

Memorandum of Agreement  
Between

Barnstable County through  
Cape Cod Commission  
3225 Main Street  
Barnstable, MA 02630

and

Board of Selectmen on behalf of  
Town of Harwich  
732 Main Street  
Harwich, MA 02645

This Memorandum of Agreement (Agreement) is entered into this        day of        2017 by and between Leo Cakounes, Mary Pat Flynn and Ron Beaty as they are the Commissioners of Barnstable County, acting by and through the Cape Cod Commission (hereafter referred to as the "Commission") and the Board of Selectmen on behalf of the Town of Harwich (hereafter referred to as the "Town.")

WHEREAS, the Commission has received mitigation funds from various projects as a result of its Development of Regional Impact review process, and

WHEREAS, a portion of the funds are required to be used for transportation improvements in the Town of Harwich, and

WHEREAS, the Town is interested in utilizing the mitigation funds for this purpose.

NOW THEREFORE, the Town enters into this Memorandum of Agreement with the Commission.

1. RESPONSIBILITIES OF THE TOWN

- A) The Town agrees to use these mitigation funds for engineering services associated with the Main Street (Route 28) Corridor Improvements project as outlined in the attached correspondence.
- B) The Town shall maintain books, records, and other compilations of data pertaining to this work and/or services performed and the funds received and paid out under this Agreement to the extent and in such detail as shall properly substantiate claims for payment under the Agreement. All such records shall be kept for a period of six (6) years or for such longer period as is specified herein. All retention periods start on the first day after final payment under this Agreement. If any litigation, claim, negotiation, audit or other action involving the records is commenced prior to the expiration of the applicable retention period, all records shall be retained until completion of the action and resolution of all issues resulting therefrom, or until the end of the applicable retention period, whichever is later.
- C) The Town shall maintain financial records of the application and expenditure of the funds received hereunder in at least as much detail as may be contemporaneously required to comply with the financial reporting and record keeping requirements mandated by the Bureau of Accounts of the Department of Revenue, or any successor thereto, with respect to the Town's ordinary custody and expenditure of funds.

2. RESPONSIBILITIES OF THE COMMISSION

The Commission agrees to provide the Town with mitigation funds in an amount not to exceed \$175,658 for expenses incurred in connection with this Agreement. The Town will submit written requests for payment as work is completed and will include copies of all vendor invoices, as appropriate.

3. DURATION

A) This Memorandum of Agreement shall be effective until December 31, 2019 unless an extension in time is agreed to in writing by both parties.

B) Either the Town or the Commission may terminate this Agreement by written notice to the other party, if the other party substantially fails to fulfill its obligations hereunder through no fault of the terminating party, or if the other party violates or breaches any of the provisions of this Agreement. Such notice shall be delivered by certified mail at least thirty (30) days before such effective date. In the event of such termination or suspension of this Agreement, the Town shall be entitled to just and equitable compensation for satisfactory work completed, for services performed and for reimbursable expenses necessarily incurred in the performance of this Agreement up to and including the date of receipt of notice of termination or suspension.

4. AMENDMENT

This Agreement may be amended as mutually agreed by both parties in writing.

5. SIGNATORY AUTHORIZATION

The respective signatories hereto represent and warrant that they are duly authorized to execute this Agreement on behalf of the public entity on whose behalf they have signed this Agreement, and that all substantive and procedural preconditions to their effective execution of this Agreement on behalf of said public entities have been satisfied.

6. INTEGRATED INSTRUMENT

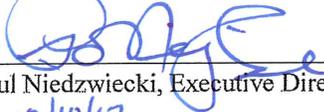
This Agreement shall take effect as an integrated instrument.

IN WITNESS WHEREOF, the TOWN and the COMMISSION execute this Agreement this \_\_\_\_ day of \_\_\_\_\_ in the year two thousand and seventeen.

