

TONY JUDGE - Chair  
CHRISTINE McKIERNAN, M.D., Vice-Chair  
KAREN WALSH PIO, LICSW, LADC 1 - Clerk  
JESSICA COLLINS  
STEPHEN FRANTZ

SHARON HART, Director of Public Health

**NOTICE**

**BOARD OF HEALTH MEETING  
&  
AGENDA**

**October 18, 2022**

**6:00 p.m.**

**NOTE: Not all the topics listed in this notice may actually be reached for discussion. In addition, the topics listed are those which the Chair reasonably expects will be discussed as of the date of this notice.**

**To: Board of Health Members**

**From: Sharon D. Hart, Director of Public Health**

**Re: A Board of Health Meeting will be held on Tuesday, October 18, 2022 at 6:00 p.m. at the South Hadley Senior Center**

- 1: Chair to Call the Meeting to Order**
- 2: Acceptance of the Minutes of the September 13, 2022 meeting.**
- 3: Announcements and Open Forum (10 Minutes)**
- 4: Director's Update**
- 5: New Business:**
  - (a): Master Plan – Nate Therien and Michelle Theroux**
  - (b): Glyphosate and Glufosinate Regulation**

**(c): Landfill Second Quarter 2022 Report**

**(d): SAPHE 2.0 Bill Status**

**(e): Update - South Hadley Drug & Alcohol Prevention Coalition (Karen)**

**(f): Emergency Order to Vacate - 87 River Road – Ratify**

**(g): Aquifer Study**

**6: Old Business:**

**(a): NearMap**

**(b): Emergency Planning and Public Health**

**(c): Update: South Hadley High School Mold Remediation**

**7: Set Next Meeting Date – (TBD) at 6:00 p.m. at South Hadley Senior Center**

**8: Adjourn Meeting**

\*\*\* Please note: Meetings are recorded\*\*\*

TONY JUDGE, Chair  
CHRISTINE MCKIERNAN, MD, Vice-Chair  
KAREN WALSH PIO, LICSW, LADC 1, Clerk  
JESSICA COLLINS  
STEPHEN FRANTZ

SHARON D. HART, Public Health Director

## Board of Health Minutes

September 13, 2022

--Draft-- --Draft-- --Draft-- --Draft--

Present: Tony Judge, Chair; Dr. Christine McKiernan, Vice Chair, Karen Walsh Pio, Clerk; Jessica Collins, Board of Health Member; Stephen Frantz, Board of Health Member; Sharon Hart, Public Health Director; Jennifer Jernigan, Assistant Public Health Director; Monasia Ceasar, Health Compliance Specialist; Robert Pleasure, Community Member, Kathy Davis; Community Member

***All present parties introduced themselves.***

***The Board of Health Meeting was called to order at 6:01 p.m. by Chair Judge.***

### **1. Acceptance of the Minutes of the July 12, 2022, Meeting:**

Chair Judge introduced the minutes from the 07/12/22 meeting and questioned if there were any comments or changes to be made. No revisions were brought forth for consideration. Dr. McKiernan made a motion and Walsh Pio seconded it. A rollcall was taken, and all were in favor.

### **2. Announcements and Open Forum:**

Chair Judge prompted that any notions wished to be considered by the Board be raised. A community member questioned if there was an update on the lead testing done previously on Town Buildings. Director Hart updated that the results are in and can be made available by appointment with Departmental staff. Frantz questioned if there was an update regarding his inquiry about the landfill and updated the Board that unfortunately the H.926 bill regarding the use of harmful pesticides on school properties has been tabled by state legislatures. Hart confirmed that a response was made to his original inquiry via email on August 1<sup>st</sup>. Walsh Pio extended congratulatory remarks to the Senior Center for hosting an amazing event celebrating the Woodlawn Park.

### **3. Director's Update:**

#### **(A) Master Plan**

Director Hart shared that Chair Judge and herself met with MPIC representatives, Nate Therrien and Michelle Theroux regarding the Board of Health's role in the Master Plan. As a result, they have requested to come before the Board at the next meeting for follow up. Chair Judge expressed the

importance of the Master Plan as it outlines and establishes the goals, objectives, and direction of the Board of Health. Judge suggested a subcommittee be formed to analyze the Master Plan and set expectations for the Board. Collins agreed to work in conjunction with Director Hart to execute the request. With the understanding that the Master Plan will be redistributed to Board members to refamiliarize themselves with the objectives originally assigned to the Board, the Board agreed to have MPIC join the next meeting.

