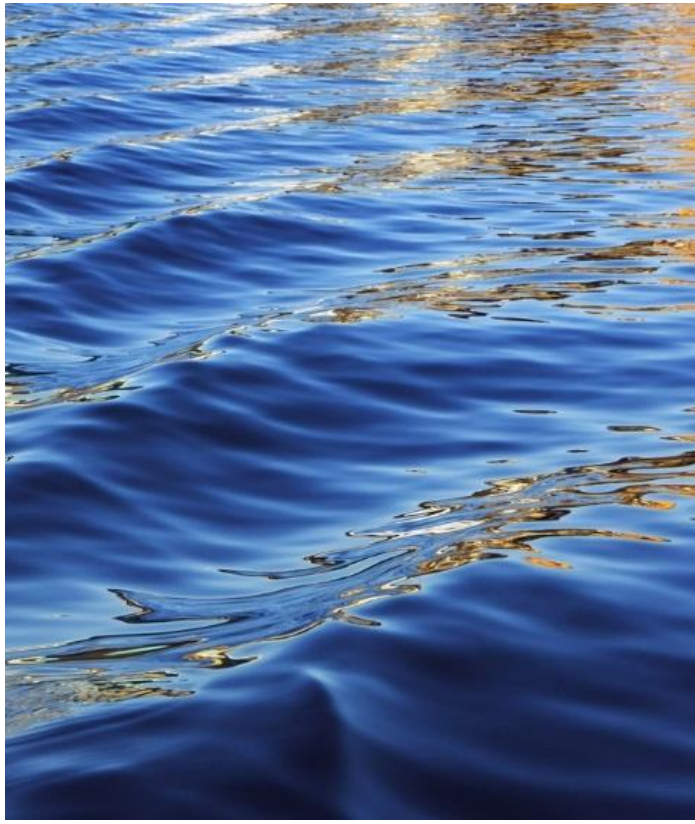
Lake Maspenock Risk Assessment & long-term vision

For informational use only
Presented by Ron Haley



Goal and Scope of this presentation

Purpose: To provide a current baseline view & actionable analysis of Lake Maspenock & surrounding area in order to maintain and improve safe, healthy & sustainable recreation areas for residents & stakeholders

What does this study include: Scope of review

Risk assessment includes 3 main areas

1) Rocks and obstructions

- Cause of damage, destruction and injury
- At least 5 incidences in the past

2) Erosion and runoff

- Erosion and runoff into Lake Maspenock at certain areas along roadside and higher elevations

3) Animals, fish and wildlife

- Weed growth and dark muddy areas along shoreline

We need a system and a way to define and align certain parts of the late. This will allow prioritization and scope of phased work.

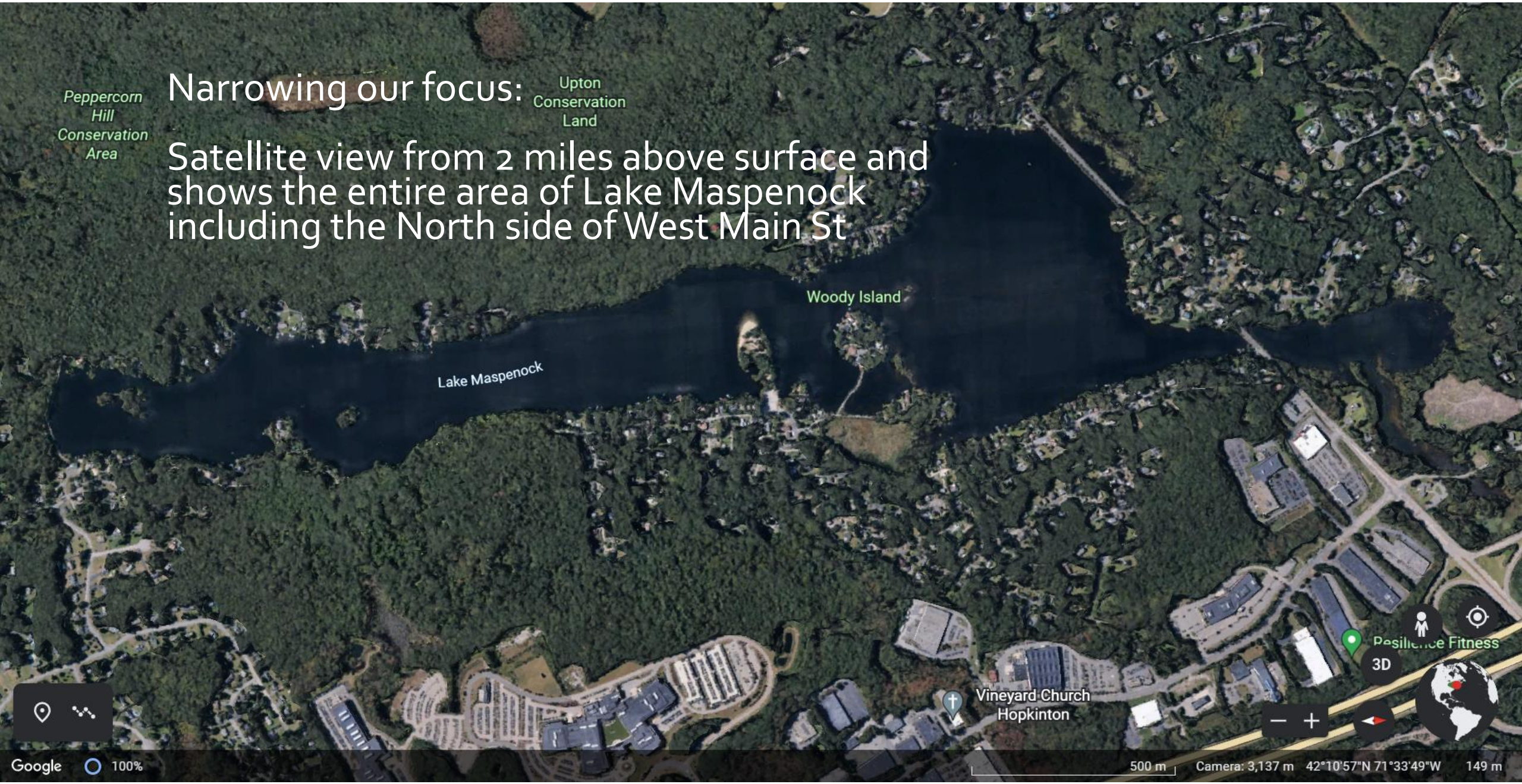
This will help align and organize a multi-year, multi-organizational, multi-phased approach to resident long-term vision.

Let’s start from the top:

Satellite view from 7.25 miles above surface and shows the entire area that influences and is influenced by Lake Maspenock

