

Members Present: Chair Tracey Rose, Vice-Chair Jason Silva, Clerk Peter Van Stratum, Member Tim Rose, Alternate Member Meredith Goff

Staff Present: Health Agent Emily Beebe and Interim Planner Barbara Huggins Corboni

Chair Tracey Rose called the meeting to order at 4:40 PM

Discussion: Overview of Comprehensive permit application for the Cloverleaf Project, 22 Highland Road.

The Health Agent presented a powerpoint to illustrate the timeline of the Cloverleaf process. A copy is attached. There were numerous questions about how the proposed wastewater treatment system would function as it was approved by the DEP under piloting; there were questions and discussion about what contingencies were in place to address possible failure. There were questions about Operations and maintenance, about impacts to private well water quality and water testing.

Discussion: white paper "Safe Water": prepared by "Truro Docs"- Brian Boyle began their powerpoint presentation, and introduced the presenters. A copy of the ppt is attached. Presenters Chris Clark, Frederick Ruyman, Rob Simpson, Ron Fichtner. Brian Boyle began the program with a describing the mission of the Docs included explaining the science. Chris Clark described the local groundwater resources and the fact that most residents of Truro both obtain drinking water from private wells on their property and dispose of wastewater on their property; he added that the wastewater can contaminate private wells with nitrate-nitrogen and other substances, and pointed out that the Board of Health regulates private wells. Frederick Ruyman presented information about studies from various journals such as Environmental Health Perspectives, the International Journal of Cancer, Epidemiology and the journal of Toxicology that describe health consequences related to nitrates and a view of the studies published over time. He talked about minimizing health risks, as in the example of smoking it was clear that with more exposure to a harmful substance the worse the potential outcome would be. He said that people make choices to reduce Health risks by eating well but ingest harmful contaminants in their well water; further, that the water sent to Provincetown from Truro was cleaner than what is found in some private wells. He presented information about nitrates and studies that associate concentrations of nitrate nitrogen with various disease and he firmly recommended being proactive about our health. Rob Simpson's work focusses on the threats to physical and mental health, and the wellbeing of all members of the community. He asked what should Truro do to protect the health of its residents. He linked nitrates as a marker to other contaminants that we do not measure and said that higher levels of contamination present a risk for disease, and that as we become aware of things like contamination, it creates stress that contributes to other disease. He summarized that legal does not necessarily equal safe, and that the standard of 10 was unsafe, as was the standard of 5, and that the appropriate community response was to address mitigation efforts before something became a full-blown crisis. Ronald Fichtner reminded the Board that their stated objective was to protect the health and safety of the public and the environment. He presented the approach of 1 BR/10,000 sf used in state and local regulations as a circuitous- human density approach used to mitigate contamination. He suggested that regulations should limit the nitrogen going into the ground and address the consequences of high levels of contamination in wells. He said that the evidence links nitrates to human health at low levels, and that it would be prudent to move on this and protect human health as immediately as possible, as this public health emergency is town wide. He also explained that the consequences were costly, and referenced the Town of Eastham public water supply project.

Brian Boyle concluded saying that Truro's well water is not safe everywhere and should be and recommends that standards are set for loading and contamination levels; further the group recommended making public health a priority for all.

The Chair opened the floor to questions. A question was asked about peer review of the paper, the authorship of the Safe Water paper, and about statements that the Cape Cod Commission had set a concentration standard of 5 PPM, confusing the loading standard with a concentration. It was stated that a response would be in writing. A citizen told the Board that the residents of Pond Village had tested their own water, and then offered to email those results to the town. The chair suggested that the Public should share their result with the Town.

Board member Tim Rose said that all the residents should sample their wells and have their water tested at Barnstable County Health Lab. The Chair agree that the Board needed the information so that they could act. Board member Meredith Goff thanked and then asked the Truro Docs about the section in their paper where they draw associations between nitrate levels and various cancers, stating that association was not causation. She asked if they had data they could present to the Board that demonstrated something more than association. Mr. Boyle responded that the question would be answered with something further submitted to the Board. There were comments expressing appreciation of the conversation and questions, especially about nitrogen loading; A resident asked if Blue Drop was a certified lab, and if someone could send their results to the Town to discuss the results. The Agent answered in the affirmative. Board member Jason Silva suggested that residents should upgrade their cesspools because it is a good neighbor thing to do; and he stated that the Board would not sign off on a project that would harm public health. He said that if the neighbors in Pond Village need Town water he would support that, and that he hoped the property owners in this area would move forward with upgrading their septic systems. The Chair thanked him for his comments. Board member Peter Van Stratum stated that he felt that this meeting had been the best Board of Health meeting he had attended. Mr. Rose agreed.