#### **4. New Business:**

##### **(A) Nearmap**

Frantz questioned the status of his inquiry regarding the utilization of the software Nearmap to investigate the deforestation of Dry Brook Hill. Director Hart confirmed she had received correspondence from Town Administration that the use of the software is not for Boards and Committees. Hart shared that the contents of the letter drafted by Frantz would have to be approved by the Board members prior to sending it to Town Administration. Hart read the letter to be considered by the Board. Concerns were raised regarding the legality of infringing upon privacy and having a specific project or oversight that would require the analysis. The Board members were in consensus that the letter was requesting clearance for Town staff (Director Hart) to investigate the activity on the aquifer using Nearmap technology. The Chair agreed to accept a motion to approve the letter being sent to Town Administration. Collins made the motion and Frantz seconded it. A roll call was taken, all were in favor.

##### **(B) Glyphosate and Glufosinate**

Chair Judge introduced the topic of Glyphosate and Glufosinate as the next topic of discussion. Frantz provided an overview of the topic highlighting the hazards, dangers, and limitations associated with the chemical use and attempted regulatory efforts. He emphasized the need to raise awareness within the community as well as to increase policy to inhibit the use of such chemicals. Hart suggested that the initiatives be made on a Town level for the most impact. Collins proposed reaching out to the Parks Division of Public Works with a proposal to utilize eco-friendly products on Town landscape, providing models used in other Towns including alternative products listed. Hart raised the possibility of editing the Town's current regulation banning the use of Glyphosate on Town owned and operated property to include Glufosinate. Frantz agreed to work with Hart on drafting the revisions to be reviewed by the board. Chair Judge encouraged the Board to brainstorm ideas on how this matter can be shared with the community.

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Meeting Minutes  
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### **(C) Emergency Planning and Public Health**

Chair Judge introduced the presentation regarding emergency planning and public health as the next topic for consideration. Pleasure expressed the importance of emergency planning and the role that the Health Department can play to ensure that the public is properly informed with the necessary information regarding emergency protocols. Pleasure shared that both FSI and E Ink are Tier 2 organizations in the Town of South Hadley that store a considerable amount of hazardous material onsite. Although properly permitted, these materials come with the increased risk of fire, explosion, contamination, etc. that can be an immediate threat to neighboring residential areas. Pleasure raised the importance of ensuring that those within close proximities to these businesses be adequately equipped with relative emergency management information. Pleasure referenced several statutes including the Town's Noisome Trade regulation to strengthen his claim that the Health Department should have a role in overseeing emergency management as it relates to public health.

Director Hart shared that as the Emergency Management Director, she oversees the submission of emergency plans on an annual basis. Hart shared that the plans are kept at the Police station. Typically, the Health Department does not participate in emergency planning besides the role of issuing site assignments for hazardous wastes. Currently, the Town does not have any hazardous wastes sites. Hart agreed to review the references submitted by Pleasure and provide insight to the Board.

### **(D) Update: South Hadley Drug & Alcohol Prevention Coalition**

Chair Judge introduced the update regarding the Drug and Alcohol Prevention as the next agenda item. Walsh Pio provided a brief update on the Coalition including the upcoming events and initiatives planned as the meetings resume following a break for the summer months. She also noted that the SPIFFY Coalition is hosting a data fair on September 28<sup>th</sup> at the Red Barn in Amherst from 2pm- 5pm presenting the data about youth health in Hampshire County.

### **(E) Emergency Order to Vacate**

#### **67 Pond Rd- Garage Conversion Unit- Ratify**

Jernigan shared that the garage conversion unit located at 67 Pond Rd was condemned after receiving confirmation from the Building Department that the unit was not permitted properly. Judge shared he would accept a motion to ratify the order. Collins made a motion and Dr. McKiernan seconded it. A roll call was taken, all were in favor.

