Former Wurtsmith Air Force Base – PFCs in Drinking Water UPDATE

MDHHS
Michigan Department of Health & Human Services

October 25, 2016 Community Meeting

Oscoda, Michigan

Outline

- Timeline to this point
- Data update (MDEQ)
- EPA's Health Advisory levels
- Overview of Health Concerns
- Data evaluation and decision "tree" update

PFCs in Drinking Water

- Timeline
  - September 2015: Type 1 water-supply wells at mobile home park ID'd and sampled
  - December 2015: Private residential well sampling begins
  - February 2016: Well owners notified of results and recommendations
  - March 2016: First community meeting about drinking water issue; sampling continues, with verbal and email notifications
  - June 2016: Second community meeting, providing updates/status
  - October 2016: Formal letters sent for wells tested in 2016

Data Update (MDEQ)

EPA's Health Advisory levels

- Previously "provisional"
  - PFOA = 400 ppt (ng/L)
  - PFOS = 200 ppt
- Now "lifetime" (as of 5/19/2016)
  - PFOA + PFOS = 70 ppt
  - Short-term and long-term exposure
- Protecting fetus and against cancer/noncancer effects

Public Health Considerations

- **Unknown**
  - Contamination not fully characterized or controlled
  - One sample per well cannot determine past or future exposure

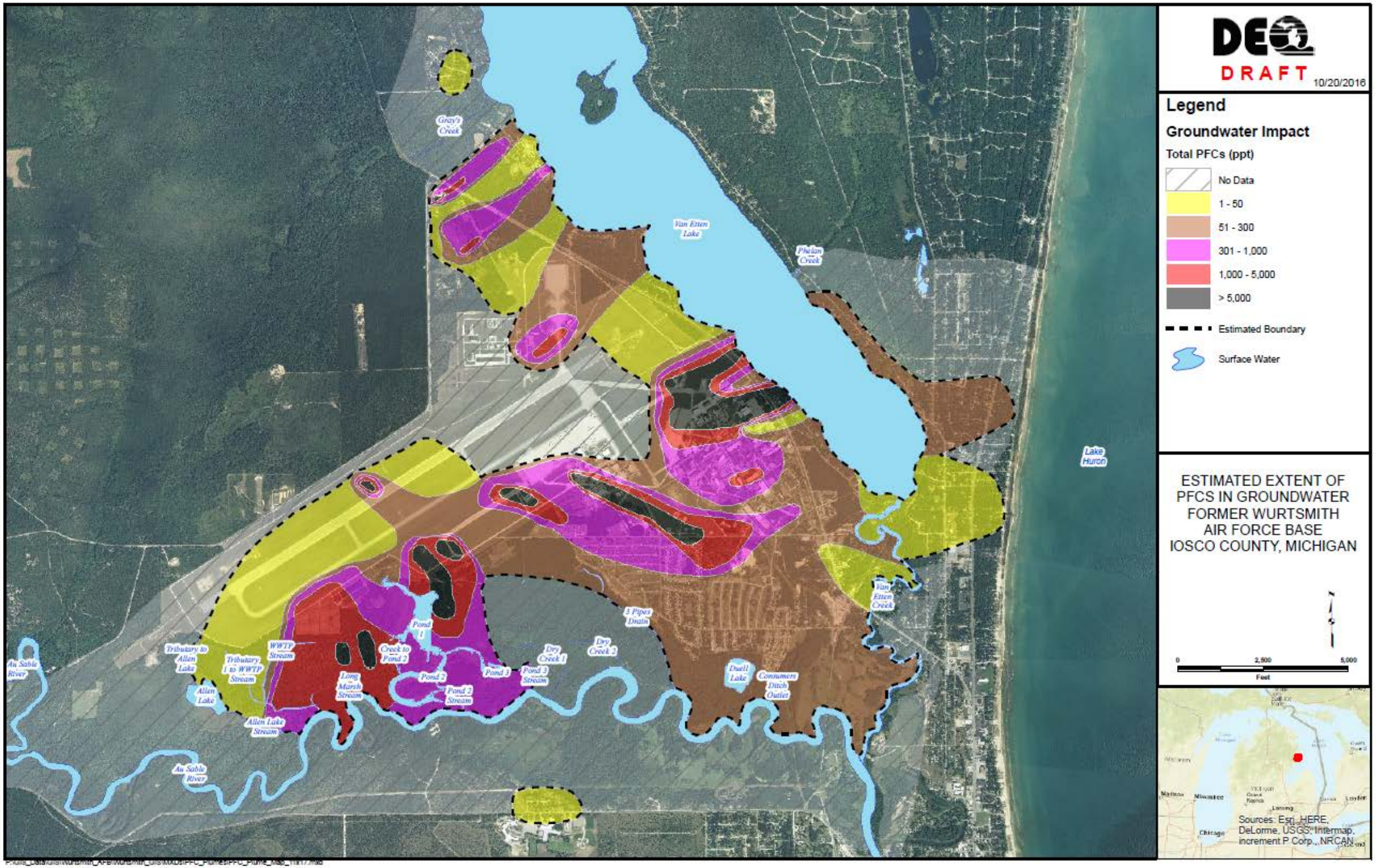
- **Known**
  - WAFB PFC groundwater contamination is found in drinking water wells
  - PFCs are persistent, bioaccumulate
  - Some PFCs stay in the body a long time

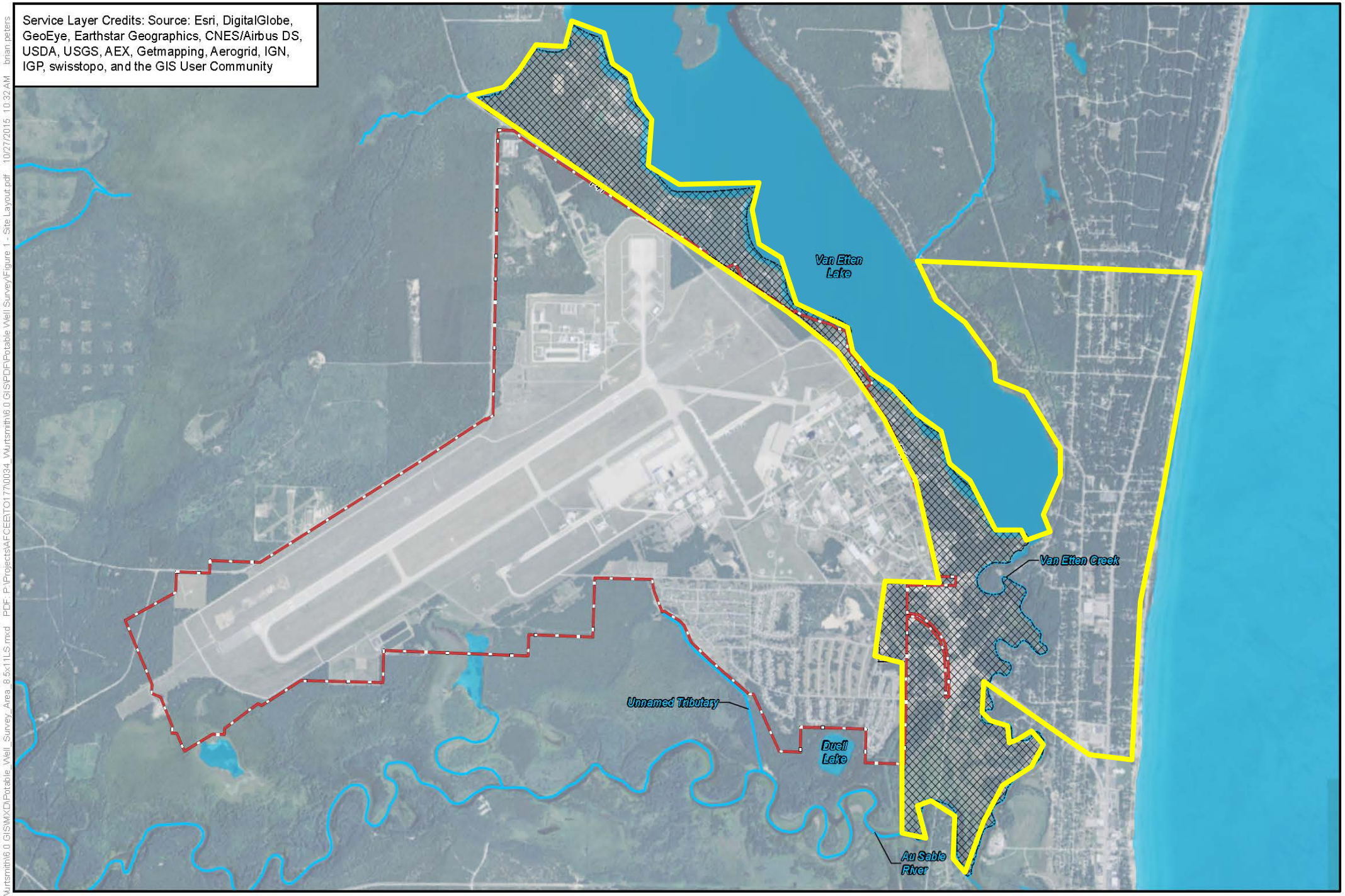
Animal studies help determine what could happen in people

Animals given high levels of PFCs showed changes to the thyroid, liver, and immune system, and harmed fetal and newborn animals.

