Truro Board of Health

Tuesday January 17, 2023
Remote Meeting- 4:30 PM

Remote Meeting Access Instructions for 1/17/2023 meeting at 4:30PM

This will be a remote meeting. Citizens in Truro can view the meeting on Channel 18 and on the web on the "Truro TV Channel 18" button found under "Helpful Links" on the homepage of the Town of Truro website. To view, click on the green "Watch" button in the upper right of the page. **To provide comment during the meeting, please call in toll free at 1-866-899-4679 and enter the following access code when prompted: 972-302-709; or access the meeting from your computer, tablet or smartphone.** https://global.gotomeeting.com/join/972302709

Please note that there may be a slight delay (15-30 seconds) between the meeting and the live-stream (and television broadcast). If you are watching the meeting and calling in, please lower the volume on your computer or television during public comment so that you may be heard clearly. We ask that you identify yourself when calling in to help us manage multiple callers effectively. Citizens may also provide public comment for this meeting by emailing the Health Agent Emily Beebe at ebeebe@truro-ma.gov with your comments.

I. PUBLIC COMMENT

Please note that the Commonwealth's Open Meeting Law limits any discussion by members of the Board of an issue raised to whether that issue should be placed on a future agenda

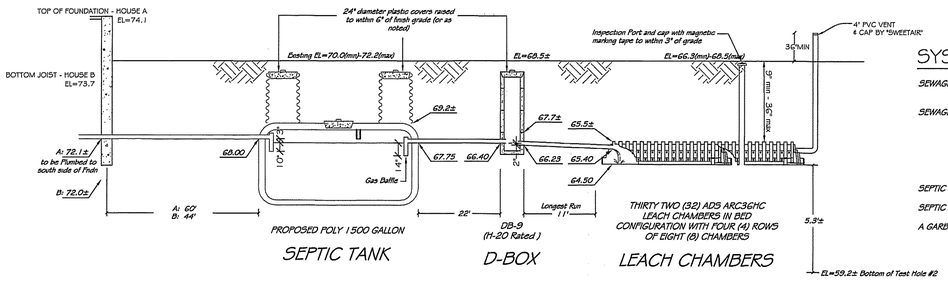
II. AGENDA ITEMS

1. **Local Variance Request:** 108 Slough Pond Road (62/1)
2. **Local Variance Request:** 18 Bay View Drive (39/33)(Continued from November 1, 2022)
3. **Local Variance Request:** 8 North Unionfield Road (40/59)(Continued from January 3, 2023)
4. **Update from DPW Director**
   a. **Transfer station**
   b. **Mill Pond Culvert restoration alternatives**
5. **Water Resources update**
6. **Re-Organization of the Board**

III. MINUTES:

IV. REPORTS

- Report of the Chair
- Health Agent's Report



FLOW PROFILE - MAIN HOUSE

NOT TO SCALE

SYSTEM DESIGN CALCULATIONS

SEWAGE DESIGN FLOW REQUIRED: 5 BDRM DWELLING @ 110 GPD / BEDROOM = 550 GPD REQUIRED

SEWAGE DESIGN FLOW PROVIDED: THIRTY TWO (32) ADS UNITS IN BED CONFIGURATION IN FOUR (4) ROWS OF EIGHT (8) UNITS EACH.

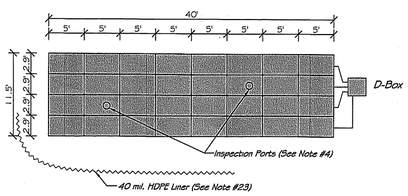
Vt = ((550 / 0.74) / (4.8 FT² /FT) / 5.0 LF) = 31.0 ADS UNITS REQUIRED (32 PROVIDED)

568 GPD PROVIDED > 550 GPD REQUIRED

SEPTIC TANK CAPACITY REQUIRED: 550 GPD X 200% = 1100 GPD REQUIRED

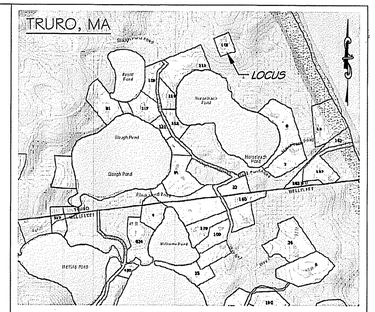
SEPTIC TANK CAPACITY PROVIDED: 1500 GALLON SEPTIC TANK

A GARBAGE DISPOSAL IS NOT PERMITTED WITH THIS DESIGN FLOW



PLAN VIEW - MAIN HOUSE

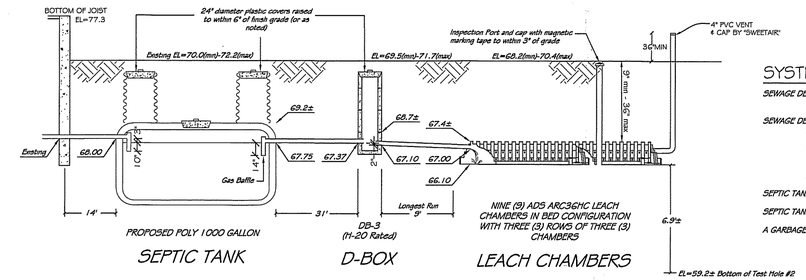
SCALE: 1" = 10'



SITE LOCUS

NOT TO SCALE

1.) Assessor's Map 62 Parcel 1
2.) Deed Book 17972 Page 283
3.) Plan Book 49 Page 37
4.) This property is not in a Zone II of a Public Water Supply
5.) Flood Zone: C
6.) Vertical Datum: NAVD 1988



FLOW PROFILE - STUDIO

NOT TO SCALE

SYSTEM DESIGN CALCULATIONS

SEWAGE DESIGN FLOW REQUIRED: 1 BEDROOM STUDIO @ 110 GPD / BEDROOM = 110 GPD REQUIRED

SEWAGE DESIGN FLOW PROVIDED: NINE (9) ADS UNITS IN BED CONFIGURATION IN THREE (3) ROWS OF THREE (3) UNITS EACH.

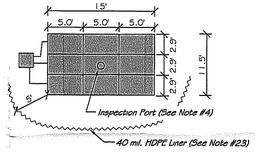
Vt = ((110 / 0.74) / (4.8 FT² /FT) / 5.0 LF) = 6.2 ADS UNITS REQUIRED (9 PROVIDED)

159 GPD PROVIDED > 110 GPD REQUIRED

SEPTIC TANK CAPACITY REQUIRED: 110 GPD X 200% = 220 GPD REQUIRED

SEPTIC TANK CAPACITY PROVIDED: 1000 GALLON SEPTIC TANK

A GARBAGE DISPOSAL IS NOT PERMITTED WITH THIS DESIGN FLOW



PLAN VIEW - STUDIO

SCALE: 1" = 10'

CONSTRUCTION NOTES

1.) ALL WORK SHALL CONFORM TO THE STATE ENVIRONMENTAL CODE, TITLE 5 (310 CMR 15.000): AND THE REGULATIONS OF THE LOCAL BOARD OF HEALTH.

2.) ANY SEPTIC SYSTEM COMPONENT INSTALLED IN A LOCATION WHERE THERE IS POTENTIAL FOR VEHICLES OR HEAVY EQUIPMENT TO PASS OVER IT SHALL BE DESIGNED TO WITHSTAND AN H-20 LOADING. IF UNDER AN IMPERVIOUS SURFACE, SYSTEM SHALL BE VENTED TO THE ATMOSPHERE.

3.) TO MINIMIZE UNEVEN SETTLING, SEPTIC TANKS SHALL BE INSTALLED ON A STABLE MECHANICALLY-COMPACTED BASE ON SIX INCHES OF CRUSHED STONE.

4.) COVERS OVER THE INLET AND OUTLET TEES OF THE SEPTIC TANK, THE DISTRIBUTION BOX, AND THE SOIL ABSORPTION SYSTEM SHALL BE RAISED TO WITHIN 6" OF FINAL GRADE. LEACHING FIELDS, TRENCHES, AND OTHER SOIL ABSORPTION SYSTEMS WITHOUT ACCESS MANHOLES SHALL HAVE AT LEAST ONE (1) INSPECTION PORT CONSISTING OF PERFORATED 4" PVC PIPE PLACED VERTICALLY TO THE BOTTOM OF THE SOIL ABSORPTION SYSTEM WITH A CAP, TIED WITH MAGNETIC MARKING TAPE, ACCESSIBLE TO WITHIN 3" OF FINAL GRADE.

5.) PIPING SHALL CONSIST OF 4" SCHEDULE 40 PVC OR EQUIVALENT. PIPE SHALL BE LAID ON A MINIMUM CONTINUOUS GRADE OF NOT LESS THAN 2% FROM THE BUILDING TO THE SEPTIC TANK, AND NOT LESS THAN 1% OTHERWISE.

6.) DISTRIBUTION LINES FOR THE SOIL ABSORPTION SYSTEM SHALL BE 4" DIAMETER SCHEDULE 40 PVC (OR EQUIVALENT) LAID AT 0.005 FT/FT. UNLESS OTHERWISE NOTED. LINES SHALL BE CAPPED AT END OR AS NOTED.

7.) LINES FROM THE DISTRIBUTION BOX TO BE LEVEL FOR THE FIRST TWO (2) FEET BEFORE PITCHING TO THE SOIL ABSORPTION SYSTEM. DISTRIBUTION BOX SHALL BE WATER TESTED TO ASSURE EVEN DISTRIBUTION.

8.) GROUT TO BE USED AT ALL POINTS WHERE PIPES ENTER OR LEAVE ALL CONCRETE STRUCTURES IN ORDER TO PROVIDE A WATERTIGHT SEAL.

9.) HEAVY EQUIPMENT SHALL NOT BE ALLOWED TO OPERATE OVER THE LIMITS OF THE SEWAGE DISPOSAL FIELD DURING THE COURSE OF CONSTRUCTION OF THE SYSTEM.

10.) IN ACCORDANCE WITH 310 CMR 15.221, ALL SYSTEM COMPONENTS SHALL BE MARKED WITH MAGNETIC MARKING TAPE.

11.) THERE ARE NO OTHER KNOWN WELLS WITHIN 100' OF THE PROPOSED SOIL ABSORPTION SYSTEM.

12.) FROM THE DATE OF THE INSTALLATION OF THE SOIL ABSORPTION SYSTEM UNTIL RECEIPT OF THE CERTIFICATE OF COMPLIANCE, THE PERIMETER SHALL BE STAKED AND FLAGGED TO PREVENT USE OF THE AREA THAT MAY CAUSE DAMAGE TO THE SYSTEM.

13.) THE DESIGNER WILL NOT BE RESPONSIBLE FOR THE SYSTEM AS DESIGNED UNLESS CONSTRUCTED AS SHOWN ON PLAN. ANY CHANGES SHALL BE APPROVED IN WRITING BY THE DESIGNER.

14.) THE BOARD OF HEALTH REQUIRES INSPECTION OF ALL CONSTRUCTION BY AN AGENT OF THE BOARD OF HEALTH AND THE DESIGNER. THE DESIGNER SHALL CERTIFY IN WRITING THAT THE SEWAGE DISPOSAL SYSTEM WAS INSTALLED IN ACCORDANCE WITH THE TERMS OF THE PERMIT AND THE APPROVED PLANS. 48 HOURS ADVANCE NOTICE IS REQUESTED.

15.) LOCATION OF UTILITIES IS APPROXIMATE AND CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE LOCATION OF ALL UNDERGROUND AND OVERHEAD UTILITIES PRIOR TO COMMENCEMENT OF ANY WORK. THIS INCLUDES, BUT IS NOT LIMITED TO, REQUESTS TO DIGSAFE, ANY PRIVATE UTILITY COMPANIES, AND THE LOCAL WATER DEPARTMENT.

16.) CONTRACTOR SHALL VERIFY THAT ALL WASTELINES ARE CONNECTED BY WATER TESTING WITHIN THE DWELLING PRIOR TO INSTALLATION OF ANY SEPTIC COMPONENTS.

17.) CONTRACTOR SHALL VERIFY EXISTING INVERT ELEVATIONS PRIOR TO INSTALLATION OF ANY SEPTIC SYSTEM COMPONENTS.

18.) INSTRUMENT SURVEY CONDUCTED FOR PROPOSED WORK ONLY. SITE PLAN SHALL NOT BE USED FOR STAKING, OR ANY OTHER PURPOSES. NOR SHALL IT BE USED AS A MORTGAGE PLOT PLAN OR TITLE SURVEY. CONFORMANCE TO LOCAL BYLAWS SHALL BE DETERMINED BY THE OWNER PRIOR TO CONSTRUCTION.

19.) THIS PLAN DOES NOT CERTIFY, GUARANTEE OR WARRANTY COMPLIANCE WITH DEEDED OR ZONING BYLAWS, SPECIFICALLY, BUT NOT LIMITED TO, SIDELINE SETBACKS AND BUILDING HEIGHT RESTRICTIONS. OWNER IS RESPONSIBLE FOR OBTAINING SUCH A DETERMINATION FROM THE APPROPRIATE AUTHORITY.

20.) TEST HOLES COMPLETED PER STATE ENVIRONMENTAL CODE, TITLE 5. SOILS CAN BE VARIABLE AND TEST HOLE DATA IS NO GUARANTEE OF SOIL CONDITIONS IN OTHER AREAS. IF SOILS DIFFER FROM THOSE SHOWN IN THE SOILS LOGS, DESIGN ENGINEER IS TO INSPECT THE SOILS PRIOR TO PROCEEDING WITH INSTALLATION OF ANY SEPTIC COMPONENTS.

21.) EXISTING SEPTIC COMPONENTS TO BE LOCATED, PUMPED DRY, FILLED WITH CLEAN SAND AND ABANDONED IN PLACE. AREA TO BE COMPACTED TO MINIMIZE SETTLING.

22.) IF EXISTING SEPTIC COMPONENTS SHOULD NEED TO BE REMOVED, ANY CONTAMINATED SOIL SHALL BE REMOVED FOR A DISTANCE OF FIVE (5) FEET LATERALLY FROM THE SOIL ABSORPTION SYSTEM AND REPLACED WITH CLEAN SAND. AREA TO BE COMPACTED TO MINIMIZE SETTLING.

23.) INSTALL A 40 mil HDPE LINER FOR BREAKOUT AS SHOWN ON PLAN (SEE PLAN VIEW).
MAIN HOUSE: EL=65.5± TO EL=61.5±
STUDIO: EL=67.4± TO EL=63.4±

24.) INSPECTION NOTE: PRIOR TO FINAL INSPECTION BY THE ENGINEER, SYSTEM NEEDS TO BE COMPLETE INCLUDING BUILDUP FOR COVERS.

