



# Water Supply District of Acton

693 MASSACHUSETTS AVENUE  
P.O. BOX 953  
ACTON, MASSACHUSETTS 01720

FAX (978) 264-0148

TELEPHONE (978) 263-9107

## Board of Water Commissioners Meeting Agenda

**Monday, November 6, 2023 @ 7:00 PM**

**Due to the COVID-19 Pandemic, meetings are being held virtually via Zoom**

Please click the link below to join the webinar:

<https://us02web.zoom.us/j/89236047109>

Or One tap mobile :

+19292056099,,89236047109# US (New York), +13017158592,,89236047109# US (Washington DC)

Or Telephone:

Dial(for higher quality, dial a number based on your current location):

+1 929 205 6099 US (New York), +1 301 715 8592 US (Washington DC), +1 305 224 1968 US

Webinar ID: 892 3604 7109

International numbers available: <https://us02web.zoom.us/j/89236047109>

- **Comments from the public**
- **Approve minutes from the meeting of 10/23**
- **Appoint one Commissioner to sign warrants while conducting meetings virtually**

### **OLD BUSINESS:**

- Per- and Polyfluoroalkyl Substances (PFAS)
  - Current sample data, if available
  - Discussion of Additional PFAS Upgrades
  - Financing agreement amendments with CWT
  - PFAS MDL
- Master Plan Update
- MWRA MetroWest Expansion
- Rate Study
- Discussion of native meadow demonstration project

### **NEW BUSINESS:**

- WRAC Groundwater Protection Mailing

**EXECUTIVE SESSION:** -- To consider the purchase, exchange, lease of real property as an open meeting may have a detrimental effect on the negotiating position of the District. To discuss strategy with respect to litigation if an open meeting may have a detrimental effect on the litigating position of the District.

**DRAFT**

Board of Water Commissioners

Meeting Agenda

Monday, October 24, 2023 @ 7:00 PM

**AGENDA**

- **Comments from the public**
- **Approve minutes from the meeting of 10/2**
- **Appoint one Commissioner to sign warrants while conducting meetings virtually**

**OLD BUSINESS:**

- Per- and Polyfluoroalkyl Substances (PFAS)
  - Current sample data, if available
  - Discussion of Additional PFAS Upgrades
  - Bottled Water Rebate update
  - Financial impacts
- Discussion of District Counsel

**NEW BUSINESS:**

- Representatives of Powers & Sullivan for annual audit report
- Discussion of native meadow demonstration project

Present at Tonight's Meeting:

Commissioners: Erika Amir Lin (Chair), Barry Rosen, Stephen Stuntz

District Manager: Matthew Mostoller

District Treasurer: Christine McCarthy

District Counsel: Mary Bassett

Finance Committee: John Petersen

Environmental Manager: Alexandra Wahlstrom

Members of the Public: Ron Parenti, Kim Kastens, Christi Andersen, Jason Cole, Heather Morton, Alissa Nicol, Jim Powers, Laura Stone, Vladimir Kan, and Judi Kotanchik

**START OF MINUTES**

Ms. Amir Lin opened the meeting at 7:00.

# DRAFT

Ms. Amir Lin informed the Board that due to there being several agenda items that involve presentations and guest speakers, the agenda items will be completed out of their written order to be respectful of the guest's time. The following minutes are in chronological order as took place during the meeting.

## **Comments from the public**

No Comment from the Public at this time.

## **OLD BUSINESS**

### **PFAS: Current sample data, if available**

Mr. Mostoller provided an update on PFAS. Currently the North and South Acton Plants are in operation. The September results are in for Center and South Acton. The Center Acton September sample, taken on September 25, was 9.7 ppt, and the South Acton September Sample, taken September 15, was 13.7 ppt. Both of these samples are considered normal for what they have been testing at recently. The sample for North Acton was taken on September 21st, however, due to an issue from the lab the sample will have to be re-analyzed. October sampling will be completed on October 24th. After the October sampling, the quarterly data set will be complete. Based on results from July and August there is a high likelihood that we will be out of compliance for North Acton and will have to send out another public notice.