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Meeting Minutes  
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## **5 Bach Lane- Ratify**

Director Hart shared that an incident occurred at the address and Town Inspectional Departments including Building, Electrical, and Health were invited to inspect the property after the electricity was disconnected. It was determined that the wiring of the property posed a threat and needed to be serviced by a licensed professional prior to restating the power. As a result, a condemnation order was issued. Judge shared he would accept a motion to ratify the order. Walsh Pio made a motion and Dr. McKiernan seconded it. A rollcall was taken, all were in favor.

### **Discussion on mold at the High School pursued:**

Dr. McKiernan questioned if there were any updates on the status of the mold issue at the High School. Chair Judge shared that the local newspaper mentioned that the issue had been resolved. Director Hart agreed to follow up with Town Administration regarding this matter for a detailed update.

### **Discussion on Vaccine Clinic pursued:**

Dr. McKiernan proposed hosting a vaccine clinic, as COVID vaccine guidance has recently been updated. Director Hart shared that the Department is currently in a transition phase with its nursing staff and will be working to get the newly appointed nurse trained. A proposed date of October 4<sup>th</sup> between 2pm-6pm is being considered for this year's vaccine clinic at Beer & Story. Both, COVID and flu vaccines will be offered to eligible parties at the drive- thru clinic.

### **Discussion of Peabody Peaker Power Plant pursued:**

Frantz raised the possibility of considering the matter at the Peaker Plant, as environmental justice groups are being negatively impacted. Collins informed Frantz that the Board had discussed the Peaker Plant to great lengths and agreed to not act on the situation.

## **4. Set Next Meeting Date- (TBD) @ 6:00 p.m. at South Hadley Senior Center:**

The Board members agreed to continuing hosting the Board meetings in person at the Senior Center. The next meeting was set for October 11<sup>th</sup> at 6 p.m. at the Senior Center.

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Meeting Minutes  
September 13, 2022

**5. Adjourn the meeting:**

Chair Judge mentioned he would accept a motion to adjourn the meeting. Dr. McKiernan made the motion and Walsh Pio seconded it. All members were in consensus.

The meeting was adjourned at 7:57 p.m.

Respectfully,

Monasia Ceasar

DRAFT

*Draft* – Board of Health  
Meeting Minutes  
September 13, 2022

**ATTACHMENT A**

**RECORD LOCATION**

August Director's Report	BOH File
Robert Pleasure Memorandum	BOH File
M.G.L Ch.111Sec. 142 D-G	BOH File
M.G.L Ch. 111 Sec. 122, 31C	BOH File
M.G.L Ch. 111 Sec. 142A-C, 142H-M	BOH File
Glufosinate Brief	BOH File

DRAFT

Here is the link to Agenda New Business Item #5 (a):

(a): Master Plan – Nate Therien and Michelle Theroux

Please note: The Master Plan information can be found in the section immediately following the members' names section on the web page.

[Master Plan Implementation Committee | South Hadley, MA - Official Website](#)

<b>Part I</b>	ADMINISTRATION OF THE GOVERNMENT
<b>Title XVI</b>	PUBLIC HEALTH
<b>Chapter 111</b>	PUBLIC HEALTH
<b>Section 122</b>	REGULATIONS RELATIVE TO NUISANCES; EXAMINATIONS

Section 122. The board of health shall examine into all nuisances, sources of filth and causes of sickness within its town, or on board of vessels within the harbor of such town, which may, in its opinion, be injurious to the public health, shall destroy, remove or prevent the same as the case may require, and shall make regulations for the public health and safety relative thereto and to articles capable of containing or conveying infection or contagion or of creating sickness brought into or conveyed from the town or into or from any vessel. Whoever violates any such regulation shall forfeit not more than one thousand dollars.

GBH 89.7

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# GBH NEWS

## LOCAL

### Wu blocks new artificial turfs in Boston parks, refrains from calling it a ban



*FILE – Artificial turf is seen during a training session at Richcraft Recreation Center on June 1, 2015 in Ottawa, Canada. The synthetic grass has become a topic of debate amid concerns about PFAS exposure.*

*Dennis Grombkowski / Bongarts/Getty Images*

By **Frankie Rowley**

October 5, 2022

**SHARE**

Mayor Michelle Wu last week halted the installation of a new artificial turf field in a city park, but city officials stopped short of calling the move a ban.

