



Aquifer Protection Area Mapping

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Aquifer Protection Area maps show the boundaries of the areas supplying groundwater to Connecticut’s largest public water supply wells. These are wells in stratified drift that serve more than 1,000 people. Mapping the contributing areas is the responsibility of the water company that owns the wells.

Groundwater and its movement can’t be seen on the land surface, making groundwater mapping complicated, expensive, and time consuming. Therefore, the mapping is completed in two phases: (1) Level B, or preliminary mapping; and (2) Level A, or final mapping.

The Level B mapping provides only a rough estimate of the contributing areas to the well field. (See Figure 7 below.) This mapping is based upon very limited information about the wells. It is essentially a circle around the well based on the pumping rate, which is extended uphill to encompass areas that topographically drain down into the circle. The Level B mapping was completed for most existing well fields in the 1990s and distributed to the towns for planning and inventory purposes only, as it was not an accurate boundary to be used as a regulatory boundary.

The Level A mapping is a refinement of Level B mapping, and replaces Level B once completed. The Level A mapping is based

on extensive site-specific data and groundwater modeling. This mapping must be conducted in accordance with DEEP’s mapping regulations [Section 22a-354b-1 of the RCSA], and DEEP must review and approve it. The shape and size of the area encompassed by the Level A mapping can be significantly different from the Level B area. (See Figure 7 below.)

The Level A mapping defines the regulated Aquifer Protection Area. When the Level A mapping is completed and approved, an approval letter is sent by DEEP to the water company and the municipal Aquifer Protection Agency receives a copy. This serves as an alert that Agency action will be needed shortly. A separate, formal notification letter is subsequently sent to the town. The notification letter outlines the steps the municipality must take and sets implementation deadlines for the town to establish their local Aquifer Protection Area program.

3.1 | Delineation of Aquifer Protection Areas

When DEEP sends the town the formal notification of mapping approval, the approved Level A mapping will be included. The Agency must delineate each Aquifer Protection Area boundary on the town’s official Zoning District Map in accordance with



Figure 7. Level A and Level B Aquifer Protection Areas. This map shows both the Level B (Preliminary) indicated by the blue line, and the Level A (Final) mapping indicated with a red line, of an Aquifer Protection Area. The Level B is a rough approximation of the area from which the well is pulling groundwater, with the well essentially centered in the area. The Level A is based on more extensive site-specific information which takes into account the nearby streams and the extent and properties of the aquifer materials. The Level A area is significantly different in shape and location and much more accurately shows the areas contributing groundwater to the well.

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CGS § 22a-354n. If no Zoning District Map exists, the Agency must delineate the Aquifer Protection Area on the town's Inland Wetlands and Watercourses Map.

The delineation must include the area as shown on Level A maps approved by DEEP. The DEEP provides maps to towns at a 1:12,000 scale, as this is a typical zoning map scale. However, the DEEP can provide maps at any scale the town requests. Electronic copies of the maps are available for download from DEEP's website on the GIS download page at www.ct.gov/deep/gis.

The map delineation must be completed within four (4) months of DEEP's notice that Level A mapping is approved. [RCSA Sec. 22a-354i-2]

There may be multiple Aquifer Protection Areas in a town. The mapping for each will not necessarily be completed at the same time, as each well field and Aquifer Protection Area is considered independently. Therefore, the town may need to conduct the delineation procedure more than once, depending on the number of Aquifer Protection Areas, the timing of map completion, and development of future well fields.

3.1.1 Delineation Procedures

Once DEEP provides the Level A mapping to the town, the municipal Aquifer Protection Agency must adopt the APA within one hundred twenty (120) days after notification. Because the mapping is based on numerical groundwater modeling, the boundaries do not necessarily follow physical features visible on the land surface, and may cut across property lines, roads, streams, etc. Therefore, the delineation of the boundaries may be done in one of two manners:

- (1) the boundary line on the Level A map can be transferred to the local maps exactly as provided by DEEP, or
- (2) the boundary line may be extended out to the nearest identifiable physical feature to clarify the location for administrative purposes.

These options are described in more detail below. In either case, the boundary must be delineated on the Zoning District Map, or if no Zoning District Map exists, then it must be delineated on the town's Inland Wetlands and Watercourses map. If the Aquifer Protection Agency is not the Agency with jurisdiction over the Zoning map (or Wetlands map if appropriate), there must be cooperation between the two agencies to accomplish the delineation.