The Chair concluded discussion on the agenda item.

Water Service change: Seasong Condominiums, 525 Shore Road; additional meters for year-round conversion- The Agent clarified that the water service connection modification was part of the year-round condominium conversion process.

Motion: Tim Rose moved to approve the application as presented; seconded by the Chair; Vote: 4-0-0, motion carries.

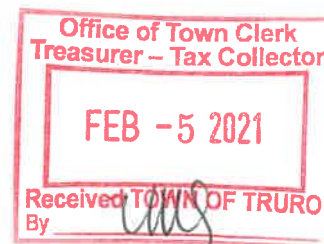
Health Agent Report

- The Agent referenced minutes that had been approved by the Board had not been recorded with the Town Clerk, and that the next agenda would include more past meeting minutes to catch up.
- The Agent reminded the Board that the next meeting would include draft regulations to including well-water testing triggers and I/A triggers.

Motion: Mr. Rose moved to adjourn the meeting; seconded by Mr. Silva; Vote: 4-0-0, motion carries.

Respectfully Submitted,

Emily Beebe





Truro Safe Water

A CALL TO ACTION FOR TRURO BOARD OF HEALTH

Dec 1, 2020 | dpcstruro.org

About Docs for Truro Safe Water

A voluntary group of medical practitioners and scientists collaborating to compile, understand and communicate the science related to safe water.

We aim to broaden public engagement and enable knowledge-based decisions, especially those that lead to town-wide mitigation efforts that forestall or reduce contamination and support a sustainable supply of safe water.

We are apolitical and will not advocate for any position other than one based on scientific evidence.

docstruro.org

Executive Summary

Water and public health

Science

Regulations

Recommendations for action

Q&A

docstruro.org

Docs for Truro Safe Water

Truro's water supply sources

Outer Cape's sole source aquifer

Pamet Lens

Chequesset Lens

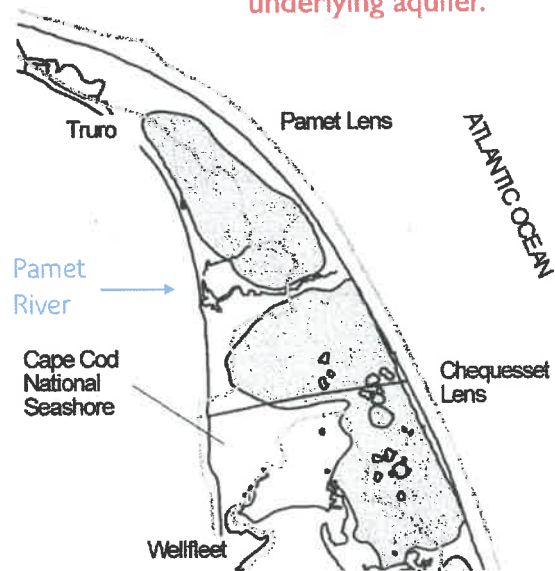
Replenished by

Rainfall

Runoff from hard surfaces

Wastewater from septic tanks/cesspools

Nitrate, a major component of human waste, along with other contaminants, passes through septic systems virtually untreated and is introduced to the underlying aquifer.






Septic systems leach **nitrates** into groundwater, well & drinking water



*"Water quality in certain areas in the Town of Truro is degraded. **Excessive nitrogen loading** in our watersheds has been identified as a major cause of this degradation. The primary source of excess nitrogen is wastewater **from on-site septic systems.**"*

- Truro Board of Health Regulations



Contaminants in well water



- Nitrogen (nitrates) from human waste
- Organic Wastewater Compounds (OWCs)
- Other toxic chemicals

What Are Organic Waste Compounds (OWCs)?

OWCs are ingredients and by-products of common agricultural, industrial, and household substances. For this study, 69 individual compounds were aggregated into 15 classes:

- | | |
|---|---------------------------------|
| • Antioxidants | • Insecticides |
| • Dyes/pigments | • Antimicrobial disinfectants |
| • Fire retardants | • Detergent metabolites |
| • Polycyclic aromatic hydrocarbons (PAHs) | • Flavors and fragrances |
| • Plasticizers | • Human drugs (nonprescription) |
| • Fuels | • Sterols |
| • Solvents | • Miscellaneous |
| • Herbicides | |

*“Your **local board of health** regulates them....*

The local BOH is empowered to adopt a Private Well Regulation that establishes criteria for water quality.”

