Town of Nantucket
NANTUCKET MEMORIAL AIRPORT
14 Airport Road
Nantucket Island, Massachusetts 02554

Thomas M. Rafter, Airport Manager
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AIRPORT COMMISSION MEETING
July 29, 2020

The meeting was called to order at 5:00 pm by Chairman Daniel Drake with the following Commissioners present: Jeanette Topham, Arthur Gasbarro, Andrea Planzer and Anthony Bouscaren.

This meeting was conducted remotely by video conference via Zoom app and broadcasted on the Town of Nantucket YouTube Channel consistent with Governor Baker's Executive Order of March 12, 2020, due to the current State of Emergency in the Commonwealth and due to the outbreak of the "COVID-19 Virus".

Airport employees present were: Tom Rafter, Airport Manager, Noah Karberg, Assistant Airport Manager, Katy Perales, Office Manager and Lillian Sylvia, Administrative Assistant.

Also present was: Rich Lasdin, McFarland Johnson, Inc., Mina Makarious, Anderson and Krieger, Jim Soukup, Weston Solutions, Lisa Kammer, Weston Solutions, Millie Garcia-Serrano, Massachusetts Department of Environmental Protection (MassDEP), Angela Gallagher, MassDEP and Gerard Martin, MassDEP.

Mr. Drake read the Town's virtual meeting statement.

Mr. Drake announced the meeting was being audio and video recorded.

Mr. Drake asked for comments on the Agenda; hearing none, the Agenda was adopted.

Mr. Drake made a brief comment on the Airport's behalf concerning the timing of its initial announcement regarding Per-and Polyfluoroalkyl Substances (PFAS) situation. He noted that the Commission's goal through this meeting and any that follow, as well as the website created to make the latest information available to the puble is to provide full transparency.

Millie Garcia Serrano, Southeast Region Administrator of MassDEP, thanked the Airport for its work in dealing with the PFAS problem. She noted that MassDEPhas recently joined with other states to deal with "contaminents of emerging concern" of which PFAS is at the forefront. She sid the process of developing contamination standards fordrinking water is stillin process. Finally she reiterated MassDEP:s willingness to continue to suppost the Airport in its PFAS remediation efforts.

Presentation: "Airport PFAS Investigation and Remediation"- Mr. Rafter presented a presentation addressing the following topics (Presentation attached):

- Aqueous Film Forming Foam (AFFF) & PFAS background/information
- Regulatory and project timelines
- ACK response actions
- Point of Entry Treatment ("POET") Systems
- Project details and current status
- Moving forward/next steps
- Project team
- How to register to ask questions
- MassDEP PFAS fact sheet

Public Question and Answer-

Liz Shannon asked when the Airport will test PFAS levels in their current and former employees. Jim Soukup, Weston Solutions, explained that is something that has not been considered yet as it is not a requirement of MassDEP under the Massachusetts Contingency Plan (MCP). These regulations focus on environmental concerns. Ms. Garcia-Serrano, MassDEP explained that she encourages concerned citizens with regards to any personal health affects to consult their primary care physician. Ms. Garcia- Serrano also explained that the Department of Public Health is engaged in the PFAS conversation with MassDEP and that she would direct Ms. Shannon on who to speak with at the Department of Public Health regarding her question. It was pointed out that this is also touched on in the MassDEP PFAS fact sheet.

Ms. Shannon asked that there be more discussion, education and information regarding the biological affects that dangerous levels of PFAS may have.

Tom Szydlowski, full time resident on Pochick Avenue and President of the Surfside Association, asked how the public will be notified once the Westside testing results are in. Mr. Drake explained that homeowners will be notified directly, and results will be posted on the website.

Andrew Mulcahy, who works for Housing Nantucket, asked for confirmation that if a property on the West Side tests over 200 PPT, that the adjoining properties will be then be tested. Mr. Soukup confirmed that is correct and explained that the initial sampling conducted on the first line of homes to the West of the Airport have been collected. Once the results are in, if any of the samples exceed the 20 MassDEP action level, then the next home to the West will be sampled and tested.

Bruce Mandel asked how efficient the POET systems for the removal of PFAS are compared to an activated charcoal system. Rich Lasdin, McFarland Johnson, Inc. explained that there are a variety of systems used for treating PFAS in homes and due to the seasonal nature of the homes that have been treated, the POET system is the most efficient system. Lisa Kammer explained that POET Systems were used in the Madaqucham Valley homes because of concentration and the seasonal nature of the homes. If homes on the West Side require a POET system, the same evaluation will be done on the home to determine what system should be installed. Ms. Kammer explained how the POET systems rempve PFAS from the water to below detection.

Mr. Mandel expressed concern that PFAS is also coming from other places on the island and asked if MassDEP is aware of any concerns regarding this. Mr. Drake explained that the Town Manager, Libby Gibson, has appointed Chuck Larson, Engineer, as a point person to perform an examination of town properties, including the landfill and wastewater treatment center, to see what the impact of PFAS might be from those facilities. Gerard Martin, MassDEP, explained that MassDEP is

aware and that they have been looking into where PFAS might come from and what it might be impacting. Mr. Martin explained that MassDEP's water division has worked with municipalities to test public water supplies for PFAS and are starting to look at other sources such as the landfills.

Mr. Mandel asked what happens to the PFAS chemicals that are collected in the filters and how are they disposed of safely. Mr. Soukup explained that there are two carbon or resin canisters in a system, where the PFAS is mostly if not all absorbed into the material of the first filter and then goes into the second filter where any chemicals that may have gotten through the first one will be caught by the second one. Mr. Soukup explained that they regularly test the the water after the first tank and the water after the second tank, to monitor and determine how often the canisters need to be changed. Once they are changed, they take the carbon or resin canister out of the tank and it is shipped to a disposal facility that is licensed to handle these types of materials.

Emily Molden, Nantucket Land Council, thanked the Airport for all the reporting and data that has been collected and shared and that she is in support of the Airport's further effort toos identify the extent of the contamination plume. Ms. Molden hopes that after the initial investigation of the extent of the plume, that continue to monitoring into the future that the contamination is as it makes its way through the groundwater. presumably towards the ocean.

