SUBCHAPTER 02S – RULES AND CRITERIA FOR THE ADMINISTRATION OF THE DRY-CLEANING SOLVENT CLEANUP FUND

SECTION .0100 – GENERAL CONSIDERATIONS

15A NCAC 02S .0101 SCOPE AND PURPOSE

The purpose of this Subchapter is to establish the criteria for determining eligibility for certification into the North Carolina Dry-Cleaning Solvent Cleanup Fund program, minimum management practices, a risk-based approach for assessment and remediation of certified facilities, and the criteria for the disbursement of funds from the North Carolina Dry-Cleaning Solvent Cleanup Fund.

History Note: *Authority G.S. 143-215.104D(b); 143-215.104F; 143-215.104N;*
Eff. August 1, 2000;
Amended Eff. September 1, 2007;
Readopted Eff. September 1, 2018.

15A NCAC 02S .0102 DEFINITIONS

The definition of any word or phrase used in this Subchapter shall be the same as given in G.S. 143-215.104B and the following words and phrases shall have the following meanings:

(1) "Act" means the Dry-Cleaning Solvent Cleanup Act of 1997.
(2) "Apparel and household fabrics" means apparel and fabrics that have been purchased at retail or have been purchased at wholesale for rental at retail.
(3) "Business" means "business" as defined in G.S. 59-102.
(4) "Chemicals of concern" means the specific compounds and their breakdown products that are identified for evaluation in the risk-based corrective action process. Identification may be based on their historical and current use at the site, detected concentrations in environmental media, and their mobility, toxicity, and persistence in the environment.
(5) "Closed container solvent transfer system" means a device or system designed to fill a dry-cleaning machine with dry-cleaning solvent through a mechanical valve or sealed coupling in order to prevent spills or other loss of solvent liquids or vapors to the environment.
(6) "Complete exposure pathway" means an exposure pathway where a chemical of concern has reached a receptor.
(7) "Contaminated site" or "site" means the area defined by the current and future location of the chemicals of concern from a facility or abandoned site. A contaminated site may be an entire property or facility, a defined area or portion of a facility or property, or multiple facilities or properties.
(8) "Discovery Site" means the physical site or area where dry-cleaning solvent contamination has been discovered. A discovery site may or may not be the same property as the facility site.
(9) "Division" means the Division of Waste Management of the Department of Environmental Quality.
(10) "Dry-Cleaning Business" means a business having engaged in dry-cleaning operations or the operation of a wholesale distribution facility at a facility site.
(11) "Environmental media" means soil, sediment, surface water, groundwater, air, or other physical substance.
(12) "Engineering controls" means physical modifications to a site to reduce or eliminate the potential for exposure to chemicals of concern.
(13) "Exposure pathway" means the course that a chemical of concern takes or may take from a source area to a receptor. Each exposure pathway includes a source or release from a source of a chemical of concern, a point of exposure, an exposure route, and the receptor.
(14) "Facility site" means the physical location of a dry-cleaning facility, a wholesale distribution facility, or an abandoned site.
(15) "Hazard Index" means the sum of two or more hazard quotients for chemicals of concern or multiple exposure pathways to a particular receptor.
(16) "Hazard quotient" means the ratio of level of exposure of a chemical of concern over a specified time period to a reference dose for that chemical of concern derived for a similar exposure period.

(17) "Individual excess lifetime cancer risk" means the increase over background in an individual's probability of getting cancer over a lifetime due to exposure to a chemical.

(18) "Institutional controls" means nonengineered measures, including land-use restrictions, used to prevent unsafe exposure to contamination.

(19) "Material impervious to dry-cleaning solvent" means a material that has been certified by the manufacturer or an independent testing laboratory to maintain its chemical and structural integrity in the presence of the applicable dry-cleaning solvent and prevent the movement of dry-cleaning solvent for a period of a least 72 hours.

(20) "Monitored natural attenuation" means an approach to the reduction in the concentration of chemicals of concern in environmental media due to naturally occurring physical, chemical, and biological processes.

(21) "Non-residential land use" means a use that is not a residential land use.

(22) "Number of full time employees" means the number of full-time equivalent employees employed by a person who owns a dry-cleaning facility, as calculated pursuant to 15A NCAC 02S .0103.

(23) "Person" means "person" as defined in G.S. 143-215.77(13).

(24) "Petitioner" means a potentially responsible party who submits a petition for certification of a facility site.

