comprised of one or more of the following:
    - (A) the formation material encountered during drilling; and
    - (B) materials manufactured specifically for the purpose of borehole conditioning or well construction.
  - (8) Only allowable grout listed under Rule .0107 of this Subchapter shall be used; however, bentonite grout shall not be used:
    - (A) to seal zones of water with a chloride concentration of 1,500 milligrams per liter or greater as determined by tests conducted at the time of construction; or
    - (B) in areas of the State subject to saltwater intrusion that may expose the grout to water with a chloride concentration of 1,500 milligrams per liter or greater at any time during the life of the well.
  - (9) The annular space between the borehole and casing shall be grouted:
    - (A) with a grout that is non-reactive with the casing or screen materials, the formation, or the injectant;
    - (B) from the top of the gravel pack to land surface and in a way that there is no interconnection of aquifers or zones having differences in water quality that would result in the degradation of the groundwater quality of any aquifer or zone; and
    - (C) so that the grout extends outward from the casing wall to a thickness equal to either one-third of the diameter of the outside dimension of the casing or two inches, whichever is greater. In no case shall a well be required to have an annular grout seal thickness greater than four inches.
  - (10) Grout shall be emplaced around the casing by one of the following methods:
    - (A) Pressure. Grout shall be pumped or forced under pressure through the bottom of the casing until it fills the annular space around the casing and overflows at the surface;
    - (B) Pumping. Grout shall be pumped into place through a hose or pipe extended to the bottom of the annular space that can be raised as the grout is applied. The grout hose or pipe shall remain submerged in grout during the entire application; or
    - (C) Other. Grout may be emplaced in the annular space by gravity flow in a way to ensure complete filling of the space. Gravity flow shall not be used if water or any visible obstruction is present in the annular space at the time of grouting.
  - (11) All grout mixtures shall be prepared prior to emplacement per the manufacturer's directions with the exception that bentonite chips or pellets may be emplaced by gravity flow if water is present or otherwise hydrated in place.

- (12) If an outer casing is installed, it shall be grouted by either the pumping or pressure method.
  - (13) The well shall be grouted within seven days after the casing is set or before the drilling equipment leaves the site, whichever occurs first. If the well penetrates any water-bearing zone that contains contaminated or saline water, the well shall be grouted within one day after the casing is set.
  - (14) No additives that will accelerate the process of hydration shall be used in grout for thermoplastic well casing.
  - (15) A casing shall be installed that extends from at least 12 inches above land surface to the top of the injection zone.
  - (16) Wells with casing extending less than 12 inches above land surface and wells without casing shall be approved by the Director only when one of the following conditions is met:
    - (A) site specific conditions directly related to business activities, such as vehicle traffic, would endanger the physical integrity of the well; or
    - (B) it is not operationally feasible for the well head to be completed 12 inches above land surface due to the engineering design requirements of the system.
  - (17) Multi-screened wells shall not connect aquifers or zones having differences in water quality that would result in a degradation of the groundwater quality of any aquifer or zone.
  - (18) Prior to removing the equipment from the site, the top of the casing shall be sealed with a water-tight cap or well seal, as defined in G.S. 87-85, to preclude contaminants from entering the well.
  - (19) Packing materials for gravel and sand packed wells shall be:
    - (A) composed of quartz, granite, or other hard, non-reactive rock material;
    - (B) of uniform size, water-washed and free from clay, silt, and toxic materials;
    - (C) disinfected prior to subsurface emplacement;
    - (D) emplaced such that it will not connect aquifers or zones having differences in water quality that would result in the deterioration of the water quality in any aquifer or zone; and
    - (E) evenly distributed around the screen and shall extend to a depth at least one foot above the top of the screen. A one foot thick or greater seal comprised of bentonite clay, shall be emplaced directly above and in contact with the packing material.
  - (20) All permanent injection wells shall have a well identification plate that meets the criteria specified in Rule .0107 of this Subchapter.
  - (21) A hose bibb, sampling tap, or other collection equipment shall be installed on the line entering the injection well such that a sample of the injectant can be obtained prior to its entering the injection well.
  - (22) If applicable, all piping, wiring, and vents shall enter the well through the top of the casing unless it is based on a design demonstrated to preclude surficial contaminants from entering the well.
  - (23) The well head shall be completed in a manner to preclude surficial contaminants from entering the well, and well head protection shall include:
    - (A) an accessible external sanitary seal installed around the casing and grouting; and
    - (B) a water-tight cap or well seal compatible with the casing and installed so that it cannot be removed without the use of hand or power tools.
- (i) Mechanical Integrity. All permanent injection wells shall be tested for mechanical integrity, which shall be conducted in accordance with Rule .0207 of this Section.
- (j) Operation and Maintenance.
- (1) Unless permitted by this Rule, pressure at the well head shall be limited to a maximum that will ensure that the pressure in the injection zone does not initiate new fractures or propagate existing fractures in the injection zone, initiate fractures in the confining zone, or cause the migration of injected or formation fluids outside the injection zone or area.
  - (2) Injection between the outermost casing and the well borehole is prohibited.
  - (3) The well owner shall monitor the operating processes at the well head and shall protect the well head against damage during construction and use.
- (k) Monitoring.
- (1) Monitoring of the injection well shall be required by the Director to protect groundwaters of the State.
    - (A) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

