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[New Hampshire Code of Administrative Rules](#)
[Env-Ws 388](#)

Adopt Env-Ws 388 to read as follows:

PART ENV-WS 388 MAJOR GROUNDWATER WITHDRAWAL

Env-Ws 388.01 Purpose. The purpose of these rules is to implement RSA 485:3 and RSA 485-C by:

- (a) Establishing criteria for designating a major withdrawal;
- (b) Establishing permitting procedures and requirements for a major withdrawal;
- (c) Establishing procedures and criteria for ensuring water conservation and identifying the need for a major withdrawal;
- (d) Establishing procedures and criteria for identifying and addressing impacts which occur as a result of a permitted major withdrawal; and
- (e) Establishing procedures and standards for the denial of or reduction in a major withdrawal.

Env-Ws 388.02 Definitions.

- (a) "Available water" means the arithmetic difference between water supply and demand.
- (b) "Bottled water" means water that is placed in a sealed container or packaged and is offered for sale for human consumption or other consumer uses as defined in He-P 2100.
- (c) "Community water system" means "community water system" as defined in RSA 485:1-a, I, namely "a public water system which services at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents."
- (d) "Conceptual hydrologic model" means a working hypothesis describing each component of the hydrologic regime.
- (e) "Cone of depression" means a depression in the potentiometric surface of a body of groundwater that has the general shape of an inverted cone and develops around a well from which water is being withdrawn.
- (f) "Department" means the department of environmental services.

(g) "Downgradient area" means the area where water taken by the withdrawal would flow if the withdrawal did not operate.

(h) "Groundwater" means "groundwater" as defined in RSA 485:C:2, VIII namely, "subsurface water that occurs beneath the water table in soil and geologic formations."

(i) "Hydrologic cycle" means the pathways along which water moves through the environment.

(j) "Hydrology" means the occurrences, movement, and chemical nature of water in the natural environment.

(k) "Large production well" means a wellhead that produces 57,600 gallons or more per 24-hours for a community water system.

(l) "Large withdrawal" means any year-round or seasonal withdrawal of groundwater from a wellhead installed after July 1998, not associated with a temporary short-term use such as contaminated site remediation or construction de-watering, and where the maximum 24-hour withdrawal is 57,600 gallons or more.

(m) "Permitted withdrawal" means a large withdrawal permitted under these rules.

(n) "Potentiometric surface" means the surface where groundwater pressure is equal to atmospheric pressure.

(o) "Public water system" means "public water system" as defined by RSA 485:1-a,XV, namely "a system for the provision to the public of piped water for human consumption, if such systems has at least fifteen service connections or regularly serves an average of at least twenty-five individuals daily at least 60 days of the year."

(p) "Recharge area" means the land surface from which water reaching a location or region originates.

(q) "Registered water user" means any water user who is required to register and report water usage in accordance with Env-Wr 700, that is, all withdrawals over 20,000 gallons per day for any purpose.

(r) "Replacement well" means a new source installed to replace an existing source that operates and impacts water resources in the same manner as the well that is being replaced.

(s) "Short term use" means the one time occurrence of a withdrawal at a specific geographical location over a period of one year or less, except for contaminated site remediation, where the duration of the withdrawal extends for the time necessary to complete the objectives of the remediation.

(t) "Stream reach" means a section of a stream, river, or other water course.

(u) "Surface water" means "surface waters of the state" as defined in RSA 485-A:2 and waters of the United States as defined in 40 CFR 122.2.

(v) "Water well board" means the board that regulates the construction of water wells under We 100-1000, as authorized under RSA 482-B.

(w) "Water related natural resource" means a natural resource that is dependent on water.

(x) "Well" means "well" as defined in RSA 485-C:2, XVII, namely "a hole or shaft sunk into the earth to observe, sample, or withdraw groundwater."

(y) "Wellhead" means the conveyance or conveyances through which, and location where, groundwater reaches the land surface such as the well casing, wellfield collector, or spring collection box.

(z) "Wetland" means an area that is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal conditions does support, a prevalence of vegetation typically adapted for life in saturated soil conditions as defined by Wt 101.88. Wetlands include, but are not limited to, swamps, marshes, bogs and similar areas.

(aa) "Withdrawal" means the removal of groundwater for any purpose.

Env-Ws 388.03 Major Withdrawal Designation Criteria. A large withdrawal shall be designated a major withdrawal when:

(a) The maximum average day withdrawal in a 30 day period is 144,000 gallons per day or more; and

(b) The maximum, 24-hour withdrawal is 57,600 gallons per day or more, but the maximum average day withdrawal in a 30 day period is less than 144,000 gallons per day and the department has denied, suspended, or revoked minor withdrawal designation under Env-Ws 387.

Env-Ws 388.04 Requirements for Major Withdrawals.

(a) Unless a large withdrawal for which the maximum 30-day average will be less than 144,000 gallons per day has been permitted as a minor groundwater withdrawal pursuant to Env-Ws 387, all entities shall obtain a major withdrawal permit in accordance with paragraph (c) below prior to starting a large withdrawal.

(b) Prior to starting a new withdrawal for which the maximum 30-day average will equal or exceed 144,000 gallons per day, all entities shall obtain a major withdrawal permit in accordance with paragraph (c) below.