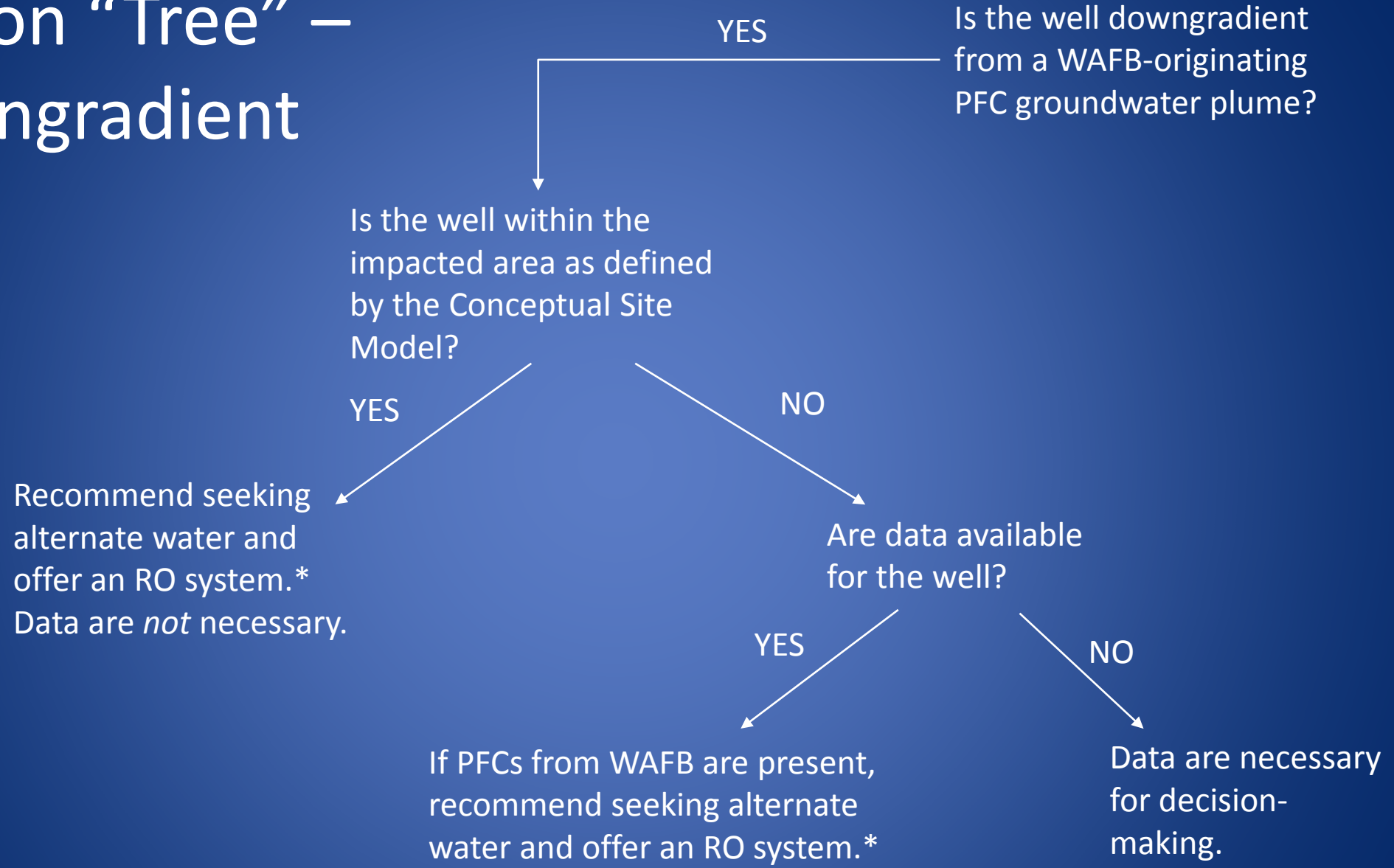
Studies of exposed people can confirm health concerns

Studies found links between human exposure and increased cholesterol, changes in the body's hormones and immune system, decreased fertility, and increased risk of certain cancers.


DEQ
DRAFT
10/20/2016
Legend
Groundwater Impact
Total PFCs (ppt)
No Data
1 - 50
51 - 300
301 - 1,000
1,000 - 5,000
> 5,000
Estimated Boundary
Surface Water
ESTIMATED EXTENT OF PFCS IN GROUNDWATER FORMER WURTSMITH AIR FORCE BASE IOSCO COUNTY, MICHIGAN
0
2,500
5,000
Feet
Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN
Gray's Creek
Van Etten Lake
Phelan Creek
Lake Huron
Van Etten Creek
3 Pipes Drain
Pond 1
Tributary to Allen Lake
WWTP Stream
Tributary 1 to WWTP Stream
Creek to Pond 2
Dry Creek 1
Dry Creek 2
Pond 3
Pond 3 Stream
Long Marsh Stream
Pond 2
Pond 2 Stream
Dwell Lake
Consumers Ditch Outlet
Allen Lake
Allen Lake Stream
Au Sable River
Au Sable River

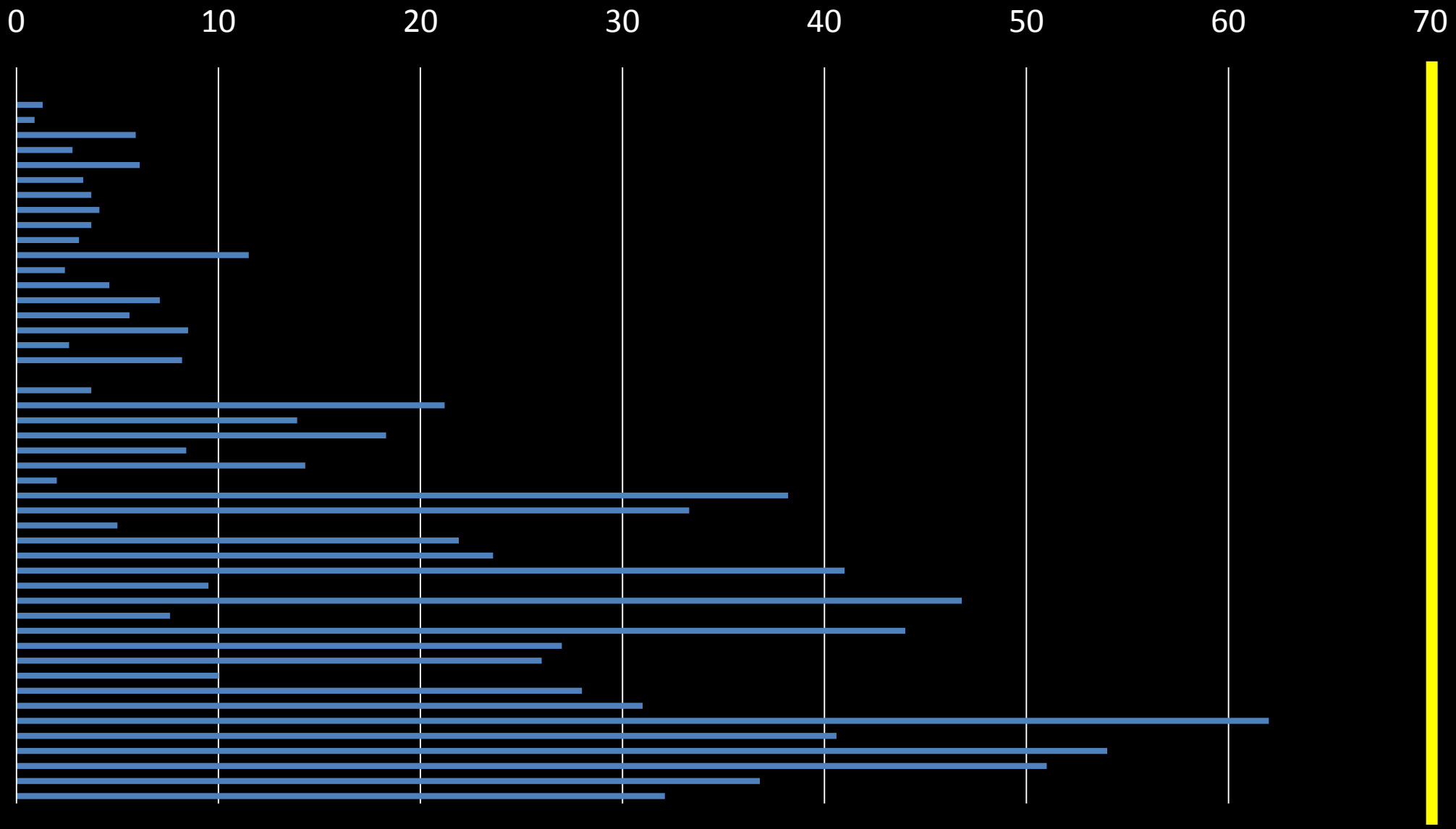

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Van Etten Lake
Van Etten Creek
Unnamed Tributary
Duell Lake
Au Sable River