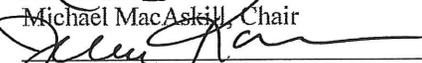
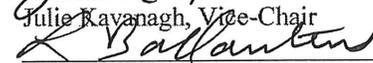
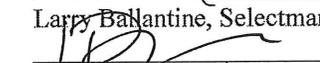
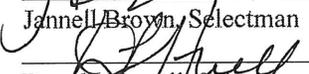
BARNSTABLE COUNTY COMMISSIONERS

\_\_\_\_\_  
Leo Cakounes, Chair  
\_\_\_\_\_  
Mary Pat Flynn, Vice-Chair  
\_\_\_\_\_  
Ronald Beaty, Commissioner  
\_\_\_\_\_  
Date

CAPE COD COMMISSION

  
\_\_\_\_\_  
Paul Niedzwiecki, Executive Director  
10/10/17  
\_\_\_\_\_  
Date

HARWICH BOARD OF SELECTMEN

  
\_\_\_\_\_  
Michael MacAskill, Chair  
  
\_\_\_\_\_  
Julie Kavanagh, Vice-Chair  
  
\_\_\_\_\_  
Larry Ballantine, Selectman  
  
\_\_\_\_\_  
Jannell Brown, Selectman  
  
\_\_\_\_\_  
Donald Howell, Selectman

10/2/17  
\_\_\_\_\_  
Date

**AGREEMENT FOR PROFESSIONAL SERVICES  
BETWEEN  
VHB  
AND  
TOWNS OF HARWICH & DENNIS**

**MAIN STREET (ROUTE 28)  
CORRIDOR IMPROVEMENTS  
Harwich & Dennis, MA**

**VHB PROPOSAL NO. 83611.15  
August 17, 2017**

This Agreement is composed of Parts I and II. Part I includes compensation, details of the services to be performed and timing of the services. Part II (attached) contains the General Terms and Conditions of Agreement, which are the general terms of the engagement between the Town of Harwich and Town of Dennis, hereinafter called the "CLIENTS," and VHB, hereinafter called the "ENGINEER."

**PART I**

COMPENSATION – Fixed Labor Fee Plus Expense

1. The total estimated compensation for performing the Scope of Services described in detail in this Agreement, is estimated below:

	Harwich	Dennis
Phase 1 Fixed Labor Fee*	\$130,458.00	\$33,900.00
Phase 1 Survey (J.M. O'Reilly)	\$21,700.00	\$2,700.00
Phase 1 Pavement Testing (LGCI)	\$11,600.00	\$1,500.00
Phase 1 Soil Borings (LGCI)	\$3,000.00	\$9,000.00
Estimated Direct Costs Phase 1	\$8,900.00	\$2,900.00
<b>Total Cost Phase 1</b>	<b>\$175,658.00</b>	<b>\$50,000.00</b>

\* Fixed Labor fee is defined as the fee for direct labor, overhead, and profit exclusive of direct costs.

3. The total Fixed Labor Fee for services rendered in Tasks 150 through 600 will be invoiced monthly as a percentage of completion.
4. The ENGINEER will not exceed the total estimated Fixed Labor Fee or estimated direct costs as stated herein without the written approval of the CLIENTS. It should be noted that each community will be responsible for the following percent of the total estimated cost: Harwich: 89%; Dennis: 11%. For design related to the traffic signal each community will be responsible for the following percent of the total estimated cost: Harwich: 25%; Dennis: 75%.
5. All direct costs (reimbursable expenses) for items such as printing, reproduction, supplies, photography, transportation, equipment rental, mail, deliveries, tolls will be invoiced to the CLIENTS at cost. An initial upset limit for direct costs of \$8,900.00 for the Town of Harwich and \$2,900.00 for the Town of Dennis has been established.
6. The CLIENTS agree to provide police services as required for all field activities such as survey and soil testing. The ENGINEER will coordinate its schedule with the local police services.
7. The ENGINEER will engage the services of sub-consultants for survey (J.M. O'Reilly & Associates), pavement testing (Lahlaf Geotechnical Consulting, Inc.) and soil borings (Lahlaf Geotechnical Consulting, Inc.).
8. All schedules set forth in Part I of this Agreement begin upon receipt of a signed Agreement.

#### PERIODS OF SERVICE

1. The ENGINEER agrees to render services for Tasks 150 through 600 within 18 months of the date of execution of this Agreement.
2. The specific period of performance, schedule, and compensation are subject to PART II - GENERAL TERMS AND CONDITIONS schedule.