(25) "Point of demonstration" means the location selected between the source area and a point of exposure where levels of chemicals of concern are measured to ensure that site-specific target levels are being met.

(26) "Point of exposure" means the location at which an individual or population may come in contact with a chemical of concern originating from a site.

(27) "Receptor" means any human, plant, or animal that is, or has the potential to be, adversely affected by the release or migration of chemicals of concern.

(28) "Reference dose" means a toxicity value for evaluating potential non-carcinogenic effects in humans resulting from exposure to a chemical of concern.

(29) "Remedial action plan" means a plan that outlines activities to be undertaken to clean up a contaminated site and to reduce or eliminate current or potential exposures to receptors.

(30) "Representative concentrations" means a typical or average concentration to which the receptor is exposed over the specified exposure duration, within a specified geographical area, and for a specific route of exposure.

(31) "Residential land use" means use for human habitation, including dwellings such as single family houses and multi-family apartments, children's homes, nursing homes, and residential portions of government-owned lands (local, State or federal). Because of the similarity of exposure potential and the sensitive nature of the potentially exposed human population, use for day care facilities, educational facilities, hospitals, and parks (local, State or federal) shall be considered residential land use for the purpose of land use classification.

(32) "Risk-based screening level" means chemical-specific, risk-based values for chemicals of concern that are protective of human health. The risk-based screening levels shall be as follows:

(a) For known or suspected carcinogens, except for those chemicals of concern that have groundwater standards or interim standards established in 15A NCAC 02L, risk-based screening levels shall be established for each chemical of concern at exposures that represent an individual excess lifetime cancer risk of one in 1,000,000.

(b) For systemic toxicants, except for those chemicals of concern that have groundwater standards or interim standards established in 15A NCAC 02L, risk-based screening levels shall be established using a hazard quotient for each chemical of concern of 0.2.

(c) For chemicals of concern in groundwater that have 15A NCAC 02L standards, the risk-based screening level shall be the standards and interim standards established in 15A NCAC 02L.

(33) "Site-specific target level" means risk-based values for chemicals of concern that are protective of human health for specified exposure pathways and are derived from a consideration of site-specific information. The site-specific target levels shall be consistent with the Department's risk-based corrective action standards under G.S. 130A-310.68.

(34) "Source" means non-aqueous phase liquid chemical, the locations of highest soil or ground water concentrations of the chemicals of concern, or the location releasing the chemical of concern.

(35) "Systemic toxicant" means a substance or agent that may enter the human body and have an adverse health effect other than causing cancer.

(36) "Unsaturated zone" means that part of the subsurface where interconnected voids are not all filled with water.

History Note: *Authority G.S. 143-215.104B; 143-215.104D(b);*
Eff. August 1, 2000;
Temporary Amendment Eff. June 1, 2001;
Amended Eff. October 1, 2007; August 1, 2002;
Readopted Eff. September 1, 2018.

15A NCAC 02S .0103 CALCULATION OF FULL TIME EQUIVALENT EMPLOYMENT

(a) This Rule governs the calculation of the number of full-time equivalent employees employed by a person who owns a dry-cleaning facility. For the purposes of this Rule, the person who owns the dry-cleaning facility shall be referred to as the "facility owner." If the dry-cleaning facility is jointly owned by more than one person, the full-time equivalent employment associated with the dry-cleaning facility shall be the number of full-time equivalent employees employed in activities related to dry-cleaning by all persons with an ownership interest in the dry-cleaning facility.

(b) The number of full-time employees employed by a facility owner in activities related to dry-cleaning operations shall be the sum of the following:

(1) The number of salaried employees employed by the facility owner in activities related to dry-cleaning operations;

(2) The total number of hours worked in the previous calendar year by non-salaried employees employed by the facility owner in activities related to dry-cleaning operations divided by 2080; and

(3) The lesser of:

(A) the number of persons who hold ownership interests in the dry-cleaning facility, but are not included in Subparagraphs (1) or (2) of this Rule, and who perform activities related to dry-cleaning operations at a dry-cleaning facility in which the persons have ownership interests; or

(B) the total number of hours worked by such persons divided by 2080.

(c) If a facility owner was not engaged in the operation of dry-cleaning facilities during the entire calendar year for which full-time equivalent employment is being calculated, then the number in Subparagraph (b)(2) of this Rule shall be prorated according to the number of weeks, or partial weeks, during the previous calendar year that the facility owner was engaged in the operation of such dry-cleaning facilities.

