

WATERSHED INSPECTION GUIDELINES

Prepared by
Source Water Protection Committee
Connecticut Section AWWA
2010

The protection of drinking water supplies from pollution is an important concern for all of Connecticut's public drinking water suppliers. Watershed inspections are a vital part of a comprehensive source water protection program which should also include the review of proposed development projects and land use changes, monitoring of active construction sites and other sites with higher potential for pollution, and cooperative efforts with municipal and state regulators to mitigate pollution sources that are discovered.

Section 19-13-B102(b) of the Regulations of Connecticut State Agencies (RCSA) requires water utilities to perform an annual sanitary survey of their watershed areas and to submit an annual sanitary survey report to the Department of Public Health (DPH) . Section 25-51 of the Connecticut General Statutes (CGS) authorizes water utility inspectors to enter and inspect premises located within public drinking water supply reservoir watershed areas.

This document has been prepared to assist Connecticut's water utilities in developing a comprehensive watershed inspection program. These guidelines are not intended to serve as strict or definitive standards. Each water utility should develop a watershed inspection program that best suits the characteristics of its watershed areas.

MAPS AND RECORD KEEPING

The water utility should delineate the boundaries of its watershed areas on a watershed map. Geographic Information System (GIS)-based watershed maps are available online at no charge from the Connecticut Department of Environmental Protection and the University of Connecticut's Map and Geographic Information Center (UCONN MAGIC). Specific locations within the watershed should then be selected as inspection sites and if necessary prioritized based on characteristics such as proximity to the reservoir, proximity to watercourses and drainage, type of land use, known or suspected problems, and general topographic and soil conditions. Each site should have an individual written card, form, or computerized record, with a sketch of the site showing the location of buildings and other structures, septic systems, fuel storage tanks, floor drains, nearby watercourses and drains, etc. An identification number should be assigned to all inspection sites listed within the watershed and, if feasible, these numbered sites should be shown on the watershed map.

The following information should be recorded and filed for all sites, regardless of land use type:

1. Inspection site identification number.
2. Watershed name.
3. Address.
4. Name of occupant .
5. Name and address of property owner (if different than #4).
6. Proximity of any nearby watercourses, reservoirs, etc., and type and name (if named) of watercourse.
7. Types of land uses and associated activities.
8. Type of sanitary system (e.g.: sewer or septic). If septic, describe the systems' location, and, if known, any such pertinent information as; date of installation, significant repairs, and when last pumped.
9. Water source. If a well is present, inquire as to its use (e.g.: drinking water, irrigation, etc.). Note the wells location and any other pertinent information.
10. Heating source.
11. Presence of above-ground and underground storage tanks. Record tank contents, size, location and, if possible, the age and condition of the tank. Note any protection measures such as secondary containment or cathodic protection. In the case of non-residential underground tanks, determine if the tank is in compliance with the registration and testing requirements of the Connecticut Department of Environmental Protection (DEP).

12. List of chemicals used and stored on the property.
13. Description of stormwater management system (e.g.: catchbasins, detention areas, drywells, municipal system tie-ins).
14. Presence of floor drains. Record their locations and points of discharge.
15. Numbers and types of large animals (excluding dogs and cats except where their numbers exceed normal amounts).
16. Other conditions which could contribute to water quality problems such as manure piles, trash or debris dumping, improper disposal or spillage of chemicals, erosion, etc.
17. Inspection date. Each inspection date record should include the name or initials of the inspector and any other persons present during the inspection.
18. Health Code violations or other problems noted and actions taken. File should include copies of any violation letters from the water utility to the violator and local agencies.

PROCEDURE FOR INSPECTIONS

If possible, the entire watershed should be inspected on an annual basis or more frequently if resources allow. Besides serving as a means for identifying problems in the watershed, the watershed inspection program can also serve as an opportunity for the water utility to educate the public. The inspector can discuss land-use activities that threaten water supply sources and also distribute educational pamphlets. An informed, concerned public is a very effective partner in watershed protection.