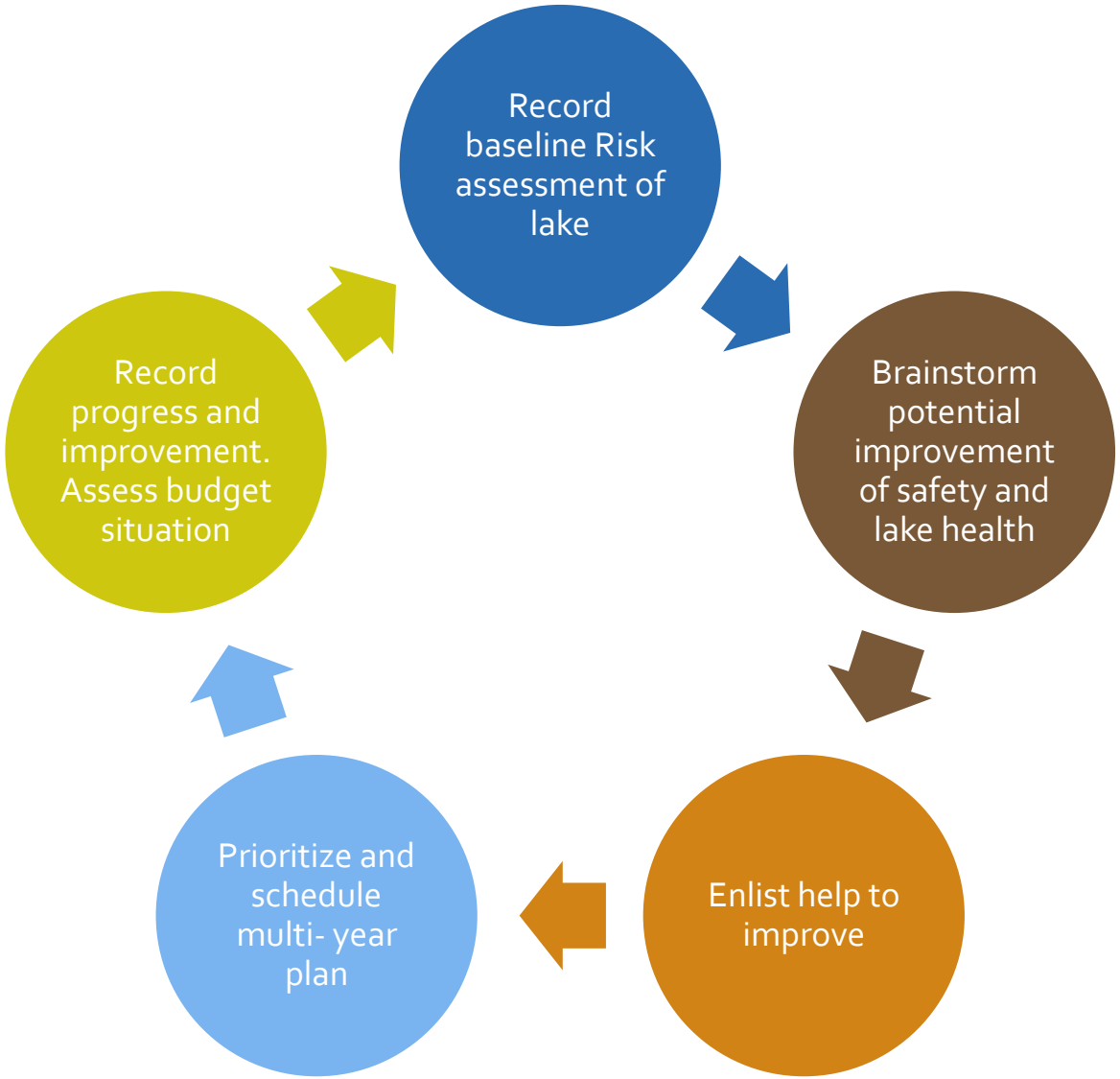
Narrowing our focus:

Satellite view from 2 miles above surface and shows the entire area of Lake Maspenock including the North side of West Main St

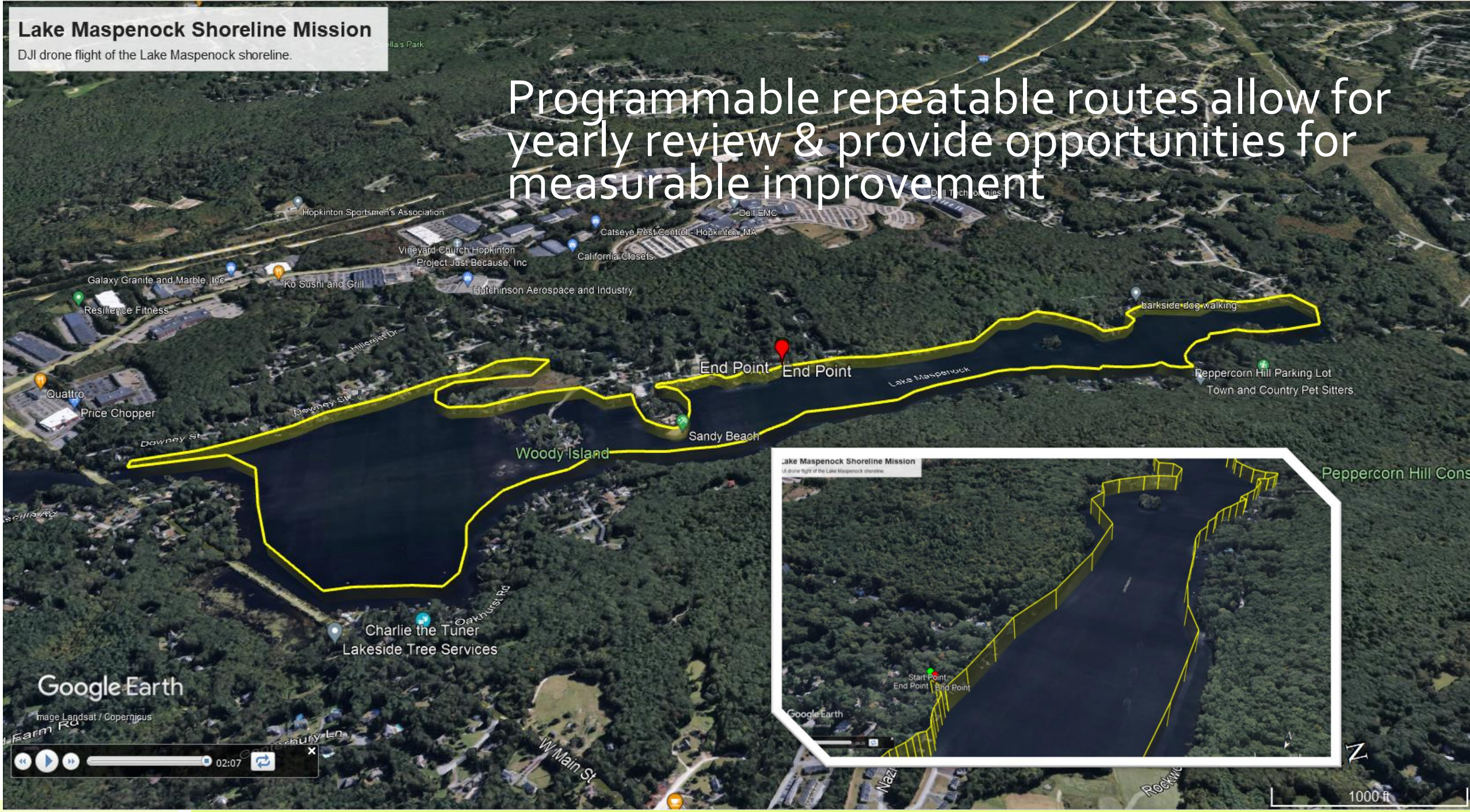


Circular system for multi-year plan for improvement

- Baseline Snapshot - Increase situational awareness
- Prioritize and record areas for improvements
- Socialize takeaways and enlist help to improve situation
- Develop a closed loop system for Continual Improvement



Programmable repeatable routes allow for yearly review & provide opportunities for measurable improvement



Proposed grid system to align & define future projects areas of focus

- Top Axis 15 zones
- Vertical Axis 8 zones
- Loosely oriented South to North
- Easy to call out priority zones such as G10, G11, G12, G13