(c) To obtain and maintain a permit to develop a new withdrawal, the applicant shall complete the following process:

- (1) Demonstrate the need for the withdrawal by completing a conservation management plan and description of need in accordance with Env-Ws 388.05;
- (2) Develop a conceptual hydrologic model of the withdrawal in accordance with Env-Ws 388.06;
- (3) Complete a preliminary water resource and use inventory in accordance with Env-Ws 388.07;
- (4) Estimate the effects of the withdrawal on water resources and uses in accordance with Env-Ws 388.08;
- (5) Design a withdrawal testing program in accordance with Env-Ws 388.09;
- (6) Submit a major withdrawal permit application in accordance with Env-Ws 388.10;
- (7) Perform public notification in accordance with Env-Ws 388.11;
- (8) If desired, request and attend a pre-testing conference with the department in accordance with Env-Ws 388.12;
- (9) Complete withdrawal testing in accordance with Env-Ws 388.13;
- (10) Refine the conceptual hydrologic model and study area for the withdrawal in accordance with Env-Ws 388.14;
- (11) Update and revise the inventory of water resources and uses based on testing results in accordance with Env-Ws 388.15;
- (12) Describe impacts to water resources and uses in accordance with Env-Ws 388.16;
- (13) Submit a report completed in accordance with Env-Ws 388.17;

(14) When observations under operating conditions are necessary to validate test results and verify that adverse impacts will not occur, the applicant shall develop and obtain approval of an impact monitoring and reporting program in accordance with Env-Ws 388.20;

(15) When an adverse impact as identified in Env-Ws 388.18 is anticipated to occur as a result of the withdrawal, the applicant or permittee shall complete the following:

a. Reduce the proposed production volume of the withdrawal in accordance with Env-Ws 388.14(b) to a level where no adverse impacts are anticipated; or

b. Design and implement mitigation measures in accordance with Env-Ws 388.21;

(16) When an adverse impact occurs as identified in Env-Ws 388.18 as a result of the withdrawal design and implement mitigation measures in accordance with Env-Ws 388.21; and

(17) Maintain the conditions of the written permit issued by the department by completing the following activities as required by stipulations in the permit or as otherwise required by Env-Ws 388:

a. Implement an impact monitoring and reporting program in accordance with Env-Ws 388.20;

b. Implement impact mitigation in accordance with Env-Ws 388.21;

c. Implement any additional permit conditions established by the department necessary to ensure that adverse impacts do not occur;

d. Notify the department in writing within 30 days of any change in ownership or address;

e. Submit an application for permit renewal in accordance with Env-Ws 388.26 90 days prior to the date of permit expiration; and

f. Continuously meter all withdrawals and report the withdrawal volumes in accordance with requirements of the permit.

(d) Where a change in permit conditions is desired, the permittee shall request modification of the permit in accordance with Env-Ws 388.25.

(e) The permittee shall comply with any modifications to the permit made by the department in accordance with Env-Ws 388.25.

(f) Where data available to the department reveals that major withdrawal requirements are not being, or cannot be met, the department shall suspend the major withdrawal permit in accordance with Env-Ws 388.23.

(g) All information submitted as part of the designation request that is material to the final decision of the department on the permit application shall be:

- (1) True;
- (2) Complete; and
- (3) Not misleading.

Env-Ws 388.05 Conservation Management Plan and Description of Need.

(a) The applicant shall prepare a water conservation management plan and description of need to demonstrate the efficient use of, and need for, the proposed withdrawal in the permit application completed in accordance with Env-Ws 388.10 for the 10 year duration of the permit that may be issued pursuant to Env-Ws 388.23.

(b) The conservation management plan and description of need shall be presented in the application completed in accordance with Env-Ws 388.10 for a major withdrawal permit.

(c) The plan shall identify:

- (1) Other water sources currently used by the applicant;
- (2) Anticipated demand for water including maximum, minimum, and average rates and durations;
- (3) Factors that control water demand such as:
 - a. Consumer choice;
 - b. Delivery contracts;
 - c. Manufacturing runs;
 - d. Seasonal occupancy; and
 - e. Precipitation;

(4) Projected growth in the demand for water and a description of the factors that control the growth in demand for water;

(5) Alternative sources of water;

(6) The ability to store water to reduce peak withdrawals; and

(7) The volume of water needed versus the number of and type of institutions either served by the water, or number of items produced or manufactured with the water.

(d) The plan shall contain an analysis of water conservation measures including the following:

(1) A description of measures being implemented to conserve water;

(2) A discussion of the feasibility of using additional water conservation measures including a description of the potential to reduce quantities of water withdrawn through reuse, recycling, and reduction of wasted water;

(3) For a public water system, a description of the status of the system's compliance with the operation criteria of Env-Ws 360 and the maintenance requirements of Env-Ws 362;

(4) For a public water system, a description of the system's use of, and planning for, the following conservation practices:

a. Customer metering;

b. Leak detection and repairs;

c. Low-flow plumbing fixtures;

d. Restricting non-essential uses such as watering lawns, washing cars, and filling swimming pools;

e. Industrial reuse and recycling;

f. Adopting a water conservation rate structure which may include surcharge penalties;

g. Conducting or requiring residential, commercial, and industrial water audits;

h. Public education; and

i. Any other measure determined by the public water supplier to be cost-effective; and

(5) For a non-public system withdrawal:

a. A description of the use and planning of water conservation measures which are not essential to the product or service design such as floor washing methods, leak and overflow management at a manufacturing facility, or any other type of water conservation management practices or measures implemented;

b. Measures for reducing water use essential to product or service design, such as re-use, loss reduction, or increased storage to reduce peaks; and

c. The cost effectiveness of water conservation measures and a schedule for any new measures planned.

Env-Ws 388.06 Conceptual Hydrologic Model of the Withdrawal.

(a) The applicant shall include a conceptual hydrologic model of the withdrawal in the major withdrawal permit application completed in accordance with Env-Ws 388.10.

(b) The conceptual hydrologic model shall be developed by a person who by education and experience is able to quantitatively analyze and interpret hydrology.

(c) The conceptual hydrologic model shall be based on information including but not limited to:

(1) A summary of the results from any hydrogeologic investigations conducted on site to date;

(2) Historic water level data;

(3) Department records for existing water users and resources including testing and production reports;

(4) Published reports;

(5) National resource conservation service maps; and

(6) United States geological survey geologic, bedrock lineament, and stratified-drift aquifer maps.

(d) Where historic environmental data is used to develop the conceptual hydrologic model, it shall be adjusted to account for any major land use changes that have occurred.

(e) The conceptual hydrologic model description shall identify the sources of information used to develop the model.

(f) Where data gaps are identified during the development of the conceptual hydrologic model, the model shall:

(1) Identify the data gaps and their significance to understanding the impacts of the proposed withdrawal; and

(2) Estimate the reasonably suspected hydrologic scenario(s) associated with the withdrawal that could occur given the known and unknown model parameters.

(g) The conceptual hydrologic model shall identify data needed to refine the model to complete the report required in Env-Ws 388.17.