### **Discussion of Additional PFAS Upgrades**

Mr. Mostoller then provided an update on the North Acton PFAS project. The Clean Water Trust has reached out and are proposing \$316,000 in principal forgiveness. The District previously had a pending financing agreement amendment; the principal forgiveness will require additional amendment to the financing agreement. The latest amendment is under review and will be moving along the approval process in the coming days. As far as other updates, footings were poured on Friday, and the treatment equipment is now expected to arrive at the end of November. This delay is not of major concern but is an example of certain delays in the overall process. Mr. Mostoller informed the Board that he and the engineers are in conversation with Suez about payment, as Suez has not been paid yet, but they do have a contract in place. The VFD's and controls remain unresolved, and he is awaiting more information from the electrical subcontractor. At this moment they are unsure how this will impact the startup timing of the project.

Mr. Rosen asked Mr. Mostoller if the Massachusetts DEP has an alternative temporary VFD. Mr. Mostoller replied that the engineer is looking into it, but they did receive some pushback from the contractor. The latest thinking is we may be able to use an alternative product instead of dealing with a temporary solution, but they are still looking into the matter.

Regarding South and Center Acton, the District met the deadline for the SRF program. They recently had a very productive meeting with the engineer about Center Acton. They are looking to pre-purchase about \$1.2 million dollars of equipment to avoid delays that they have seen from North Acton. Mr. Mostoller is working with Ms. McCarthy on the necessary financial details for this.

Regarding South Acton they are in the process of planning a similar meeting with the engineer as they did for Center Acton. They are looking into the possibility of short-term borrowing to accommodate the pre-purchase of equipment for this project.

Ms. Amir Lin asked if the goal is to prebuy the equipment, Mr. Mostoller responded that yes, the aim is to have procurement for equipment before the larger construction procurement so the District can have the equipment on hand to streamline the process and have an extra lead time. Mr. Mostoller added that they are also considering having a single instrumentation and controls contractor aspects for the two projects, and both the engineers agree with that plan. They are looking forward to a future meeting to coordinate.

Mr. Rosen asked if after the primary delivery, if Suez will be supplying the GAC or if they will be purchasing it? Mr. Mostoller responded that Suez will be supplying it as part of their contract cost, though some information on refills remains unclear.

### **Bottled Water Rebate update**

Ms. McCarthy provided an update on the Bottled Water Rebate program. For October of 2023 bottle water rebates totaled \$7,110, of that 139 customers received on bill credits, and that totaled \$6,165. For payments sent to tenants the total was \$945 and 21 customers. This month had 4 new applications but also dropped 3. Current total is 160.

Ms. Amir Lin asked how consistent the number has been, Ms. McCarthy said that in Quarter four of FY 23 it did go up a bit but now seems to be leveling out.

### **Financial Impacts (Presentation)**

Mr. Mostoller opened this item by providing a short background on the genesis of the presentation. The Town of Acton Finance Committee had reached out previously to ask about expected financial impacts and cost considerations to the town regarding the evolving PFAS issues. After some back and forth with Christi Andersen the Board of Commissioners invited them to this meeting tonight so they may present the information with some additional context and provide an opportunity for questions. Mr. Mostoller thanked Ms. Andersen for her detailed questions in their previous communications as they informed the topics of this presentation.

Mr. Mostoller then gave the presentation which he prefaced by stating that this is a situation with many moving parts that are likely to change. Mr. Mostoller broke the factors contributing to PFAS cost considerations into the Clean Water Trust Loans, operating costs, debt repayment model, the MWRA Study, and projects like the temporary North Acton solution, and the Clapp/ Whitcomb Water Treatment Plant. Mr. Mostoller then went through a chart of how existing and proposed debts will likely affect the debt fee on the bills customers receive. Mr. Mostoller estimated that average users may see an increase from \$1.56 per day to \$1.73 per day, however the estimates may change with time. Mr. Mostoller then presented a chart that demonstrated the District's debts as loans come due and retire. Mr. Mostoller then provided an overview of the MWRA study and explained that if Acton does join the MWRA it will likely take a decade or longer to fully be realized.

Ms. Andersen thanked Mr. Mostoller for the presentation. Mr. Cole asked Mr. Mostoller if there is an expected timeline for deciding to join or not join the MWRA. Mr. Mostoller responded that the primary factor dictating the timeline of this decision is that the entrance fee for joining the MWRA is being waived until 2027. Mr. Mostoller explained that the rest of the timeline is unknown beyond that incentive, which might change as the situation evolves.

