MassDEP

massDOT
Massachusetts Department of Transportation
Highway Division

Collaborative Options to Improve Drinking Water Quality in Western Boxborough, MA

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BOXBOROUGH
ENGINE
63

Wikipedia Commons, 2019

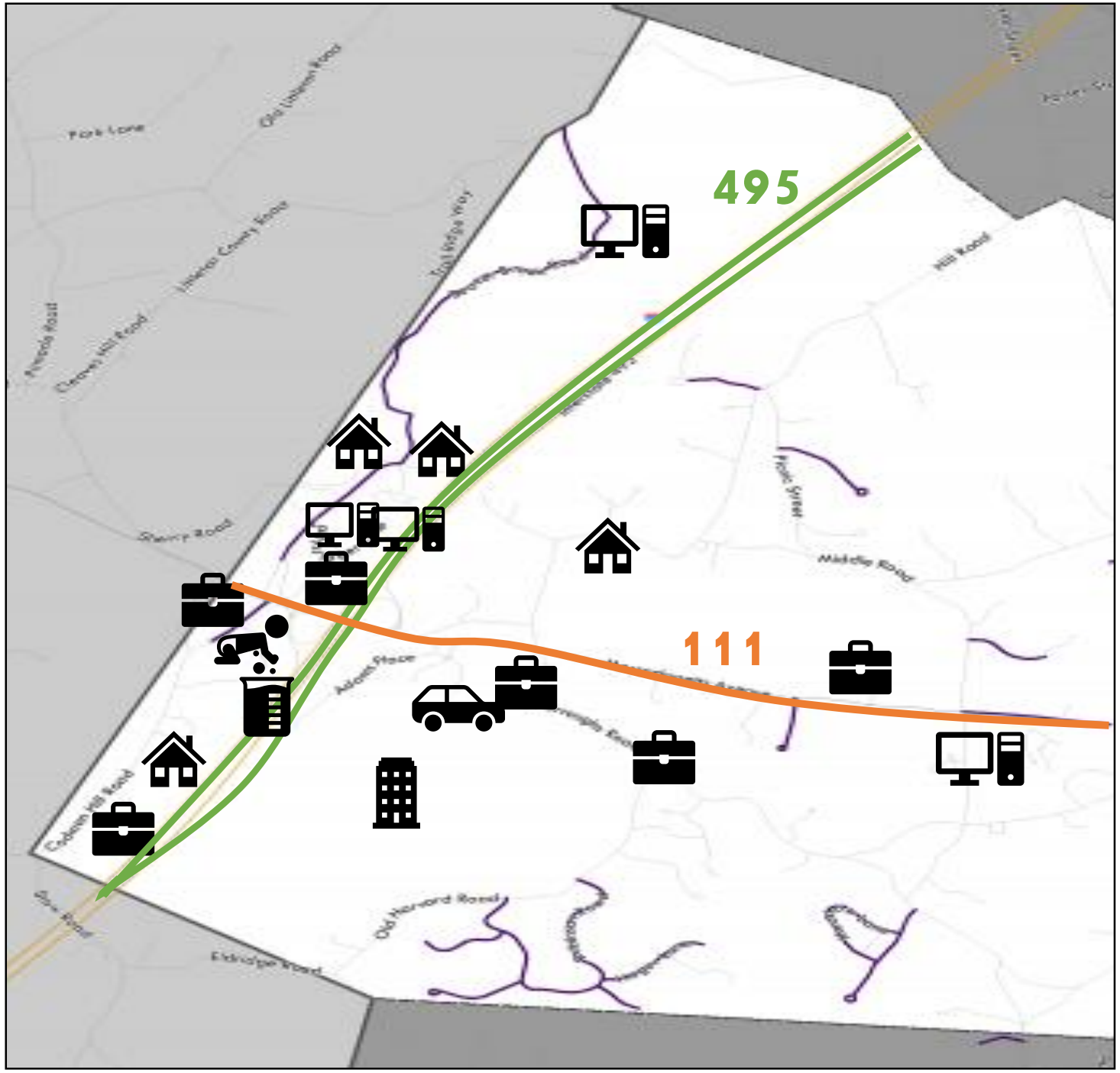
Boxborough2030, 2019


Blanchard
MEMORIAL SCHOOL
HAVE A FUN & SAFE SUMMER!

