

## Chapter NR 716

## SITE INVESTIGATIONS

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Note: Corrections made under s. 13.93 (2m) (b) 7., Stats., Register, February, 1997, No. 494.

**NR 716.01 Purpose.** The purpose of this chapter is to ensure that site investigations provide the information necessary to define the nature, degree and extent of contamination, define the source or sources of contamination, determine whether any interim actions, remedial actions, or both are necessary at the site or facility, and allow a interim or remedial action option to be selected that complies with applicable environmental laws. Nothing in this chapter shall be construed to require plans or reports that are more detailed or complex than is justified by the known scope of contamination or the complexity of the site or facility. This chapter is adopted pursuant to ss. 227.11 (2), 287.03 (1) (a), 289.06, 292.11, 292.15 and 292.31, Stats.

Note: The following portions of 40 CFR part 280 have been included in the text of this chapter: portions of s. 280.34 (a) (3), portions of s. 280.63 (a) and (b) and s. 280.65 (b).

History: Cr. Register, April, 1994, No. 460, eff. 5-1-94; am. Register, February, 1996, No. 482, eff. 3-1-96.

**NR 716.02 Applicability.** (1) This chapter applies to all site investigations required under s. NR 716.05 and conducted by:

(a) The department under the authority of s. 292.11 or 292.31, Stats. In this chapter, where the term "responsible parties" appears, it shall be read to include "the department" where department-funded response action is being taken.

(b) Responsible parties at sites, facilities or portions of a site or facility that are subject to regulation under s. 292.11 or 292.31, Stats., regardless of whether there is direct involvement or oversight by the department.

Note: This chapter does not apply to site assessments undertaken for the sole purpose of gathering information prior to knowledge or discovery of contamination. However, upon the discovery of a discharge of a hazardous substance during a site assessment, s. 292.11, Stats., and ch. NR 706 require the responsible party to immediately notify the department of the discharge.

(c) Persons undertaking actions in order to obtain the liability exemption under s. 292.15, Stats. In this chapter, where the term "responsible parties" appears, it shall be read to include "the purchaser" or "person under contract with the purchaser" where an action is being taken to comply with s. 292.15, Stats.

(2) The department may exercise enforcement discretion on a case-by-case basis and choose to regulate a site, facility or a portion of a site or facility under only one of a number of potentially applicable statutory authorities. However, where overlapping restrictions or requirements apply, the more restrictive control. The department shall, after receipt of a request from the responsible parties, provide a letter indicating which regulatory program or programs the department considers to be applicable to a site or facility.

Note: Sites, facilities or portions of a site or facility that are subject to regulation under s. 292.11 or 292.31, Stats., may also be subject to regulation under other statutes, including the solid waste statutes in ch. 289, Stats., or the hazardous waste management act, ch. 291, Stats.; and the administrative rules adopted pursuant to those statutes. One portion of a site or facility may be regulated under a different statutory authority than other portions of that site or facility. Persons who wish to conduct response actions that will meet the requirements of CERCLA and the NCP may request that the department enter into a contract with them pursuant to s. 292.31, Stats. However, a CERCLA-quality response action will likely require compliance with

additional requirements beyond those contained in chs. NR 700 to 726 in order to satisfy CERCLA and the NCP.

History: Cr. Register, April, 1994, No. 460, eff. 5-1-94; cr. (1) (c), Register, February, 1996, No. 482, eff. 3-1-96.

**NR 716.03 Definitions.** In this chapter:

(1) "Batch of samples" means a group of samples collected during one discrete sampling event and stored and transported in a single shipping container, regardless of the number of samples in the group.

(2) "Field blank" means a sample of water which, prior to use, is known to be free of contaminants, and which is processed through the sampling equipment in the field in the same manner as the actual water sample to determine if field procedures introduce contaminants into the samples. This is also known as a "rinse blank."

(3) "Immunoassay" means a test for the presence or concentration of a substance that relies on the reaction of one or more antibodies with the substance.

(4) "Investigative waste" means all solid and liquid wastes and contaminated environmental media resulting from activities conducted during a site investigation, immediate action, interim action, remedial action, or a monitoring or sampling event at a site or facility. Investigative wastes include soil from drill cuttings; drilling fluids; contaminated water from construction, purging, development and sampling of monitoring wells; and wash waters used during sampling or decontamination activities.

(5) "Lithologic" means based on the physical characteristics of a rock.