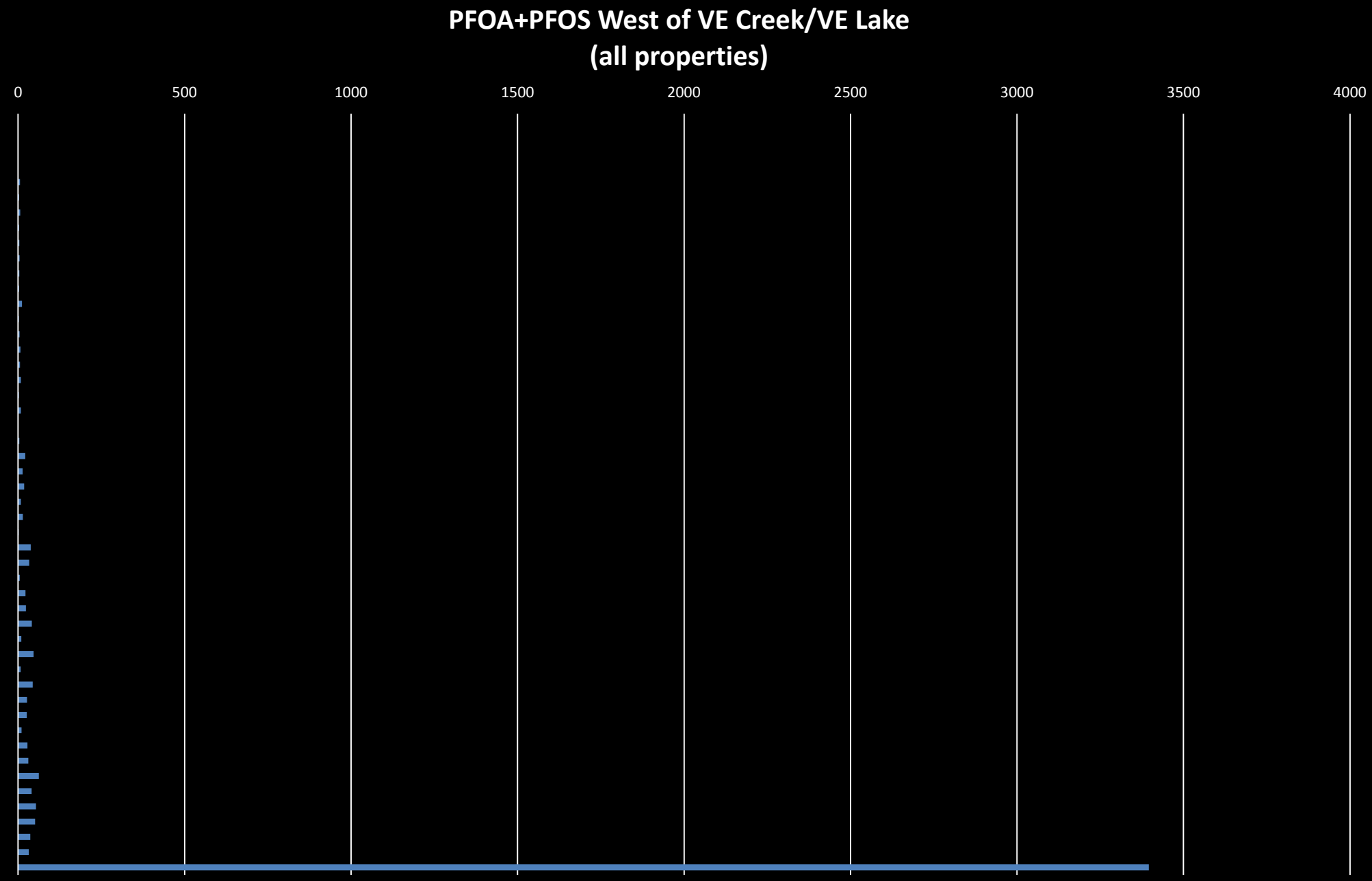
Decision "Tree" – Downgradient



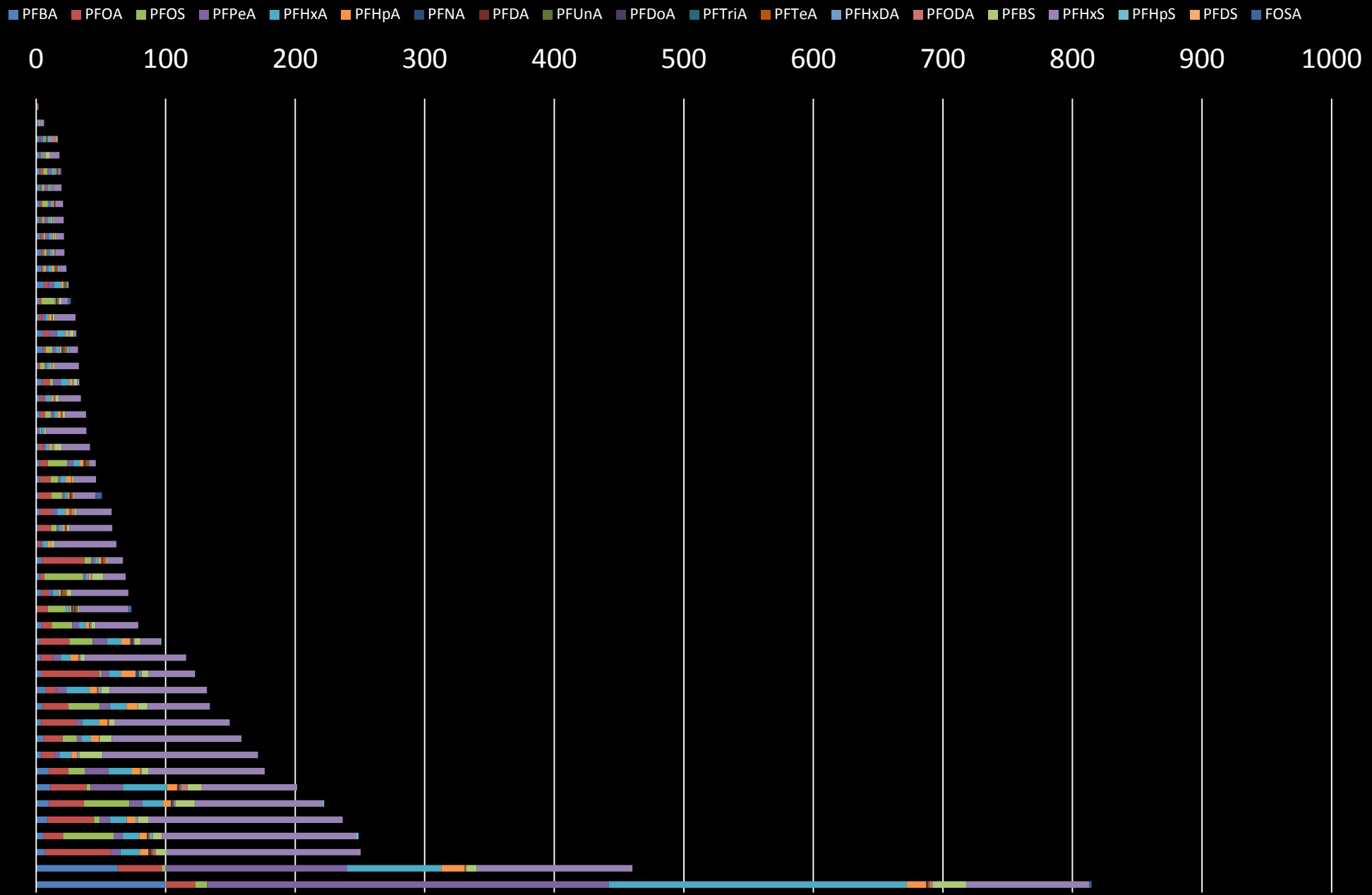
*Well owners may choose to connect to city water, if that is currently available.

PFOA+PFOS West of VE Creek/VE Lake (not including one property)

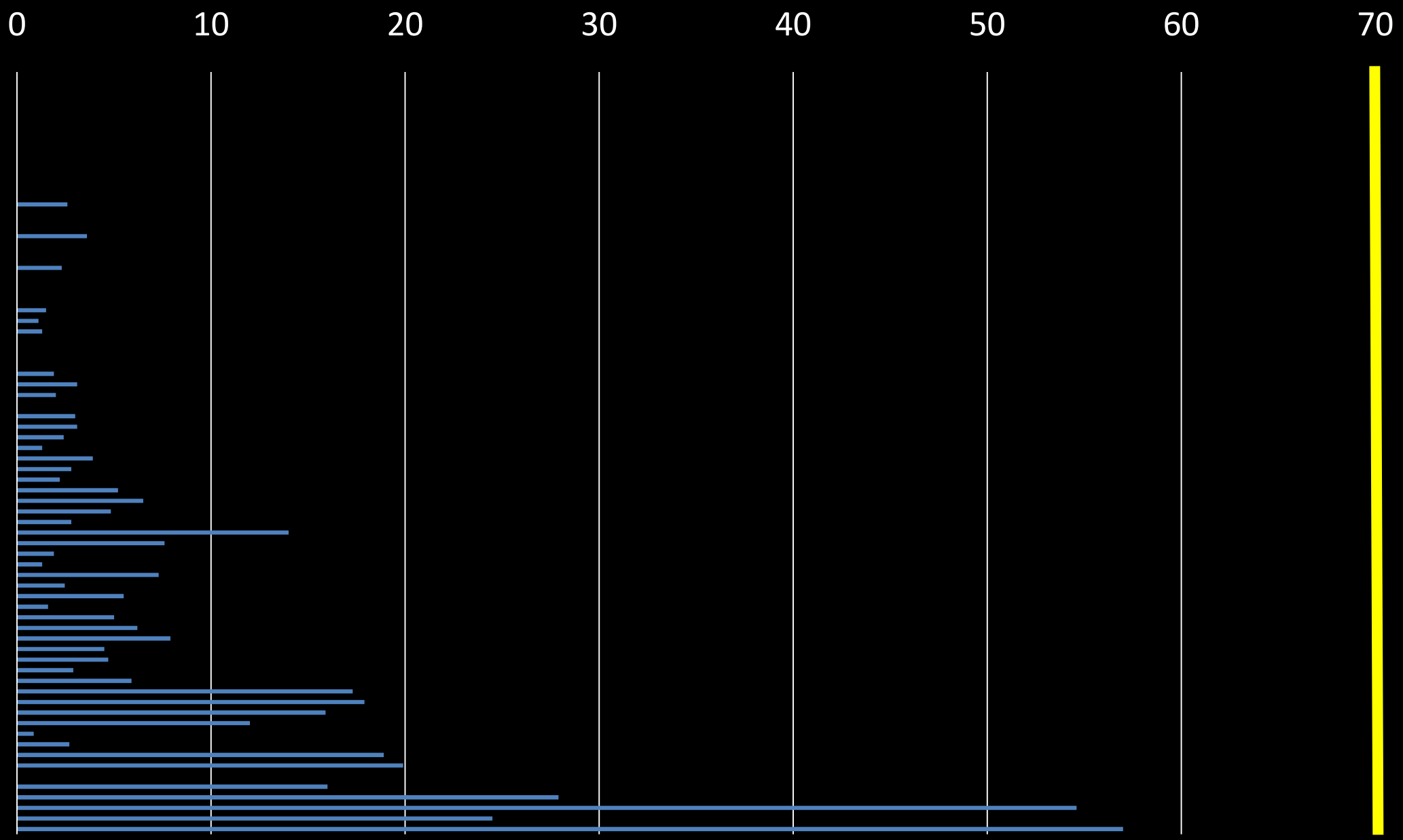



PFOA+PFOS West of VE Creek/VE Lake
(all properties)
0
500
1000
1500
2000
2500
3000
3500
4000