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
A															
B															
C															
D															
E															
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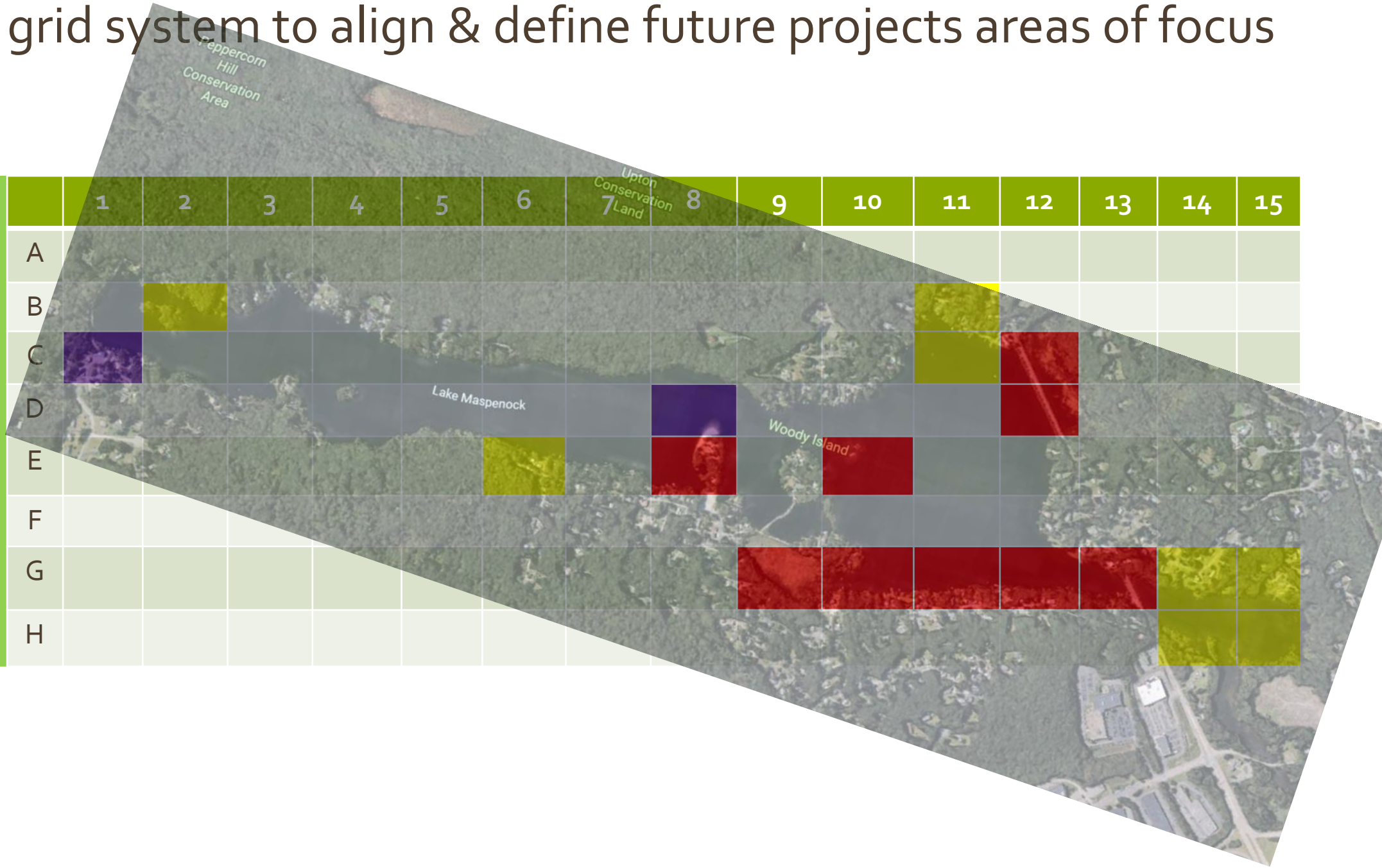
- Yellow = Medium Risk to enjoyment of lake
- Red = High risk to enjoyment of the lake
- Purple = Fatality



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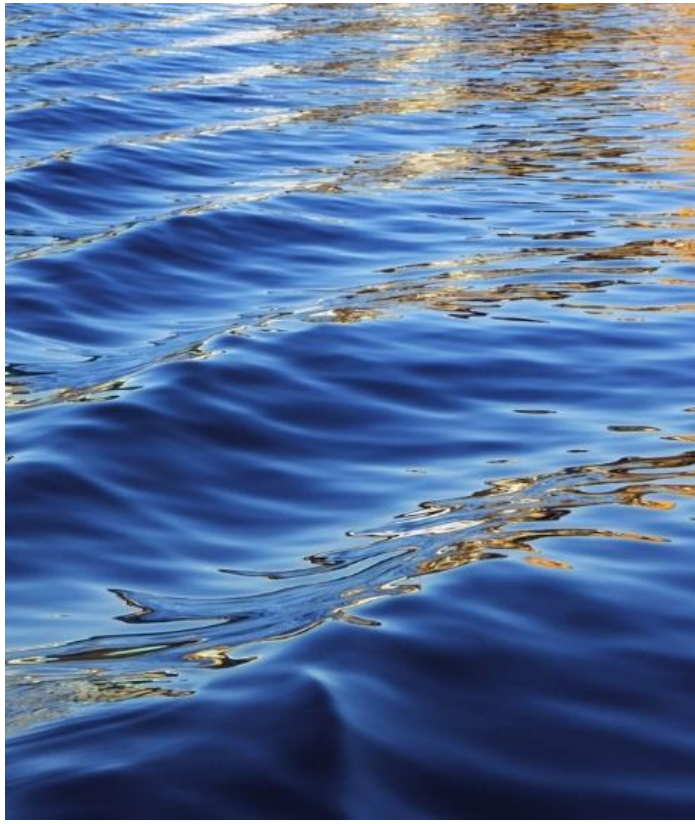
Baseline Risk Assessment for Lake Maspenock

Extended Drawdown provides good opportunity



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- Total of 9 Red
- Total of 8 Yellow
- Total of 2 Purple

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
A															
B															
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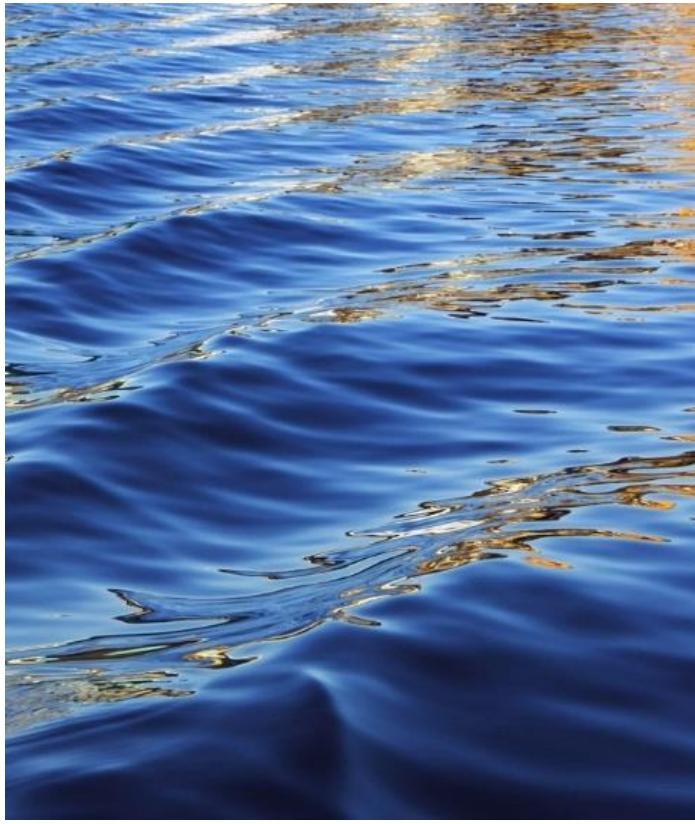
Lake Maspenock Risk assessment by location

Categories/Segments of Risk
Rocks, water quality, vegetation, invasive wildlife, drowning, water height et. Al, run-off