Watershed inspectors should be familiar with the statutes and guidelines that apply to watershed protection including the RCSA, State and local regulations concerning underground storage tanks, DEP guidelines on floor drain discharges, and the Connecticut Guidelines for Sediment and Erosion Control. The inspector should carry a copy of Section 19-13B102(b) of the RCSA and Section 25-51 of the CGS.

When conducting residential inspections, it may be appropriate to provide prior notification to watershed residents or to the local police department. Information which may be helpful to provide to the police include the proposed inspection dates and areas to be inspected, a description of the inspector's vehicle, and the names of the persons conducting the inspections. Easily visible company identification, preferably a photo I.D., should be worn when conducting inspections.

If refused access onto a property, the inspector should politely leave without aggravating the situation. Any such refusals should be documented in writing with the name of the person denying access and their relation to the property. A written request

to inspect the property should be sent to the property owner, with copies sent to the DPH and the local health department. A follow-up phone call to the owner should be made to determine if an alternate inspection date can be arranged. If not, request assistance from the local health department. If an imminent contamination problem is known or suspected on the property, also seek assistance from the DEP. Leave any pamphlets or educational materials at the door of the premises and not in the mailbox. In case of loose dogs, keep the door of your vehicle unlocked or open during the inspection and carry dog biscuits and pepper spray.

It is useful for watershed inspectors to have a digital camera in order to make photographic documentation of violations discovered. Photographs are very helpful in the event enforcement or legal action is necessary to correct a problem. Digital photographs should be labeled with the location, date, time, a brief description, and the name or initials of the inspector.

I. GENERAL WATERSHED INSPECTION PROCEDURES

- A. *Storm Drainage Outlets and Catch Basins.* Check catch basins and outlets for oil sheens, siltation, and hydrocarbon or septic odors.
- B. *Waterbodies.* Inspect streams, rivers, and reservoirs for oil sheens, siltation, or other unusual conditions. It may be appropriate to collect and analyze water samples in order to verify and document suspected water quality problems.
- C. *Dumping.* Check remote or lightly-travelled roads, vacant lots, and wooded areas for illegal dumping, abandoned motor vehicles, fuel or waste drums, and other debris. Notify property owner, municipal staff, and the DEP and note as violations.
- D. *Tank Trucks.* Note any pesticide tank trucks filling from streams and ponds. Request that they cease doing so immediately. It is illegal for pesticide applicators to fill from streams tributary to public water supply. Note any violations and report all such incidents to DEP and DPH.
- E. *Bridge / Road Improvements, Construction Sites, Gravel Mining, Logging.* Check for erosion and sedimentation problems and note if erosion controls have been adequately installed and maintained. Note any problems concerning debris, storage and handling of fuel, machinery fluids, etc.

F. *Spills.* Respond to each spill according to the individual water utility's Emergency Spill Control Plan. The DEP's Oil and Chemical Spill Response Unit (860-424-3338) should be notified immediately. Examples of reportable spills include:

1. An overturned or leaking tanker truck containing fuel oil, gasoline, or other hazardous chemicals.
2. Leaking motor vehicle fluids from an automobile accident.
3. Vehicle fires or accidents with fire department washdown.
4. Sanitary sewer line break.
5. Harmful chemicals or materials deposited near or in watercourses (e.g.: pesticides, salts, leaking containers, waste oil, etc.).
6. Leaking underground storage tanks.

II. **RESIDENTIAL INSPECTION PROCEDURES**

- A. *Sanitary Systems.* Determine if the property is connected to a sanitary sewer system or if an on-site septic system is present. If the property is served by a septic system, determine and note its location. Look for lush grass, gray or black stained ground areas, wet areas or foul odors that are indications that the system may be failing. If the occupant is present, inquire as to septic tank pumping frequency and stress the importance of both having the tank pumped out regularly and of not adding chemicals or cleaners to the system. Explain that waste household chemicals should be disposed of at household hazardous waste collection days or collection centers. Note any violations. Local health authorities can be used as a resource for information on septic system changes, repairs and historic problems.
- B. *Heating Source.* If heating oil is used, determine whether the storage tank is located above or below ground. Inquire about the tanks location, capacity and age. Look for vent pipes and signs of leakage such as oil stained soil. If the tank is located in the basement, inquire if the basement has an impervious floor and if a sump pit or floor drains are present. Note condition of above-ground tanks.
- C. *Domestic Drains and Discharge Points.* Check for laundry waste discharging into catch basins, floor drains, yard and footing drains, lawn areas, and adjacent streams. Inquire as to the drainage discharge points for swimming pool backwash water. It is illegal to discharge pool backwash water into septic systems. Pool backwash water should be discharged to a subsurface disposal system other than the domestic system. Floor drain discharges other than to the