(6) "Piezometer" has the meaning specified in s. NR 141.05 (30).

Note: Section NR 141.05 (30) defines "piezometer" as "a groundwater monitoring well, sealed below the water table, installed for the specific purpose of determining either the elevation of the potentiometric surface or the physical, chemical, biological or radiological properties of groundwater at some point within the saturated zone or both."

(7) "Potentiometric surface" has the meaning specified in s. NR 141.05 (31).

Note: Section NR 141.05 (31) defines "potentiometric surface" to mean "an imaginary surface representing the total head of groundwater and is the level to which water will rise in a well."

(8) "Replicate sample" has the meaning specified in s. NR 149.03 (27).

Note: Section NR 149.03 (27) defines "replicate sample" to mean "equal aliquots taken from the same sampling location and analyzed independently for the same constituent." This is also known as a "duplicate."

(9) "Temperature blank" means a water sample which undergoes the same cooling procedure used for the samples for analysis, but which is only checked to determine the temperature of the samples upon arrival at the laboratory.

(10) "Trip blank" has the meaning specified in s. NR 149.03 (32).

Note: Section NR 149.03 (32) defines "trip blank" to mean "a sample of reagent grade water which is used to determine possible contamination of samples from volatile organic chemicals while in transit to and from the laboratory."

(11) "Water table observation well" has the meaning specified in s. NR 141.05 (46).

Note: Section NR 141.05 (46) defines "water table observation well" to mean "any groundwater monitoring well, in which the screen or open borehole intersects a water table, which is installed for the specific purpose of determining either the elevation of the water table or the physical, chemical, biological or radiological properties of groundwater at the water table or both."

History: Cr. Register, April, 1994, No. 460, eff. 5-1-94; correction in (10) made under s. 13.93 (2m) (b) 7., Stats., Register, January, 2001, No. 541.

**NR 716.05 General.** (1) Responsible parties shall conduct a site investigation that meets the requirements of this chapter and s. NR 746.05, for discharges of petroleum products from petroleum storage tanks, when site-specific or facility-specific information indicates that soil, sediment, groundwater, surface water, air or other environmental media at a site or facility may have become contaminated. Unless sub. (2) is applicable, responsible parties shall use the factors in s. NR 708.09 (1) (a) through (n) and (2) (a) through (c) to determine whether or not a site investigation is necessary.

(2) A site investigation is not required of the responsible parties at a site or facility, if:

(a) After notification to the department of a hazardous substance discharge in accordance with ch. NR 706, the department determines that no further action is required of the responsible parties, based on the factors in s. NR 708.09 (1) and (2).

(b) After completion of an immediate action, the department determines that no further action is required of the responsible parties, based on the factors in s. NR 708.09 (1) and (2).

Note: Department guidance on conducting site investigations is available. The publications *Guidance for Conducting Environmental Response Actions and Leaking Underground Storage Tank Analytical Guidance* may be obtained by contacting the Bureau of Remediation and Redevelopment, Public Information Requests, P.O. Box 7921, Madison, WI 53707.

History: Cr. Register, April, 1994, No. 460, eff. 5-1-94; am. (2) (a), Register, February, 1997, No. 494, eff. 3-1-97; emerg. am. (1), eff. 5-18-00; am. (1), Register, January, 2001, No. 541, eff. 2-1-01; correction in (1) made under s. 13.93 (2m) (b) 7., Stats., Register, January, 2001, No. 541.

**NR 716.07 Site investigation scoping.** Prior to conducting the field component of a site investigation required under s. NR 716.05, responsible parties shall evaluate all of the following relevant items, considering the location of the site or facility, to ensure that the scope and detail of the field investigation are appropriate to the complexity of the site or facility:

(1) History of the site or facility, including industrial, commercial or other land uses that may have been associated with one or more hazardous substance discharges at the site or facility.

(2) Knowledge of the type of contamination and the amount of the contamination.

(3) History of previous hazardous substance discharges or environmental pollution.

(4) Environmental media affected or potentially affected by the contamination.

(5) Location of the site or facility, and its proximity to other sources of contamination.

(6) Need for permission from property owners to allow access to the site or facility and to adjacent or nearby properties.

(7) Potential or known impacts to receptors, including public and private water supplies; buildings and other cultural features; and utilities or other subsurface improvements. This evaluation shall include mapping the location of all water supply wells within a 1,200-foot radius of the outermost edge of contamination.