TEST HOLE LOGS

Test Hole #1 (EL=69.8±)				
Depth	Layer	Soil Class	Soil Color	Comments
0"-6"	A	Loamy Sand	10YR 3/6	
6"-30"	B	Loamy Sand	10YR 6/8	
30"-130"	C1	Medium-Coarse Sand	10YR 8/3	

Test Hole #2 (EL=69.2±)				
Depth	Layer	Soil Class	Soil Color	Comments
0"-10"	A	Loamy Sand	10YR 3/6	
10"-36"	B	Loamy Sand	10YR 6/8	
36"-120"	C1	Medium-Coarse Sand	10YR 8/3	Perc @ 54"

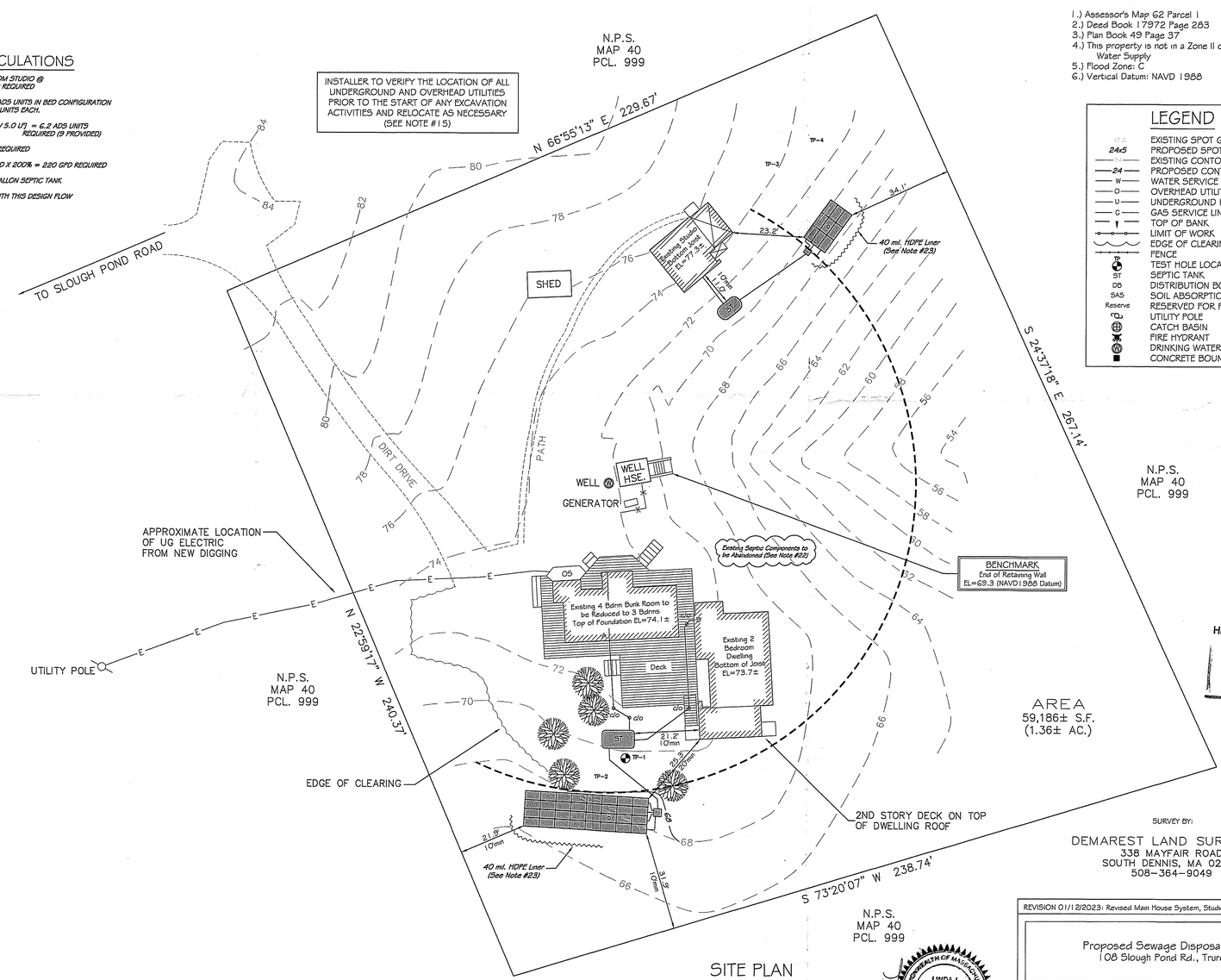
Test Hole #3 (EL=74.2±)				
Depth	Layer	Soil Class	Soil Color	Comments
0"-10"	A	Loamy Sand	10YR 3/6	
10"-30"	B	Loamy Sand	10YR 6/8	
30"-137"	C1	Medium-Coarse Sand	10YR 8/3	Perc @ 50"

Test Hole #4 (EL=73.1±)				
Depth	Layer	Soil Class	Soil Color	Comments
0"-8"	A	Loamy Sand	10YR 3/6	
8"-30"	B	Loamy Sand	10YR 6/8	
30"-140"	C1	Medium-Coarse Sand	10YR 8/3	

DATE OF TESTING: 11/17/2021
SOIL EVALUATOR: D. BENNETT, R.S., S.E.
BOARD OF HEALTH AGENT: A. DAVIS, TRURO HEALTH DEPARTMENT
PERCOLATION RATE: LESS THAN 2 MIN/INCH IN 'C' LAYER

NO GROUNDWATER ENCOUNTERED

INSTALLER TO VERIFY THE LOCATION OF ALL UNDERGROUND AND OVERHEAD UTILITIES PRIOR TO THE START OF ANY EXCAVATION ACTIVITIES AND RELOCATE AS NECESSARY (SEE NOTE #15)



SITE PLAN

SCALE: 1" = 20'

SCALE 1"=20'

C:\CSN\SDS-Slough Pond\SDS-Slough Pond-SDS PlanRev1-12-23.dwg

LEGEND

77.3	EXISTING SPOT GRADE
24x5	PROPOSED SPOT GRADE
24	EXISTING CONTOUR
24	PROPOSED CONTOUR
W	WATER SERVICE LINE
O	OVERHEAD UTILITY LINES
U	UNDERGROUND UTILITY LINES
G	GAS SERVICE LINE
	TOP OF BANK
	LIMIT OF WORK
	EDGE OF CLEARING
	FENCE
TP-1	TEST HOLE LOCATION
ST	SEPTIC TANK
DB	DISTRIBUTION BOX
SAS	SOIL ABSORPTION SYSTEM
Reserve	RESERVED FOR FUTURE USE
UP	UTILITY POLE
	CATCH BASIN
	FIRE HYDRANT
W	DRINKING WATER WELL
	CONCRETE BOUND

HEALTH DEPARTMENT
TOWN OF TRURO
JAN 13 2023
RECEIVED BY:

SURVEY BY:
DEMAREST LAND SURVEYING
338 MAYFAIR ROAD
SOUTH DENNIS, MA 02660
508-364-9049

LINDA CROWN FIELD CIVIL NO. 49614 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS

REVISION 01/12/2023: Revised Main House System, Studio ST, Number of Total Bdrms

Proposed Sewage Disposal System
108 Slough Pond Rd., Truro, MA

Prepared for:
Jeff Halpnn, Tr.
104 Irving St.
Cambridge, MA 02138

CSN ENGINEERING
P.O. Box 201
Brewster, MA 02631
Phone: (508) 274-7347

DATE:	SCALE:	DESIGN:	CHECK:	JOB NO:
10/21/2022	AS SHOWN	LJC	KM	2021316

TOWN OF TRURO
HEALTH & CONSERVATION DEPARTMENT
24 Town Hall Road, Truro 02666
508-349-7004 x119

To: Truro Board of Health
From: Emily Beebe, Health & Conservation Agent
Date: Jan 13, 2023
Re: January 17 meeting: septic upgrades- review notes

18 Bay View Drive

This project was originally heard on Nov. 1 and was continued for staff to resolve the bedroom count issue with the owner, or representative. This septic upgrade should be designed for a 4 Bedroom dwelling, which is what currently exists on the 23,100-sf parcel.

- Assrs. card specifies 4 BR; the house was built as a 3 BR in 1971.
- A walk-through has been conducted by our office:
  - There is a finished second-floor garage space, not legally finished as a BR, that meets the definition of a bedroom and has a bed in it;
  - There is a finished basement with 3 BR observed. None of these meet the requirements of the building code, regarding egress windows.
  - There is a bedroom on the main floor with the kitchen, living room and dining room.
- It is recommended that a deed restriction be crafted to specify the approved BR count (4) for the property. The owners must submit a plan describing how they will reconfigure the space for only 4 bedrooms and how they will create building code conforming egress for the basement bedrooms. We also recommend requiring a deed restriction.
- There are no title 5 variances, however, the existing use on this lot size triggers the use of I/A technology. An Orenco Advantex AX-20 was proposed.
- A 38% reduction to the size of the leaching area was proposed; this is allowed under the general use approval for the Advantex system.
- It appears that GW flow is toward the east, and the arrangement of the locus well and SAS is parallel. No wells in this area appear downstream of the SAS.
- **The Variance requested is to the time frame for completion of the upgrade to title 5 from a cesspool.**

108 Slough Pond Road Road

This septic upgrade will serve 3 existing structures with a total of 7 bedrooms on this 59,186 sf property.

- We find no permit trail for 1-Bedroom that was constructed in 2004; and the owners are aware that the legal bedroom count for the property is 6 bedrooms. They will submit a floor plan sketch showing where changes in the layout will be made to reduce the bedroom count to 6.
- The existing use on a lot of this size triggers the use of I/A technology under TBoH regulations. **A variance to this requirement is being requested**.
- The property is served by composting toilets; greywater will be disposed of in 2 title 5 systems ,
- The use of composters is a suitable alternative to using I/A treatment, but this could easily be changed to traditional fixtures if the property is sold, therefore we recommend a deed restriction be put in place denoting the presence of composters and upon transfer the matter return to the BoH to address concerns about what happens to the composters if the property is sold, or at such time as the composters are not used, relative to the TBoH requiring I/A.
- *Approval of the variance is recommended with conditions:*
  1. *A plumber should be hired by the owner to apply for after the fact permits for the composting units. These composters would be inspected by the plumbing inspector, and any issues regarding safety, etc. would be properly addressed through this process.*

  2. *A deed restriction be crafted denoting the presence of composters and upon transfer the matter return to the BoH.*

J.C. ELLIS DESIGN COMPANY, INC.

SEPTIC SYSTEM DESIGN & ENGINEERING – SEPTIC INSPECTION –
SITE PLANNING – WETLAND CONSULTATION & PERMITTING
P.O. BOX 81, NORTH EASTHAM, MA 02651 PHONE 508-240-2220 FAX 508-240-2221
EMAIL jcellisdesign@verizon.net

HEALTH DEPARTMENT
TOWN OF TRURO
OCT 21 2022
RECEIVED BY

October 20, 2022

Truro Board of Health
24 Town Hall Road
P.O. Box 2030
Truro, MA 02666

Re: Variance Requests – Septic System Upgrade
Santina & Frank Smith, 18 Bay View Drive, Truro, MA, Assessor's Map 39 Parcel ~~23~~ 33

Dear Board,

Santina and Frank Smith are requesting a variance to the requirement to upgrade their cesspool December 31, 2023. The Smiths are experiencing some serious health challenges and are on a fixed retirement income. They have engaged us to design a septic system for them which is complete. The costs of the installation have proved to be out of range financially and the installation of the septic will prove to be a major hardship. The Smiths are looking for an alternative, such as delaying the installation of the new septic system until they transfer the property (either sell it or transfer to another family member).

Specifically, they request a variance to delay the installation of the new septic system.

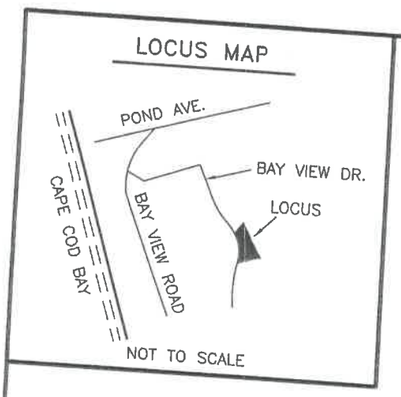
Truro Board of Health Regulations – Section VI, Article 3, 1 h

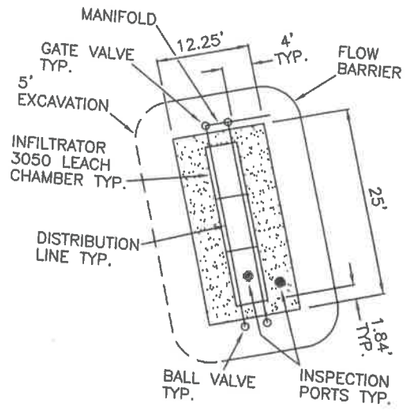
1. Cesspools to be to be upgraded prior to December 31, 2023.

Thank you for your attention to this matter.
Sincerely,

Jason C. Ellis, R.S., L.S.I.T.
J.C. Ellis Design Co., Inc.

Cc: file





S.A.S. DETAIL

HEALTH DEPARTMENT
TOWN OF TRURO
OCT 21 2022
RECEIVED BY

COMMONWEALTH OF MASSACHUSETTS
JASON CHRISTOPHER ELLIS
No. 11116
REGISTERED SANITARIAN

SON C. ELLIS, R.S.

SURVEY PLAN REFERENCE:
PLAN BOOK 227 PAGE 7
THIS PLAN IS FOR SEPTIC SYSTEM DESIGN PURPOSES ONLY.
THIS PLAN IS NOT FOR BOUNDARY DETERMINATION.
PROPERTY OWNER AND CONTRACTORS TO VERIFY ALL WATER LINES AND GAS UTILITIES ON PROPERTY.

J.C. ELLIS DESIGN
P.O. BOX 81
NORTH EASTHAM, MA 02651
(508)240-2220
Email: jason@jcellisdesign.com

SEPTIC SYSTEM UPGRADE PLAN

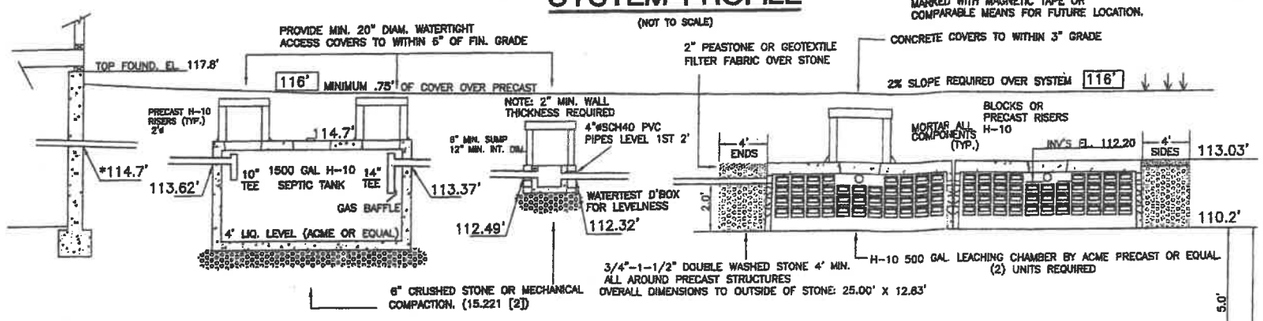
SUBJECT:
18 BAY VIEW DRIVE
TRURO, MA

PREPARED FOR:
FRANK & SANTINA SMITH
P.O. BOX 531
NORTH TRURO, MA 02652-0531

ASSESSOR'S MAP 39 PARCEL 33	SCALE: 1"=30'
DATE: OCTOBER 10, 2021	SHEET 1 OF

SYSTEM PROFILE

(NOT TO SCALE)



*THE INSTALLER SHALL VERIFY THE LOCATIONS OF ALL UTILITIES AND ALL BUILDING SEWER OUTLETS AND ELEVATIONS PRIOR TO INSTALLING ANY PORTION OF SEPTIC SYSTEM

LEGEND

- 99 — EXISTING CONTOUR
- X 99.1 EXIST. SPOT ELEV.
- —[99]— PROPOSED CONTOUR
- [98.4] PROPOSED SPOT EL.
- TH1 TEST HOLE
- 2% SLOPE OF GROUND
- UTILITY POLE
- FIRE HYDRANT

NOTE: NOT ALL SYMBOLS MAY APPEAR IN DRAWING

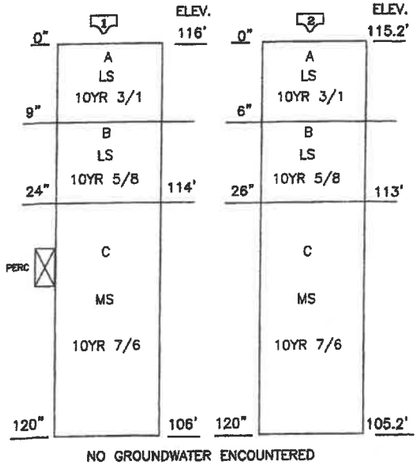
VARIANCES REQUESTED:

UNDER TOWN OF TRURO HEALTH REGULATIONS: (ARTICLE 14): 110 GPD PER 10,000 S.F.

