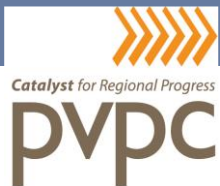


# Better understanding water supply protection at the Dry Brook Wells

A District Local Technical Assistance funded  
project for the Town of South Hadley



*Photo: Daily Hampshire Gazette*

# Project Aim and Elements

Aim: Provide additional insights on water supply protection needs

1

Review Technical Documents

2

Inventory and Map Resources

3

Assess Existing Regulatory Tools

4

Prepare Report / Memo

# Review Technical Documents

- 11 documents reviewed, including 2004 USGS study, additional technical analysis from 2019 and 2021, and Town of South Hadley planning documents
- + meetings and interviews
  - District #2 Superintendent Mark Aiken
  - State Geologist Stephen Mabee and Smith College Geologist Emeritus Robert Newton
  - MassDEP's Catherine Skiba

# Inventory and Map Resources

Prepared 6 maps identifying assets and values of the Mount Holyoke Range and surrounding area of the Dry Brook wells:

- Zoning
- Recreation and Protected Open Space
- Surficial Geology
- Topography
- Ecological Resources
- Parcel Map for Water Supply Protection District

## Assess Existing Regulatory Tools

Reviewed several existing regulatory tools to identify possible gaps in water supply protection:

- Zoning Bylaw, Section 255-35, on Water Supply Protection District (including Use Regulations Schedule for Water Supply Protection Overlay)
- Zoning Bylaw, Section 255-84, on earth removal, extraction, and fill regulations
- General Bylaw, Section 245, on earth removal

# Assess Existing Regulatory Tools

Provided review comments in several ways:

- Highlights in report/memo
- Marked up code with track changes
- Table that compares earth removal considerations across Zoning and General Bylaws (Appendix D)

# Highlights

Definitions within the Zoning Bylaw Section 255-10 need updates to better describe terms for Section 255-35.

Within the District Delineations part of Section 255-35, the breadth of language is good, but seems important to connect with terms that have been/are in use by MassDEP, including Zone I, Zone II, and Zone III.

In this same Section, Part C could be strengthened with a rewording in #2 to reduce the possibility of challenge to the delineation (as shown on mark-up) and to provide resolve where a boundary divides a lot or parcel with the following added language: “Where the boundary line of the Water Supply Protection District divides a lot or parcel, the requirements established by this overlay district shall apply to the entire lot or parcel.”

# Highlights

On earth removal, prepared across board comparison, but following are key points:

- Various sections in Zoning Bylaw, Section 255-35, discuss earth removal (under permitted uses, prohibited uses, and restricted uses). Somewhat confusing. Best to set up earth removal as prohibition that includes specific exceptions.
- Seems to be large allowance under exception of “Other Earth Removal” (as defined under 255-84) that could enable subdivision site improvements to remove up to the amount qualified as “Major Earth Removal,” up to 5,000 cubic yards (also the set up for subdivisions in the General Bylaw Chapter 245 presents possibility of removing additional quantities if in *different* calendar year).
- Elaborations on earth removal within Zoning Bylaw, Section 255-84, and Chapter 245 are problematic with lack of clarity and inconsistency. Perhaps most problematic is consistency in depth to groundwater table with references to 5 feet and 10 feet.
- Terms for measure of groundwater level for excavation are not aligned with reference to either “historical high groundwater table” or “seasonal high water table.”



# Highlights

Permitted, prohibited, and restricted uses section within Section 255-35 of the Zoning Bylaw includes duplications and there are several additions needed to prohibited uses in order to fully comply with requirements of 310CMR22.21(2) as noted in MassDEP's April 6, 2020 letter to District #2 Superintendent.

Prohibited uses section also does not reference Use Regulations Schedule within Zoning Bylaw where there is much further elaboration of uses not allowed in WSPD.

Restricted uses seems to be catchall listing that includes some performance standards.

Language on hazardous materials and liquid petroleum has some duplication and lack of clarity. For example, prohibition of waste oil facilities appears as an exception under both hazardous materials and liquid petroleum.

## Highlights

Section on replacement of underground storage tanks makes reference to certain sections in 527 CMR that do not seem to exist currently.

No existing prohibition or standards on private wells or irrigation wells, which can present opportunity for introduction of contaminants. Fire District #2 Superintendent has noted that property owners with private wells cannot also have service connection. Only exception for private irrigation wells, where water line does not enter foundation of house.

No existing section on Performance Standards within Zoning Bylaw, Section 255-35.