sanitary sewer or a holding tank are illegal. Discharges to a holding tank or sanitary sewer may require a permit from the DEP.

- D. *Fertilizer / Pesticide Use.* Explain the potential impacts of lawn and garden chemicals on water supplies, and stress that their use should be minimized. Recommend that paved areas and storm drains be avoided when applying fertilizers and pesticides, and suggest leaving untreated buffer strips between the application area and wetlands or watercourses.
- E. *Animals.* If livestock such as horses, cows, llamas, goats, etc., are present, determine their proximity to watercourses and wetlands and if manure or erosion from paddock areas could impact these resources. Check for compliance with Section 19-13-B32(e) of the RCSA concerning manure storage and setbacks from reservoirs and watercourses. Note any violations.
- F. *Erosion and Sedimentation.* Look for signs of erosion and sedimentation which may be affecting nearby watercourses or drainage systems. Work with the property owner, local agencies, and the Soil Conservation Service to see that the problem is corrected. Inspect control measures for proper maintenance. Note any violations.
- G. *Dumping.* Look for evidence of dumping of motor oil, paint, litter, demolition debris, auto parts, junk cars, etc. Note any violations.
- H. *Water Bodies.* Note the existence of nearby ponds or watercourses and inspect for possible impacts from activities occurring on the inspection site property. Inquire if aquatic herbicides or other pesticides are applied to any waterbodies at the site and, if so, inquire whether a DEP permit has been obtained per Section 22a-66z of the CGS.

Home Occupations. Inquire about home occupations on the property and if chemical use is involved. Note the existence of any detached buildings and floor drains and inquire about their use.

III COMMERCIAL / INDUSTRIAL INSPECTION PROCEDURES

Conditions at commercial / industrial facilities may change significantly during the course of any given year. Consequently, more frequent inspections of these important facilities should be performed in order to monitor for significant changes in site use or operations.

- A. *Sanitary Systems.* Determine if the property is connected to a municipal sanitary sewer or if an on-site septic system is present. If an on-site system is used, inquire about the system location, the types of materials discharged to the system, use of tank cleaners, and pumping frequency. Be aware that septic systems at commercial and industrial sites are sometimes illegally used to dispose industrial waste chemicals and hazardous materials.
- B. *Heating Source – Fuel Storage Tanks.* If heating oil is used determine whether the storage tank is located above or below ground. Inquire about its location, capacity and age. Non-residential underground tanks of 2100 gallons or more must be registered with DEP and must comply with all testing requirements pursuant to Sec. 22a-449(d)-(RCSA. In addition, all underground tanks of any size containing petroleum liquids or liquids other than those used for on-site heating or intermittent stationary power production (e.g.: waste oil, oil for resale, and gasoline) must be registered with the DEP and must also comply with all testing and inventory requirements. Refer to the DEP's guidance booklet regarding nonresidential underground storage tank regulations or contact DEP's Hazardous Materials Management Unit at 860- 424-4193. Also check for compliance with any applicable local and federal regulations for underground storage of fuel, oil, and chemicals. It is recommended that above-ground tanks be situated on a bermed impervious surface designed to contain at least 110% of the volume of the tank. It is also recommended that the containment area be roofed for protection from rain and weathering, and lined with a sealant suitable for contact with the stored material. Enclosing the tank on all sides is even more desirable and may also be preferable to the property owner for aesthetic reasons.
- C. *Wastewater Discharge.* Determine if there are any illegal wastewater discharges to the environment via floor drains, drywells, storm sewers, septic systems, etc. Also determine if wastewater discharges to the sanitary sewer or holding tanks have been permitted by the DEP. Note any violations.
- D. *Floor Drains.* Determine if floor drains are present and their discharge point. Discharges other than to a sanitary sewer or a holding tank are illegal. Note any violations. In many cases (e.g.: vehicle maintenance floor areas) floor drain discharges to the sanitary sewer or a holding tank will require a DEP General Permit and, if the drain discharges to a sanitary sewer, pretreatment in a 1000 gallon oil and grit separating tank prior to discharge is also required. For more information contact the DEP Water Management Unit at 860-424-3020.