Mr. Cole then asked if the District had investigated alternatives to joining the MWRA. Mr. Mostoller responded that the District has more or less assessed all available in-Town resources, and they have done an exploration of additional local options. Of this exploration, a full cost analysis was not conducted so they are unsure about cost against the cost of the MWRA, which has not been fully developed. Mr. Mostoller hypothesized that the MWRA is likely the more expensive option of the two, but it may present other benefits to operations or in addressing the next treatment challenge after PFAS.

Mr. Cole then asked Mr. Mostoller that, according to his own calculations from the estimates given in the presentation, the average water user is going to see an increase in their water bill of about \$200 from 2019 to 2025. Mr. Cole wanted to know how that information was shared with the Select Board and if that cost was ameliorated with ARPA funds?

Mr. Mostoller responded that last fall the District did engage with the Select Board about ARPA funding. The District did ask for a larger share than what they received, some of those funds went to helping design the North Acton project which otherwise would have been delayed awaiting alternative funding authorizations.

Mr. Mostoller and Mr. Cole then had a brief discussion about the upcoming EPA standard that may aim for a virtually non-detect level of PFAS. Ms. Amir Lin added to this discussion that should a new regulation be instated, the District will have to comply, and that they will await regulatory guidance for lowering the PPT and any analytic detection necessary to sample. Mr. Mostoller added that it is technically feasible to meet a non-detect if the lab analysis is correct, but practically it will be a challenge, and it can be hard to know what those operating costs will be.

In the Zoom Chat Judi Kotanchik asked which well handles West Acton, Mr. Mostoller responded that South Acton Plant serves that area at this time.

In the Zoom Chat Judi Kotanchik also asked why the MWRA is waiving entry fees, and if it may be related to dealing with old pipe? She also asked for the PFAS testing levels, and if a Berkey water filtration unit would work on PFAS.

Mr. Mostoller responded in chat that the MWRA is exploring this expansion because they have excess capacity and are interested in selling water and reiterated the numbers from the previous report. Regarding PFAS regulation Mr. Mostoller responded to Ms. Kotanchik that regulators are aiming for a non-detect standard, but the current MCL for Massachusetts is 20ppt. Most consumer filters would be regulated to the current federal standard of 70 ppt performance criteria.

## **NEW BUSINESS:**

### **Representatives of Powers & Sullivan for annual audit report**

Jim Powers and Laura Stone from Powers & Sullivan presented an overview of the District's annual audit report. The report details are enclosed in the meeting packet. Ms. Stone provided a brief overview of their audit report which expressed their opinion on the District's finances. Broadly, Ms. Stone reported it was a very smooth audit, but they also expressed a list of recommendations for efficiencies as they have done in the past.

Mr. Rosen asked if the report reflected suggested adjustments made at the beginning of the process? Mr. Powers answered yes, those changes are reflected in the final report.

Mr. Rosen then asked if it might be possible to use resources from the land trust to finance the Main Street purchase. Mr. Powers responded that that is not in their purview and the question would be better suited for counsel.

Mr. John Petersen asked the representatives from Powers & Sullivan about the possibility of providing multi-year or long-term trends in these annual audits. After a brief discussion, Mr. Powers answered that if they believed it would be helpful, they would be able to create something like a 10 year analysis in these reports, Powers & Sullivan would just need clear guidance on what they are looking for. Mr. Powers recommended having a meeting about this topic in the spring if the board is interested in adding this to the report.

Mr. Stuntz added that the data for this kind of projection analysis likely already exists in other documents, it would probably be a matter of collecting and organizing the information. Mr. Rosen asked Ms. McCarthy and Mr. Petersen if this would be helpful for future budget decisions, and both said it would be helpful in the future.

The Board thanked Mr. Powers and Ms. Stone for their presentation and report on the audit.

### **Discussion of native meadow demonstration project**

Mr. Mostoller introduced Heather Morton, who has expressed an interest in promoting native wildflower habitats. Mr. Mostoller explained that this is a topic that is not unique to the District, and they have done similar partnerships with the Garden Club and the Girl Scouts to promote Water Wise landscaping, which is similar to what Ms. Morton is proposing.

Ms. Morton then introduced herself to the Board and elaborated on the proposed project. Ms. Morton is interested in native meadows as a method to combat invasive plant species and support native insect populations. Her interest is in designing meadows that after 3-4 years of moderate maintenance will become low maintenance meadows. Her goal is to transform a 20 by 40ft area that she would garden into a more self-sustaining meadow. Ms. Morton has requested if she may do this on the District's property where it may be visible to encourage others in the community to consider native yards.