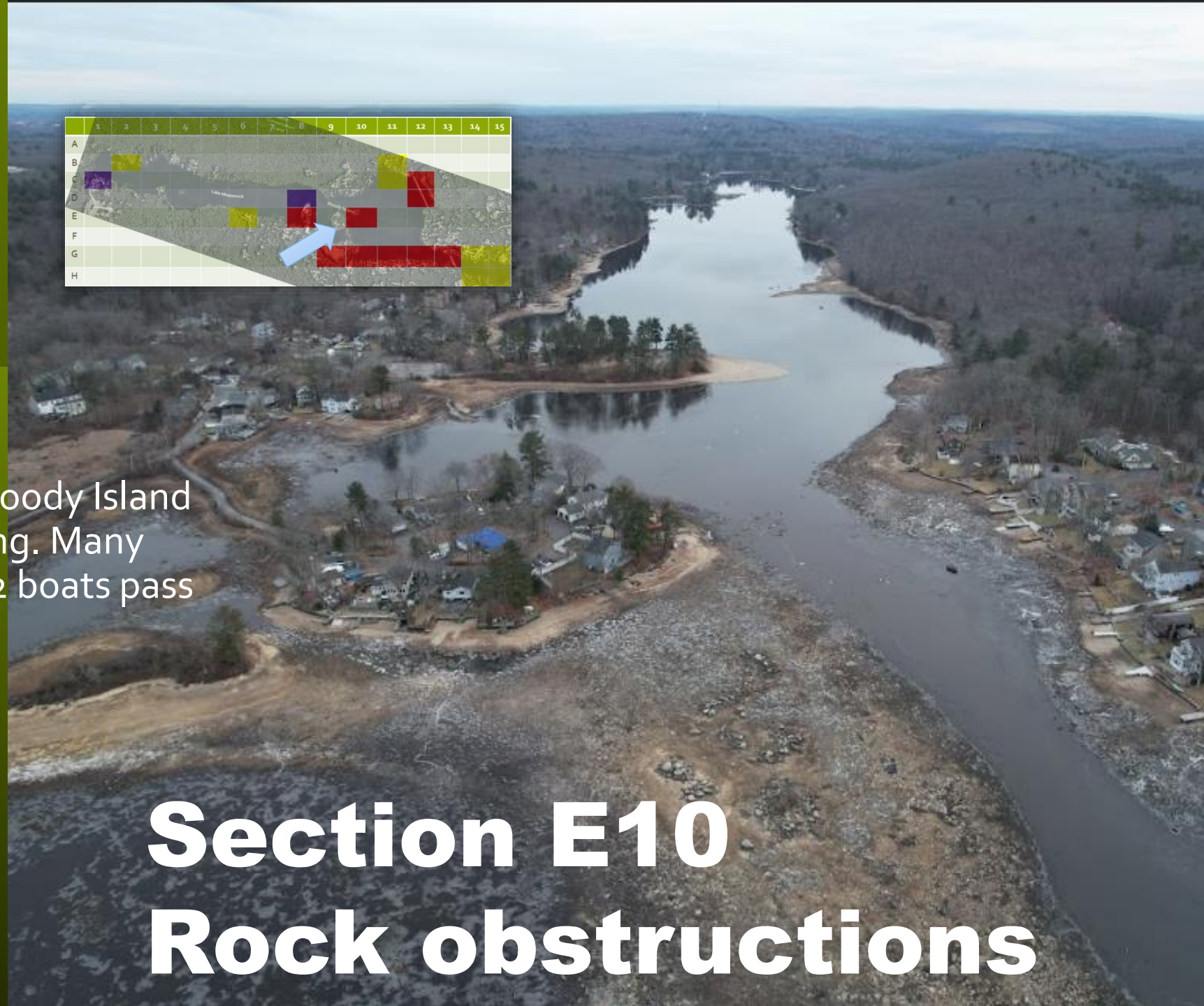
Run off from street. Road treatment and other debris flow into the lake from West Main St

Section G11-G13

- At right shows the West Main St run off which during a snowstorm runs the entire side of Lake Maspenock.
- The flow is seen here extending
- Actionable suggestion: request town dramatically reduces snowstorm chemical applications in and around a half mile from the lake

Pictures of the Lake 1/20/23

From W. Main St overlooking Woody Island and the shallow area surrounding. Many rocks and no easy way to have 2 boats pass



Section E10
Rock obstructions

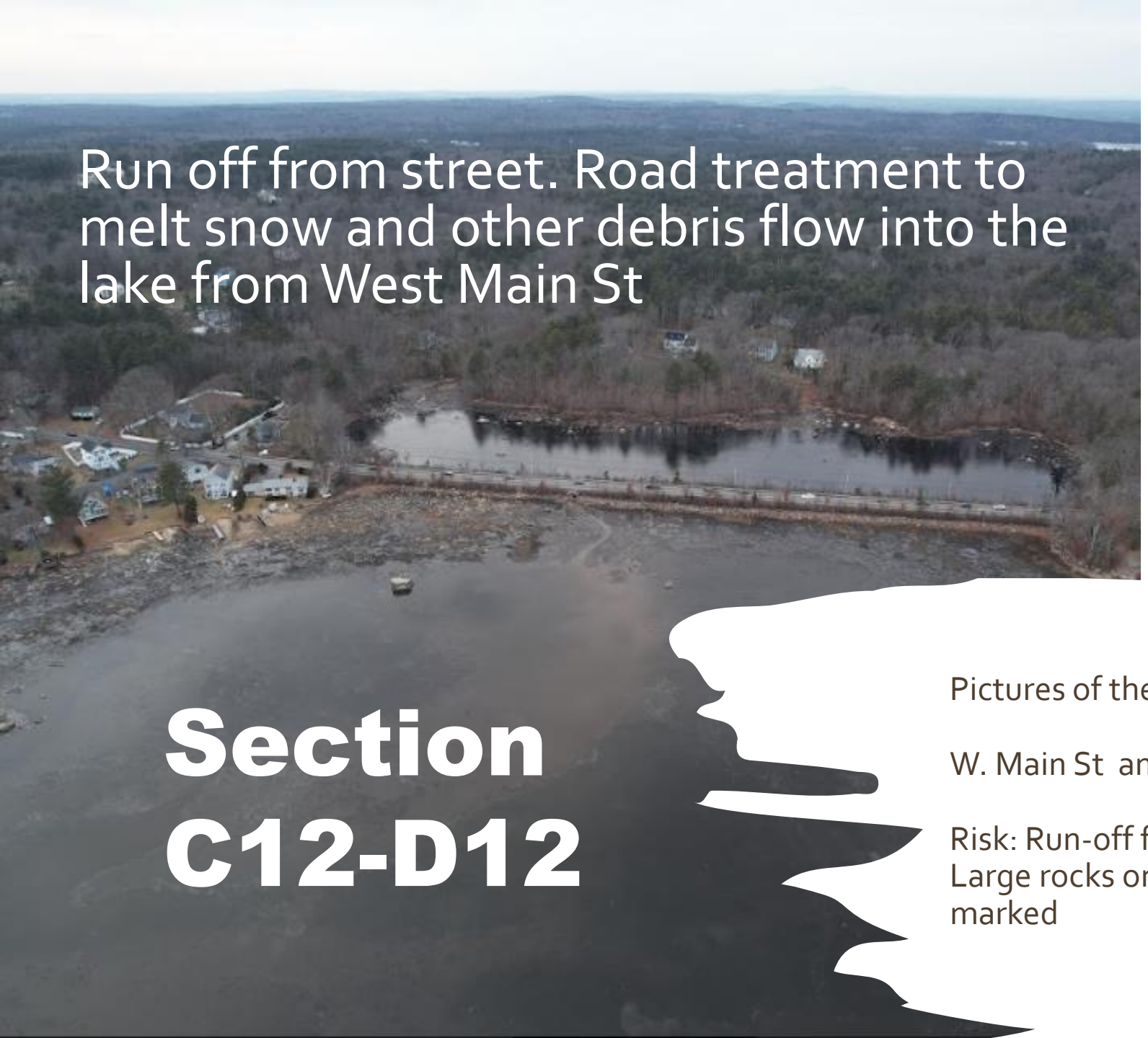
Section E8 boat ramp

Pictures of the Lake 1/20/23 During Run-off from Sandy Beach parking lot and surrounding area. Run-off from street brings in road chemicals and lack of moving water promotes week growth

Rocks at boat ramp reduces time to take out boat and caused damage to boats several seasons

Boat ramp is not monitored, and many non-resident boaters enter during off hours and off season without rinsing off boat

