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PART Env-Ws 373 DESIGN STANDARDS FOR NON-COMMUNITY WATER SYSTEMS

Env-Ws 373.01 Purpose; Authority.

(a) As required by RSA 485:8, all proposals to establish or expand a public water system shall be submitted to the department for review and approval before construction.

(b) The purpose of this part is to specify design criteria for non-community water systems.

Source. (See Revision Note at chapter heading for Env-Ws 300); ss by #8499, eff 11-30-05

Env-Ws 373.02 Applicability.

(a) Subject to (d), below, the rules of this part shall apply to non-community water systems as defined by RSA 485:1-a, X, which comprise:

(1) Transient non-community water systems, which serve a transitory non-residential population without having fire protection provided by street hydrants, such as restaurants, motels, and campgrounds; and

(2) Non-transient non-community (NTNC) water systems, which serve a regular but non-residential population such as schools, workplaces, and day care centers.

(b) Water systems serving residential populations, or a population greater than 1,000 persons, or having fire protection provided by street hydrants, shall be governed by the rules in Env-Ws 370 through Env-Ws 372, Env-Ws 374, Env-Ws 378, and Env-Ws 379, as applicable.

(c) Those NTNC water systems whose reliability is directly important to public health, such as schools or other facilities that are used as shelters during public emergencies, shall comply with the design criteria contained in Env-Ws 372 pertaining to the sizing of the water storage tanks and booster pumps, and other related appurtenances, as specified therein.

(d) Criteria that only apply to a particular type of non-community water system shall be as noted in each specific rule requirement.

(e) Existing non-community water systems that are proposed to be expanded shall comply with the design criteria of this part.

(f) Existing non-community water systems that are required by the department to make water system improvements, including new wells, shall comply with the design criteria of this part.

Source. (See Revision Note at chapter heading for Env-Ws 300); ss by #8499, eff 11-30-05

Env-Ws 373.03 Public Water System Capacity Assurance. All proposed NTNC water systems shall comply with the requirements of Env-Ws 371 before the operation of such water system begins.

Source. (See Revision Note at chapter heading for Env-Ws 300); ss by #8499, eff 11-30-05

Env-Ws 373.04 Concept Approval for a Proposed Non-Community Water System.

(a) No well construction or water system design shall commence on a proposed non-community water system until a concept approval is issued by the department.

(b) The issuance of a concept approval for a proposed non-community water system shall be based on the following criteria:

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- (1) Water service from another approved public water system is not available, determined based on the willingness of the potential provider to offer service and a comparison of the overall project cost to extend water service versus the overall project cost of constructing the proposed non-community water system;
- (2) The method of operation of the proposed non-community water system is adequate to ensure that all applicable requirements of Env-Ws 300 are met;
- (3) The proposed non-community water system is consistent with state, regional, or local water resource/water supply management plans for the area;
- (4) The proposed non-community water system ownership and operation is consistent with other New Hampshire public utility commission (PUC) franchises in the area; and
- (5) The proposed water system will use the best feasible source of water available.

(c) For purposes of this section, the best feasible source of water shall be determined based on a comparison of alternatives based on project cost and other technical factors. Such a comparison shall include capital and operational costs to provide an equivalent level of safe and reliable water supply service, for both domestic and fire flow needs, from an entity having adequate financial and managerial capability.

(d) Favorable criteria for the best source of water supply concept shall include:

- (1) Larger public water systems;
- (2) Public water systems that have full time employees who have higher levels of training and experience in the water works profession;
- (3) Public water systems with large volume water storage tank(s); and
- (4) Public water systems that have available equipment, controls, and communications that better ensure the reliability of operations and water quality.

(e) To request concept approval, the applicant shall submit a brief letter identifying the following:

- (1) The size of the proposed system;
- (2) The type of the proposed system;
- (3) The nature of the proposed system; and
- (4) A map specifically locating the proposed service area.

Source. (See Revision Note at chapter heading for Env-Ws 300); ss by #8499, eff 11-30-05

Env-Ws 373.05 Design Review Checklist.

(a) The person proposing to construct a new non-community water system or to expand or modify an existing non-community water system shall provide the following items to the department:

- (1) A completed application form as specified in (c), below, or a letter with the information specified in (c), below;
- (2) A copy of the concept approval obtained pursuant to Env-Ws 373.04;
- (3) A site plan of the project which includes the complete protective radius area surrounding each well;

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- (4) The well driller's well completion report for each well as required in We 800;
 - (5) The water quality analysis of the water from each well as specified in Env-Ws 373.14;
 - (6) A pumping test log for each well, if required by Env-Ws 373.13;
 - (7) If water treatment is or is proposed to be provided, an operations and maintenance manual in accordance with Env-Ws 360; and
 - (8) For a NTNC water system:
 - a. A preliminary business plan in compliance with Env-Ws 371;
 - b. A revised business plan in compliance with Env-Ws 371;
 - c. A final business plan in compliance with Env-Ws 371; and
 - d. Identification of the certified operator.
- (b) For a proposed NTNC water systems whose reliability is directly important to public health as specified in Env-Ws 373.02(c), the applicant shall also submit the following:
- (1) Plans and specifications for the pumphouse and any water distribution system as specified in Env-Ws 372;
 - (2) An operation and maintenance manual in accordance with Env-Ws 360; and
 - (3) A verification of any water distribution pipe installation in accordance with Env-Ws 372.31.
- (c) The applicant shall provide the following information as required by (a)(1), above:
- (1) For existing water systems, the system's EPA identification (ID) number;
 - (2) The name and address, by street location and municipality, of the water system or proposed water system;
 - (3) Whether the project is a proposed water system, a new well, or a modification to an existing water system;
 - (4) The design flow, in gallons per day (gpd);
 - (5) The number of residential units or equivalent units based on one unit being equivalent to 300 gpd;
 - (6) Whether water quality testing has already been done, and if so, the sample identification numbers;
 - (7) The amount of the design review fee calculated in accordance with Env-Ws 373.06;
 - (8) The name, mailing address, and daytime telephone number of the project owner and, if the owner is other than an individual, the name of an individual who can be contacted regarding the application on behalf of the owner; and
 - (9) The name, mailing address, and daytime telephone number of the project designer and, if the project has a design flow greater than 20,000 gpd, the professional engineer license number of the project designer.
- (d) The applicant shall sign and date the form or letter required by (a)(1), above, to certify that the information provided is accurate.