The Board and Mr. Mostoller had a brief discussion about the project. Mr. Mostoller highlighted it would fit with their land management goals along with their outreach and education programs.

Mr. Stuntz expressed support for the idea and encouraged a spot that would be visible. Ms. Amir Lin expressed support for the idea and elaborated that it compliments their water wise and conservation goals.

After a brief discussion about possible locations as well as current landscaping management, Mr. Mostoller said that he would continue to look for parcels where this would be possible. Ms. Morton stated that she is willing to fully donate the time and resources to this though if the Board is aware of other community partners who would be interested in this, she would appreciate the support.

### **Return to OLD BUSINESS**

#### **Approve minutes from the meeting of 10/2**

Mr. Rosen motioned to approve the minutes of the October 2, 2023, meeting. Mr. Stuntz seconded the motion, and it was unanimously approved via a roll call vote; Mr. Rosen, Mr. Stuntz, Ms. Amir Lin.

## **Appoint one Commissioner to sign warrants while conducting meetings virtually**

Mr. Rosen motioned to appoint Ms. Amir Lin to sign warrants until the next regularly scheduled meeting. Mr. Stuntz seconded the motion, and it was unanimously approved via a roll call vote, Mr. Stuntz, Mr. Rosen, Ms. Amir Lin.

## **Discussion of District Counsel**

Mr. Mostoller updated the Board on the progress of finding new District Counsel. Mr. Mostoller had previously circulated the letters of interest to the Commissioners. The next phase would be moving forward with scheduling interviews. Mr. Mostoller informed the Board that he and Ms. Bassett would compile questions to ask applicants during the interview as a starting point. Mr. Mostoller recommended interviewing all applicants to adequately vet the applicants. Ms. Amir Lin agreed with the idea of interviewing all the applicants. Mr. Mostoller then suggested breaking up the meetings over two sessions, and after a brief discussion the Board expressed support for interviewing applicants in person.

The Board then discussed their schedule availability to start interviewing applicants. Considering their very limited availability, Mr. Mostoller proposed that a member of the Board could be assigned to represent the Board during the interviews, and then present their top candidates to the Board at the next meeting. Ms. Amir Lin then suggested the possibility of bringing that top candidate before the full Board.

The Board then discussed finding a time to interview the candidates. They agreed on reaching out to candidates to come in the morning of November 13th. After much discussion considering the District's needs and the backgrounds of the candidates, the Board decided to reach out to 2 of the applicants and invite them to come in for an interview the morning of November 13<sup>th</sup> starting at 8:30. The Board discussed this as a primary step, establishing that they may bring in the other candidates to interview at a later date.

## **ADDITIONAL BUSINESS**

Mr. Mostoller informed the Board the EPA announced a proposed rule to ban TCE, which is of interest to the District given past issues with WR Grace. Ms. Amir Lin then informed the Board of the specific discharge and handling guidelines of this proposed rule.

Mr. Rosen brought up that the WRAC has been working on a paper written and approved by the Town to distribute in Acton about groundwater protection zones. Mr. Rosen informed Mr. Mostoller to expect the Town Manager to reach out regarding how to split the bill on the mailer. Mr. Mostoller said he will provide an update when he hears from the Town Manager.

Alissa Nicol commented that she will be in communication with the Town Manager in the near future and she can bring this item up for an update.

Mr. Rosen motioned to adjourn this meeting of the Acton Water District Commissioners. Mr. Stuntz seconded the motion, and it was unanimously approved via a roll call vote; Mr. Stutz, Mr. Rosen, Ms. Amir Lin.

**Meeting Closed at 9:20 pm**

January 7, 2022  
WP Project No. T16507

Mr. Chris Allen  
District Manager  
Acton Water District  
P.O. Box 953  
Acton, Massachusetts 01720

**SUBJECT: Water System Master Plan Update  
Letter Proposal - DRAFT**

Dear Mr. Allen,

As requested, we are pleased to present our proposal to the District for a comprehensive Water System Master Plan Update. Our proposal is presented as follows:

- Project Understanding
- Proposed Scope
- Proposed Fee
- Proposed Schedule

### **Project Understanding**

With the ever changing and more stringent regulatory environment, the Acton Water District will be faced with both near and long-term challenges in its efforts of providing a safe and plentiful water supply. In just the past few years, the District has had significant challenges related to Per- and Polyfluoroalkyl Substances (PFAS) since the last master plan update. Therefore, it is important that a comprehensive Water Master Plan Update be prepared that fully evaluates the District's current infrastructure needs, identifies options, and presents recommendations in a well thought out Capital Improvement Plan (CIP).

