

# Lake Auburn Watershed Stakeholder Meeting | February 16, 2022

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Planning, Permitting & Code



# AGENDA

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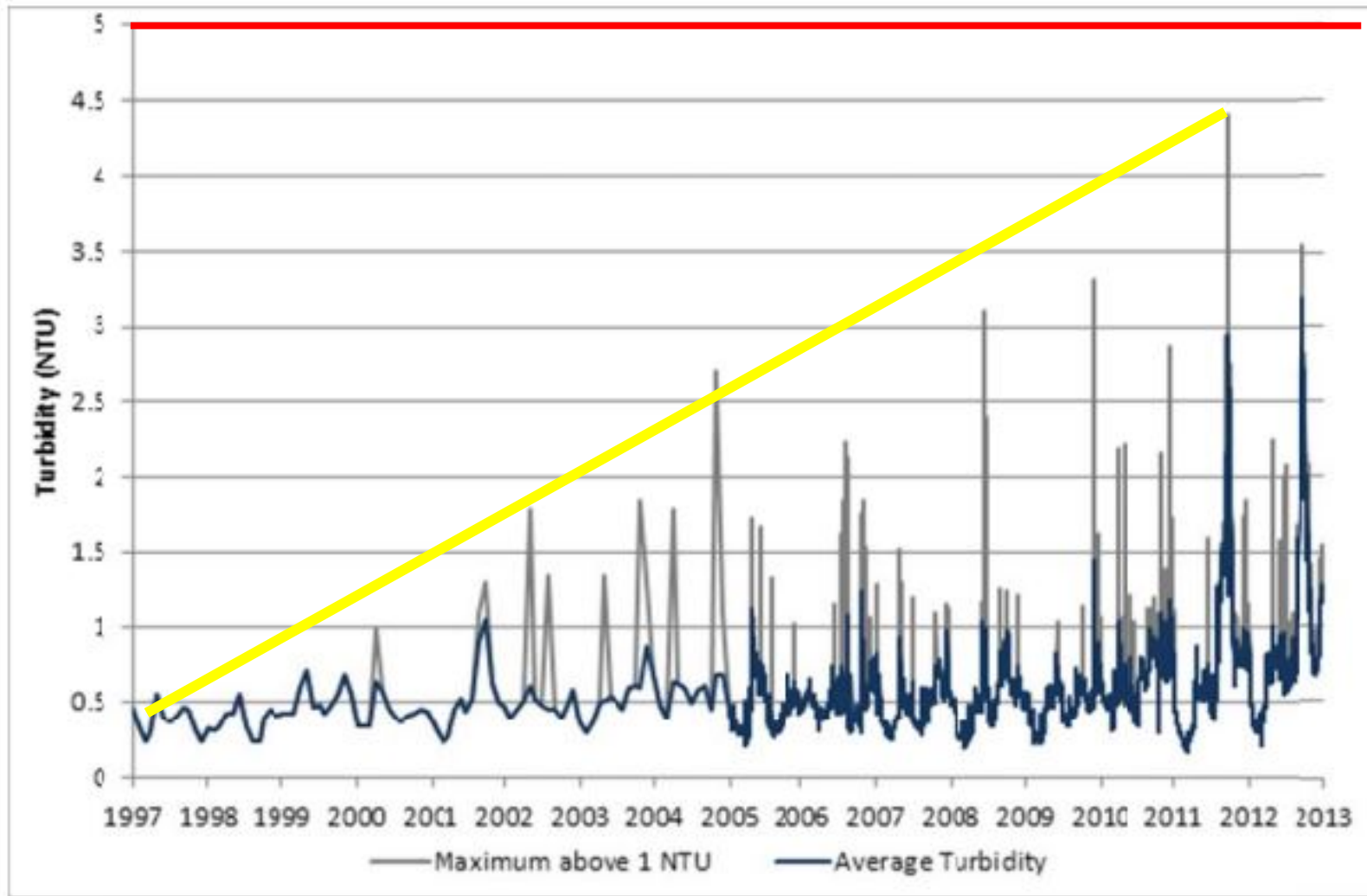
## **Proposed lake auburn watershed ordinance updates**

- Sense of **urgency** (can't wait on protection of public water supply)
- Guiding **team** to adopt and guide ordinance update (identify stakeholders)
- What is the **vision & strategy** (why and how)
- Greater **understanding & buy-in** (technical information)
- **Follow-up** with change and results (year 2, 4, 6)

# URGENCY!

- **The source of drinking water** for Auburn & Lewiston
- Lake Auburn high water quality has entitled the Auburn Water District to a **waiver from filtration** from the EPA; one of only 10 water utilities in Maine to do so
- Development pressures - **LD1884** & lack of housing opportunities.
- Older developed lots without watershed protections (existing septic systems)
- Reduce land use discrimination

# STATE OF LAKE AUBURN



Average and Maximum when above 1 NTU Raw Water Intake Turbidity for 1997 to 2013

← A Compliance Perimeters; 5 Nephelometric Turbidity Unit (NTUs). Measurement of suspended solids in the water.