Option 1: Delineation of APA Boundaries as Provided by DEEP

Delineating the Aquifer Protection Area boundaries consists of transferring the Level A mapping boundaries onto the town's Zoning map. When the boundaries are transferred exactly as provided by DEEP, the adoption process should follow the Regulations of Connecticut State Agencies [RCSA

Sec. 22a-354i-2]. The "Aquifer Protection Area Map Delineation Flow Chart" indicates the necessary actions and timeframes to accomplish the delineation, and it may be used as a checklist for the adoption process. Adopting the boundaries as provided by DEEP is a simpler administrative process than Option 2 below.

Option 2: Extension of APA Boundaries for Administrative Purposes

As mentioned above, APA boundaries do not necessarily follow property lines or identifiable physical features. In order to clarify the location of an APA boundary, the Agency may extend the boundary to coincide with the nearest property line, municipal boundary or topographic feature. The extension must, at a minimum, fully encompass the APA bounded by the approved Level A mapping, but shall not exceed the distance necessary to clarify the location of the APA or facilitate the administration of regulations. When APA boundaries are extended for administrative purposes, the adoption process must follow RCSA Sec. 22a-354i-4. The "Extension of APA Boundaries Flow Chart" indicates the necessary additional actions and timeframes to accomplish the extended boundary delineation. The APA boundary may not be extended without written approval of the Commissioner, and requires more extensive public notice than adopting the map as provided by DEEP.

DEEP urges towns to carefully consider any proposed boundary extension and to minimize extensions as much as possible. While boundary extension can facilitate administration of the program, such extensions are vulnerable to challenge by the affected property owners. Zoning district lines and property lines should be examined to see how well they match the APA

Aquifer Protection Area vs. Zoning

The delineated Aquifer Protection Area drawn on the town's official zoning map is subject to local Aquifer Protection Area regulations.

The APA is *not* a typical zoning district and it is *not* part of local zoning regulations. Unlike zoning, existing land use activities as well as future land use activities are regulated under the APA program.

The statutory authorities and regulations for zoning and Aquifer Protection Areas are separate and distinct. It is therefore very important to differentiate the Aquifer Protection Area from a zoning district.



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boundary. These lines, road boundaries, topographic features, or easily measurable distances from any such features may be used to extend the boundaries. Existing land use conditions are also an important consideration. For example, in residential areas where the APA regulations have relatively little impact, extending the boundary to existing property lines may simplify administration. However, care should be used, particularly where the boundary line runs through a business property and the portion of the property outside the boundary is large enough to be used for other purposes. In that case, if the boundary line were taken directly from the Level A map, the business could conceivably install new regulated uses on their property outside the APA. The business could therefore reasonably argue against such a boundary extension.

3.1.2 Notice Requirements

The Aquifer Protection Agency must carry out the proper public notice requirements for the delineation. The notice should appear in the newspaper and include a map or a detailed description of the Aquifer Protection Area and the name, address and telephone number of a representative of the municipal Aquifer Protection Agency who maybe contacted for more information. Examples of notices are included at the end of this section.

3.1.3 Availability of Aquifer Protection Area Map

A map of the delineated Aquifer Protection Area boundaries must be made available for inspection in the Office of the Town Clerk or the Agency during regular office hours.

3.1.4 Effective Date of Map

The effective date of the map is important in that it sets the date for the eligibility of facilities to register their land use activities. The effective date is the date of publication of the map in the newspaper or otherwise established by the Agency. To verify completion of the delineation process, send a copy of the map with the effective date to the DEEP Aquifer Protection Area Program at:

Aquifer Protection Area Program
CT Department of Energy and Environmental Protection
Bureau of Water Protection and Land Reuse
79 Elm Street
Hartford, CT 06106-5127

3.1.5 Requesting Maps of Special Scale or Electronic Format

Final (Level A) maps will be (or have been) provided to towns as the mapping is approved by DEEP. However, if the town needs an additional copy, a special scale to match the existing zoning map, or would like the map in electronic format (as a GIS shape file), please contact DEEP at 860-424-3020.