### **Proposed Scope**

In general, our Master Plan Update would be formatted to include the following major sections that will build off of information currently available and supplement it with new:

1. Existing System and Facilities
2. Historical and Projected Water Use
3. Water Supply Evaluation and Assessment
4. Distribution System Evaluation and Assessment
5. Regulatory Review
6. Demand Management

1/7/2022

Mr. Chris Allen

Page 2 of 5

7. Asset Management
8. Recommendations
9. Capital Improvement Program

For this, our proposed scope of services includes the following:

**Task 1: Existing System and Facilities**

This task would incorporate the existing information available from current documentation and will be updated to include more recent changes (e.g., the Central Acton Water Treatment Plant, Assabet Well No.3, Bedrock Wells, etc.). Present information on:

- Water sources
- Treatment facilities
- Distribution system
- Distribution storage
- Interconnections
- SCADA (monitoring and control)

**Task 2: Historical and Projected Water Use**

This task would:

- Evaluate and present an overview of historic population demographics, trends, and projections.
- Evaluate and present the historical and projected water use information through the next 10-year planning period (2022-2031).
- Discuss potential impacts to the District by the Water Management Act regulations.

**Task 3: Water Supply Evaluation and Assessment**

This task would:

- Evaluate and present an assessment of the District's current water supply quantity and capacity.
- Evaluate and present an assessment of needed pumping and/or well improvements for increased yield, pumping capacity, and redundancy.
- Identify opportunities for expanded water supply including interconnections (neighboring communities and the Massachusetts Water Resources Authority (MWRA)).
- Perform in initial evaluation of an interconnection with MWRA:
  - With input from the District, identify the type of interconnection (i.e., permanent or emergency) and the desired volume/rate,
  - Preliminarily identify the location for a possible connection point,
  - Conceptually identify a potential pipe route from the connection point to Acton's distribution system and whether a pump station could be needed (hydraulic modeling or preliminary design effort is not anticipated to be required nor included for this initial conceptual effort),
  - Identify the anticipated implementation needs (e.g., Interbasin Transfer, permitting, etc.), and

- Prepare a conceptual level cost estimate of construction for the interconnection and summarize anticipated usage costs based on currently available MWRA rates.
- Evaluate and present an assessment of needed treatment of the District's sources.

#### **Task 4: Distribution System Evaluation and Assessment**

Utilizing the current water system hydraulic model, this task would:

- Evaluate the ability of the water system to meet projected maximum-day demands with coincident fire flows at each ISO location, projected peak-hour demands, etc.
- Identify high headloss/high velocity piping under various operating conditions as well as under static conditions.
- Evaluate and identify opportunities to improve looping and circulation, reduce water age in the distribution system, and improve overall expected distribution water quality.
- Perform a storage analysis. Calculate the hourly demand fluctuation volume, emergency volume, and fire storage volumes necessary to meet the revised demand projections. Recommend a required active storage volume through the CIP planning period. Fire flow requirements will be based of available and estimated ISO data and will be used to determine volume of distribution storage required for fire protection.
- Analyze and develop needed improvements to the distribution system and storage tanks, using the calibrated hydraulic model of the water distribution system.
- Evaluate existing municipal interconnections as sources of supply during emergencies.
- Perform a detailed Water Main Improvement Plan (WMIP) analysis of all system water mains to comprehensively identify and prioritize needed water main improvements. Evaluation parameters utilized for the analysis would include age, material, size, C-factor, break history, water quality complaints, etc. Identify and prioritize needed improvements based on this analysis.
- Develop recommendations for construction of the identified improvements to the distribution system and storage facilities. Clearly present noted improvements on the District's base mapping as appropriate.

#### **Task 5: Regulatory Review**

This task would perform and present the results of a regulatory overview of the water system's compliance with current and anticipated drinking water regulations. Existing water quality information provided by the District will be utilized. Incorporate an updated discussion on the PFAS regulations and its impact on the District's sources.