In 2011 and 2012, however, water quality was degraded due to a combination of factors that raised turbidity in the lake to near the limit allowed under the filtration avoidance waiver granted to the Auburn Water District and Lewiston Water Division (AWD/LWD).

# OPPORTUNITY FOR ALL

## Commission to Increase Housing Opportunities In Maine

### **By Studying Zoning and Land Use Restrictions**

Resolve 2021, C. 59

1. Review data on housing shortages in the State for low-income and middle-income households;
2. Review state laws that affect the local regulation of housing;
3. Review efforts in other states and municipalities to address housing shortages through changes to zoning and land use restrictions;
4. Consider measures that would encourage increased housing options in the State, including but not limited to municipal incentives, state mandates, eliminating or limiting single-family-only zones and allowing greater housing density near transit, jobs, schools or neighborhood centers; and
5. Review and consider the historical role of race and racism in zoning policies and the best measures to ensure that state and municipal zoning laws do not serve as barriers to racial equality.

# RECOMMENDATIONS

**Recommendation #1.** Allow accessory dwelling units by right in all zoning districts currently zoned for single-family homes. (Vote 15-0) Reference LD 1312

**Recommendation # 2.** Eliminate single-family zoning restrictions in all residential zones across the State by allowing up to four residential units on all lots, in compliance with any health and safety requirements such as minimum septic and lot sizes, and with a sunrise clause to provide adequate time for municipalities to prepare for this change. (Vote 13-2)

**Recommendation # 3.** Prohibit municipal growth caps on the production of new housing. (Vote 14-1)

**Recommendation # 8.** Strengthen Maine's Fair Housing Act by eliminating the terms "character," "overcrowding of land," and "undue concentration of population" as legal bases for zoning regulations. (Vote 13-1)

**12 Recommendations in total many of which will affect the City of Auburn in positive and negative ways if Implemented.**

***Housing crisis*** identified in report by the Commission to Increase Housing Opportunities in Maine

*Maine is currently facing an affordable housing crisis, which has been exacerbated by the recent COVID-19 pandemic. Maine is a largely rural, sparsely populated state, with modestly sized urban or service centers, and while population in the United States is growing, the population growth rate in Maine and New England has been flat since 2000. In most areas of Maine, the population is also aging, with adults over age 65 likely to comprise 30% of the State's by 2030. However, some pockets of the State, especially Southern and coastal counties, I95 Corridor are growing – some are even getting younger. To further complicate matters, there has been a continued shift toward non-family and smaller family households, with Maine currently ranked the third lowest in average household size and second lowest among owned units in the United States. Due in part to the COVID-19 pandemic, the supply of homes for sale is at a record low and low interest rates and the recent surge in home buying have significantly reduced the supply of affordable homes. Maine also has the eighth oldest housing stock in the nation. Statewide, 72% of occupied housing units are owned and 28% are rented.*

# LD 1884: AN ACT TO CREATE AFFORDABLE AGRICULTURAL HOMESTEADS

## Summary

The proposed Bill prohibits a municipality from requiring:

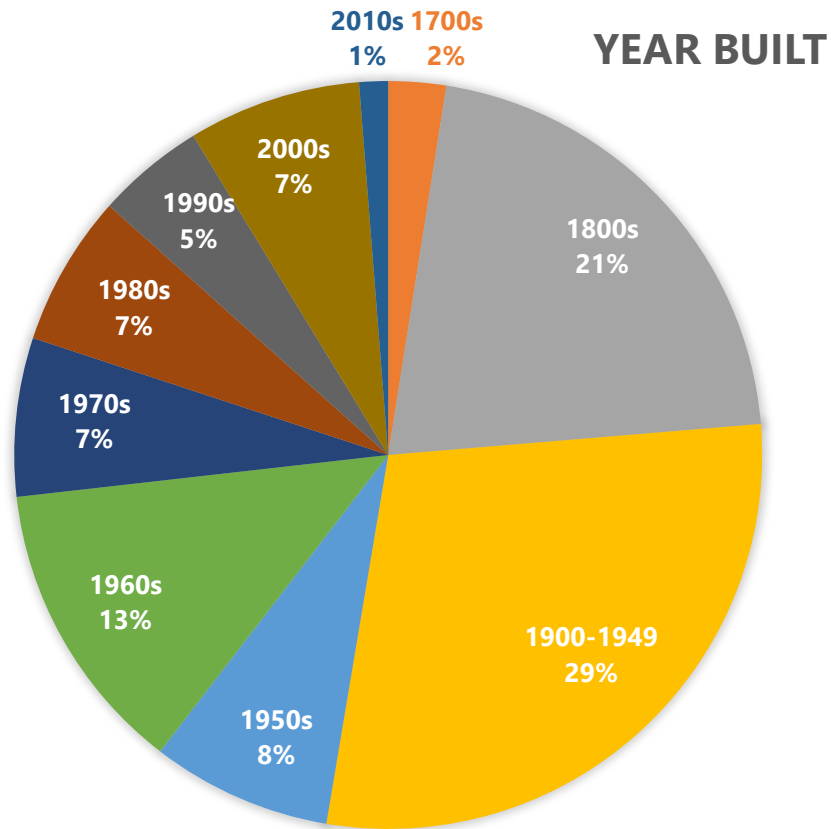
An income requirement as a condition for residential construction.

A condition of residential construction in an agricultural zone that is more restrictive than any condition on farmland under the State's farm tax law.

A minimum lot size for zones primarily used for agriculture that is more than twice the minimum lot size of the most restrictive residential zone in that municipality. (5-6 Acre Lots)