(8) Potential for impacts to any of the following:

(b) Species, habitat or ecosystems sensitive to the contamination.

(c) Wetlands, especially those in areas of special natural resource interest as designated in s. NR 103.04.

(d) Outstanding resource waters and exceptional resource waters as defined in ss. NR 102.10 and 102.11.

(e) Sites or facilities of historical or archaeological significance.

(9) Potential interim and remedial actions applicable to the site or facility and the contamination.

(10) Immediate or interim actions already taken or in progress, including any evaluations made of whether an interim action is needed at the site or facility.

(11) Any other items, including climatological conditions and background water or soil quality information, that may affect the scope or conduct of the site investigation.

(12) The need to gather data to determine the hydraulic conductivity of materials where contaminated groundwater is found and, for sites with petroleum-product contamination discharged from a petroleum storage tank, to determine whether the site satisfies the risk screening criteria in s. NR 746.06 and the closure criteria in s. NR 746.07 or 746.08.

History: Cr. Register, April, 1994, No. 460, eff. 5-1-94; emerg. cr. (12), eff. 5-18-00; cr. (12), Register, January, 2001, No. 541, eff. 2-1-01.

**NR 716.09 Site Investigation work plan.** (1) GENERAL. Unless otherwise directed by the department, in cases where a site investigation is required under s. NR 716.05, responsible parties shall submit a work plan to the department describing the intended scope and conduct of a field investigation if the site or facility is classified as complex under s. NR 700.09 (2) or if the responsible party chooses to proceed with the complex site process under s. NR 700.11 (2).

(2) CONTENTS. The work plan shall include all of the following information, unless otherwise directed by the department:

(a) Site name, address, and location by quarter-quarter section, township, range and county, or a more precise location description if necessary to adequately define the location of the site or facility.

(b) Name and address of the responsible party or parties, and name and address of all consultants or contractors involved in the response action.

(c) Site location map, consisting of the applicable portion of a 1:24,000-scale topographic quadrangle published by the United States geological survey with the name of the quadrangle indicated, and a site layout map to approximate scale depicting the layout of buildings, roads, discharge location and other relevant features of the site.

(d) Information gathered during scoping of the project, including the applicable items in s. NR 716.07.

(e) Basic information on the physiographical and geological setting of the site necessary to choose sampling methods and locations, including:

1. The existing topography, including prominent topographic features.

2. The surface water drainage patterns and significant hydrologic features, such as surface waters, springs, surface water drainage basins, divides, wetlands and whether the site lies within a floodplain or floodway.

3. Texture and classification of surficial soils.

4. General nature and distribution of geologic materials, including the thickness and type of unconsolidated materials and the type and nature of bedrock.

5. General hydrogeologic information.

6. Potential hazardous substance migration pathways.

(f) Sampling and analysis strategy to be used during the field investigation, including:

1. A description of the investigative techniques to be used to characterize the site or facility.

2. Identification on a site layout map of the locations, both planimetric and vertical, from which samples of environmental media will be obtained. Where locations cannot be specified in advance, the work plan shall include a description of the strategy to be used for determining these locations in the field.

3. A description of sampling methods to be used, including methods for preserving and delivering samples.

4. An itemization of the parameters for which samples will be analyzed, as well as the analytical methods to be used and their method detection limits.

5. A description of quality control and quality assurance procedures to be used, including the items specified in s. NR 716.13.

6. A description of the procedures to be used to prevent cross-contamination among samples.

7. A description of the type of investigative wastes that will be generated during the site investigation and how they will be collected, stored, transported and treated or disposed of.

8. A discussion of how the sampling and analysis results will be related to results of any previous investigations at the site or facility, and how the results will be used to determine the degree and extent of the contamination and the selection of a remedial action option including, where appropriate, natural biodegradation.

(g) A description of other procedures to be used for site management, including erosion control and repair of soil or ground disturbance.

(h) A schedule for conducting the field investigation and reporting the results to the department.

**(3) DEPARTMENT REVIEW OF SUBMITTED WORK PLANS.** (a) The department may instruct responsible parties to proceed without departmental review of work plans submitted under this section.

(b) Responsible parties that are not instructed to proceed under par. (a) shall wait before initiating the field investigation until the department has approved or conditionally approved the work plan, except that if the department has not reviewed the work plan within 60 days after its receipt by the department, the responsible parties may proceed with the field investigation.