(h) Conceptual hydrologic model pumping conditions shall be based upon the withdrawal operating continuously for 180 days at maximum withdrawal amounts without groundwater recharge from rainfall or snowmelt.

(i) The conceptual hydrologic model shall include:

(1) A description of the geology and geomorphologic history of the region including geologic formations, the chronology and mechanisms of change, grain size distribution, and bedrock fracture characteristics;

(2) Generalized geologic cross-sections through the region, including at least one through the well site, based on available information such as well logs, geologic reports, maps, and subsurface data; and

(3) Delineated extents of the study area, with the assumption of a conceptual hydrologic model condition of 180 days of continuous pumping at maximum volumes without recharge from rainfall or snowmelt, including all of the following items:

a. The maximum extent of the cone of depression created by the withdrawal;

b. The maximum extent of the recharge area for the withdrawal;
and

c. The downgradient area of the withdrawal.

(j) The downgradient area of the withdrawal shall include:

(1) The area where water taken by the withdrawal would flow if the withdrawal did not operate;

(2) The area that will provide water to the downgradient area when the withdrawal is operating; and

(3) The point where the amount of water to be withdrawn is negligible when compared to the amount of water crossing the boundary using one of the following methods:

a. An existing or new delineation of a watershed large enough so that the size of the entire study area for the withdrawal is at least 10 times the size of the recharge area for the withdrawal;

b. An existing or new delineation of a watershed where the amount of water crossing the downgradient boundary, that is, leaving the study under current conditions, is at least 10 times the amount to be withdrawn; or

c. An alternative method of estimating a study area provided it:

1. Relies on conservative assumptions;

2. Is demonstrated as appropriate for the site by testing results; and

3. Is clearly explained and justified using test results in the report developed pursuant to Env-Ws 388.17.

(k) The estimate of the study area and each of its components shall be presented on a map as described below:

(1) The map shall be at a scale of 1:24000 or 1:25000;

(2) The base map information shall wholly depict the data included on a United States geologic survey topographic map or a department geographical information system map; and

(3) The map figure shall include a map title, date, scale, and north arrow.

(l) A description of the hydrologic cycle and a water budget calculation for the study area shall be prepared that describes:

(1) The amounts and timing of precipitation, runoff, storage, recharge, and discharge;

(2) The distribution and availability of water necessary to maintain natural resources, existing water uses, and the proposed withdrawal; and

(3) The location and amounts of natural and artificial loss of water, consumption, discharge, and recharge of water to and from the study area.

(m) A comprehensive description of the groundwater flow regime that describes hydraulic boundaries, recharge patterns, and the interaction of water bodies associated with the withdrawal shall be prepared that includes:

(1) Conditions at the water table, in any confining or semi-confining layers of the overburden aquifer and in bedrock;

(2) The occurrence of groundwater flow both in horizontal and vertical directions, under average, non-pumping and conceptual hydrologic model based operating conditions;

(3) The magnitude and direction of vertical and horizontal hydraulic gradients;

(4) Hydraulic influences of regional groundwater flow from all aquifers and surface water bodies, or other water resources in communication with the proposed withdrawal; and

(5) Preferential groundwater flow pathways caused by the properties of the deposits.

(n) The conceptual hydrologic model and its study area estimate shall be refined in accordance with Env-Ws 388.14 and presented in the report required by Env-Ws 388.17 based on results from withdrawal testing performed in accordance with Env-Ws 388.13.

Env-Ws 388.07 Preliminary Water Resource and Use Inventory.

(a) The applicant shall complete an inventory of water resources and uses for the study area delineated pursuant to Env-Ws 388.06.

(b) The inventory shall be used to estimate withdrawal effects in accordance with Env-Ws 388.08 and identify the applicable institutions that are notified of the proposed withdrawal in accordance with Env-Ws 388.11.

(c) The inventory shall be based on the following:

- (1) Department records of other water uses and resources;
- (2) Published reports;
- (3) Municipal and public inventories and records; and
- (4) A visual survey conducted by a person who by education and experience is able to quantitatively analyze and interpret hydrology, or a New Hampshire certified soil scientist.

(d) The inventory shall identify water related natural resources in the study area.

(e) The inventory of water uses shall identify the following:

- (1) Public water supply withdrawals and impoundments;
- (2) Registered water users including withdrawals, recharges, deliveries, and releases;
- (3) Permitted surface water discharges;
- (4) Permitted groundwater discharges;
- (5) Areas served by public water supply systems and the locations of their withdrawals;
- (6) Areas served by public sewer and the locations of the discharge;
- (7) Private wells within 1000 feet of the cone of depression associated with the withdrawal; and
- (8) Other water uses that might be influenced by the withdrawal.

(f) The inventory of water uses shall identify the site address and property owner's or operator's name and address of each water use.

(g) The inventory of water uses shall identify the purpose and estimate the volume of each water use.

(h) The inventory shall identify information sources and describe efforts to collect information pertaining to water uses and resources within the study area identified in Env-Ws 388.06.

(i) The inventory shall be presented on a map as described below:

(1) The map shall be at a scale of 1:24000 or 1:25000;

(2) The base map information shall wholly depict the data included on a United States geologic survey topographic map or a department geographical information system map; and

(3) The map figure shall include a map title, date, scale, and north arrow.

Env-Ws 388.08 Estimation of Withdrawal Effects.

(a) The applicant shall identify and estimate the effects of the withdrawal on water resources and uses in the study area and shall provide this information in the major withdrawal permit application identified in Env-Ws 388.10.

(b) The estimate of withdrawal effects shall be based on the conceptual hydrologic model and the study area estimate identified in Env-Ws 388.06.

(c) The estimate shall be prepared by a person who by education and experience is able to quantitatively analyze and interpret hydrology.

(d) The estimate shall account for current land use patterns.

(e) The estimate shall quantify impacts on water resources and water uses in the inventory prepared pursuant to Env-Ws 388.07.

(f) The applicant shall describe limitations to the estimate of the withdrawal effects identified in Env-Ws 388.06(f) as of a result of the data gaps or complexity of the geology.