High risk for aquatic hitchhikers, invasive weeks and erratic driving tendencies

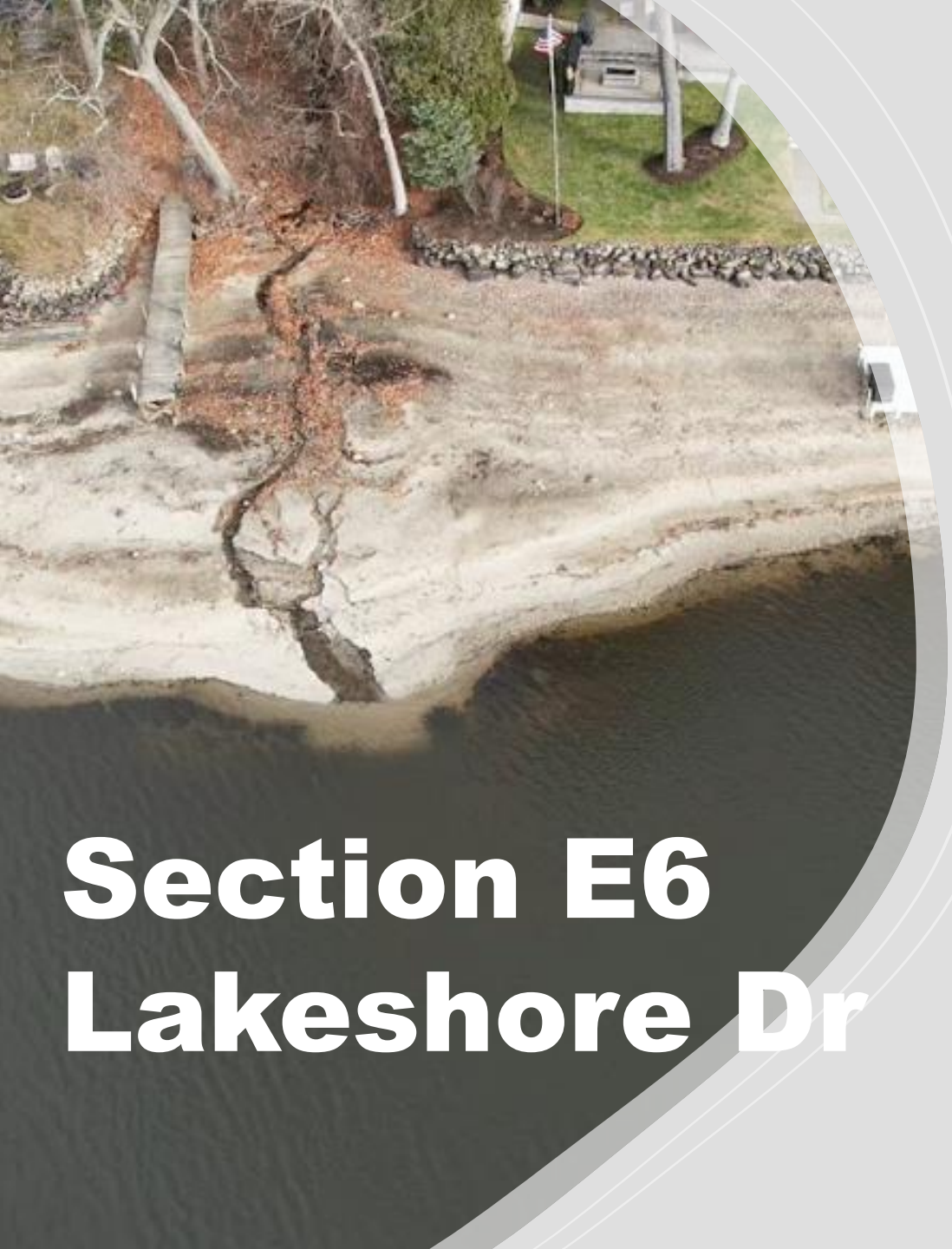


Section C12-D12

Pictures of the Lake 1/20/23

W. Main St and the shallow area surrounding

Risk: Run-off from W. Main St impacts West from road
Large rocks on left June 22 propeller damage from rocks not marked



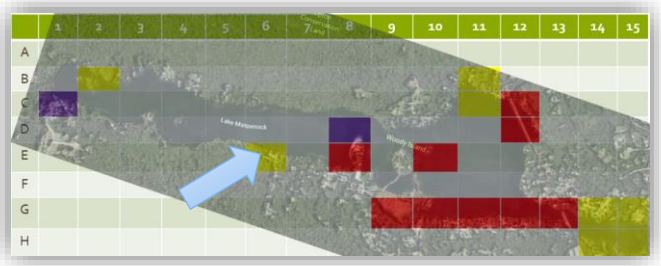
Section E6 Lakeshore Dr

Pictures of the Lake 1/20/23 looking towards Lakeshore Dr

run-off from street impacts shoreline both sides and contains nitrates from entire area South.

As the run-off runs along frozen, buckled ice makes weed growth hard to manage and has been increasing each year.

Dark areas around run-off create darker patches which are lagging indicators of weed growth. Potential area of treatment



Pictures of the Lake 1/20/23 looking North

From above the dam looking North. Rocks on right side are a risk and need to be better marked

Several instances of boat propellor damage and jet skis pass among rocks without understanding the risk

Section C3-D4 Milford Hop line

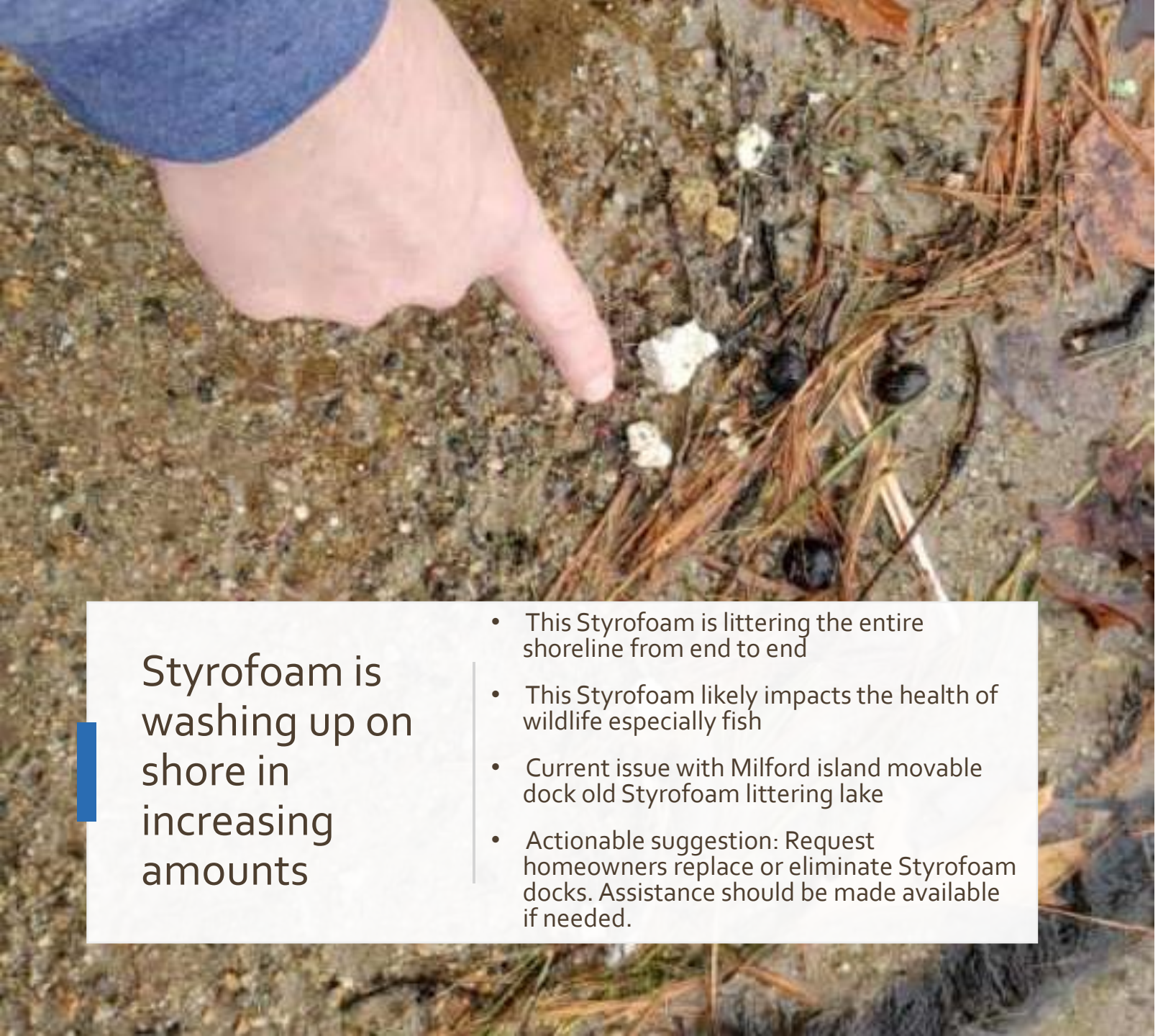
Section C7 Peppercorn Conservation

Pictures of the Lake 1/20/23 looking South past Sandy Beach

The rocks in the distance have been market but due to boat traffic can move.

There are 3 rock groups that need attention here.