Ms. Molden asked what the best resource of information for those that are not having their wells tested by the Airport to find consultants and labs that can help them to get their wells tested properly. Mr. Martin explained that googling environmental labs in your area can provide good information and to make sure they are able to perform a PFAS analysis. Mr. Martin explained that if people do decide to have their private wells sampled and are impacted, that he recommends notifying the Board of Health and MassDEP with those results. Mr. Martin explained that the State is currently doing a statewide random private well sampling program to gather more information on PFAS.

Meghan Perry asked if there was any reason to retest the municipal water source on island, that was tested for PFAS back in 2013. Mr. Martin explained that it is a different program but that MassDEP has been working with water supplies across the state to retest. Angela Gallagher, MassDEP, explained that Nantucket's water supply has not been tested for PFAS since 2013. Mr. Martin explained that they have weekly PFAS calls between the three Bureaus and the DEP southeast region and he will raise this question with the deputy regional director for the Bureau that oversees Nantucket's water supply.

Ms. Perry asked if there is any concern that the plume might move due to the increase in demand for water or wells on a single source aquifer. Mr. Martin explained that a zone two has been developed, which is the area of the aquifer that contributes water to that water supply, which is very conservative. The water supply wells are controlled under the state regulations on what they can pump and the studies that must go into designing wells and where they are going to be.

Ms. Perry asked if the water withdrawal permit, that the town has for municipal water, comes into play with the considerations discussed above. Mr. Martin explained that they are permittedlimit how much t can pumped from municipal wells.

Ms. Perry asked if the Airport has looked into signing an MDL (class action) and is looking into the chemical companies being held responsible. Mr. Drake said this is being discussed.

Ms. Perry asked if the Airport or Town can sign onto the multi-million-dollar fund that were created by the state to help with remediation. Mr. Drake explained that he understood the Airport was not eligible.

Robert Orlandi asked if you had to be a licensed lab technician to collect PFAS samples. Mr. Soukup explained that you do not need to be licensed or have special certification to collect the sample but that sampling for PFAS is very tricky, as PFAS comes in a variety of household uses and recommends having someone skilled and trained in collecting sampling, otherwise you risk cross contamination.

Mr. Orlandi asked where POET systems are installed in the home. Mr. Soukup explained that each system is customized to the specific home and it depends on a variety of factors, such as where the water comes into the home, the concentrations etc.

Mr. Orlandi asked who collects the samples. Mr. Soukup explained that there are technicians at Weston Solutions who have been doing that work.

Mr. Orlandi asked how long the filters last. Mr. Soukup explained that it depends on the homes water usage and level of concentrations. Mr. Soukup explained that once a POET system is installed into a home, they typically do sampling on a monthly basis, which in turn allows for a curve that shows how often the filters need to be replaced.

Ms. Shannon asked how listeners can obtain the contact information for the participants. Mr. Drake explained to reach out to Mr. Karberg for this information.

Ms. Shannon asked when the Airport replaced the AFFF that contained PFAS with another product that does not have PFAS. Mr. Rafter explained that the Airport removed foam that contained PFAS from the fuel farm fire suppression system, under a state program and which the state disposed of. The Airport currently tests the the mix of AFFF by utilizing a cart system, to catvch the foam and recycle it back into the firetruck. This does allows the Airport to to test the AFFF mix as required by the FAAt without dispersing it on to the ground.Only in the case of an emergency wpould AFFF be sprayed on the ground.. Mr. Drake explained that the FAA has not yet changed the specification for firefighting foam. Mr. Rafter explained that they are working on developing a PFAS free foam.

Ms. Shannon asked if employees have been provided with new Personal Protective Equipment (PPE). Mr. Rafter explained that the Airport is looking into this.

Ms. Shannon asked what has been done to identify other sites where AFFF has been used on the island. Mr. Drake explained that the Airport has not done anything in that respect . Elizabeth Gibson, Town Manager, then explained that the Select Board had just executed a contract to conduct an initial risk assessment to determine that issue.

Commissioners Comments:
Mr. Gasbarro reported the date and time of the next Commission Meeting, which is August 11th at 5:00PM and that the Airport will also be holding an Energy and Environment Sub-committee meeting where the subcommittee will review and discuss scopes of services related to the continued study of this issue that will be brought forth to the Commission.

Ms. Topham thanked the public for coming forward with their questions and comments.

Mr. Drake thanked everyone for their participation and asked for the public's continued interest and patience as the Airport breaks new ground on this difficult issue. Mr. Drake thanked MassDEP for participating.

Mr. Bouscaren made a **Motion** to adjourn. **Second** by Ms. Topham and **Passed** by the following roll call vote:

Ms. Planzer- Aye
Mr. Bouscaren- Aye
Ms. Topham- Aye
Mr. Gasbarro- Aye
Mr. Drake- Aye

Meeting adjourned at 6:21pm.

Respectfully submitted,

Lillian Sylvia, Recorder

NANTUCKET MEMORIAL AIRPORT

ACK PFAS Public Information Session

Presented by:
Nantucket Memorial Airport
Daniel Drake, Commission Chair
Tom Rafter, Airport Manager

July 29, 2020
Visit *www.ACK-PFAS.com*

Presentation Overview

1. AFFF & PFAS Background/Information
2. Regulatory and Project Timelines
3. ACK Response Actions
4. Point of Entry Treatment (“POET”) Systems
5. Project Details and Current Status
6. Moving Forward/Next Steps
7. Project Team
8. Questions and Comments

APPENDICES:
- Instructions on How to Register to Ask Questions
- MassDEP Fact Sheet