Env-Ws 388.09 Withdrawal Testing Program Design.

(a) A withdrawal testing program shall be designed to estimate the effect of the withdrawal under conceptual hydrologic model withdrawal conditions, that is, 180-days of continuous operation at maximum rates without recharge from rainfall or snowmelt.

(b) The program shall be designed and performed by a person who by education and experience is able to quantitatively analyze and interpret hydrology.

(c) The program shall be designed to address critical data gaps, limitations, or insufficiencies identified in Env-Ws 388.06 and Env-Ws 388.08 that are necessary to complete impact assessments required by these rules.

(d) The program shall include at a minimum, the measurement of representative resources and uses such that the data can be used to estimate effects on all resources and users that might be adversely impacted.

(e) For all wellheads, the testing production rate shall equal or exceed the rate requested in the permit application.

(f) The program shall be designed to provide data to:

- (1) Demonstrate production of the maximum withdrawal volumes requested;
- (2) Identify the response of the aquifer(s) and other interconnected water resources to pumping at the wellhead;
- (3) Refine the conceptual hydrologic model and study area delineation in accordance with Env-Ws 388.14;
- (4) Quantify the impacts of the withdrawal and conclude if the impacts meet the criteria for adverse impacts as specified by Env-Ws 388.18;
- (5) Develop an impact monitoring and reporting program, if necessary, in accordance with Env-Ws 388.20;
- (6) Develop an impact mitigation program, if necessary, in accordance with Env-Ws 388.21;
- (7) Establish values or ranges of values for environmental factors that will, during the period of the permit:
 - a. Reveal that withdrawal effects are consistent with original estimate; and
 - b. Indicate if adverse impacts are or may be occurring;
- (8) Develop a program for impact mitigation for any adverse impacts identified in Env-Ws 388.21 which might occur; and

(9) Determine a revised permanent production volume for the withdrawal if necessary, to ensure that adverse impacts do not occur as identified in Env-Ws 388.18.

(g) For a bottled water withdrawal, the program shall comply with pumping test requirements for new groundwater sources of bottled water specified in Env-Ws 389.

(h) For all other withdrawals, the program shall comply with pumping test requirements for large production wells for community water systems specified in Env-Ws 379.

(i) Withdrawal testing and evaluation methods, procedures, data, laboratory reports, and other supporting documentation shall be presented in the report specified in Env-Ws 388.17.

(j) As part of the withdrawal testing, the applicant shall submit a written request to all water users located within 1000 feet of the proposed withdrawal that requests permission to access their property to monitor the following during withdrawal testing:

- a. The operating and associated extraction rates of their withdrawal; and
- b. Water levels associated with their withdrawal point.

Env-Ws 388.10 Major Withdrawal Permit Application.

(a) The applicant shall submit a major withdrawal permit application to the department prior to the start of all large withdrawals not granted minor designation status under Env-Ws 387, and to renew a major withdrawal permit.

(b) The application shall include:

- (1) The maximum 24-hour withdrawal volume for which the new withdrawal permit is being requested;
- (2) The name, mailing address, and telephone number of the applicant;
- (3) The conservation management plan and description of need prepared in accordance with Env-Ws 388.05;
- (4) The conceptual hydrologic model of the withdrawal prepared in accordance with Env-Ws 388.06;

(5) The figure of the estimated study area and a description of how it was delineated using the conceptual hydrologic model in accordance with Env-Ws 388.06;

(6) The preliminary inventory of water resources and uses in the study area completed in accordance with Env-Ws 388.07;

(7) A description of withdrawal effects estimated in accordance with Env-Ws 388.08;

(8) A description of the withdrawal testing program design prepared in accordance with Env-Ws 388.09;

(9) A description of activities being performed to comply with the notification requirements under RSA 485-C:14-a as described in Env-Ws 388.11 including the inventory of water uses and municipalities and water supplies being notified;

(10) For a community water supply system, a preliminary report prepared in accordance with Env-Ws 379.13;

(11) For a new groundwater source of bottled water where a pre-testing conference is being requested, the information required in accordance with Env-Ws 389.10; and

(12) For a new withdrawal not for a public water supply or bottled water where a pre-testing conference is requested, a written request prepared in accordance with Env-Ws 388.12.

Env-Ws 388.11 Public Notification.

(a) The applicant shall submit one copy of the major permit application to each municipality and public water supplier in the study area delineated pursuant to Env-Ws 388.06.

(b) Public notification of the proposed large withdrawal shall be completed in accordance with RSA 485-C:14-a.

(c) Notification of municipalities and public water suppliers downgradient of the recharge area for withdrawals in a river valley-aquifer or similar environment may be limited to those within 1000 feet of the river bank.

(d) If a public hearing is requested pursuant to RSA 485-C:21 III, the notice shall be posted in 2 public places at least 7 days before the public hearing at each of the following locations:

- (1) The municipality in which the proposed withdrawal is located; and
- (2) The municipality in which the entity requesting the public hearing is located.

Env-Ws 388.12 Optional Pre-Testing Conference.

(a) The applicant may submit a request for a pre-testing conference in writing and shall include all information and materials required for the permit application in accordance with Env-Ws 388.10.

(b) The department shall meet with the applicant's representative to review the proposal of work.

(c) The applicant or the applicant's representative shall have the education and experience to quantitatively analyze and interpret hydrology in order to review a detailed proposal of work to be performed in accordance with these rules.

(d) A pre-testing conference shall be conducted within 30 days after the receipt of the written request.

(e) If an optional pre-testing conference is requested and conducted in accordance with this section, then the department shall provide comments and recommendations regarding the withdrawal testing design developed pursuant to Env-Ws 388.09 within 15 working days after the public comment period ends pursuant to Env-Ws 388.11.

Env-Ws 388.13 Withdrawal Testing.

(a) Withdrawal testing shall be completed pursuant to Env-Ws 388.09.

(b) Withdrawal testing observations, results, and interpretations shall be presented in the report completed in accordance with Env-Ws 388.17.