AGREEMENT FOR PROFESSIONAL SERVICES  
BETWEEN  
VHB  
AND  
TOWN'S OF HARWICH & DENNIS

MAIN STREET (ROUTE 28)  
CORRIDOR IMPROVEMENTS  
Harwich & Dennis, MA

August 17, 2017

APPROVED FOR  
VHB  
(ENGINEER)

By: Mark E. Shamon  
Mark E. Shamon

Title: Managing Director, Traffic  
and Highway Design

Date: 8/18/17

APPROVED FOR  
TOWN OF HARWICH  
(CLIENT)

By: Michael D. MacAskill  
Michael D. MacAskill

Title: Chairman, Board of Selectmen

Date: August 7, 2017

AGREEMENT REVIEW

Project Manager Initials: SJR

Reviewer Initials: PGD

APPROVED AS TO  
AVAILABILITY OF FUNDS

By: Carl Coppola  
Town Accountant

2. The breakdown of the Fixed Labor Fee is as follows:

<u>Tasks</u>		<u>Estimated Labor Fees</u>	
		Harwich	Dennis
150	Environmental	\$14,250.00	\$1,800.00
200	Functional Design Report	\$5,200.00	\$14,300.00
220	Design Exception Report	\$10,164.00	\$1,000.00
300	25% Highway Design*	\$68,868.00	\$8,400.00
320	25% Signal Design	\$1,600.00	\$4,600.00
350	Design Public Hearing	\$5,376.00	\$700.00
500	Right of Way	\$25,000.00	\$3,100.00
600	Geotechnical Design	Costs included in sub-consultant (LGCI) fee	Costs included in sub-consultant (LGCI) fee
TOTAL ESTIMATED LABOR FEE		\$130,458.00	\$ 33,900.00

\*Note: Traffic signal design included separately under Task 320

I request permission to enter into a Memorandum of Agreement with the U.S. Environmental Protection Agency (on behalf of the Massachusetts Alternative Septic System Test Center - MASSTC) to facilitate the development of a nutrient sensor. The nutrient sensor could become an important element in the validation of technologies purporting to reduce nitrogen into our sensitive areas. Sensors might assist in reducing the cost of technology monitoring by providing regulators with real time accurate performance data. In short, we have indicated that we would serve as a validation site for the development of an ISO (International Standard) for the testing of sensors and that we will perform the first validating test for the sensors identified by EPA as candidates. The Draft MOU is attached.

MASSTC's commitment is to run samples from various wastewater treatment technologies and allow the data to be compared with data collected by nutrient sensors that are concurrently deployed. We believe that this effort has the potential for easing the costs of monitoring should the effort identify a cost effective remote monitoring probe/sensor. There is no risk to the Barnstable County and **all analyses done under this project will be paid for by EPA**. George Heufelder has been a collaborator on the project and acted as one of many judges to pick potential technologies in the EPA Nutrient Sensor Challenge. He offered the use of MASSTC as a cost-effective way to ground-truth data from the sensors using real treatment units. The only unsupported effort in the project is the development and construction of a test module to house the sensors and to present each sensor with a consistent wastewater stream. This task will be completed with approximately four person-days and is similar to many such efforts we have performed in the past. The projected revenue from the project is \$30,000 and is in the form of revenue for analytical services for samples submitted to the Barnstable County Department of Health and Environment Laboratory as they validate the data downloaded from the candidate sensors.

**MEMORANDUM OF UNDERSTANDING  
BETWEEN THE MASSACHUSETTS ALTERNATIVE SEPTIC SYSTEM TEST  
CENTER  
AND THE U.S. ENVIRONMENTAL PROTECTION AGENCY,  
REGION 1**

**I. PURPOSE**

The purpose of this Memorandum of Understanding (MOU) is to establish a formal cooperative program between the Barnstable County Massachusetts Alternative Septic System Test Center (MASSTC) and the United States Environmental Protection Agency, Region 1 (EPA) (collectively, the Parties) in an area of mutual interest. Implementation of this MOU will provide a framework for the Parties' effort to performance test and evaluate prototype nitrogen sensor systems designed to monitor the effluent of Innovative and Alternative Onsite Wastewater Treatment Systems (I/A OWTS).

**II. BACKGROUND**

Nitrogen loads from conventional residential Onsite Wastewater Treatment Systems (OWTS) cause critical water quality problems in the northeastern U.S. and elsewhere. In coastal areas, OWTS are a major source of excess nitrogen loading. There are a number of commercially available proprietary and non-proprietary I/A OWTS technologies designed to reduce the amount of nitrogen leaving a system. However, to EPA's knowledge, a nitrogen sensor package that can be used in conjunction with I/A OWTSs is not currently commercially available. Currently, I/A OWTS nitrogen reduction performance can only be measured by time consuming and expensive sampling and laboratory analysis.