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(e) The plans and specifications for all proposed non-community water systems or modifications to existing non-community water systems having a design flow greater than 20,000 gpd shall be stamped by a professional civil or sanitary engineer licensed in the state of New Hampshire.

Source. (See Revision Note at chapter heading for Env-Ws 300); ss by #8499, eff 11-30-05

Env-Ws 373.06 Design Review Fee.

(a) As specified in RSA 485:8, III, the applicant shall pay an application fee for the review of:

- (1) A proposed non-community water system; or
- (2) The modification of an existing transient non-community water system to include residential-type use.

(b) The fee shall be determined as follows:

- (1) For proposed residential-type units, the fee shall be as stated in RSA 485:8, III per unit, regardless of the size of the residential units;
- (2) For proposed non-residential units, the fee shall be determined by conversion of the water system design flow to a residential-equivalent unit basis. For purposes of this rule, a “residential-equivalent unit” means a design flow of 300 gpd;
- (3) The design flow for non-residential units shall be as specified in Env-Ws 373.08 or Env-Ws 1008;
- (4) The fee for each residential-equivalent unit shall be as stated in RSA 485:8, III. The calculated fee for non-residential systems shall be determined by rounding off to the nearest full residential-equivalent unit;
- (5) In determining the number of units the water system is designed to accommodate, the department shall use system design parameters, proposed plans for additional construction, and other factors bearing on the ultimate design flow for the water system;
- (6) The department shall presume that any application for expansion within 2 years of the initial submittal is part of the initial water system design and therefore subject to the design review fee;
- (7) If the design flow of a non-residential public water system is less than one-half of a residential equivalent unit, the fee shall be zero dollars;
- (8) The maximum fee shall be based on 175 units or equivalent residential units; and
- (9) No additional fee shall be charged for revised submissions which do not include additional units, or for submissions requesting an extension or expansion of an existing non-community water system if more than 2 years after the original approval.

(c) The design review fee shall be paid in conjunction with the final design review submittal.

Source. (See Revision Note at chapter heading for Env-Ws 300); ss by #8499, eff 11-30-05

Env-Ws 373.07 Plans.

(a) Design documents shall provide adequate information to analyze the expected system performance and serve as a detailed permanent record for future owners, maintenance personnel, and the department.

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(b) All water system plans to be submitted to the department by or on behalf of the water system owner shall be:

- (1) Prints or copies of original drawings, with no original drawings or line work and no highlighting unless existing line work is traced;
- (2) On paper that is 24 inches by 36 inches;
- (3) For site plans, drawn to a scale no greater than 1 inch equals 60 feet; and
- (4) For architectural plans, drawn to the scale of 1 foot equals 1/4 inch or 1 foot equals 3/8 inch.

(c) The plans and other documents shall be neat, fully detailed, and drawn to scale. All lettering shall be neatly printed or mechanically or electronically set.

(d) The project plan(s) shall include the following items:

- (1) A location key or locus plan, which shall:
 - a. Be not less than 3 inches by 3 inches;
 - b. Be on a scale equal to the latest United States Geological Survey (USGS) scale, 1 inch being equal to 2,000 feet, if available; and
 - c. Identify street names and other principal features;
- (2) A title block, which shall include the following:
 - a. The name of the project, its location, and the design date;
 - b. The name, mailing address, and daytime phone number of the owner;
 - c. The name, mailing address, and daytime phone number of the system designer;
 - d. The scale used; and
 - e. Space for noting the date(s) of any subsequent plan revisions;
- (3) A site plan, which shall be drawn to a scale in the range of 1 inch being equal to 20 feet to 1 inch being equal to 50 feet and show or identify the following:
 - a. Property boundaries, the name of each adjacent owner, and the ultimate scope of the project;
 - b. All roads, existing and proposed wastewater disposal areas, green areas, north arrow, lot numbers, and property lines;
 - c. The water distribution piping system including:
 1. Pipe size, location, and material;
 2. Gate valves and blow-offs; and
 3. A typical trench section showing depth of cover and bedding material; and
 - d. Elevation contours at not less than 5 foot intervals; and
- (4) For campgrounds and other transient non-community water systems which have water distribution piping systems, a water-distribution system plan.

Source. (See Revision Note at chapter heading for Env-Ws 300); ss by #8499, eff 11-30-05

Env-Ws 373.08 Design Flow.