- E. *Water Source*. Determine if there is an on-site well and if so, what it is used for (e.g.: drinking water, cooling water, irrigation). Improperly sealed or poorly located wells may serve as conduits for industrial chemicals to enter the groundwater.

- F. *Chemical Handling*. Check to see that raw and waste materials which are potentially harmful to the environment would be properly contained in the event of a spill, leak, or fire. Note any signs of leakage or spills. Recommend that spill containment equipment be stored on-site and that employees be trained to deploy it. Check nearby catch basins, streams, etc., for signs of illegal discharges such as oil sheens, hydrocarbon or septic odors. If evidence of discharges are found, contact DEP for assistance.

- G. *On-Site Hazards*. Look at the general conditions of the site and note such problems as erosion and sedimentation, improperly stored or corroded drums of harmful materials, containers of waste oil, litter, auto parts, junk cars, stained soil, hydrocarbon or septic odors, etc. Note any violations.

- H. *Stormwater Drainage Systems*. Determine type of drainage system (e.g.: surface discharge, drywells, or municipal system). Examine for signs of contamination and illegal discharges.

- I. *Water Bodies*. Note the proximity of nearby wetlands, ponds and watercourses and inspect them for evidence of possible impacts from activities occurring on the inspected property. Inquire about pesticide usage in any waterbodies on site. If pesticides are used inquire whether a DEP permit has been obtained per Section 22a-66z of CGS.

- J. *Erosion and Sedimentation*. Look for signs of erosion and sedimentation that may be affecting nearby watercourses or drainage systems. Work with the property owner, local agencies, and the Conservation Districts to see that any erosion problems are corrected. Inspect erosion control measures for proper maintenance. Note any violations.

- K. *Fertilizer/Pesticide Use*. Inspect storage areas of pesticides and fertilizers especially at golf courses, farms, nurseries and orchards. Storage areas should have impervious floors with no floor drains, and should also be roofed or otherwise covered, and secure. Recommend that paved areas and storm drains be avoided when applying fertilizers and pesticides, and that untreated buffer

strips be left in between application areas and adjacent wetlands and watercourses.

- L. *Animals*. If large numbers of livestock such as horses and cows are present, review the manure management practices for the site to determine if manure contaminated or nutrient-rich runoff from the site could impact nearby watercourses. Check for compliance with Section 19-13-B32(e) of the RCSA concerning manure storage and setbacks from reservoirs and watercourses. Note any violations.

IV. REPORTING

An annual sanitary survey report must be prepared and submitted to DPH by March 1st of the following year. All violations should be noted in the report, with special emphasis on repeat or chronic problems. Send a separate letter listing the repeat violations to DPH requesting their assistance in resolving outstanding violations. A list of violations should also be submitted to the local health agency for enforcement action. The water utility may also want to notify the property owner of any violations. Contact the local health department and other pertinent agencies periodically to keep abreast of the status of these violations.

Certain violations, such as those pertaining to fuel spills and hazardous materials, should also be referred to the DEP.

V. ROAD SIGNS

Signs identifying public drinking water supply reservoirs and tributary streams can be posted at roadsides and road crossings. Signs identifying the limits or boundaries of public drinking water supply watersheds can also be posted along state and local roads.