Risk Assessment: High Risk



Styrofoam is washing up on shore in increasing amounts

- This Styrofoam is littering the entire shoreline from end to end
- This Styrofoam likely impacts the health of wildlife especially fish
- Current issue with Milford island movable dock old Styrofoam littering lake
- Actionable suggestion: Request homeowners replace or eliminate Styrofoam docks. Assistance should be made available if needed.

Several dock floats should be replaced due to Styrofoam breakdown

Multiple older floating docks on the lake contribute to Styrofoam floating to every corner of the lake.

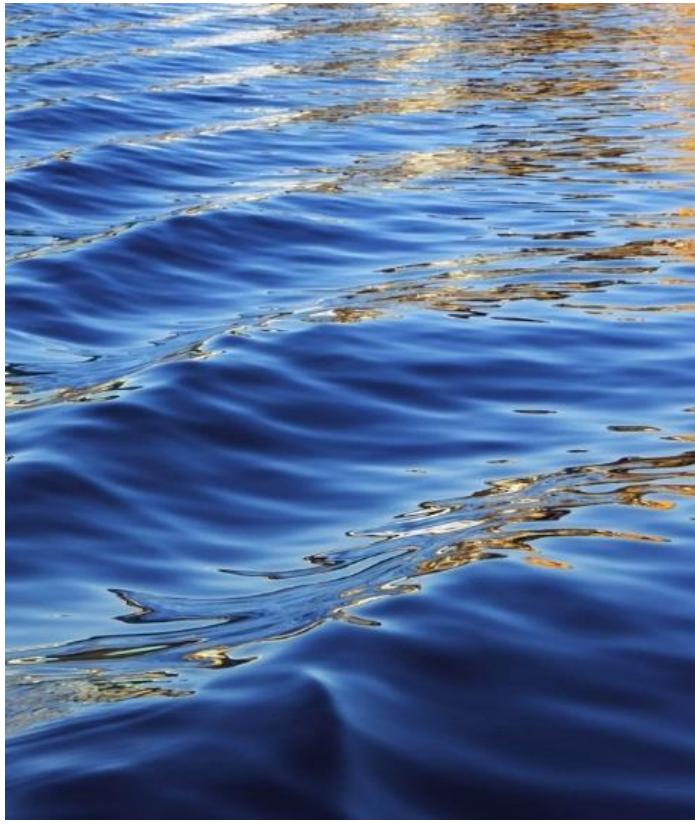
Encourage update and/or provide some relief to neighbors that may want to update but may not have the funds during this time of inflation

Sandy Beach Parking Lot

- High risk area
- Actionable Suggestions:
  - Video monitoring
  - Low salt application
  - Install emergency siren
  - More comprehensive admission
  - Gated entrance
  - Gated boat ramp

Here's what we should do about it

Let's create the gold standard of Lake



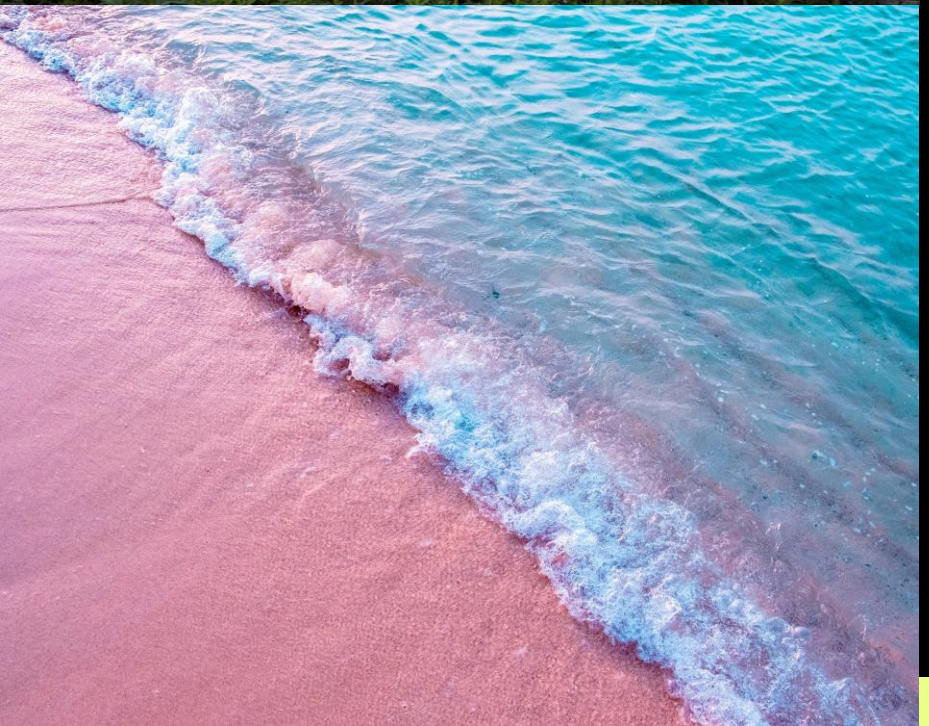
Request town reduce salt applications in 1 mile radius

Picture of salt on street very thick

Boat ramp empties into Sandy beach area

Lakeview Rd empties into public dock location

Contact Hopkinton highway dept to reduce salt treatment in a 1 mile radius of Maspenock



Fundraising – Boston Marathon Bib for monetary increase

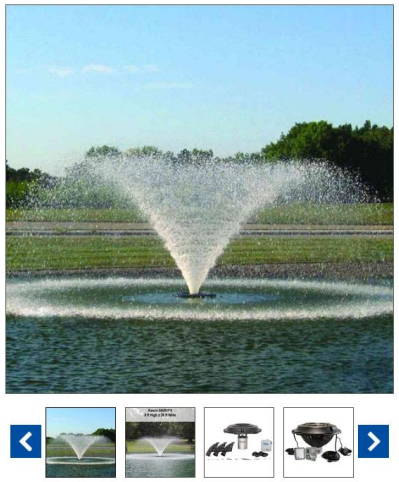
1. We will need funds and a budget for tasks needing money
2. Send in application September/October to Town hall seeking a fundraising bib
3. Solicit local runners that can fundraise. Typical fundraising can exceed $10,000 Suggest Chris Stevenson
4. Help with fundraising for runner including Superbowl squares, GoFundMe, dinners, social media

Fountains and aerators are used in water treatment facilities and cuts unwanted agents such as CO_2

Example 1: Multiple types including multiple lit features

FOUNTAIN	HORSEPOWER	HEIGHT	RECOMMENDED LIGHTING
LF3000CP	3.0	10'	LKD 2x500 Watt
LF5000CP	5.0	15'	LKE 3x500 Watt
LF7500CP	7.5	20'	LKF 4x500 Watt
LF10000CP	10.0	25'	LKF 4x500 Watt
LF15000CP	15.0	30'	LKG 2x1000 Watt