(a) Subject to (b), below, anticipated design flows for a proposed non-community water system, based on the type of use, shall be as determined in Table 373-1 below:

Table 373-1
Anticipated Design Flows

<u>Type of Use</u>	<u>Design Flow</u>
Institutions other than hospitals	135 gpd per bed
Golf Club	20 gpd per locker
Bed & Breakfast	60 gpd per bedroom
Shopping center/stores	5 gpd per 100 square feet (sq.ft.)
Hospitals	200 gpd per bed
Campground with 3-way hook-up	90 gpd per site
Campground with central comfort station	75 gpd per site
Motel/Hotel	50 gpd per person, calculated at 4 persons per room
School with gym and cafeteria	25 gpd per student
Factory - sanitary use only	20 gpd per worker
Restaurant	40 gpd per seat
Lounge	20 gpd per seat
Office space	15 gpd per person or 15 gpd/100 sq. ft.

(b) If the specific type of use is not listed above, the design flow shall be determined in accordance with Env-Ws 1008.

(c) For non-community water systems that are being expanded or upgraded, the design flow shall be determined either in accordance with (a) and (b), above, or by using historical water readings in accordance with one of the following:

- (1) By finding the daily average flow from water meter readings and multiplying the average by a minimum factor of 2 or a maximum factor of 3 depending on the type or frequency of the meter readings; or
- (2) By examining 12 months of consecutive daily water meter readings, in which case, the water system's design flow shall be based on the highest daily flow noted, without application of a multiplying factor.

(d) Since the design flows contained in Table 373-1 and Env-Ws 1008 do not include exterior water use, for those water systems where watering lawns and gardens, filling swimming pools, or other high water use demands are expected, the total design flow for the water system shall be increased accordingly.

Source. (See Revision Note at chapter heading for Env-Ws 300); ss by #8499, eff 11-30-05

Env-Ws 373.09 Acceptable Sources of Water Supply.

- (a) Surface water shall not be used as a source by any non-community water system.
- (b) Where the residential-equivalent units exceed 45, a minimum of 2 wells shall be required.
- (c) If connection to a municipal water system is proposed, the applicant shall submit a letter of confirmation to the department from the supplying water system owner which states that:

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- (1) Adequate quantities of water are available to serve the proposed water system; and
 - (2) With the proposed water system on line, adequate system pressures will be maintained.
- (e) Design criteria for municipal water system piping extensions shall be as specified in Env-Ws 374.

Source. (See Revision Note at chapter heading for Env-Ws 300); ss by #8499, eff 11-30-05

Env-Ws 373.10 Required Source Capacity.

(a) The required minimum total source capacity for non-community water systems shall be not less than 1.5 times the design flow for the water system based on a 24-hour day.

(b) Since the design flows contained in Table 373-1 and Env-Ws 1008 do not include exterior water use, for those water systems where watering lawns and gardens, filling swimming pools, or other high water use demands are to be expected, additional source capacity for these uses shall be provided.

(c) For those NTNC water systems whose reliability is directly important to public health as outlined in Env-Ws 373.02(c) that are required to have 2 or more wells, the minimum total permitted production volume with the largest source out of service shall be equal to or greater than 50% of the system's design flow.

Source. (See Revision Note at chapter heading for Env-Ws 300); ss by #8499, eff 11-30-05

Env-Ws 373.11 Well Location.

(a) Non-community water system wells shall be located at least 50 feet from surface waters, wetlands, and natural drainage ways.

(b) The wellhead shall be above the 100-year flood level, provided, however, that where wells must be located within a floodway, the area immediately surrounding the well and pumphouse shall be built up above the 100-year flood elevation.

(c) Non-community water system wells shall be kept at least 50 feet from the edge of road right-of-ways, driveways, and parking areas to minimize contamination from de-icing salts.

Source. (See Revision Note at chapter heading for Env-Ws 300); ss by #8499, eff 11-30-05

Env-Ws 373.12 Sanitary Protective Area and Permitted Production Volume for Groundwater Sources.

(a) To protect the long-term quality of each public water system, a sanitary protective area shall be established around each groundwater source and a permitted production volume shall be assigned to the source based on the size of the sanitary protective area established. The sanitary protective area shall be a circle with a specified radius, centered on the well.

(b) The permitted production volume shall not be greater than the source capacity based on a 24 hour period defined by the pumping test in accordance with Env-Ws 373.13 or the well driller's well completion report.

(c) The sanitary protective area, based on the permitted production volume established by the system, shall be as shown in Table 373-2 below.

Table 373-2
Sanitary Protective Area

<u>Permitted Production Volume (gpd)</u>	<u>Sanitary Protective Radius Length (ft.)</u>
0 - 750	75
751 - 1440	100
1441 - 4320	125
4321 - 14,400	150
14,401 - 28,800	175
28,801 - 57,600	200
57,601 - 86,400	250
86,401 - 115,200	300
115,201 - 144,000	350
Greater than 144,000	400

(d) When more than one well is inside another well's sanitary protective area, then the individual sanitary protective areas for the wells shall be based on their combined permitted production volume unless the applicant demonstrates through hydrogeological means that these wells are not interconnected.

(e) The following land uses shall be specifically excluded from within the sanitary protective areas of non-community water systems:

- (1) Wastewater disposal systems, including septic tanks, grease traps, and effluent disposal areas;
- (2) Soil fertilization areas;
- (3) Nitrate set-back areas;
- (4) Dumpsters;
- (5) Detention ponds or infiltration basins;
- (6) Storage tanks for oil, gasoline, propane, or natural gas, or other hazardous chemicals; and
- (7) Any uses associated with hazardous materials.