- (B) Analysis of the physical, chemical, biological, or radiological characteristics of the injectant shall be made monthly or more frequently, as approved by the Director, in order to provide representative data for characterization of the injectant.
  - (C) Monitoring of injection pressure, flow rate, and cumulative volume shall occur according to a schedule determined necessary by the Director.
  - (D) Monitoring wells associated with the injection site shall be monitored quarterly or on a schedule determined by the Director to detect any migration of injected fluids from the injection zone.
- (2) In determining the type, density, frequency, and scope of monitoring, the Director shall consider the following:
- (A) physical and chemical characteristics of the injection zone;
  - (B) physical and chemical characteristics of the injected fluids;
  - (C) volume and rate of discharge of the injected fluids;
  - (D) compatibility of the injected fluids with the formation fluids;
  - (E) the number, type, and location of all wells, mines, surface bodies of water, and structures within the area of review;
  - (F) proposed injection procedures;
  - (G) expected changes in pressure, formation fluid displacement, and direction of movement of injected fluid;
  - (H) proposals of corrective action to be taken in the event that a failure in any phase of injection operations renders the groundwaters unsuitable for their best intended usage as defined 15A NCAC 02L; and
  - (I) the life expectancy of the injection operations.
- (3) Monitoring wells completed in the injection zone and any of those zones adjacent to the injection zone may be affected by the injection operations. If affected, the Director may require additional monitor wells located to detect any movement of injection fluids, injection process byproducts, or formation fluids outside the injection zone as determined by the applicant in accordance with Subparagraph (f)(3) of this Rule. If the operation is affected by subsidence or catastrophic collapse, any other required monitoring wells shall be located so that they will not be physically affected and shall be of an adequate number to detect movement of injected fluids, process byproducts, or formation fluids outside the injection zone or area. In determining the number, location and spacing of monitoring wells, the following criteria shall be considered by the Director:
- (A) the population relying on the groundwater resource affected, or potentially affected, by the injection operation;
  - (B) the proximity of the injection operation to points of withdrawal of groundwater;
  - (C) the local geology and hydrology;
  - (D) the operating pressures;
  - (E) the chemical characteristics and volume of the injected fluid, formation water, and process byproducts; and
  - (F) the number of existing injection wells.
- (l) Reporting.
- (1) For all injection wells, the well owner shall be responsible for submitting to the Director on forms furnished by the Director the following:
- (A) a record of the construction (form GW-1), abandonment (form GW-30), or repairs of the injection well within 30 days of completion of the specified activities; and
  - (B) the Injection Event Record within 30 days of completing each injection.
- (2) For injection wells requiring an individual permit, the following shall apply:
- (A) The well owner shall be responsible for submitting to the Director hydraulic or pneumatic fracturing performance monitoring results;
  - (B) All sampling results shall be reported to the Division annually or at another frequency determined by the Director based on the reaction rates, injection rates, likelihood of secondary impacts, and site-specific hydrogeologic information;
  - (C) A final project evaluation report shall be submitted within nine months after completing all injection-related activities associated with the permit or submit a project interim evaluation before submitting a renewal application for the permit. This document shall



assess the injection projects findings in a written summary. The final project evaluation shall also contain monitoring well sampling data, contaminant plume maps, and potentiometric surface maps; and

- (D) For groundwater remediation injection permits, each monitoring report shall include a summary identifying any detectable contaminant degradation breakdown products, and a table with historical laboratory analytical results. The table shall indicate any exceedances of groundwater standards per 15A NCAC 02L .0202, and shall distinguish data collected prior to injection from data collected after injection.

(m) Application and Annual Fees (For Systems Treating On-Site Contaminated Groundwater Only)

- (1) Application Fee. For every application for a new or major modification of a permit under this Rule, a nonrefundable application processing fee in the amount provided in G.S. 143-215.3D shall be submitted to the Division by the applicant at the time of application. Modification fees shall be based on the annual fee for the facility.
- (2) Annual Fees. An annual fee for administering and compliance monitoring shall be charged in each year of the term of every renewable permit per the schedule in G.S. 143-215.3D(a). Annual fees shall be paid for any facility operating on an expired permit that has not been rescinded or revoked by the Division. Permittees shall be billed annually by the Division. A change in the facility, which changes the annual fee, shall result in the revised annual fee being billed effective with the next anniversary date.
- (3) Failure to pay an annual fee within 30 days after being billed may be cause for the Division to revoke the permit upon 60 days notice.

*History Note: Authority G.S. 87-87; 87-88; 87-90; 87-94; 87-95; 143-211; 143-214.2(b); 143-215.1A; 143-215.3(a)(1); 143-215.3(c);  
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