(d) For the purposes of this Section, an employee shall be considered to be employed in activities related to dry-cleaning operations if the employee's duties include any of the following activities:

(1) The provision of dry-cleaning or laundry services, including collecting, cleaning, pressing, altering, repairing, packaging, handling, or delivering of items of apparel or household fabrics for which dry-cleaning or laundry services are provided;

(2) The supervision of employees involved in the provision of dry-cleaning or laundry services as described in Subparagraph (d)(1) of this Rule;

(3) The maintenance or operation of physical facilities used to provide dry-cleaning or laundry services as described in Subparagraph (d)(1) of this Rule; or

(4) The management, including accounting, financial, human resource, or other support functions, of the business providing dry-cleaning or laundry services as described in Subparagraph (d)(1) of this Rule.

History Note: *Authority G.S. 143-215.104D(b); 150B-21.2;*
Temporary Adoption Eff. June 1, 2001;
Eff. August 1, 2002;
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. April 25, 2015.

SECTION .0200 – MINIMUM MANAGEMENT PRACTICES

15A NCAC 02S .0201 APPLICABILITY

The provisions contained in this Section set forth the minimum management practices for the storage and handling of dry-cleaning solvents required to be implemented at all dry-cleaning facilities, dry-cleaning solvent wholesale distribution facilities, and abandoned sites. The provisions contained in this Section are applicable only to owners and operators of dry-cleaning facilities, dry-cleaning solvent wholesale distribution facilities, and abandoned sites.

History Note: *Authority G.S. 143-215.104D(b);*
Eff. August 1, 2000;
Amended Eff. August 1, 2002;
Readopted Eff. September 1, 2018.

15A NCAC 02S .0202 REQUIRED MINIMUM MANAGEMENT PRACTICES

(a) No abandoned sites shall use underground storage tanks for solvents or waste.

(b) All dry-cleaning facilities and wholesale distribution facilities shall comply with the following minimum management practices:

(1) At no time shall any dry-cleaning solvent, wastes containing dry-cleaning solvent, or water containing dry-cleaning solvent be discharged onto land or into waters of the State, sanitary sewers, storm drains, floor drains, septic systems, boilers, or cooling- towers. All invoices generated as a result of disposal of all dry-cleaning solvent waste shall be made available for review upon request by the Department. If a dry-cleaning facility uses devices such as atomizers, evaporators, carbon filters, or other equipment for the treatment of wastewater containing solvent, all records, including invoices for the purchase, maintenance, and service of the devices, shall be made available upon request by the Department. Records shall be kept for a period of three years.

(2) Spill containment shall be installed and maintained under and around dry-cleaning machines, filters, dry-cleaning solvent pumps, stills, vapor adsorbers, solvent storage areas, and waste solvent storage areas. Spill containment shall have a volumetric capacity of 110 percent of the largest vessel, tank, or container within the spill containment area and shall be capable of preventing the release of the liquid dry-cleaning solvent beyond the spill containment area for a period of at least 72 hours. All floor drains within or beneath the spill containment area shall be removed or sealed with materials impervious to dry-cleaning solvents. Emergency adsorbent spill clean-up materials shall be on the premises. Facilities shall maintain an emergency response plan that is in compliance with federal, State and local requirements.

(3) All perchloroethylene dry-cleaning machines installed at a dry-cleaning facility after August 1, 2000, shall meet air emissions that equal or exceed the standards that apply to a comparable dry-to-dry perchloroethylene dry-cleaning machine with an integrated refrigerated condenser. All perchloroethylene dry-cleaning facilities shall be in compliance with the EPA Perchloroethylene Dry Cleaner NESHAP: 40 CFR, Part 63, Subpart M to be eligible for certification.

(4) Facilities that use perchloroethylene shall use a closed container solvent transfer system by January 1, 2002.

(5) No dry-cleaning facility shall use underground storage tanks for solvents or waste.

History Note: *Authority G.S. 143-215.104D(b);*
Eff. August 1, 2000;
Temporary Amendment Eff. June 1, 2001;
Amended Eff. August 1, 2002;
Readopted Eff. September 1, 2018.