(f) Acceptable uses of the sanitary protective area for non-community water systems shall include those uses listed below:

- (1) Roadways, with the exception of the required setback in Env-Ws 373.11(c);
- (2) Parking lots, with the exception of the required setback in Env-Ws 373.11(c);
- (3) Tennis courts;
- (4) Surface water such as lakes, rivers, and streams;
- (5) Permanently protected or undevelopable land;
- (6) Wastewater piping which passes within the sanitary protective area only if:
 - a. The type of pipe is ductile iron or approved equal pressure-type pipe that is tested for water-tight construction after installation; and
 - b. All wastewater piping is located a minimum distance of the greater of 50 feet or a distance equal to at least one-half the total amount of the well radius length from the well;

(7) Pumphouse and permanent buildings; and

(8) Other compatible uses proposed in writing to the department by the water system owner if the submittal demonstrates that:

- a. The type(s) and volume(s) of contaminant(s) associated with the activity, when subject to any best management practices proposed by the owner, will not pose a threat to water quality;
- b. The owner has a contaminant mitigation plan that will prevent the contaminant(s) from rendering the water unfit for use by the water system; and
- c. The overall risk of groundwater contamination is outweighed by the benefit expected from the activity.

(g) The NTNC water system's potential for future waivers from a portion of its chemical monitoring requirements shall be diminished by the location of buildings, roadways, parking lots, and other such construction within the well's protective radius.

(h) For non-community water systems, the water system owner shall control the sanitary protective area. The water system owner shall, where possible, locate the well and sanitary protective area entirely on the property owned by the water system. Once established, the sanitary protective area shall not be subdivided. Where the sanitary protective area cannot be located fully on the property owned by the water system, written legal easements from abutters shall be obtained. Such easements shall specifically exclude the uses described in (e), above, from the area within the sanitary protective area.

Source. (See Revision Note at chapter heading for Env-Ws 300); ss by #8499, eff 11-30-05

Env-Ws 373.13 Pumping Tests.

(a) For all non-community water systems having a design capacity of 13,500 gpd or greater, the water system owner shall demonstrate adequate source capacity by a sustained 48-hour pumping test at a constant rate before final plans can be approved. The pumping test shall demonstrate stabilized drawdown for at least the last 12 hours of the test. Stabilization is defined as a drawdown of less than one inch in 2 hours. If stabilization is not achieved, the pumping test shall continue and the department shall be contacted.

(b) The water system owner shall submit data documenting the pumping test on a pumping test log sheet that includes the following items:

- (1) Well depth, in feet;
- (2) The date of the pumping test;
- (3) The pumping rate, in gallons per minute (gpm);
- (4) The level of water in the well prior to pumping in feet below top of casing;
- (5) The drawdown level during pumping, in feet below top of casing; and
- (6) The time the test was initiated and concluded and the total hours of the test.

(c) Each log sheet shall be identified by project name, well number or name, location, and submittal date.

(d) Readings for water level and pumping rate shall be taken at least every hour so long as the change in drawdown exceeds 2 feet per hour. Thereafter, readings may be taken at appropriate intervals not to

exceed 4 hours. Readings shall be direct measurements and not inferred from pump curves or other inferential methods.

(e) Where wells are within 150 feet of each other, the pumping tests shall be run simultaneously.

(f) For any proposed non-community water system well where a pumping test is not conducted, the well driller shall provide a signed statement of the well's projected safe yield to the department.

Source. (See Revision Note at chapter heading for Env-Ws 300); ss by #8499, eff 11-30-05

Env-Ws 373.14 Water Supply Quality.

(a) Prior to the end of the pumping test, the water system owner shall take a water sample from each source and have the sample analyzed for quality by a laboratory accredited for the analysis requested. Results from unaccredited laboratories shall not be accepted. Samples shall be taken after the well has been flushed and near the completion of any pumping test or other means for determining the well's projected safe yield. Dip samples from wells shall not be acceptable.

(b) Special containers and sampling techniques shall be required for those sources which will supply non-community water systems as specified in Env-Ws 320 through Env-Ws 329.

(c) Water quality for NTNC water systems shall meet the applicable standards established in Env-Ws 310 through Env-Ws 316 or shall be capable of meeting these standards with approved treatment. The submitted analysis shall have been performed within the previous 6 months by a state certified water lab.

(d) Proposed transient non-community water systems shall sample for:

- (1) Arsenic;
- (2) Bacteria;
- (3) Chloride;
- (4) Copper;
- (5) Fluoride;
- (6) Hardness;
- (7) Iron;
- (8) Lead;
- (9) Manganese;
- (10) Nitrate/Nitrite;
- (11) pH; and
- (12) Sodium.

(e) Subject to (f), below, the water system owner shall submit results of laboratory analyses to the department as originals or photostatic copies of the original laboratory report. Re-typing or re-writing the data shall not be acceptable.

(f) The water system owner may have the results submitted directly to the department by the laboratory. If the laboratory submits results directly, the results shall be submitted in the same format as results on existing water systems.

Source. (See Revision Note at chapter heading for Env-Ws 300); ss by #8499, eff 11-30-05

Env-Ws 373.15 System Concept.