CONNECTICUT STATUTES AND REGULATIONS

Connecticut General Statutes

www.cga.ct.gov/LCO/Statute_Web_Site_LCO.htm

- Sec. 20-341(a-m).....Licensing of Septic System Installers and Pumpers
- Sec. 22a-66z..... Permits for Use of Pesticides in State Waters
- Sec. 22a-417..... Discharge of Sewage to Water Supply Impoundment
- Sec. 22a-329..... Erosion & Sediment Control Plan
- Sec. 22a-430b..... General Permit for Construction Activities
- Sec. 22a-423.....Definition of Sewage
- Sec. 25-38..... Carcass of Animal in Water Supply
- Sec. 25-43..... Bathing In & Pollution of Reservoirs
- Sec. 25-51..... Utility Inspection Authority
- Sec. 26-128..... Carp & Goldfish

Regulations of State Agencies- Connecticut Public Health Code

www.dir.ct.gov/dph/PHC/browse.asp

- Sec. 19-13-B1 Constitution of Public Nuisance
- Sec. 19-13-B21 Manure Storage
- Sec. 19-13-B31 Stagnant Water
- Sec. 19-13-B32 Watershed Sanitation
- Sec. 19-13-B102..... Standards for Quality of Public Drinking Water
- Sec. 19-13-B102(a-e)... Subsurface Sewage Disposal Criteria
- Sec. 19-13-B102(b).. Utility Requirement for Watershed Inspection

Regulations of State Agencies- Connecticut Dept. Environmental Protection

www.ct.gov/dep/cwp/view.asp?a=2704&q=323518

- Sec. 22a-449(d).....Residential and Nonresidential Underground Storage of Oil & Petroleum Liquids
- Sec. 22a-462-3.....Registration & Labeling of Sewage System Additives

STATE AGENCIES

CT DEPT. OF PUBLIC HEALTH

410 Capitol Avenue
Hartford, CT 06134-0308
www.ct.gov/dph

Drinking Water Section	(860) 509-7333
Septic System Information	(860) 509-7296
Local Health Administration Branch	(860) 509-7660

CT DEPT. ENVIRONMENTAL PROTECTION

79 Elm Street
Hartford, CT 06106-5127
www.ct.gov/dep

Pesticide Management	(860) 424-3369
Solid Waste Management	(860) 424-3366
Water Management	(860) 424-3020
Hazardous Waste Mgt.	(860) 424-4193
Oil/ Chemical Spills	
	(860) 424-3377 (Non Emergency)
	(860) 424-3338 (Emergency)
Leaking Underground Storage Tank	
	(860) 424-3376
Septic System Information	(860) 424-3018
Aquifer Protection	(860) 424-3020

Sec. 25-51. Injunction against injury to water supply or source. Whenever any land or building is used, occupied or allowed to remain in a condition such that it is or could be a source of pollution to any public water supply reservoir or associated watershed, including, but not limited to, any watercourse, wetland or drainage system from which water flows to a public water supply reservoir or any public water supply well or associated aquifer protection area, as defined in section 22a-354h, the municipality or water company, as defined in section 25-32a, having charge of such reservoir or well, or the local director of health or the local director's agents, may apply for relief to the superior court for the judicial district wherein such reservoir, watershed, well or aquifer protection area is located, and said court may make any order in the premises, temporary or permanent, which, in its judgment, may be necessary to preserve the purity of such water. **The municipality or water company, by its officers or agents duly appointed, or the local director of health, or the local director's agents may, at all reasonable times, enter upon and inspect any premises within the watershed tributary to, or aquifer protection area of, such water supply and, if any nuisance likely to pollute such water is found therein, the local director of health or the local director's agent may abate such nuisance after reasonable notice to the owners or occupants** of such premises and their refusal or neglect to abate the same, and the municipality or water company shall be liable for all unnecessary or unreasonable damage done to such premises.

Public Health Code

19-13-B102. Standards for quality of public drinking water

- (b) Watershed survey. A public water system using surface water as an active source of supply shall make a sanitary survey of the watershed to the intake at least annually. A report on the survey shall be submitted to the Department by March 1 each year covering the preceding calendar year.

19-13-B32. Sanitation of watersheds

Unless specifically limited, the following regulations apply to land and watercourses tributary to a public water supply including both surface and ground water sources.