(c) If the department disapproves a work plan submitted under this section, the department shall provide to the responsible parties, in writing, the basis for disapproval and a deadline for providing a revised work plan.

(d) The lack of a response from the department, after the department's receipt of a work plan, may not be construed to mean that the department has approved the work plan.

History: Cr. Register, April, 1994, No. 460, eff. 5-1-94; r. and recr. (1), r. (3) (c), Register, April, 1995, No. 472, eff. 5-1-95.

**NR 716.11 Field Investigation.** (1) Responsible parties shall conduct a field investigation as part of each site investigation required under this chapter, unless the department directs otherwise.

(2) The field investigation shall be conducted in accordance with a work plan approved or conditionally approved by the department, unless the department has directed the responsible parties to proceed with a field investigation without department review of the investigation work plan.

(3) The purposes of the field investigation shall be to:

(a) Determine the nature, degree and extent, both areal and vertical, of the hazardous substances or environmental pollution in all affected media.

(b) Provide sufficient information to permit evaluation of interim options pursuant to ch. NR 708, and remedial action options pursuant to ch. NR 722, and to permit a determination to be made regarding whether any of the interim or remedial action options require a treatability study or other pilot-scale study.

(c) Provide sufficient information to determine the hydraulic conductivity of materials where contaminated groundwater is found and, for sites with petroleum-product contamination discharged from a petroleum storage tank, determine whether the site satisfies the risk screening criteria in s. NR 746.06 and the closure criteria in s. NR 746.07 or 746.08.

(4) Responsible parties shall extend the field investigation beyond the property boundaries of the source area as necessary to fully define the extent of the contamination. If the responsible parties are unable to complete the required investigation beyond the source property because a property owner refuses access, the responsible parties shall notify the department within 30 days of the refusal, and shall document in writing the efforts undertaken to gain access when requested by the department.

(5) The field investigation shall include an evaluation of all of the following items:

(a) Potential pathways for migration of the contamination, including drainage improvements, utility corridors, bedrock and permeable material or soil along which vapors, free product or contaminated water may flow.

(b) The impacts of the contamination upon receptors.

(c) The known or potential impacts of the contamination on any of the resources listed in s. NR 716.07 (8) that were identified during the scoping process as having the potential to be affected by the contamination.

(d) Surface and subsurface rock, soil and sediment characteristics, including physical, geochemical and biological properties that are likely to influence the type and rate of contaminant movement, or that are likely to affect the choice of a remedial action.

(6) Responsible parties shall manage investigative wastes in a manner that will not pose a threat to public health, safety or welfare or the environment, and which is consistent with state and federal regulations.

History: Cr. Register, April, 1994, No. 460, eff. 5-1-94; am. (3) (b), Register, April, 1995, No. 472, eff. 5-1-95; emerg. cr. (3) (c), am. (5) (a), eff. 5-18-00; cr. (3) (c), am. (5) (a), Register, January, 2001, No. 541, eff. 2-1-01.

#### **NR 716.13 Sampling and analysis requirements.**

(1) Responsible parties shall use laboratory analyses of environmental media samples which are collected, handled and analyzed in compliance with subs. (2) to (12) to confirm the nature and extent and evaluate the impacts of contamination, if a field investigation is required under s. NR 716.11 (1).

(2) Responsible parties shall ensure that drinking water samples are collected, handled and analyzed according to the procedures specified in ch. NR 809.

(3) Responsible parties shall ensure that samples other than drinking water are collected, handled and analyzed according to the procedures specified in "SW-846: Test Methods for Evaluating Solid Waste", November 1986, including December 1987 and November 1990 updates, published by the U.S. EPA, unless the department approves the use of an alternative procedure. The department may approve the use of an alternative procedure from one of the authoritative sources listed in s. NR 149.03 (5), an alternate test procedure approved by the U.S. EPA, or, if the department determines that an appropriate procedure is neither available from "SW-846: Test Methods for Evaluating Solid Waste" nor from one of the authoritative sources listed in s. NR 149.03 (5), from another source.

Note: Copies of "SW-846: Test Methods for Evaluating Solid Waste" are available for inspection at the offices of the department of natural resources, the secretary of state, and the revisor of statutes. Copies may be obtained from the Government Printing Office, Room 190, Federal Building, 517 East Wisconsin Avenue, Milwaukee, WI 53202.