(a) If limited fire protection service is to be provided, the following water system design criteria shall be observed:

(1) When fire hydrants are planned by the water system owner, a separate water storage tank shall be installed and the fire hydrants shall connect to only this water storage tank. The re-fill pipe for this water storage tank shall incorporate an air gap. There shall be no connection between the domestic water system and the fire storage tank; and

(2) Where sprinklers are planned to be installed within the premises to be served by the water system, the service line and domestic plumbing shall be appropriately increased in size. The service line shall be sized to accommodate a design flow rate specified in the state fire code, Saf-C 6000. The sprinkler portion of the piping shall be separated from the domestic plumbing by at least a testable double check valve.

(b) Additional provisions for source capacity and storage facilities in the water system's design shall be made to accommodate fire flows.

Source. (See Revision Note at chapter heading for Env-Ws 300); ss by #8499, eff 11-30-05

Env-Ws 373.16 Pumphouse Design and Construction.

(a) Pumphouses shall have screened gravity floor drains or equivalent with all floors pitched ¼-inch per foot toward the drains. Sump pumps shall not be acceptable. The drain pipes shall not discharge to any surface water and shall be screened at the discharge end to prevent small animals or insects from blocking flow. The pumphouse floor level shall be above the seasonal high water table.

(b) The layout of equipment and the design of the pumphouse shall provide for convenient operation and preventative maintenance. The design and materials shall include provisions to minimize vandalism damage to wells, doors, and roofs. Windows shall be avoided. The pump station walls and ceilings shall be fully insulated. Construction materials shall be highly resistant to moisture, decay, and vandalism.

(c) For all proposed pumphouses, the applicant shall make every reasonable effort to design and construct the pumphouse at finished grade. Where constraints are encountered, the station may be as much as 5 feet below grade. If the floor of the pumphouse is below grade, the design shall address the "confined space rules" of the U.S. Department of Labor, Occupational and Health Administration (OSHA) as specified in 29 CFR 1910.146.

Source. (See Revision Note at chapter heading for Env-Ws 300); ss by #8499, eff 11-30-05

Env-Ws 373.17 Pumps and Auxiliary Equipment.

(a) All non-community water systems serving campgrounds shall have a water meter installed on each incoming source line before the water enters the storage tank(s).

(b) For all non-community water systems, a pressure gauge shall be provided. Gauges shall be installed with gauge cocks for isolation and of suitable range for the expected pressure range.

(c) For all non-community water systems, the pump controls shall have a manual "off/on/auto" switch to control pump operations where water is pumped into a vented tank or the equivalent. Where the water is pumped into a pressure system, a pressure relief valve or spring-loaded "on" switch shall be provided.

(d) Where an air compressor is provided for air which will be in direct contact with drinking water, the air compressor shall be of the oil-less type.

(e) Mercury-type float switches shall not be in direct contact with drinking water, and shall, if present, be removed and replaced.

Source. (See Revision Note at chapter heading for Env-Ws 300); ss by #8499, eff 11-30-05

Env-Ws 373.18 Well Appurtenances and Pump Installation.

(a) No well installed after June 4, 1997 shall be placed inside a pumphouse or building being served by the water system.

(b) Well casings shall project at least one foot above finished grade.

(c) For bedrock wells installed prior to June 4, 1997 that are inside a pumphouse where the floor is below finished grade, the well casing shall extend above the finished floor at least 2 feet.

(d) A tight seal shall be provided around all entry ports into the well. Provisions shall be made to allow the removal of well pump for repair.

(e) All well sources at all non-community water supply systems shall be capable of being separately sampled for water quality before entering storage tank(s).

Source. (See Revision Note at chapter heading for Env-Ws 300); ss by #8499, eff 11-30-05

Env-Ws 373.19 Appurtenances and Installation of Storage Tanks.

(a) All water storage tanks at all non-community water systems shall have drains. All water storage tanks installed outdoors shall be totally backfilled to minimize damage to the tank coating. Water storage tanks shall be located above the seasonal high ground water table to prevent possible flotation when empty. Proposals to bury the water storage tank into or below the water table shall not be accepted.

(b) All atmospheric water storage tanks shall have a downward-turned "U" vent with fine mesh screening to prevent the entry of small living things such as insects, small animals, and birds.

(c) All buried steel water storage tanks shall be installed in accordance with current industry practice and be provided with an adequate underdrain system to assure that the seasonal high ground water table remains below the bottom of the water storage tanks, and have a protective coating inside and out. The interior coating shall be certified as being manufactured and applied in accordance with the approved listings in Env-Ws 305. Damage to the exterior coating during construction shall be repaired prior to tank backfill.

(d) All water storage tanks, larger than 500 gallons and installed after January 1, 1996 shall have a name plate identifying the following:

- (1) Year of manufacture;
- (2) Size; and
- (3) Pressure rating.

(e) Atmospheric water storage tanks shall be equipped with a capped filler pipe, which shall be lockable if located on the exterior of the tank, to accommodate tank truck water delivery. Atmospheric water storage tanks existing as of January 1, 1996 shall have filler pipes installed by January 1, 2007.

Source. (See Revision Note at chapter heading for Env-Ws 300); ss by #8499, eff 11-30-05

Env-Ws 373.20 Water Treatment Facilities.

