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# **PFAS Contamination From a Former U.S. Air Force Base – Michigan Case Study**

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Highly Fluorinated Compounds – Social and Scientific Discovery

June 15, 2017

# Former Wurtsmith Air Force Base

- Timeline
- PFAS in FISH and wild game
- PFAS in drinking water
- Past and current exposure concerns
- Our partners



# Timeline

- 2010: DEQ started sampling and finding PFAS
- 2011: Fish in Clark's Marsh sampled and analyzed
- 2012: MDHHS receives fish data, issues do-not-eat advisory; further investigation

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- Sept 2015: Type 1 water-supply at mobile home park ID'd and sampled
- Oct 2015: Results received; planning begins for potable well survey
- Dec 2015: USAF and MDEQ sample 24 private residential wells
- Jan 2016: Results received; MDHHS prepares "Understanding Your Well Test Results" fact sheet
- Feb 2016: USAF and MDEQ send results letters and fact sheet; MDHHS sends recommendations letter with meeting info, updated fact sheet; local health conducts in-person outreach
- Mar 2016: MDHHS report showing evaluation of data sent to local health and township; ongoing investigation

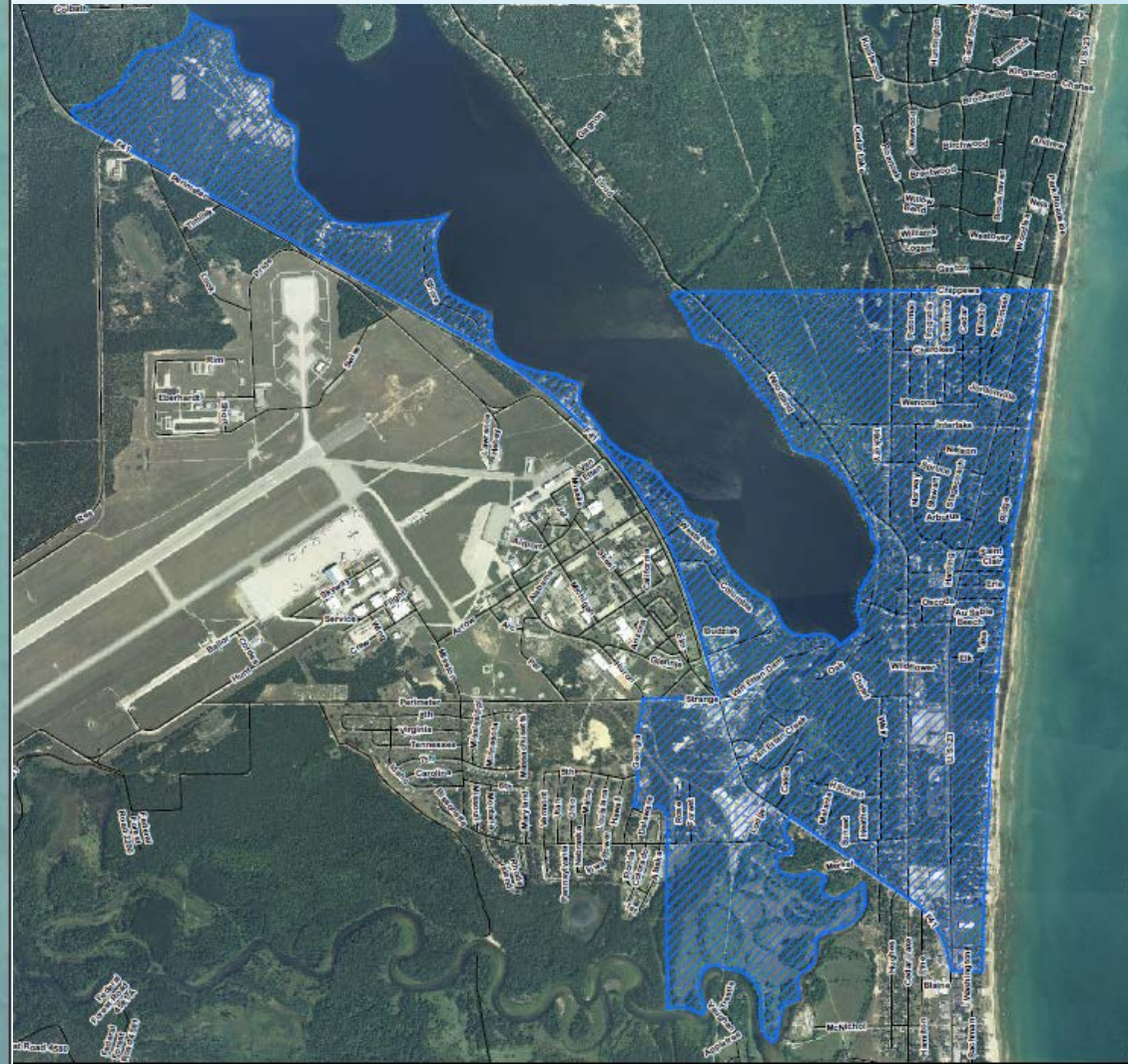
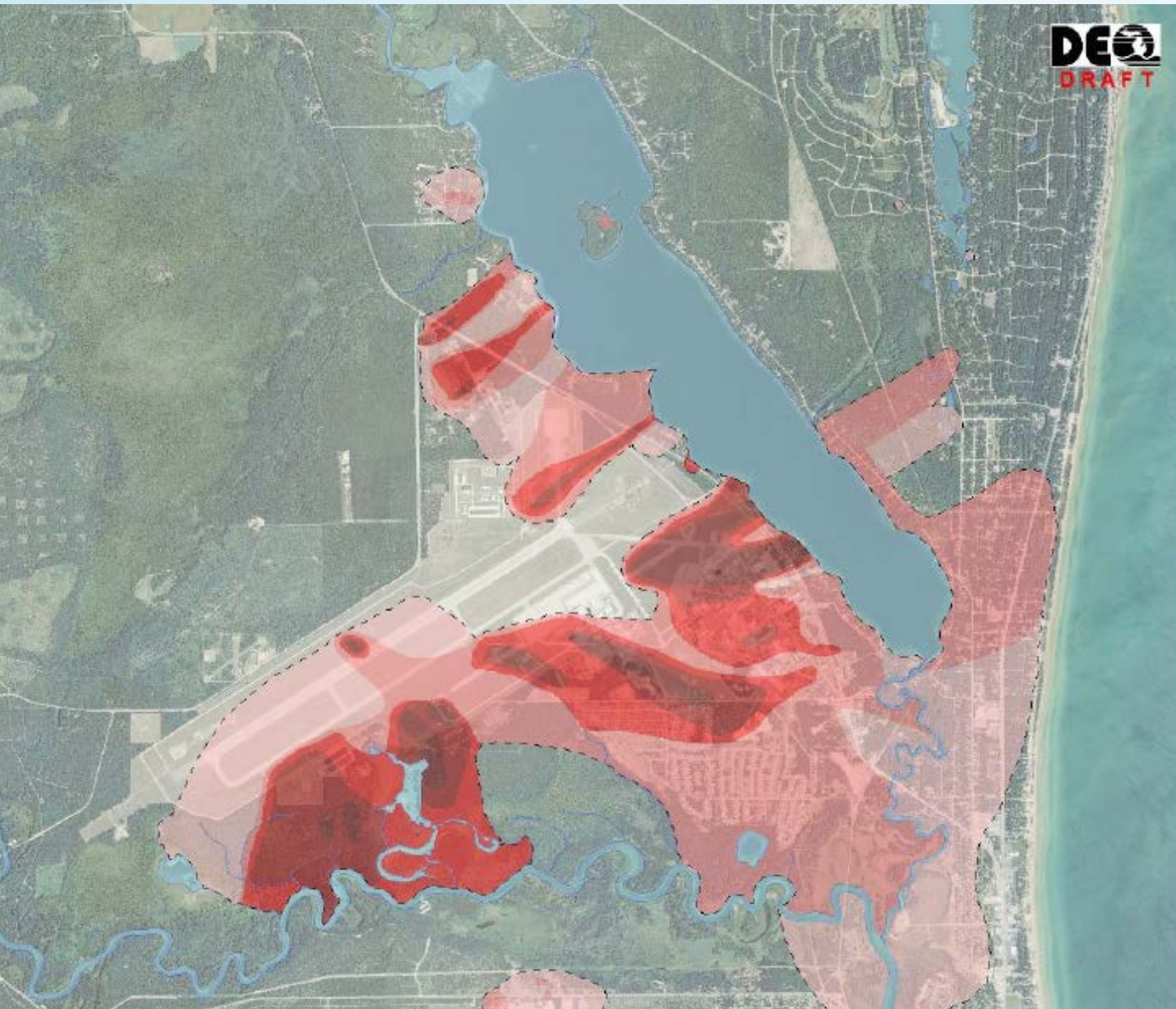