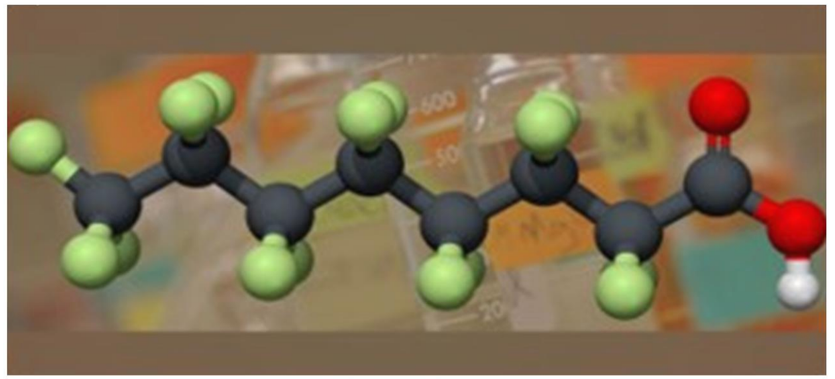
Aqueous Film Forming Foam (AFFF) & Per- and Polyfluoroalkyl Substances (PFAS) Background

Fire safety training operations with AFFF at ACK

- The use of Aqueous Film Forming Foam (AFFF), containing PFAS, has been required by the Federal Aviation Administration (FAA) for all commercial service airports throughout the U.S. for more than 30 years.
- Per FAA requirements, AFFF has been used in training exercises to prepare for airport emergencies and for FAA certification inspections.
- PFAS compounds are man-made chemicals that have been in use in a variety of products since the 1930s.
- ACK is not unique – Approximately 524 airports across the U.S. have been required by the FAA to use AFFF.

General Characteristics of PFAS Compounds

- Persistent in the environment
- Water soluble and mobile in groundwater
- Scientific understanding and regulatory actions are continuing to evolve.
- Per the MassDEP Fact Sheet, studies of the 6 PFAS compounds in laboratory animals and studies of exposed people indicate some PFAS compounds are toxic with high concentrations and/or long-term exposure:
  - Developmental effects in fetuses
  - Possible effects on thyroid, liver, kidneys, hormone levels, and the immune system
  - Cancer risk may exist in people exposed to levels above the EPA lifetime drinking water Health Advisory of 70 parts per trillion (ppt)



PFAS Chemical Structure

*Please refer to the MassDEP and U.S. EPA Fact Sheets on the www.ack-pfas.com website

Per-and Polyfluoroalkyl Substance (PFAS) Sources

Industrial and Commercial Property Use

- Military facilities
- Dry cleaners
- Car washes
- Industrial and manufacturing facilities

Household/Consumer Products

- Including stain- and water-repellent fabrics, nonstick products (e.g., Teflon), cookware, polishes, waxes, paints, cleaning products, shampoos, sunscreens, moisturizers, insect repellents, cosmetics, fast food packaging, microwave popcorn bags, dental floss

Aqueous Film Forming Foams (AFFF)

- For emergency use and firefighting training and certification (required annually by the FAA) since at least 1989

Regulatory Timeline

U.S. EPA May 2016 - Issued a Health Advisory citing a lifetime risk of 70 ppt for drinking water covering two PFAS compounds.

There are currently no U.S. EPA federal drinking water standards for PFAS compounds, only this guideline.

MassDEP June 2018 – Set a guideline of 70 ppt for any combination of 5 PFAS compounds.

MassDEP January 2019 - Announced its intention to initiate the process to develop a drinking water standard for a group of PFAS compounds.

MassDEP December 27, 2019 – Adopted revisions to the Massachusetts drinking water regulations for PFAS where the standard is 20 ppt for the sum of the concentrations of six PFAS compounds.

Project Timeline

March 11, 2019	MassDEP issues Request for Information (RFI) to ACK
April 2, 2019	ACK responds with all requested information including past and current AFFF use
December 6, 2019	MassDEP issues Notice of Response Action (NORA)
December 21, 2019	ACK sends access agreements to commence testing on Madequecham Valley Road (MVR)
December 27, 2019	MassDEP issues drinking water standard of 20 ppt for private wells for the sum of six PFAS compounds
February 14, 2020	Ground water testing of airport wells and Thompson House well (airport-owned) on MVR
March 3, 2020	MassDEP informed of ACK property test results
April 29, 2020	Immediate Response Action Plan (IRA Plan) submitted to MassDEP
May 6, 2020	Madequecham Valley Road testing commences Installation of the Thompson House POET system
June 10-12, 2020	Installation of 3 POET systems on MVR
July 14, 2020	Airport Commission authorized task order for testing residences west of ACK and continued work on MVR
July 20, 2020	West side residences testing commences
July 22-23, 2020	Installation of 2 POET systems on MVR

Airport property monitoring well
ACK and MassDEP documents located on the www.ask-pfas.com website

ACK Response Actions

ACK Actions as required by MassDEP

Results: greater than non-detect up to 20 parts per trillion (ppt)
Response: Verbal or electronic notification of homeowner, provide bottled water, no treatment, followed by quarterly monitoring.

Results: greater than 20ppt up to 200ppt
Response: Verbal or electronic notification of homeowner, provide bottled water, design and install treatment system.

Results: 200ppt or greater (deemed Imminent Health Hazard by MassDEP)
Response: Verbal and electronic notification of homeowner, provide bottled water, and install treatment system on an expedited basis.