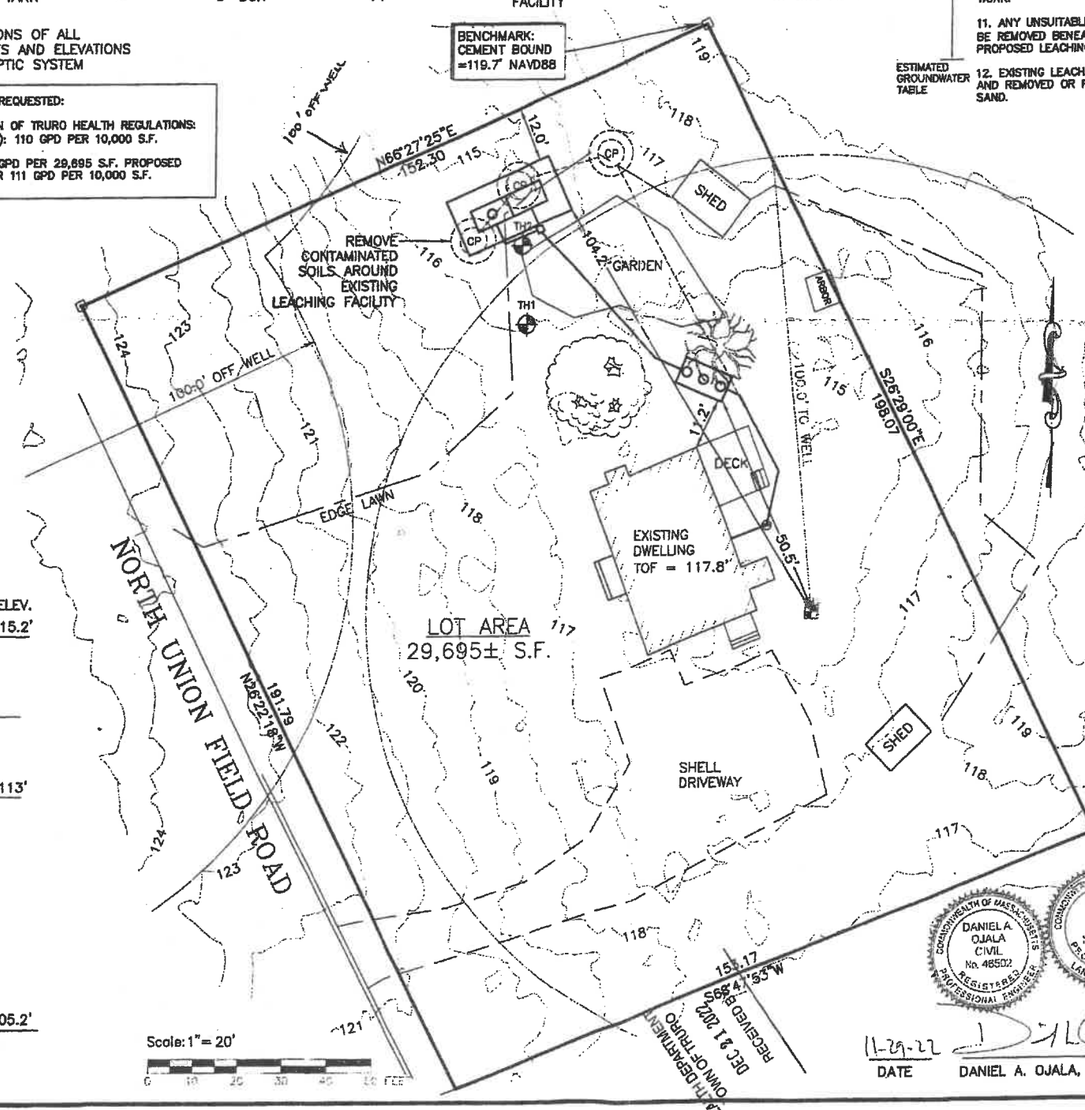
NOTE: 330 GPD PER 29,695 S.F. PROPOSED OR 111 GPD PER 10,000 S.F.

TEST HOLE LOGS

ENGINEER: CRAIG J. FERRARI, SE #13871
WITNESS: AROZANA DAVIS
DATE: 11/22/2022
PERC. RATE = < 2 MIN/INCH
CLASS I SOILS



NO GROUNDWATER ENCOUNTERED



Scale: 1" = 20'

RECEIVED BY TOWN OF TRURO HEALTH DEPARTMENT DEC 21 2022

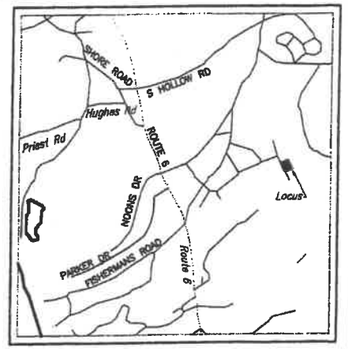
DANIEL A. OJALA CIVIL No. 46502 REGISTERED PROFESSIONAL ENGINEER
DANIEL A. OJALA No. 40950 PROFESSIONAL LAND SURVEYOR

11-29-22
DATE

DANIEL A. OJALA, P.E., P.L.S.

NOTES

1. DATUM IS NAVD 88.
2. MUNICIPAL WATER IS EXISTING.
3. MINIMUM PIPE PITCH TO BE 1/8" PER FOOT.
4. DESIGN LOADING FOR ALL PROPOSED PRECAST UNITS TO BE AASHO H-10.
5. PIPE JOINTS TO BE MADE WATERTIGHT.
6. CONSTRUCTION DETAILS TO BE IN ACCORDANCE WITH 310 CMR 15.000 (TITLE 5.)
7. THIS PLAN IS FOR PROPOSED WORK ONLY AND NOT TO BE USED FOR LOT LINE STAKING OR ANY OTHER PURPOSE.
8. PIPE FOR SEPTIC SYSTEM TO SCH. 40-4" PVC.
9. COMPONENTS NOT TO BE BACKFILLED OR CONCEALED WITHOUT INSPECTION BY BOARD OF HEALTH AND PERMISSION OBTAINED FROM BOARD OF HEALTH.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR CALLING DIGSAFE (1-888-344-7233) AND VERIFYING THE LOCATION OF ALL UNDERGROUND & OVERHEAD UTILITIES PRIOR TO COMMENCEMENT OF WORK.
11. ANY UNSUITABLE MATERIAL ENCOUNTERED SHALL BE REMOVED BENEATH AND 5' AROUND THE PROPOSED LEACHING FACILITY.
12. EXISTING LEACHING FACILITY SHALL BE PUMPED AND REMOVED OR PUMPED AND FILLED WITH CLEAN SAND.



LOCUS MAP

SCALE 1"=2000'±

ASSESSORS MAP 40 PARCEL 59

LOCUS IS WITHIN A ZONE II

SYSTEM DESIGN:

GARBAGE DISPOSER IS NOT ALLOWED

EXISTING 3 BEDROOM DWELLING
DESIGN FLOW: 3 BEDROOMS @ 110 GPD = 330 GPD
USE A 330 GPD DESIGN FLOW

SEPTIC TANK: 330 GPD (2) = 660
USE A 1500 GAL. SEPTIC TANK

LEACHING:
SIDES: 2 (25 + 12.83) 2 (.74) = 112 GPD
BOTTOM 25 x 12.83 (.74) = 237 GPD
TOTAL: 472 S.F. 349 GPD

USE (2) 500 GAL. LEACHING CHAMBERS (ACME OR EQUAL) WITH 4' STONE ALL AROUND

_____ _____ _____, MA
APPROVED DATE BOARD OF HEALTH

TITLE 5 SITE PLAN

OF

#8 NORTH UNION FIELD ROAD NORTH TRURO, MA

PREPARED FOR

MARJORIE COREA

DATE: NOVEMBER 29, 2022

off 508-362-4541
fax 508-362-9860
downcape.com @
down cape engineering, inc.
civil engineers
land surveyors
939 Main Street (Rte 6A)
YARMOUTHPORT MA 02675

22-339

DCE #22-339

TOWN OF TRURO

P.O. Box 2030, Truro MA 02666
Tel: (508) 349-7004 Fax: (508) 349-5505

Memorandum

To: Members of the Truro Board of Health
From: Jarrod J. Cabral, Department of Public Works Director
Date: January 17, 2023
Subject: Update for Transfer Station Operations and Mill Pond Culvert Alternatives

Operating Summary: For this fiscal year solid waste and recycling tonnage amounts are on the decline when compared to last year, additionally our metal recycling revenue has declined this year due to a significant drop in the price. The Transfer Station has seen a complete turnover in personnel this year our new Transfer Station Supervisor is Ben Morris, and the Assistant Transfer Station Attendant position was advertised, interviews are scheduled for this Friday January 20th. Our DEP mandated annual third-party inspections for the landfill cap and Transfer Station were completed this year with no discrepancies and our waste ban compliance plan was also updated this year to include the new DEP requirement for commercial food waste, mattresses, and textiles.

For the upcoming fiscal year, I will not be recommending any permit fee increases, and we have no capital improvement requests for the Transfer Station. For the current fiscal year, we have received our new closed top trailer and heavy-duty tractor that were a part of previous capital plans. Additionally, our operational software and license plate recognition cameras have been updated, this update was funded by a competitive DEP grant.

Regulatory Recommendation: As an alternative to raising annual permit fees to create revenue the below regulatory changes may result in a revenue increase of approximately $8000.00 in permit fees, and $3000.00 in DEP grant funding. The revenue, and grant funding estimates are based on the past sales of the six-month permit.

- Page 18, Paragraph 4, Types of permits - Six Month Permits - shall be valid for a period of six months from the date of issue and shall be available to (1) owners and/or (2) Occupants, provided that the occupant is authorized to occupy the premises for a period of two to six months. Swap Shop permit - shall be valid for a period of one year from date of
  purchase and shall be available to Owners and/or Occupants and taxpayers.
- Page 19, Paragraph 5, #8 Delete - Swap shop permits are limited to 2 per household. Owners and Occupants must show proof of trash hauling service or equivalent. Disposal of refuse is not permitted with a Swap Shop only permit.
- Page 19, paragraph 7, Fees - Delete six month permit $55.00 and swap shop permit $25.00
- Page 22, Article 7 Fee Schedule – Delete swap shop only permit $10.00 and six month permit $55.00

Mill Pond Culvert Alternatives: DPW recommendation, & discussion – Supporting documents are attached from the Woods From the Woods Hole Group and Fuss & Oneill.

Sincerely,
Jarrod J. Cabral
Director
Department of Public Works
Truro Ma 02666

TOWN OF TRURO

HEALTH & CONSERVATION DEPARTMENT

Memo to: Truro Board of Health
From: Emily Beebe, Truro Health & Conservation Agent
Date: January 12, 2023
Re: Proposed changes to BoH regulations regarding the Transfer Station

Proposed amendments to the existing regulations are shown in Red below.

SECTION V: TRANSFER STATION RULES AND REGULATIONS

Article 2 Transfer Station Permits

1) Use of Transfer Station

No person shall enter or dispose of any materials at the Transfer Station unless they are the holder of a valid permit issued in accordance with this Regulation.

License Plate Recognition Software is now being used to monitor use of use of the Transfer Station. Physical stickers will no longer be distributed. Instead, cameras have been installed to read each license plate as vehicles enter the facility. The cameras will take a picture of each license plate and software will compare the plate numbers in the pictures to a listing of authorized users.

2) Eligibility

The following individuals shall be eligible for a Transfer Station Permit:

1. Owners of residential property located in the Town of Truro, as that term is defined herein;
2. Occupants of residential properties located in the Town of Truro, as that term is defined herein;
3. Provided however, that transfer station permits shall only be available for residential addresses with habitable dwelling units that are occupied for at least a portion of the year.

3) Definitions

Owner – for purposes of this Regulation, the term Owner shall refer to the individual listed on the deed or other instrument of ownership on record with the Barnstable County Registry of Deeds for residential properties located in the Town of Truro. If the property is held in

trust, only the trustee may be considered an Owner for purposes of this Regulation. Beneficiaries shall not be considered Owners for purposes of this Regulation.

Occupant – for purposes of this Regulation, the term Occupant shall refer to any individual residing at a residential address in the Town of Truro for any period consisting of two or more consecutive nights, with a lease or the written permission of the Owner or by virtue of being the Owner's spouse, domestic partner or dependent over the age of eighteen years old.

4) Types of Permits and Eligibility

Annual Permits – shall be valid for a period of one year from date of purchase and shall be available to (1) Owners and/or (2) Occupants, provided that the Occupant is authorized to occupy the premises for a period of at least twelve months out of the year.

Six Month Permits - shall be valid for a period of six months from the date of issue and shall be available to (1) Owners and/or (2) Occupants, provided that the Occupant is authorized the occupy the premises for a period of two to six consecutive months.

Monthly Permits – shall be valid for a period of thirty days from the date of issue and shall be available to (1) Owners and/or (2) Occupants, provided that the Occupant is authorized to occupy the premises for a period of least thirty consecutive days.

Weekly Permits - shall be valid for a period of seven days from the date of issue and shall be available to (1) Owners and/or (2) Occupants, provided that the Occupant is authorized to occupy the premises for a period of up to twenty-nine consecutive days.

Swap Shop Permit – shall be valid for a period of one year from date of purchase and shall be available to Owners and/or Occupants and taxpayers.

5) Limitations

1. The number of permits that may be issued and active for a particular household or household held in a trust at any time shall be limited to three annual and one weekly or monthly at a time.

2. Permits shall only be issued upon presentation of proof of eligibility and payment of the applicable fee.

3. Annual permits shall only be issued to Owners and to Occupants whose vehicle registration shows the address for which the permit is issued; or the name on the vehicle registration corresponds with the Truro address as noted on the deed or lease.

4. Only the vehicles associated with the permit shall be allowed to enter the Transfer Station. If a permit holder will be using an alternative vehicle for any portion of a permit period, the permit may be transferred to the alternative vehicle, provided appropriate documentation (such as a copy of a lease) is provided.

5. Permits may not be transferred to any other person or entity. If the permit holder ceases to qualify, the permit will be revoked.

6. Any permit may be revoked. The Owner or Occupant may appeal to the BOH for any violation of the Transfer Station Rules and Regulations or any other provision of law relative to the use of the Transfer Station.

7. All waste brought to the Transfer Station shall originate within the Town of Truro and shall be related solely to the use of the property for which the permit is issued. Evidence of dumping any waste from other municipalities shall be a violation of these regulations, and is a ticketing offense under the non-criminal violation provisions stated in Section1, article 3.2.