# PFAS in Fish and Wild Game



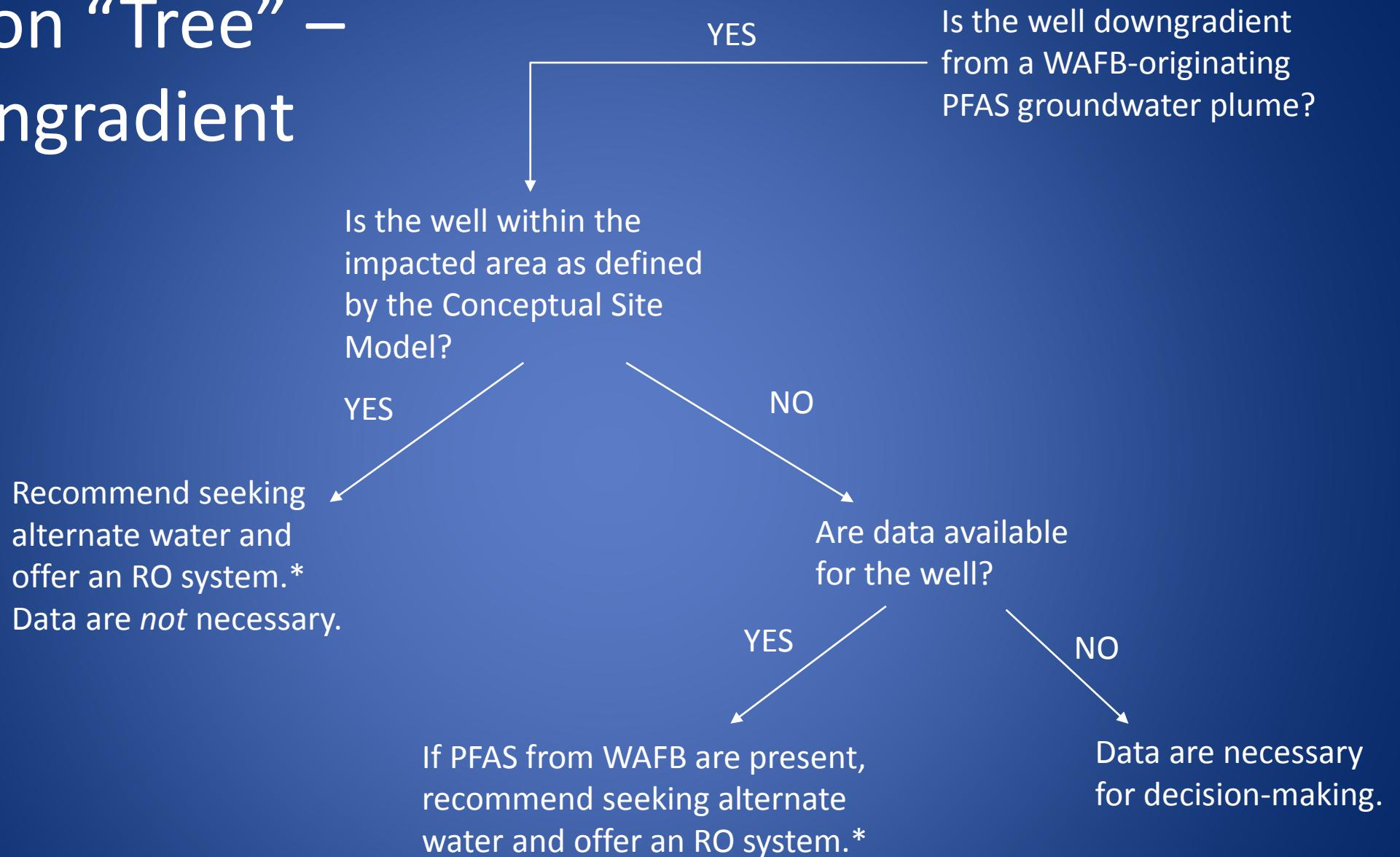


# PFAS in Drinking Water





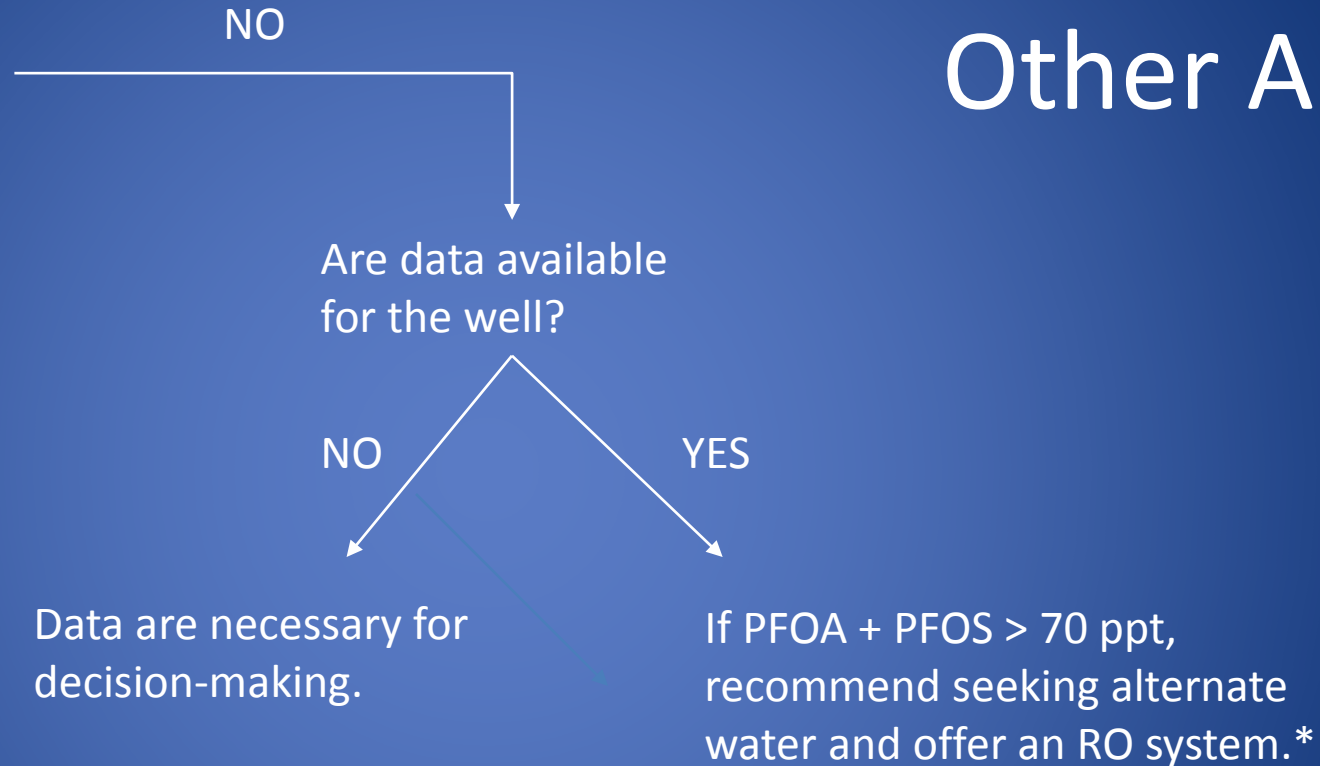
# Decision “Tree” – Downgradient



\*Well owners may choose to connect to township water, if that is currently available.

# Decision “Tree” – Other Areas

Is the well downgradient  
from a WAFB-originating  
PFAS groundwater plume?



\*Well owners may choose to connect to township water, if that is currently available.

# Exposure Concerns

## Past

- Base - Veterans, civilian workforce and their families
- Off-base exposures – when did exposure start?
- Should there be a health study?