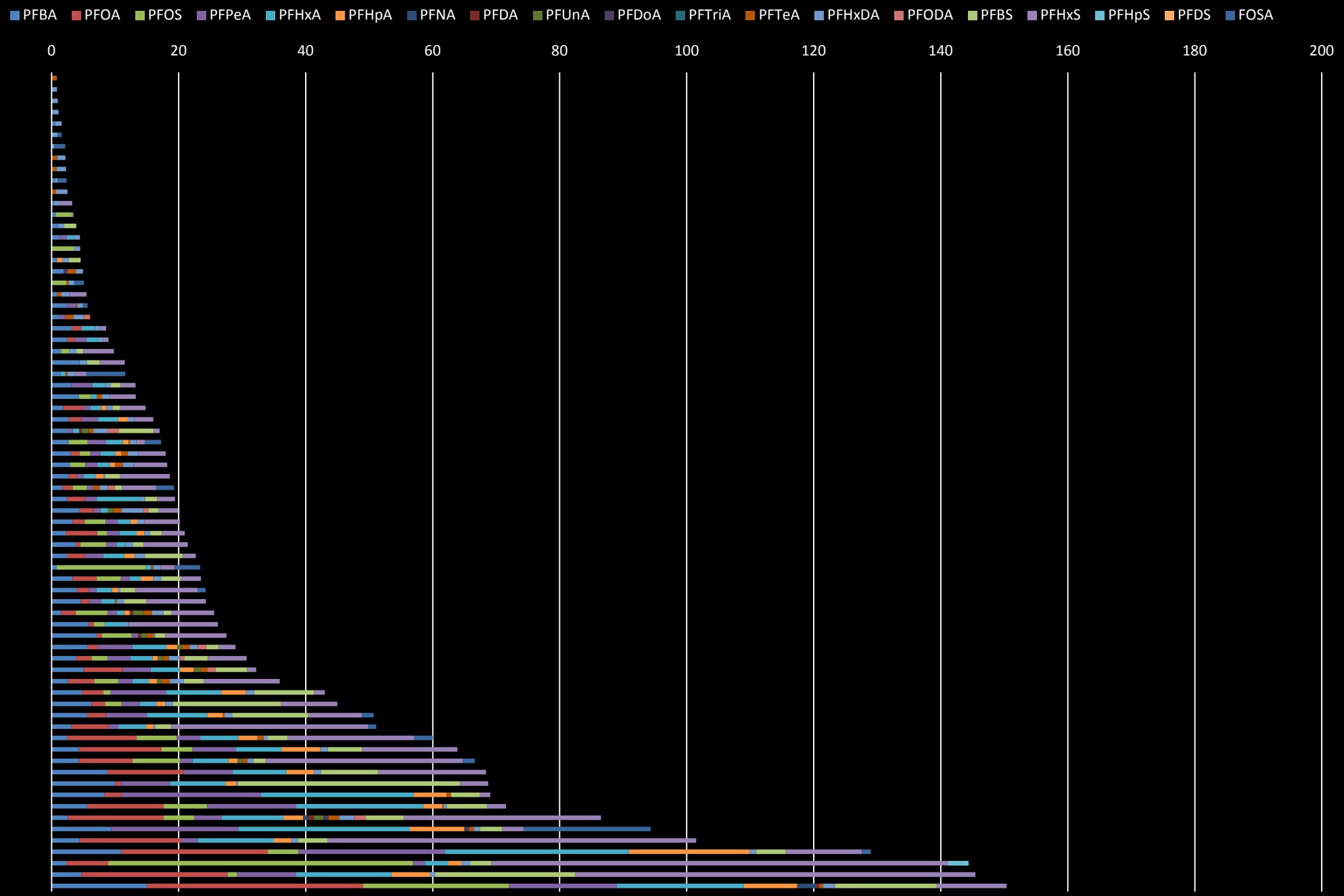
Total PFCs West of VE Creek/VE Lake
(not including one property)