#### **Task 6: Demand Management**

This task would incorporate the District's past demand management efforts and focus on updating its efforts with new initiatives to effectively reduce waste and increase water use efficiency.

1/7/2022

Mr. Chris Allen

Page 4 of 5

This task would also incorporate an initial discussion on climate change. The discussion would include an overview of potential impacts that could be expected to affect the water supply and its infrastructure as preliminarily identified by agencies, associations, and regulators like the MassDEP, EPA and others.

#### **Task 7: Asset Management**

Wright-Pierce completed an Asset Management Plan for the District in September of 2021. This task would summarize the plan's evaluation and assessment of the District's water system and summarize the plan's recommended improvements.

#### **Task 8: Recommendations**

This task would:

- Summarize all recommendations made for improvements to the District's system along with implementation needs (permitting, timing, etc.).
- Develop estimated capital costs for all the recommended improvements to the District's system.

#### **Task 9: Capital Improvement Program**

This task would:

- Rank all recommended improvements as high, medium, or low priority needs.
- Present all of the recommended improvements in a prioritized manner (10-year Capital Improvement Program).
- Identify sources of funding available to the District for the needed improvements.

In general, contact would be maintained with the District throughout the project. A draft would be submitted for review and comments, and then upon receipt of the District's comments, the Master Plan Update would be finalized and submitted to the District.

#### **Proposed Fee**

For the identified scope, we estimate a not to exceed fee of \$63,500. Invoices would be submitted monthly as the project progresses.

#### **Proposed Schedule**

Based upon the presented scope, we estimate the duration of the project to be between six to nine months (depending on workload and/or District needs at that time) following the Notice to Proceed (anticipated to be in April of 2022 following the District's annual meeting).

1/7/2022

Mr. Chris Allen

Page 5 of 5

Please let me know if you have any questions or require additional information. Should the proposal be acceptable, please let us know and we'll prepare an Exhibit B for execution.

We look forward to working with the District on this important project.

Sincerely,

**WRIGHT-PIERCE**



Richard G. Protasowicki

Vice President

[Richard.protasowicki@wright-pierce.com](mailto:Richard.protasowicki@wright-pierce.com)

# ZONING FOR GROUNDWATER PROTECTION IN ACTON

## *Why am I receiving this?*

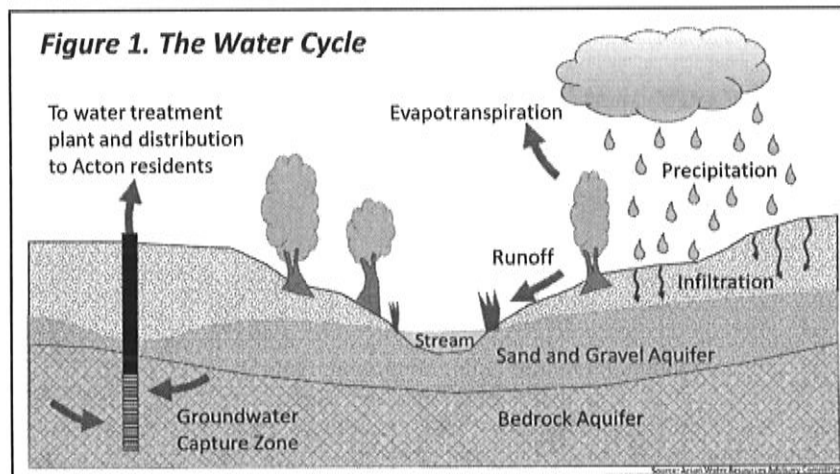
Acton obtains its water from wells. Zoning is one of the methods used to protect the water that will be pumped from these wells. We hope this mailing will help you understand this special zoning and what you can do to help protect Acton's fragile water supply.

## *What is Zoning?*

Zoning is the partitioning of land into areas for different purposes with rules pertaining to the land use in each area. New York State began creating the largest zoning area in the contiguous US when it established the Adirondack Park in 1892. The purpose was to protect the waterways (Erie Canal System) and the watershed that supplied the downstate area by regulating both public and private land use within 6.1 million acres of upstate New York. This is believed to be the first zoning designed for source water supply protection.

Source water protection zoning is designed to delineate the land area that contributes to the drinking water supply and define where pollution from human activities and/or natural resources poses the greatest threat. There can be both surface water and groundwater protections. Acton utilizes groundwater protection zoning as our drinking water supply lies beneath the surface in the soil pore spaces (gravels & sands) and in the fractures of rock formations.