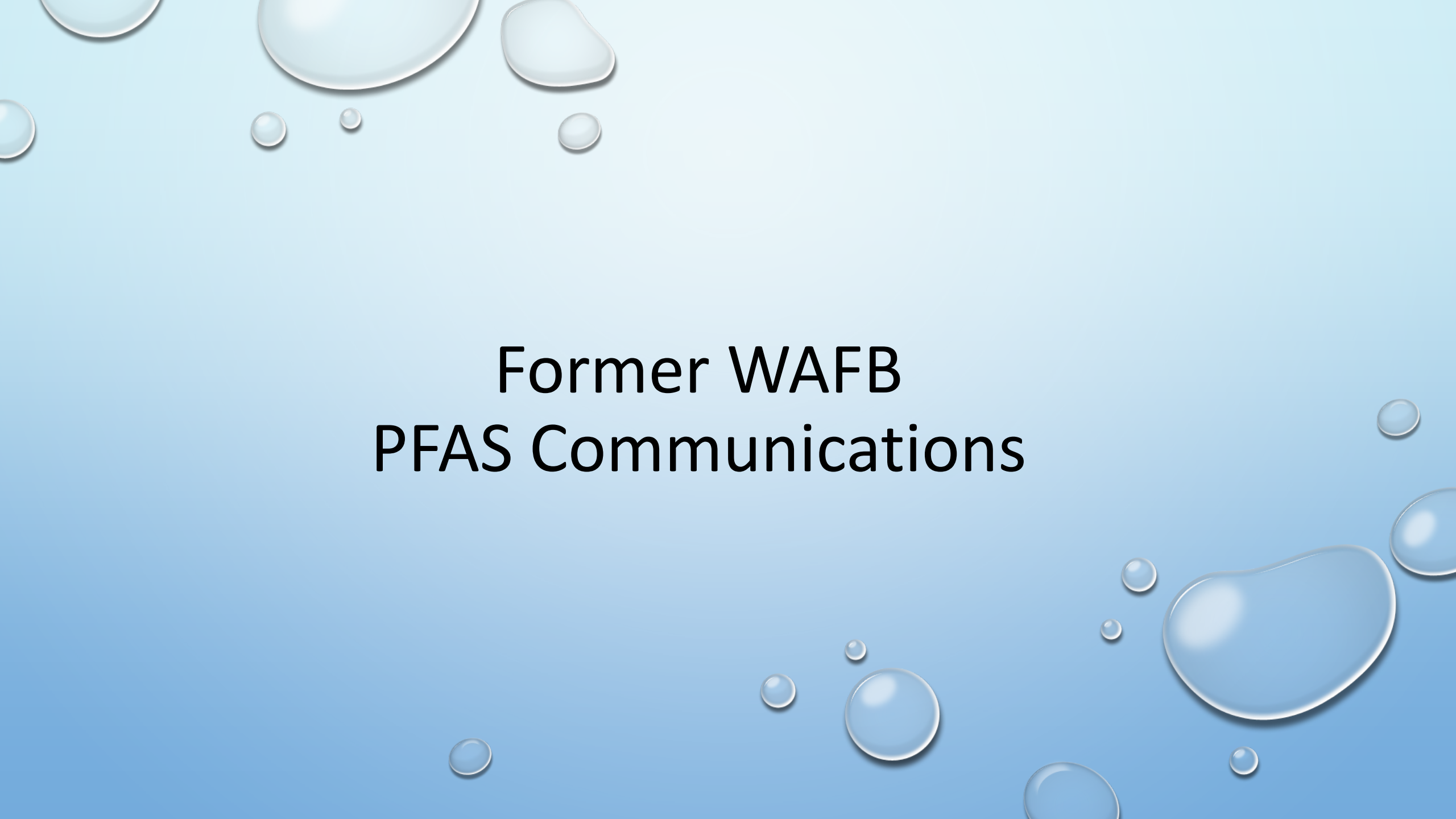
## Present

- Base is on city water now
- Off-base exposures – only 2/250 samples exceed LTHA
- Concern is drinking/cooking; contact is OK



# **Our Partners and Other Involved Parties**

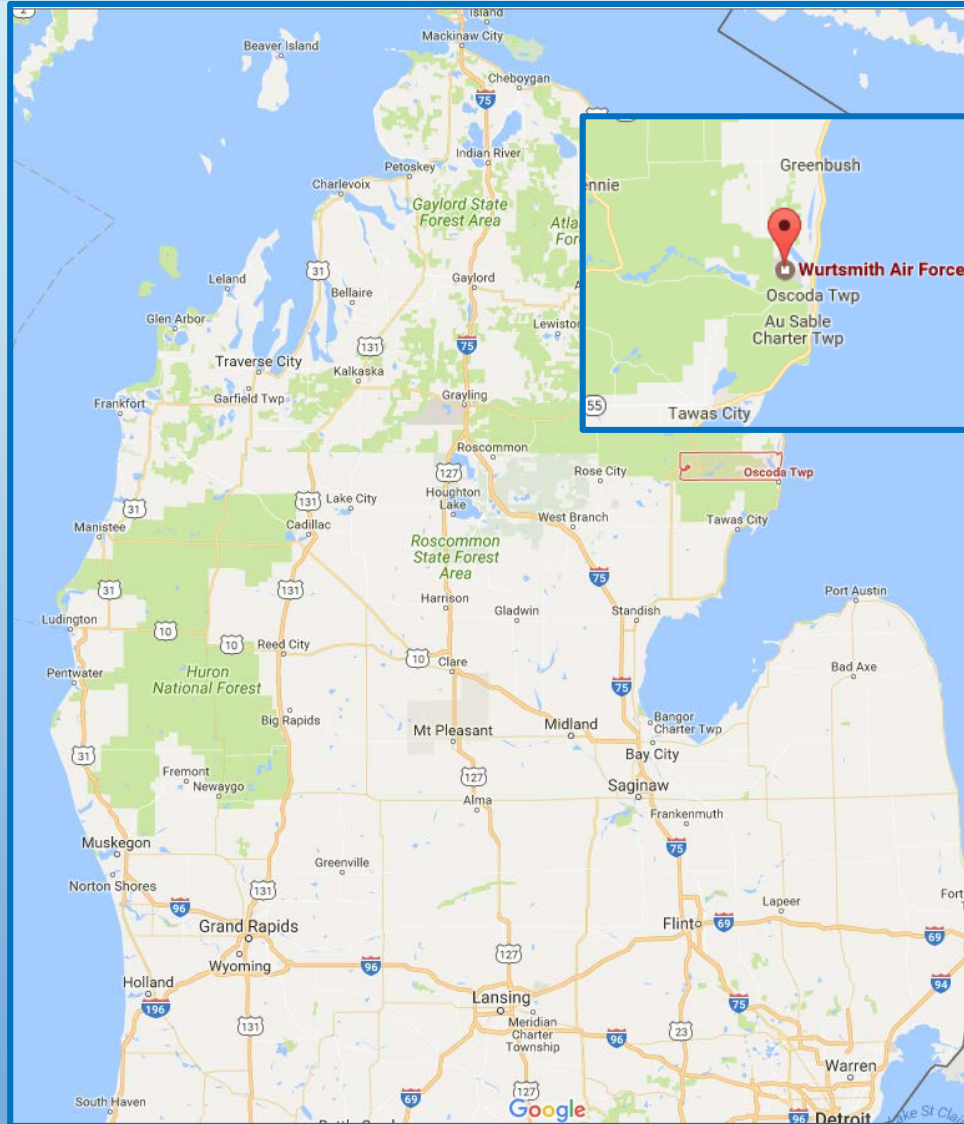
- Federal – U.S. Air Force, U.S. Forest Service, Michigan Congressional members
- State – MDEQ, MDNR, MDMVA, Governor's Office, State legislators
- Local – district health department, township officials, chamber officials, conservation clubs, fishing groups, homeowner associations
- Community members – residents, veterans (individuals, Facebook group), owners of vacation rentals, landlords/occupants
- Media