“The City has a preference for grass playing surfaces wherever possible,” a city spokesman said in a statement to GBH News. “There is no ban on the installation of turf in the City of Boston.”

That clarification came after the appearance of a single sentence in the reconstruction plans of the city’s **Malcolm X Park** in Roxbury. A notation in the plan stated: “Mayor Wu has directed that no new artificial turf fields will be installed in the City of Boston.”

Kyla Bennett, director of science policy at the Public Employees for Environmental Responsibility, said the environmental nonprofit heralded the statement as a sign of the city’s support of recent health discoveries about a group of chemicals known as PFAS, or so-called “forever chemicals,” in artificial turf.

And the purported ban made headlines in the British daily The Guardian, which published [a report](#) on the matter.

Bennett said Wu appears to be backtracking, saying the city has not banned artificial turf outright even though the notation is explicit. Wu is not elaborating on the issue, but Bennett said it could be to avoid legal action.

“They sue at the drop of a hat,” Bennett said of the turf industry. “They’re fighting as hard as they can to make this stuff as long as they can. They know it’s dangerous, but they don’t care because they’re making a lot of money.”

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## Related Stories

[More games or more grass fields? Turf wars play out across Massachusetts](#)

[Massachusetts Attorney General files suit against PFAS manufacturers](#)

[PFAS task force releases recommendations to state officials](#)

In response to the block of future turf installation, Melanie Taylor, president and CEO of the Synthetic Turf Council, condemned Mayor Wu’s actions.

"The mayor's decision will only succeed in depriving Bostonians of year-round access to playing fields," said Taylor. "We will continue to work with public officials to educate them on the proven safety and reliability benefits of synthetic turf systems."

The debate over the installation of new turf in parks in Boston comes just months after the Environmental Protection Agency released a series of health advisories over perfluoroalkyl and polyfluoroalkyl substances in drinking water.

"That's the first time that EPA has said, 'OK, we were wrong, this stuff is really dangerous,'" said Bennett.

The chemicals are used in a wide variety of products, including artificial turf. **PFAS don't easily break down**, and because of widespread use, the chemicals have been found in water supplies and soil. Exposure has been linked to a myriad of health risks ranging from developmental issues to certain kinds of cancer.

"Our exposure to them is what we call ubiquitous, which means that almost every single person in the world ... has levels of PFAS chemicals in their bodies," said Dr. Julia Varshavsky, an assistant professor of environmental health and Northeastern University.

Children playing on artificial turf fields are also at some of the highest risk of exposure, according to Bennett. Turf is made from plastic blades of grass and an infill layer of crumbled black rubber from old tires. Those crumbs can get accidentally ingested as kids play. And the fields can also become worn enough to release PFAS as the fibers break down.

Bennett said Wu never intended to make a public announcement banning artificial turf.

"I wish that she had done it more publicly," Bennett said. "It was just an accident that we found it in that document and blew it up. She probably is not overly fond of the fact that we did that."

Phil Brown, co-director of the Social Science and Environmental Health Institute at Northeastern University, said cities like Boston have major influence over how states and federal government respond to man-made environmental threats. He said Massachusetts already exceeds EPA regulations on allowable PFAS chemicals, but he hopes moves like Wu's – however unintentional – encourage more scrutiny.

“Towns and cities can do a lot and they can have influence on the state,” he said. “We're now waiting to see that pressure go up to the EPA, so that at a federal level, they'll [become] regulations.”

### **Frankie Rowley**

Frankie is a GBH News intern for fall 2022.

