

**TOWN OF TUFTONBORO
PLANNING BOARD
July 11, 2019
MINUTES**

Members Present: Matt Young, Chairman, Tony Triolo, Vice-Chairman, Kate Nesbit, Gary Qua, Laureen Hadley, Members.

Members Absent: Bill Marcussen, Selectmen's Representative, John Cameron, Member.

Staff Present: Lee Ann Hendrickson, Administrative Secretary.

Chairman Young opened the meeting at 7:00 PM at the Town Offices, 240 Middle Road.

Chairman Young stated the Planning Board meeting scheduled for July 18, 2019 has not been cancelled.

I. Public Comment

None.

II. Consideration of Minutes

June 20, 2019

It was moved by Tony Triolo and seconded by Kate Nesbit to approve the June 20, 2019 Tuftonboro Planning Board minutes as submitted. All members voted in favor. The motion passed.

III. Scheduled Appointments/Public Hearings

Nick Castel

Tax Map #40-4-1-1

Pre-application Discussion; Use of Property

Nick Castel stated he is under contract for Condominium #1, Pier 19; noting there is a due diligence contingency. He stated he intends to file for a Variance to restore the commercial use of the property in a residential zoning district. He stated he doesn't have a complete plan for the property yet however, there may be a peripheral development that would link to the project (such as boat trailer parking/storage). He stated he is continuing to search for property and believes the land would not be contiguous. He stated it is clear that there will be another property involved that is relative to the project. He stated there is only one site plan that was recorded in 1989; noting the plan does not have the condominiums noted on it.

Matt Young stated he recalls the condominiumization linked the docks to the land via mailboxes.

Nick Castel stated he is aware of such however, the mailboxes are not noted as a unit of denomination used for the declaration of the condominium documents.

Matt Young noted two issues; use of property and potential site improvements dependent upon proposed use and the condominium issue.

Gary Qua questioned the use prior to the store.

Matt Young stated there has been a store at the property since the 1960's.

Nick Castel stated he believes he can make a reasonable case with regard to the renewal of the former use however, he is proposing a mixed use for the property. He questioned the Town's plan regarding the expansion of the wharf.

Matt Young stated the Town is proposing the repair of the docks and not an expansion and was awarded grant money for such. He stated the Town has started the permitting process.

Tyler Phillips stated the Town is proposing a repair of the docks however, due to the style of construction NHDES considers the project an expansion. He stated they are continuing to work with NHDES with regard to the permitting of the project.

Nick Castel confirmed the docks and/or boat launch are not being expanded. He noted that per the condominium documents, the property is exempt from site plan review however, believes a change of use would trigger site plan review.

Educational Workshop on Municipal Wastewater Systems; Presented by Tyler Phillips, Horizons Engineering

Tyler Phillips, Horizon's Engineering, reviewed a PowerPoint presentation on municipal wastewater systems, see attached.

IV. Action Item

N/A

V. Discussion Items

N/A

VI. Informational Items

N/A

VII. Other Business

N/A

VIII. Public Comment

None.

It was moved by Tony Triolo and seconded by Laureen Hadley to adjourn the July 11, 2019 Tuftonboro Planning Board meeting. All members voted in favor.

There being no further business before the Board, the meeting adjourned at 8:34 PM.

Respectfully Submitted,

Lee Ann Hendrickson

Lee Ann Hendrickson

Municipal Wastewater Treatment

Tyler Phillips, Jr.
CPESC, CFM, NH Septic Designer
Former Grade II Wastewater Plant Operator



Overview

1. History/purpose of wastewater treatment
2. Typical approaches to treatment and disposal
3. Wolfeboro's system as an example
4. Q&A

History/purpose

- Raw discharges
 - Industrial pollutants, algal blooms, fish kills, pathogens were impacting usage of our waterways and waterbodies



History/purpose

- Clean Water Act (impetus in 1948, major revisions in 1972)
 - Illegal to discharge from a point source into a navigable water without a permit
 - National Pollution Discharge Elimination System (NPDES) coverage needed for such discharges.
 - EPA program
- NH is Delegated state= administers NPDES Wastewater discharges to surface water

History/purpose

- Early efforts focused on keeping pollutants out of water supplies or minimizing physical obstructions to pipe intakes and navigation



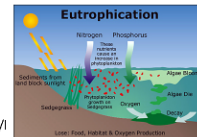
History/purpose

- Industrial pollutants and nutrients were the next focus



History/purpose

- Phosphorus is limiting nutrient= catalyst for algal blooms
- Typical concentrations of P
 - Expressed as milligrams per liter (mg/L)
 - 1 mg/L=1 part per million
 - Streams in forested watersheds 0.015-0.018 mg/l
 - Rainfall
 - 0.020mg/l (rural) 95% of samples
 - 0.500mg/l (urban/ag.)
 - Historic default discharge concentration in US 1.0 mg/l
 - Recommended limits:
 - 0.050mg/l tributaries to lakes/reservoirs
 - 0.100mg/l rivers not flowing to lakes/reservoirs



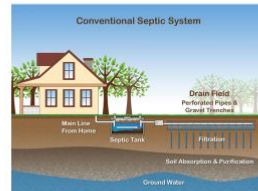
Treatment approaches

- Outhouses
- Treatment processes- soil
 - Physical filtering
 - Chemical adsorption
 - Biological action
- Effluent disposal
 - Above water table??
 - Away from surface waters



Treatment approaches

- Septic systems



Treatment approaches

- Septic **tank** treatment processes:
 - Settling (solids, metals)
 - Floatation (oils, greases)
 - Biological (nitrogen, BOD)