Google Earth, 2019

The 18 Businesses

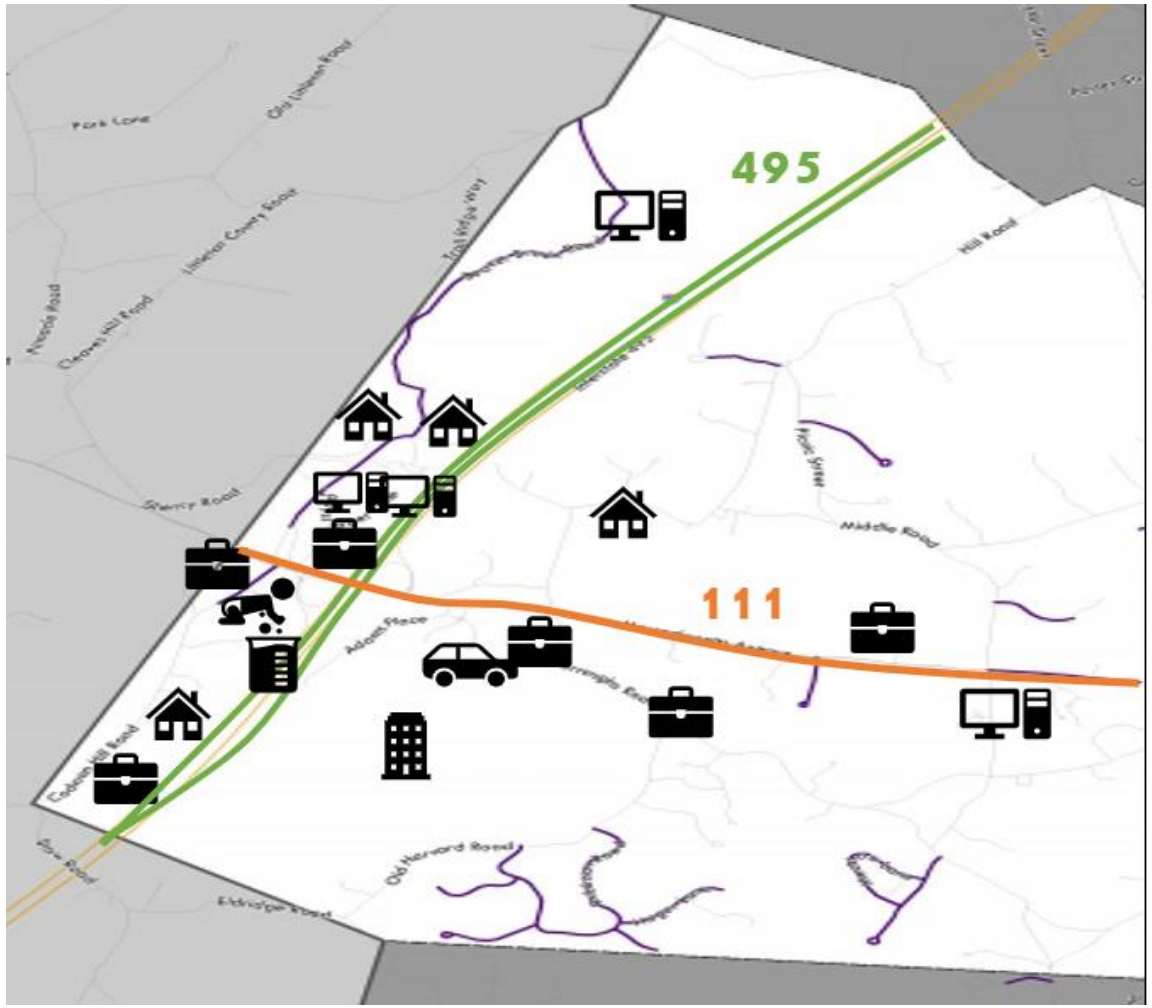
- Apartments and Condos (4)
- Hotels (1)
- Daycare/Pre-schools (1)
- Business Centers (6)
- Technology (4)
- Laboratories (1)
- Gas Station (1)

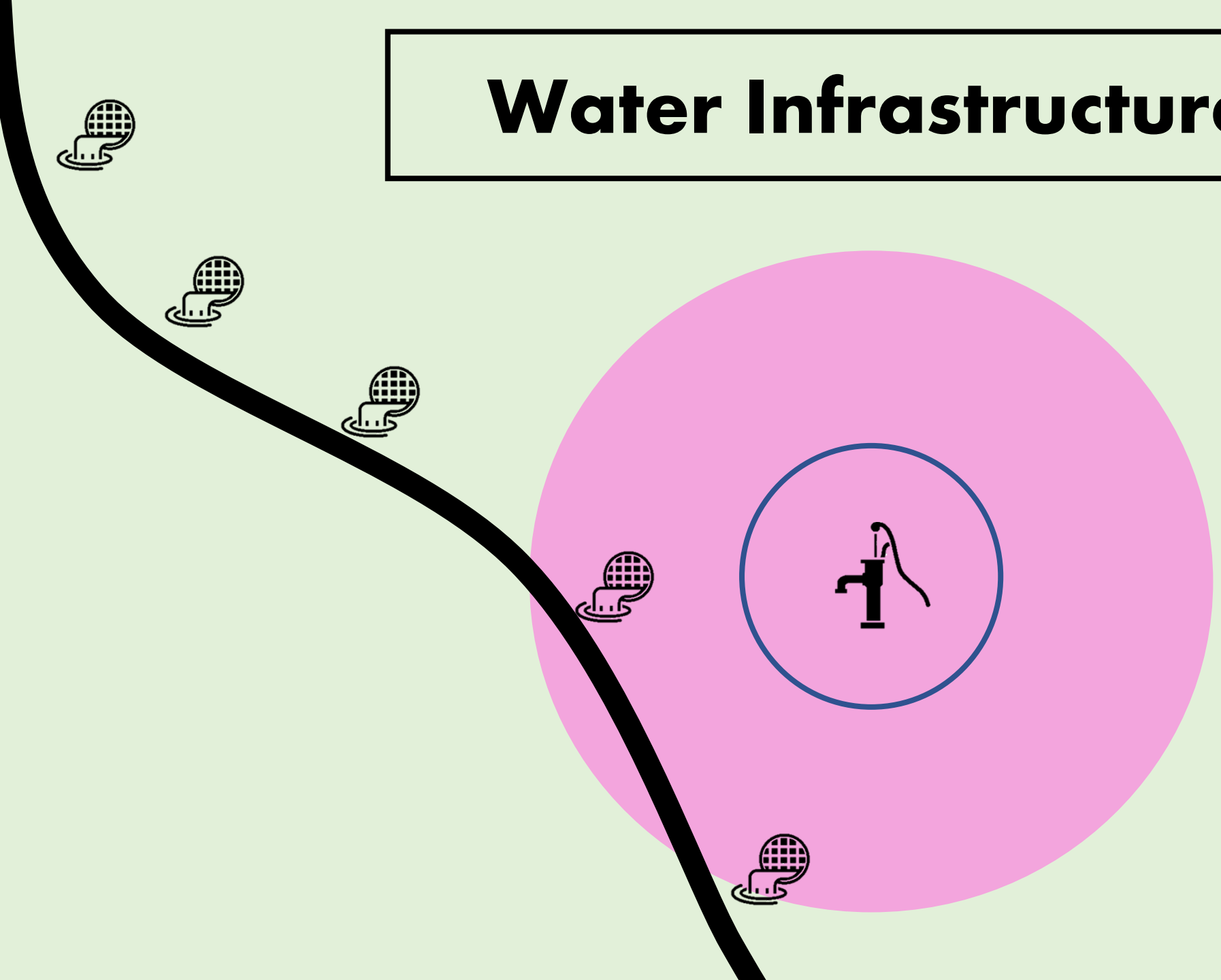


Our understanding of the water challenges

- Currently in compliance with regulations, but have similar drinking water quality issues due to high sodium levels and other contaminants
- Infrastructure may be starting to age and updates can come at a high price
- MassDEP is always evaluating drinking water for new contaminants

Are there benefits to collaborating?