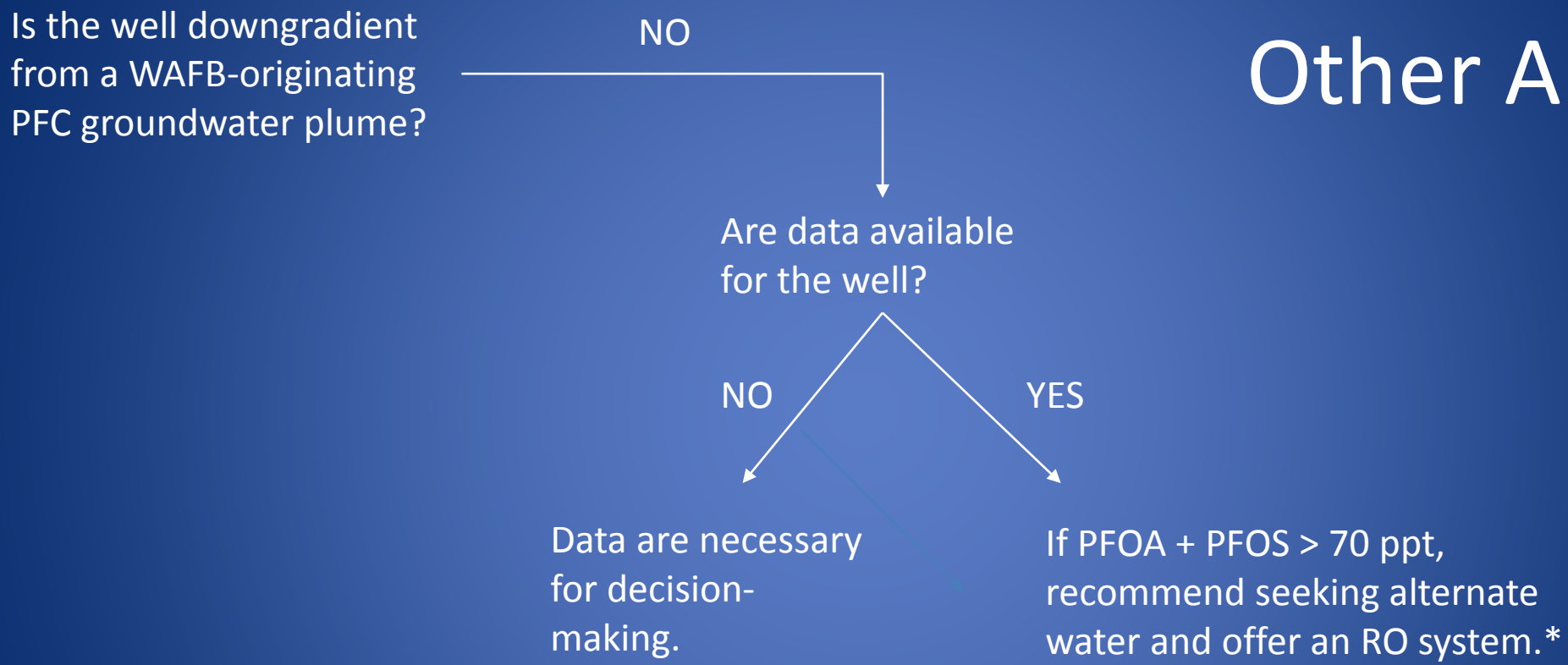
PFOA+PFOS East of VE Creek/VE Lake



Total PFCs East of VE Creek/VE Lake



Decision "Tree" – Other Areas



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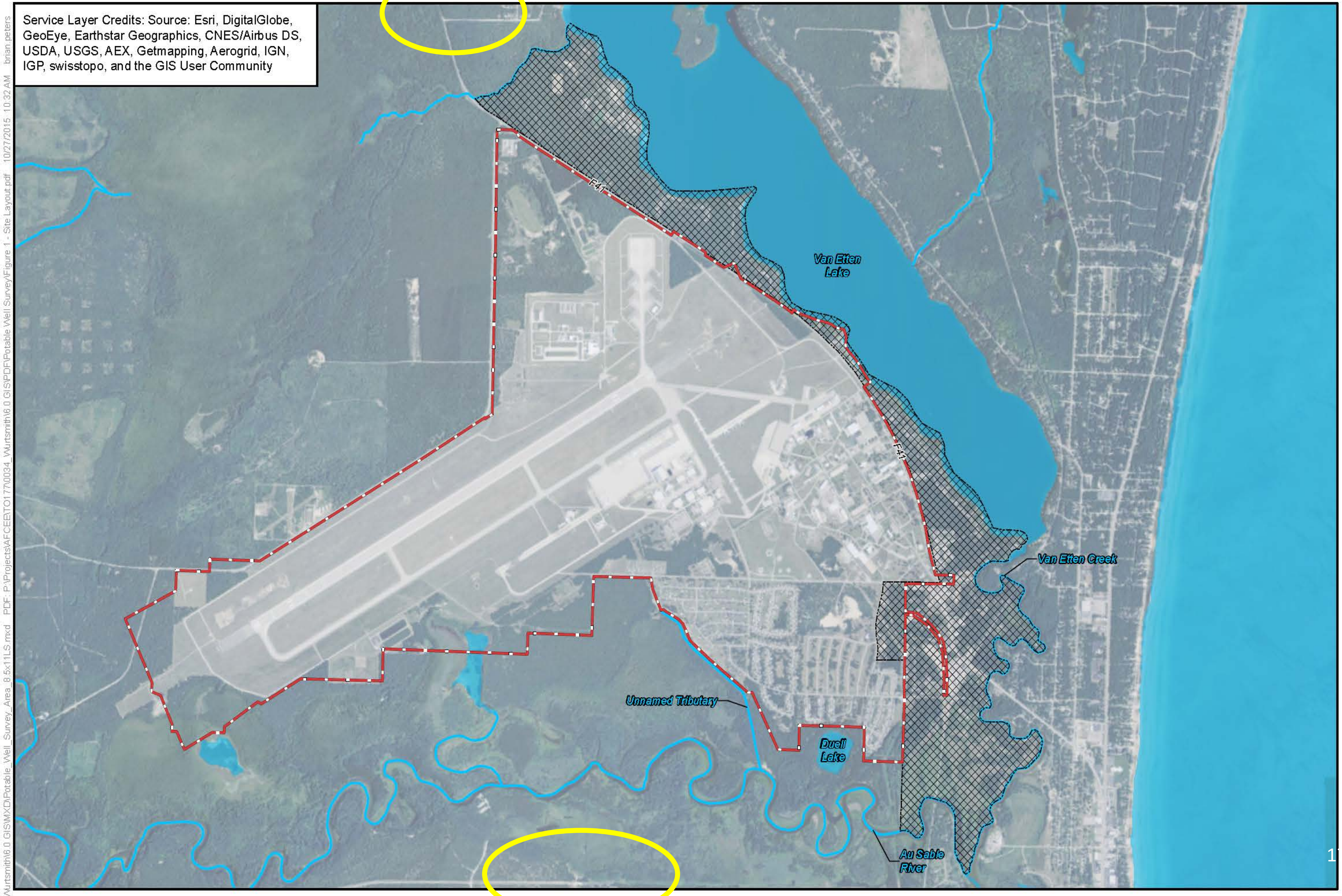
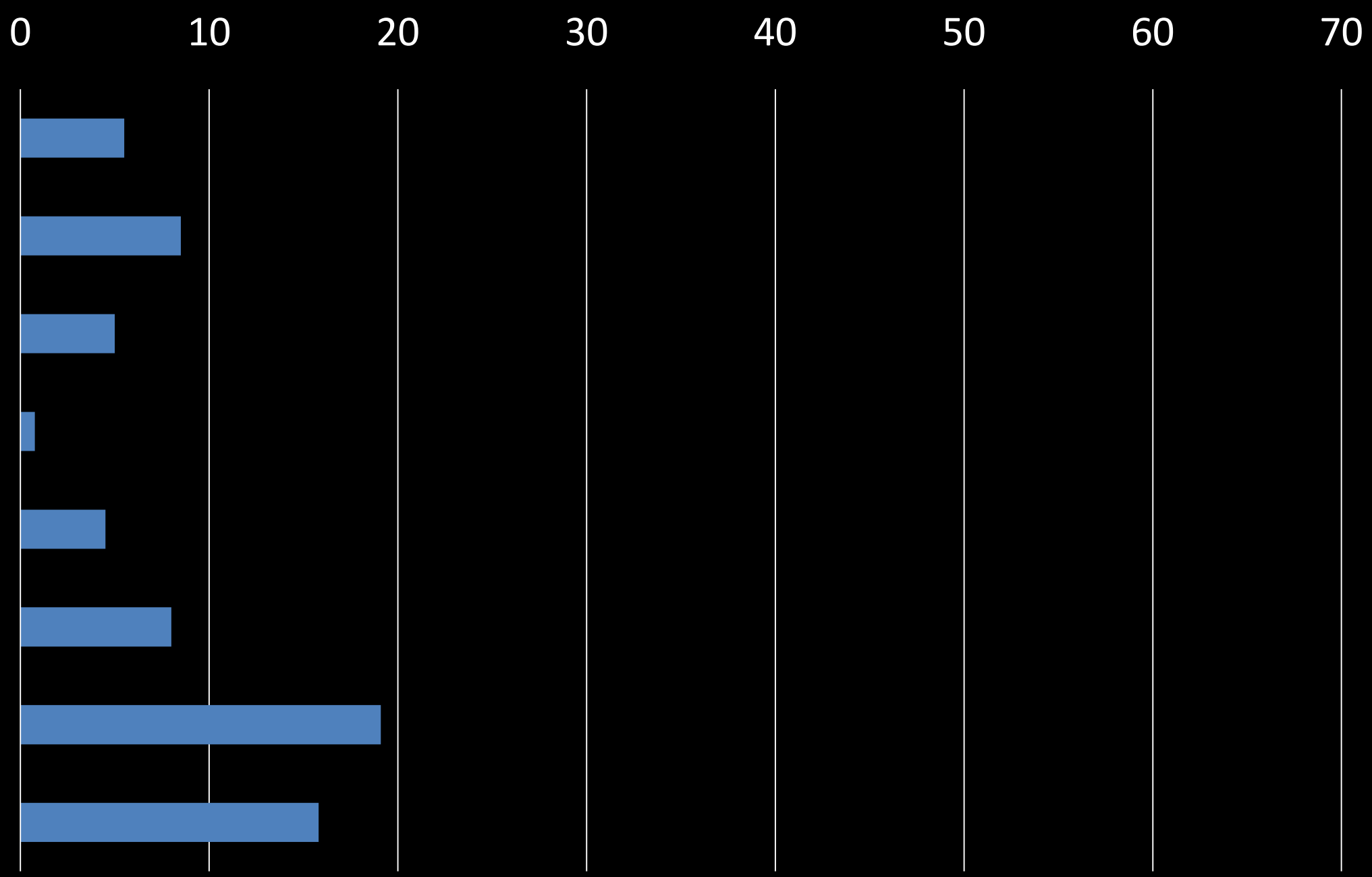
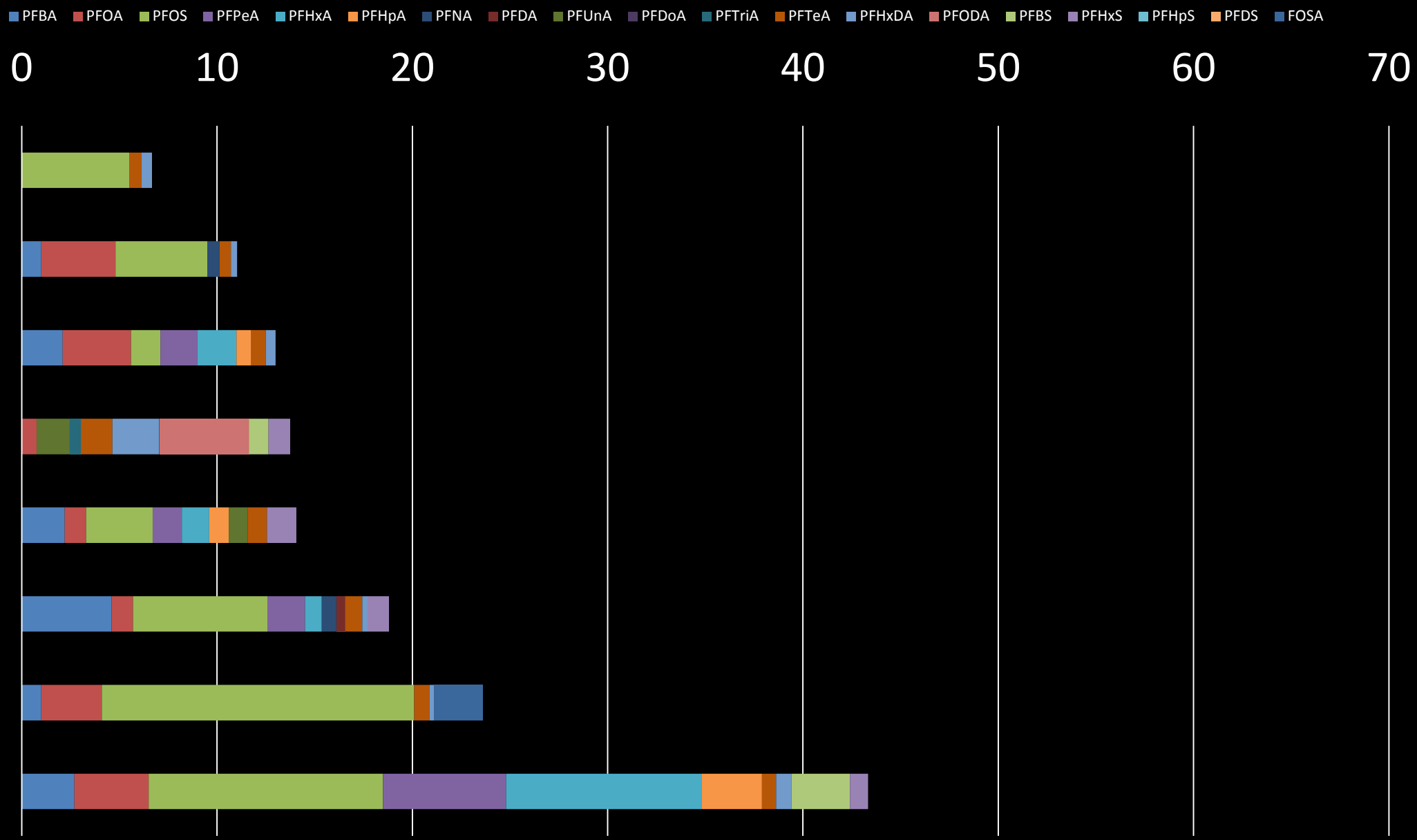

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Van Etten Lake
F41
Van Etten Creek
Unnamed Tributary
Duell Lake
Au Sable River
Wurtsmith\6.0 GIS\MXD\Potable_Well_Survey_Area_8.5x11LS.mxd PDF: P:\Projects\AFCEE\TO17\0034_Wurtsmith\6.0 GIS\PDF\Potable Well Survey\Figure 1 - Site Layout.pdf 10/27/2015 10:32 AM brian.peters