Eight northeastern states (MA, RI, NH, VT, ME, CT, NY and NJ) have expressed specific support for the development of a low-cost nitrogen sensor system that would measure nitrogen concentration in the effluent of I/A OWTS and facilitate the optimal performance of these systems. A nitrogen sensor installed in an I/A OWTS and the resulting real time performance data will provide assurance to state and local governments, as well as homeowners, that I/A OWTSs are performing as intended during their service life. The development of a low-cost nitrogen sensor would also allow MASSTC to monitor its I/A OWTSs in real time and for a fraction of the cost of lab analysis.

To address this technological gap, under the authority of the America COMPETES Act, EPA's Office of Research and Development (ORD), Regions 1 and 2, and the Office of Water (OW) devised the "Advanced Septic System Nitrogen Sensor Challenge" (Phase I) to spur the development and design of a low-cost nitrogen sensor package that can measure and monitor the performance of I/A OWTSs. In January 2017, EPA partnered with The Nature Conservancy, the US Geological Survey (USGS), state and county agencies, and research institutions to launch the Challenge. In June 2017, EPA and its Challenge partners hosted a Sensor Showcase event to bring together interested parties, including industry and investors in the water technology sector,

to recognize the Phase I winning designs and launch Phase II of the Challenge: Development and Testing of Sensor Prototypes. Following prototype development and testing, the Sensor Challenge team plans to award \$300,000 to the group with the best performing sensor package for an initial order of 200 sensors to be installed in residential I/A OWTSs in 2019.

Both EPA and MASSTC have a vested interest in the development of a low-cost nitrogen sensor. A sensor would allow MASSTC to better monitor I/A OWTS it tests, which would provide states and municipalities more confidence in approving new I/A OWTS technology. A sensor would also enable MASSTC to detect sub-optimal performance or failure on a real time basis rather than be limited to the current quarterly effluent testing. This would allow for faster remediation of the situation. Additionally, a steady stream of nitrogen performance data would bolster MASSTC's ability to study conditions and modifications to I/A OWTS that increase and optimize nitrogen removal capacity and decrease the chance of nitrogen breakthrough. Ultimately, the increased monitoring ability provided by a nitrogen sensor would support MASSTC's goal of addressing the issue of eutrophication with new on-site technology on Cape Cod, and EPA's overarching Clean Water Act mandate to protect and restore the chemical, physical, and biological integrity of our Nation's waters.

### **III. AUTHORITIES**

EPA enters into this MOU pursuant to Section 104 of the Clean Water Act (33 U.S.C. 1254), which authorizes EPA to encourage and cooperate with, and render technical services to, individuals, as well as public and private sector entities, to promote the coordination and acceleration of research related to the causes, effects, prevention, and elimination of water pollution.

### **IV. ROLES AND RESPONSIBILITIES**

The Parties expect that Phase II sensor package testing and verification will be performed under the recently released ISO 14034 standard for environmental technology verification by EPA contractors funded by EPA's OW and ORD. The Parties expect that Phase II sensor package testing will be completed at the MASSTC, a National Sanitation Foundation (NSF) certified test facility, as described in this MOU and pursuant to applicable test and quality assurance plans.

The Parties intend that testing will be completed by MASSTC staff and EPA contractors at the MASSTC facility pursuant to the test quality assurance plan developed by EPA and its contractor. The Parties anticipate that the testing will begin with a 1-week screening test to evaluate no more than 10 prototype sensor systems' efficacy, accuracy, precision, and dynamic range. The projected date for the screening test is the first week of April 2018. Developers whose prototypes meet basic performance goals during the preliminary screen will be invited to the full field performance test.

For the full field performance test no more than 5 prototype sensor systems will then be installed at the outlet of functioning I/A OWTS at the MASSTC facility for 6 months, from July to

December 2018. Using test data, supplied by MASSTC, EPA contractors will then compile ISO verification reports for sensor packages that meet the Challenge performance goals.