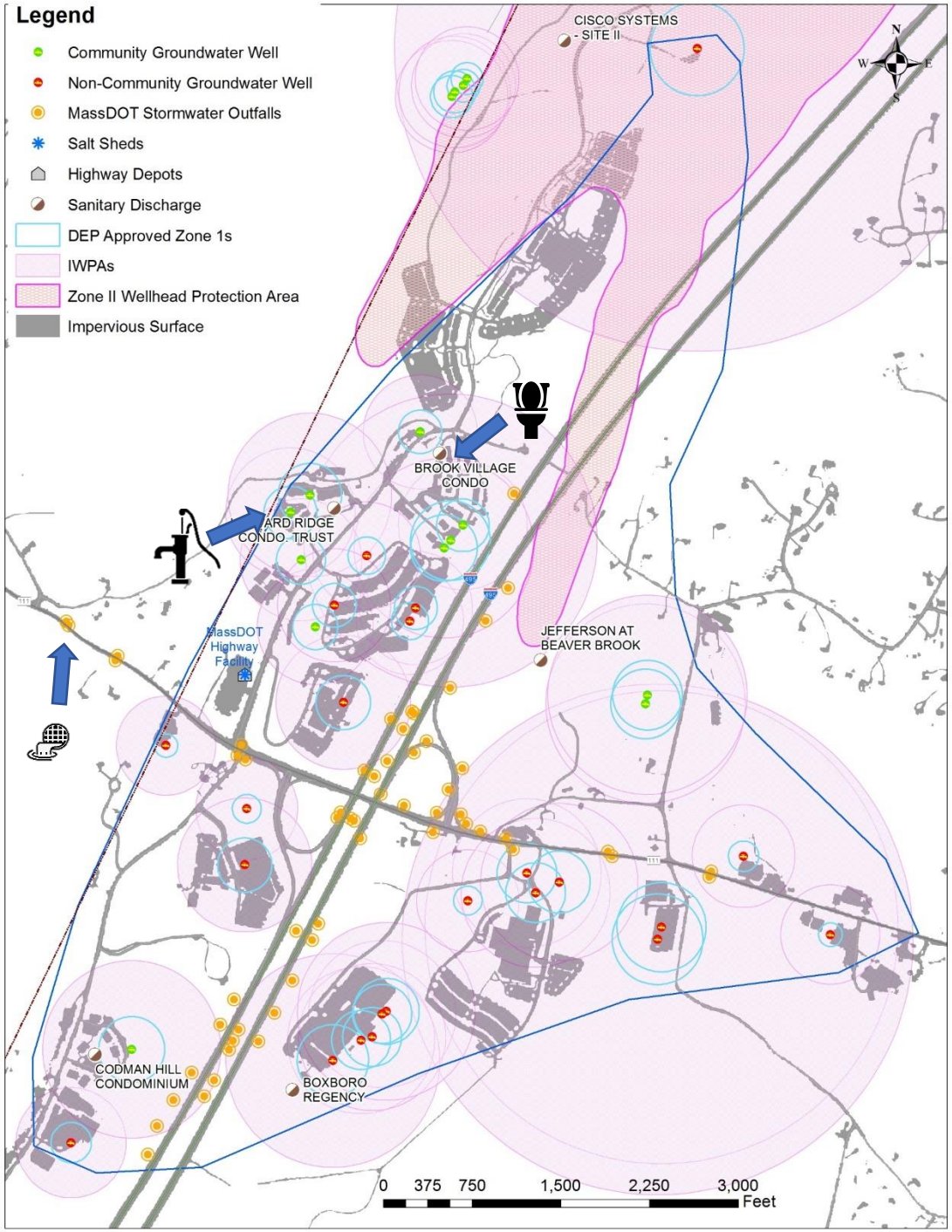




Water Infrastructure

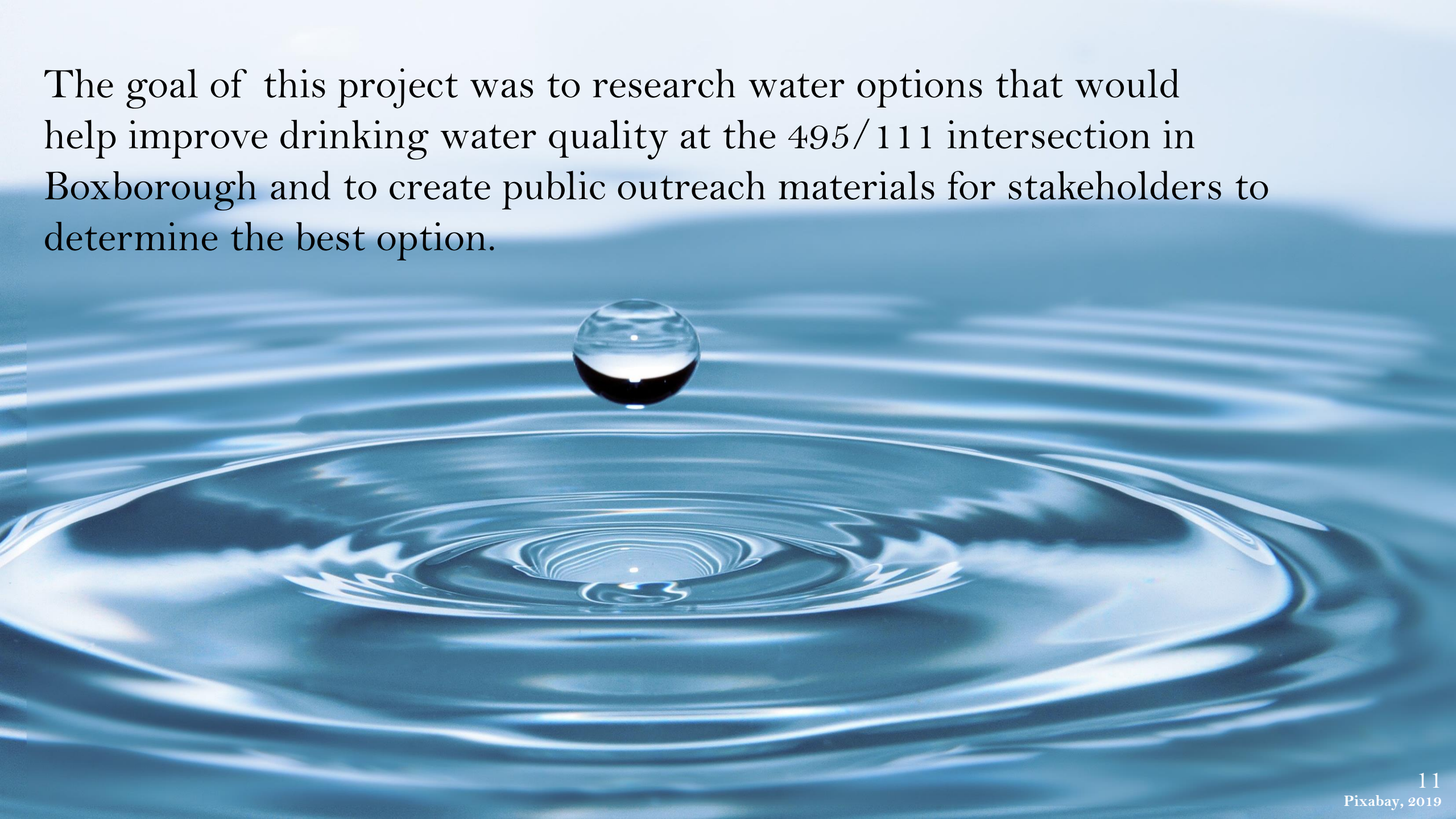
Storm water outfalls: Outside of [illegible]
zone 1 and preferably IWPA [illegible]
wells

- Impervious surfaces, stormwater outfalls, and sanitary discharge within Zone I's
- Multiple overlapping IWPA's leads to overdrawing of a well
- Salt contamination of wells from runoff and MassDOT salt shed (in some areas)



These plans would not be accepted today

The goal of this project was to research water options that would help improve drinking water quality at the 495/111 intersection in Boxborough and to create public outreach materials for stakeholders to determine the best option.



Pixabay, 2019

Methodology

What drinking water options exist?