SECTION .0300 - PETITIONS FOR CERTIFICATION

15A NCAC 02S .0301 FILING

(a) Any potentially responsible party petitioning for certification of a facility site shall file a petition with the Division using the DSCA Petitioner Questionnaire Form provided by the Division. The petition shall include a laboratory analysis demonstrating the presence of dry-cleaning solvent in environmental media at the discovery site. In addition to the requirements of G.S. 143-215.104F(b), the DSCA Petitioner Questionnaire Form shall include the following:

(1) petitioner contact information, their corporate status, and their relationship to the facility site;
(2) property owner contact information;
(3) location of the facility site;
(4) status of the facility; and
(5) facility size pursuant to 15A NCAC 02S .0103.

(b) Petition forms may be obtained from the Dry-Cleaning Solvent Cleanup Act Program of the Superfund Section of the Division at https://deq.nc.gov/about/divisions/waste-management/dry-cleaning-solvent-cleanup-act-program.

History Note: *Authority G.S. 143-215.104D(b); 143-215.104F; 143-215.104G;*
Temporary Adoption Eff. June 1, 2001;
Eff. August 1, 2002;
Readopted Eff. September 1, 2018.

15A NCAC 02S .0302 OTHER POTENTIALLY RESPONSIBLE PARTIES

(a) After receiving a petition, the Division may notify other potentially responsible parties that a petition has been filed.

(b) The Division may request from any potentially responsible party that has not petitioned for certification of the facility site additional information concerning the dry-cleaning business, the discovery site, or the facility site. The Division may refuse to enter into an assessment or remediation agreement with any potentially responsible party that:

(1) Fails to provide within 60 days any additional information requested by the Division that is in the possession or control of the party, or
(2) Fails or refuses to cooperate in the assessment or remediation of the facility site or the discovery site.

The time for responding to requests for additional information described in this Rule shall be measured from the date a request for information is received by the potentially responsible party from whom the information is requested.

History Note: *Authority G.S. 143-215.104D(b); 150B-21.2;*
Temporary Adoption Eff. June 1, 2001;
Eff. August 1, 2002;
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. April 25, 2015.

SECTION .0500 – RISK-BASED CORRECTIVE ACTION

15A NCAC 02S .0501 PURPOSE AND APPLICABILITY

The purpose of this Section is to establish a risk-based corrective action approach for assessment and remediation of contamination at certified dry-cleaning facilities or abandoned sites. This Rule applies to risk-based corrective action undertaken pursuant to the terms of assessment and remediation agreements between petitioners and the Division.

History Note: *Authority G.S. 143-215.104D; 143-215.104H; 143-215.104I;*
Eff. September 1, 2007;
Readopted Eff. September 1, 2018.

15A NCAC 02S .0502 ABATEMENT OF IMMINENT HAZARD

If the Division determines from factors such as chemical concentrations, exposure pathways, and receptors that contamination or conditions at a site constitute an imminent hazard as defined in G.S. 143-215.104B(b)(16), the Division shall require the development and implementation of a plan to abate the imminent hazard. Actions taken to abate the imminent hazard may include alternate sources of drinking water, soil excavation, vapor mitigation, and well abandonment.

History Note: *Authority G.S. 143-215.104C; 143-215.104D; 143-215.104N;*
Eff. September 1, 2007;
Readopted Eff. September 1, 2018.

15A NCAC 02S .0503 PRIORITIZATION OF CERTIFIED FACILITIES AND SITES

(a) The Division shall determine the priority ranking of certified facilities and abandoned sites for the initiation and scheduling of assessment and remediation activities.
(b) The Division shall consider the following factors in determining the priority ranking of a facility or site:
- (1) proximity of contamination to public and private water supply wells and surface water;
- (2) existing or potential impacts to public and private water supply wells and surface water;
- (3) existing or potential vapors from contamination entering buildings and other structures;
- (4) existing or potential exposure to contaminated soils;
- (5) the degree of contamination in soil, groundwater, and surface water; and
- (6) any other factor relevant to the degree of harm or risk to public health and the environment posed by the existence or migration of contamination at the facility or site.

(c) The priority ranking of facilities and sites shall be revised annually to reflect updated information.

History Note: *Authority G.S. 143-215.104C; 143-215.104D;*
Eff. September 1, 2007;
Readopted Eff. September 1, 2018.

15A NCAC 02S .0504 CONTAMINATED SITE CHARACTERIZATION

(a) A site assessment shall describe:
- (1) The source, types and levels of contamination at the site;
- (2) Any immediate actions required to abate any imminent hazard to public health, safety, or welfare or the environment;
- (3) All receptors and exposure pathways;
- (4) The horizontal and vertical extent of soil and groundwater contamination;
- (5) The geology and hydrogeology of the contaminated site, and features influencing the movement, chemical, and physical character of the chemicals of concern;
- (6) The current and anticipated uses of property and groundwater at the site.