(4) All chemical and physical analyses for which a certification or registration test category is available under ch. NR 149 shall be conducted by a laboratory certified under ch. NR 149 for that test category.

(5) Responsible parties may use non-laboratory methods of sample analysis, including field screening with a photoionization detector or flame ionization detector, analysis with a field gas chromatograph, geophysical or downhole probe surveying, non-certified mobile laboratory analysis, immunoassays and other appropriate methods, to supplement the information derived from laboratory analysis of samples. If non-laboratory methods are used at a location from which a laboratory sample is collected,

responsible parties shall use separate samples for the non-laboratory and the laboratory analyses, unless the target compound is not subject to loss or alteration through sample handling.

(6) All soil samples obtained during the field investigation for the purpose of defining the degree and extent of the contamination shall be discrete, not composite, samples, unless the department explicitly approves in advance composite sampling for a specific site situation.

(7) Responsible parties shall inspect monitoring wells installed for field investigations conducted under this chapter at least annually to determine whether they are providing a conduit to the subsurface, and shall take action to repair or abandon the well if necessary in accordance with ch. NR 141.

(8) Responsible parties shall measure and record to the nearest 0.01 foot the static water level elevation in each groundwater monitoring well prior to obtaining a groundwater sample from the well. The measurement point shall be the top of the well casing and shall be identified on the well itself if the top of the casing is not level.

(9) Where site investigation data or other information indicate it is appropriate, or when directed to do so by the department, responsible parties shall make a good faith effort to sample public or private water supply wells as part of a regular monitoring program or to determine the extent of groundwater contamination, or both. Responsible parties shall report all water supply well sampling results to the department within 10 days after receiving the sampling results. The report shall include a preliminary analysis of the cause and significance of any contaminant concentrations observed in the samples and an identification of any substances that attain or exceed ch. NR 140 preventive action limits, as well as any other substances observed in the samples for which there are no ch. NR 140 groundwater quality standards. Private and public water supply wells to be sampled shall include:

(a) Those wells that are known or suspected to be affected by the groundwater contamination.

(b) Other wells that the department determines have the potential to be affected by the groundwater contamination.

(10) If the responsible parties are unable to sample a public or private well because the property owner refuses access, the responsible parties shall notify the department within 30 days of the refusal, and shall document in writing the efforts undertaken to gain access when requested by the department.

(11) Responsible parties shall provide for the following quality control and quality assurance procedures, at a minimum, when collecting samples for laboratory analysis for a field investigation conducted under this chapter:

(a) Chain of custody, which shall be documented in a format specified by the department, from the time of sample collection to the receipt of the sample by the analytical laboratory.

Note: Copies of the chain-of-custody format may be obtained from Public Information Requests, Bureau of Remediation and Redevelopment, 101 S. Webster Street, P.O. Box 7921, Madison, WI 53707.

(b) For soil samples, one temperature blank for every batch of samples that require cooling for preservation, unless samples are received by the laboratory on ice and a temperature of no greater than 4°C is maintained until their receipt by the laboratory.

(c) For water samples:

1. One replicate sample for every 10 or less samples.

2. One field blank for every 10 or less samples.

3. One trip blank for each batch of samples that will be analyzed for volatile organic chemicals.

4. One temperature blank for every batch of samples that require cooling for preservation, unless samples are shipped on ice and a temperature of no greater than 4°C is maintained until their receipt by the laboratory.

(d) Decontamination of all sampling instruments between each sampling event, unless dedicated or disposable sampling

devices are used in a manner that prevents cross contamination or other unintended contamination of samples.

(12) Responsible parties shall ensure that the following items are documented during the field investigation and are made available to the department upon request:

(a) Procedures for sampling and all other routine activities associated with the site investigation.

(b) A log of all routine and nonroutine maintenance and calibrations performed on all instruments used during the field investigation.

(c) Field notes describing in detail the sequence of activities that took place during the field investigation.

History: Cr. Register, April, 1994, No. 460, eff. 5-1-94.

**NR 716.15 Site investigation report.** (1) **REPORT REQUIREMENT.** (a) *Simple site.* Unless otherwise directed by the department, responsible parties shall include the site investigation report information with the final report and accompanying compliance letter for the response action in accordance with s. NR 700.11 (1)(b), if the site or facility meets the criteria for a simple site classification, in s. NR 700.09(1).