(c) When the withdrawal testing design identified in Env-Ws 388.09 includes the monitoring of water levels of any existing sources listed within the inventory of water resources, permission to access these locations shall be obtained by the applicant in the following manner:

- (1) All owners of the sources identified in the withdrawal testing design specified in Env-Ws 388.09 shall be identified and notified in writing of the forthcoming test by the applicant;
- (2) The notification shall:

- a. Include an informational form letter supplied by the department;
- b. Request monitoring permission and a written response;
- c. Define responsibility to prepare the source for monitoring;
- d. State the monitoring requirements;
- e. Include an offer from the applicant to disinfect and reseal the source when the monitoring ends;
- f. Inform the source user and owner that the applicant will supply potable water or cease the pump test should their water supply needs not be met; and
- g. Identify name and phone number of the contact person in the event of a water outage during testing;

(3) If the applicant is unable to monitor a source of water of a potentially impacted user, the estimate of the interference of the withdrawal on the source shall:

- a. Be based upon data collected from other nearby wells that represent the sources that could not be monitored; or
- b. Be based on an estimate using data collected during the withdrawal testing and analytical techniques; and

(4) If the water level in the well of another water user is monitored during withdrawal testing, the applicant shall:

- a. Inform the source user and owner that the pump test will be ceased should their water supply needs be affected by the test; and
- b. If requested by the water user, disinfect and reseal the source of water when the monitoring ends.

(a) The conceptual hydrologic model developed in accordance with Env-Ws 388.06 shall be refined based on results of the withdrawal testing completed in accordance with Env-Ws 388.13.

(b) If after the withdrawal testing, the applicant elects to reduce the originally proposed withdrawal volume proposed in Env-Ws 388.10, the applicant shall refine the conceptual hydrologic model to reflect the proposed, revised withdrawal rate.

(c) Conceptual hydrologic model refinement shall include a refinement of the study area estimated in accordance with Env-Ws 388.06.

(d) The refined conceptual hydrologic model and study area delineation shall be presented with supporting documentation in the report specified in Env-Ws 388.17.

Env-Ws 388.15 Water Resource and Use Inventory Update and Revision.

(a) The preliminary inventory completed in accordance with Env-Ws 388.07 shall be updated if the inventory is more than 90 days old.

(b) The preliminary inventory shall be revised to reflect any expansion or decrease in the study area after it is refined in accordance with Env-Ws 388.14.

(c) The updated and revised inventory shall be presented in the report completed in accordance with Env-Ws 388.17.

Env-Ws 388.16 Impact Description.

(a) The anticipated impacts from the withdrawal shall be described in the report completed in accordance with Env-Ws 388.17.

(b) The description shall be completed by a person who by education and experience is able to quantitatively analyze and interpret hydrology.

(c) Impacts shall be defined using the refined conceptual hydrologic model withdrawal conditions specified in Env-Ws 388.14 and the water use and resource inventory prepared in accordance with Env-Ws 388.07 and Env-Ws 388.15.

(d) The description shall be based on results from the withdrawal testing program and refined conceptual hydrologic model.

(e) Impacts shall be quantified to the extent necessary to:

- (1) Determine if adverse impacts might occur;

(2) If adverse impacts potentially might occur, develop a monitoring and reporting program to accompany the operation of the proposed withdrawal to provide data that assesses if adverse impacts are or will occur;

(3) Develop mitigation measures as required by Env-Ws 388.21 for adverse impacts that might occur; or

(4) Determine a revised permanent production volume for the withdrawal if necessary, to ensure that adverse impacts as specified by Env-Ws 388.18 do not occur.

Env-Ws 388.17 Report In order to obtain a permit for the withdrawal, the applicant shall submit a report to the department after withdrawal testing is completed pursuant to Env-Ws 388.13 that includes the following:

(a) All information and materials required in Env-Ws 388.05 through Env-Ws 388.16;

(b) Where operating information is necessary to ensure adverse impacts do not occur, the impact monitoring and reporting program prepared in accordance with Env-Ws 388.20;

(c) When adverse impacts are anticipated, an impact mitigation program prepared in accordance with Env-Ws 388.21;

(d) For a community water supply system, the report shall also include the final report prepared in accordance with Env-Ws 379.22; and

(e) For a new groundwater source of bottled water, the report shall also include the report prepared in accordance with Env-Ws 389.19.

Env-Ws 388.18 Adverse Impact Criteria.

(a) For all large withdrawals, adverse impacts shall be impacts due to reduction in the availability of water caused by the withdrawal.

(b) For all large withdrawals, adverse impacts shall not be impacts due to:

(1) Poor operation or maintenance;

(2) Infrastructure failure;

(3) Increase in volume of water withdrawn by water users not owned or operated by the permittee; or

(4) Alteration of the environment beyond the control of the permittee.

(c) For all major withdrawals, adverse impacts shall include the following:

(1) A reduction in the withdrawal capacity of a private water supply well of a single residence as a result of the reduction of available water that is directly associated with the withdrawal, including:

- a. Any reduction in capacity for wells with a capacity less than water well board recommended optimum minimum flow capacity of 4 gallons per minute for 4 hours before the withdrawal;
- b. A reduction in capacity below 4 gallons per minute for 4 hours, for wells that had a capacity greater than 4 gallons per minute for 4 hours, before the withdrawal; or
- c. A reduction in capacity where the well still has a capacity between 4 gallons and 10 gallons per minute for 4 hours and the user provides information indicating that the reduction in flow has resulted in the inability to meet their water needs;

(2) A reduction in a public, drinking water supply below the minimum withdrawal rates required per consumer determined by the following:

- a. Minimum daily amounts of drinking water shall be determined per use based on the design flow criteria established for public water supply systems under Env-Ws 372; or
- b. Where it is verified that such wells were unable to produce the design flow before the withdrawal began, the adverse impact shall be any reduction in the ability of produce water;

(3) A reduction in a water supply that is used for a multiple unit dwelling residence, but that is not a public water supply, that results in the inability to continue established activities or maintain existing water capacity requirements;

(4) A reduction in a private, non-residential, non-drinking water supply that results in the inability of a commercial, industrial or retail facility to continue established services or production volumes;

(5) A reduction in the ability of a registered water user to produce volumes equivalent to the average daily withdrawal for a specific calendar month as determined by discharge measurements and reports made to the

department in accordance with the water user requirements under Env-Wr 700;

(6) Reduction in surface water levels or flows that will, or does cause a violation of surface water quality regulations set forth in Env-Ws 1700;

(7) A net loss of values for submerged lands under tidal and fresh waters and its wetlands as set forth in RSA 482-A;

(8) The inability of permitted surface water or groundwater discharges to meet permit conditions;

(9) A reduction of river flows below acceptable levels established pursuant to RSA 483; or

(10) The contamination of groundwater obtained from wells or surface waters from contaminated groundwater whose flow has been altered by the withdrawal.