(b) The Division shall determine the scope of any assessment necessary to adequately characterize a site.

History Note: *Authority G.S. 143-215.104C; 143-215.104D; 150B-21.2;*
Eff. September 1, 2007;
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. April 25, 2015.

15A NCAC 02S .0505 PRELIMINARY SOURCE REMOVAL

The Division may authorize the performance of preliminary source removal at a site that does not present an imminent hazard as set forth in 15A NCAC 02S .0502 prior to approval of a remedial action plan if the Division determines that:

(1) The removal would eliminate or significantly reduce a continuing source of contamination at the site, thereby reducing the risk to public health and the environment;

(2) Current conditions at the site allow the removal to be conducted in a manner that will result in cost savings to the Fund; and

(3) There is sufficient money in the Fund to pay for the removal and funding is appropriate based on the relative priority of the site.

History Note: *Authority G.S. 143-215.104D(b)(3); 150B-21.2;*
Eff. September 1, 2007;
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. April 25, 2015.

15A NCAC 02S .0506 TIERED RISK ASSESSMENT

(a) A tiered risk assessment shall be conducted to establish risk-based screening levels or site-specific target levels for a site.

(b) A site conceptual model shall be developed including the following elements:

(1) the type and distribution of chemicals of concern;

(2) the geology and hydrogeology;

(3) an exposure model that identifies the receptors, including sensitive subgroups, and the exposure pathways; and

(4) land use classification as either residential or non-residential.

(c) Tier 1. A Tier 1 risk assessment is based on chemical-specific risk-based screening levels. The representative concentrations of chemicals of concern that exist at a site shall be compared to these risk-based screening levels for all complete and potentially complete exposure pathways. If the concentrations exceed the risk-based screening levels, the Division may require remediation of the site to risk-based screening levels or the performance of a Tier 2 risk assessment to establish site-specific target levels. Factors considered by the Division when determining if remediation or a Tier 2 assessment is warranted shall include:

(1) whether the assumptions on which the risk-based screening levels are based are representative of the site-specific conditions;

(2) whether the site-specific target levels developed under Tier 2 either are likely to be different than the risk-based screening levels or will modify remediation activities; or

(3) whether the cost of remediation to achieve risk-based screening levels will likely be greater than the cost of further tier evaluation and subsequent remediation.

(d) Tier 2. A Tier 2 assessment shall allow consideration of site-specific information in order to calculate site-specific target levels. This information includes the locations of actual points of exposure and points of demonstration as well as site-specific geologic, hydrogeologic, and contaminant fate and transport parameters. The representative concentrations of chemicals of concern that exist at a site shall be compared to these Tier 2 site-specific target levels for all complete and potentially complete exposure pathways. If the concentrations exceed the Tier 2 site-specific target levels, the Division may require remediation of the site to Tier 2 site-specific target levels or the performance of a Tier 3 risk assessment to establish alternative site-specific target levels. Factors considered by the Division when determining if remediation or a Tier 3 assessment is warranted shall include:

(1) whether the assumptions on which the Tier 2 site-specific target levels are based are representative of the site-specific conditions;

(2) whether the alternative site-specific target levels developed under Tier 3 either are likely to be different than the Tier 2 site-specific target levels or will modify remediation activities; or

(3) whether the cost of remediation to achieve Tier 2 site-specific target levels will likely be greater than the cost of further tier evaluation and subsequent remediation.

(e) Tier 3. A Tier 3 risk assessment shall allow consideration of additional site-specific and toxicological data in order to calculate alternative site-specific target levels. This data may include alternative, technically defensible toxicity factors, physical and chemical properties, site-specific exposure factors, and alternative fate and transport models. The representative concentrations of chemicals of concern that exist at a site shall be compared to these Tier 3 site-specific target levels for all complete and potentially complete exposure pathways. If the concentrations

exceed the Tier 3 site-specific target levels, the Division shall consider the results of the Tier 2 and Tier 3 assessments to determine the site-specific target levels.