~~8. Swap shop permits are limited to 2 per household. Owners and Occupants must show proof of trash hauling service or equivalent. Disposal of refuse is not permitted with a Swap Shop only permit.~~

6) Required Documentation

1. If a property owner, ownership will be confirmed through the records of the Board of Assessors.
2. If an Occupant, an original written lease or other form of written authorization with Owner's signature shall be presented with the application (designation form will be provided).
3. Vehicle Registration for each vehicle that will be used with the permit. If the vehicle is not registered to the applicant, sufficient proof of the applicant's authorization to use the vehicle shall be presented.
4. Driver's License.

7) Fees

1. Annual Permit	$100.00
~~2. Six Month Permit~~	~~$55.00~~
3. Monthly Permit	$50.00
4. Weekly Permit	$25.00
~~5. Recycle/Swap Shop Permit~~	~~$10.00~~

Article 7 Fee Schedule

Last Amended: 8-7-18, 12-4-18; 1-7-19; 12-17-19

1. REAL ESTATE OWNERS/YEAR-ROUND RESIDENTS
   a. Transfer Station Annual Permit..... $100.00
   ~~Swap Shop Only Permit (limited to 2 per household) ..... $10.00~~
   Second Annual Permit..... $25.00
   Third Annual Permit..... $25.00
   b. ~~Six Month Permit..... $55.00~~

2. REFUSE HAULER USERS
   a. Commercial Refuse Annual Permit (DPW).....$125.00 per vehicle
   b. Truro Refuse Haulers Permit (BoH).....$50.00
   c. Commercial Refuse Disposal Fee..... $160/ton for household trash
   d. Commercial Refuse Disposal Fee..... $130/ton for recyclables

3. SEASONAL PERMITS
   a. Monthly..... .... $50.00
   b. Weekly..... $25.00

4. PRICES FOR ITEMS
   a. Fuel oil tanks (see Fire Chief; Must be purged and cleaned) .....$25.00 per item
   b. "White Goods" and other large metal objects..... $25.00 per item
   c. Gasoline tanks (see Fire Chief-Must be purged and cleaned) ..... $ 10.00 per item
   d. Automobile batteries..... $4.00 per item
   e. 55-gallon drums (cleaned) ..... $15.00 per item
   f. Television and computer monitors..... .....$20.00 per item
   g. Water Tanks..... $5.00 per item
   h Propane Tanks:
      1.) 1 lb – FREE
      2.) Any other size: $15.00
   i Tires..... $6.00 per item
   j. Residential Toilets.....$20.00 per item
   k. Soft furniture, box springs and mattresses..... $45.00 per item
   l. Composters.....$15.00 per item
   m. Recycling Containers.....$6.00 per item
   n. Food Scrap Bucket..... $6.00 per item

5. There is no charge for placement of the following items, at designated areas:
   a. All rechargeable batteries
   b. All types of fluorescent lamps/bulbs
   c. All types of computer parts
   d. All types of motor oil & filters

6. If scale is out of service
   - Solid Waste- compacted..... .... $36.00 /cubic yard
   - Solid Waste-loose, or not compacted..... .... $15.00 /cubic yard
   - Recyclables..... $20.00/cubic yard

Mill Pond Salt Marsh Restoration Alternatives Assessment Technical Memorandum

Town of Truro
Truro, MA

June 2022

FUSS & O'NEILL

317 Iron Horse Way, Suite 204
Providence, RI 02908

Project No. 20181290.A10

FUSS & O'NEILL

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Executive Summary

Currently, the Mill Pond Road culvert restricts tidal flow into Mill Pond from Pamet Harbor and, ultimately, Cape Cod Bay. The purpose of this project is to replace the damaged and undersized culvert at the Mill Pond Road dike with a larger structure or alternative breach design.

Structural, geotechnical analyses, and this technical memorandum were developed by Fuss & O'Neill, Inc. (F&O) in conjunction hydrologic/hydraulic analyses performed by Woods Hole Group (WHG). These analyses were completed to assess conditions and support development of 30% conceptual design drawings for the proposed alternatives to replace the of the existing 36-inch corrugated polyethylene pipe culvert on Mill Pond Road. A total of four alternatives were considered in the development of this report including two larger open bottom precast culverts and two embankment breach formations.

To assess the severity of the restriction and the potential for ecological restoration, the anticipated effects of replacing the undersized culvert with a larger culvert structure or open channel entailing abandonment of the road were evaluated. Woods Hole Group, Inc. (WHG) assessed the current and proposed alternative culvert and breach scenarios and provided recommendations for channel bed scour [protection measures for respective alternatives.

- Culvert Alternative No. 1: Single 8'-0"W x 8'-6"H Three-Sided Precast Concrete Box Culvert
- Culvert Alternative No. 2: Single 10'-0"W x 8'-6"H Three-Sided Precast Concrete Box Culvert
- Breach Alternative No. 1: 15' Bottom Width with Uniform Channel Banks
- Breach Alternative No. 2: 10' Bottom Width with Adjacent 15' Elevated Benches

An assessment of the above alternatives was completed, entailing consideration of construction costs, operation and maintenance costs and consideration of other evaluation criteria. Upon completing this assessment, it was determined that a breach channel with a 65-foot top width is the preferred alternative for subsequent design and implementation, subject to review and discussion with the Truro Selectboard and receipt of public input from ongoing outreach efforts

1 Project Description and Purpose

1.1 General Site Description and Project Purpose

The Project Site (Site) is located on Mill Pond Road (MPR) where the roadway crosses over a tidal creek referred to as the Mill Pond Channel stemming from Pamet Harbor to Mill Pond in Truro, Massachusetts. The Mill Pond Channel conjoins with the Pamet River and subsequently forms Pamet Harbor.

The earthen causeway supporting Mill Pond Road (MPR) effectively functions as a dike restricting tidal flows to, and drainage flows from, the Mill Pond impoundment. A 36-inch corrugated polyethylene pipe (CPP) conveys drainage from Mill Pond to the Pamet River (Figure 1).

Mill Pond has an extensive usage history dating back to the Revolutionary War Period. During the mid-19th century, Truro and other Cape Cod towns enjoyed economic success as major producers of salt from its shoreline waters. Mill Pond was regularly used as one of the largest salt works in New England. In 1869, a railroad bed was constructed across Pamet Harbor, which restricted Tidal Flows to Mill Pond, converting the impoundment to a freshwater marsh.

Figure 1 — Mill Pond Road Culvert Location

The freshwater condition remained until large storm events in 1978 and 1991 completely breached the former railroad embankment. The existing 36-inch CPP pipe was installed after the 1991 storm as a temporary measure, with the intent to subsequently install a larger timber bridge as a permanent structure. The bridge was never constructed and the 36-inch CPP remains today.

The roadway embankment covering over the culvert is subject to wave and roadway runoff erosion, resulting in a narrowing of the roadway shoulders over the culvert, and requiring regular repair and replenishment of stone armor scour protection.

The purpose of this project is to replace the undersized culvert that tidally restricts Mill Pond with a larger structure or channel breach alternative that will allow increased tidal flushing to restore degraded salt march resources, provide water quality improvements, and improve drainage runoff flows from the impounded system under both normal and storm flow conditions.

Woods Hole Group (WHG) is currently completing refined hydraulic modeling of alternative culvert sizes and configurations, in conjunction and collaboration with the structural and civil layout assessments described in this technical memorandum. The results of WHG's analyses and recommendations are contained in a separate technical memorandum to be provided to the Town of Truro in support of this project.

1.2 Existing Conditions

Conditions observed at the project site in May and June 2021 are described in the following sections. An existing conditions survey with current tidal elevations is provided as Attachment A.

1.2.1 Culvert and Downstream Channel/ Riverbank

The existing 36-inch diameter CPP below MPR has a total length of approximately 54 feet and is sloped from east to west at approximately 0.7 percent, having invert elevations of -2.03 and -1.6 (NAVD88) at its downstream (west) and upstream (east) ends, respectively. The downstream end of the culvert emerges from the causeway into a stone armored channel that discharges to the downgradient connecting to Pamet River.

Figure 2 — Downstream Culvert Outlet and Stone Armor Slope Protection (Facing North)

The areas surrounding the Mill Pond Channel are dominated by tidal conditions and supports a saltwater environment exhibited by the channel being surrounding by salt marsh vegetation and marsh flats

farther downstream. The downstream channel is bounded by the Pamet Harbor Yacht Club to the north and Mill Pond Road/Post Drive to the south.

Approximately 1,600 feet downstream of the CPP, a breached former railroad embankment conveys tidal flow from Mill Pond to Pamet Harbor. The former railroad embankment appears to consist of sand with former railroad abutments of cut stone exposed in places at the breach..

The downstream face of the embankment is currently in poor condition as exhibited by displaced slope protection and debris build up around the culvert discharge point. The Town of Truro completes maintenance on the embankment annually to restore displaced riprap and repair areas of erosion. In addition, a scour hole is positioned at the discharge area at the beginning of the Mill Pond Channel.

Figure 3 — Upstream Culvert Outlet, Scour hole and Shoaled Sediment (facing east)

1.2.2 Upstream Channel and Impundment

The Mill Pond tidal impoundment upstream of the culvert receives water from upland areas via groundwater and overland runoff. The impoundment is bounded by salt marsh and other intertidal habitat around its perimeter, with forested residential properties bording the wetlands to the south, east and north, with a portion of the impoundment northern bank formed by the embankment slope supporting Depot Road.

Figure 4 — Downstream Tidal Channel and Abutting Salt Marsh (facing west)

The upstream end of the CPP projects from the earthen causeway supporting MPR, which is partially covered by stone armor protection over and adjacent to the culvert. Indications of a tidal restriction near the culvert's end include a scour hole with an intertidal island formed by shoaled

Figure 5 — Upstream Culvert Outlet and Stone Armor Slope Protection (facing south)

sediment, a significant tidal lag and muting, poor drainage during inland precipitation events, and bank erosion adjacent to the culvert.

1.2.3 Roadway Approaches

The existing paved surface of MPR consists of two travel lanes (one lane in each direction) with a total width of approximately 18 feet. Metal beam guardrails are located on both sides of the roadway at its crossing over the culvert, with approximately 12-inches of clearance from the guardrail face to the edge of pavement (little to no shoulder).

Embankment slopes behind the guardrails exhibit signs of erosion and steepening, providing inadequate lateral support to the guardrail system, as indicated by leaning posts supporting the horizontal rail on the roadway's southbound (western) travel lane. Concrete posts are positioned beyond the ends of the metal beam guardrails in both directions at an approximate 8 foot spacing.

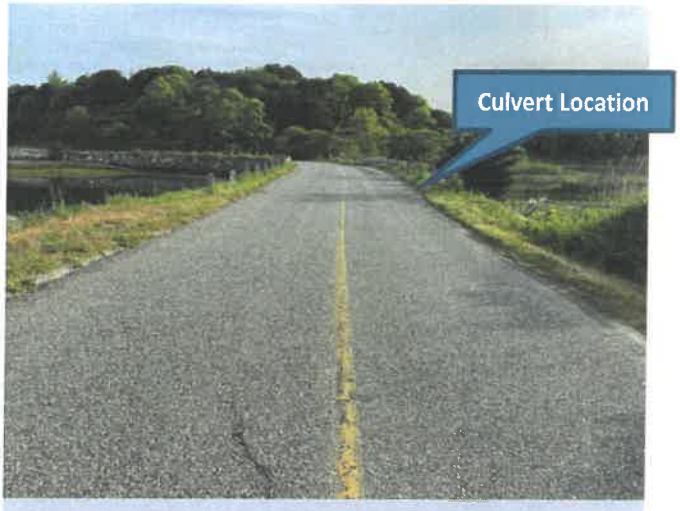


Figure 6 — Mill Pond Roadway Approach to Culvert (facing north)

Survey measurements along the roadway's centerline profile on both sides of the culvert indicate low points approximately 80 feet north and 115 feet south of the culvert (0.1 feet and 0.65 feet lower, respectively, than the roadway elevation at the culvert). The roadway is pitched to the upstream (east) slope in proximity to the culvert, with a small section south of the culvert nearly flat.

1.2.4 Roadway Stormwater Drainage

Stormwater runoff north of the culvert generally flows along the roadway's curb at the edge of pavement, with a leaching catch basin on the southbound (west) lane approximately 420 feet north of the culvert providing partial drainage. Runoff continuing past this drainage structure generally is generally conveyed as sheet flow to the shoulder and adjacent land along the northbound (east) lane, with the majority of runoff discharging from the road at the low point immediately north of the culvert and adjacent to a secondary residential driveway and sandy pull-out area.

Runoff arriving at the culvert from the north continues to the low point south of the culvert, where it generally is conveyed as sheet flow to Mill Pond as along the northbound shoulder and slope. A leaching catch basin is located on the northbound shoulder approximately 160 feet south of the culvert.

1.2.5 Flood Zones

Federal Emergency Management Agency (FEMA) Flood Map No. 25001C0227J for Barnstable County (with an effective date of July 16, 2014) depicts the project site as being located within a 'Zone AE' special flood hazard area with a 1% annual chance base flood elevation of 12 feet (NAVD88). The downstream tidal channel west of MPR is designated as a 'Zone AE' special flood hazard area with a 1% annual chance base flood elevation of El 13 feet (NAVD88). FEMA Flood Zone boundaries are depicted on the Existing Conditions Plan provided as Attachment A.

1.2.6 Contaminated/Hazardous Materials

There are no known or expected hazardous materials or contaminants located within the roadway and in off-roadway areas within the Project Site that would need to be managed during construction associated with the replacement of the existing culvert or excavation of an open channel alternative. Supplemental investigations of the environmental quality of soils comprising the causeway embankment are recommended in the subsequent project phase to confirm the above understanding.

1.3 Scope of Report

The primary scope of this report is to present findings of preliminary geotechnical and structural analyses completed to date and provide conceptual layouts for replacement culvert and open channel alternatives following removal of the Mill Pond Road culvert to improve tidal flows to Mill Pond and restore deteriorated salt marsh areas.

2 Geotechnical Investigation and Design Evaluation

The following sections summarize findings from a geotechnical investigation and preliminary design analysis completed in support of the replacement of the existing culvert. The contents of this section are subject to the limitations provided as Attachment B.

2.1 Program Objective

The objectives of the subsurface investigation was to assess subsurface conditions at the Mill Pond Road culvert (Site). To achieve these objectives, Fuss & O'Neill completed the following field investigation:

- Conduct two (2) geotechnical boreholes (B-1 and B-2) at the Site and collect soil samples
- Visually classify soil samples
- Complete three (3) gradation analyses on selected representative soil samples

Prior to conducting this investigation, the Natural Resources Conservation Service (NRCS) soil report for the Site, provided as Attachment C, was reviewed. The results of the subsurface investigation and laboratory testing, and preliminary design assessments, are presented below.

2.2 Subsurface Exploration Program

The subsurface exploration program consisted of two (2) boreholes (B-1 and B-2) completed by Soil X, Corp of Leominster, Massachusetts under subcontract to Fuss & O'Neill, Inc. Boreholes were completed on June 1 and 2, 2021 utilizing a truck-mounted drill rig. Hollow-stem augers were used to set the casing at each borehole. Boreholes were advanced using 4-inch inner-diameter flush wall casing and tricone roller bit. The approximate locations of the borings are depicted in Figure 7. All borings were observed and logged by a Fuss & O'Neill engineer. Boring logs are provided as Attachment D.