Example 2: Install Aerating Fountains in multiple locations



Kasco 1HP 4400VFX Aerating Fountains in 120V and 240V

Kasco AUTHORIZED DEALER ★★★★★ 15 reviews

Your Price:
$3,702.00

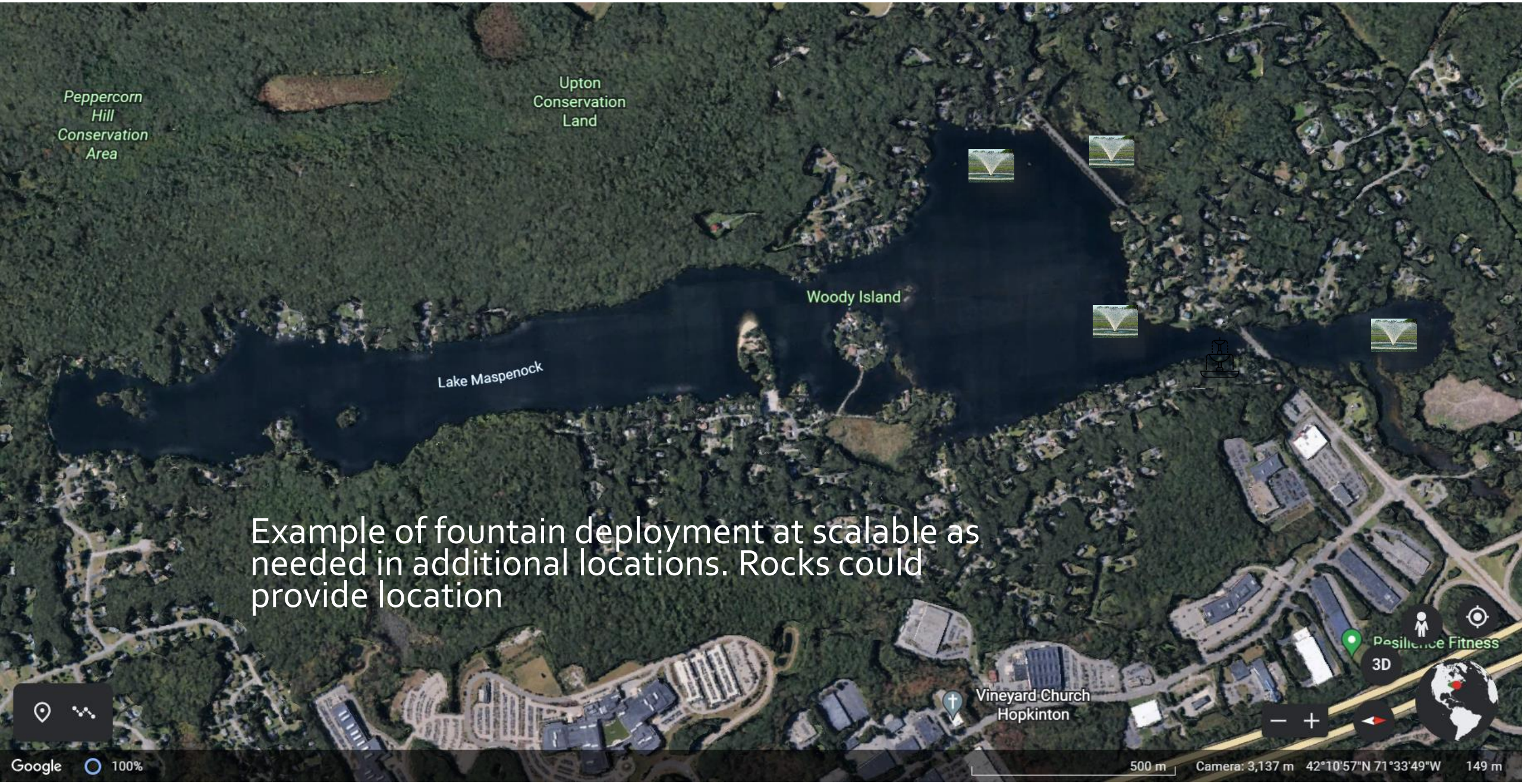
- Ships in 1-2 Business Days
- Click Here to See this Fountain on YOUR Pond
- Want it installed? We have professionals in your area that can help
- FREE & FAST Shipping. No Sales Tax (Excluding CA & TX)
- Financing Available. See how it works
- Have a Question or Want to Order? Call Us: 800-291-3013
- Chat with us to learn more about special offers!

Power Supply: 120V Single Phase

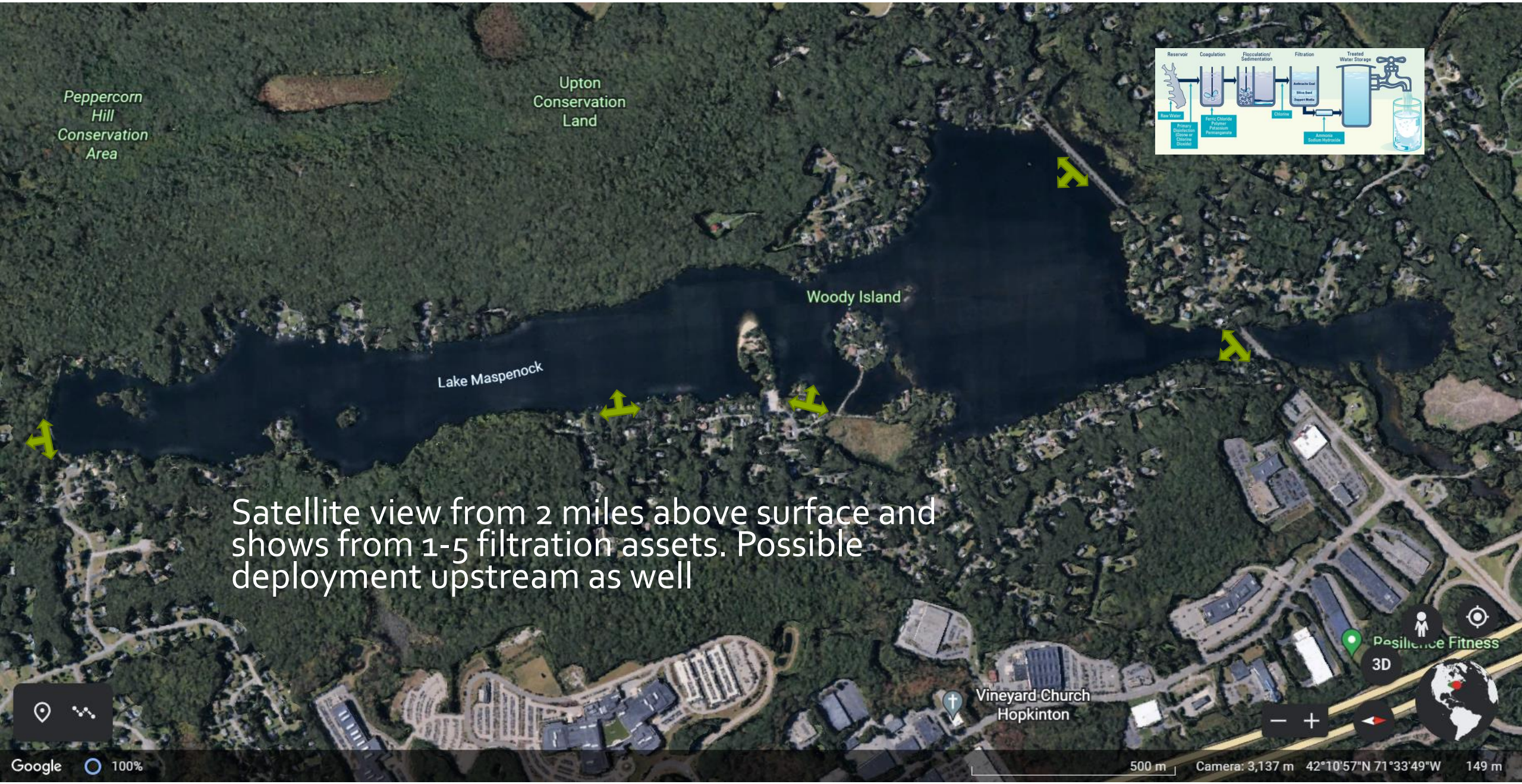
Cord Length: 200'

Benefits:

Lower CO_2
Lower Nitrates
Inhibits weed growth
Increases O_2 for healthier fish
Circulates water
Can be used as a diffusion system for treatments
Lit feature increases beauty



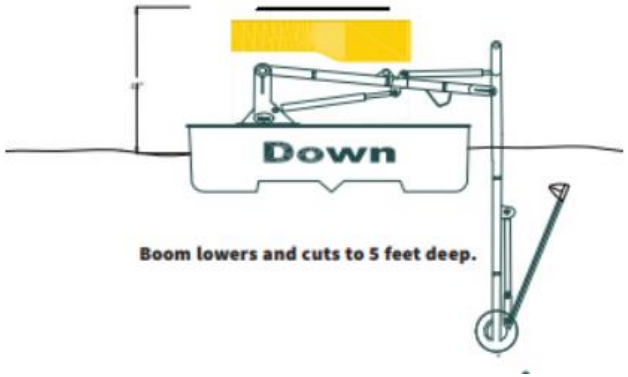
Example of fountain deployment at scalable as needed in additional locations. Rocks could provide location



Satellite view from 2 miles above surface and shows from 1-5 filtration assets. Possible deployment upstream as well

Add harvester picture and cost estimate

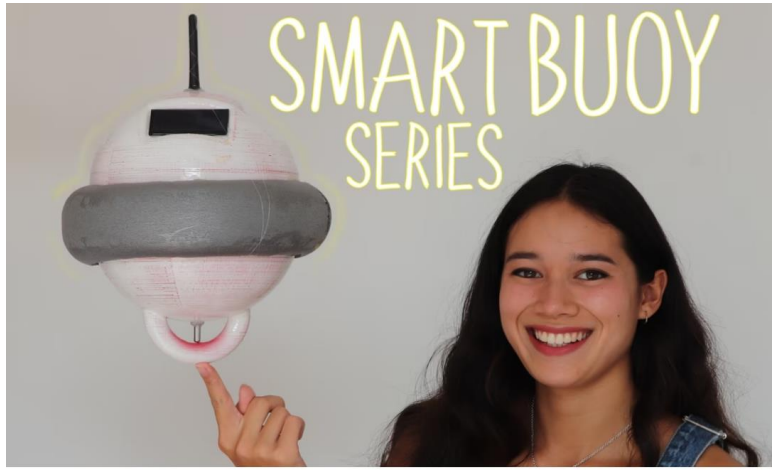
- Town of Hopkinton
  - Seek to purchase harvester. **Approx 35K** and maintenance and operational costs



- Plan B is to get a marathon runner and a bib aim for yearly fundraising of 15K+ charitable donations
- Likely 3 years needed to fund or payback if financing is needed
- Seek Grants alongside funding for this
  - Do we have anyone skilled at researching and applying for grants?