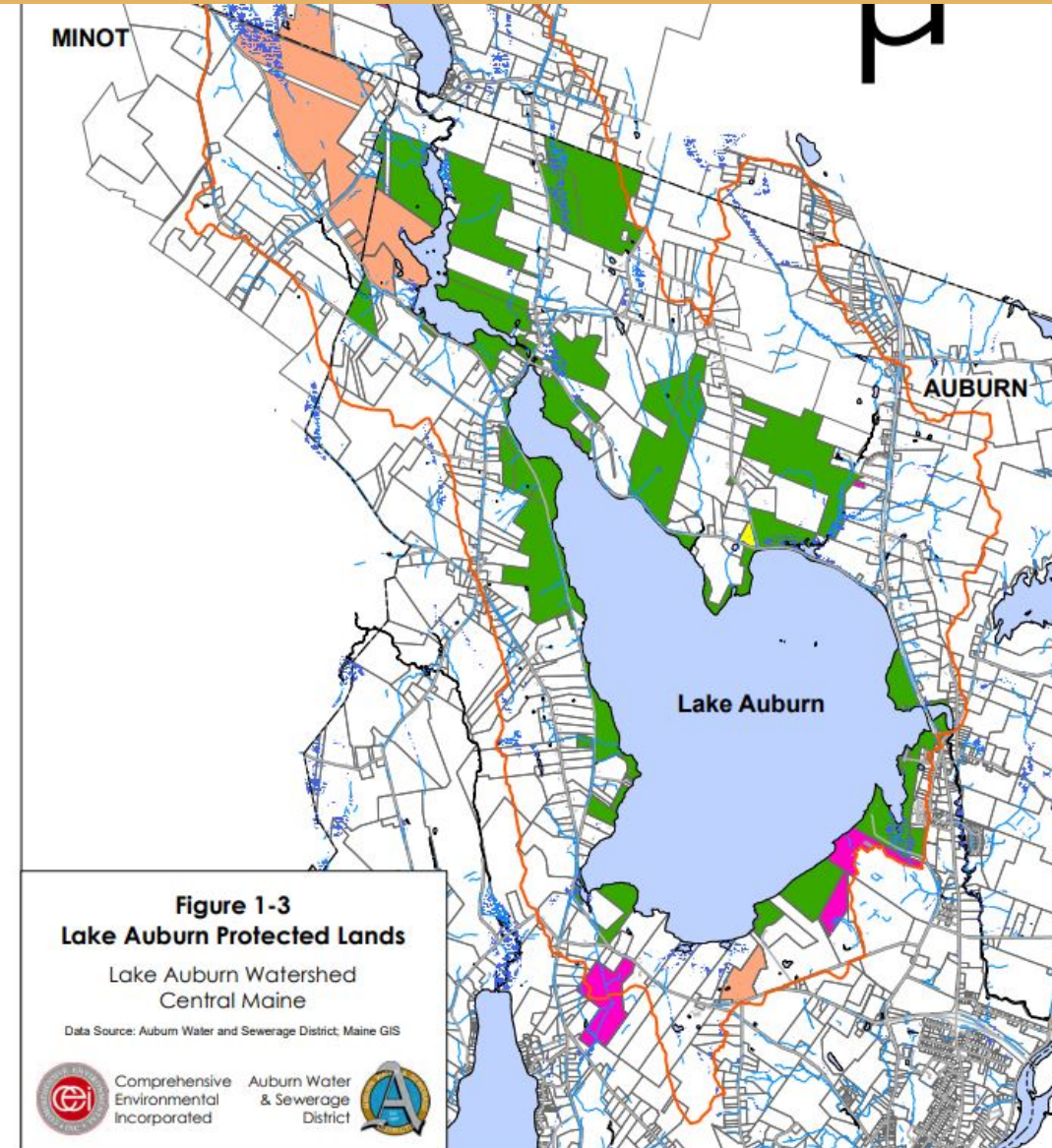


# THE WATERSHED NUMBERS



YearBuilt	
1700s	8
1800s	68
1900-1949	93
1950s	25
1960s	41
1970s	22
1980s	21
1990s	15
2000s	24
2010s	4
Grand	321

275 systems are grandfathered to state subsurface wastewater standards for replacement systems out of a total of 321. (10-144 CMR 241), Maine Subsurface Wastewater Disposal Rules, Section 4, Design Criteria allows down to 9" (limiting factor) outside the shoreland zone.





# VISION

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## Reports

Diagnostic Study of lake Auburn: Phase 1

Diagnostic Study of Lake Auburn: Phase 2

Lake Auburn Watershed Management Plan (2010)

A Regulatory Environmental, and Economic Analysis of Water Supply Protection Auburn, Maine (2021)

## Recommendations from 2021 Report that align with 2010 Report

- 1.) Align the septic system regulations contained in the Lake Auburn Watershed Overlay District Ordinance with the best available science and Maine's septic system regulations.
- 2.) Develop a clear set of standards for farm management that will limit phosphorus loading from commercial agricultural activities.
- 3.) Incorporate low impact development requirements for new single family residential development.

## Other Recommendations:

- 1.) City is to increased density in other areas of the community.
- 2.) City to foster a working relationship with stakeholders
- 3.) City continue to support small watercraft restrictions.
- 4.) City support implementation of BMPs.
- 5.) City should support local YCC for summer conservation work.
- 6.) City recommends larger lot frontage in LDCR

# TEAM APPROACH & ORDINANCE IDENTIFICATION

## Stakeholders:

City of Auburn and city of Lewiston

(city-wide residents, mayor, council and staff)

Auburn & Lewiston water districts and consultants

## Ordinances to be updated:

Sec. 60-952 (c) *Agricultural buffer strip*. Where land adjoining Lake Auburn or its perennial tributaries is tilled for agricultural purposes, an untilled buffer strip ~~50~~ 100 feet wide shall be retained between the tilled area and the normal high-water mark. This subsection (c) shall not be interpreted as permitting agricultural tillage in any zoning district in which it is not otherwise permitted.

(f) *Private sewage disposal systems*. The following regulations shall be adhered to in the development of private sewage disposal systems in the Lake Auburn Watershed:

(1) ~~Subsurface absorption Disposal~~ areas shall not be permitted on sites on which ~~the highest seasonal groundwater table, bedrock, or other impervious layer~~ is less than 12 inches to the limiting factor, 36–12 inches below the bottom of the organic horizon. Not less than 24 inches of suitable soil shall be present below the bottom of the subsurface absorption area. The bottom of such subsurface absorption area shall not be less than 12 inches below the bottom of the organic horizon measured from the lowest point on the subsurface absorption area. In addition, having at least 24 inches of suitable natural soil or fill material below the bottom of the disposal field and (the mineral soil surface) to result in a 36-inch separation between the bottom of the disposal field and the limiting factor.