Within Use Regulations Schedule, several categories where there is no indication whether use is / is not permitted within WSPD. Most of these uses are not allowed in most other districts. (e.g., Marijuana testing facility; Gas to energy facilities; Research, development and manufacturing facilities of products that generate renewable or alternative energy).

## Recommendations

Develop clear hierarchy within code of where reigning guidance and requirements will be on Earth Removal so that there is clarity and consistency.

- General Bylaws and Zoning Bylaw reference General?
- Create barebones General Bylaw that references Earth Removal Regulations that then elaborate on requirements and standards? Zoning Bylaw sections would reference the General Bylaw and accompanying regulations.

Consult with Town Counsel on best set up within South Hadley's municipal code.

## Recommendations

Consider references to “historical high groundwater table” and “seasonal high water table” and proximity for excavation with some research and consultation with USGS or UMass geologists. Fuller understandings of the following are important:

- What proximity of excavation to groundwater table still provides adequate protection for drinking water supply? Ten feet may be a good measure, but it is not clear from where this new number derives.
- To better protect private sources of supply, may be worth using this depth across Town, beyond the Water Supply Protection District.
- Is “historical high groundwater table” measure still useful? New Hampshire in its 2015 model ordinance for groundwater protection is referencing “seasonal high water table” measure. Analysis of USGS groundwater wells in New England by UMass Professor David Boutt indicates, “Trends in aquifer storage when averaged over the 124 wells in the study region show an upward positive trend indicating that the water table has risen over the last 40 years.” Is there a technical difference between “historical” and “seasonal” in reflecting these trends? And what is best term to use and guidance for capturing these trends?

## Recommendations

Rework sections on permitted, prohibited, and restricted uses within Zoning Bylaw, Section 255-35, and consider language on hazardous materials and petroleum fuels. As recommended in Appendix D, some of the uses are better included as prohibitions with a few exceptions, rather than in permitted uses or restricted uses. Updates here are also important to comply with requirements of 310 CMR 22.21(2).

Update section on underground storage tanks so CMR code is current, though it appears from the MA Office of Technical Assistance mapping “Massachusetts Toxics Users and Climate Vulnerability Factors” there are no underground storage tanks in the WSPD.

Explore whether to get more specific about requirements or standards for home heating fuel storage.

# Recommendations

Consider adding performance standards to better guide uses. Some examples:

- Best practices in operation of irrigation wells so as to be protective of groundwater in the WSPD, and especially the Zone II. Could include requirements for use or storage of certain substances from such wells, such as putting material under cover so as to avoid contaminating stormflows and locating material at certain minimum distances.
- Prior to any land disturbing activities, all inactive wells on the property not in use or properly maintained at the time plan is submitted, shall be considered abandoned and must be sealed in accordance with Board of Health regulations (assuming that there are such provisions in Board of Health Regulations...if not, best to develop and adopt).
- Any earth removal activity allowed in the WSPD must retain all topsoil on site in order to more effectively hold and recharge stormwater in this top layer of organic material, as well as ensure that any given site retains its capacity to support the growth of vegetation (and avoiding the chronic need for fertilizers to support vegetative growth).

## Recommendations

Engage landowners on materials storage, especially near irrigation wells, perhaps as part of the program series recommended above for landowners.

Work with Board of Health and Fire District #2 to understand how irrigation wells are permitted and which properties currently have irrigation wells and proximity to septic systems.

Update and complete the Use Regulations Schedule so that these uses mostly not allowed in other districts are also not allowed in Water Supply Protection District.

Convene working group to discuss and prepare municipal code updates for adoption based on some of the amendments proposed for November 20, 2019 Special Town Meeting for Zoning Bylaw Section 255-35 that were not adopted, as well as recommendations included here in PVPC's work. At a minimum, the permitted uses and prohibitions sections in Section 255-35 need to be updated to comply with requirements of 310 CMR 22.21(2).

# 3

## Assess Existing Regulatory Tools

Clarifications, questions?



# Prepare Report / Memo

Planning and Conservation Department web page /  
Menu on left side of page, select Planning Documents

<https://www.southhadley.org/294/Planning-Documents>

## Other Community Plans and Reports

- [Water Supply Protection Overlay District Review, PVPC - Final Memorandum 12-30-21](#)
- [Water Supply Protection Overlay District Review - Appendix A](#) Technical documents
- [Water Supply Protection Overlay District Review - Appendix B](#) Interviews
- [Water Supply Protection Overlay District Review - Appendix C](#) Maps
- [Water Supply Protection Overlay District Review - Appendix D](#) Regulatory review

Thank you!