(d) A private residential well with a capacity greater than 10 gallons per minute for 4 hours after the withdrawal will not be considered adversely impacted.

Env-Ws 388.19 Adverse Impact Reporting and Response.

(a) The permittee shall report to the department within 5 days after discovering an unmitigated adverse impact that is occurring or has occurred.

(b) The department shall notify the permittee within 5 days of the time when the department observes, or another entity reports, an unmitigated adverse or unanticipated impact.

(c) At the written request of any entity, the department shall review any reports of adverse impacts including hydrologic data supporting the occurrence or potential occurrence of an adverse impact, and determine whether a claim of adverse impact is valid.

(d) The department shall notify the permittee and the entity reporting an adverse impact whether an unanticipated or adverse impact has occurred within 21 days of the time when a report meeting the criteria specified in paragraph (c) above is received.

(e) Where the status of an unanticipated impact is not clear, the applicant shall gather information needed to quantify the impact and determine its status relative to adverse impact criteria defined under Env-Ws 388.18 and provide this information to the department.

(f) A verified adverse impact shall be mitigated in accordance with Env-Ws 388.21.

(g) The permittee shall design and implement mitigation measures when an adverse impact occurs as identified in Env-Ws 388.18 as a result of the withdrawal.

Env-Ws 388.20 Impact Monitoring and Reporting Program.

(a) A permittee shall conduct impact monitoring and reporting program when:

(1) Available information, including work completed in accordance with these rules, is not sufficient to verify that adverse impacts from the large withdrawal will not occur, provided the available information does not suggest that an impact is:

- a. Irreversible; or
- b. Will occur immediately; and

(2) It is necessary to ensure that impact mitigation identified in Env-Ws 388.21 is effective in preventing adverse impacts from the withdrawal.

(b) The monitoring and reporting program shall monitor representative sites where the data collected can be used to ensure adverse impacts do not occur to water resources or users identified pursuant to Env-Ws 388.07(d) and (e) and 388.15.

(c) Where wetlands monitoring and reporting is conducted, it shall be completed as follows:

(1) An initial survey shall be conducted by a person who by education and experience is able to qualitatively and quantitatively assess wetland ecosystems;

(2) The initial survey of wetlands shall include the following:

- a. An inventory and map of wetland flora species;
- b. An inventory and map of soil types;
- c. A general description of the stratigraphy of geologic deposits;
- d. A general description of soil moisture, its source, and mechanisms of change; and

e. A general description of the function of the wetland as part of the natural ecosystem including:

1. Removal of sediment from runoff;
2. Improvement or stabilization of water quality;
3. Reduction in peak flow; and
4. Maintenance of wildlife habitat;

(3) Monitoring of the characteristics of the wetland identified in the initial survey shall be performed during the growing season.

(d) When groundwater monitoring and reporting is necessary, the monitoring shall include the following:

- (1) Monitoring of water levels at the wellhead and at other observation points necessary at a frequency sufficient to complete an evaluation of potential impacts associated with the withdrawal;
- (2) Monitoring of the volumes withdrawn from the permitted withdrawal at a frequency appropriate to assess the potential impacts associated with a withdrawal; and
- (3) Monitoring of the operating parameters of other water uses that might be contributing to impacts to water resources within the study area including:
 - a. Water levels at wellheads;
 - b. Operating schedules; and
 - c. Withdrawal amount.

(e) When surface water monitoring and reporting is necessary, the monitoring shall include an initial survey that incorporates the following:

- (1) An initial inventory and mapping of aquatic flora and fauna species and habitat;
- (2) Identification of factors which control the elevation of water levels;
- (3) A general description of anticipated seasonal fluctuations in temperature profiles and nutrient balances; and

- (4) A procedure for long term monitoring of surface waters, including:
- a. Monitoring of water levels in lakes or ponds at a frequency that is adequate to assess the potential occurrence of impacts to these water bodies as a result of the withdrawal;
 - b. Measurement of changes in stream discharge across a representative reach influenced by the major withdrawal at a frequency that is adequate to assess the potential occurrence of impacts to these water bodies as a result of the withdrawal using methods that are:
 - 1. Accurate; and
 - 2. Technically defensible; and
 - c. Monitoring of instream or other submerged habitat to identify the health of aquatic ecosystems.

(f) When monitoring of the water levels in other groundwater withdrawals nearby is required, the work shall be conducted in accordance with Env-Ws 388.13(c)(1)-(c)(4).

(g) Monitoring shall be adjusted during the permit period in accordance with permit modification procedures and criteria pursuant to Env-Ws 388.24.

(h) Monitoring results shall be presented in a tabular and graphic format and interpreted by a person who by education and experience is able to quantitatively analyze and interpret hydrology.

(i) The impact monitoring and reporting program shall be a condition of the withdrawal permit.

(j) Monitoring results shall be reported as specified by permit conditions.

Env-Ws 388.21 Procedures and Criteria for Impact Mitigation.

(a) The permittee shall immediately implement an impact mitigation program for withdrawals when:

- (1) A withdrawal permit requires mitigation from the start of operation to prevent adverse impacts anticipated during the permit application process;

(2) An impact monitoring and reporting program conducted in accordance with Env-Ws 388.20 reveals the potential occurrence of an adverse impact; or

(3) The department determines that a report of unanticipated or adverse impact is valid as defined by Env-Ws 388.18 and reported in accordance with Env-Ws 388.19.