- (a) Water treatment processes at non-community water systems shall:
- (1) Maximize the effectiveness of treatment;
 - (2) Have sufficient controls and monitors to identify treatment performance and aid in operation;
 - (3) Support reliability and flexibility of operations;
 - (4) Have low capital and operational costs;
 - (5) Be easily repaired; and
 - (6) Be sized and configured consistent with the practices and standards of the professional water treatment industry.
- (b) Each water system owner who wishes to install or modify a treatment process shall submit the following to the department in writing:
- (1) The name, location, and EPA ID number of the system;
 - (2) The name, mailing address, and daytime telephone number of an individual who is knowledgeable about the proposed treatment process who can answer questions about the proposal on behalf of the owner;
 - (3) A description of the proposed treatment process, including how the process functions conceptually;
 - (4) A technical design proposal which identifies necessary equipment, chemicals, plumbing, and electrical elements, as specified in Env-Ws 373.21;
 - (5) A description of the anticipated treatment wastes and their disposal, in accordance with Env-Ws 373.22;
 - (6) An operation and maintenance manual, as specified in Env-Ws 373.23; and
 - (7) A monitoring plan for determining the quality of the treated water and waste flows, as specified in Env-Ws 373.24.
- (c) The documents specified in (b)(1) through (b)(5) above, shall be submitted concurrently to the department.
- (d) The department shall approve the water treatment process application if the department determines that the proposal meets the criteria specified in (a), above, and any item-specific criteria listed in Env-Ws 373.21 through Env-Ws 373.24.
- (e) The department shall inform the applicant of its decision in writing. If the decision is to not approve the proposal, the decision shall specify the reason(s) for the non-approval.

Source. (See Revision Note at chapter heading for Env-Ws 300); ss by #8499, eff 11-30-05

Env-Ws 373.21 Technical Design Proposal Criteria. The technical design proposal required by Env-Ws 373.20(b)(4) shall:

- (a) Identify the water treatment process to be used and the equipment to be installed;
- (b) Describe the chemical(s), plumbing, and electrical control modifications that represent a complete treatment process;
- (c) Include a tabular summary of laboratory sampling results analyzed by a New Hampshire accredited laboratory which identifies:
 - (1) The contaminant(s) to be modified by the treatment process; and
 - (2) All other water quality factors, by name and concentration, that are predicted to be modified by the treatment process;
- (d) Describe the expected water quality change by the water treatment process, including:
 - (1) The concentration of the target contaminant at normal and peak production rates; and
 - (2) The concentrations of all other affected water quality parameters at normal and peak production rates;
- (e) Identify the configuration of all components of the treatment process including:
 - (1) The rationale for a series or parallel configuration;
 - (2) The number of trains of equipment; and
 - (3) A description of each pretreatment process;
- (f) Describe the design goal of the treatment process, as follows:
 - (1) Removal of the contaminant(s) to de minimis levels; or
 - (2) A reduction of the contaminant so as to achieve compliance with the maximum contaminant level(s) or the maximum contaminant level goals specified in Env-Ws 312 through Env-Ws 316;
- (g) Identify the criteria used for each treatment component of the process, as appropriate, including:
 - (1) The loading rate;
 - (2) The detention time or empty bed contact time;
 - (3) The backwash or regeneration flow rate required; and
 - (4) The concentration of target contaminant selected to control the end of the treatment cycle;
- (h) Require a sampling tap to be installed between each treatment component of the treatment process and identify plumbing appurtenances throughout the treatment sequence, including:
 - (1) Connecting pipe size, gate valves, check valves, unions, and bypasses;

- (2) Meter(s) and their type including whether indicating, totalizing or recording; and
- (3) Flow restrictors and their rating;
- (i) Identify measuring, control, and communication/alarm equipment including:
 - (1) Chemical feed pump pacing method and associated equipment;
 - (2) Flow switch interrupt of chemical feed equipment when there is no production flow; and
 - (3) Other automatic monitoring and communication devices;
- (j) For each treatment chemical to be used:
 - (1) Identify the chemical and the anticipated concentration(s) to be used during both the initial start-up phase and the operational phase, if different; and
 - (2) Include the following information:
 - a. Documentation that the chemical is approved for drinking water use in accordance with American National Standards Institute (ANSI) standard 60 as required in Env-Ws 305; and
 - b. A copy of the material safety data sheet (MSDS) for that chemical.

Source. (See Revision Note at chapter heading for Env-Ws 300); ss by #8499, eff 11-30-05

Env-Ws 373.22 Disposal of Treatment Wastes in the Technical Design Proposal. The proposal for disposal of treatment wastes and by-products required by Env-Ws 373.20(b)(5) shall:

- (a) Identify the volume and strength of treatment wastes and by-products expected to be generated;
- (b) Identify whether the expected treatment wastes or by-products are hazardous and cite the applicable rule(s);
- (c) Identify the state agency having jurisdiction over the treatment wastes or by-products;
- (d) Identify the method(s) proposed to dispose of the treatment wastes or by-products; and
- (e) Estimate the annual cost of waste disposal.

Source. (See Revision Note at chapter heading for Env-Ws 300); ss by #8499, eff 11-30-05

Env-Ws 373.23 Operation and Maintenance Manual.