Point of Entry Treatment (POET) Systems

01

Designed and installed by the Airport consultants

02

Redundant design to ensure system protection

03

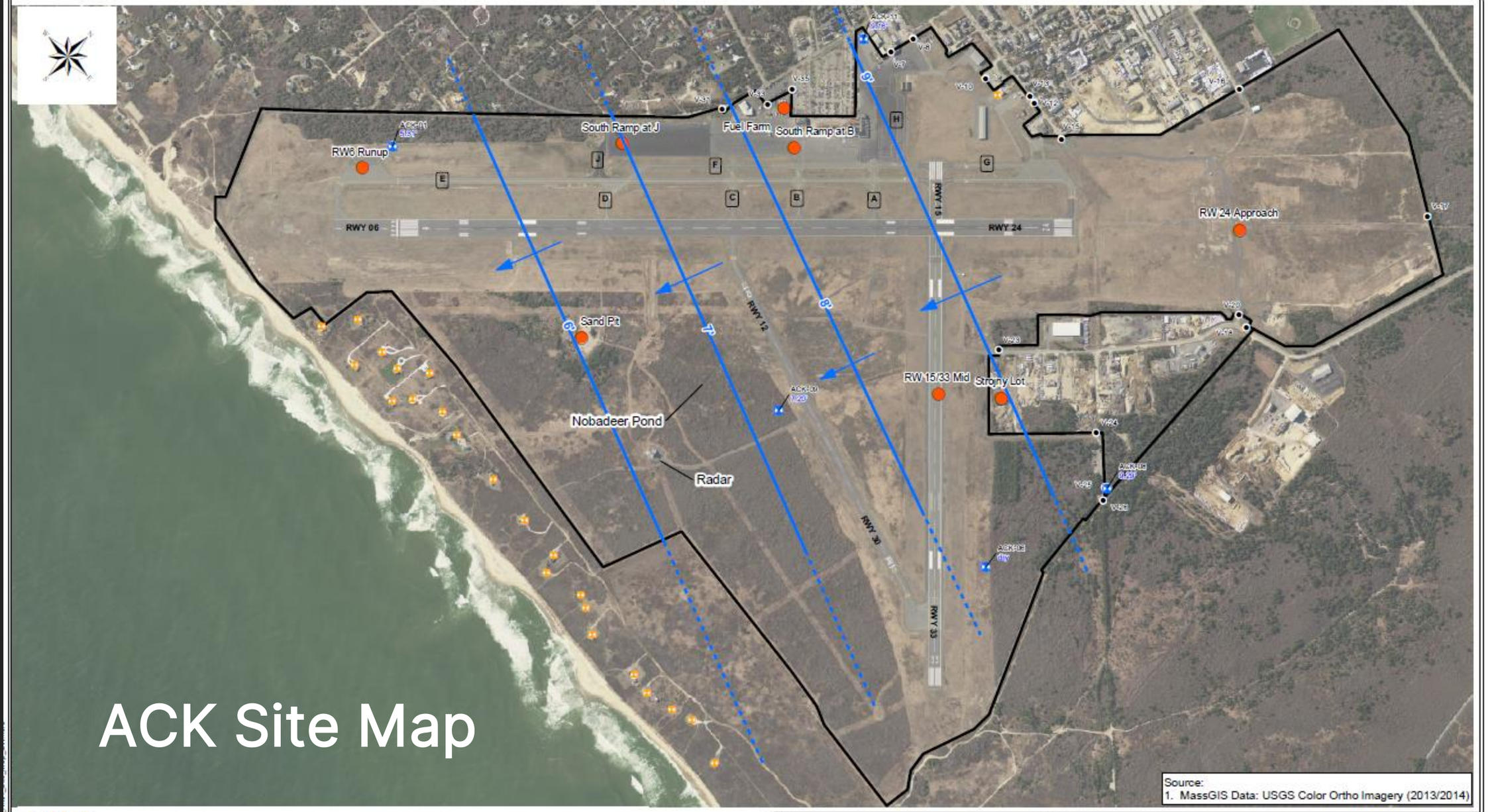
Design unique to each home

04

Initial monthly testing to ensure efficacy of system, then quarterly

05

Provision of bottled water until water samples confirm removal of PFAS



ACK Site Map

Legend

- Drinking Water Well
- Monitoring Well
- Gate
- Site Fence
- Known AFFF Release Areas
- RWY 12 Runway
- A Taxiway
- 7.20' Groundwater Elevation (feet)
- Groundwater Elevation Contour
- Inferred Groundwater Elevation Contour
- Groundwater Flow Direction

800 400 0 800
Feet

NANTUCKET MEMORIAL AIRPORT SITE MAP

NANTUCKET MEMORIAL AIRPORT
14 AIRPORT RD, NANTUCKET, MA 02554

NANTUCKET MEMORIAL AIRPORT

WESTON & SAMPSON

4/15/2020

2

Known ACK AFFF Application, Approximate Summary

Location	Date Range	Frequency	Estimated Total AFFF Conc applied (gallons)
Sand Pit	1989-1994	1-2 applications/year	150-300
Sand Pit	2008	1 application	10
RW6 Runup (w)	1995-2015	1-2 total applications	25-50
Strojny Lot	2015-2018	6 annual applications	600-750
South Ramp @ J (w)	2015-2018	1-2 annual applications	25-50
RW 24 Approach	1995-2015	1-2 applications/year	275-550
Fuel Farm (w)	1998-2013	Every 2 years	200
RW 15/33 Mid	1989-2013	Annual	625
South Ramp @ B (w)	1995-2015	1-2 total applications	25-50

Total Estimated AFFF Application: Between 1, 910 and 2, 535 gallons
Information taken from Exhibit G of the Request for Information (RFI) Response, dated April 2, 2019. See www.ACK-PFAS.com for a full copy of the document.
(w) – indicates location is on the western side of the airport property