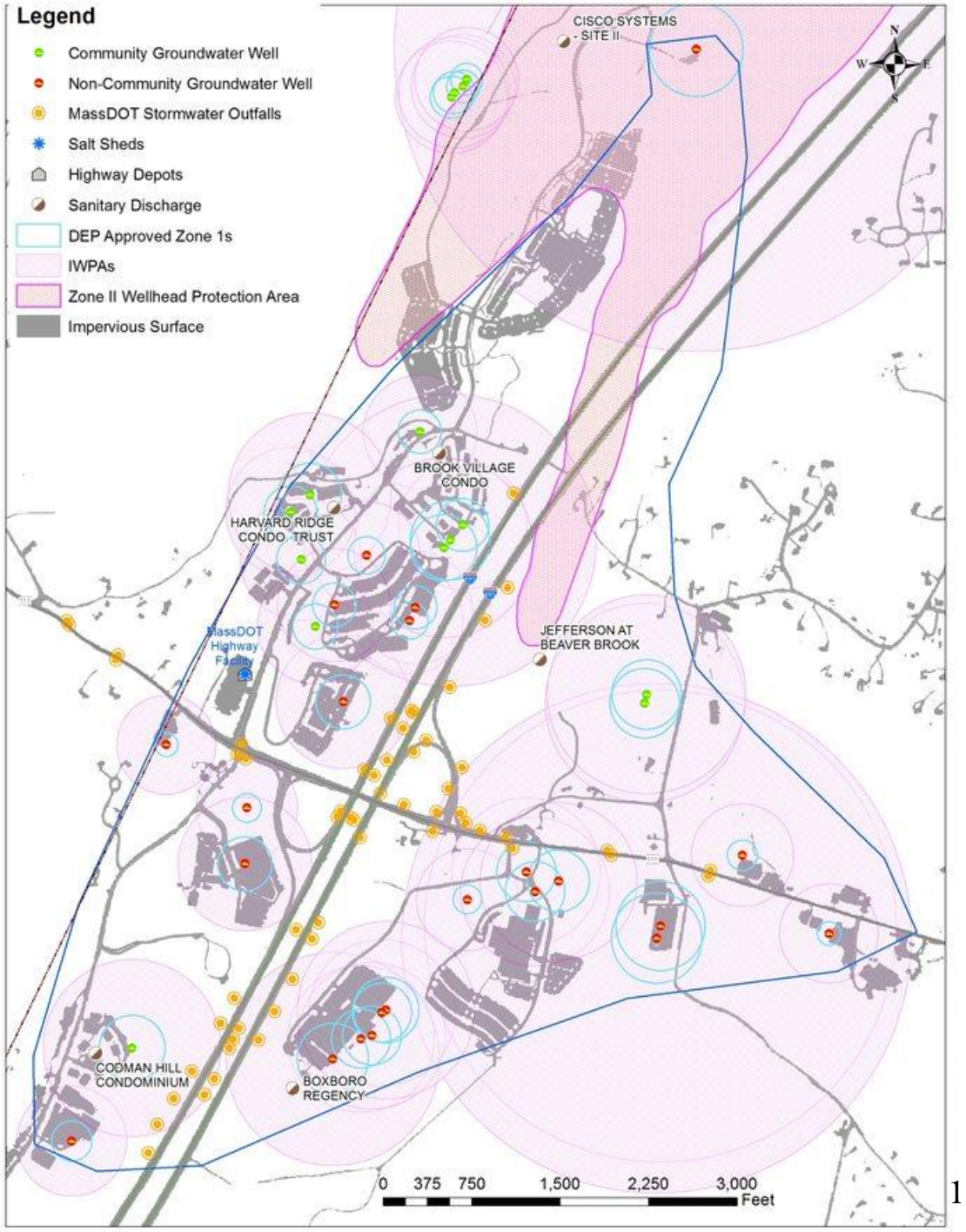
Option 1: Do it Yourself

Option 2: Collaborate With Littleton

Option 3: New Water Supplier

Option 1: Do it yourself

- Current existing circumstance
- Each business and living community finds their own solution for their own issues
- Regulations are likely to continue to change
- This option could limit town expansion



Option 2: Collaborate with Littleton

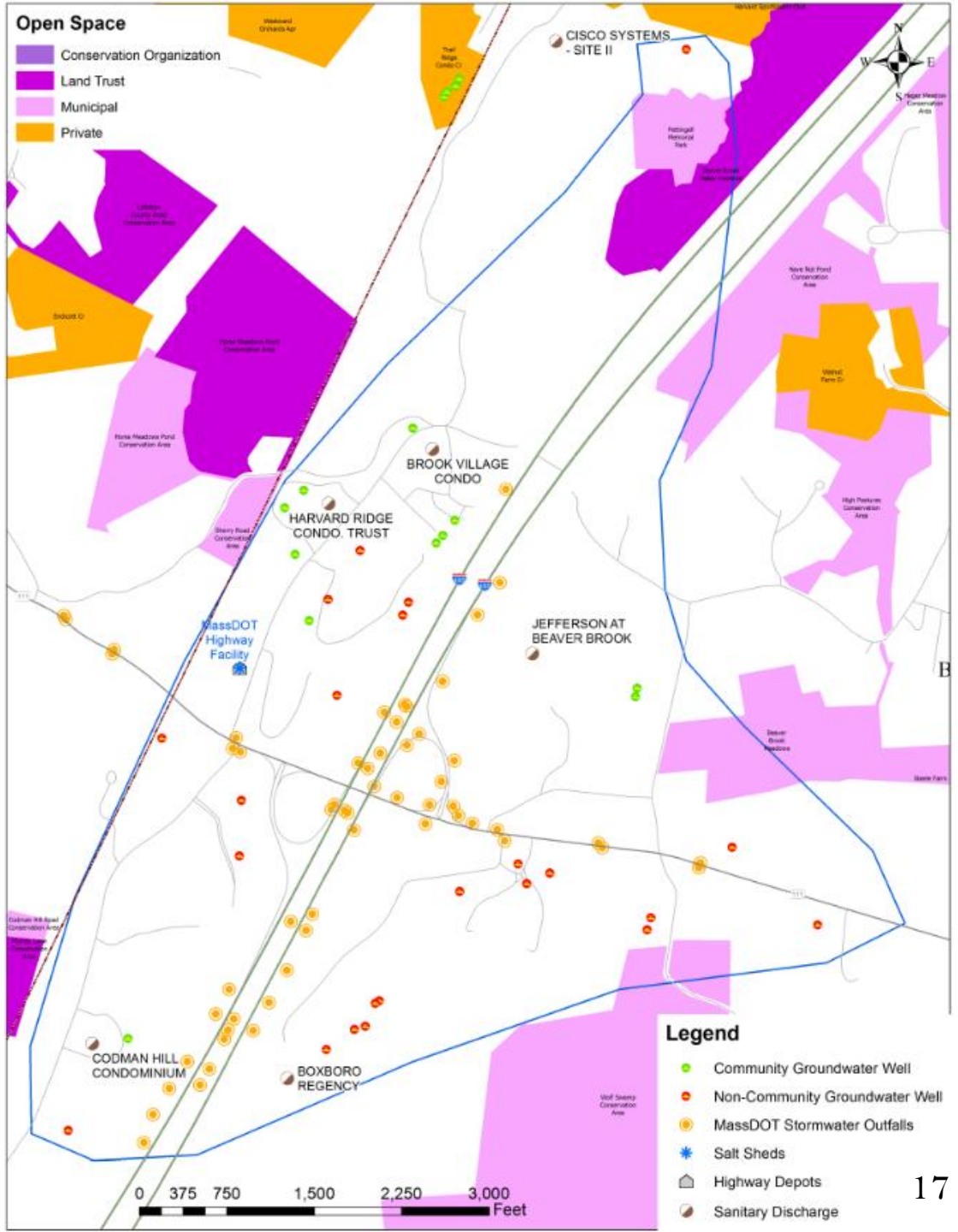
- Create a shared system between Littleton and Boxborough
- Littleton will be in charge of the water distribution system
- Big investment with a longer timeline, but a very safe and reliable source
- Reduces potential wastewater and stormwater costs

Littleton Cost Analysis Estimates

Location	% Water Usage of Total
1300 Mass. Ave	2%
330 Codman Hill Road	1%
60&70 Codman Hill Road	2%
Boxboro Green	0%
Boxborough Executive Center	0%
Boxborough Regency	17%
Bright Horizons Daycare	2%
Brook Village Condominiums	23%
Cisco Systems, Inc.	8%
Codman Hill Condominiums	10%
Harvard Ridge Condominiums	13%
LPCH Boxborough, LP	2%
Mass. Ave Gulf	2%
National Technical Systems	4%
Sentra Systems Inc.	5%
SYNQOR	5%
Winstanley Enterprise	5%

Option 3: Find a new water supplier

- Preliminary option with many different variations
  - Create a water district or LLC
  - Find someone else willing to be the water supplier
- Collaboration between stakeholders
- Needs to be completely designed from scratch, so this option has the longest timeline



Finding 1: There is an opportunity for stakeholders to communicate more effectively.