(2) Within areas containing soils described as deep, ~~loose~~ and sandy or gravelly and which contain more than ~~70 percent sand or gravel outwash or stratified drift~~ as shown on table ~~4D (profiles 5 or 6 and some 11) of the State of Maine Subsurface Wastewater Disposal Rules 10-144 Chapter 241 9-3 of the state plumbing code, part II (April 25, 1975)~~, no subsurface absorption area shall be installed closer than ~~300~~ 400 feet to the normal high-water mark of any lake, pond, or year-round or intermittent stream. Where the daily sewage flow is or is reasonably likely to be ~~in excess of~~ 2,000 gallons, the system shall be located at least 1,000 feet from the normal high-water mark of any lake, pond or year-round or intermittent stream.

(3) All disposal areas, replacement or new shall meet the section 60-952 (F) (1) design criteria. If replacement systems cannot meet Section 60-952 (F) (1) The local plumbing inspector must evaluate the design with concurrence from the Auburn Water District to impart as much design criteria to the replacement system.

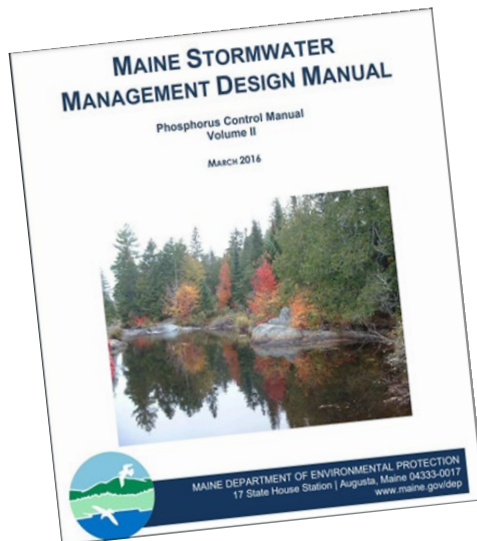
(4) All private sewage disposal systems shall have a curtain drain installed per section H, 10-144 CMR 34 of the Maine Subsurface Wastewater Disposal Rules or diversion ditch, upslope of a disposal field, for its entire length including fill extensions as determined by groundwater conditions by a Licensed Site Evaluator.

(5) All private sewage disposal systems shall be installed on the lot of the dwelling unit, unless the system can be developed outside the watershed or in under special conditions replacement systems may approve by local plumbing inspector on adjacent lots.

# PHOSPHOROUS ORDINANCE SECTION 60-1070 TEXT AMENDMENT

## Sec. 60-1070. Submission requirements.

All projects subject to review under the provisions of this division shall submit a phosphorus control plan and maintenance provisions meeting the standards set forth in ~~the manual Phosphorus Control and Lake Watersheds A Technical Guide to Evaluating New Development design criteria of the Maine Department of Environmental Protection, Maine Stormwater Management Design Manual, Phosphorus Control Manual Volume II, March 2016. (Maine DEP et al., September 1989, with the Simple Review Method revised in May 1990).~~



- Utilizes most current design manual available for Phosphorus Control
- Implements the use of low impact development (LID) techniques
- Focus on infiltration techniques best management practices. (BMP)



# TECHNICAL INFORMATION

- Existing Conditions
- LID
- Buffers
- Stormwater Controls
- Soils
- Septic Design



Picture credit: City of Portland, Oregon, 2016.

<b>Grassy Swales and Vegetated Swales (Bioswales)</b>
<b>Description</b>
Gently sloping vegetated channels/depressions that convey stormwater and remove pollutants by sedimentation and infiltration through the soil. Maintenance requirements include litter removal and landscaping. Vegetated swales with native or non-invasive plants are preferable to grassy swales, which function primarily as a stormwater conveyance system.
<b>Conditions Suited For</b>
Swales require shallow slopes, well-draining soils, and a minimal width of 3 feet. They are typically long channels placed at the side of a road or parking lots. Where soils don't drain well, swales can overflow to an approved discharge location (typically, another BMP).
<b>Additional Information</b>
Maine Stormwater Management Design Manual Vol III Chapter 8.1. Vegetated Swale



Picture credit: Joy Stewart, USEPA.