- Massachusetts State Law



FEDERAL
STATE
TRURO

- EPA does **not** regulate private wells
- MassDEP does **not** regulate private wells
- Board of Health **can and should** regulate private wells

UNSAFE vs SAFE water

Scientific Research Evaluations
Last 25 Years



Evolving nitrate scientific awareness over time

Table of all relevant scientific studies found through extensive review of the scientific literature

Additional information available at docs.truro.org

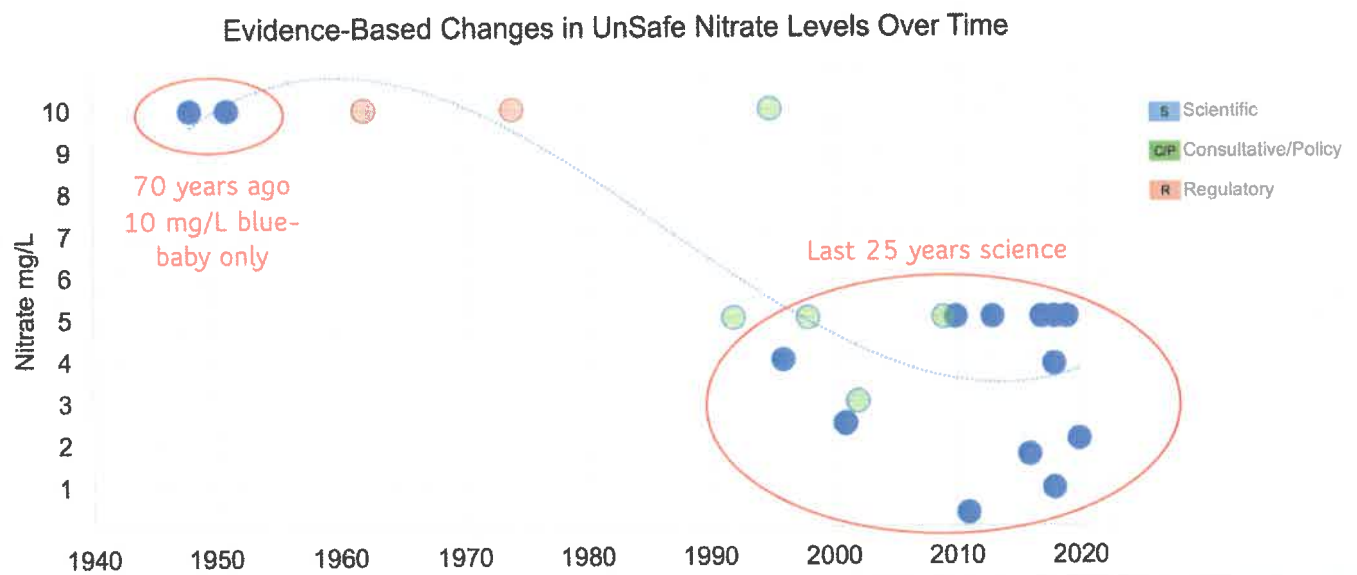
Timeline Summary | Level of Nitrates in Water and Serious Health Risks

Year	Nitrate	Reference Source	Type	Health Risk
1948	10	Minnesota Department of Health	S	methemoglobinemia
1951	10	Graham Walton, PhD	S	methemoglobinemia
1962	10	US Public Health Service	R	methemoglobinemia
1974	10	US Safe Water Drinking Act	R	methemoglobinemia
1992	5	Cape Cod Commission Nitrogen Loading	C/P	Nitrogen loading standard
1995	10	US Environmental Protection Agency	C/P	methemoglobinemia
1996	4	Epidemiology/National Cancer Institute	S	non-Hodgkin's lymphoma
1998	5	Lower Cape Water Management Task Force	C/P	general
2001	2.46	Epidemiology	S	bladder and ovarian cancer
2002	3	The Journal of Preventive Medicine	C/P	Max Contam Limit Goal
2009	5	Cape Cod Commission Regional Policy Plan	C/P	Nitrogen loading standard
2010	5	Epidemiology	S	thyroid cancer
2011	0.31	Journal of Toxicology and Environmental Health	S	childhood brain tumors
2013	5	Environmental Health Perspectives	S	birth defects
2016	1.7	Spain and Italy	S	colorectal cancer
2017	5	Environmental Health Perspectives	S	bladder cancer
2018	3.87	International Journal of Cancer	S	colorectal cancer
2018	5	Environmental Health Perspectives	S	birth defects
2018	0.9	Denmark	S	colorectal cancer
2019	5	Silent Spring Institute	S	cancers and birth defects
2019	5	Environmental Research	S	colorectal cancer
2020	2.07	Epidemiology	S	bladder cancer