3.1.6 Security Issues

Specific water supply well locations should not be shown on delineated maps or made available to the general public, for

security-related reasons. However, regulated entities must be able to determine if they are within 500 feet of the well field, because commercial fuel oil tanks are only regulated under the program if they are within 500 feet of the well field. The DEEP can provide a map to the town showing a 500-foot radius line, if requested. Because the approximate location of the supply wells could be determined from this information, it should not be publicly disseminated. The town may either:

- (1) Make a separate map showing the 500-foot line that is kept on file at the Town Clerk or the Agency's office and may not be copied or borrowed. The businesses within the APA would be required to come in and check the map to determine if they are located within the 500-foot line; or
- (2) The Agency and water utility can review the inventory of land uses within the 500-foot area. Because the area is relatively small and the water company typically owns much of the land within that area, there may be very few facilities within the 500-foot area. It may therefore be more efficient (for both the registrants and the Agency staff) for Agency staff to notify potential registrants that are within the 500-foot area. Additional security issues regarding the mapping can be referred to DEEP or to the water company that owns the wells.

3.2 | Challenges to Aquifer Protection Area Boundaries

In accordance with CGS Section 22a-354n, no person may challenge the boundaries of the Aquifer Protection Area at the local level unless the challenge is based solely on a failure by the Agency to properly delineate the boundaries in accordance with state regulations. Any other challenge must be in the form of a petition to the DEEP in accordance with the mapping regulations under RCSA Sec. 22a-345b-1(j).

3.3 | Revisions of Aquifer Protection Areas

Water companies may be required to revise the mapping of APAs if, for example, they are adding a new well, removing or decommissioning a well, or if new data on the aquifer becomes available. These situations are infrequent, but if they occur, the water company must first submit a plan for revising the mapping and then the revised mapping from DEEP for DEEP's approval. The Agency would receive a copy of the approval of the plan for revising the mapping, which would serve as notice to the town that the mapping is in the process of being revised. The timeframe between approval of the plan and approval of the revised mapping is typically six months to a year. DEEP will notify the Agency when the revised APA mapping is approved. The Agency will then need to adopt the revised APA and delineate the revised area by following the formal procedures outlined in the above paragraphs.

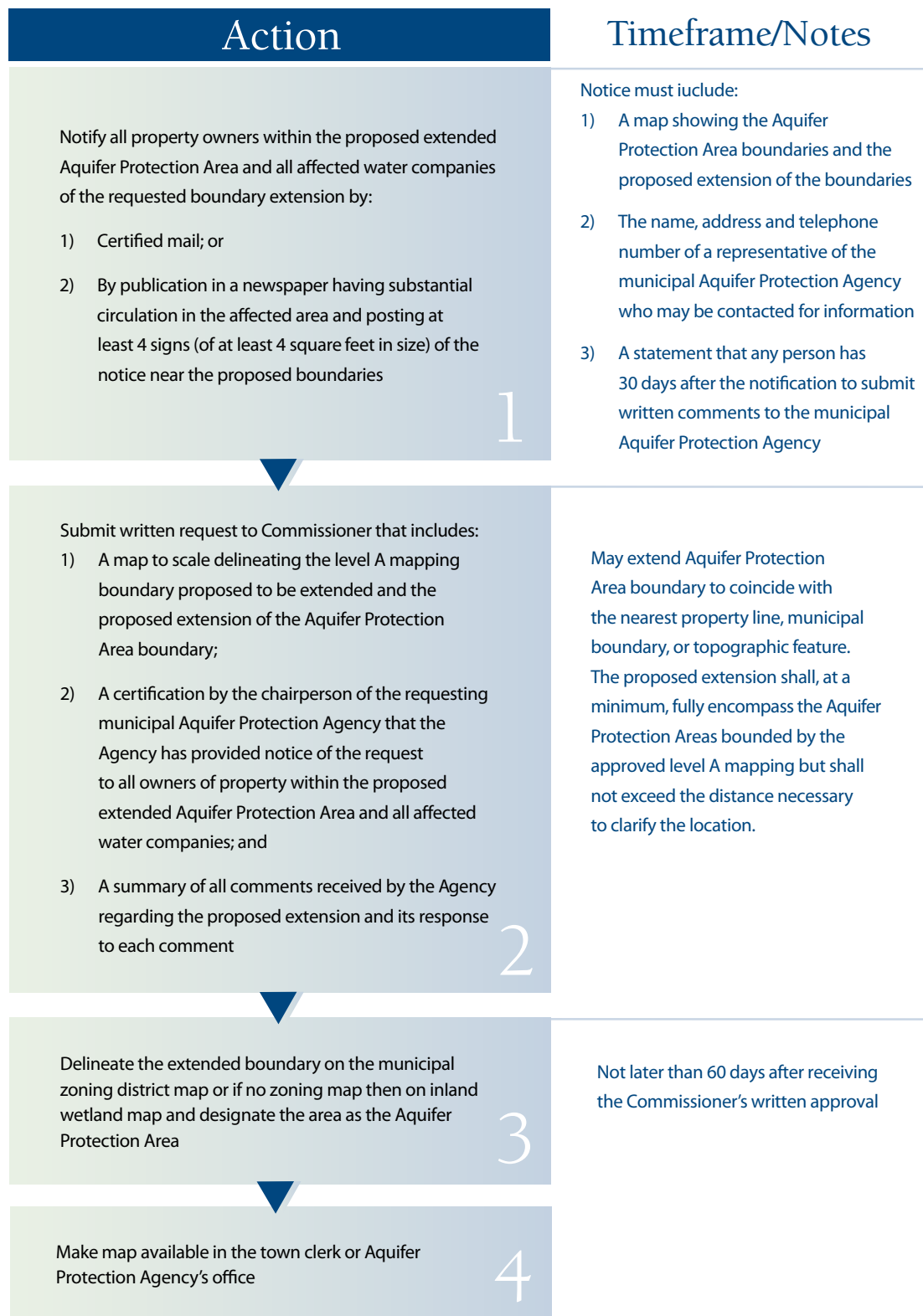
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3.4 | APA Map Delineation Flow Chart [RCSA Sec. 22a-354i-2]