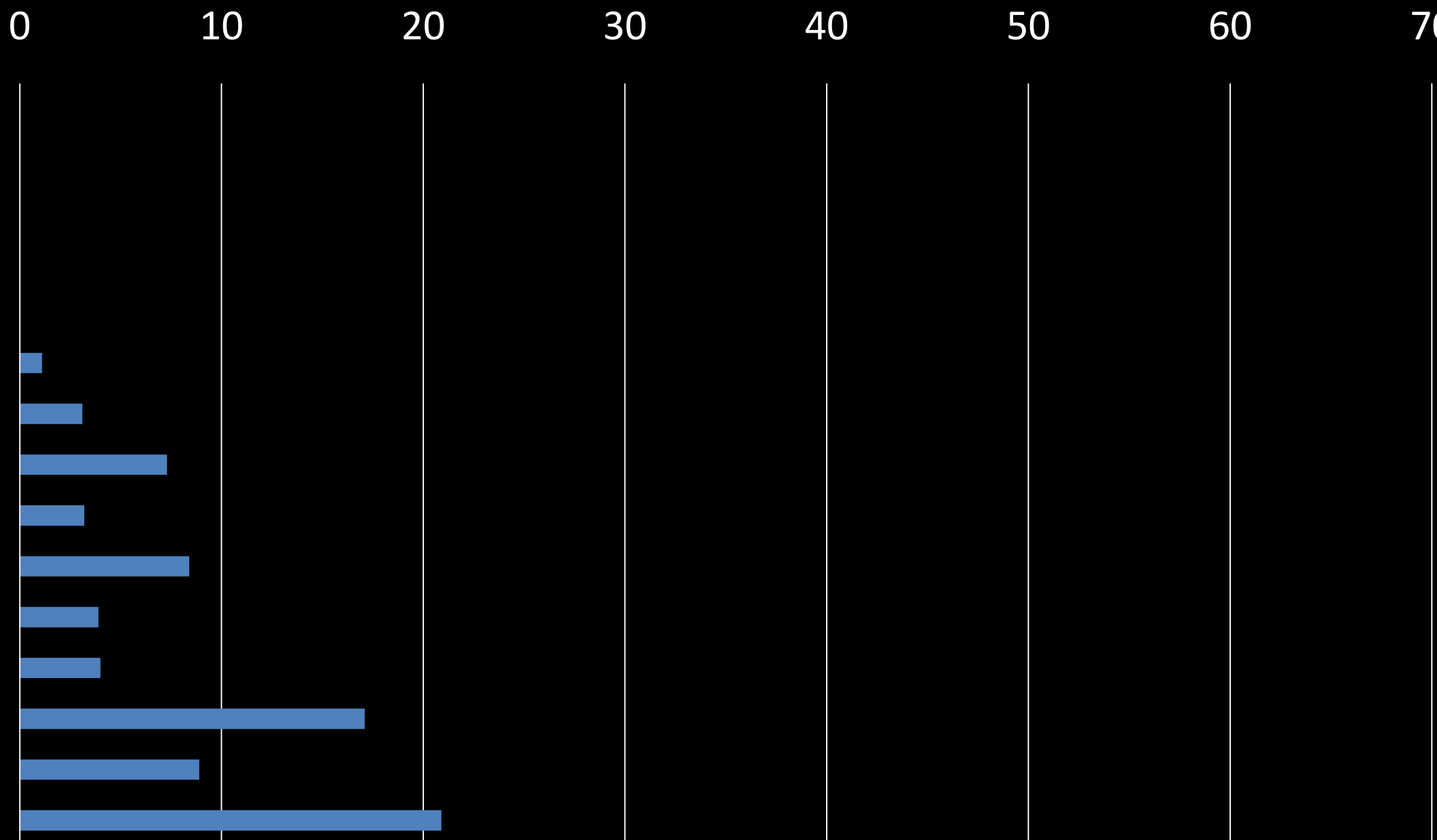
PFOA+PFOS in School Area



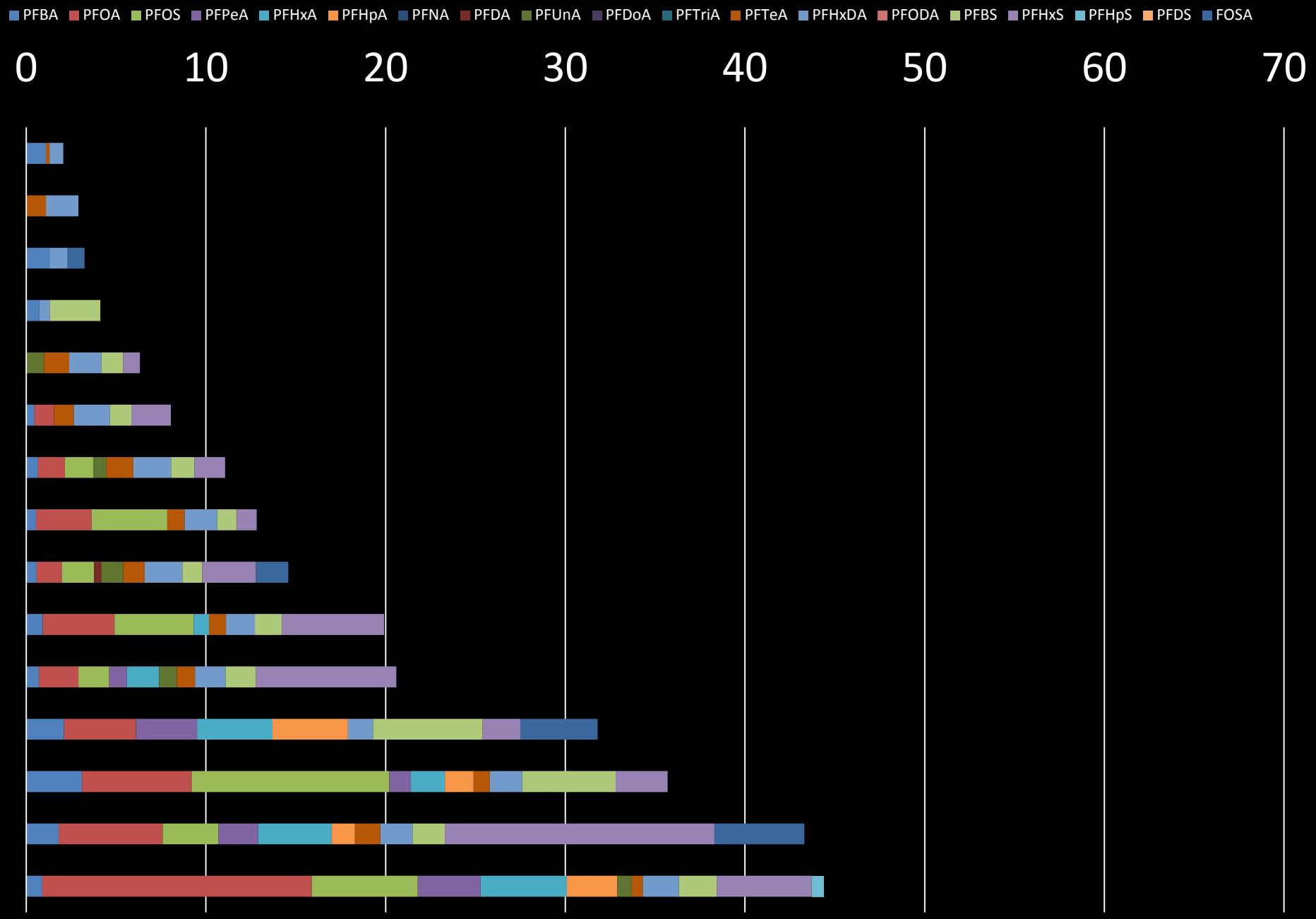
Total PFCs in School Area



PFOA+PFOS in Colbath Area

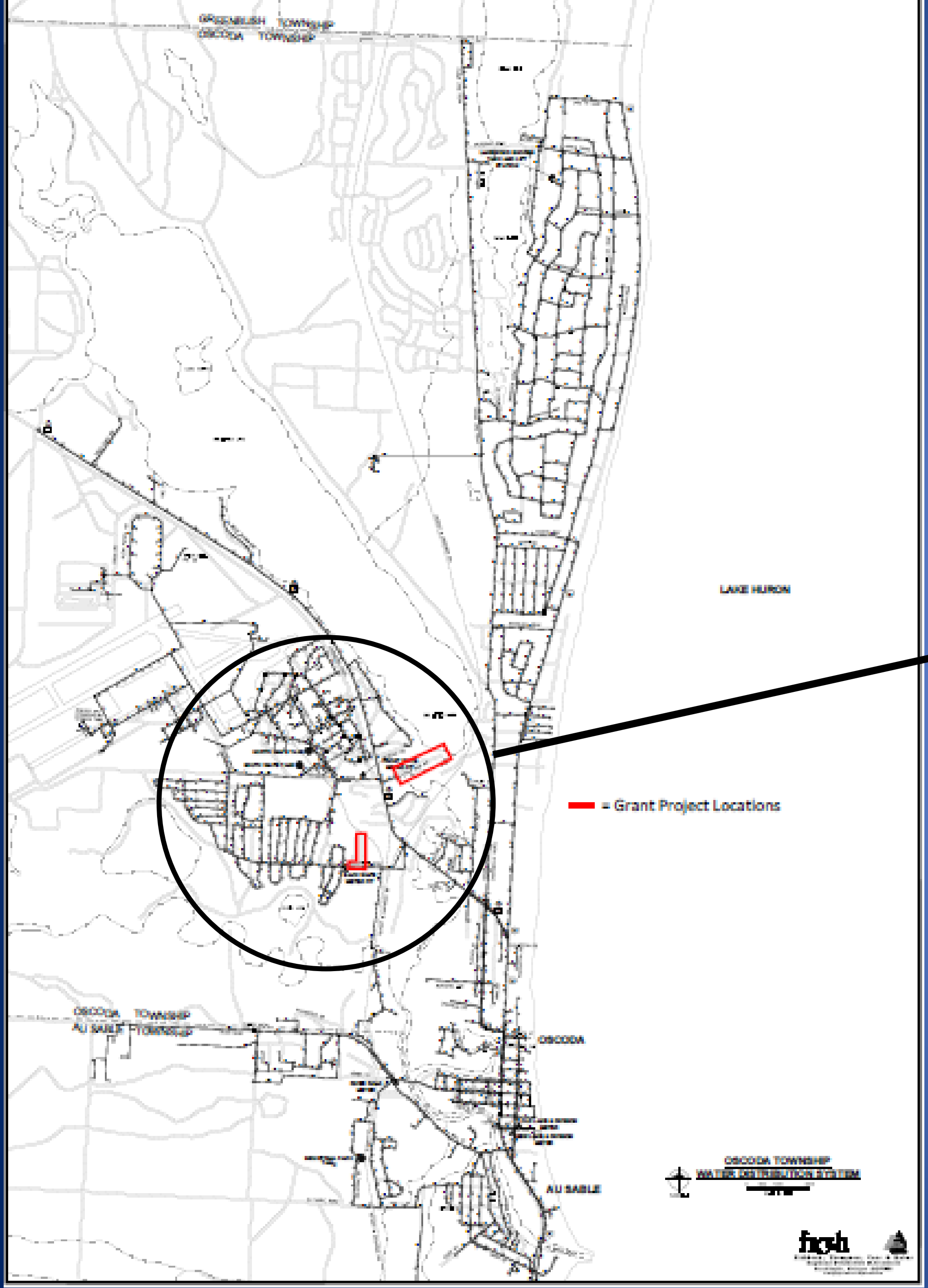


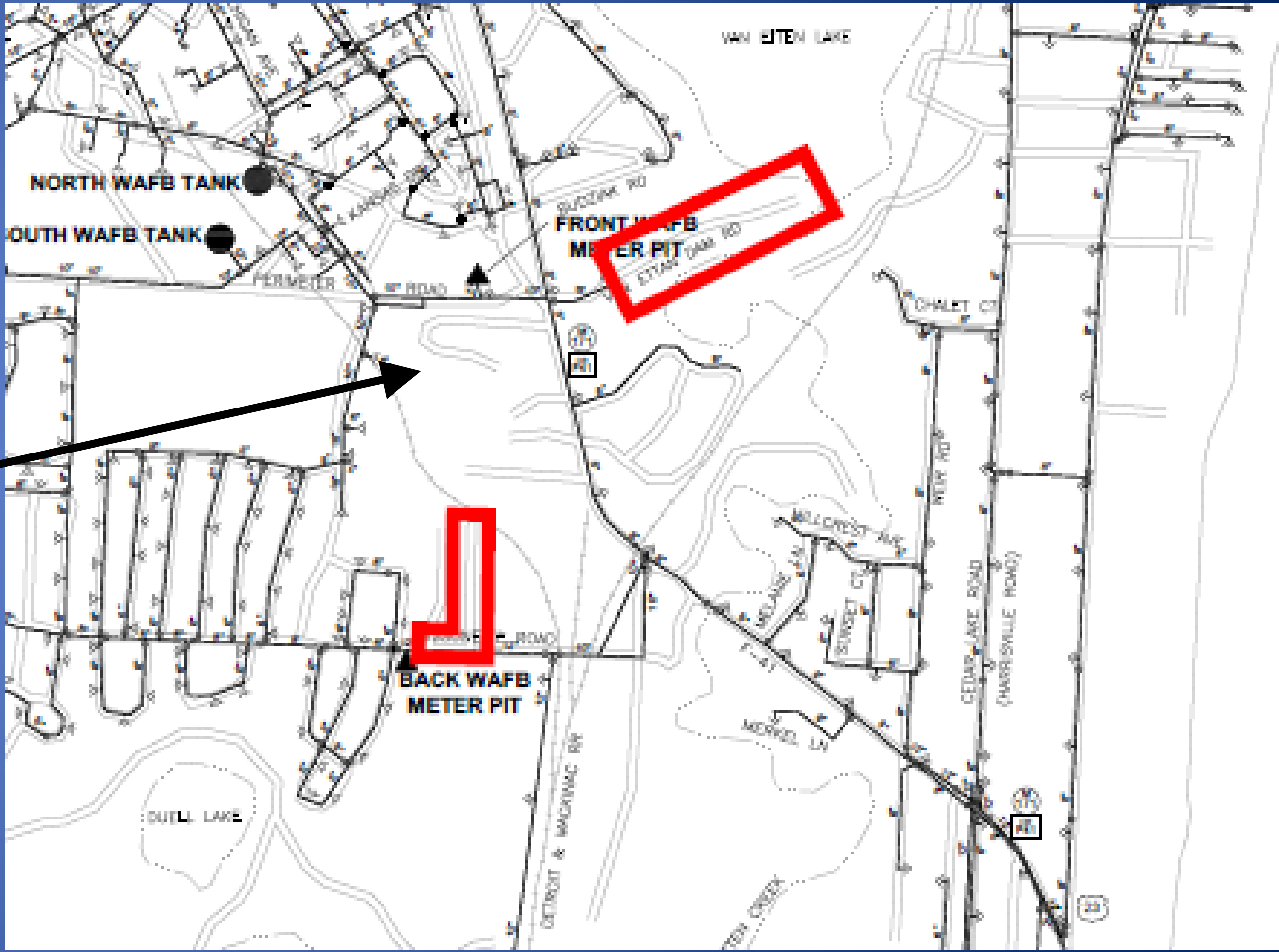
Total PFCs in Colbath Area



Alternate Water/Water Treatment (DHD No.2)

Oscoda Township Update


GREENBUSH TOWNSHIP
OSCODA TOWNSHIP
LAKE HURON
= Grant Project Locations
OSCODA TOWNSHIP
AU SABLE TOWNSHIP
OSCODA
AU SABLE
OSCODA TOWNSHIP
WATER DISTRIBUTION SYSTEM


VAN ETTEN LAKE
NORTH WAFB TANK
OUTH WAFB TANK
PERIMETER ROAD
BACK WAFB
METER PIT
DUTIL LAKE
CEDAR LAKE ROAD
(HARRISVILLE ROAD)

USAF Activity Update (USAF)

Legislative Update
(Sen. Stamas)

Health Dept Contacts

- FIRST CONTACT = District Health Dept No.2 – Denise Bryan, Health Officer
  - 989-343-1800

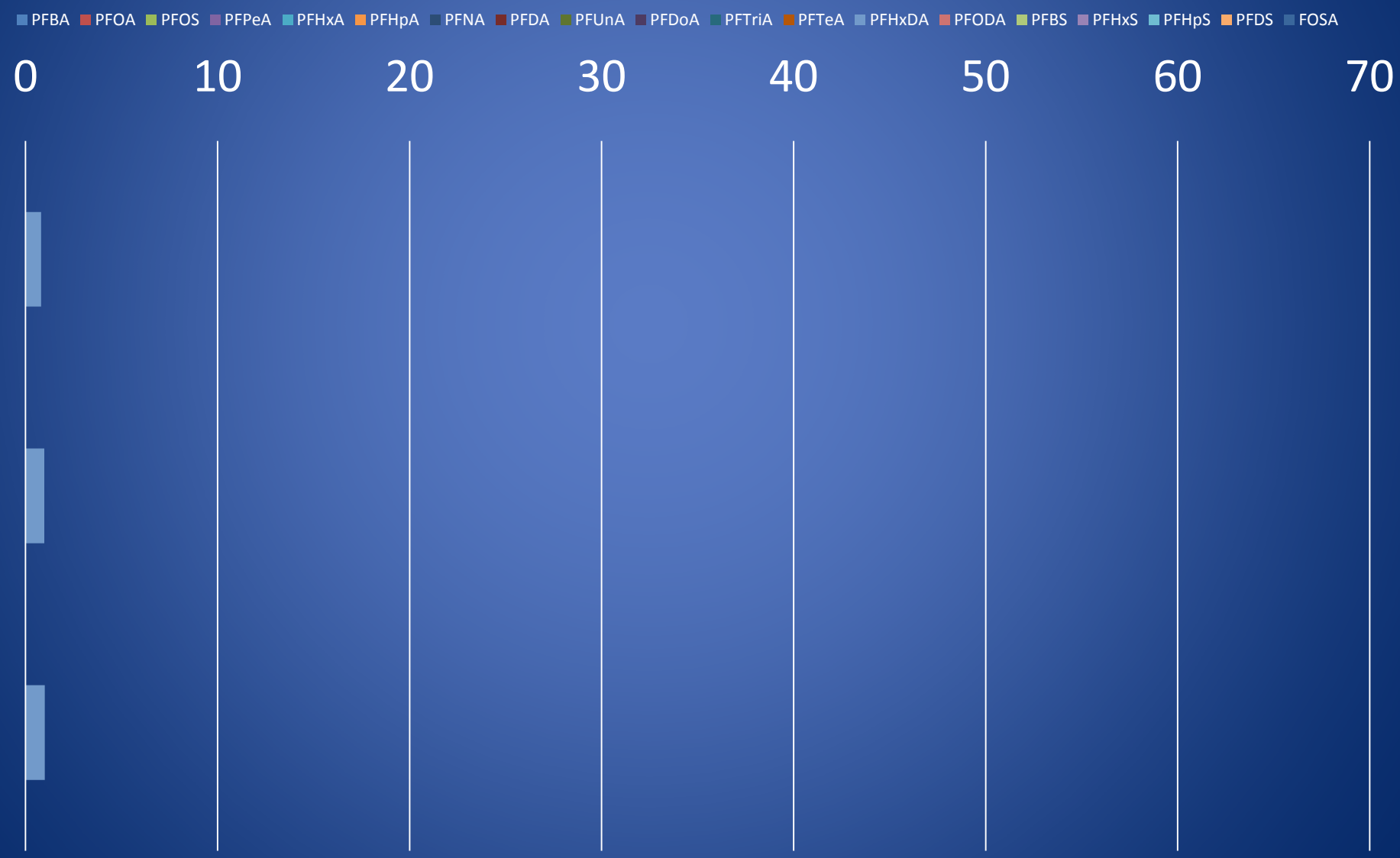
- MDHHS - Christina Bush, Toxicologist
  - 517-284-4794 or 800-648-6942
  - bushc6@michigan.gov

For More Information

- MDHHS webpage for Wurtsmith work:
  - –www.mi.gov/wurtsmith (new, easier link)
  - –Links to EPA, ATSDR, USAF webpages

Questions / Comments

Total PFCs near McDonald Store Fire (no PFOA or PFOS)



Question Received re RO:

- ❖ Doesn't RO remove everything, including nutrients and minerals that may be beneficial? If so, could this be harmful to my nutrition and health?

- ✓ RO systems do remove just about everything in the water

- ✓ MDHHS consulted with a toxicologist trained in diet and nutrition and with an MDARD nutritionist who worked on the Flint water crisis:

“Reverse osmosis systems remove harmful chemicals and bacteria, but they also remove minerals that can be beneficial to your health. Since everyone’s dietary needs are different, it is impossible to say if removing minerals from drinking water might affect you. You may be getting enough minerals from your food, especially if you eat dairy products, fruits, a variety of vegetables, dry beans, whole grains, and meat. Families who rely on their drinking water to provide fluoride for their teeth and bone health may want to contact their doctor, pediatrician, or dentist about their fluoride needs.”