(b) *Complex site.* If, however, the site or facility is classified as a complex site in accordance with s. NR 700.09 (2) or if the responsible party chooses to proceed with the complex site process, responsible parties shall submit:

1. A site investigation report to the department within 30 days after completion of the report unless the site is exempt under s. NR 700.11 (2)(e), in which case site investigation data are required to be submitted with the site closure request.

2. A draft remedial options report meeting the requirements of ch. NR 722 within 30 days after completion of the report unless the site is exempt under s. NR 700.11 (2)(f), in which case the submittal of a remedial action options report is not required unless requested.

(2) **REPORT CONTENTS.** The site investigation report shall include all of the following:

(a) *Cover letter.* A letter referencing the department's identification number for the site or facility and stating the purpose of the submittal and the desired department action or response.

(b) *Number of copies.* Unless otherwise directed by the department, 2 copies of the plan or report.

(c) *Executive summary.* A brief narrative describing the site investigation results, conclusions and recommendations for future actions.

(d) *General information.* 1. Project title and purpose.

2. Name, address and telephone number of the present property owner, lessee, operator and any individual or company responsible for the contamination.

3. Name, address and telephone number of any consultants or contractors involved with the response action at the site or facility.

4. Site or facility name, address and location by quarter-quarter section, township, range and county. The location of the property and the contamination shall be given in sufficient detail to allow department personnel to inspect the property and the contaminated area.

Note: Additional requirements for reporting locations of monitoring wells are contained in ch. NR 141.

5. Location map which meets the requirements of par. (h) 1.

6. In addition to any other site layout maps, one site layout map which depicts the site's property boundaries, named and unnamed roads or access points, surface water features, underground utilities, buildings, public and private wells, land uses on adjacent properties and known and potential hazardous substance sources.

(e) *Background information.* Descriptions of the following:

1. Activities or events at or near the site or facility which had the potential to affect public health, safety or welfare or the environment, including time, duration, type and amounts of hazardous substance discharges.

2. Any previous discharges or response actions and the relevant dates.

3. Response action activities to date, with references to any previous reports concerning response action activities on the site or facility.

4. Any other information relevant to the response action.

(f) *Methods of investigation.* Descriptions of investigative techniques used to characterize the site or facility, including subsurface boring and probe methods; monitoring well construction, installation and development procedures; well and aquifer testing methods; modeling techniques; and sample collection, handling and analysis techniques. Where procedures were performed in accordance with methods described in a work plan for the same investigation that was previously submitted to the department or in exact accordance with published departmental guidance, the site investigation report may omit detailed descriptions by referring to the work plan or the department guidance in which the methods were described.

(g) *Results.* A detailed description of the results of the site investigation, including all of the following:

1. The information collected during the scoping stage of the investigation conducted pursuant to s. NR 716.07.

2. A description of the sequence of activities that took place during the site investigation.

3. All field measurements, observations, and sampling data generated during the site investigation, including data from non-laboratory sample analyses. Laboratory data shall include laboratory name, location from which each sample was obtained, date each sample was obtained, date each sample was extracted and analyzed, analytical method used by the laboratory, parameters tested for, the method detection limit, the analytical result for each sample, and whether other compounds not specifically tested for were observed in significant quantities. Relevant and significant sample results and field measurements shall be compiled in tabular form and at corresponding sampling locations noted on a site layout map.

4. Where laboratory results are significantly inconsistent with field observations or non-laboratory method results, a clear evaluation of the reason for the inconsistency and an indication of whether resampling or additional quality control procedures are needed.

5. For sites or facilities with 3 or more water table observation wells, a map depicting the elevation of the water table and the apparent direction of groundwater flow, with additional water table maps as necessary to depict significant variations in water table elevation or groundwater flow direction.

6. For sites or facilities with 2 or more soil borings, a geologic cross section depicting the stratigraphy of the site.

7. Isoconcentration maps of hazardous substance concentrations in each environmental medium, as appropriate to the scope and complexity of the site and where sufficient data are available to estimate meaningful isoconcentrations.

8. Interpretations of the data generated at the site or facility sufficient to characterize the geologic and hydrogeologic characteristics of the site or facility, the areal and vertical degree and extent of hazardous substances in all environmental media, and the impacts of the contamination to all potential receptors.

9. The hydraulic conductivity of materials where contaminated groundwater is found and, for sites with petroleum-product contamination discharged from a petroleum storage tank, interpretations of data necessary to determine whether the site satisfies all of the risk screening criteria in s. NR 746.06 and the closure criteria in s. NR 746.07 or 746.08.