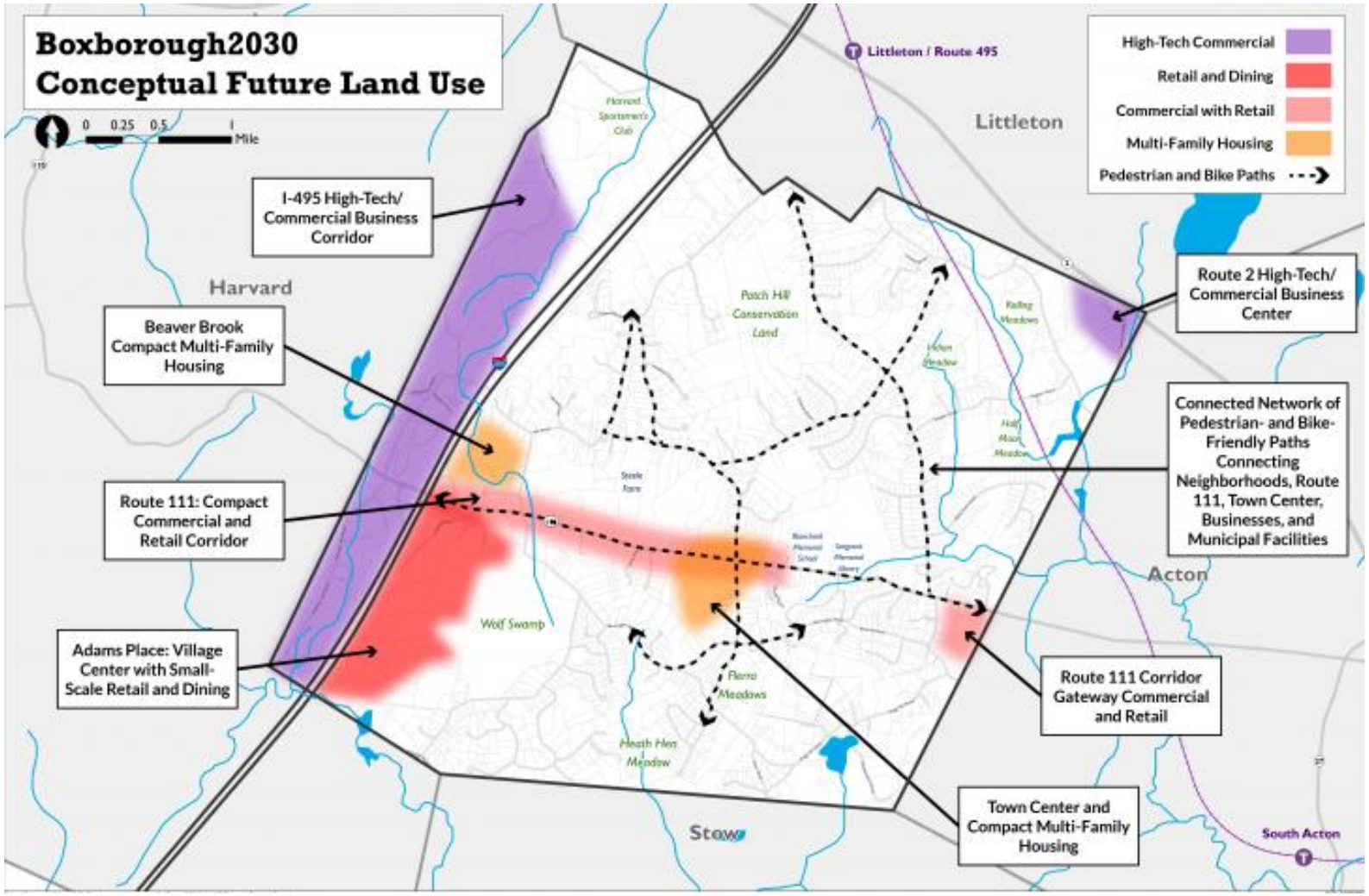
- Involved stakeholders had different understandings of commitment levels and project statuses
- Focus group attendees wanted to work together
- Water Resources Committee is willing to continue developing the Littleton Solution

Name	Attended?
Harvard Ridge Condominiums	**y**
Brook Village Condominiums	**y**
Mass. Ave Gulf	**y**
LPCH Boxborough, LP	**y**
SYNQOR	**y**
Sentra Systems Inc.	**y**
WhiteWater	**y**
RCAP	**y**
Water Resources Committee	**y**
The Dartmouth Group	**y**
Marlborough Resident (1)	**y**
Boxborough Residents	**y**
Codman Hill Condominiums	n
Boxborough Executive Center	n
1300 Mass. Ave	n
60&70 Codman Hill Road	n
Winstanley Enterprise	n
330 Codman Hill Road	n
Boxboro Green	n
Boxborough Regency	n
National Technical Systems	n
Bright Horizons Daycare	n
Paddock Estates	n
Cisco Systems, Inc.	n

Finding 2: Collaborating with Littleton is the most preferred option.