Tagged: **BOSTON ENVIRONMENT**

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ARTS & CULTURE, MORNING EDITION

### **[Texas sheriff certifies the Martha's Vineyard migrants are crime victims, opening the door for special visas](#)**

IMMIGRATION

Stephen Frantz [REDACTED]

Mon, Jul 25, 2022 at 5:11 PM

To: Sharon Hart <shart@southhadley.ma.gov>

Cc: Stephen Frantz <sfrantz@shadley.ma.org>, Jessica Collins <jcollins@shadley.ma.org>, Christine McKiernan <cmckiernan@shadley.ma.org>, Tony Judge <tjudge@shadley.ma.org>, K WPio <kwalshpio@gmail.com>, Tony Judge [REDACTED], Karen Walsh Pio [REDACTED], Monasia Ceasar <mceasar@southhadley.ma.gov>, Jennifer Jernigan <jjernigan@southhadley.org>

Dear Sharon —

Thank for forwarding the South Hadley Landfill 2022 Q2 report. I had no difficulty downloading the report; however, I do have questions regarding the report *per se*. I would appreciate your passing this note on to Mr. Boulais in order to help clarify the monitoring process and accompanying data.

Thank you — Stephen

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In the Operations Report April 2022-June 2022, it mentions that additional data provided in Attachments B, C, D, E, F, G, H, I, J, K and L; however Attachments B thru L were not included. *Leachate Flow, Monitoring and Discharge data*, and *Monitoring Points* and *Monitoring Spike Data* would be among the data worthwhile to review.

In Attachment A, Soil Gas Points, Device ID = SG-00003 and SG-00003D, for CH<sub>4</sub>(%Vol) are both marked "Blocked". Methane (CH<sub>4</sub>) is a significant greenhouse gas and I'm uncertain of what is meant by "Blocked". Has this been corrected?

Regarding the 5 EXCEL tables —

*MSE Berm Cell 2D Monitoring Points*: First, what is meant by "bent nail," though data was supplied? Second, I'm curious about the many cells with missing data. These are marked "Vegetation," "Disturbed" or "DNL" ( I think that means Data point not located or Did not find). Have these issues been resolved, have these stations been abandoned or have replacement stations been established? I understand "Location surveyed using local coordinate system," but considering how much difficulty is based on "location," should not a different locator system be employed to improve the data set?

*MSE Berm Cell 2E Monitoring Points*: Similar to above, data is missing and marked: "Did not find" or "Monitoring point not located". In some cases, the same recording is given for several years. Again, have these stations been abandoned or is there some reason for not replacing the stations?

*MSE Berm Toe Heave Monitoring Points:* Cell 2E, Iron Rod A is marked "Inaccessible" since 6/30/21. How is it "inaccessible"? Does this continue to be inaccessible or is it being corrected?

*MSE Berm Cell 2D Settlement Plates:* In the column "Cumulative Settlement," data is frequently missing and marked: "Did not find," "Did not locate," "Did not locate - Vegetation," "Rod unreachable (on the wall)," "DNL - Vegetation," "Damaged," or "Rod is absent". Sometimes the data is missing for several successive years, and some of these problems appear to be correctable. As mentioned earlier, have any of these issues been resolved by the monitoring company? Can they replace some/all of the missing stations? Considering the importance of "location," and since location surveyed uses a local coordinate system, shouldn't a different locator system be employed to give a more complete set of monitoring data?

*MSE Berm Cell 2E Phase 1 Settlement Plates:* Again, the "Cumulative Settlement" column has missing data and/or marked "DNL - Vegetation". I propose the same questions as in previous tables above.

*MSE Berm Cell 2E Phase 2 Settlement Plates:* In the: "Cumulative Settlement" column there are cells with no data or marked "Monitoring suspended due to lateral movement of rod," "Did not locate," "Monitoring suspended due to damage to rod" and "Did not locate - Vegetation". Again, some of these problems appear to be resolvable or manageable and, if not, I'm curious as to why not?

