Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
One Winter Street Boston, MA 02108 • 617-292-5500

A Small Public Water System Guide to Developing a Wellhead Protection Plan (WHPP)

(pws <100,000 gpd)

updated 2014

1. Identify and map the recharge area

The recharge area to your well is comprised of the Zone I and the Interim Wellhead Protection (IWPA). The Zone I is the immediate 100' to 400' radius around the wellhead. The radius is determined by the metered rate of withdrawal or the approved pumping rate. When there is no metered withdrawal or approved rate, the default radius is 100'. The IWPA is proportional to the approved pumping rate or metered withdrawal. If you do not have a map of your Zone I or IWPA please call the Drinking Water Program at 617-556-1070.

2. Identify and mitigate threatening land uses and activities

- Map the location of uses and activities in the IWPA (septic systems, buildings, parking lots etc), or include an ortho map of the IWPA in the protection plan.
- Restrict access to the well by posting signs or fencing the Zone I.
- Keep all non water supply activities out of the Zone I.
- When feasible, remove underground storage tanks and septic systems from the Zone I.
- Slope parking areas and concrete storage pads away from the wellhead.
- Seal floor drains which discharge directly to the groundwater.
- Store garden chemicals, deicers, motor oil, gasoline, paints and equipment outside the Zone I.
- Store hazardous materials outside the Zone I in a secure building on an impermeable surface with adequate spill containment.
- Do not increase impervious surfaces (such as parking areas) in the Zone I.
- Use natural gas, propane or solar for power.

4. Educate and Inform

If you are a pws that has a facility (business or a residential/ institutional) in the Zone I;

- Inform staff that your facility provides water to them and to the public.
- If there is a septic system post signs instructing staff what not to pour down the drain.
- Send letters to land owners in the IWPA informing them of their location in a water supply area and the steps they can take to maintain clean drinking water.
- Provide your municipal Board of Health with a map of your IWPA and request them to adopt a hazardous materials health regulation that covers the recharge areas.

Massachusetts Department of Environmental Protection
Drinking Water Program - Wellhead Protection Plan Checklist
Guidelines for Small Systems (sources pumping <100,000gpd)

Developing a Wellhead Protection Plan (WHPP) is integral to ensuring a good clean drinking water supply. The key components of an approved WHPP are identified below. This checklist can be used to ensure your plan meets MassDEP's minimum criteria for a WHPP. To use this guide, review each component below and check off each one when implemented. If all components are complete, you have a successful WHPP in place. Although WHPP are not required by MassDEP they are strongly encouraged. If you would like to be notified of having an approved WHPP, please sign and submit the completed WHPP Checklist to MassDEP Drinking Water Program 1 Winter St. Boston MA 02108. For assistance call 617-556-1070.

System Name:	**PWS ID#:**
Municipality:	**Wells (01G, 02G etc)**

☐ **1. The plan identifies the wellhead protection committee/team members -** The wellhead protection committee/ team can be just the pws or can include other stakeholders such as employees, the certified operator and land owners located in the recharge area.

☐ **2. The plan includes a current map of the Zone I/IWPA that shows (or lists) the current uses and activities -** Use your SWAP map (if land uses have not changed) or most recent DEP Site Exam Report, or an Ortho map from MassGIS**,** or conduct an inspection of the Zone I/IWPA and locate uses on a local assessor's map.

☐ **3. The plan describes the <u>existing</u> protection measures -** ie. protection signs posted; wellhead fencing; Zone I inspections; land purchases or MOU's with landowners; threat removal; drainage improvements; floor drain sealed; protection controls adopted by the municipality (bylaws/health regulations) that include the Zone I or IWPA. Note: Many small systems are located in a Zone II of another PWS that is protected by the municipality, if this is true for you be sure to note this in your WHP plan.

☐ **4. The plan identifies potential threats to the water supply and the protection strategies to address them -** Refer to your SWAP Report, DEP Site Exam Report, sanitary surveys and your own inspections. See #3, #6 and the BMP list for strategies.

☐ **5. The plan includes public education and outreach -** This includes providing source protection informational material to land owners in the Zone I or IWPA and meeting with stakeholders and local officials to discuss protection.

☐ **6. The plan includes an Action Plan (timeline/(schedule) for accomplishing the identified protection strategies (see examples in #3) -** A timeline is important to a successful WHPP. It can include threat removals and other planned activities: ie. Remove septic system from Zone I, (date); Fence pump house (date); Improve wellhead drainage (date); Post protection signs(date); Conduct inspections; Meet with land owners; Meet with the Board of Health etc.