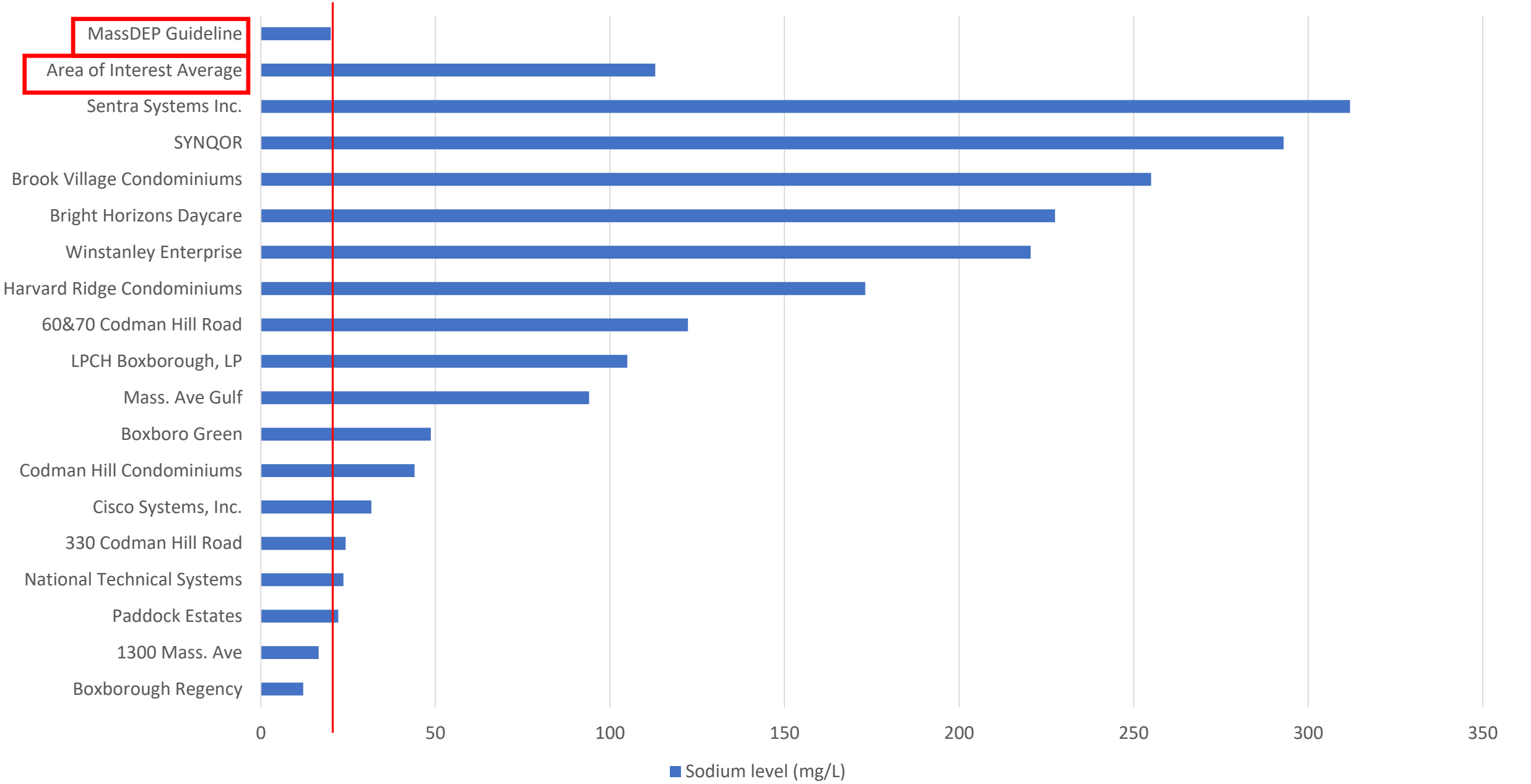
Evaluation Factors:	DIY	Littleton	Other Supplier
Water Supply			
Improves water quality for consumption		x	x
Adds system redundancy		x	
Removes need to operate individual Public Water Supply		x	x
Decreases cost for water over time		x	
Water Distribution			
Create and manage a water distribution system			x
Leave water distribution to another entity		x	
Stormwater Concerns			
Mitigates road salt contamination		x	x
Mitigates salt contamination from salt storage facility		x	x
Mitigates salting of other impervious surfaces, like parking lots		x	
Wastewater Discharge			
Reduces risk of toxins in water supply		x	x
Maintains existing permit limits	x		
Reduces wastewater facility standards and costs		x	x
Regulatory Issues			
Increases risk for more stringent permits	x		

Littleton option would support business and community growth in Boxborough



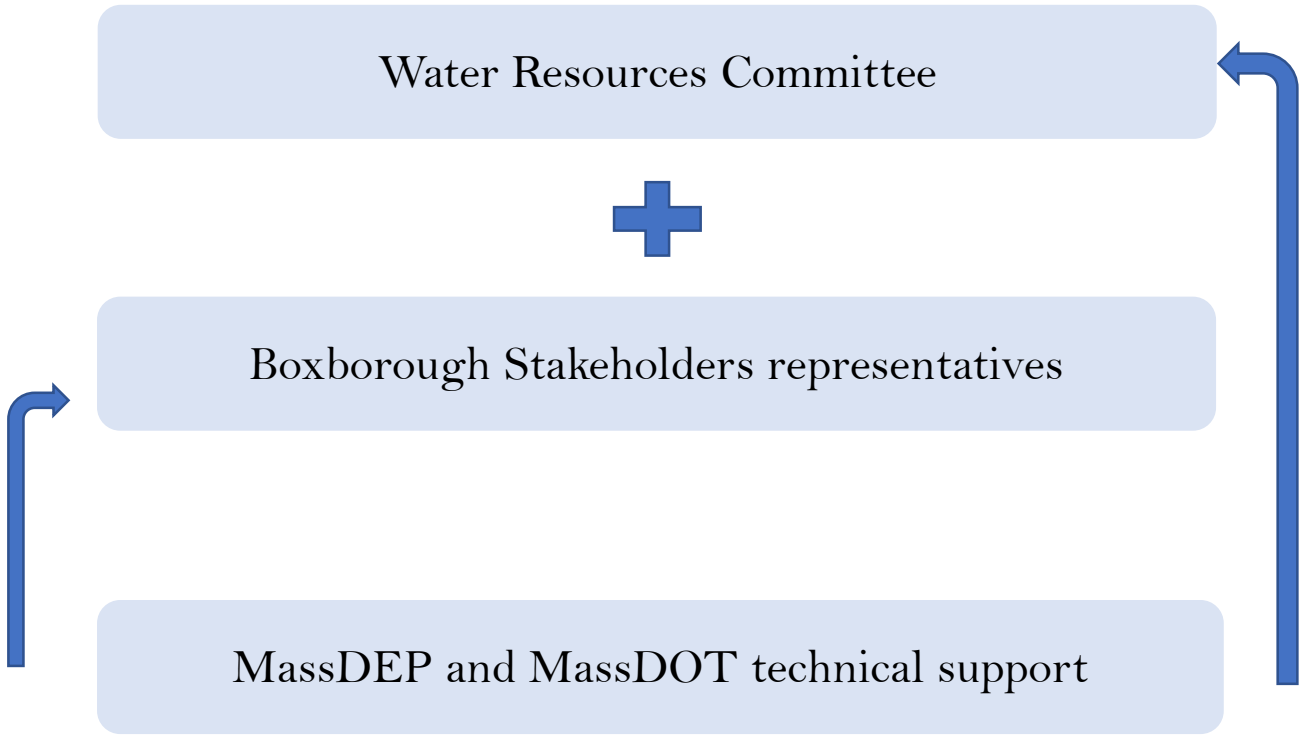
- Stimulate economic growth
- Support growth of current businesses
- Meet Boxborough2030 town goals