Action	Timeframe/Notes
<p>Place boundary on municipal zoning map (or if no zoning map, then wetlands map) and include an effective date of map.</p> <p>1</p>	<p>Delineation must be completed for each well field not later than 120 days after being notified by DEEP of Level A mapping approval.</p> <p>Effective date of the map is the date of publication in the newspaper or another date established by the Agency.</p>
<p>Publish notice of delineation in newspaper including: 1) A map or a detailed description of the APA. 2) Name, address, telephone number of a representative of the municipal Aquifer Protection Agency who may be contacted for more information.</p> <p>See example notice at the end of this section.</p> <p>2</p>	
<p>Verify delineation of Aquifer Protection Area on zoning map; send a copy of the map with the effective date to DEEP.</p> <p>Send map to: Aquifer Protection Area Program CT DEEP, WPLR 79 Elm Street Hartford, CT 06106-5127</p> <p>3</p>	
<p>Make map available in the office of the town clerk or Agency.</p> <p>4</p>	

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3.5 Extension of APA Boundaries Flow Chart [RCSA Sec. 22a-354i-4]



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3.6 | Examples of Public Notices for Map Delineations of Aquifer Protection Area Boundaries

The Aquifer Protection Agency must carry out the proper public notice requirements for the delineation. The notice should appear in the newspaper and include a map or a detailed description of the Aquifer Protection Area and the name, address and telephone number of a representative of the municipal Aquifer Protection Agency who may be contacted for more information.

Figure 8. Example of a public notice with map image.

LEGAL NOTICE - CITY OF BRISTOL
NOTICE OF DELINEATION OF
UPPER AND LOWER WHITE BRIDGE/MIX STREET WELL FIELDS

In accordance with the State of CT Aquifer Protection Area Program (CGS §22a-354a to §22a-354bb), the Bristol Zoning Commission, acting as the city's duly authorized Municipal Aquifer Protection Agency, hereby delineates the Aquifer Protection Area for the Upper and Lower White Bridge and Mix Street well fields on the City of Bristol's Official Zoning Map, as shown on the map below:

A larger-scale copy of this map is available for public inspection at the Land Use Office, City Hall, 111 North Main St., Bristol, Monday-Friday, 8:30 AM to 5:00 PM, and online at: www.bristolct.gov/aquiferprotectionagency

For more information, contact Alan L. Weiner, City Planner, at Bristol City Hall, 111 North Main Street, Tel # : (860) 584-6225, E-Mail: alanweiner@bristolct.gov

Figure 9. Example of a public notice with text only.