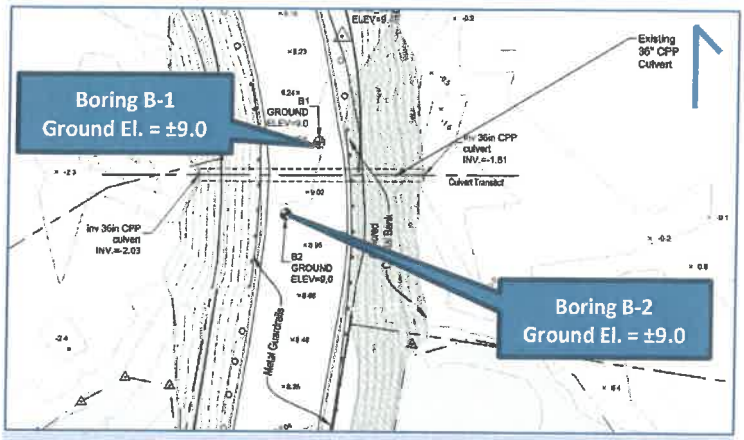


Figure 7 — Subsurface Boring Locations

Borings were advanced to depths ranging from 51 feet to 80 feet below the existing ground surface. Split spoon soil samples were obtained continuously to about 21 feet and then at intervals of 5 feet thereafter using the Standard Penetration Test (SPT) per ASTM D-1586 at each borehole location. The SPT consists of driving a 2-inch outside-diameter split spoon sampler 24 inches with a 140-pound hammer free-falling 30 inches. The number of blows required to drive the sampler from 6 to 18 inches is the Standard Penetration Resistance, also known as the SPT N-value, which is a relative indicator of the *in-situ* soil relative density or consistency. Boreholes were backfilled with tamped soil cuttings upon completion covered with cold patch asphalt prior to leaving the site.

During explorations, subsurface soils were visually classified utilizing the Burmister Classification System. This system describes soil composition based upon the percentage of soil particle size present in the sample with the major soil particle size listed first following other soil components described as "and" (indicating 35-50% by weight), "some" (indicating 20-35% by weight), "little" (indicating 10-20% by weight), or "trace" (indicating 0-10% by weight). Descriptions of each soil strata encountered during the investigations are provided in the Subsurface Profile section below.

Borehole B-1 was terminated without refusal at a depth of approximately 80 feet below the ground surface. The casing was driven to a depth of 74 feet below the ground surface and the split spoon sampler was advanced to the termination depth. Borehole B-2 was terminated without refusal at a depth of approximately 51 feet below the ground surface. The casing was driven to a depth of 49 feet below the ground surface and the split spoon sampler was advanced to the termination depth.

2.3 Subsurface Profile

Generalized subsurface conditions at the Site are described below, based on the results of the explorations and observations at the time of drilling.

- **General Description:** Brown sandy fill over brown to reddish brown native sand.
- **Fill:** Very loose to medium dense, brown, fine to medium sand with varying amounts of fine gravel and trace amounts of silt. One sample within the fill material contained trace amounts of woody fibrous material. Approximately seven (7) feet of sandy fill material was encountered in borings B-1 and B-2.
- **Native Sand:** Loose to medium dense, brown to reddish brown, fine to coarse sand with varying amounts of fine to coarse gravel and trace amounts of silt. At the transition point between the fill material and the native sand two samples had a main constituent of fine gravel with some fine to coarse sand and trace silt. The native sand layer was encountered beneath the fill in both borings and extended to the termination of each boring.

2.4 Laboratory Testing

Laboratory testing consisted of three (3) grain size analyses (per ASTM D6913) performed by Thielsch Engineering of Cranston, Rhode Island. Testing was performed to confirm visual classification of soils in the field. The results of the sieve analyses are included as Attachment E and are summarized below in Table 1.

Table 1
Summary of Laboratory Test Results

Sample No.	Identification Test		
	Sieve Analysis (ASTM D6913)		
	% Gravel	% Sand	% Silt
B-1 / S-2	0.0	97.7	2.3
B-2 / S-5	5.9	93.1	1.0
B-2 / S-12	6.8	92.0	1.2

2.5 Groundwater Conditions

Surveyed ground surface elevations at borings B-1 and B-2 are reported by Woods Hole Group at EL. 9.03 and 8.97 (NAVD88), respectively. Due to the tidal influence present at Mill Pond and the Pamet Harbor, groundwater elevations may fluctuate due to the tidal cycle, in additional to seasonally and due to storm- or drought-related events.

Groundwater was observed at the time of the subsurface investigation in each boring at depth of 7 feet below the ground surface. Since the borings were advanced utilizing cased borehole techniques involving water being poured into the boreholes during the driving process, natural groundwater levels are expected to vary from the measured values. Groundwater observation wells were not installed at the site.

A summary of groundwater elevations measured within the boreholes is provided in Table 2.

Table 2
Summary of Boring Groundwater Elevations

Boring No.	Date	Groundwater	
		Depth Below Ground (ft)	Approx. Elev. (ft, NAVD88)
1	6/1/2021	7	2.03
2	6/2/2021	7	1.97

2.6 Geotechnical Design Evaluations and Recommendations

Geotechnical design evaluations and recommendations presented below were developed by RMA GeoEnvironmental (RMA) under subcontract to Fuss & O'Neill. RMA was provided the geotechnical data report developed as part of the initial subsurface investigation as well as preliminary conceptual drawings for the culvert alternatives under consideration, in support of their preliminary design evaluations and foundation recommendations.

2.6.1 Seismic Design Parameters and Liquefaction Potential

Lower zones within the subsurface profile appear to have the potential for liquefaction under potential future seismic events and should be evaluated further under future design analyses. Depending on the results of those future analyses, alternative ground improvement methods should be considered and identified for potential implementation during the project's construction phase, as described in Section 2.6.2 below.

2.6.2 Recommended Foundation

A preliminary bearing capacity analysis was completed by RMA utilizing the subsurface investigation information and conceptual design drawings provided by Fuss & O'Neill. The analysis was completed using three independent bearing capacity equations (Bowles, Terzaghi, and Vesic) in accordance with established engineer practice and accepted principles of soil mechanics. These methodologies rely on weighted average of the N-values obtained during the subsurface investigation for footing influence depths that are corrected for field conditions, overburden, and groundwater table condition along with strength parameters (unit weight, friction angle, etc.) correlated from boring information.

Based on the results of the analysis, allowing for one-inch of total long-term settlement, the wingwalls and strip footings depicted on the conceptual drawings will provide adequate support for the proposed culvert structure, provided that the footings bear on a minimum of 12 inches of compacted crushed

stone wrapped in non-woven geotextile fabric, as shown. This evaluation assumes a bearing pressure of 3,500 pounds per square foot (psf) for the culvert structures under consideration; as shown on the conceptual drawings, recommended footings should be designed with a width of 4 feet and be embedded below the scour depth determined from WHG's scour analyses.

Due to the loose lower zones observed within the boring's soil profile, a ground improvement method such as rammed aggregate piers should be considered to reduce the potential for settlement under a potential future seismic event. The scope of future investigations should consider the identified preferred alternative from the current evaluation; ground improvement methods would only be warranted for an alternative to construct a replacement culvert, and would not be required under either breach scenario.

Rammed aggregate piers (RAPs) consists of vertical columns of aggregate installed on a grid within the footprint of the construction. Piers are installed by placing and mechanically tamping lifts of aggregate through a bottom-fed pipe. The pipe is driven to the bottom of the pier depth and subsequently withdrawn and tamped downward during installation of the aggregate, forming bulbs along the length of the pier. Aggregate piers improve conditions at the site by displacing, and thereby, densifying the surrounding soil at each column and transferring loads from the spread footings to the underlying suitable soil.

Spread footings at the wingwalls and along the length of the alternative culvert walls and wingwalls will be constructed over the improved area following implementation of the rammed aggregate piers. As there is no dewatering required and the installation process does not generate any spoils during construction, this soil improvement approach is typically used to reduce the potential for long-term settlement where liquifiable conditions are identified under potential future seismic events.

2.6.3 Embankment Considerations

Within the limits of proposed excavation, sections of the embankment that are disturbed as part of activities to construct the replacement structure will be reconstructed to provide vertical and lateral support for both the new structures and the overlying roadway. This will be achieved by placement of an appropriate structural backfill (e.g., gravel borrow) and ensuring placement of this material under controlled conditions to achieve the required compaction and in-place density stated in the project's technical specifications.

For any construction during freezing weather, soil bearing surfaces in exposed culvert footing excavations should be protected from frost by use of insulated blankets, ground heaters or other acceptable methods. Specifications for protection and placement of materials would be developed under future phases of design entailing a replacement culvert structure, and would not apply for either alternative open channel configuration.

It is understood that potential increases of the embankment's crest (roadway) elevation may be evaluated as potential variants of the culvert alternatives assessment presented in the sections below. Considerations relative to either raising or not raising the embankment crest include the following:

- Not raising the embankment crest will result in more frequent and severe future inundation/overtopping conditions under sea level rise projections outlined by Woods Hole Group's June 2022 Hydraulic Analysis Report. These overtopping events will impact usability of MPR for normal and emergency response uses. In addition, overtopping events will result in increased maintenance and repair of the road and slopes due to scour erosion.
- Raising the embankment crest will reduce, and possibly avoid depending on the magnitude of the increase, the impacts noted above however will require supplemental field investigations and analyses to evaluate horizontal layout and structural considerations in designing a higher embankment configuration that would be structurally adequate to support a public road.
    - Horizontal considerations include potential impacts to adjacent wetland resources by the increased base with of the embankment's cross-section that would be entailed with slopes remaining at their current configuration (i.e., not increasing the proposed slopes, which would increase stability concerns).
        - Such impacts to adjacent wetlands may be prohibitive considering the length of road that would need to be raised (approximately 1,600 feet). In addition, soils adjacent to the existing embankment may not be structurally suitable to support the weight of soils placed as to laterally expand the embankment, and thus would need to be excavated and replaced with suitable soil or augmented by geosynthetics or other ground improvement methods.
    - Structural considerations include potentially incorporating retaining walls along the top and/or bottom of the embankment to provide lateral support for soils placed to increase the embankment crest in order to avoid or minimize the extent of encroachment into adjacent wetlands (that would otherwise result from a widening of the embankment's base, as described above).
        - A number of wall structure types and configurations could be evaluated. Supplemental subsurface investigations would be required to evaluate soil properties along the length of the embankment in support of subsequent design analyses. If unsuitable soil conditions are identified, improvement methods and/or deeper wall configurations would likely be required.

2.7 Geotechnical Construction Considerations

2.7.1 Surface and Groundwater Management

As noted above, water elevations within the boreholes were measured at El. 1.91 – 2.03 feet (NAVD88) during subsurface exploration. These observed elevations are in the vicinity to the Mean High-Water elevation (El. 2.75 feet, NAVD88) immediately upstream of MPR. Water levels are expected to fluctuate moderately with the varying tidal elevations and seasonal conditions during construction.

Based on the proposed culvert invert elevation (El. -1.6, NAVD88) and conceptual culvert/foundation system developed from preliminary foundation design evaluations to date, it is expected that excavations may be required to El. -9.6 or lower, which is approximately 12-feet below observed groundwater levels

within the causeway. Temporary seepage cutoff (e.g., steel sheeting) and groundwater dewatering systems will need to be designed and implemented by the contractor to maintain adequately dewatered conditions for construction of the foundation elements.

As part of these measures, surface water flowing within the channel will need to be maintained throughout the period of construction. It is expected that flow will be maintained through the existing culvert during the period of construction of the proposed culvert or open channel. Upon completion of construction of the replacement culvert, or partial construction of the alternative breach channel, the existing culvert will be abandoned in place or removed and replaced with compacted backfill.

2.7.2 Excavations

It is expected that approximately 19 vertical feet of embankment fill material will need to be excavated below the roadway surface to remove embankment (fill) soil supporting MPR and underlying native soil to allow placement of proposed foundation elements and culvert/wall structures on a suitable subgrade surface.

Temporary excavation slopes will range between a maximum of 1.5H:1V to 2H:1V for culvert alternatives, unless otherwise reinforced or shored, to allow construction equipment to safely reach the deepest/interior work areas. Consideration of the type of equipment expected for construction will affect the configuration of shoring systems and platforms for position of equipment required to construct culvert structures, if selected. It is expected that embankment breach alternatives can be constructed without any temporary shoring systems.

While other cutoff and shoring systems may also provide suitable conditions for mobilization of materials and equipment in support of construction operations, it is expected that steel sheeting would be most cost effective given the limited area and depth of excavation required below expected groundwater elevations, as well as this type of system being most widely used by contractors in the region.

2.7.3 Obstructions

Based on our observations at the site and review of available reports and records, it does not appear that structures or other objects that would obstruct excavation work associated with the alternative culvert structure or channel configurations under consideration. If such structures or objects are encountered and are determined to be abandoned or remnant structures, it is expected that they will be partially or completely removed as required to allow placement of proposed materials and structures in accordance with the developed drawings and specifications.

2.7.4 Protection of Adjacent Structures

Adjacent structures include the paved roadway beyond the proposed work limits depicted on the conceptual alternative drawings and the leaching catch basin to the south of the MPR culvert. It is expected that proposed construction activities will be conducted in a manner avoiding interruption to, or temporary relocation of, this structure. Temporary steel sheeting is expected to be installed if a culvert

alternative is selected, to limit the extent of impacts resulting from excavation to the depths required for construction of the proposed structure.

It is also noted that existing steel guardrails in the immediate vicinity of the culvert will be removed and replaced with steel-backed timber guardrails if either replacement culvert alternative is selected.

2.7.5 Additional Earthwork Considerations

The following controls or methods should be employed during construction of either culvert alternative to ensure that the structures are not compromised by inadequate structural fill or improper construction techniques.

- Fill used as gravel borrow for bridge/footing foundations or for embankment fill should meet the gradation requirements of MassDOT Item No. M1.03.0 Type b and should be free of organic material, construction debris, ice, snow, and other deleterious material. The on-site fill may be selectively reused as bedding and backfill materials adjacent to the culvert structure, subject to inspection and testing to verify gradation requirements are met in other excavation areas. The existing native soils are not suitable for reuse for these applications.
- Crushed Stone may be used for wet subgrades, as a replacement for fill used below foundation level. This material is to be a crusher-run stone quarry product, should meet the gradation requirements of MassDOT Item M2.01.4 (minus ¾-inch crushed stone), and should be wrapped in a geotextile separation fabric.
- Fill placed above footings should be placed in loose lifts not to exceed 12 inches in thickness and should be compacted to 95 percent of maximum dry density as determined by ASTM 1557, Method C.

Excavation, fill placement, and footing construction for cul;vert alternatives should be conducted under dry conditions. Excavation shoring and side slopes, where used, should be in accordance with Occupational Safety and Health Administration (OSHA) standards. This will require that methods be developed and implemented to bypass tidal and storm flows at the site through temporary structures while the replacement structure is being constructed. It will also require the cutoff and drawdown of groundwater within the excavated areas until constructed features are backfilled to a high enough elevation that structures and materials are not potentially compromised by natural high surface water and/or groundwater conditions (e.g., floods, seasonal high tides, storm surges, etc.).

Dewatering within excavated areas would likely be most effectively completed by installing and operating appropriately sized and spaced conventional groundwater dewatering sumps. These sumps should be employed in concert with positive cutoff methods provided by driven cofferdam/shoring sheets in order to maintain water levels sufficiently below the ground surface to allow placement of soil materials and structures under controlled conditions. The contractor will be responsible for design of these provisions, which will subsequently be reviewed for acceptance by the design engineer.