(f) The determination of risk-based screening levels and site-specific target levels shall be based on the following assumptions and requirements:

(1) concentrations of chemicals of concern in soil shall not exceed Tier 1 residential risk-based screening levels on land classified as residential land use. Concentrations in soil may exceed Tier 1 residential risk-based screening levels on property containing both residential and non-residential land use if the ground-level uses are non-residential and the potential for exposure to contaminated soil has been eliminated;

(2) an ecological risk evaluation shall be conducted to determine the risk to plant and animal receptors and habitats;

(3) the most recent versions of the following references, in order of preference, shall be used to obtain the quantitative toxicity values necessary to calculate risk to identified receptors:

(A) Integrated Risk Information System (IRIS);

(B) provisional peer reviewed toxicity values (PPRTVs); and

(C) published health risk assessment data, and scientifically valid peer-reviewed published toxicological data;

(4) all current and probable future use of groundwater shall be protected. If groundwater has been contaminated or is likely to be contaminated, a point of exposure shall be established to quantitatively evaluate the groundwater use pathway. The point of exposure shall be established at the nearest to the source of the following locations:

(A) closest existing water supply well;

(B) likely nearest future location of a water supply well;

(C) hypothetical point of exposure located at a distance of 500 feet from the downgradient property boundary of the facility site; or

(D) hypothetical point of exposure located at a distance of 1000 feet downgradient from the source;

(5) for chemicals of concern for which there is a groundwater quality standard in 15A NCAC 02L, concentrations at the point of exposure shall not exceed the groundwater quality standards as specified in 15A NCAC 02L. For chemicals of concern for which there are no groundwater quality standards, concentrations at the point of exposure shall not exceed the risk-based screening levels or site-specific target levels for these chemicals of concern that assume ingestion based on domestic water use;

(6) concentrations of chemicals of concern shall be measured and evaluated at a point of demonstration well to ensure that concentrations are protective of any point of exposure;

(7) surface water is protected. The standards for surface water shall be the water quality standards in 15A NCAC 02B.

History Note: *Authority G.S. 143-215.104D;*
Eff. September 1, 2007;
Readopted Eff. September 1, 2018.

15A NCAC 02S .0507 REMEDIAL ACTION PLAN

(a) If the level of contamination of any chemical of concern exceeds risk-based screening levels or site-specific target levels, a remedial action plan shall be developed and implemented at the site.

(b) A remedial action plan shall be sufficient to meet the risk-based screening levels or site-specific target levels established for the site and shall include, if applicable:

(1) a summary of the results of all assessment and interim remedial activities conducted at the site;

(2) justification for the remediation method selected based on an analysis of each of the following factors:

(A) results from any pilot studies or bench tests;

(B) the remediation methods considered and why other alternatives were rejected;

(C) practical considerations in implementing the remediation, including ease of construction, site access, and required permits;

(D) operation and maintenance requirements;

(E) the risks and effectiveness of the proposed remediation including an evaluation of the type, degree, frequency, and duration of any post-remediation activity that may be required, including operation and maintenance, monitoring, inspection, reporting, and other activities necessary to protect public health or the environment;
(F) long-term reliability and feasibility of engineering and institutional controls;
(G) technical feasibility of the proposed method to reduce the concentrations of chemicals of concern at the site;
(H) estimated time required to achieve risk-based screening levels or site-specific target levels;
(I) cost-effectiveness of installation, operation and maintenance, when compared to other remediation alternatives; and
(J) community acceptance;

(3) an evaluation of the expected breakdown chemicals or by-products resulting from natural processes;
(4) a discussion of the proposed treatment or disposition of contaminated media that may be produced by the remediation system;
(5) an operation and maintenance plan and schedule for the remediation system;
(6) design drawings of the proposed remediation system;
(7) a groundwater monitoring plan to monitor plume stability and effectiveness of the remediation;
(8) a plan to evaluate the effectiveness of the remedial efforts and the achievement of risk-based screening levels or site-specific target levels;
(9) a plan that addresses the health and safety of nearby residential and business communities;
(10) a discussion of how the remedial action plan will protect ecological receptors;
(11) all required land-use restrictions and notices prepared in accordance with G.S. 143-215.104M and 15A NCAC 02S. 0508; and
(12) measures necessary to protect plant and animal receptors and habitats.