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# Former WAFB PFAS Communications

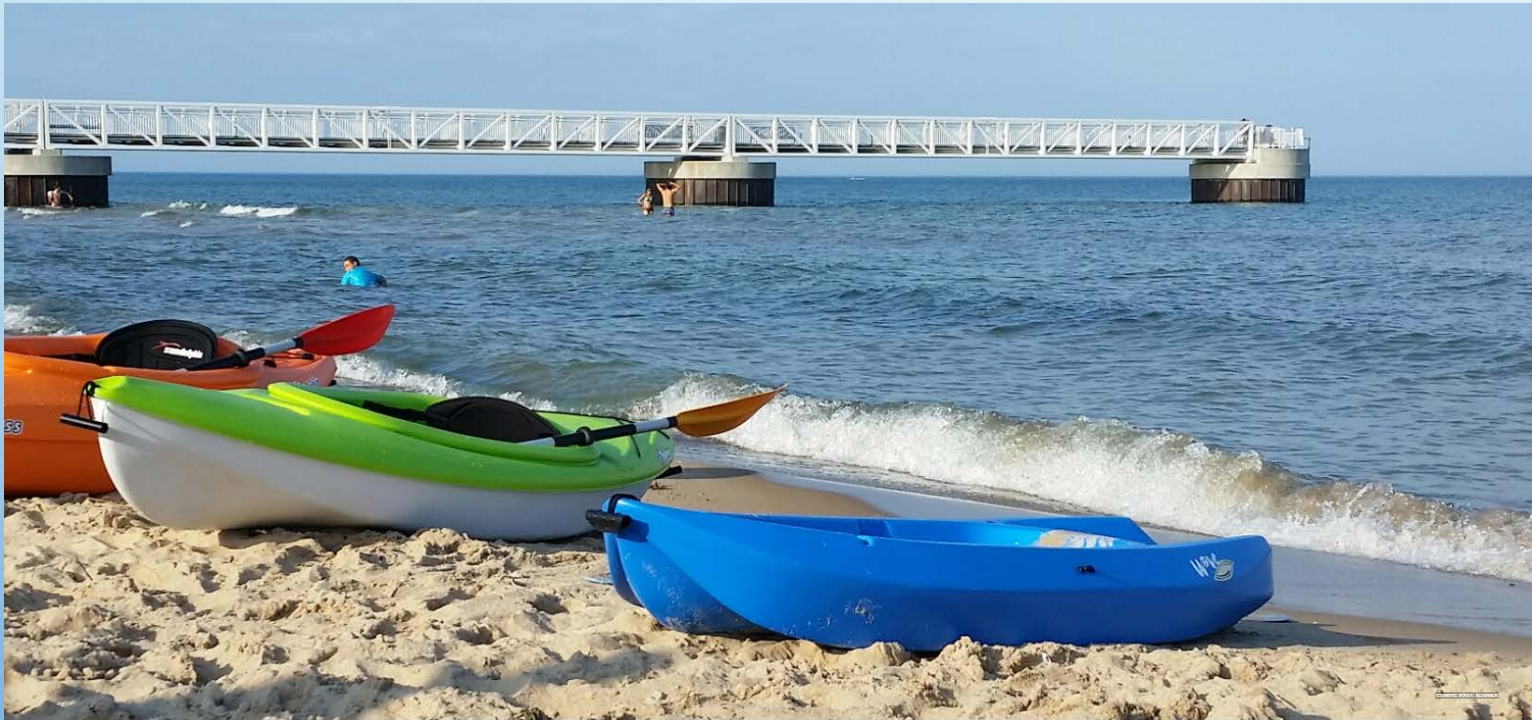


# Oscoda Township



Population	6,852
Median household income	\$34,295
Median age	51.3
Percent high school graduate or higher	87.5
Percent bachelor's degree or higher	19.7
Percent Individuals below poverty level	18.3
Veterans	1,025
Percent Race:	
White alone	95.2
Black or African American alone	.07
American Indian or Alaska Native alone	1.0
Asian alone	.05
Hispanic or Latino (of any race)	2.0

# Local Economy – Oscoda Township



Occupation	By number of employees*
Retail trade	388
Manufacturing	239
Accommodation and food service	232
Other services	69
*2012 Economic Census of the United States, U.S. Census Bureau	



# Well Known Fishing Destination

- Au Sable River is a world famous trout stream
- Lake Huron known for walleye fishing
- Van Etten Lake known for walleye fishing



Photo credit: Michigan Interactive, [www.fishweb.com](http://www.fishweb.com)

# First Round... PFAS Fish Advisory

**Do Not Eat Fish  
From Clark's Marsh**

The Michigan Department of Community Health has found unsafe levels of perfluorinated chemicals (PFCs) in fish from Clark's Marsh.



Eating fish from Clark's Marsh could harm your health.