3 Culvert Structure Alternatives Assessment

The following sections summarize the results of assessments of alternative culvert structure configurations at the Project Site.

3.1 Culvert Structure Design Criteria

Alternative culvert structures evaluated would meet applicable requirements of the American Association of State Highway and Transportation Officials (AASHTO) Load Resistance and Factor Design (LRFD) Specifications and MassDOT's Bridge Manual and Highway Specifications. Primary conceptual design parameters are listed below.

Vehicle Loading:	HL-93
Vehicle Speed:	25 MPH
Overhead Clearance:	18" over MHW

There is no current or proposed marine traffic that affects the structure's layout. There is potential that this channel is, or will be, used by recreational paddlers and fish passage. Therefore, the height of the structure was set strictly based on hydraulic modeling recommendations, recreational access and fish passage as outlined by Woods Hole Group.

3.2 Alternative Culvert Structure Configurations

Two precast concrete open bottom culvert configurations were evaluated, both of which would meet the project's restoration objectives by increasing tidal volumes and elevations to/from Mill Pond while also improving drainage from Mill Pond following large storm events (dimensions indicated are hydraulic opening sizes):

- **Culvert Alternative No. 1:** Single 8'-0"W x 8'-6"H Three-Sided Precast Concrete Box Culvert
- **Culvert Alternative No. 2:** Single 10'-0"W x 8'-6"H Three-Sided Precast Concrete Box Culvert

Plan, profile and section views of these alternatives are provided on drawings Culvert Alt-1 and Culvert Alt-2 included in Attachment F. The following general considerations are noted for both culvert alternatives.

- The structure's configuration is compatible (i.e., construction- and cost-effective) with the geotechnical foundation recommendations outlined above.
- The structure's configuration supports placement of sediment within voids of stone armor scour protection to provide a natural channel substrate through the culvert.
- The alternative culvert opening sizes provide improved tidal volumes and ranges to support restoration of salt marsh areas within Mill Pond, and improve post-storm drainage conditions (i.e., allowing impounded water to drain out more quickly vs. existing conditions).

- A replacement culvert would maintain MPR as a local roadway for normal use and emergency response. The elevation of MPR could potentially be increased in the future in response to sea level rise conditions.
- Maintaining the culvert and embankment reduces energy within Mill Pond during coastal storm events, in comparison to breach channel alternatives being considered.

These and other considerations are further evaluated in relation to the two culvert configurations and breach alternatives in Section 6 below.

3.3 Culvert Structure Span and Foundation

The subsurface investigation observed unsuitable (non-structural) soil forming the embankment, with traces of organic material (timber) observed in one of the borings. This fill material would be excavated and removed/replaced with compacted structural backfill adjacent to/over the culvert structures.

As noted above, based on the findings of the subsurface investigation and preliminary geotechnical design analyses, the culverts and wingwalls can be placed on concrete spread footings with the potential need for supplemental ground improvement within the footprint of the footings depending on the results of future design analyses. Both culvert structure alternatives would have a span of approximately 32 feet based on conceptual layout analyses conducted to date. Other relevant design considerations include the following:

- The conceptual wingwall configuration will minimize impacts to adjacent wetlands by reducing the amount of fill that would otherwise be required to provide stable embankment slopes, and by reducing discharge velocities emerging from the culvert structure.
- Stone armor channel and slope protection will be placed along the beyond the limits of the culvert for additional scour protection and to protect embankment slopes during higher energy storm conditions.

Future design evaluations in the project's next phase will further assess scour countermeasures that would be required within and beyond the limits of the culvert and on embankment slopes (i.e., based on wave generation analyses, and stormwater drainage analyses for the roadway).

3.4 Culvert and Tidal Channel Alignment

The conceptual culverts alignments included in Attachment F position the proposed precast concrete culverts immediately south of the existing CPP and channel. Offsetting the proposed culverts would allow tidal and drainage flows to be maintained through the existing CPP during construction of the new culvert, at which point flow would be diverted through the new culvert to allow removal of the existing CPP (or removal/burial of the CPP ends and infilling the remaining central section with flowable fill).

Shifting the culverts south maintains general alignment with the existing tidal channel to Pamet Harbor and would direct flow within Mill Pond toward the shoaled area shown on Figure 5. Future layout analyses may entail adjusting the alignment further to discharge flows into Mill Pond north of the shoaled area, however that may result in a conflict with the existing culvert and/or reduce alignment

with the tidal channel to Pamet Harbor. Future supplemental field investigations of sediment properties on both sides of MPR would also be considered in potential dredging and/or grading sediment to create continuous channels from the culvert's ends to existing channels in Mill Pond and leading to Pamet Harbor.

3.5 Channel and Bank Protection

The channel bottom within the culvert and immediately adjacent to the ends of the culvert (to the limits of the splayed wingwalls) will be stabilized with sediment-filled stone armor as scour protection upstream and downstream of the culverts. The dimensions of the scour aprons beyond ends of the culvert would be evaluated and updated in future design analyses. Embankment slopes immediately adjacent to the culvert openings (to the extent of excavation required for placement of the culver) would be protected by vegetated soil-filled stone armor and toe protection. Based on preliminary scour assessments by Woods Hole Group, it is expected that stone armor would be required to meet Federal Highway Administration (FHWA) Class IV sizing (D_{50} of 14 inches) and be placed in layer with a minimum thickness of 36" over a crushed stone bedding layer underlain by geotextile filter fabric. Embankment slopes would be seeded and covered with a biodegradable erosion control blanket to establish coastal grass vegetation for additional surface stabilization.

As shown on the drawings included in Attachment F, the open-bottom culvert would be configured with sediment-filled stone armor placed to provide a natural channel substrate. A concrete cutoff wall has been included in the conceptual layout drawings to provide additional protection against movement of armor stones within the culvert due to excessive scour velocities, however would be evaluated in future design phases to determine if it is required or other measures could be incorporated to provide improved protection against potential movement (e.g., increasing stone size, or grouting lower ¼ of stones before placing infilled sediment). It is expected that future design evaluations would also consider the cross-sectional configuration of the channel bottom within the culvert to improve channel conditions (e.g., water depths) for aquatic animals and/or paddlecraft passing through the structure.

3.6 Roadway Layout and Drainage

Mill Pond Road's cross-section over the embankment and culvert currently consists of two approximately 9-foot wide travel lanes (no outer stripes) with approximate 12-inch wide grassed shoulders inside the face of metal beam guardrails bordering the embankment over the tidal channel, as shown on Figure 8. The conceptual roadway section depicted on drawings included in Attachment F maintains existing travel lane widths within the limits of excavation required to construct the culvert, which conforms to the Town's requirements for a 'Type B' roadway (defined as a road serving 5-10 residential properties).

Figure 8 — Mill Pond Road Layout (facing south)

Steel-backed timber guardrails are conceptually proposed to replace the existing metal beam guardrails. Standard MassDOT guardrail section requirements including a minimum of 24-inches of compacted soil behind guardrails to provide lateral support for driven posts, as shown on Figure 9. Guardrails are conceptually depicted along both lanes within the limits of excavation associated with the culvert, and would be evaluated in future design phases to adjacent the extent required along both lanes to provide adequate protection to prevent errant vehicles from striking the bridge's wingwalls or entering the steeply sloped banks and open water.

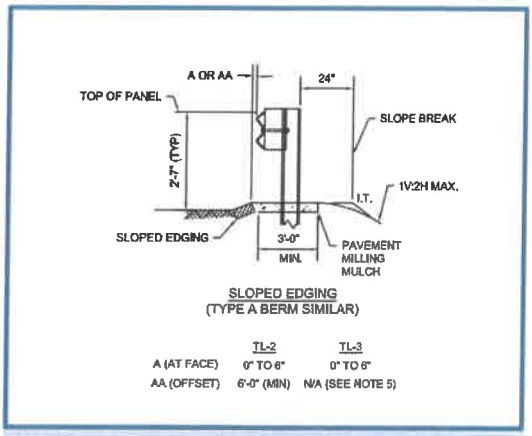


Figure 9 — Typical MassDOT Guardrail Section

The conceptual embankment/roadway section depict the faces of guardrails a minimum offset of 3-feet from the edges of pavement, providing an standard shoulder along both travel lanes and the 24-inch minimum width of level soil being the both guardrails. Future design phases would determine how respective segments of the roadway approaching the culvert and over the culvert would be crowned or pitched uniformly to provide positive drainage from the road to existing or additional drainage structures conveying runoff to adjacent wetlands and open water areas.

3.7 Operation and Maintenance

Operation and maintenance guidelines for respective elements associated with the culvert alternatives are outlined below. Specific and more detailed requirements, including inspection and recordkeeping frequencies, would be developed as part of an Operation and Maintenance Plan in support of future permitting activities.

- Concrete Culvert and Headwall/Wingwall Structures
  - Inspection and maintenance/repair of concrete surfaces for damage and deterioration (e.g., cracks, delamination, exposed reinforcing steel).
- Stone Armor Scour and Slope Protection
  - Inspection and maintenance/repair of stone armor if displaced or damaged from storm events, runoff or anthropogenic factors.
- Vegetative Stabilization
  - Inspection and maintenance to assure that embankment slopes and other areas subject to runoff erosion are stable.

4 Causeway Breach Alternatives Assessment

The following sections summarize the results of conceptual design evaluations of the proposed breach alternatives to remove the existing culvert and create an open channel through the causeway supporting MPR. These alternatives would result in elimination of Mill Pond Road as a pedestrian and vehicle travelway between Depot Road and Post Drive.

4.1 Breach Channel Design Criteria

Breach channel alternatives considered would provide increased tidal and drainage conveyance to/from Mill Pond in comparison to either culvert alternatives. Hydraulic modeling analyses by Woods Hole Group have evaluated upstream water levels and conditions affecting bordering properties and the embankment supporting Depot Road on Mill Pond's northern bank. Sizing of the channel alternatives have been developed to achieve restoration objectives without causing impacts to bordering upland properties.

Channel banks on both sides of alternative breach channels would incorporate stone armor slope protection on lower elevations and bioengineered bank stabilization on upper intertidal portions to protect the adjacent embankment soils from scour, wave and runoff erosion.

As noted above, any breach alternative would result the loss of pedestrian/vehicular traffic between Depot Road and Post Drive. Pavement would be maintained to the residential property south of the intersection with Depot Road through Mill Pond Road to maintain access to that residence. Remaining segments of the embankment would have pavement removed and be restored to a natural (soil or vegetated) surface. Considerations for emergency vehicle access and maneuvering on the resulting cul-de-sac roadway segments would need to be identified (if any) and evaluated to determine if additional layout modifications (e.g., to accommodate the turning radius of an emergency response vehicle) would need to be incorporated in a future design phase.

While it is not anticipated that the channel would be navigated by powered watercraft, it is likely that the channel would provide adequate widths and water depths for small boats to access Mill Pond.

4.2 Alternative Breach Channel Configurations

Two alternative breach configurations were evaluated and are described in the following sections, as depicted on drawings Breach Alt-1 and Breach Alt-2 included in Attachment F

- **Breach Alternative No. 1:** 15' Bottom Width with Uniform Channel Banks
- **Breach Alternative No. 2:** 10' Bottom Width with Adjacent 15' Elevated Benches

The following general considerations are noted for both breach alternatives.

- As noted above, both alternatives would allow increased inundation into Mill Pond during coastal storm events. Potential impacts to the Depot Road embankment and other adjacent properties, and potential protection/mitigation measures, would need to be evaluated in a future design phase.
- Public access accommodations including vehicle parking, pedestrian access and provisions for potential emergency response would need to be evaluated in a future design phase.

- Both breach configurations would significantly improve passage conditions for aquatic life and recreational paddlers.
- Embankment slopes bordering the breach channel would incorporate vegetated stabilization practices to provide wetland habitat bordering the waterway.

4.3 Channel Improvements

Both breach alternatives would improve tidal exchange and drainage from Mill Pond, and improve resiliency of the system to withstand future climate changes (both anticipated increased precipitation and sea level rise), in comparison to both existing conditions and both culvert alternatives.

The channel bed for both alternatives would be stabilized with native channel substrate incorporating natural cobbles sized to remain stable potential future storm events that would be evaluated in a future design phase. Similarly, armor protection for channel banks would be sized baased on future supplemental hydraulic and wave generation analyses by Woods Hole Group.

The increased width of both breach alternatives would provide improved connectivity for aquatic organisms and enhance natural processes including sediment transport and elevated salinity levels and lower low tides supportive of degrading salt marsh resources bordering Mill Pond.

As noted above, the channel opening would increase water levels and wave energy within the Mill Pond impoundment, both of which could potentially affecting the stability of the embankment slope supporting Depot Road. This potential concern would need to be investigated/evaluated in a future design phase.

4.4 Pavement Removal and Embankment Restoration

Figure 10 — Limit of Pavement Removal South of Mill Pond Road / Depot Road Intersection (facing south)

Both breach alternatives involve abandonment of Mill Pond Roadway due to the breach through the causeway, with the asphalt pavement to be removed and conceptually replaced with a gravel walking path bordered by grassed shoulders. As shown in Figure 10, pavement would be removed from the northern segment of Mill Pond approximately 150 feet south of the intersection of Mill Pond Road and Depot Road and continue to a location immediately north of the culvert, as shown in Figure 11. The limit of pavement removal will maintain access to a residential driveway at 40 Mill Pond Road, which is north of the limit of pavement removal shown in Figure 10.

Pavement removal on Mill Pond Road's southern segment would begin approximately 150 feet east of the Post Drive/Mill Pond Road intersection and continue to the southern limit of the conceptual breach channel, as shown in Figures 12 and 13, respectively.

Boulders (or a lockable reflectorized swing gate) would be placed at the ends of pavement removal north and south of the breach channel to prevent vehicular access while still providing access for maintenance and emergency vehicles. Consultation would likely be required to determine access requirements to the secondary informal access to a residential property at 31 Mill Pond Road (shown in the background in Figure 10), which has its primary driveway at 62 Depot Road.

At each of limits of pavement removal, it is anticipated that a crushed stone apron would be constructed, and/or a stormwater biowswale or other infiltration practice constructed, to prevent erosion from precipitation runoff draining from upgradient paved areas.

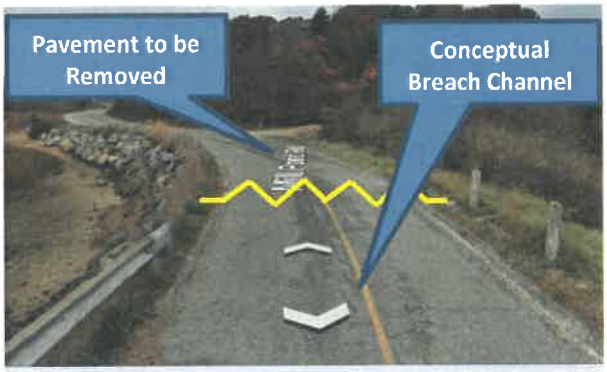


Figure 11— Approximate Limit of Pavement Removal and Channel Breach North of Mill Pond Culvert (facing north)

Figure 12 — Limit of Pavement Removal South of Mill Pond Road / Post Drive Intersection (facing north)

Figure 13 — Approximate Limit of Pavement Removal and Channel Breach South of Mill Pond Culvert (facing south)

4.5 Operation and Maintenance

Operation and maintenance guidelines for respective elements associated with the breach alternatives are outlined below. It is not anticipated that a formal Operation and Maintenance Plan would be required for a breach channel as it is expected to be resilient to current and future environmental conditions at the site.