Signature **Date**

PROTECTION PLANS SHOULD BE UPDATED EVERY 3- 5 YEARS OR
WHENEVER THERE IS A CHANGE TO ONE OF THE KEY COMPONENTS

WELLHEAD PROTECTION PLAN
ACTION PLAN

PWS :
DATE:

ACTION	RESPONSIBLE ENTITY	TIMELINE
eg. Fence the pump house	*PWS*	*date*
Update Plan	PWS	Date :

Threats to Drinking Water Quality

Residential Uses *(viruses, bacteria, nitrates, chemical compounds)*

- Failing Septic Systems, chemical septic system cleaners
- Improper storage and application of fertilizers, pesticides and lawn care chemicals
- Disposal of household cleaners, automotive products, poisons, waste oil, paint thinners, gasoline, pet waste into septic systems, backyard pits and storm drains.
- Driveway runoff of oils, gasoline, heavy metals, deicing chemicals
- Leaking underground heating oil tanks

Schools and Institutions *(chemical compounds, solvents, nitrates)*

- Disposal of oil, paints, chemicals into floor drains, sinks or directly to the ground
- Contaminated runoff from parking areas
- Improper fertilization of recreation fields
- Equipment wash waste water

Municipal Uses *(sodium chloride, heavy metals, petroleum)*

- Improper storage and application of deicing chemicals
- Street sweeping into open storm drains
- Public works garages; auto maintenance, equipment wash waste water
- Uncapped/Unlined landfills, open dumps
- Leaking sewer lines/oil lines
- Improper storage/application of pesticides and fertilizers
- Contaminated runoff from roads, parking lots

Commercial and Industrial Uses *(heavy metals, petroleum, sodium chloride)*

- Improper storage, disposal and management of hazardous materials/waste
- Abandoned or leaking underground storage tanks
- Spills and releases that go unattended
- Floor drains which discharge directly to the ground
- Exposed bodies of water from mining, sand and gravel operations,
- Waste storage lagoons
- Transportation spills and releases

Agricultural Uses *(nitrates, bacteria, viruses)*

- Improper use/storage of pesticides, herbicides, animal manure, fertilizers
- Improper irrigation methods
- Animal burial
- Storage lagoons
- Contaminated runoff and equipment wash waste water

In addition to potential threats posed by high risk land uses and activities in the recharge area, small public water suppliers should routinely inspect for threats that occur at the well site.

This component of the inventory should be conducted by the certified operator. Look for:

- **Cracks in sanitary seals, grouting, casing, and concrete pads**
- **Concrete pads that do not slope away from the well**
- **Unscreened openings in vents and water level ports**
- **Cross connections**
- **Vents and valves that aren't pointed to the ground**
- **Unprotected chemical feeders that aren't tamper proof**
- **Unapproved well cleaning chemicals**
- **Old oil-drip lubricated pumps**
- **Well casing that doesn't extend above ground**
- **Back flow prevention valves which do not operate properly**

BEST MANAGEMENT PRACTICES

For small water systems that do not own or control the Zone I, Best Management Practices (BMPs) are often the primary tool for protecting the water supply from contamination. BMPs focus on good house-keeping, spill prevention, proper storage, and operational practices that eliminate or reduce hazardous material releases in the Zone I.

BMPs in the Zone I

- ☑ **Keep non water supply activities out of the Zone I**
- ☑ **Do not establish parking areas in the Zone I**
- ☑ **Do not store or use lawn chemicals, road salt/deicers, motor oil, gasoline or paints in the Zone I or pump house**
- ☑ **If possible, remove or relocate underground storage tanks, hazardous materials, and septic systems from the Zone I**
- ☑ **Store hazardous materials in a secure building on an impermeable surface with adequate spill containment.**
- ☑ **Use propane, natural gas or solar energy to power pumps.**
- ☑ **Seal floor drains in the Zone I.**
- ☑ **Properly label, store and dispose of hazardous substances.**
- ☑ **Restrict access to the well and post water supply protection signs.**

If you do not own the Zone I and you have not been able to purchase the land, a Memorandum of Understanding or Agreement may be an additional tool for enhancing source protection. An MOU/MOA does not give control of the land to the pws nor does it prevent the land owner from using their land. However it can improve protection if both parties adhere to it In general, land owners participating in an MOU/MOA do so because they are actively interested in protecting drinking water quality.

SAMPLE SIMPLE MOU/MOA

MEMORANDUM OF UNDERSTANDING/AGREEMENT

FOR (name of public water system)

This memorandum is agreed to by [name of landowner(s)] and [name of PWS] for the purpose of protecting the drinking water quality of the [name of well(s)]. The area affected by this agreement is the MassDEP approved Zone I land area as shown on the [name of map].