The Barnstable County Massachusetts Alternative Septic System Test Center expects to contribute to the testing and verification of I/A OWTS nitrogen sensors by:

- Assisting with sensor installation and positioning and any associated trouble shooting pertaining to lab-scale screening and long term field tests;
- Attending an informational webinar in December to answer questions from sensor developers;
- Alerting EPA and EPA contractors of any external conditions that might impact the sensor package testing effort;
- Following the T/QAP provided by EPA;
- Providing facility space with access to wastewater effluent for sensor developers and the EPA contractor to conduct lab-scale sensor screening testing (1-week duration);
- During prototype screen and field testing, adjustment of wastewater effluent to simulate I/A OWTS failure;
- Assisting sensor developers and the EPA contractor with installation of sensors for 1-week lab-scale test;
- Providing facility and field space for sensor developers and the EPA contractor to conduct long term sensor testing in MASSTC I/A OWTS systems (6-month duration);
- Allowing prototype sensor developers and/or the EPA contractors to install sensor packages at outlet of I/A system(s) at MASSTC facility, and if necessary, assisting in installation;
- Providing personnel time for normal day to day servicing of MASSTC facility I/A OWTSs where sensors are being tested;
- Providing personnel time for taking time stamped grab samples of the effluent of MASSTC facility I/A OWTS where sensor prototypes are installed;
- Allowing sensor prototype developers to adjust sensors periodically as allowed in the Phase II T/QAP;
- Participating in regular quality assurance audits by EPA and the EPA contractor;
- Preparing two “Sensor Data Reports” at the conclusion of the 1-week and 6-month tests; and
- Providing analysis results of influent and effluent grab samples from certified labs to EPA and EPA contractor.

EPA intends to support this MOU by:

- Funding and overseeing contractor activities;
- Funding and directing an EPA contractor to develop a test quality assurance plan as per ISO 14034;
- Funding and directing an EPA contractor to assist in the installation and removal of nitrogen sensors;
- Funding and directing an EPA contractor to oversee the 1-week lab-scale test and the beginning and end of the 6-month field test;
- Providing EPA staff time for periodic inspection and quality assurance audit of the MASSTC facility and sensors during 1-week and 6-month tests; and

- Funding and directing an EPA contractor to compile verification/performance reports for sensor packages.

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**V. LIMITATIONS**

A. This MOU is a voluntary agreement that expresses the good-faith intentions of the Parties, is not intended to be legally binding, does not create any contractual obligations, and is not enforceable by any party.

B. All commitments made in this MOU are subject to the availability of appropriated funds and each party's budget priorities. Nothing in this MOU, in and of itself, obligates Barnstable County or the MASSTC or EPA to expend appropriations or to enter into any contract, assistance agreement, interagency agreement, or other financial obligation. Barnstable County and MASSTC agree not to submit a claim for compensation for services rendered to EPA in connection with any activities it carries out in furtherance of this MOU.

C. This MOU is neither a fiscal nor a funds obligation document. Any endeavor involving reimbursement or contribution of funds between the parties to this MOU will be handled in accordance with applicable laws, regulations, and procedures, and will be subject to separate subsidiary agreements that will be effected in writing by representatives of both parties.

D. Except as provided in Section IV, this MOU does not create any right or benefit, substantive or procedural, enforceable by law or equity against MASSTC or EPA, their officers or employees, or any other person. This MOU does not direct or apply to any person outside Barnstable County, MASSTC and EPA.

E. MASSTC may make factual statements to the public which describe its cooperation with EPA. However, nothing in this MOU allows EPA to endorse the purchase or sale of MASSTC's products or services. Barnstable County and MASSTC agree not to make statements to the public in news releases, product brochures, on web sites or in any media that imply EPA endorsement of MASSTC's products or services.

**VI. POINTS OF CONTACT**

The following individuals are designated points of contact for the MOU:

United States Environmental Protection Agency Region 1:  
Ian Dombroski, Life Scientist,  
5 Post Office Square, Suite 100 (OEP06-1), Boston, MA 02109,  
Dombroski.ian@epa.gov, 617-918-1342

Barnstable County Massachusetts Alternative Septic System Test Center:  
George Heufelder MS, RS, Director,  
99 Kittridge Road, Buzzards Bay, MA, 02542  
gheufelder@barnstablecounty.org, 508-375-6616

**VII. MODIFICATION/DURATION/TERMINATION**

This MOU shall take effect upon the signature of the Parties and remain in effect for a period of 18 months. This MOU may be extended or modified at any time per the mutual consent of the Parties. Additionally, a party may terminate its participation in this MOU at any time by providing written notice to the other party at least 90 days in advance of the desired termination date.

**VIII. APPROVAL**

\_\_\_\_\_  
Deborah A. Szaro  
Acting Regional Administrator  
U.S. EPA Region 1

\_\_\_\_\_  
Date

\_\_\_\_\_  
George Heufelder, Director  
Barnstable County Massachusetts Alternative  
Septic System Testing Center

\_\_\_\_\_  
Date