(h) *Visual aids.* Maps, figures, tables and photographs that are necessary to clarify and support results and interpretations. Visual aids shall present information in legible formats, shall be referenced in the report text, and shall meet all of the following requirements:

1. Maps, plan sheets, drawings, cross sections and fence diagrams shall:

a. Be of appropriate scale to show all required details with sufficient clarity.

b. Have a figure number, title, north arrow, legend of all symbols used, contain horizontal and vertical scales, specify drafting or origination dates and indicate the source if not an original design.

c. Use national geodetic survey data as the basis for all elevations.

d. Use a distinguishing symbol, such as a dashed line or question mark, to depict inferred or questionable data.

e. For water table maps and potentiometric surface maps, depict water level elevations measured on the same day, indicate the date of measurement on the map, and indicate apparent flow direction. For potentiometric surface maps, additionally depict measurements taken from piezometers with similar screen lengths that intersect the same geologic zone and depth, and indicate any vertical gradients as well as the location and type of any confining layers.

f. For isoconcentration maps, depict hazardous substance concentrations and indicate the hazardous substance, the environmental medium, the date measured and the unit of measurement.

2. Cross sections shall include a reduced inset diagram of the site layout map indicating the location of the cross-section transect, and shall indicate the dates of measurements, stratigraphy, screened intervals of monitoring wells and water table surface.

3. Tables shall meet all of the following requirements:

a. Have a table number, title and an explanation of any footnotes marked in the body of the table.

b. Include units of measurement when displaying measured data. When an environmental standard exists for the contaminant, the unit of measurement shall be the same as that used by the department to express the environmental standard.

c. Indicate measurement or sample collection date when displaying measured data or data derived from sampling.

d. Indicate which results equal or exceed environmental standards when displaying analytical results of tests on environmental media for which standards exist.

4. Photographs shall be in color, of sufficient size to clearly represent the purpose of the photograph, and shall be accompanied by the date, orientation and topic.

(i) *Well and borehole documentation.* All of the following department forms, shall be used, where applicable to the site or facility:

1. 4400-89, groundwater monitoring well information.

2. 4400-113A, monitoring well construction.

3. 4400-113B, monitoring well development.

4. 4400-122, soil boring log information.

5. 3300-5B, well/drillhole/borehole abandonment.

Note: Copies of these well and borehole documentation forms may be obtained from the Bureau of Remediation and Redevelopment, Public Information Requests, P.O. Box 7921, Madison, WI 53707.

(j) *Conclusions and recommendations.* A summary of the results from the site investigation, and recommendations for further response actions necessary to protect public health, safety and welfare and the environment, and to meet the requirements of chs. NR 700 to 726.

History: Cr. Register, April, 1994, No. 460, eff. 5-1-94; r. and recr. (1), r. (2), renun. (3) to be (2), Register, April, 1995, No. 472, eff. 5-1-95; emerg. am. (1), cr. (2) (g) 9., eff. 5-18-00; r. and recr. (1), cr. (2) (g) 9., Register, January, 2001, No. 541, eff. 2-1-01.

**NR 716.17 Additional requirements.** (1) When warranted by the complexity of the site or facility or the severity of the actual or potential environmental or public health impacts which may be caused by the contamination, the department may impose additional site investigation requirements upon responsible parties beyond those specifically described in this chapter. The department shall communicate any additional investigation requirements to the responsible parties in writing and shall explain why the additional requirements are needed.

(2) The department may require that treatability studies be conducted as part of the site investigation, where appropriate for the purpose of demonstrating that an interim action or remedial option will meet the remedy selection criteria in ch. NR 708 or 722.

(3) When a site investigation conducted under this chapter indicates that an immediate, interim or remedial action is necessary, the responsible parties shall identify, evaluate and select an immediate or interim action in accordance with ch. NR 708 or a remedial action in accordance with ch. NR 722.

(4) When a site investigation conducted under this chapter indicates that, based on the criteria in s. NR 726.05 (1), no further action is necessary to protect public health, safety or welfare or the environment, the responsible parties may request that the department close the case in accordance with ch. NR 726.

History: Cr. Register, April, 1994, No. 460, eff. 5-1-94; am. (2) and (3), Register, April, 1995, No. 472, eff. 5-1-95.