Smart Buoy potential constellation

Generate more data more frequently from multiple locations. Automate



INTRO: SMART BUOY [SUMMARY]

We all love the seaside. As a collective, we flock to it for holidays, to enjoy water sports or to make our livelihood. But the coast is a

Elicit help of HHS Robotics project proposal. Likely fall 2023. Reached out to High School and they are interested likely timing would be the fall season.

Proposal is to have each class make 1 or 2 buoys each school year to develop a constellation of data generating automated stations.

Each could potentially upload data automatically to a central server for analysis

Residents such as Rens Hayes can help with metal work for potential entry gate(s)

- Unauthorized use by folks outside the community gain access, cause disruption such as jet-ski mis-use, damage to equipment, picnic tables, graffiti etc, essentially disrespect of Sandy Beach and Lake Maspenock. Currently no way to know who or how many are accessing the lake

DRIVEWAY GATES / METAL GATES / COMPOSITE WOOD...

Visit

Images may be subject to copyright. **Learn More**

Dual Driveway Fence Gate

★★★★★

Pictures of the Lake 1/20/23 looking North past Sandy Beach

Parking Lot and Sandy Beach camera for monitoring past hours.

In need of power to video cameras and internet access on the island

This would help with damage, dumping, theft, safety

Video Camera deployment. Put in picture of parking lot light pole

Put in picture of Sandy beach video locations

Capable of quick rewind in case of emergency and drowning

Capable of recording for review of overnight footage

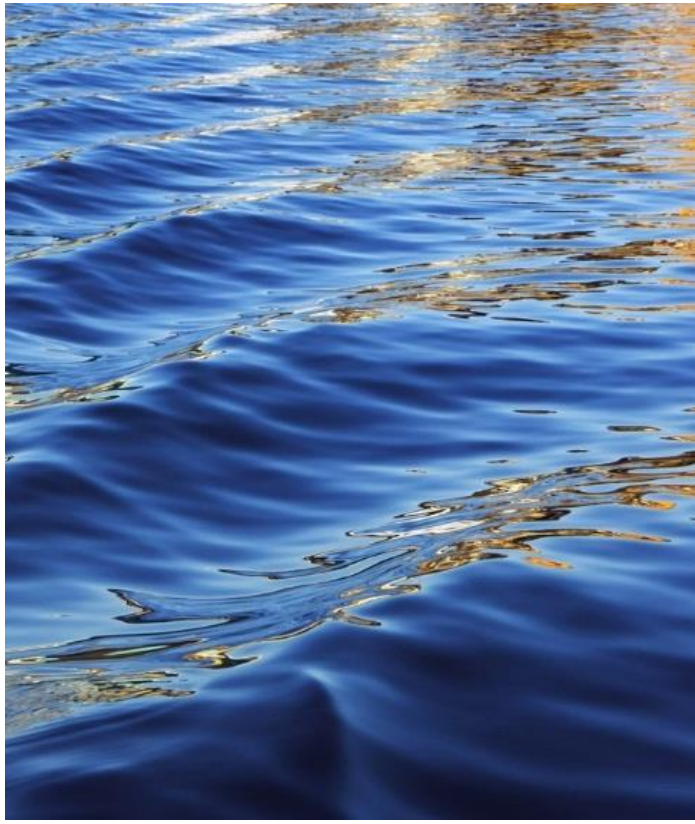
Next Steps:

- Mark high priority rocks with Buoys
- Fountain
- Gather data as able
- Water treatment
- Video monitoring and recording
- Apply for a Boston Marathon bib for LMPA 501C3 – Possible runner Chris Stevenson . Due in September/October
- Enlist the help of the HHS Robotics team for smart Bouey system spoke with Doug Scott about potential project in the fall

Lake Maspenock

Let's create the gold standard for Lake rejuvenation

We've had good leadership and now we need great vision and funds to help make it happen



Glossary

Lake Maspenock Rejuvenation Plan - Fountains

Step 1/Phase 1

Actionable analysis, i.e. What do we suggest you do about it? We need data points at various strategic locations across the lake, trended over a rhythmic cadence over time

Take baseline measurements of:

- Oxygen
- Nitrogen or Nitrates
- CO_2
- Water Level
- Water Temp
- EColi
- Phosphorous
- Algae
- Plant Growth

Lake Maspenock Rejuvenation Plan

Step 1/Phase 1 – We need data points which will help with baseline and trends over time

Actionable analysis, i.e. What do we suggest you do about it?

Take baseline measurements of:

- Oxygen
- Nitrogen or Nitrates
- CO_2
- Water Level
- Water Temp
- Air temp
- EColi/bacteria
- Phosphorous
- Algae
- Plant Growth

Secondary data sources

- Weather patterns,
- Rain
- Snow
- NOA
- Temperature
- Solar
- other

Put in existing weed application photo from LMP

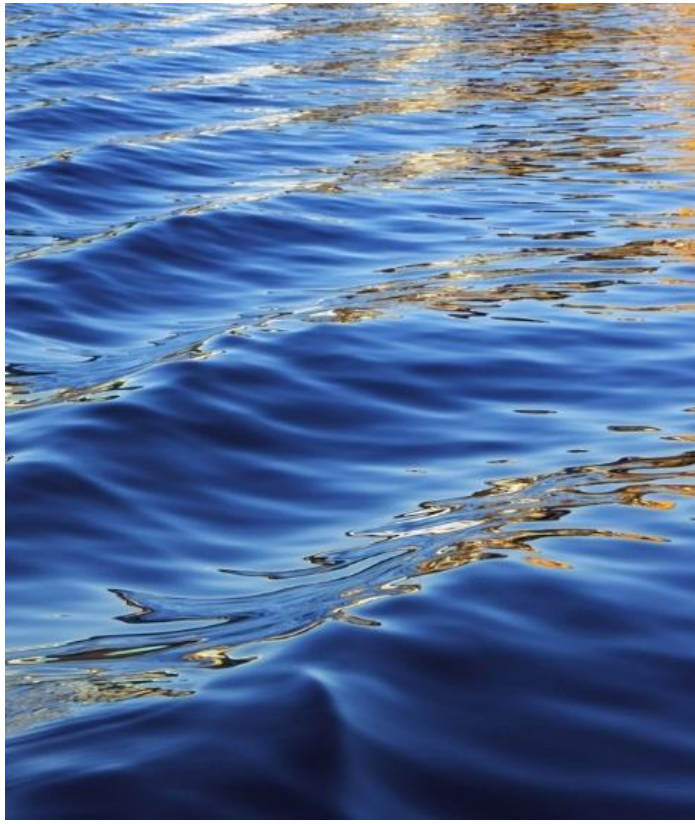
Add lake weed treatment area 1

Add lake weed treatment area 2

Lake Maspenock

Lagging Indicators of trouble on the lake

Muddy dark areas, algae growth, water temp, o2 level, CO2 level, particulate matter, dead fish, disease



Lake Maspenock

Leading Indicators of trouble on the lake

Increase in water fowl, low water level, hot humid temps, lack of adequate winter freeze, upstream lake issues