<b>Raingardens</b>
<b>Description</b>
Landscaped depressions that collect runoff in a vegetated soil medium, where water infiltrates back into the ground, is absorbed by plants, evapotranspirates, or is redirected. Raingardens require some maintenance, such as watering during extreme droughts, and general landscaping. Raingardens should be planted with native or non-invasive plant species
<b>Suitable for</b>
Can be used in small residential installations to capture driveway or roof runoff, or to complement other BMPs in larger developments. Plants must be able to tolerate both dry and wet conditions.
<b>Additional Information</b>
Vermont Rain Garden Manual Native Plants for New England Rain Gardens New Hampshire Homeowner's Guide to Stormwater Management Do-It-Yourself Stormwater Solutions



# Appendix 2

## Current Septic Design Standard

Auburn Zoning Ordinance Section 60-952(f)(1): Subsurface absorption areas shall not be permitted on sites on which the highest seasonal groundwater table, bedrock or other impervious layer is less than 36 inches below the bottom of the organic horizon. Not less than 24 inches of suitable soil shall be present below the bottom of the subsurface absorption area. The bottom of such subsurface absorption area shall not be less than 12 inches below the bottom of the organic horizon measured from the lowest point on the subsurface absorption area.

The Implication: Local standards within the Lake Auburn Watershed Overlay District limit development on a significant portion of the watershed by effectively prohibiting the use of innovative and alternative septic system and leach field designs to meet the 'depth to constraining layer' requirement. These innovative and alternative designs are otherwise allowed by the State and can achieve comparable or better nutrient removal than a traditional system and leach field.

## Recommended Septic Design Standard

The Recommendation: Maintain a requirement for a minimum depth of 36 inches above the constraining layer (groundwater or bedrock), while allowing the use of State-approved alternative septic system and leach field designs that meet statewide standards.

This can be achieved by referencing the Maine Subsurface Wastewater Treatment Rules (10-144 CMR 241), with the exception that the required depth to the constraining layer would be at least 36 inches (specified by updating Table 4-F, Minimum Permitting Requirements and Minimum Design Requirements). Because the State rules already provide for the use of such alternative designs such as mounded leach fields and drip distribution systems, as well as other proprietary systems, these would be allowed in the Lake Auburn watershed as well.



# SOILS



Photos of Maine soils. The first (1.) one shows an outwash soils with a finer textured topsoil layer. The second (2.) one shows a field profile typical in Maine where there is no organic horizon, just a plow layer. The third (3.) shows a spodosol, our most famous soil profile. We used to have a lot of these, but many have been destroyed by farming, forestry (skidding) or development. Note that all three show little rooting below the upper most layer of soil.

**Soil Filter Media:** From the bottom-up (lower fill layer) consists of a loamy sand (see spec.) and a minimum of 6 inches of upper fill layer. (see specification)

**New Soil Media Specification**

Upper Fill Layer	
Sieve #	% Passing by Weight
No. 4	75-95
No. 10	60-90
No. 40	35-85
No. 200	20-40
200 (clay size)	<2.0

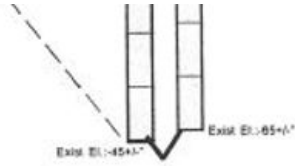
Lower Fill Layer	
Sieve #	% Passing by Weight
No. 10	85-100
No. 20	70-100
No. 60	15-400
No. 200	6-8
200 (clay size)	<2.0



# Replacement Disposal Profile

18 - 6' Plastic Chambers  
 (High Capacity- 16" high, CODE Table 6B)  
 USE any equivalent brand & length  
 of Plastic Chamber

2 trenches of 9 Chambers (56 ft. long)  
 @ 6 ft. center to center



> = 4" Solid PVC Connection Pipe

**FILL REQUIREMENTS**

Depth of Backfill (Upslope) 0 "

Depth of Backfill (Downslope) 0 +/- "

DEPTH AT CROSS-SECTION (shown below)

**CONSTRUCTION ELEVATIONS**

Finished Grade Elevation (Top Row \*\*) -39 "

Top of Distribution Pipe or Proprietary Devices -47 "

Bottom of Disposal Area -63 "

Bottom of Sand Layer -69 +/- "

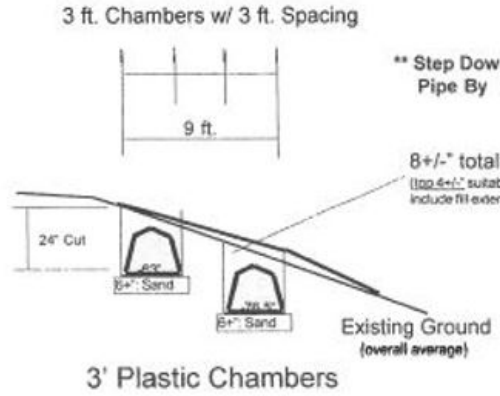
**ELEVATION REFERENCE POINT**

Location & Description top of bottom step

Reference Elevation is: 0.0 " or:

Scale:  
 Vertical: 1" = 5 Ft.  
 Horizontal: 1" = 10 Ft.