(b) The permittee shall perform the following activities once an adverse impact is verified in accordance with Env-Ws 388.19:

(1) Submit a description of the impact based on observations to the department within 14 days of adverse impact notification under Env-Ws 388.19;

(2) Submit an impact mitigation program description in accordance with (c) below, for department approval within 60 days of adverse impact notification under Env-Ws 388.19; and

(3) Where the impact mitigation program is a condition of the permit and meets adverse impact thresholds identified in the permit, immediately begin the impact mitigation program designed for permit approval pursuant to Env-Ws 388.17(c).

(c) A mitigation program shall include one or more of the following:

(1) Implementation of additional water conservation measures;

(2) Reduction in withdrawal volumes, including cessation of the withdrawal except where necessary for fire protection or residential drinking water;

(3) Replacement of sources for adversely impacted users in accordance with Env-Ws 388.22;

(4) Other action necessary to mitigate adverse impacts;

(5) Periodic monitoring and reporting at a frequency necessary to substantiate the effectiveness of the mitigation activities; and

(6) A schedule for the implementation of the activities listed in (c)(1)-(5), above.

(d) Adherence to a mitigation program, where required, shall be a condition of the permit or become a condition of the withdrawal permit in accordance with permit modification procedures under Env-Ws 388.25.

Env-Ws 388.22 Procedures and Criteria for Source Replacement.

(a) Where a water supply source is adversely impacted as identified in Env-Ws 388.18, the permittee shall develop a program for providing an alternative water supply in accordance with the criteria and procedures described in this section.

(b) An adversely impacted water user shall be supplied with a quantity of water sufficient to provide an equivalent volume of water that was available prior to operating the withdrawal.

(c) The water source user shall not be charged for initial capital costs for providing an alternative water supply.

(d) The initial capital cost for providing an alternate water supply shall include all costs associated with any of the following:

(1) Water source development including:

a. Hydrogeologic investigation, including test well drilling as appropriate; and

b. Source construction;

(2) Water treatment equipment;

(3) Control building;

(4) Water storage facility;

(5) Water distribution system;

(6) Customer connection to the system;

(7) All costs associated with engineering in developing the water system, including the following:

a. Design engineering; and

b. Field engineering including the verification of quality workmanship;

(8) All legal costs associated with the establishment of the water system; and

(9) All other costs relating to developing a new water supply not otherwise categorized and identified above.

(e) The source replacement program shall:

(1) Identify other withdrawals in the recharge area for the adversely impacted source;

(2) Define the performance standards at which alternative supply will be provided to the user, including the following:

a. Location and type of source;

b. Method of delivery;

c. Minimum and maximum volumes and rates of delivery;

d. Water chemistry; and

e. Any water quality treatment or testing practices;

(3) Provide a schedule by which alternative supply will be provided;

(4) Estimate the initial capital costs associated with establishing the alternative supply; and

(5) Estimate the costs to the user of the alternative supply after it is established by the permittee, including the per-unit cost and projected annual costs.

Env-Ws 388.23 Procedure and Criteria to Issue, Deny, or Suspend a Major Withdrawal Permit.

(a) The department shall issue or deny a large groundwater permit or permit renewal in writing within 45 days of receipt of the report prepared in accordance with Env-Ws 388.17.

(b) The department shall issue or renew a major withdrawal permit described pursuant to Env-Ws 388.23 under the following circumstances:

(1) When the information in the report produced in accordance with Env-Ws 388.17 is complete and correct; and

(2) When the information in the report produced in accordance with Env-Ws 388.17 demonstrates that the withdrawal will:

- a. Not produce adverse impacts; or
- b. Result in impacts that can and will be mitigated, provided:
 - 1. There is sufficient information to verify that any adverse impacts that occur as a result of the withdrawal will not be:
 - (i) An adverse impact that may occur immediately; and
 - (ii) An irreversible impact; and
 - 2. A monitoring and reporting program is implemented in accordance with Env-Ws 388.20.

(c) The department shall not issue a new, or renew an existing major withdrawal permit if it is demonstrated that a withdrawal will result in adverse impacts which cannot or will not be mitigated.

(d) The department shall suspend an existing major withdrawal permit when:

- (1) The withdrawal is resulting in adverse impacts which cannot or will not be mitigated;
- (2) If after the issuance of a permit, the department receives information that indicates that the information upon which the permit was based was not true and complete or was misleading; or
- (3) The applicant does not comply with the conditions of the permit issued pursuant to Env-Ws 388.20.

(e) The procedure for suspending and reinstating a major withdrawal permit shall be as follows:

- (1) The department shall notify the permittee of the date, time, and place of a hearing at which the permittee shall be given an opportunity to show cause why the permit should not be suspended;
- (2) The hearing shall be conducted in accordance with RSA 541-A:31;
- (3) The department shall suspend the permit immediately, if it determines that emergency action is required in accordance with RSA 541-A:30, III;
- (4) The department shall suspend the permit after the hearing conducted pursuant to (1), above, if:

a. Emergency action is not required; and

b. It is verified that that a scenario listed pursuant to (d), above, has occurred; and

(5) The department shall reinstate the permit suspended pursuant to (3) or (4), above upon receiving and approving technical data from the permittee that demonstrates that the site meets the requirements of Env-Ws 388.

(f) The department shall provide the applicant with an opportunity for a hearing in accordance with RSA 541-A:31 if the permit is denied.

Env-Ws 388.24 Withdrawal Permit. When the department issues a permit to operate a withdrawal pursuant to Env-Ws 388.23, the permit shall specify the following information:

(a) The name, address, and telephone number of the permittee;

(b) The permit expiration date which shall be 10 years from the date the permit was issued;

(c) The permit number;

(d) The maximum permissible water withdrawal volumes for the purpose of mitigating impacts from the withdrawal;

(e) The need demonstrated in the conservation plan prepared in accordance with Env-Ws 388.05; and

(f) A schedule for monitoring and reporting production from, and static water levels in the well that includes the following:

(1) Cumulative flow meter readings at the start of each operating month;

(2) Static groundwater level in feet below a fixed point, at the start and in the middle of each operating month; and

(3) Time and date of each reading.

Env-Ws 388.25 Procedure and Criteria for Permit Modifications.