Scientific

Consultative/Policy

Regulatory



Evidence-based changes in **unsafe** nitrate levels

This chart plots each of the scientific papers reviewed, with the publication date on the horizontal axis, and the critical nitrate level discussed in the publication on the vertical axis.

70 years ago vs last 25 years

It has been over 70 years since the first "blue-baby" finding about unsafe levels of nitrates in drinking water.

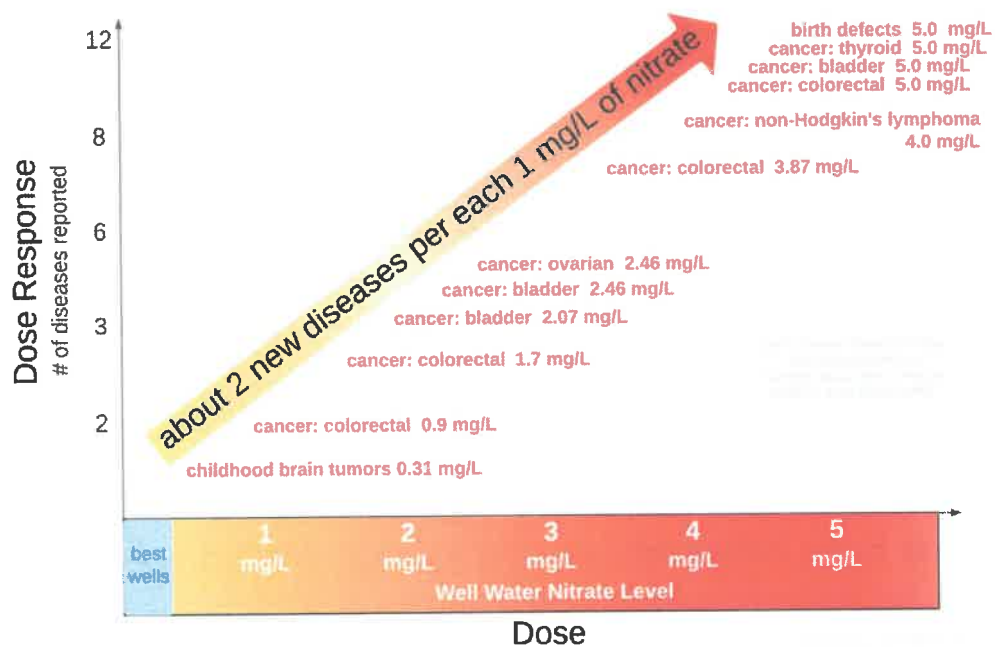
For decades, this was the only finding of substance, and so the EPA's 10 mg/L Maximum Contamination Limit was interpreted wrongly as a private well safe drinking water limit.

In the last 25 years of numerous scientific studies, **none** we can find suggest that 10 mg/L is appropriate for safeguarding health risks.

Instead, adverse health consequences appear at **5mg/L and less** -- **half** the EPA level.



Unsafe water & cancer/non-cancer diseases





Current science should inform Safe Water Standards

FOR TRURO PUBLIC HEALTH




Nitrate levels

Nitrates serve as a marker for human activity, and human activity is the source of other harmful organic and chemical contaminants.

Many contaminants are not easily filtered out even in public water supplies and pose a risk of cancer and other health problems to residents.

If contamination rises at a neighborhood level, a community can start experiencing **psychological** issues (anxiety, depression, sleep disorders).

Scientific evidence indicates action on nitrate levels is clearly **necessary and appropriate** for the Board of Health.