- Stone Armor and Bioengineered Channel Bank and Embankment Slope Stabilization
  - Inspection and maintenance/repair to assure that channel banks subject to channel, runoff and/or wave erosion remain stable.
- Channel Bed Scour Protection
  - Inspection and maintenance/repair of channel bed if scour erosion undermines, or could potentially undermine, adjacent channel banks.
- Gravel Pathway and Vegetated Shoulders
  - Inspection and maintenance/repair of the gravel pathway and vegetated shoulders for signs of erosion from stormwater runoff from paved areas.

5 Construction Phase Issues Assessment

The following sections outline evaluations completed to address construction phase issues associated with construction of respective culvert and breach alternatives.

5.1 Sequence of Construction

5.1.1 Culvert Alternatives

The anticipated sequence of construction for both culvert alternatives is described below. It is noted that the contractor would be responsible for establishing and implementing its own construction sequence and phasing based on its selected means and methods of construction, which must be developed in compliance with future permit authorizations and performance requirements established in the (future) contract specifications.

Phase 1

1. Establish survey control, traffic controls, and staging areas.
2. Install erosion & sedimentation controls and perform any necessary clearing required to construct modifications and improvements.
3. Remove and dispose the existing pavement on Mill Pond Road within the limits of excavation necessary to construct the new culvert structure.
4. Install "Phase 1" temporary cofferdamming to enable excavation and installation of temporary shoring around the footprint of the proposed culvert structure. The existing 36-inch CPP culvert would remain in place to maintain tidal/drainage flows between Mill Pond and Pamet

Harbor until the new culvert is in place.

5. Dewater area as required within limits of the "Phase 1" cofferdam. Discharge from dewatering pumps shall be discharged into a dewatering basin prior to being released to the environment. Contractor's proposed methods shall be described in a water control plan submittal, submitted for engineer's review and acceptance.
6. Construct culvert, wingwalls and associated structures. Construct proposed in-river improvements including channel realignment, channel scour and slope protection practices and establish vegetation in disturbed areas.

Phase 2

1. Remove the "Phase 1" cofferdam around the new culvert to allow tidal/drainage flows through this structure.
2. Install "Phase 2" cofferdamming (if/as required) around the existing culvert to allow is removal (or abandonment in place by placement of flowable fill into the culvert and removal/burial of exposed ends).
3. Construct remaining embankment slope and toe protection.
4. Construct roadway and stormwater improvements including, curbing/berm, guardrails, the pavement surface course and roadway striping.
5. Place seed and install plantings along the roadway shoulders and restore all disturbed areas.
6. Remove perimeter erosion and sedimentation controls upon establishing stable vegetation.

5.1.2 Breach Alternatives

The anticipated sequence of construction activities for both breach alternatives is described below. As for the culvert alternatives, the contractor would be responsible for establishing and implementing its own construction sequence and phasing in compliance with permitting and contract specification requirements.

1. Establish survey control, traffic controls, and staging areas.
2. Install erosion & sedimentation controls and perform any necessary clearing that will be required to construct modifications and improvements.
3. Remove and dispose the existing pavement on Mill Pond Road from the upper limits of pavement removal to the limit of the excavation necessary to complete the desired breach formation.
4. Install "Phase 1" temporary cofferdamming around the portion of the breach section that does not obstruct flow through the existing culvert.
5. Complete channel bed grading, grade breach side slopes and construct stone armor bank protection and bioengineered bank stabilization in the "Phase 1" work area.
6. Remove temporary "Phase 1" cofferdamming and divert flows through the partially-constructed breach channel.
7. Install temporary "Phase 2" cofferdamming around the existing culvert and proposed breach

channel and banks.

8. Remove the existing culvert and embankment soils.
9. Complete channel bed grading, grade breach side slopes and construct stone armor bank protection and bioengineered bank stabilization in the "Phase 2" work area.
10. Remove temporary "Phase 2" cofferdamming and restore tidal flow through the complete breach channel.
11. Construct gravel pathway and install boulders/gates at pavement limits north and south of the breach channel.
12. Place seed and install plantings within the "Phase 2" work area, along the pathway shoulders and restore all disturbed areas.
13. Remove perimeter erosion and sedimentation controls upon establishing stable vegetation.

5.2 Temporary Traffic Detour and Management

Traffic would be detoured during construction of both culvert and breach alternatives as closure of MPR would be required. The closure would enable continued access to residential properties near Depot Road and at Post Drive. It is estimated the construction associated with both culvert alternatives would require approximately 4-5 months to complete.

The temporary detour, which would entail use of Depot Road and Old County Road, would need to be reviewed and approved by Truro Public Safety officials prior to construction.

5.3 Temporary Cofferdamming and Control of Water

Surface water control will be required for both culvert and breach channel alternatives, and groundwater control will be required for construction of both culvert alternatives due to the need for deeper excavations associated with construction of the culvert foundations and channel bed scour countermeasures. Surface water bypass flow diversion measures will be required to maintain tidal and drainage flows to/from Mill Pond during the entire period of construction for all alternatives.

While specific practices employed to bypass surface water around active construction areas will be determined by the contractor based upon its preferred means/methods and construction sequence, as noted above all measures would be required to comply with permit and contract specification performance requirements, and be reviewed and accepted by the engineer prior to implementation. Primary elements for control of water at the site for respective alternatives are outlined below.

- The existing culvert will be used to maintain tidal/drainage flows to/from Mill Pond during initial phases of construction.

- Large bulk sandbag cofferdams or steel sheeting will likely be used to temporarily prevent surface water and tidal flows from entering active work areas upstream and downstream of MPR.
- It is anticipated that a steel sheeting cofferdam would be utilized for culvert alternatives to provide groundwater cutoff for the lowered excavations association with construction of the culvert foundation. Groundwater dewatering would be employed to dewater the work area and allow culvert construction to occur in a controlled environment. Specific measures employed for groundwater dewatering will be determined by the contractor based on its proposed means and methods, where such practices would need to comply with permitting and contract specification performance requirements, respectively.

5.4 Preliminary Opinion of Probable Construction Cost

The budgetary opinion of construction cost associated with respective culvert and breach channel alternatives are summarized in Table 3 below. All conceptual alternative costs include a 20 percent contingency and are typically expected to be accurate within -30% to +50% (depending on market conditions and other factors at the time of construction), resulting in a stated construction cost range.

These costs do not include future costs for supplemental field investigations, engineering analyses, design development, permitting, and construction oversight. It should also be noted that the costs only include fees associated with the construction cost and do not include long-term operation and maintenance costs. Detailed opinions of cost are provided in Attachment G, based on assessments of material quantities corresponding to conceptual drawings included in Attachment F.

Table 3
Order-of-Magnitude Opinions of Probable Construction Cost for Conceptual Alternatives

Conceptual Alternative	Order of Magnitude Opinion of Cost	-30%	+50%
Culvert Alternative No. 1	$1.56M	$1.17M	$2.20M
Culvert Alternative No. 2	$1.71M	$1.49M	$2.42M
Breach Alternative No. 1	$795K	$596K	$1.13M
Breach Alternative No. 2	$1.05M	$785K	$1.48M

6 Salt Marsh Restoration Alternatives Assessment

An assessment of each alternative was performed under consideration of identified criteria including site compatibility/natural resources criteria, construction phase criteria and long-term operation and maintenance criteria.

The following sections provide brief descriptions of respective criteria considered for this assessment, followed by a review of assessment matrices developed to evaluate each alternative. A preliminary recommendation for the preferred alternative, subject to receipt and incorporation of input from project partners, property owners and other project stakeholders, is provided at the end of this section.

6.1 Evaluation Criteria

Respective criteria identified to assess relative advantages/disadvantages for each alternative are described in following sections.

6.1.1 Site Compatibility/Natural Resources Criteria

The following site compatibility and natural resources criteria were considered in assessing each alternative.

Environmental Impacts

- Minimize environmental impacts, requirements, regulatory barriers
- Minimize number of permit applications under consideration of the following programs:
    - Massachusetts Environmental Protection Agency Environmental Notification Form
    - Notice of Intent
    - MADEP Chapter 91 License
    - Army Corps of Engineers Section 404 Permit
    - MADEP Section 401 Water Quality Certification
    - MA Coastal Zone Management

Wave Action and Vulnerability

- Minimize the potential for wave action during coastal storm events to destabilize the slope supporting Depot Road and private properties bordering Mill Pond
- Minimize vulnerability of bordering private properties to increased tides

Ecological Restoration

- Maximize aquatic passage and ecological restoration
- Maximize potential sediment transport
- Increase tidal flushing and enhancement of bordering salt marsh areas
- Enhance shellfish habitat
- Improve water quality

Emergency Response

- Minimize impacts to emergency response vehicles for private properties on Mill Pond Road and public recreation within Mill Pond

Recreation

- Maximize recreational passage for paddlecraft and motorcraft users
- Maximize safety for recreational boating
- Maximize passive recreation opportunities (e.g., birdwatching, etc.)

6.1.2 Construction Phase Criteria

The following construction phase criteria were considered in assessing each alternative.

Minimize Construction Cost

- Minimize the overall cost for construction

Minimize Construction Duration

- Minimize the duration of construction

6.1.3 Long-Term Operation and Maintenance

The following long-term operations criteria were considered in assessing each alternative.

Minimize Operation/ Maintenance Costs

- Minimize repair or future replacement costs.
- Minimize the overall cost for future operation and maintenance

Maximize Resiliency to Climate Change

- Maximize adaptability to climate change and sea level rise

6.2 Alternatives Assessment and Recommended Alternative

Comparative criteria evaluation matrices have been developed addressing considerations, advantages and disadvantages for each alternative in relation to respective criterion, based on our project's team's assessments to date. Respective matrices reflect weighted and unweighted criteria based on initial evaluations by the engineering assessment, with weighted criteria subject to revision based upon input

received from the Town and project partners.

Within each matrix, brief descriptions of assessment results and relative numeric scores are provided for each alternative/criterion. Scores as based on a scale of 1 to 5, with 5 being most advantageous and 1 being most disadvantageous, with respect to other alternatives. Scores for each alternative are aggregated across all criteria to identify an overall score representing relative rankings with respect to other alternatives.

It is noted that the matrices are intended as a decision-making tool to facilitate aggregation of multiple layers of information within a single document, thus providing a clearly documented and transparent mechanism to communicate assessment results within a project team. Its value is in providing a collaborative platform to inform decision-making where multiple, and sometimes conflicting considerations, present a complex environment from which to advance subsequent project development with the support of all interested parties.

The weighted and unweighted assessment matrices developed through project evaluations and consultations with project partners are included in Attachment H, and a summary of overall scores is provided below in Table 4.

Table 4
Overall Alternatives Assessment Matrix Scores

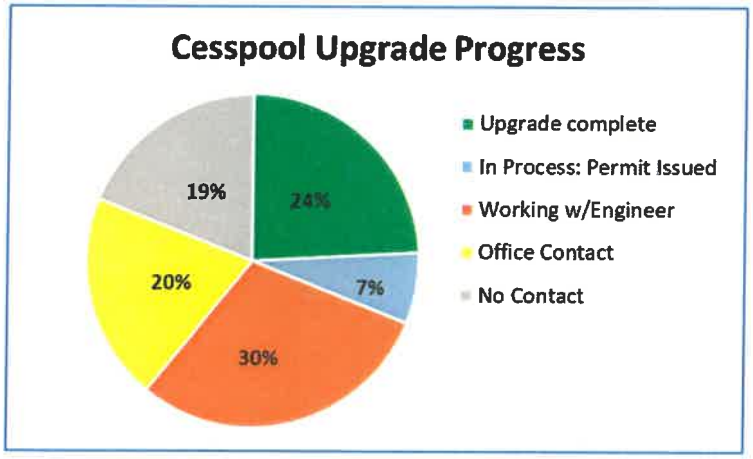
Conceptual Alternative	Unweighted Evaluation Matrix Score	Weighted Evaluation Matrix Score
Culvert Alternative No. 1	2.67	2.66
Culvert Alternative No. 2	2.67	2.69
Breach Alternative No. 1	3.78	3.80
Breach Alternative No. 2	3.67	3.74

Based on the results of above evaluations, Breach Alternative 1 has been identified as the preferred alternative. Further investigations, hydraulic modeling, and design evaluations, and consultations with the Town of Truro and project partners are recommended to confirm and refine this determination.

TOWN OF TRURO
HEALTH & CONSERVATION DEPARTMENT
24 Town Hall Road, Truro 02666
508-349-7004 x119

Memo to: Truro Board of Health
From: Emily Beebe, Truro Health & Conservation Agent
Date: January 12, 2023
Re: **Water Resources Update: January 2023**

Regarding cesspool upgrades to Title 5
To date, 31% of the properties with cesspools have either completed the upgrade process or have permits issued to do so. 30% are working with engineers and 20% have contacted our office with questions but may not yet be under contract with an Engineer/designer.
Our current challenge is making direct contact with the 33 homeowners who we have not yet heard from, so that we may assist them in their efforts to comply.



Regarding Administrative Consent Orders (ACO's) Pending revisions to the Board of Health regulations would incorporate the use of ACO's to form legal agreements between the Board of Health and property owners regarding the specific circumstances about their septic upgrade process.
ACO's will include a compliance schedule that is specific and unique to each property.

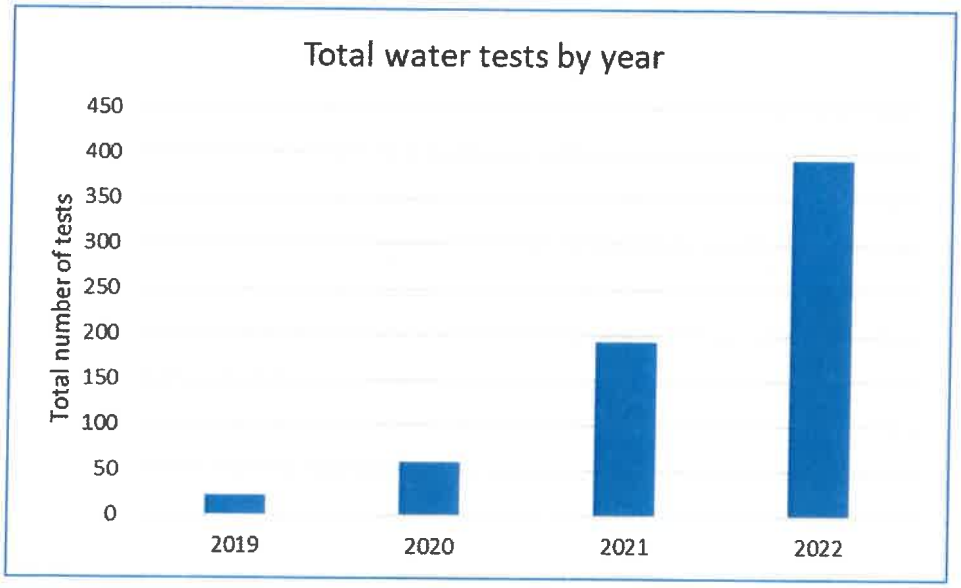
Regarding the Massachusetts Estuaries project (MEP)
As many of you learned last month, Brian Howes, the director of the SMAST Program, passed away suddenly. He was an inspirational figure in the work that we do, and a champion of science-backed public policy. He was our contact at the MEP, and Scott Horsley has agreed to pursue further contact with the leadership at MEP about our nitrogen targets.