(a) The applicant may request the department to modify a permit as follows:

(1) A permittee requests a permit modification by submitting a written request to the department; and

(2) The request explains the reasons for the proposed modification.

(b) The department shall modify a permit when it determines that the permittee's request demonstrates that the modified permit complies with the criteria for issuance or renewal of a permit as specified in Env-Ws 388.23.

(c) A permittee shall apply for a new minor or major withdrawal permit pursuant to Env-Ws 387 and Env-Ws 388 when there is any permanent increase in the withdrawal rate.

(d) The department shall modify the permit to eliminate or prevent adverse impacts after:

(1) Providing an opportunity for a hearing pursuant to RSA 541-A:30, II; and

(2) Providing written notice to the permittee which:

a. Identifies the facility by name, location, and permit number;

b. Explains the action(s) the department proposes to take and the reasons for the proposed action;

c. Identifies the department's authority for taking such action;

d. Lists the name, title, mailing address, and telephone number of the department representative who may be contacted regarding the notice; and

e. Is dated and signed by the director of the department's water division.

(e) Potential permit modifications shall include, but not be limited to the following:

(1) An increase in production monitoring;

(2) An increase in monitoring and reporting of ground water or surface water levels;

(3) A reduction in permit volumes; and

(4) The implementation of an impact mitigation program.

Env-Ws 388.26 Procedures and Criteria for Major Withdrawal Permit Renewal.

(a) The permittee shall submit an application for a permit renewal at least 90 days prior to its expiration date.

(b) The renewal application shall include an update of all the information submitted for the expiring permit.

(c) The renewal application may reference information already contained in the department files if the information has not changed since the last application package submitted and meets the current criteria outlined in these rules.

(d) Permit renewals shall be issued in accordance with the criteria for new permits under Env-Ws 388.23 and Env-Ws 388.26.

Env-Ws 388.27 Other Requirements. Applicants and permit holders shall comply with all other relevant state, federal, and local regulations and requirements.

Env-Ws 388.28 Waivers.

(a) The rules in this section are intended to apply to a variety of conditions and circumstances. It is recognized that strict compliance with all rules prescribed herein might not fit every conceivable situation. An applicant or permit holder may request a waiver of specific rules outlined in this section in accordance with (b) through (f), below.

(b) The department shall waive the requirements of Env-Ws 388.03 - Env-Ws 388.17 for a withdrawal that is used as a back-up water supply if all of the following criteria are met:

(1) The withdrawal operates no more than 720 hours over a calendar year;

(2) The withdrawal does not adversely impact any other water users or water resources pursuant to Env-Ws 388.18;

(3) The following information is provided to the department in writing prior to using the back-up supply:

a. The location of the proposed back-up withdrawal shown on a map at a scale of 1:24000 or 1:25000;

- b. An inventory of water users and resources pursuant to Env-Ws 388.07(c)-(i) within 2000 feet of the proposed back-up groundwater withdrawal;
- c. Records describing the subsurface hydrogeology in the area of the proposed back-up groundwater withdrawal;
- d. The proposed well construction details of the back-up withdrawal including the proposed vertical location and length of screen of the well;
- e. The estimated maximum volume of the withdrawal from the back-up supply over any 24-hour period;
- f. A description of the primary water source used including the registered water user identification number issued pursuant to Env-Wr 700 in which the back-up groundwater withdrawal is being developed for; and
- g. A description of the circumstances that would require the back-up groundwater withdrawal to be used;

(4) Within 7 days of using the back-up withdrawal, the applicant provides the department with a written description of the following:

- 1. An estimate of the total time that the back-up withdrawal will be operated; and
- 2. A description of the reason for the operation of the back-up groundwater withdrawal;

(5) The department conducts a hydrologic evaluation of the proposed back-up groundwater withdrawal using the information provided by the applicant in (3) above, and determines that adverse impacts identified in Env-Ws 388.18 will not occur as a result of operating the proposed withdrawal;

(6) If sufficient information is not available for the department to determine if adverse impacts identified in Env-Ws 388.18 might occur as the result of operating a back-up withdrawal, the applicant completes the following:

- a. Obtains additional hydrogeologic information; and
- b. Implements a monitoring and reporting program.

(c) Unless emergency action is required, the department shall suspend the waiver status of a back-up withdrawal after providing an opportunity for a hearing in accordance with RSA 541-A:31 if the permittee does not comply with the requirements in (b), above;

(d) The department shall suspend the permit immediately, if it determines that emergency action is required in accordance with RSA 541-A:30, III;

(e) The department shall waive the requirements of Env-Ws 388.03 - 388.17 for a withdrawal that is a replacement for a withdrawal in existence prior to August 1, 1998 under the following conditions:

(1) The replacement withdrawal is constructed in the following manner:

- a. The replacement well is installed within 50 feet of the existing well;
- b. The replacement well is constructed with a well screen of similar diameter and length;
- c. The well screen is placed within the same vertical location of the existing well; and
- d. The replacement well under pumping conditions will impact groundwater hydraulics in the same manner as the existing well;

(2) Prior to installing the replacement well, the permittee submits a request for a waiver to the department for the replacement withdrawal that demonstrates compliance with (1), above; and

(3) The existing well in which the replacement well replaces is no longer operational.

(f) A Request for a waiver shall be:

(1) Submitted in writing to the department; and

(2) Include the following information:

- a. A description of the site to which the waiver request relates;
- b. A specific reference to the section of the rule for which a waiver is being sought;

- c. A full explanation of why a waiver is necessary and demonstration of hardship caused if the rule is adhered to;
- d. A full explanation of the alternatives for which a waiver is sought with backup data for support; and
- e. A full explanation of how the alternatives for which a waiver is sought are consistent with the intent of RSA 485:3 and RSA 485-C.

(g) The department shall approve a request for a waiver if it finds that the alternatives proposed are at least equivalent to the requirements contained in this section, and are adequate to ensure that the provisions of RSA 485:3 and RSA 485-C are met.

(h) The department shall not grant any waiver which in its judgment contravenes the intent of any rule.

(i) The department shall issue a written response to a request for a waiver within 30 days. If the waiver is denied, the denial shall specifically set forth the reason(s) for the denial.