ATSDR/CDC re health studies

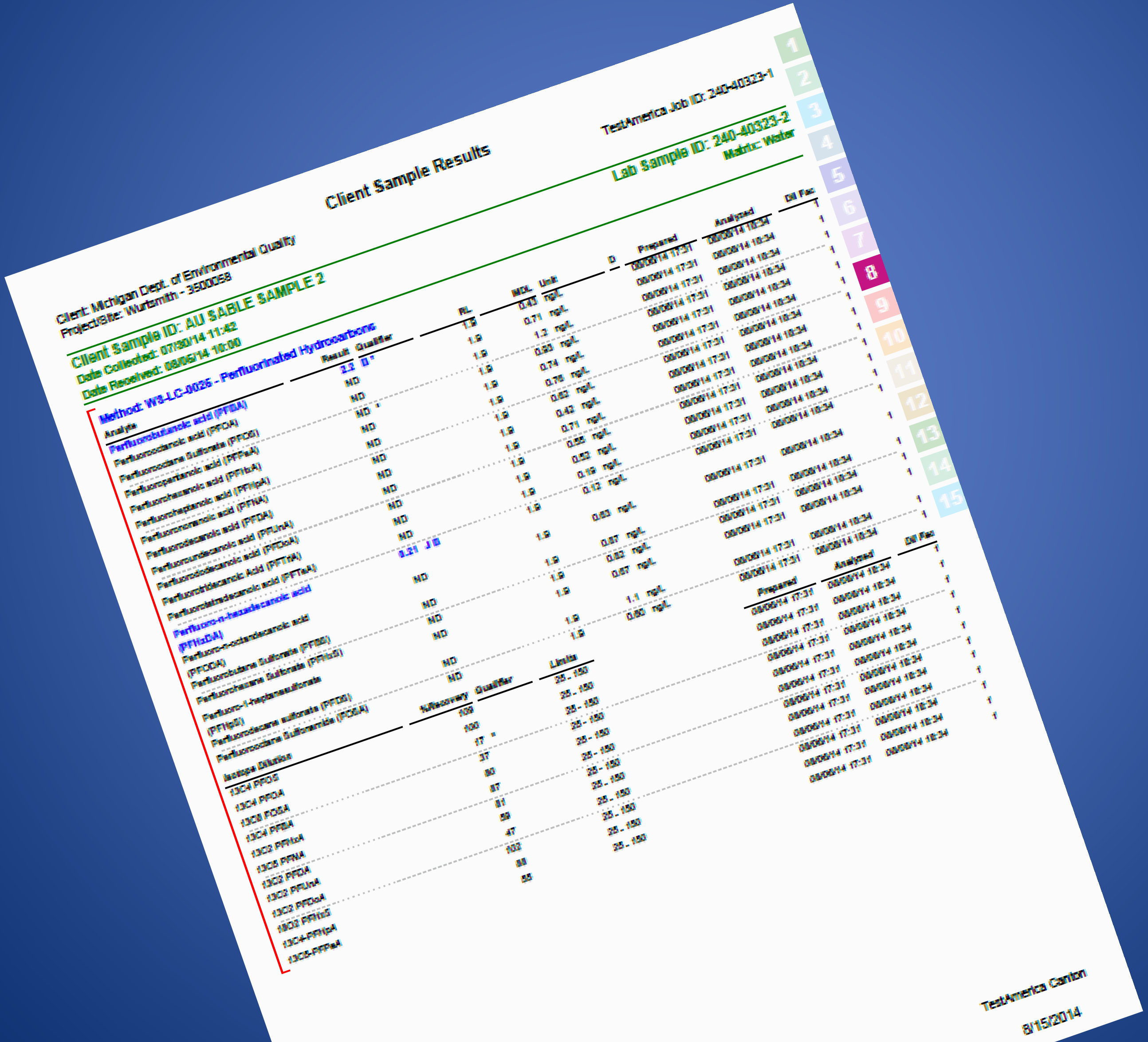
- CDC/ATSDR is supportive of conducting a national-scale study of the health effects associated with community exposures to PFAS.

- Determining which communities participate in a study will be based on an algorithm that includes a variety of factors, such as the number of individuals exposed, the ability to identify water system boundaries, the magnitude of exposure, the length of exposure, etc. The cost estimate will then be further refined though the feasibility assessment findings.

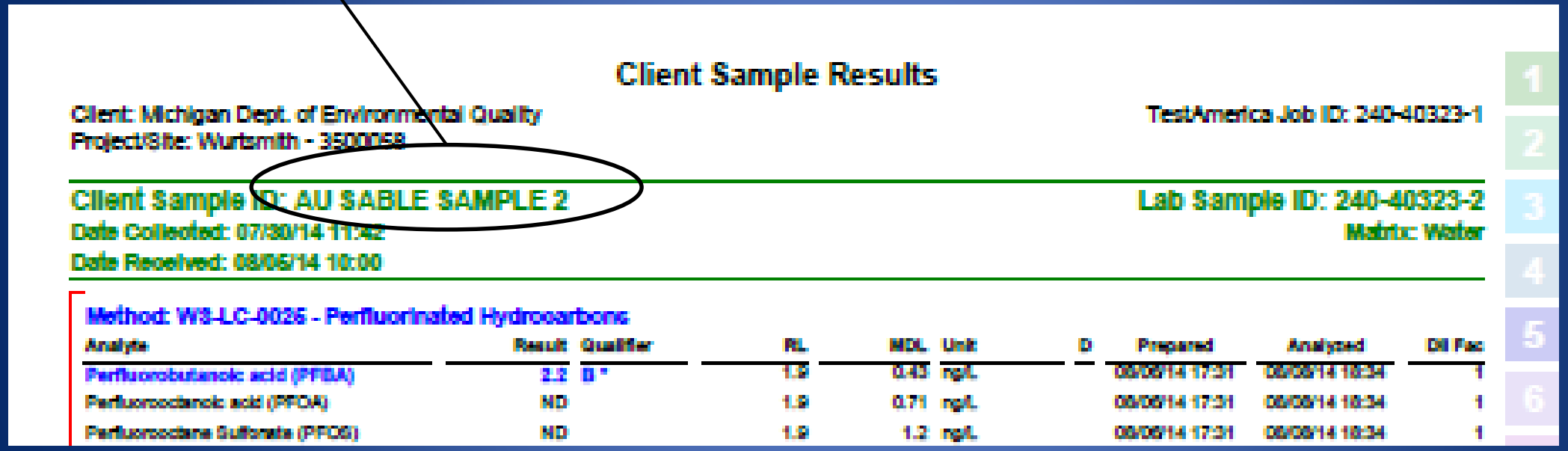
- The feasibility assessment will consider whether biomonitoring or other testing of some or all participants will provide the necessary information that answers the questions posed by the study. If testing for PFOA and PFOS does occur, it may also include analysis for additional PFAS, such as PFHxS. Please note that it is very likely that such a national study would take 5 to 8 years to complete.

- CDC/ATSDR is currently not funded to conduct a study of this scope. In addition to discussions with DoD and state partners, CDC/ATSDR is working with federal agencies such as the National Institute of Environmental Health Sciences (NIEHS) and EPA to develop an overarching strategy to identify and address data gaps in our scientific and public health knowledge about PFAS exposure and to ensure that an appropriate approach to address this issue is identified and implemented.

How to read your water sample results



Your address will be here



Client Sample Results

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 35000058

TestAmerica Job ID: 240-40323-1

Client Sample ID: AU SABLE SAMPLE 2
Date Collected: 07/30/14 11:42
Date Received: 08/05/14 10:00

Lab Sample ID: 240-40323-2
Matrix: Water

Method: W3-LC-0026 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	2.2	B *	1.9	0.43	ng/L		08/08/14 17:31	08/09/14 18:34	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.71	ng/L		08/08/14 17:31	08/09/14 18:34	1
Perfluorooctane Sulfonate (PFOS)	ND		1.9	1.2	ng/L		08/08/14 17:31	08/09/14 18:34	1

"ND" means the PFC was not detected in the sample

Nanograms per liter (ng/L) is the same as parts per trillion

List of PFCs the lab looks for

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit
Perfluorobutanoic acid (PFBA)	2.2	B *	1.9	0.43	ng/L
Perfluorooctanoic acid (PFOA)	ND		1.9	0.71	ng/L
Perfluorooctane Sulfonate (PFOS)	ND		1.9	1.2	ng/L
Perfluoropentanoic acid (PFPeA)	ND	*	1.9	0.93	ng/L
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.74	ng/L
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.76	ng/L
Perfluorononanoic acid (PFNA)	ND		1.9	0.62	ng/L
Perfluorodecanoic acid (PFDA)	ND		1.9	0.42	ng/L
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.71	ng/L
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.55	ng/L
Perfluorotridecanoic Acid (PFTrA)	ND		1.9	0.52	ng/L
Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.19	ng/L
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.21	J B	1.9	0.12	ng/L
Perfluoro-n-octandecanoic acid (PFODA)	ND		1.9	0.63	ng/L
Perfluorobutane Sulfonate (PFBS)	ND		1.9	0.87	ng/L
Perfluorohexane Sulfonate (PFHxS)	ND		1.9	0.82	ng/L
Perfluoro-1-heptanesulfonate (PFHpS)	ND		1.9	0.67	ng/L
Perfluorodecane sulfonate (PFDS)	ND		1.9	1.1	ng/L
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.60	ng/L

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*

"Qualifiers" are lab notes:
B = PFC was also detected in the blank.
H = Sample was analyzed after the lab's holding time.
J = The result is an estimate.

This part of the report shows some of the QA/QC testing that is done to make sure the results are reliable. These numbers are <u>not</u> your results.

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOS	109		25 - 150	08/06/14 17:31	08/08/14 18:34	1
13C4 PFOA	100		25 - 150	08/06/14 17:31	08/08/14 18:34	1
13C8 FOSA	17	*	25 - 150	08/06/14 17:31	08/08/14 18:34	1
13C4 PFBA	37		25 - 150	08/06/14 17:31	08/08/14 18:34	1
13C2 PFHxA	80		25 - 150	08/06/14 17:31	08/08/14 18:34	1
13C5 PFNA	87		25 - 150	08/06/14 17:31	08/08/14 18:34	1
13C2 PFDA	81		25 - 150	08/06/14 17:31	08/08/14 18:34	1
13C2 PFUnA	59		25 - 150	08/06/14 17:31	08/08/14 18:34	1
13C2 PFDoA	47		25 - 150	08/06/14 17:31	08/08/14 18:34	1
18O2 PFHxS	102		25 - 150	08/06/14 17:31	08/08/14 18:34	1
13C4-PFHpA	88		25 - 150	08/06/14 17:31	08/08/14 18:34	1
13C5-PFPeA	55		25 - 150	08/06/14 17:31	08/08/14 18:34	1

PFCs and public health – key points

- Taking conservative (protective) stance
  - What we know
  - What we don't know
- Using best available science
- Using a decision "tree"
- Requesting more data to verify results, strengthen conclusions

Data Evaluation

- Contamination not fully understood or controlled
- One sample cannot determine past exposure amount or duration, is not predictive of future
- Contamination at WAFB → → drinking water wells
- PFCs in most well water samples are higher than in HSRUA
- Animal/human studies → potential for harm
- PFCs are persistent, bioaccumulate
- Some PFCs have long half-lives in humans

Total PFCs West of VE Creek/VE Lake (all properties)