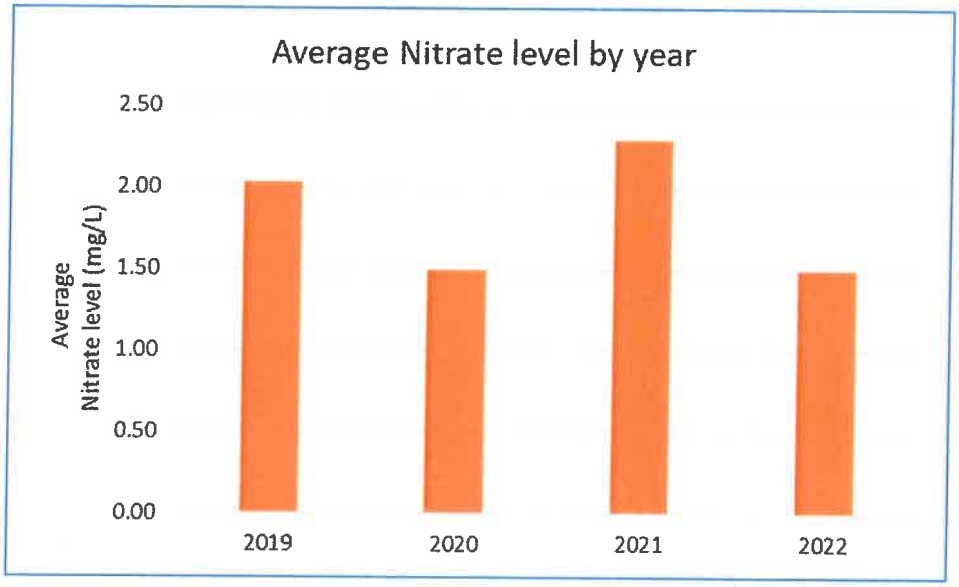
Regarding stormwater management- please see proposed draft stormwater regulations-attached.

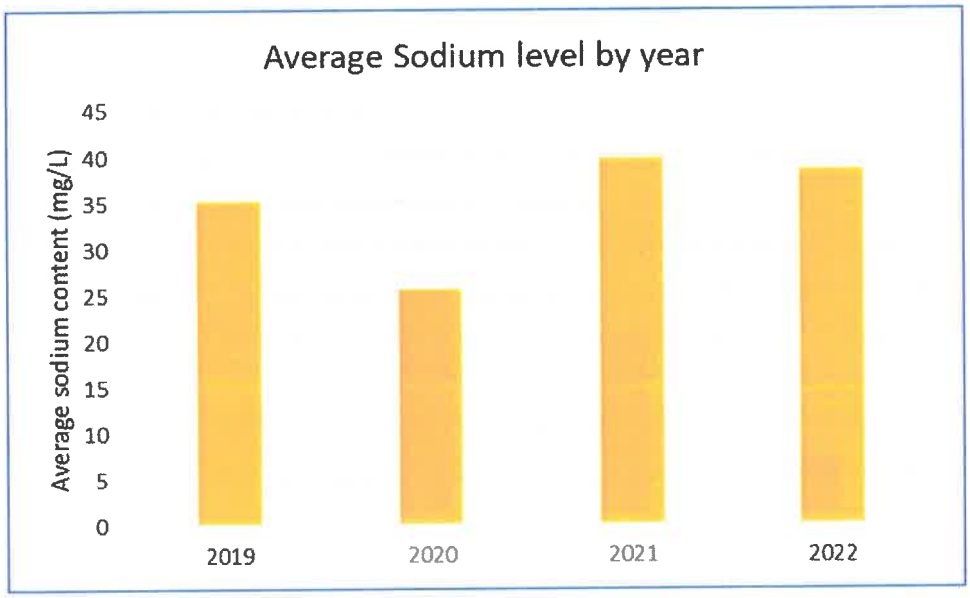
Regarding Private well water quality:
An annual water testing summary has been compiled to demonstrate the water quality results, and just the sheer increase in water quality analysis that the Town has received because of changes made to BoH regulations.

Regarding MA DOT:
The Truro DPW director has consistently appealed to the DOT in writing each month to request route 6 re-paving information. This month his email precipitated an email from the CCNS to the DOT expressing similar concerns and questions .

Water Resources discussion with Provincetown:
As of this date, the meeting schedule is pending return of staff from vacation.


Total water tests by year
Total number of tests
450
400
350
300
250
200
150
100
50
0
2019
2020
2021
2022


Average Nitrate level by year
Average Nitrate level (mg/L)
2.50
2.00
1.50
1.00
0.50
0.00
2019
2020
2021
2022


Average Sodium level by year
Average sodium content (mg/L)
45
40
35
30
25
20
15
10
5
0
2019
2020
2021
2022

Minutes of the Truro Board of Health, Tuesday November 15, 2022
This was a remote meeting.
Board members in attendance:
Chair Tracey Rose, Vice Chair Jason Silva; Board Members: Helen Grimm, Brian Koll, Tim Rose, and Alternate Member: Candida Monteith; Also Present: Health Agent Emily Beebe, Assistant Health Agent Courtney Warren

The meeting was called to order at 4:04 PM by the Vice Chair, who described the remote meeting procedures and the process for public participation. The Vice Chair continued to Chair the rest of the meeting.

PUBLIC COMMENT:
Ellen English read a letter into the record on behalf of Karen Ruymann requesting the following items be added to a future Board of Health agenda:

1. Appointing a Board of Health member as a Liaison to the Pond Village Friends Group
2. Discussion of potential fertilizer regulations.

Municipal Water Service connection request: Stones Throw Condominiums, 6 Shore Road; (*continued from 10/18/2022*) Barbara Correa, a trustee, was on the call to represent the Stones Throw Condominium Association's request to connect to the Provincetown Public Water Supply. The October PFAS levels were reported at 21.7 ppt which exceeds the 20 ppt limit and lower from September levels. The trustees want to pursue a long-term solution to the water issues by connecting to the public water supply. The Health Agent added that she has been in communication with Cody Salisbury, superintendent to the Provincetown Water Department, and he does not foresee any issues with the Stones Throw Condominium Association connecting to the public water supply. Next steps after approval would be for engineering discussions to be held between Provincetown Water and an engineer for Stones Throw. Board member Brian Koll asked about temporary remedial steps. Two residents have identified themselves as in a subgroup requiring remediation. One unit has installed a reverse osmosis system and the other as a summer resident will be provided bottled water. The Board Chair Tracey Rose asked what the flow for the property was. The Health Agent answered that the septic flow is approximately 3500 gpd making the water supply requirement 1750 gpd. Jack Reimer asked about precautions for the surrounding neighborhood. **Motion: Board Member Tim Rose moved to approve the request; Second: Board Member Brian Koll; Vote 5-0-0, The motion passed.**

Variance Request/Local Upgrade Approval: 45 Corn Hill Road *(continued from 11/1/2022)* Jason Ellis was on the call to represent the upgrade request. A revised plan now shows the new well location. The public water supply easement was discussed. The Board Chair Tracey Rose asked who is responsible for protecting the water lines. The Agent stated that the easement as now noted draws attention to the presence of the public water supply lines and allows any necessary maintenance. **Motion: Board Member Brian Koll moved to approve the request with the condition that the upgrade be completed prior to 12/31/2023 or prior to any property transfer if that is sooner; Second: Board Member Helen Grimm; Vote 3-0-2 with the Chair Tracey Rose and Board member Tim Rose abstaining, The motion passed.**

Local Variance Request: 108 Slough Pond Road
Linda Cronin represented the request. She described the property as a single-family compound consisting of two buildings served by composting toilets. The composting toilets are on a maintenance schedule where all the solids are hauled off-site and the liquids are composted on site. The request is for a variance to the local requirement for I/A treatment for any system that is serving more than 5 bedrooms. The total flow on the property included a 6-bedroom Title 5 to handle only the gray water for the main house (4 + 2), and a 1-bedroom Title 5 to handle only the gray water for the cottage. No approvals for the clivus units had been granted previously, and graywater was currently being disposed of in a cesspool. There was discussion about the lack of building permits and plumbing permits for this property. The Board Chair Tracey Rose suggested continuing the matter so that the discrepancy with the bedroom count and permitting issues could be further evaluated. **Motion: The Board Chair Tracey Rose moved to continue the request until the December 6, 2022, meeting; Second: Board Member Brian Koll; Vote 5-0-0, The motion passed.**

Waiver of time: 12 Twine Field Road
Chris Nagle was on the call to represent the owner. The septic system has failed, and the house is being sold. Designs for an I/A system have been completed and the request is for a waiver-of-time to allow the buyer take on responsibility for installation. This is a 90-day extension request from the date of sale. The Board Chair Tracey Rose commended the applicant for their completed application. **Motion: Board Member Brian Koll moved to approve the waiver of time, giving the Applicant until Feb 17, 2023 to install the system with the condition that the dwelling shall not be occupied until the system has been installed and certified; Second: Board Member Helen Grimm; Vote 5-0-0, The motion passed.**

Inspection report discussion: 9 South Highland Road
Jason Ellis described the reverse engineered septic plan/inspection findings. There are two wells both within 100 feet of the leaching area on the property, so the current system does not comply with Title 5. Jason Ellis asked how the Board would like to proceed. Paul Morris, the homeowner, stated that he was unaware of how close the wells were to the leaching area. The Board Chair Tracey Rose stated that the Board has to do what is right and should do their due diligence before coming to a decision. **Initial Motion: Board Member Tim Rose moved to continue the request until the December 6, 2022, meeting; Second: Board Member Brian Koll; Vote 5-0-0, The motion passed.**
The Board initially motioned to continue the matter, but Mr. Morris said that he would like to have Jason Ellis design an upgrade. The Health Agent suggested designing a compliant system is the best option. Therefore,**Jason Silva moved to rescind the motion to continue.**

Due to time constraints, The Board Chair Tracey Rose moved to continue the following agenda items to the next meeting:

1. **Water Resources Update**
2. **Minutes:** October
3. **The Health Agents Report**
4. **The Chairs Report;**

Second: Board Member Brian Koll; Vote 5-0-0, The motion passed.

Helen Grimm moved to adjourn the meeting: Second: Board member Tracey Rose.; Vote: 5-0-0, the motion passed.

The meeting was adjourned at 5:10 P.M.

Respectfully submitted by Janina Richey

Minutes of the Truro Board of Health, Tuesday December 6, 2022
This was a remote meeting.
Board members in attendance:
Chair Tracey Rose, Vice Chair Jason Silva; Board Members: Helen Grimm, Brian Koll; Also Present: Health Agent Emily Beebe, Assistant Health Agent Courtney Warren
Absent: Member Tim Rose and Alternate Candida Monteith
The meeting was called to order at 4:04 PM by the Vice Chair, who described the remote meeting procedures and the process for public participation.

PUBLIC COMMENT:
No Public Comment.

Variance Request/Local Upgrade Approval: Striar Family, LLC, 5 Ryder Beach Way *(continued from 11/1/2022)* Jason Ellis, the designer for the project, requested to withdraw this request. **Motion: Board Member Brian Koll moved to accept the withdrawal of this request; Second: Helen Grimm; Vote 4-0-0; The motion passed.**

Variance Request/Local Upgrade Approval: 108 Slough Pond Road
Linda Cronin, engineer for the project, requested a continuance until the December 20, 2022, meeting. **Motion: Board Member Helen Grimm moved to continue the request until December 20, 2022; Second: Board Member Brian Koll; Vote: 4-0-0, The motion passed.**

Inspection report discussion: 11 Snows Field Road
Ed Oswalt, the property owner, was on the call. The Board of Health had previously approved the submission of a reverse engineered as-built plan for the septic system on the property. This plan showed that the leaching pit was within 100 feet of the locus well, which triggered the need for additional water testing. The additional water analysis was submitted and showed no issues with either of these potential contaminants. The well setback poses no impact to the abutting properties as the system components are all located properly in terms of abutting wells and property lines. The system passes inspection per the Title 5 requirements. The Health Agent stated that this system could be accepted by the Board of Health as compliant. Board member Jason Silva stated that the reverse engineered plan is a useful tool in these types of situations. Chair Tracey Rose asked when the locus well, currently servicing the property, was installed. Ed Oswalt answered that it had been installed around 2015.
Initial Motion: Board Member Jason Silva moved to approve the plan as presented; Second: Board Member Brian Koll.
Discussion on the motion: Chair Tracey Rose inquired as to whether anything else should be included in the motion. The Health Agent suggested that the motion should actually state that the Board accepts the septic inspection report, the motion should not be to approve the plan. **Jason Silva rescinded his initial motion.**
Board member Helen Grimm asked for clarification on whether the board was approving the report only or also a 6-foot variance between the leaching pit and the locus well. The Agent explained that the local regulations triggered the need for a septic plan for the transfer of deed; the reverse engineering allowed the board to more properly investigate the septic system and well. The plan shows existing conditions versus proposed conditions which makes this an

"inside-out" process of investigating and accepting existing conditions or, if not accepted, enforcing an upgrade. The board is therefore accepting the septic system inspection report not approving a plan. **Motion: Board Member Jason Silva moved to approve the septic inspection report; Second: Board Member Brian Koll; Vote 3-0-1; Chair Tracey Rose abstained from the vote; The motion carried.**

Water Resources Update: November 2022(Continued from 11/15/2022) The Health Agent discussed the different financial options available for homeowners needing to complete cesspool upgrades. Administrative Consent Order paperwork is being prepared and will be ready for review by the Board at a later date. These ACOs will be specific to each property and will help address unique circumstances. The Health Agent has been in contact with UMass Dartmouth regarding the Estuaries project. Snow Pond's health advisory for a harmful algal bloom which was issued at the end of October has been lifted as of November 10th. Provincetown and Truro are working together to discuss forecast planning for future water use.

Future Agenda Items for upcoming meetings:

The Board discussed the following future agenda items for an upcoming meeting:

1. Fertilizer discussion and possible fertilizer regulations.
2. Board of Health representative at the Pond group neighborhood association.

Minutes: October 18, 2022 : **Motion: Board Member Helen Grimm moved to approve the minutes; Second: Board Member Brian Koll; Vote 4-0-0; The motion passed.**

Report of the Chair:

Chair Tracey Rose discussed her attendance at the meetings of the Housing Authority, and their development of a Housing Needs Assessment and Housing Production Plan (HPP). The Chair also brought up the request from the Pond Village Friends Group to appoint a representative from the Board. The Health Agent and the Chair attended a meeting to show their support for the formation of the group. The Health Agent and/or the Chair will continue to attend the meetings until the Board of Health's role is better defined. Then they will discuss appointing a Board of Health member as a liaison to the group.

Karen Ruymann was on the call and gave an update on the progress of the Village Pond Friends Group.

Health Agents Report:

The Health Agent reported that she attended the New England Rural Health Association Conference in November. The joint Board of Health meeting to review the recent Needs Assessment has been postponed. The Assistant Health Agent is going to be interviewed by the Selectboard for appointment to the Provincetown Water and Sewer Board. The Health Department has been working on grant applications which include the AARPA grant and a smaller MVP grant for Climate Action. The Health Agent asked Board member Dr. Brian Koll to give a brief overview on the current status of both Covid and Flu. Dr. Koll stressed the

importance of getting a flu shot, since flu is the main virus risk followed by covid and RSV. The number of covid cases in our area poses a moderate risk. There are new variants of covid related to omicron. These are more immune evasive than omicron, but the bivalent vaccines do offer some protection against the new variants.

Board member Jason Silva moved to adjourn the meeting: Second: Board member Brian Koll; Vote: 4-0-0, the motion passed.

The meeting was adjourned at 5:06 P.M.

Respectfully submitted by Nina Richey