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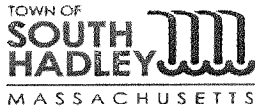
Dr. Stephen C. Frantz  
Research Pathobiologist

[Redacted]  
[Redacted]  
Email: [sfrantz@shadleyma.org](mailto:sfrantz@shadleyma.org)  
[Redacted]  
[Redacted]

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\*Do not print this email unless necessary



Jennifer Jernigan &lt;jjernigan@southhadleyma.gov&gt;

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**Fwd: 2022 Q2 report**

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Sharon Hart &lt;shart@southhadleyma.gov&gt;

Mon, Aug 1, 2022 at 3:37 PM

To: Stephen Frantz [REDACTED], Tony Judge [REDACTED], Tony Judge <tjudge@shadleyma.org>, Christine McKiernan <cmckiernan@shadleyma.org>, jessica collins <jcollins@shadleyma.org>, K WPio [REDACTED], Karen Walsh Pio [REDACTED], Monasia Ceasar <mceasar@southhadleyma.gov>, Jennifer Jernigan <jjernigan@southhadleyma.gov>

Sharon D. Hart,  
Emergency Management Director,  
Director of Public Health  
116 Main Street, M2  
South Hadley, MA 01075  
cell (413) 315-7307  
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shart@southhadleyma.gov

----- Forwarded message -----

From: **Chris Bouchard** <cbouchard@southhadleyma.gov>  
Date: Thu, Jul 28, 2022 at 4:27 PM  
Subject: 2022 Q2 report  
To: Sharon Hart <shart@southhadleyma.gov>  
Cc: Daniel Boulais <djboulais@tighebond.com>

Hi Sharon,

Dan forwarded me some questions from a member of the board.

The attachments B-L are in the attachment Q2 pdf.

Soil gas points - The soil gas points reported as blocked (SG-3 and SG-3D) are in close proximity to a landscaped area at 17 Industrial Drive and have likely been impacted by tree growth or maintenance activities by the private property owner. Sampling point soil gas point SG-13 is located approx. 40' west of SG-3 and SG-3D and has reported to have 0% reportable CH4.

As far as the other questions, many relate to MSE Berm monitoring points that were damaged during capping of the landfill or by brush removal equipment. We will follow up with the survey crew to make a more concerted effort going forward to locate the points noted as blocked by vegetation or did not find. The other issue has been to schedule the mowing contractor to mow the landfill and trim the MSE berms, weather, help and equipment issues as there are only a couple of companies that can handle landfill slope mowing safely and not damage the the liner, swails, gas heads or monitoring points. Many other survey monitoring points as well as inclinometers continue to be surveyed and reported in the quarterly reports. Additionally, a year end summary of the historic MSE Berms data and assessment report is required and submitted as part of the closure monitoring.

The history of the landfill is this is the first MSE Berm landfill in the state and was required to have more survey points than a normal landfill almost to a point of redundancy as it was the first as the DEP wanted to make sure everything was done right and did what it was proposed to do.

done right and did what it was proposed to do.

We are also contracted with Tighe and Bond for three years as they are do the daily, weekly, monthly, and yearly monitoring and reporting for post closure services shown below:

1. Gas System Monitoring, Adjusting, Maintenance, and Reporting
2. Leachate System Maintenance (Leachate Testing, Monitoring, and Reporting is not included – the Town will perform these tasks)
3. Surface/Groundwater Monitoring, Testing, and Maintenance
4. Site Inspections
5. Landfill Mowing and Vegetation Control of Landfill (including MSE Berms)
6. Surveying and Monitoring of the MSE Berms (including Monitoring and Reporting of Inclinometers and Extensometers. Town will provide equipment and proprietary software for DEP Reporting)
7. All Necessary Reporting
8. Operation and Maintenance of Landfill Equipment
9. Troubleshooting and Repair Recommendations
10. Response to After Hours Issues
11. The Firm shall provide all Monitoring Equipment except for the equipment and software necessary for the monitoring and reporting of the Inclinometers and Extensometers as mentioned in #6 above

Tighe and Bond has held this post closure contract with the Town since the closure and has great success with them and onsite staff with communication, work as contracted and when recommendations for work that needs to be done outside the scope of the post closure contract as well. We have not had any significant issues that remain unresolved or are outstanding with the MA DEP in accordance with our permits.