- (a) The builder of the public water system shall prepare an operation and maintenance manual for the water system owner to submit to the department.
- (b) The manual shall be bound so as to provide a permanent document for the water system owner and a ready reference for the water system operator.
- (c) The operation and maintenance manual shall include:

- (1) A schematic drawing of the treatment process, which shall identify each unit of the treatment equipment by:
 - a. Type;
 - b. Size;
 - c. Model number; and
 - d. Any appurtenances;
- (2) An original or a photocopy of the description of the treatment equipment from the manufacturer's catalogue;
- (3) A separate schematic drawing of the treatment process in the normal production configuration, which shall include:
 - a. A written description of the process, which shall reference the schematic drawing and show flow direction; and
 - b. The approximate expected values, settings or feed rates for pumps, gauges, gate valves and controllers in the production mode;
- (4) A separate schematic drawing of the treatment process in the normal backwash or regeneration configuration, which shall include:
 - a. A written description which references the schematic drawing, showing the backwash or regeneration process functions which shall include:
 1. The flow rate of backwash or regeneration and its temperature dependency where applicable;
 2. The duration of backwash or regeneration; and
 3. The frequency of anticipated backwashes or regenerations; and
 - b. The approximate expected values, settings, or feed rates for pumps, gauges, gate valves and controllers in the backwash mode;
- (5) Recommended short- and long-term maintenance schedules for each piece of equipment;
- (6) A description of common operational problems and proposed corrective operator responses;
- (7) A description of how the operator can maximize the efficiency of the treatment process relative to:
 - a. Energy use;
 - b. Chemical use;
 - c. Maximizing the net treated water production volume; and
 - d. Minimizing the volume of waste and by-products produced; and

(8) A blank copy of the compliance and oversight operational form that is required by Env-Ws 360.07 to be submitted to the department when a water system performs treatment.

Source. (See Revision Note at chapter heading for Env-Ws 300); ss by #8499, eff 11-30-05

Env-Ws 373.24 Water Quality Monitoring Plan. The water quality monitoring plan required by Env-Ws 373.20(b)(7) shall:

- (a) Identify appropriate raw water test parameters and sampling frequencies;
- (b) Identify appropriate finished water test parameters and sampling frequencies;
- (c) Include any proposed modifications to the finished water sampling schedules once a data record is established showing the consistency and reliability of the treatment process; and
- (4) Identify the treated water safety factor, as specified in Env-Ws 321.20, for changing sampling frequencies.

Source. (See Revision Note at chapter heading for Env-Ws 300); ss by #8499, eff 11-30-05

Env-Ws 373.25 Water Pressure; Distribution System.

(a) Where operational pressure is anticipated to be less than 30 pounds per square inch (psi), the service line shall be oversized so as to reduce frictional losses.

(b) Maximum system pressure shall be 100 psi. Any portion of the water distribution piping system where pressure is expected to exceed 100 psi shall have pressure reducing valves installed on each individual water service line or on the water main to maintain pressure at less than 100 psi. Any bypass line around a water main pressure reducer shall also have a pressure reducer. The water system shall maintain all pressure reducing devices.

(c) For non-community water systems serving campgrounds, the following shall apply:

- (1) The water distribution piping system shall be capable of passing peak flow without excessive frictional loss, such that at peak flow, pressure at each lot or site shall be at least 20 psi;
- (2) Consideration shall be given to possible future expansion in the sizing and layout of the proposed water distribution piping system;
- (3) The water distribution piping system shall be so valved as to allow isolation of major sections of the water distribution piping system for repairs while still providing service to most of the water system;
- (4) The spacing for on-line gate valves installed on water mains shall not exceed every 1,500 feet, and gate valves shall be provided at all intersecting pipes;
- (5) Blow-offs shall be installed to allow flushing of the water distribution piping system near the ends of the water mains, and shall be sized so as to permit high velocities, at least 2.5 feet per second, to be developed in the water distribution piping;
- (6) Where possible, dead-end piping shall be avoided. Near the temporary end of a water main, a gate valve shall be installed to allow future piping extension without shutting down the system or jeopardizing the health of existing consumers;

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(7) Water distribution piping shall be bedded in sand or other appropriate material with a minimum cover of not less than 5 feet for year-round systems;

(8) Piping and valving material and installation techniques shall conform with the appropriate American Water Works Association (AWWA) specification, in accordance with Env-Ws 307, for that type of piping material where such specification exists. Where such specification does not exist for the size pipe specified in the system design, the minimum pressure rating for piping shall be 200 psi and the piping shall meet the manufacturing requirements of the American Society of Testing and Materials (ASTM) specification 2241; and

(9) All buried non-metallic piping shall be backfilled with an effective metal tracing element located above the pipe approximately 6 inches below the finished grade.

(d) Subject to (e), below, if a water main and sewer pipe are to be installed adjacent to one another, a minimum horizontal separation of 10 feet shall be maintained.

(e) When conditions prevent 10 feet of separation, the following shall be considered by the water system:

(1) Where other utilities or obstacles, not including bedrock, prevent such separation, a waiver may be requested to allow location of the sewer pipe not less than 3 feet from a water main horizontally, provided that the water main is in a separate trench or on an undisturbed earth shelf located on one side of the sewer and at an elevation so the bottom of the water main is at least 18 inches above the top of the sewer pipe;

(2) If a water main shall cross a sewer pipe, the water main shall cross above the sewer pipe, with not less than 18 inches of clear separation;

(3) Water piping may cross under sewer piping only when this is demonstrated to be unavoidable and only when granted by specific waiver. Special construction, including use of ductile iron water and sewer pipe, no pipe joints within 9 feet of the crossing points, and minimum 18 inches clearance shall be required; and

(4) Technical criteria supporting a waiver of sewer pipe and water main separation criteria shall include:

a. The topography of the area; and

b. The number of utility interferences.