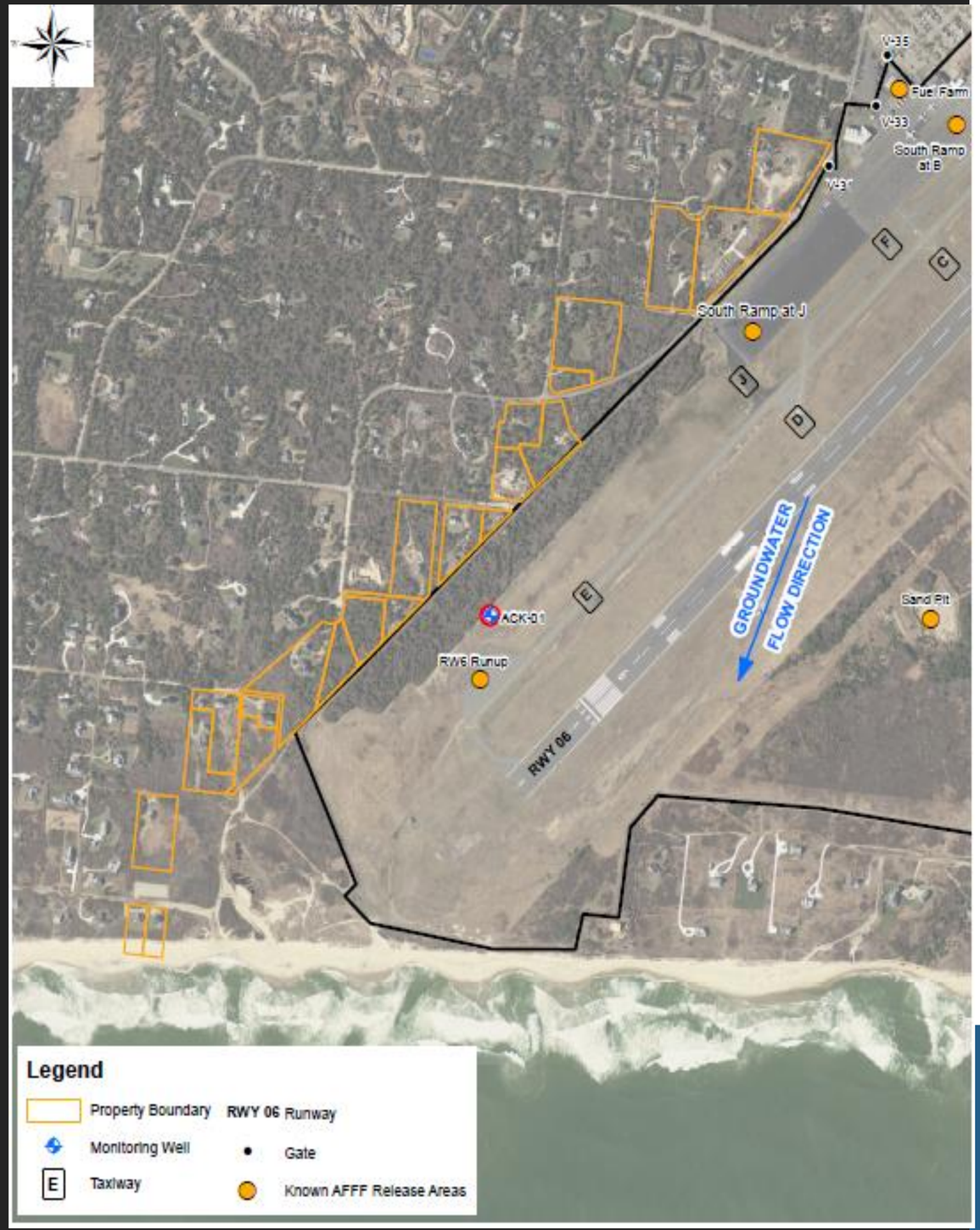
Current Status

Madequecham Valley Road

- 22 parcels total
- 19 tested, 1 pending, 2 nonresponsive owners
- 5 over 200ppt
- 3 between 20ppt and 200ppt
- 4 below 20ppt
- 3 non detect (ND)
- 4 results pending
- 6 treatment systems installed (2 pending)
- 14 on bottled water
- Testing is still ongoing

West of Airport Properties

- 22 parcels
- 20 confirmed wells
  - 20 access agreements received
  - 20 tested
  - Initial results expected about August 7th
- Testing is still ongoing