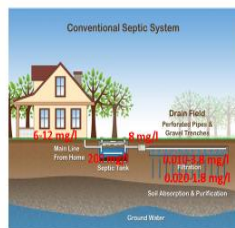
- Septic **leach field** treatment processes:
 - Filtering (fine solids)
 - Adsorption (soluble Phosphorus, metals)
 - Biological (pathogens)

- Disposal of effluent
 - 4' above water table
 - 2'-2.5' above water table (Enviro-septic)
 - 75' -125' from surface waters



Treatment approaches

- Septic **leach field** treatment processes:
 - Typical (total) phosphorus concentrations
 - Many variables contribute to P generation and soil adsorption capacity



Treatment approaches

- Municipal Publicly Owned Treatment Works (50%-75% of US systems are centralized)

- Primary treatment-physical processes
 - Imhoff tanks
 - Lagoons
- Secondary treatment- biological processes
 - Additional step beyond Primary treatment
 - Typically (Aeration tanks, clarifiers, process control)



Treatment approaches

- Lagoons



Treatment approaches

- Lagoons
 - Still common in NH and across the US
 - Some lagoons in NH are lined and some are unlined



Treatment approaches

- Lagoon treatment process
 - Grit and debris removal screening (settling and filtering)
 - Solids, metals, and some nutrients removed (settling and flotation)
 - BOD removed by biological process (air and mixing)
 - Chlorine used for pathogen removal
- Disposal of effluent
 - Directly to rivers
 - For unlined-incidental discharge to GW
 - Typical phosphorus values
 - Influent 6-8 mg/l
 - Effluent 1-5 mg/l



Treatment approaches

- Secondary treatment
- Wolfeboro example:
 - Was primary;
 - then added advanced secondary treatment; and
 - tertiary treatment/disposal



Treatment approaches

- Wolfeboro example:
 - Sewer collection system
 - Pumped to WW plant
- Grit removal
 - gravitational settling,
 - physical filtering



Treatment approaches

- Wolfeboro example:
 - Aeration tanks
 - Culture beneficial biological organisms
 - BOD
 - Nitrogen
 - Phosphorus
 - Volatiles removal
 - Process control flexibility



Treatment approaches

- Wolfeboro example:
 - Clarifiers
 - Settling- separates solids from liquid
 - Allows for concentration of solids
 - Allows for propagation of "superbugs"
 - Floatation
 - Removal of oils, greases, and fats



Treatment approaches

- Wolfeboro example:
 - Process splits
 - Solids handling
 - Concentrated/decanted
 - Physically filtered
 - Solids are composted or landfilled
 - Kills pathogens by heat or pH ^
 - Liquid handling/disinfection
 - Chlorine contact chamber
 - Chlorine kills bacteria/pathogens



Treatment approaches

- Wolfeboro example:
 - Liquid handling/disinfection
 - Most facilities discharge treated eff.
 - To rivers
 - To oceans
 - Because Wolfeboro rivers to go Winni...



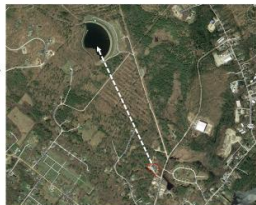
Treatment approaches

- Wolfeboro example:
 - Liquid handling/disinfection
 - Because Wolfeboro rivers to go Winni...
 - Treated effluent cannot enter tribs.
 - Must discharge to ground/GW
 - Wolfeboro adds another polishing step
 - Tertiary treatment/disposal



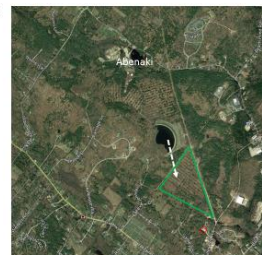
Treatment approaches

- Wolfeboro example:
 - Tertiary treatment step
 - Treated eff. stored in 14 ac lagoon
 - May stay there for approx. 6 months



Treatment approaches

- Wolfeboro example:
 - Tertiary treatment step
 - Historically sprayed in forest
 - 100 acres of woodlands irrigated
 - Soaks into forest floor
 - Further polishing in soils/veg.



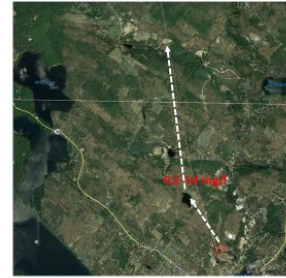
Treatment approaches

- Wolfeboro example:
 - Tertiary treatment step
 - Historically sprayed in forest
 - 100 acres of woodlands irrigated
 - Soaks into forest floor
 - Further polishing in soils/veg.
 - Intent: After polishing, water enters GW
 - Problems
 - Rainy weather limits irrigation/perc.
 - Some spray fields close to water table
 - A back up plan was needed....



Treatment approaches

- Wolfeboro example:
 - Tertiary treatment step-back up plan..
 - Find a sandy area that infiltrates treated water better than least functioning spray fields
 - Site was found and Rapid Infiltration Basins (RIB) were constructed to receive treated water



Treatment approaches

- Wolfeboro example:
 - Tertiary treatment step-back up plan..
 - Rapid Infiltration basins
 - Act like a leachfield
 - Receive treated water and may further polish/treat
 - Understand RIB problems are:
 - Hydraulic (cant take the rate of water) not due to lack of treatment



Questions?

Tyler Phillips, CPESC, CFM, NH Septic Designer

horizons
Engineering