Truro's groundwater contamination

Contaminants Exceeding EWG Health Guidelines in Town Water*	Potential Effect	Times EWG Guideline
Bromodichloromethane	cancer	16x
Bromoform	cancer	2.1x
Chloroform	cancer	5.8x
Chromium (hexavalent)	cancer	24x
Dibromoacetic acid	multiple	8.5x
Dibromochloromethane	cancer	18x
Haloacetic acids (HAA5)†	cancer	25x
Radium, combined (-226 & -228)	cancer	5.5x
Tetrachloroethylene	cancer	3.9x
Total trihalomethanes (TTHMs)†	cancer	47x

Nitrate as a Marker

- Indicative of other contaminants present in the water.
- Easy to measure via a low-cost test.

*Water is pumped from Truro's large protected wellhead sites and piped to Provincetown Water Dept. where it is tested by Environmental Work Group. See ewg.org/tapwater/system.php?pws=MA4242000 (results as of 9/22/2020)

† HAA5 is a contaminant group that includes monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, monobromoacetic acid and dibromoacetic acid. TTHM is a contaminant group that includes bromodichloromethane, bromoform, chloroform and dibromochloromethane.

Truro's Board of Health is responsible for Truro's public health

"The Board of Health considers protection of groundwater their **top priority** and are continually looking for ways to **protect and improve groundwater quality**.

The Board has and will continue to aggressively **adjust their Regulations** for the town of Truro to address ways **to protect the Public Health.**"

- Board of Health, July 2020

"All wastewater regulations should be revisited every 5 years. The review will include but not be limited to: ground water and surface water sample data, wastewater treatment technology, and county, state, and federal regulations."

- Weston & Sampson, Feb 2018
Truro Integrated Water Resources
Management Plan Phase II Report

Board of Health current regulations focus on Nitrogen loading

LOADING



Regulations aim to **mitigate** excessive groundwater contamination via a maximum nitrogen *loading* standard, e.g., **¼ acre per bedroom**

(Section VI, Article 14, ref: MA Title 5)

CONTAMINATION



Nitrate *contamination* levels in private well water are **not addressed** in regulations

(currently not regulated)

Loading restrictions

Cape Cod Commission recommends **5 mg/L** as a maximum Nitrogen *loading* limit.

Truro Board of Health

- Limits the density of human activity by restricting development to 1 bedroom per 10,000 square feet of land up to the limits of total acreage, i.e., **¼ acre per bedroom**.
- Larger properties (more than 5 bedrooms i.e., 600 gallons per day) must take additional steps to reduce Nitrogen loading.

So, what can we do?



Immediate action is necessary

Increasing evidence - based on science - shows **harmful effects of nitrate** on human health. Nitrates are a marker for **additional contaminants** that are also harmful to human health

The arc of lower threshold levels has been consistent for more than 25 years, finding **significant health consequences at and below nitrate concentrations of 5 mg/L, and as low as 1 mg/L**

This **warrants immediate action locally**



This has become Truro's public health emergency

Affects all of Truro

Data indicates nitrate levels are rising

When and how will the Town act?

Call to action

Truro Board of Health can and should **set new local standards** in conformity with current scientific evaluations and with Cape Cod conditions for both nitrate contamination and nitrogen loading at a **level at or under 5 mg/L**.

In addition, Truro's BoH should take all needed steps to **ensure that levels of contamination are regularly measured throughout Truro**, to **identify** areas of concern, **mitigate** through effective strategies, and **measure and report** progress.

We can help – at no cost – here's how

- ✓ Propose safe well water regulation, including triggers and suggested actions
- ✓ Survey other towns and propose updated regulations for
 - Larger wastewater systems (2,000 to 10,000 GPD)
 - Mid-sized wastewater systems (600 to 2,000 GPD)
 - Residential-sized wastewater systems (<600 GPD)
- ✓ Suggest health-focused budget measures so public health priorities receive adequate focus in the FY22 budget and after

Truro depends on you

Thank you



Docs for Truro Safe Water

Robert H Brown, MD, DPhil

Neurology Research

Mary C Pearl, PhD

Biology

Brian E Boyle, PhD

Operations Research

Christopher W Clark, PhD

Neurobiology & Behavior

Frederick W Ruymann, MD, FACG, FASGE

Gastroenterology

Robert E Simpson, Jr, MPH, DSW

Public Health

Ronald R Fichtner, PhD

Epidemiology

For more information see docstruro.org



The Cloverleaf

Recapping the Board of Health review process and the evolution of the
proposal

MGL Chapter 40 B

- 40B is State Law that requires a special permitting process for affordable housing applications
- The ZBA is the local Board who issues the comprehensive permit.
- The Initial Comprehensive permit application for the Cloverleaf was filed with the ZBA on 11-7-2019
- Under 40 B, the project must meet the requirements of State laws such as Title 5 and the Wetland Protection Act
- Compliance with local regulations is not obligatory, but becomes a negotiation under a process of granting waivers to these regulations