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Catching and releasing fish is fine. Touching the fish or water will not harm you.



For more information, call MDCH at 1-800-648-6942 or visit [www.michigan.gov/eatsafefish](http://www.michigan.gov/eatsafefish).



**Do Not Eat Fish  
From Clark's Marsh**

The Michigan Department of Community Health has found unsafe levels of perfluorinated chemicals (PFCs) in fish from this area.



Eating fish from Clark's Marsh could harm your health.

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Catching and releasing fish is fine. Touching the fish or water will not harm you.





For more information, call MDCH at 1-800-648-6942 or visit [www.michigan.gov/eatsafefish](http://www.michigan.gov/eatsafefish).



**Do not eat certain fish  
from the Au Sable River -  
Foote Dam to Lake Huron**

There are high amounts of perfluorinated chemicals (PFCs) in fish that live in this part of the river year round. Eating them could harm your health.





**Do not eat** resident river fish such as sunfish, bass, and perch.



Migratory lake fish such as salmon and steelhead do not have high levels of PFCs.


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Catch and release fishing, boating, and swimming are fine. Touching the water will not harm you.



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MDCH has meal guidelines for some fish from the Au Sable River and Lake Huron because of other chemicals. For more information, call MDCH at 1-800-648-6942 or visit [www.michigan.gov/eatsafefish](http://www.michigan.gov/eatsafefish).



Or scan this with your smartphone.



## Second Round

### Have fun on the Au Sable!

The Michigan Department of Community Health has advice about activities on the lower Au Sable River between Foote Dam and Lake Huron.



Do not eat resident river fish such as sunfish, bass, and perch. There are high amounts of perfluorinated chemicals (PFCs) in fish that live in this part of the river year round. Eating them could harm your health.

Fish that don't live in the river year round, such as salmon and steelhead, are safer to eat.



Enjoy swimming, boating, and fishing in the river. Touching the water will not harm you.



MDCH has meal guidelines for some Au Sable River and Lake Huron fish because of other chemicals. Call MDCH at 1-800-648-6942 or visit [www.michigan.gov/eatsafefish](http://www.michigan.gov/eatsafefish).



Scan this with your smartphone!

### Eat Safe Fish



caught from the lower Au Sable River, Van Etten Lake, Clark's Marsh, Allen Lake, and Lake Huron



[www.michigan.gov/eatsafefish](http://www.michigan.gov/eatsafefish)

# MDHHS Issues Drinking Water Advisory



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District Health Department No. 2 is main contact for alternate water supply: RO filter systems or in-home water cooler

Chris is the main contact for water test results, questions, and recommendations. Trusted source!

## Public Meetings

- Held on quarterly basis or when new information is received
- Afternoon open house, ~100 in attendance
- Evening public meeting, ~100-150 in attendance
- MDHHS, MDEQ, U.S. Air Force, and local health department present
- Meetings last for four hours



# Fact Sheets & Website

## Per- and Polyfluoroalkyl Substances (PFAS) in Drinking Water Wells Near the Former Wurtsmith Air Force Base

Updated April 2017

Perfluorinated chemical contamination has entered drinking water wells near the former Wurtsmith Air Force Base (WAFB) in Oscoda Township, Michigan. The main affected area is near Van Etten Lake. Other areas near WAFB are also being investigated.



WAFB is located in Iosco County. Detailed map on back of this sheet.

### What are per- or polyfluoroalkyl substances (PFAS)?

PFAS (sometimes known as perfluorinated chemicals or PFCs) are a group of chemicals that are fire resistant, and repel oil, stain, grease, and water. PFAS are used in fire-fighting foams, nonstick cookware, fast food wrappers, as well as in industry and manufacturing. Firefighting foams that contained PFAS were used and sometimes spilled at WAFB when the base was in operation.

### Were any of the PFAS found in drinking water wells above health advisory levels?

- The U.S. Environmental Protection Agency (EPA) has set a lifetime health advisory (LTHA) level for two PFAS in drinking water: perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS). The LTHA level is 70 parts per trillion (ppt) for PFOA and PFOS combined.
- Nearly all of the drinking water wells tested near WAFB have been below the LTHA.
- There were other PFAS (not PFOA or PFOS) found in the water well samples. The EPA has not set health advisory levels for the other PFAS because not enough is known about them.

### Are there PFAS in the municipal water?

- Extremely low levels of PFAS were found in the municipal water supply, which is drawn from Lake Huron. The PFAS levels in the municipal water supply are considered safe to drink.
- PFAS are found in the environment worldwide. We expect to find PFAS in most surface waters, such as lakes and rivers.

### Why is MDHHS giving advice if PFAS levels are not an immediate health concern?

- Levels of PFOA and PFOS in the groundwater at WAFB are up to 10,000 times higher than the LTHA.
- Groundwater with high levels of PFAS might be moving off-base toward people's drinking water wells.
- We know that the PFAS from WAFB are found at low levels in some private drinking water wells. We don't know if the PFAS in the drinking water wells will stay at low levels. Also, we do not know how long PFAS may have been in the drinking water wells.
- PFAS can build up in the human body.