## *What is Groundwater?*



Groundwater is the water that lies beneath the Earth's surface. It is used by more than half of the population in the United States and an even higher percentage of the people in rural areas. Precipitation (rain & snow) deposits water on the Earth's surface. Where the ground is porous, gravity will draw the water downward (infiltration) until it reaches a layer that inhibits downward flow, such as clay or unfractured

bedrock. The water will collect in the porous spaces which can be sand, gravel or a fractured bedrock zone in the subsurface known as the aquifer. In Acton, we draw our drinking water from sand and gravel and fractured bedrock aquifers.

Not all the precipitation will enter the aquifer. The porous areas can only accept a certain amount of liquid over a time period and not all areas of the Earth's surface are porous. Most of the precipitation that arrives, does not infiltrate the surface but actually "runs off" into other areas such as streams, lakes, ocean or non-porous areas. Only 30-50% of the precipitation that reaches Acton enters our aquifers.

Some of the water that does arrive immediately evaporates back into the atmosphere as water vapor. Plants absorb some of the water and return the rest to the atmosphere through transpiration. About 25 – 35% of the water is returned to the atmosphere by evaporation and

transpiration. These two processes along with the naturally occurring evaporation from other bodies of water resupply water vapor which will allow precipitation and infiltration to complete the water cycle as depicted in Figure 1. It is this water cycle that replenishes our groundwater supply.

It is very important for all of us to realize that in addition to the natural water cycle, other things can influence the groundwater supply. Human activities have been contributing to changes as the population increases and more of the open land is occupied and developed. Both the quantity and the quality of our groundwater supply are impacted by our activities. Some results of human activity can cause a reduction in porous surface available for aquifer recharge; an increase in wastewater disposal needs; and the introduction of human created chemicals into the groundwater.

#### *What is Groundwater Protection Zoning?*

Groundwater protection zoning's purpose is to protect the water beneath the surface that will, at some point, be pumped to the surface, treated in a purification facility and moved through the water infrastructure to be delivered to the community. This zoning is not designed to encourage or discourage development. There are other zoning regulations and rules by the Town of Acton and/or the Commonwealth to regulate growth and building.

The groundwater protection zones are created using the location of the wellhead – the “straw” that brings the water to the surface – to establish the base of the groundwater protection zone. Groundwater protection zones are overlay zones. They are additional zones that are superimposed “on top” of the town’s existing zoning districts. That is, one could own a parcel of land that is zoned R2 residential and be part of a groundwater protection Zone 2 also. How the parcel could be developed would be a combination of town regulations, the type of zoning and the groundwater protection zone.

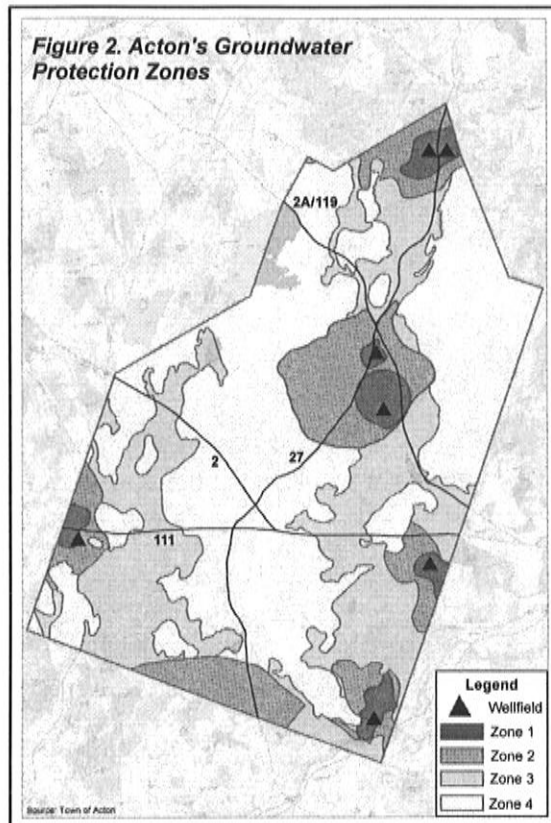
#### *What are the Groundwater Protection Zones?*