BOH Review Process, December 2019

- The BOH met with the applicant & their engineer and reviewed initial site and septic plans on 12/3/2019
- Proposal was 40 units with 8293 GPD design flow
- Project met title 5 requirements
- Local Regulations- for waivers
 - I-A system required for wastewater flows >600 gpd
 - All development must meet nitrogen loading standard of title 5

BOH Review Process, continued

- Board discussed their concerns about scale of project and potential impact to groundwater resources and private wells in the immediate area, Pond Village Neighborhood and impacts to Standish Pond itself
- I-A not proposed in original application; developer cited financial burden, BOH asked developer to explore cost of I-A and contain all stormwater to the site

Cape Cod Commission Review, December 2019

- Also in December 2019, Cape Cod Commission reviewed original proposal and expressed concern that the nitrogen and nutrient loading from the project, as proposed, could impact private wells
- CCC suggested these impacts could be mitigated by connection to the municipal water system and/or adding nitrogen removal to the proposed wastewater system; they also suggested reduction of nutrient loading from stormwater would reduce overall N-loading on the site

Revised Plans , February 2020

- Applicant submitted revised site and septic plans showing the addition of I/A wastewater treatment (microfast) and project wastewater flow was reduced to 7871 gpd

Peer Review of Proposed Application (March 2020)

- Horsley/Whitten Group selected to review the project proposal, and specifically tasked to review whether or not the proposed wastewater system would be protective of down-gradient private wells and Standish Pond.
- They opined that (further) additional treatment was warranted to protect down-gradient drinking water wells
- By meeting a 10mg/ liter N in wastewater effluent, the waiver of local BOH regulations would be more appropriate,
- Specifically suggested conditions:
 - for regular monitoring of wastewater effluent for performance , and
 - Improve stormwater mitigation

Revised Site & Septic Plans, June 2020

- Applicant submitted second revision of site & septic plans to the BOH in early June, showing the addition of advanced I-A wastewater treatment using BIOMICROBICS treatment system
- Daily wastewater flow reduced to 7480 GPD

Peer Review #2, July 2020

- HWG compares nitrogen load between BIOMICROBIC system and standard Title 5 loading
- Found that the improved design to limit the N concentration to 10 mg/liter or less, “also serves to protect the private wells down-gradient of the Cloverleaf property”.
- Opined that the use of this system with performance conditions made the granting of the LBOH regulation waivers appropriate

BOH Review/Work Session, July 2020

- HWG presented the revised site and septic plans and walked the Board through the changes/improvements in the system
- The Board developed conditions, as recommended, for wastewater operations and monitoring

Peer Review #3, September 2020

- HWG requested contingency details from the project engineer for operations contingency plan
- The project engineer provided revised plan to address details requested and HWG responded via a comment letter in October 2020

Cape Cod Commission Review #2, November 2020

- The Commission discussed the revised site and septic plans and the reduction in project design flow from 8293 gpd to 7480 gpd
- Commission discussed the reduction of nitrogen load bringing the total site nitrogen load down to 5.56 mg/liter, with the septic system designed as proposed with a 10 mg/l N effluent goal.
- Found that as ammended, the project, “sufficiently addresses its potential impacts to drinking water resources.”
- Also suggested that the Town explore the benefit, independent of the project, to the exploration of the infrastructure necessary to connect the Pond Village development to the public water supply

Concerns of Pond Village Neighborhood , ZBA Contact & BOH/Agent Response (Dec 2019- present)

- Agent sent a memo to the ZBA outlining the comments of the BOH's initial review of the proposed project (December 5, 2019)
- Agent attend ZBA meetings to answer questions from both the ZBA and public
- Agent sent a memo to the ZBA regarding updates on the project after the BOH work session (July 16, 2020)
- Town of Truro contracted with the Cape Cod Commission to conduct Standish Pond Watershed Analysis (Stormwater, well water & watershed study)
- Agent sent a memo to the ZBA in response to the comment letter from the Pond Village Neighborhood (October 7, 2020)