- (a) As used in this section, "sewage" shall have the meaning found in section 19-13-B20 (a) of the public health code: "Toxic metals" shall be arsenic, barium, cadmium, chromium, lead, mercury and silver and the salts thereof: "high water mark" shall be the upper limit of any land area which water may cover, either standing or flowing, at any time during the year and "watershed" shall mean land which drains by natural or man-made causes to a public drinking water supply intake.
- (b) No sewage disposal system, cesspool, privy or other place for the deposit or storage of sewage shall be located within one hundred feet of the high water mark of any reservoir or within fifty feet of the high water mark of any stream, brook, or watercourse, flowing into any reservoir used for drinking purposes.
- (c) No sewage disposal system, cesspool, privy or other place for the deposit or storage of sewage shall be located on any watershed, unless such facility is so constructed that no portion of the contents can escape or be washed into the stream or reservoir.
- (d) No sewage shall be discharged on the surface of the ground on any watershed.
- (e) **No stable, pigpen, chicken house or other structure where the excrement of animals or fowls is allowed to accumulate shall be located within one hundred feet of the high water mark of a reservoir or within fifty feet of the high water mark of any watercourse as above mentioned, and no such structure shall be located on any watershed unless provision is made in a**

manner acceptable to the commissioner of health for preventing manure or other polluting materials from flowing or being washed into such waters.

- (f) **No toxic metals, gasoline, oil or any pesticide shall be disposed of as a waste into any watercourse tributary to a public drinking water supply or to any ground water identified as supplying a public water supply well.**
- (g) Where fertilizer is identified as a significant contributing factor to nitrate nitrogen occurring in excess of 8 mg/l in a public water supply, fertilizer application shall be made only under current guidelines established by the commissioner of health in cooperation with the state commissioner of agriculture, the college of agriculture of the University of Connecticut and the Connecticut agricultural experiment station in order to prevent exceeding the maximum allowable limit in public drinking water of 10.0 mg/l for nitrite plus nitrate nitrogen.
- (h) Where sodium occurs in excess of 15 mg/l in a public drinking water supply, no sodium chloride shall be used for maintenance of roads, driveways, or parking areas draining to that water supply except under application rates approved by the commissioner of health, designed to prevent the sodium content of the public drinking water from exceeding 20 mg/l.
- (i) **The design of storm water drainage facilities shall be such as to minimize soil erosion and maximize absorption of pollutants by the soil. Storm water drain pipes, except for crossing culverts, shall terminate at least one hundred feet from the established watercourse unless such termination is impractical, the discharge arrangement is so constructed as to dissipate the flow energy in a way that will minimize the possibility of soil erosion, and the commissioner of health finds that a discharge at a lesser distance is advantageous to stream quality. Special protections shall be taken to protect stream quality during construction.**

Sec. 22a-66z. (Formerly Sec. 19-300u). Permits for use of pesticides in state waters.

The Commissioner of Environmental Protection may issue permits for the introduction of chemicals into the waters of the state for the control of aquatic vegetation, fish populations or other aquatic organisms. Application for said permit shall be on forms provided by the commissioner and shall be accompanied by a fee established by the commissioner by regulations adopted in accordance with the provisions of chapter 54 provided the fee shall be not less than twenty dollars. No permit shall be issued without prior approval, if the proposed application of chemicals involves areas tributary to reservoirs, lakes, ponds or streams used for public water supply, by the Commissioner of Public Health. Each permittee shall be responsible for any and all damages resulting from the applications of any pesticide to control aquatic vegetation, fish populations or other organisms. The commissioner, acting with the Department of Public Health, may establish regulations governing the use of pesticides in the waters of the state, including the marine district. The provisions of this section shall not apply to normal, emergency or experimental operations of the Department of Environmental Protection, the Department of Public Health or public water supply utilities, except that chemicals may not be applied to waters used for water supply furnished to the public or tributary to such water supply without prior approval of the Department of Public Health. Enforcement officers of the Department of Environmental Protection and the Department of Public Health may enforce the provisions of this section.