(c) Monitored natural attenuation of chemicals of concern may be approved as an acceptable remediation method, provided:

(1) all free product has been removed or controlled to the maximum extent practicable;
(2) contaminated soil is not present in the unsaturated zone above risk-based screening levels or site-specific target levels for the soil-to-groundwater pathway for the site unless it is demonstrated that the soil does not constitute a continuing source of contamination to groundwater at concentrations that pose a threat to human health, safety or the environment, and it is demonstrated that the rate of natural attenuation of chemicals of concern in groundwater exceeds the rate at which the chemicals of concern are leaching from the soil;
(3) the physical, chemical and biological characteristics of each chemical of concern and its by-products are conducive to degradation or attenuation under the site-specific conditions;
(4) the travel time and direction of migration of chemicals of concern can be predicted with reasonable certainty;
(5) available data shows an apparent or potential decrease in concentrations of chemicals of concern;
(6) the chemicals of concern will not migrate onto adjacent properties that are not served by an existing public water supply system, unless the owners have consented to the migration of chemicals of concern onto their property;
(7) if any of the chemicals of concern are expected to intercept surface waters, the groundwater discharge will not exceed the standards for surface water contained in 15A NCAC 02B .0200;
(8) all necessary access agreements needed to monitor groundwater quality have been or can be obtained; and
(9) a monitoring program, sufficient to track the degradation and attenuation of chemicals of concern and by-products within and down-gradient of the plume and detect chemicals of concern and by-products at least one year's travel time prior to their reaching any existing or foreseeable receptor, is developed and implemented. Analytical data collected during monitored natural attenuation shall be evaluated on an annual basis to determine if the annual rate of expected progress is being achieved.

(d) If the Division determines that it is technically impracticable to achieve a risk-based screening level or site-specific target level for a specific chemical of concern due to geological conditions, remediation technology limitations, site conditions, physical limitations, or other factors, the Division shall approve or modify the remedial

action plan to provide for the use of institutional controls, engineering controls, and long-term monitoring until the risk-based screening levels or site-specific target levels are met. Methods that may be used to demonstrate that remediation is technically impracticable include the following:

(1) a full-scale field demonstration consisting of an operating remediation system;
(2) a pilot study applying a remediation technology on a small portion of the contaminated site;
(3) predictive analyses or modeling that shows the potential for the migration and remediation of chemicals of concern to occur at the site;
(4) comparison of specific conditions at the subject site to those of similar sites in case studies or peer-reviewed and published research papers;
(5) a combination of the above methods; or
(6) other equivalent methods that demonstrate that remediation is technically impracticable.

History Note: *Authority G.S. 143-215.104D;*
Eff. September 1, 2007;
Readopted Eff. September 1, 2018.

15A NCAC 02S .0508 LAND-USE RESTRICTIONS

The Division, pursuant to the risk assessment procedures of 15A NCAC 02S .0506, may require the imposition, recordation, and enforcement of land-use restrictions pursuant to G.S. 143-215.104M.

History Note: *Authority G.S. 143-215.104D; 143-215.104M;*
Eff. September 1, 2007;
Readopted Eff. September 1, 2018.

15A NCAC 02S .0509 NO FURTHER ACTION CRITERIA

(a) A "No Further Action" notice documents the Division's decision that the site has been assessed and remediated, and that the site conditions pose no unacceptable risks as long as the recorded land-use restrictions are maintained. The Division shall issue a "No Further Action" notice if each of the following criteria is met:

(1) risk-based screening levels or site-specific target levels for each chemical of concern have been achieved, and, if applicable, plant and animal receptors and their habitats have been protected;
(2) monitoring of the groundwater plume for at least one year following a complete site characterization as described in 15A NCAC 02S .0504 shows that the plume is not expanding, and concentrations of chemicals of concern in groundwater exhibit a stable or decreasing trend based on all available data representative of the entirety of the groundwater plume; and
(3) all required land-use restrictions and notices pursuant to G.S. 143-215.104M have been filed in the office of the register of deeds of the county or counties in which the property described is located.

(b) The Division shall not issue a "No Further Action" notice if the Division has determined that it is technically impracticable pursuant to 15A NCAC 02S .0507 to remediate the site to risk-based screening levels or site-specific target levels.

(c) If site conditions change or additional information becomes available to the Division to indicate that the "No Further Action" notice no longer applies, the site poses an unacceptable risk to human health, safety, or the environment, or the land-use restrictions imposed in accordance with G.S. 143-215.104M are violated, the Division may rescind the "No Further Action" notice and require further remedial action at the site.

History Note: *Authority G.S. 143-215.104D; 143-215.104M;*
Eff. September 1, 2007;
Readopted Eff. September 1, 2018.