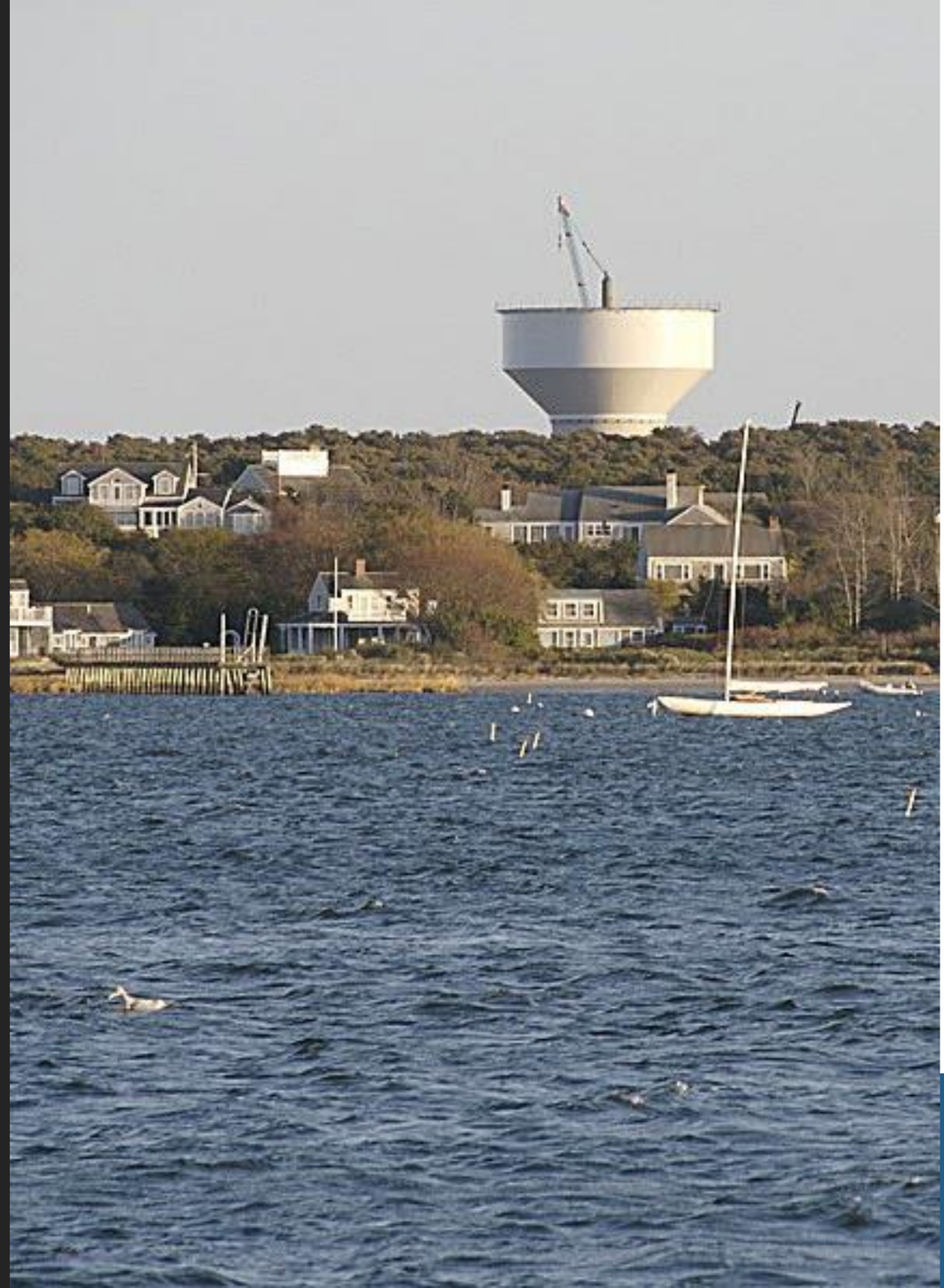
Moving Forward

Madequecham Valley Road

- Obtain access agreements for remaining properties
- Complete testing and notify homeowners
- Complete treatment system installation
- Continuing testing to determine system maintenance schedule and to monitor homes without treatment systems
- Winterize and activate systems for seasonal homes – annual requirement

West of Airport Properties

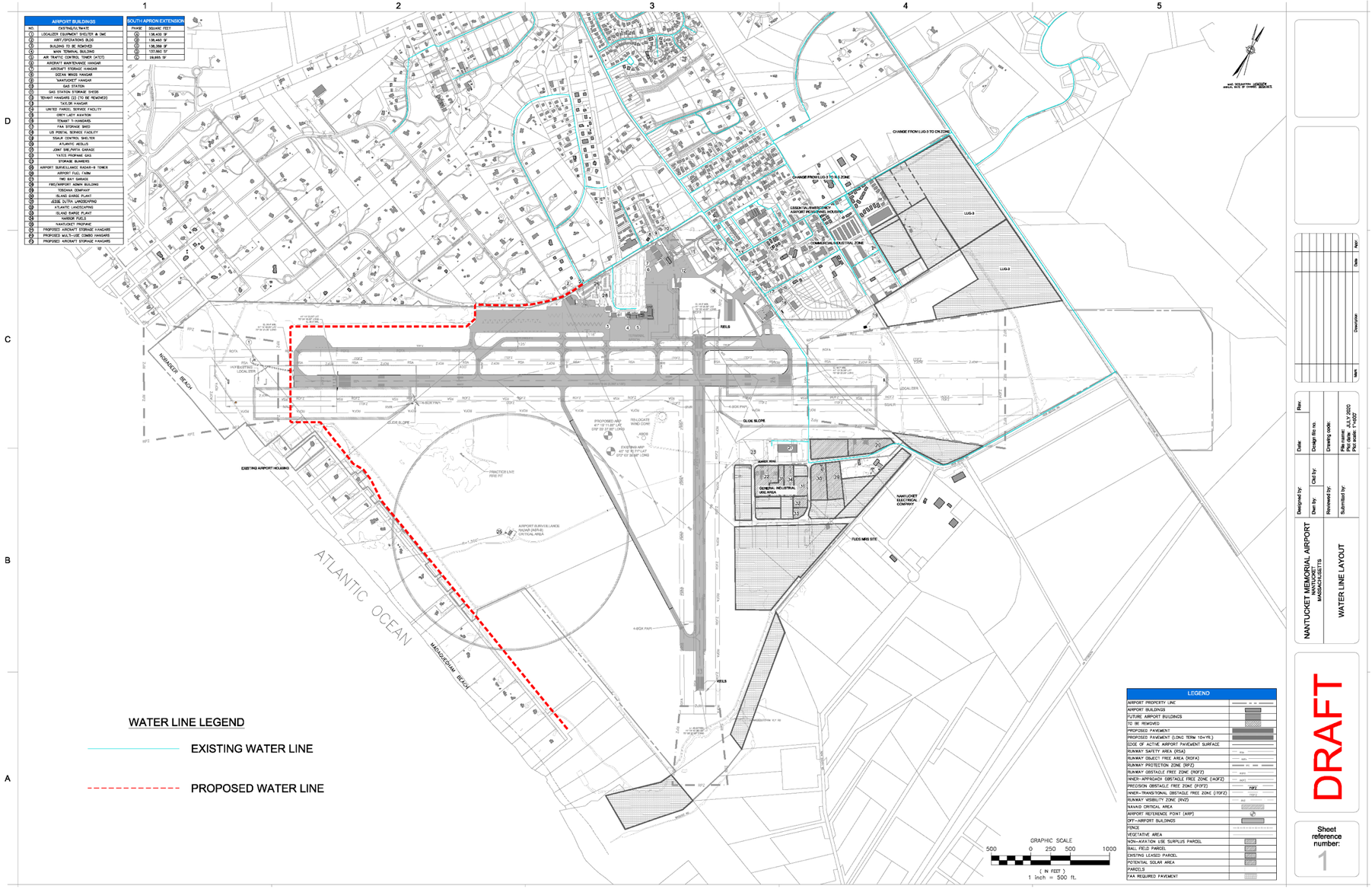
- Same protocol as MVR for testing and treatment systems, if needed
- If results at or above 20 ppt, adjacent parcels to be sampled
- Possible follow up testing for homes without treatment systems



Other Next Steps:

- Continued testing and analysis
- Investigate nature and extent of groundwater impact
- Insure funding to expedite the process
- Continued public outreach and communication

★Working with Wanacomet Water Company to provide town water to affected properties



Project Team

Nantucket Memorial Airport

Website: www.ack-pfas.com

Noah Karberg – Assistant Airport Manager

Email:
nkarberg@nantucketairport.com

Phone: (508) 325-7531

McFarland-Johnson, Inc.

Airport Consulting Engineering

Richard Lasdin, Project Manager

Weston Solution

Licensed Site Professional (LSP)

James Soukup, LSP, PG, RG

Lisa Kammer, Project Manager

Thank you

Public Questions and Comments

Please use the *"Raise Hand"* function to ask a question or provide a comment. You will be called upon in order.