Chris

--

Christopher J. Bouchard  
Director of Public Works  
Department of Public Works  
Town of South Hadley  
10 Industrial Drive  
South Hadley, MA 01075  
Phone #: (413)538-5033 Ext. 6509  
www.southhadley.org  
cbouchard@southhadleyma.gov



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**Jennifer Jernigan** <jjernigan@southhadleyma.gov>  
To: Stephen Frantz [REDACTED] sfrantz@shadleyma.org

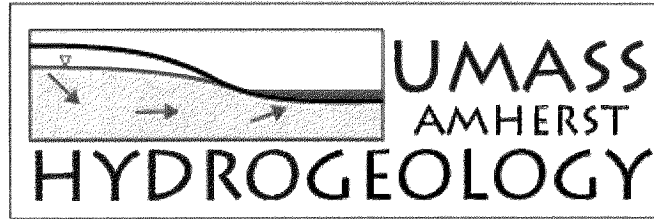
Tue, Sep 13, 2022 at 6:10 PM

[Quoted text hidden]

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**Jennifer Jernigan,**  
**Assistant Public Health Director/Burial Agent**  
Town of South Hadley  
Board of Health, Room M2  
(413)538-5017, x6107

## Environmental Tracer Study of Dry Hill Aquifer, South Hadley, MA



**Background:** A USGS study of the dry brook aquifer system developed a hydrogeologic conceptual model of the aquifer system.

Physical hydrologic data suggest that groundwater flows from the recharge area towards the CT River with a strong hydraulic connection between observation wells and the river itself. A physical hydrogeologic model that solves the groundwater flow equation determined the steady-state contributing area of the aquifer at 2 sustained pumping rates. The lower sustained rate of 300 gpm produced 90% of water from local recharge vs 10% from the Connecticut River while the 914 gpm pumping rate produced 50% from both sources. Refining the contributing area of the aquifer is critical for making informed decisions regarding the sustainability and vulnerability of the sole-source drinking water supply for the town of South Hadley.

**Purpose:** To refine the contributing area (source of water) for the production well in the dry brook aquifer using geochemical tracers. This work seeks to answer the following questions: Does the geochemistry of the pumped water support a connection to the CT river? What fraction of produced water is local recharge (i.e. Dry Brook Hill) vs. induced infiltration from the Connecticut River. What can be concluded from this data regarding the size and residence time of water in the aquifer system?

**Approach:** We will use a proven method in isotopic tracing of subsurface water flow referred to as a 2-end member mixing model. We will take advantage of the isotopic composition of the CT river water being distinct (due to its large size and source of water in Northern New England) compared to local groundwater and precipitation. We will perform an initial sampling of observation wells and local stream water. We will work with the town to perform a sustained 10-day pump test at both 200 and 900 GPM and sample the produced water at fixed intervals (5 min for first hour, afterwards hourly for first day and then every 12 hrs) to assess possible changes in contributing area as function of drawdown in the aquifer. We will sample for hydrogen and oxygen isotopes, electrical conductivity, chloride,  $^{222}\text{Rn}$  (radon), and major and minor elemental compositions. At specified intervals we will sample for strontium isotopes, CFCs, SF<sub>6</sub>, and tritium to establish the transit time distribution of the water at different production rates. At the discretion of the town we can sample for other possible contaminants in the produced water, but those analyses will be invoiced separately.

**Analysis and Deliverables:** Most geochemical and isotopic data will be analyzed in house at UMass-Amherst. CFC and Tritium samples will be shipped to a commercial lab (invoiced directly to town of South Hadley). Professor Boutt and graduate student will lead the study design, perform the data analysis, interpretation, and end-member mixing model. A report summarizing data, results, and interpretation will be delivered to the town. At the culmination of the study, Professor Boutt and graduate student will hold a meeting where the results of the study will be presented and discussed.

**Qualifications:** The hydrogeology group at UMass-Amherst led by Professor David Boutt has 20+ years of experience in the field of hydrogeology and has led studies of environmental tracers both locally (Massachusetts, Vermont) and internationally (Chile, Argentina, and Trinidad and Tobago). The study proposed here is novel approach and one that few consulting firms have the knowledge or expertise to perform.

**Costs:** Approximately \$15,000-20,000 depending on final scope and total number of samples.

Dr. David Boutt, Professor UMass-Amherst, Department of Geosciences, Hydrogeologist  
For more information email: [dboutt@geo.umass.edu](mailto:dboutt@geo.umass.edu) or tweet [@davidboutt](https://twitter.com/davidboutt)