Sodium Contamination Levels



Next Step 1: Create formal working groups.

- Encourage collaboration
- Encourages communication



Location	% of Total Water Usage
Brook Village Condominiums	**23%**
Boxborough Regency	**17%**
Harvard Ridge Condominiums	**13%**
Codman Hill Condominiums	**10%**
Cisco Systems, Inc.	8%
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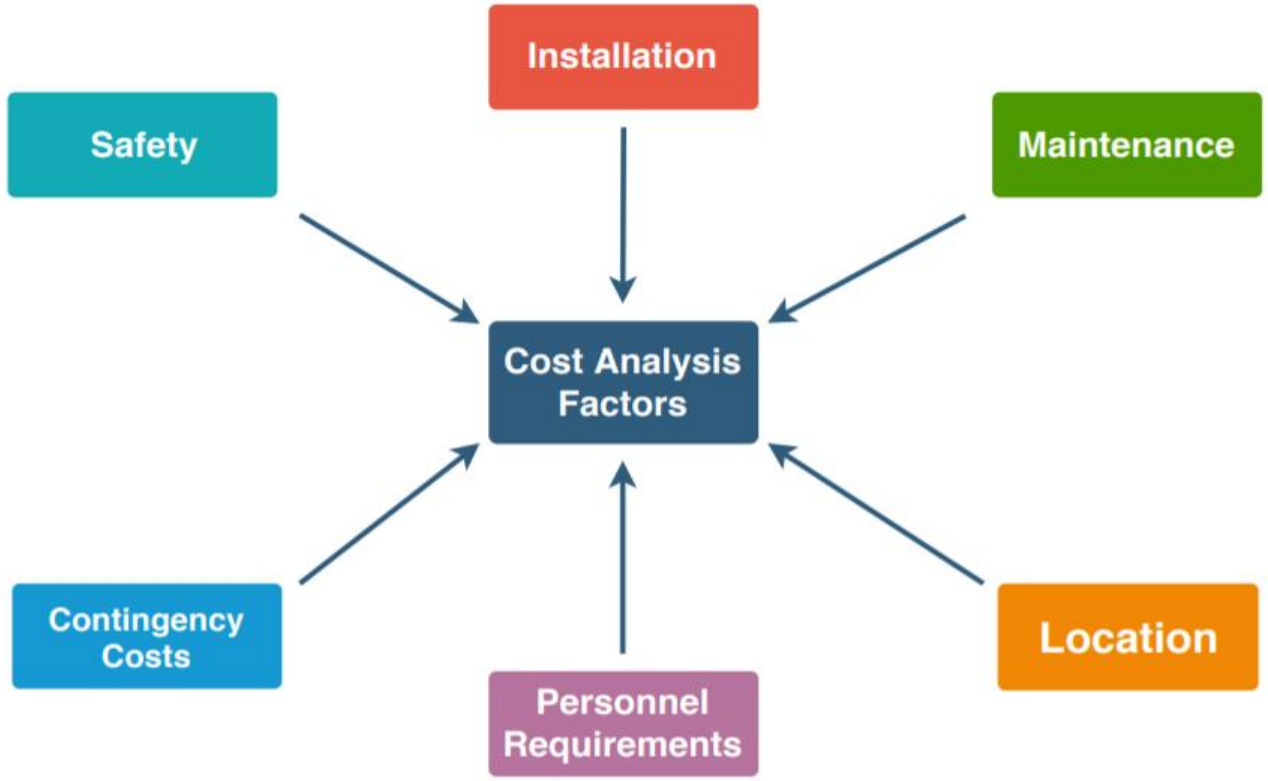
60&70 Codman Hill Road	2%
1300 Mass. Ave	2%
330 Codman Hill Road	1%
Boxborough Executive Center	0%
Boxboro Green	0%

Next Step 2: Apply to the Salt Remediation Program

- One year monitoring process to determine MassDOT's impact in order to create a remediation plan
- More applications could lead to the possibility for more funding for collaborative drinking water options

Next Step 3: Contract engineers for a more exact cost-analysis

- Focused on how costs could be distributed among stakeholders
- Many costs included were estimates based off engineering bids, previous studies, or educated guesses
- Legal fees were not evaluated in this cost analysis



Summary and Conclusions

- Assessed possible drinking water solutions
- Organized potential cost distributions
- Brought together stakeholders to discuss research and best options

- Interest expressed in collaboration and serious talk about next steps has begun
- Businesses have an idea on what the next steps are for the most supported option
- The Water Resources Committee has agreed to take the lead in continuing the conversation

Acknowledgments

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Water Resources
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