If you do not get your question addressed or have comments after this meeting, please submit your questions and comments to:

Noah Karberg, Assistant Airport Manager
nkarberg@nantucketairport.com

Please visit www.ACK-PFAS.com

Nantucket Memorial Airport
NANTUCKET, MA

How to Register to Ask Questions

Commission Public Information Session - July 29, 2020 at 5:00pm

This Commission Public Information Session will be held on Wednesday, July 29, 2020 at 5pm. This meeting will be hosted on Zoom Webinar. See links below for the instructions and access.

To view the meeting on YouTube, please use this link: https://youtu.be/ZhiWezscC_0.

To register as a meeting participant and to participate during the public comment portion of the meeting, please use this link for access to Zoom Webinar:
https://zoom.us/webinar/register/WN_bIDbdg3JTaWs17i9JYSY0g.

To review the instructions on how this public meeting will occur and how public comment and participation will take place, please use the link below. This meeting will be run similar to the current Nantucket Select Board Meeting format. Please refer to ***"New Public Participation Guidelines for Select Board Meetings*** section for the instructions for this meeting.
https://www.nantucket-ma.gov/138/Boards-Commissions-Committees

MassDEP Fact Sheet

Per- and Polyfluoroalkyl Substances (PFAS) in Drinking Water: Questions and Answers for Consumers

What are PFAS and how are people exposed to them?
PFAS are fluorinated organic chemicals. Two PFAS chemicals, perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) were extensively produced and are the most studied and regulated of these chemicals. Several other PFAS that are similar to PFOS and PFOA exist. These PFAS are contained in some firefighting foams used to extinguish oil and gas fires. They have also been used in a number of industrial processes and to make carpets, clothing, fabrics for furniture, paper packaging for food and other materials (e.g., cookware) that are resistant to water, grease and stains. Because these chemicals have been used in many consumer products, most people have been exposed to them.

While consumer products and food are the largest source of exposure to these chemicals for most people, drinking water can be an additional source of exposure in communities where these chemicals have contaminated water supplies. Such contamination is typically localized and associated with a specific facility, for example, an airfield at which they were used for firefighting or a facility where these chemicals were produced or used.

What are the levels of concern?
Scientific information and regulatory actions on PFAS are rapidly evolving. Currently, there are no enforceable federal standards for these substances in public drinking water. However, in May 2016, the United States Environmental Protection Agency (EPA) issued a lifetime drinking water Health Advisory (HA) of 70 nanograms (ng) per liter (L) (70 ng/L which equals 70 parts per trillion or ppt) for any combination of PFOA and PFOS. In June 2018, MassDEP extended this advisory to include three additional related PFAS chemicals - perfluorononanoic acid (PFNA), perfluorohexanesulfonic acid (PFHxS) and perfluoroheptanoic acid (PFHpA). This Massachusetts value, called a MassDEP Office of Research and Standards Guideline (ORSG), is a maximum recommended level for drinking water. It is set to be protective against adverse health effects for all people consuming the water for a lifetime and also applies to shorter-term exposures of weeks to months during pregnancy and breast-feeding.

On December 27, 2019 MassDEP proposed revisions to the Massachusetts drinking water regulations that would establish a regulatory drinking water standard or Massachusetts Maximum Contaminant Level (MMCL) for per and polyfluoroalkyl substances (PFAS). These revisions would establish a MMCL of 20 ng/L (or parts per trillion) for the sum of the concentrations of six specific PFAS: perfluorooctane sulfonic acid (PFOS); perfluorooctanoic acid (PFOA); perfluorohexane sulfonic acid (PFHxS); perfluorononanoic acid (PFNA), perfluoroheptanoic acid (PFHpA), and perfluorodecanoic acid (PFDA). The proposed standard is supported by recent scientific developments in understanding the health effects of PFAS and is aligned with PFAS cleanup standards promulgated by the Waste Site Cleanup Program. For information on the proposed MMCL see: https://www.mass.gov/regulations/310-CMR-22-the-massachusetts-drinking-water-regulations

On January 27, 2020, MassDEP issues an updated Office of Research and Standards Guideline (ORSG) for

drinking water of 20 ng/L for these six PFAS compounds. The ORSG and the technical support document explain the basis of both the MassDEP revised cleanup standards and the proposed MMCL for drinking water. The updated ORSG replaces the June 2018 guideline for PFAS in drinking water. See the updated ORSG and technical support document here: https://www.mass.gov/info-details/per-and-polyfluoroalkyl-substances-pfas#health-advisories-and-downloadable-fact-sheets-

Based on the current ORSG, MassDEP recommends that:

1) consumers in sensitive subgroups (pregnant women, nursing mothers and infants) not consume water when the level of the six PFAS substances, individually or in combination, is above 20 ppt; and,
2) public water suppliers take steps expeditiously to lower levels of the six PFAS, individually or in combination, to below 20 ppt for all consumers.

What does MassDEP currently recommend while the standard is being finalized?
If you are a sensitive consumer (pregnant women, nursing mothers, and infants) you can minimize your exposure by using bottled water that has been tested for PFAS for drinking, making infant formula and cooking of foods that absorb water or use a home water treatment system that is certified to remove PFAS by an independent testing group such as National Sanitation Foundation (NSF), Underwriters Laboratories (UL), Water Quality Association or the CSA Group. See MassDEP's website on PFAS (under "Bottled water and home water filters") for more information https://www.mass.gov/info-details/per-and-polyfluoroalkyl-substances-pfas.

What health effects are associated with exposure to PFAS?
The MassDEP ORSG and proposed MMCL are based on studies of the 6 PFAS substances in laboratory animals and studies of exposed people. Overall, these studies indicate that exposure to sufficiently elevated levels of the 6 PFAS compounds, may cause developmental effects in fetuses during pregnancy and in breastfed infants. Effects on the thyroid, the liver, kidneys, hormone levels and the immune system have also been reported. Some studies suggest a cancer risk may exist in people exposed to levels well above the EPA Health Advisory.

It is important to note that consuming water with PFAS above the recommended limits does not mean that adverse effects will occur. The degree of risk depends on the level of the chemicals and the duration of exposure. The recommended limit assumes that individuals drink only contaminated water, which typically overestimates exposure, and are also exposed to PFAS from sources beyond drinking water, such as food. To enhance safety, several uncertainty factors are additionally applied to account for the differences between animals and humans, and to account for the differences between people. Scientists are still working to study and better understand the health risks posed by exposures to PFAS. If your water has been found to have PFAS and you have specific health concerns, you may wish to consult with your doctor.