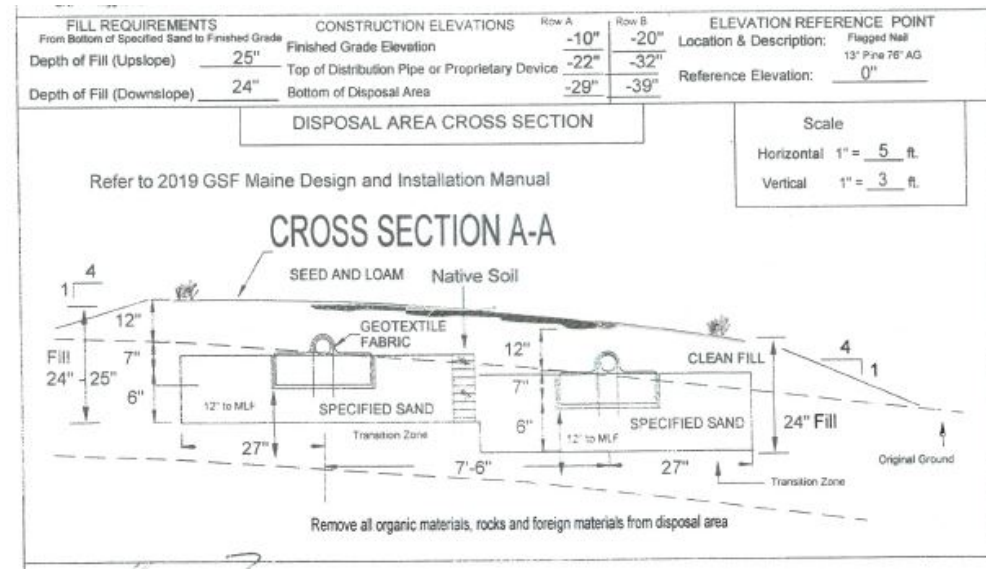
**DISPOSAL AREA CROSS SECTION**



\*\* Step Down Connection  
 Pipe By 13.5" Each

8 +/- total cover over Devices  
 (top 6 +/- suitable for Grass Growth, Sect 504.2.6,  
 include fill extensions)

- Construction Notes:**
- General Installation procedure shall follow RULES Manual, section 11. Available from State. call: (207) 287 5699.
  - Beneath & around chambers: use 6"+ coarse sand. Mix same into the surface of unexcavated soil for an interface transitional zone.
  - Fill above chambers can be on-site soils or coarser material.
  - Inspection &/or an "Affidavit" of Site Preparation may be required by LPI prior to installation.



**SOIL PROFILE DESCRIPTION AND CLASSIFICATION**

Observation Hole 1 Test Pit  Boring

Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
Loam		Dk. Br.	
Fine Sandy Loam Till	Friable	Brown	
		Ol. Br.	

Soil Classification: 3 C Slope: 19% Limiting Factor: 36

Ground Water Restricting Layer:  g/3% Depth

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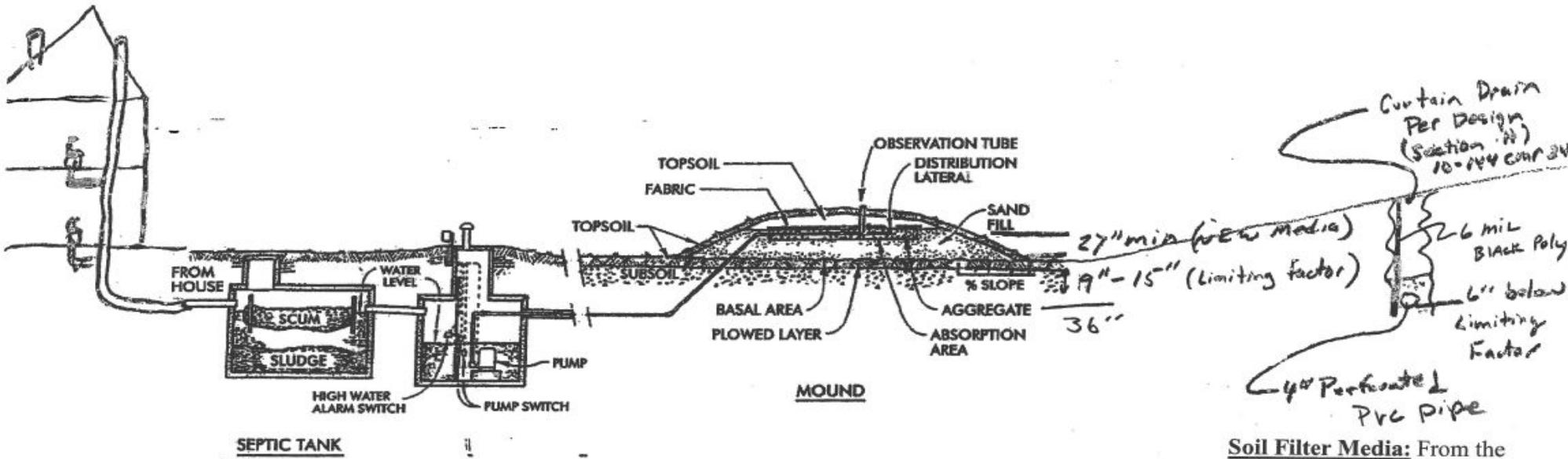
Observation Hole 1 Test Pit  Boring

Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
GRAVELLY LOAM SAND	FRAGILE	YELLOWISH BROWN	
GRAVELLY SAND	FIRM	OLIVE BROWN	WATER

Soil Classification: 3 D Slope: 10% Limiting Factor: 10

Ground Water Restricting Layer:  g/3% Depth



- Peer review: David Rocque, retired state soil scientist & currently licensed site evaluator & soil scientist

- Mottling of soils | restrictive layer | restrictive layer | seasonal high-water table

- Curtain drains - effectiveness of protection of septic disposal fields during high water table conditions and saturated soils from high rain events

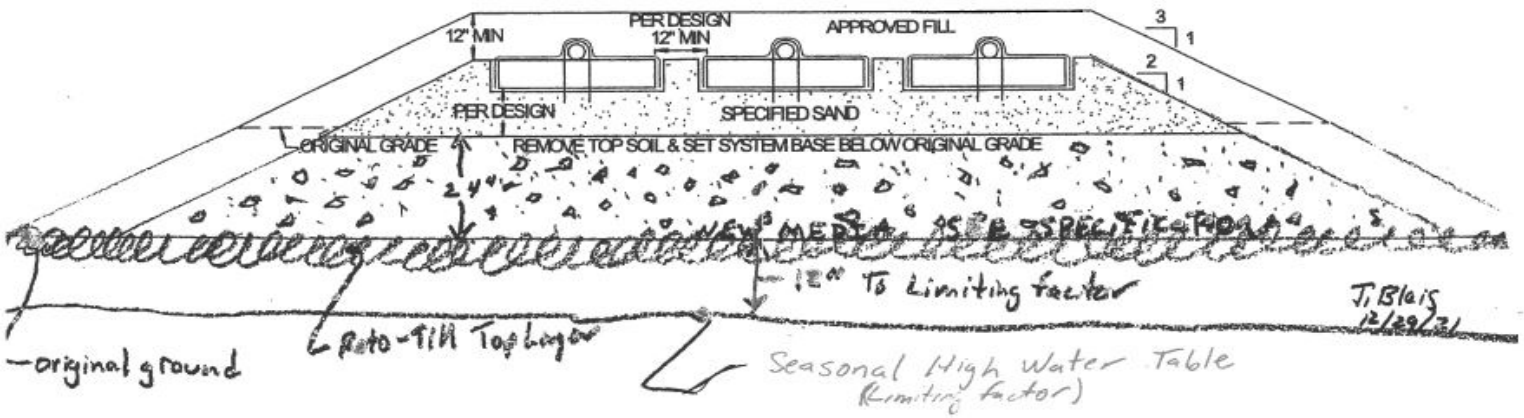
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*Soil/Septic Field Example  
12" to Limiting Factor  
Mounding Profile*





# FOLLOW-UP

**Years 2, 4 & 6**

**How much development occurred?**

**How many existing sites did we correct?**

**Types of BMPs implemented**

**Quantify P, N & NO<sup>2</sup> trapped in the watershed**



# Next Steps

**Community Conversations: March 2, 2022**

**Planning Board Workshop: March 8th, 2022**

**Planning Board Public Hearing: April 12, 2022**

**Council Reading: April 18, 2022**

**Council Reading: May 2, 2022**