Prior to a permit being issued to operate a well by the Massachusetts Department of Environmental Protection (MassDEP), the Acton Water District (the “District”) must demonstrate that a well satisfies a host of strict requirements. One of the requirements is for the District to establish the groundwater protection zones for that well. In Acton, we create 4 zones of groundwater protection. One can think of each zone being further and further away from the wellhead. The Zone 1 is the area closest to the wellhead and is defined as the area from which water will flow to a well in one year under average recharge and anticipated pumping conditions. The Zone 2, often referred to as the recharge protection area, is defined as the area where the groundwater will move toward the wellhead in 180 days with little or no surface recharge. The Zone 2 is a bit further away surrounding the Zone 1 and groundwater flows from Zone 2 into the Zone 1. The other two zones (3 and 4) are known as the aquifer protection area and the watershed protection area respectively. The Zone 4 feeds into Zone 3 which eventually will recharge Zone 2. These zones are displayed in Figure 2 to the right (page 3).

#### *How are the Groundwater Protection Zones Established?*

The MassDEP recognizes five methods of establishing groundwater protection zones. The methods vary widely from arbitrary radial distance from the wellhead to flow-and-transport computer modeling. Advances in technology have made the mapping of the groundwater protection

zones increasingly accurate over the years and, in some instances, have caused revisions to be made to existing groundwater protection zoning.



When a well requires groundwater protection zoning, the District engages an engineering firm that has experience in hydrogeologic computer modeling and mapping. The engineers will use computer modeling to create maps of each of the proposed groundwater protection zones around the wellhead that is to be protected. The new proposed zone maps are presented to the MassDEP. The agency will review the methods and resulting proposed groundwater protection zones, and potentially pose questions and require revisions, prior to granting their approval.

After the new groundwater protection zoning has been approved by the MassDEP, the District must work with the Town of Acton to implement the new protection zones per state requirements prior to operating the well. This generally means that the District will work with the Planning Board and other town committees prior to the proposed new groundwater protection zoning being presented to the Selectboard. Once the Selectboard approves, a warrant for the new protection zoning will then be presented to the voters at Town Meeting who must approve the article by a 2/3 vote.

#### *How are Acton's Groundwater Protection Zones Enforced?*

The short answer is that it is the government and the people of the Town of Acton that are the enforcers and the caretakers of our groundwater. Section 4 of the Town of Acton Bylaws identifies the land use activities that are allowed in Zone 1, Zone 2 and Zone 3 aquifer protection areas. For example, vehicle repair and body shops are not allowed in Zone 1 or Zone 2 areas but are allowed in Zone 3 areas. The Acton Planning Board, under the supervision of the Town Manager and the Select Board, are responsible for enforcing Acton's groundwater protection zoning. In addition, the Acton Public Health Department has the authority to prevent any other activity which may degrade, reduce, interfere with, or otherwise adversely affect our public water supply. The Health Department exercises this authority through the issuance of permits.

#### *What Can Acton Residents Do to Help?*

- Support the acquisition and conservation of land in water supply protection areas (e.g., support the work of the Acton Conservation Trust and the Acton Open Space Committee)
- Never dispose of household hazardous waste to your septic system or sewer and participate in Household Hazardous Waste Collection days. Substitute less hazardous substances for products used in the home.

- Help to reduce PFAS in our drinking water. PFAS is utilized in many products such as food packaging (grease resistant packaging such as microwave popcorn), non-stick cookware, water repellent fabrics, cosmetics, floor wax. Disposing and/or the washing of any of these products may result in releases to groundwater from septic or sewer systems. Numerous organizations have published information on how to avoid PFAS (e.g. see [Meaningful and Achievable Steps You Can Take to Reduce Your Risk | US EPA](#)).
- Use environmentally sound lawn care practices and deicing chemicals. Ensure these products are properly stored and do not allow runoff to enter town waterways.

For more information on what you can do to protect our water supplies, visit the Massachusetts Department of Environmental Protection source protection site here:

<https://www.mass.gov/lists/drinking-water-supply-source-protection>

We, the people of our community, can learn about the precautions that we should take to protect our water supply.

*How To Find Your Groundwater Protection Zone*

To identify the land use zoning and groundwater protection zones for any parcel in Acton go to <https://actonma.mapgeo.io> and select "Groundwater Zones" under the "Themes" folder. Then click on any parcel to see the land use zoning.

Town of Acton  
Water Resources Advisory Committee  
472 Main Street  
Acton, MA 01720

Postal Patron  
Acton, MA 01720