## Understanding Your Well Test Results (Former Wurtsmith Air Force Base and PFAS)

Updated April 2017

The U.S. Air Force or Michigan Department of Environmental Quality (MDEQ) tested your well water for a group of chemicals called per- or poly- fluoroalkyl substances (PFAS). PFAS are sometimes known as perfluorinated chemicals (PFCs). PFAS were in fire-fighting foams used at Wurtsmith Air Force Base when the base was in operation. PFAS are very persistent, meaning they stay in the environment for a very long time. The Michigan Department of Health and Human Services (MDHHS) has prepared this fact sheet to help you understand your well water test results.

### What do my results mean?

If a PFAS was detected in your water sample, there is a number in the table next to the specific PFAS found. This means your well water has that specific PFAS in it.

The U.S. Environmental Protection Agency (EPA) has set a lifetime health advisory (LTHA) level for two PFAS in drinking water: perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS). The LTHA level is 70 parts per trillion (ppt) for PFOA and PFOS combined.

For more about understanding your test results, see the back of this sheet.

### Can PFAS harm human health?

- Studies in people who were exposed to PFAS found links between the chemicals and increased cholesterol, changes in the body's hormones and immune system, decreased fertility, and increased risk of certain cancers.
- Animals given high levels of PFAS showed changes to the thyroid, liver, and immune system, and harmful effects in fetal and newborn animals. Animal studies help scientists understand what could happen in people.
- No one can say for sure if drinking water that has PFAS in it will harm you.

### What does MDHHS recommend if there is PFAS in my well water?

If you have been notified by MDHHS that PFAS in your well test results are likely coming from WAFB, MDHHS recommends:

- Call District Health Department No. 2 at 989-362-6183 for help with alternate water such as bottled water.
- Do not use your well water for drinking, cooking, making baby formula or food, or washing fruits and vegetables.
- Touching the water will not harm you. You can bathe, do your dishes, launder your clothes, and clean with your water.

### General Questions

1. Is this the same problem that caused the former Wurtsmith Air Force Base (WAFB) and YMCA Camp to be put on municipal water years ago, or is this a newly found situation?

**MDEQ:** The off base homes, businesses and the YMCA camp were originally offered a municipal water hook-up in response to fuel and industrial solvent contamination of the groundwater east of the former base. In 1997, the former base drinking water system was switched to the Huron Shores Regional Utility Authority (HSRUA) municipal drinking water system for operational reasons. Neither switch was in response to PFC contamination. PFC contamination was first discovered by the MDEQ at the former base's fire training site in 2010, long after the municipal water was provided to residents.

2. What was the initial cause of the leakage/plume?

**MDEQ:** There are several plumes of PFCs. Most appear to be from past use of firefighting foam. These foams were used at many locations on the former base, causing contamination to the ground and groundwater. PFCs may be also present in and coming from the base landfills. The Air Force is investigating the sources of the PFC contamination.

3. Where is the new plume coming from?

**MDEQ:** The PFCs that were recently discovered in residential wells are coming from many places where firefighting foams were used on the base. Examples include former air plane hangars, firefighting training sites, fuel storage areas, fire equipment cleaning sites, fuel filling areas, and jet engine testing buildings. It is likely there are other places where PFCs were used on the base in addition to those listed above. The Air Force is investigating these as potential sources of the PFC contamination. MDEQ staff will be providing oversight of the Air Force's investigation and will be taking duplicate samples to check the Air Force's findings.

4. How can a 20+ year old problem cause a bigger problem now?

**MDEQ:** This is an important question for understanding the problem and the challenges ahead. PFCs are still in the environment from use at the base from at least the 1970s, and will continue to be in the environment without human intervention. PFCs are very challenging to clean up as they are nearly indestructible in the environment. That is one major reason they are used in so many products. As an example, they do not breakdown in high temperature fuel fires. They continue to work when other substances will break down.

**AF:** The PFC issue was unknown in 1993 when the base closed. The EPA issued a Provisional Health Advisory level for PFCs in 2009, more than 16 years later. The Air Force is working to determine whether PFCs pose a risk to drinking water supplies of communities associated with the former WAFB. If PFCs from Air Force activities pose a risk of

# Informal Community Outreach workgroup

MDHHS requested - 7 attended the meeting

## Top concerns



- Health survey
- What does lifetime exposure mean
- Reaching non-engaged community members

## Other concerns

- Cleanup
- Municipal water – safety, funding for affected area
- Transparency
- LTHA

# To Publicize or Not?

Will using statewide media benefit or harm the community?

- Could let tourists know dermal contact is not of concern 
- Could bring negative attention to the area and drive away tourists 





# Next Steps

- Second meeting with communication workgroup
- Public meetings
  - Provide updates
  - Poll attendees at next open house for concerns, etc.
  - Implement additional communication methods based on community feedback

# Contact Information

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