(f) Other utilities, including, but not limited to natural gas, storm drainage, electric, telephone, steam, and cable television, shall not be installed within 3 feet of water mains.

(g) On-line gate valves and service shut-offs shall be equipped with cast iron gate box extensions. Gate valve boxes shall have cast iron covers clearly marked by the word "water" or other appropriate water supply marking and shall be installed flush with the finished grade.

(h) Rigid connections shall not be used to construct or repair water distribution piping systems.

Source. (See Revision Note at chapter heading for Env-Ws 300); ss by #8499, eff 11-30-05

Env-Ws 373.26 System Construction.

(a) No person shall construct a public water system until all required state and local approvals, including water system design approval, have been obtained. If a portion of the water system is to be constructed at a later date, or phased with the actual growth of the development, this shall be indicated at the time of original submittal.

(b) For non-community water systems serving campgrounds, detailed measurements shall be made of the exact location of all buried water distribution piping and related service connections, gate valves, and blow-offs, and recorded on as-built plans or record drawings.

(c) As-built plans or record drawings of the water distribution piping system shall conform to the following conditions:

- (1) Precisely-measured dimensions to all on-line gate valves;
- (2) Precisely-measured dimensions to all blow-offs;
- (3) Precisely-measured dimensions to all house service shut-offs;
- (4) Precisely-measured dimensions to all house service taps to water mains;
- (5) Precisely-measured dimensions to all water distribution piping at approximately 200 foot intervals; and
- (6) Precisely-measured dimensions to any principal changes in pipe direction or size.

(d) For purposes of this section, “precisely-measured” means of sufficient accuracy to locate the facility or appurtenance to within 1 foot accuracy, recorded to the nearest 0.5 foot.

(e) The water system owner shall file a copy of the as-built plan or record drawing of the water distribution piping system with dimensions noted with the department and with the entity that operates or will operate the water system.

(f) For non-community water systems serving campgrounds, the water system owner shall perform a leakage test of the buried water distribution piping system before system use. The water distribution piping system shall be checked for leakage by conducting a sustained pressure test for at least 2 hours, in accordance with AWWA specification C 600 as specified in Env-Ws 307. Leakage shall not exceed the value given in AWWA specification C 600.

(g) For all non-community water systems, flushing and chlorination of the water distribution piping system shall be required before use. Before the final inspection, the entire water system, distribution pipes, water storage tanks and pumps shall be flushed to remove any dirt or other contaminants, and then chlorinated at a concentration of 50 parts per million in accordance with AWWA specification C 651 as specified in Env-Ws 307. After 24 hours, the system shall then be flushed again to remove all traces of chlorine and a water sample shall be taken from the end of the distribution system and analyzed for bacterial quality at a laboratory accredited for such test.

Source. (See Revision Note at chapter heading for Env-Ws 300); ss by #8499, eff 11-30-05

Env-Ws 373.27 Final Inspection.

(a) Upon completion of the construction of a non-community water system, but before any service is offered, the department shall conduct a sanitary survey, or inspection, of the water system. This inspection shall be performed within 5 working days after notification by the owner of the proposed water system that construction, including all required testing, is complete. The water system shall not be approved for any service unless this inspection is completed.

(b) The proposed operator for a new NTNC water system shall:

- (1) Have taken or arranged to take the operator certification exam as required under Env-Ws 367; and

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(2) Be in attendance at the inspection required under (a), above.

Source. (See Revision Note at chapter heading for Env-Ws 300); ss by #8499, eff 11-30-05

Env-Ws 373.28 Waivers.

(a) Non-community water systems that have operated in compliance with all applicable requirements of Env-Ws 300 for at least 12 months may apply to the department for a waiver of particular design criteria.

(b) Waivers shall not be granted for criteria which pose a direct risk to public health such as proper well construction, back-up wells where required, water quality standards, or the integrity of water storage tank(s).

(c) Waivers shall be granted where the water system can document effective operation in its current configuration.

(d) Waiver requests for non-community water systems sanitary protective area may be submitted by the water system owner as follows:

(1) All requests for waivers shall be submitted in writing and shall be signed by the water system owner and the water system’s designer; and

(2) The request shall include information on technically-important factors for a waiver of the sanitary protective area such as historical water quality, if applicable, overburdened soil depth, soil type, height and consistency of water table, and direction of slope.

Source. (See Revision Note at chapter heading for Env-Ws 300); ss by #8499, eff 11-30-05

Env-Ws 373.29 Expiration of Design Approvals.

(a) An approval for a proposed non-community water system design shall expire 4 years after issuance if 50% or more of the proposed water distribution piping system and pumphouse has not been completed.

(b) Any water system that has completed 50% or more of the proposed water distribution piping system and pumphouse but has not started operation as of 4 years after the approval date shall comply with all then-current design criteria prior to start-up.

(c) A new design review fee and appropriate design revision shall be required for review and re-approval of lapsed designs.

(d) A new complete water quality test shall be required for each source for the appropriate parameters listed in Env-Ws 310 through Env-Ws 316 for re-approval of lapsed designs.

Source. (See Revision Note at chapter heading for Env-Ws 300); ss by #8499, eff 11-30-05

APPENDIX

Rule Section(s)	State Statute(s) Implemented	Federal Statute(s)/ Regulations Implemented
Env-Ws 373.01 - 373.29	RSA 485:1, II(c); 485:8	