Activities of concern in the Zone I include: *(specify your concerns e.g. septic system, agricultural activities, equipment maintenance, hazardous materials storage, etc*).

To ensure the protection of the water quality for the [residents/staff] of [name of community/facility] the following Best Management Practices will be used by [name of land owner(s)] to the extent feasible and include:

Note: Cite applicable BMPs, include whatever practices are needed to ensure water quality and which the landowner will agree. For example:

1. Agriculture; no storage or application of fertilizers, pesticides, animal manure (or) storage of fertilizer, pesticides, animal manure will be located (specify location) and contained in a manner that will not allow contaminants to reach the groundwater ; and
2. Septic systems; no chemicals, petroleum products, or other hazardous or toxic substances, including septic system cleaners, will be placed into the septic system and system will be pumped (specify frequency).

This Memorandum will become effective when it is signed by participating parties.

public water supplier signature/date _____.

land owner signature/date _____.

(submit to DEP for review prior to signing and notarization)

Sample Notification Letter to Residences or Businesses

To be effective, the letter should address issues specific to your situation. It is important to tailor the letter and recommendations to that business or residence.

Dear *(Resident/Business)*:

I am writing to advise you of the location of the *(name of public water supply system)* which serves *(number of people)*. Your property is located within the area from which water flows to the well. This area should be protected from land uses and activities that threaten the quality of the water supply.

Groundwater comes from rain and snowmelt percolating through the ground, and flows through the spaces between soil particles and through fractures in rock. Groundwater is vulnerable to contamination from many types of land uses and activities, including road salt, septic systems, and improper disposal of hazardous materials. If the groundwater becomes contaminated it may be impossible to eliminate the contamination.

I am contacting you to request your assistance and cooperation in protecting this supply. There are a number of ways in which you can help reduce the possibility of contamination of this water supply. For example:

- If your house/business is served by a septic system
  - ✓ pump out the tank every two to three years;
  - ✓ do not use commercial septic tank cleaners as these materials reduce the effectiveness of the system by killing necessary microorganisms and can pass through the system and contaminate the groundwater; and
  - ✓ do not put hazardous materials down the sink, toilet, or floor drain.
- Do not apply hazardous or toxic materials to lawns or other areas of your property as they can seep into the ground and reach the water supply
- Do not dispose of used motor oil on your property or into storm sewers.

Enclosed is a fact sheet which I urge you to read. If you have any questions, please contact *(your name and phone number)* or the MassDEP Drinking Water Program at (617) 292-5770.

The management and customers of the *(name of water system)* appreciate your cooperation in protecting this important source of drinking water.

Sincerely,

Public Water Supplier

CLEAN DRINKING WATER IS UP TO YOU!

Where does my drinking water come from? Your drinking water comes from groundwater. Groundwater is the water that flows through the spaces between soil particles and through fractures in rock. It comes from rain and snowmelt percolating through the ground.

Why should I be concerned? Contaminants (such as pathogens, oils, and toxic chemical compounds) can reach your water supply through direct discharges above and below the land surface and through storm water leachate and runoff.

DO	DON'T
Use non-toxic and less-toxic alternatives to household chemicals.	*Don't* buy more hazardous chemicals than you need.
Follow package directions on pesticides, fertilizers, and other household chemicals. Take leftover household chemicals to your community's household hazardous waste collection day.	*Don't* over-use household chemicals. More is *not* better. *Don't* use pesticides, fertilizers or herbicides near the well.
Inspect your heating tank • Check your heating oil tank frequently for leaks • Remove a deteriorating underground storage tank (UST)	*Don't* dispose of hazardous chemicals by pouring them down household drains, into the storm drain, or onto the ground. *Don't* locate new fuel storage tanks in the Zone I.
• Replace USTs with above-ground storage that has secondary containment and a cover over it	*Don't* have your tank removed by a contractor who is not familiar with state guidelines for UST removal.
Take care of your septic system. • Keep records of septic system maintenance • Inspect septic tank every year. • Have tank pumped out every two to three years • Avoid damage to your leach field and distribution lines by keeping vehicles, livestock, and other heavy objects off the leach field	*Don't* overload your septic system with solids by using a garbage grinder (unless the septic system was specifically designed for a grinder). *Don't* pour grease or cooking oil down the drain; it will clog the soil and leaching system. *Don't* pour chemicals,including bleach, down the sink or toilet. *Don't* use septic system cleaners or additives.