How can I find out about contaminants in my drinking water?
If you get your water from a public water system, you should contact them for this information. For a contact list for all public water systems in the Commonwealth you may visit: https://www.mass.gov/lists/drinking-water-health-safety#contacts then under "Contacts" click on "MA Public Water Supplier contacts sorted By Town."

For private well owners, you may want to contact your local Board of Health, Town government or town

For access to the links shown in the MassDEP Fact Sheet above please click here

public water supplier for information specific to your Town. For water testing for PFAS compounds, MassDEP recommends the use of a state "Approved" or certified analytical laboratory. Local Private Well Regulations may specify the use of a state certified lab. Massachusetts is currently developing state PFAS lab certification, but until available, it recognizes other third party approvals with an "Approved" designation. A searchable list of MassDEP certified labs can be found at: http://eeaonline.eea.state.ma.us/DEP/Labcert/Labcert.aspx

What options should be considered when PFAS in drinking water is above MassDEP's drinking water guideline (ORSG) or proposed MMCL?

- ✓ Sensitive subgroups, including pregnant women, nursing mothers and infants, should consider using bottled water that has been tested for PFAS, for drinking, cooking of foods that absorb water (like pasta) and to make infant formula. Bottled water that has been tested for PFAS, or formula that does not require adding water, are alternatives.
- ✓ For older children and adults, the recommended guideline is applicable to a lifetime of consuming the water. For these groups, shorter duration exposures present less risk. However, if you are concerned about your exposure while steps are taken to assess and lower the PFAS concentration in your drinking water, use of bottled water that has been tested for PFAS will reduce your exposure.
- ✓ Water contaminated with PFAS can be treated by some home water treatment systems that are certified to remove PFAS by an independent testing group such as NSF, UL, Water Quality Association or the CSA Group. These may include point of entry systems, which treat all the water entering a home, or point of use devices, which treat water where it is used, such as at a faucet.
- ✓ In most situations the water can be safely used for washing and rinsing foods and washing dishes.
- ✓ For washing items that might go directly into your mouth, like dentures and pacifiers, only a small amount of water might be swallowed and the risk of experiencing adverse health effects is very low. You can minimize any risk by not using water with PFAS greater than the MassDEP guideline to wash such items.
- ✓ The water can be safely used by adults and older children for brushing teeth. However, use of bottled water should be considered for young children as they may swallow more water than adults when they brush their teeth. If you are concerned about your exposure, even though the risk is very low, you could use bottled water for these activities.
- ✓ Because PFAS are not well absorbed through the skin, routine showering or bathing are not a significant concern unless PFAS levels are high. Shorter showers or baths, especially for children who may swallow water while playing in the bath, or for people with skin conditions (rashes, cuts, etc.) would limit any absorption from the water. Based on information from the Connecticut Department of Health, which is the only State to have issued guidance on this issue, water should not be used, long-term, for showering and bathing if the PFAS level exceeds 210 ppt.
- ✓ For pets or companion animals, the health effects and levels of concern to mammalian species, like dogs, cats and farm animals, are likely to be similar to those for people. However, because these animals are different sizes, have different lifespans, and drink different amounts of water than people it's not possible to predict what health effects an animal may experience from drinking water with PFAS concentrations greater than the MassDEP guideline. There is some evidence that birds may be more sensitive to PFAS. There is little data on PFAS effects on other species like turtles, lizards, snakes and fish. As a precaution, if you have elevated levels of PFAS in your water, you may wish to consider using alternative water for your pets. If you have concerns, you may also want to consult with your veterinarian.
- ✓ For gardening or farming, certain plants may take up some PFAS from irrigation water and soil. Unfortunately, there is not enough scientific data to predict how much will end up in a specific crop.

Since people eat a variety of foods, the risk from the occasional consumption of produce grown in soil or irrigated with water contaminated with PFAS is likely to be low. Families who grow a large fraction of their produce would experience higher potential exposures and should consider the following steps, which should help reduce PFAS exposures from gardening:

- Maximize use of rainwater or water from another safe source for your garden.
- Wash your produce in clean water after you harvest it.
- Enhance your soil with clean compost rich in organic matter, which has been reported to reduce PFAS uptake into plants.
- Use raised beds with clean soil.

- **NOTE ON BOILING WATER:** Boiling water will not destroy these chemicals and will increase their levels somewhat due to water evaporation.
- **NOTE ON BOTTLED WATER:** Even though bottlers are not required to test for PFAS, some bottlers have tested. The best way to know if the bottled water you are drinking or plan to drink has been tested for PFAS is to contact the bottler and ask for the latest testing results. Contact information should be available on the bottle or you may need to search the internet. For more information, see MassDEP's website on PFAS (under "Bottled water and home water filters") https://www.mass.gov/info-details/per-and-polyfluoroalkyl-substances-pfas.

Where can I get more information on PFAS?

MassDEP PFAS Information. https://www.mass.gov/info-details/per-and-polyfluoroalkyl-substances-pfas

Interstate Technology and Regulatory Council (ITRC). PFAS.
https://www.itrcweb.org/Team/Public?teamID=78

Association of State Drinking Water Administrators PFAS webpage https://www.asdwa.org/pfas/

EPA's Drinking Water Health Advisories for PFOA and PFOS can be found at: https://www.epa.gov/ground-water-and-drinking-water/drinking-water-health-advisories-pfoa-and-pfos

The Centers for Disease Control and Prevention's Public Health Statement for PFOS and PFOA can be found at: https://www.atsdr.cdc.gov/pfas/index.html

For additional information on possible health effects, you may contact the Massachusetts Department Environmental Protection, Office of Research and Standards at 617-556-1165.

For information on the MassDEP Drinking Water Program, you may visit https://www.mass.gov/drinking-water-program or contact the program at program.director-dwp@state.ma.us or 617-292-5770.

For access to the links shown in the MassDEP Fact Sheet above please click here