

WELCOME

Water Well Sampling and Site Investigation Program
Community Meeting – Town of Peshtigo, WI

January 23, 2018

Tyco Meeting Agenda

- Welcome and Introductions (5 minutes)
- Meeting Overview (5 minutes)
- Technical Presentation (45 minutes)
- Questions and Answers – Group (25 minutes)
- BREAK (5 minutes)
- Questions and Answers – Break-out (30 minutes)

Basic Details

Site Address	2700 Industrial Parkway South Marinette, WI
Site Ownership	Tyco Fire Products, LP
Current Site Use	Fire Fighting Training and Research Center of Excellence
Parameters	Per- and Poly-Fluoroalkyl Substances (PFAS)
Where found	Soil, Groundwater, Surface Water
Regulatory Agencies Involved	Wisconsin Department of Natural Resources (WDNR), Wisconsin Department of Health Services (WDHS)



Technical Presentation Agenda

- Geologic Background/Setting
- Investigations and Data Update
 - Groundwater Investigation
 - Drinking Water (Potable) Well Sampling
- Review of Drinking Water Options
- Next steps
- Information Resources

What are PFOA and PFOS?

- Definitions
 - PFAS: per- and poly-fluoroalkyl substances
 - PFCs: perfluorinated compounds
 - PFOA: perfluorooctanoic acid
 - PFOS: perfluorooctanesulfonic acid
 - HAL: USEPA Health Advisory Level
 - ppt: parts per trillion
- Found in many consumer and industrial products

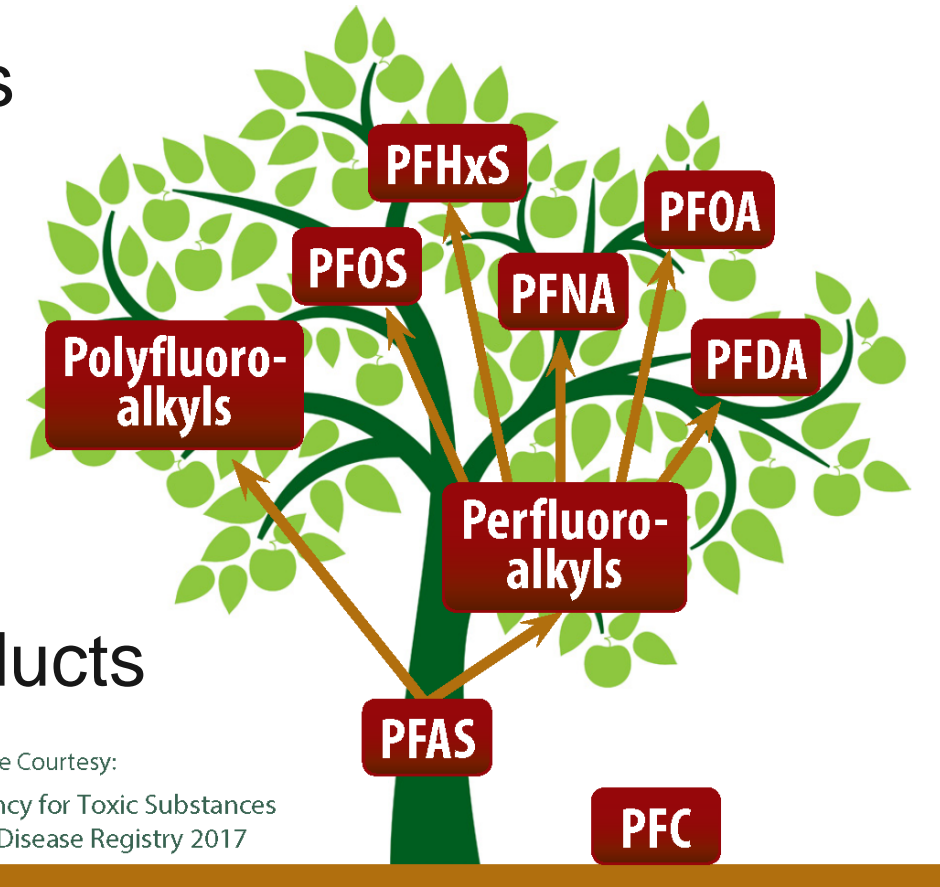


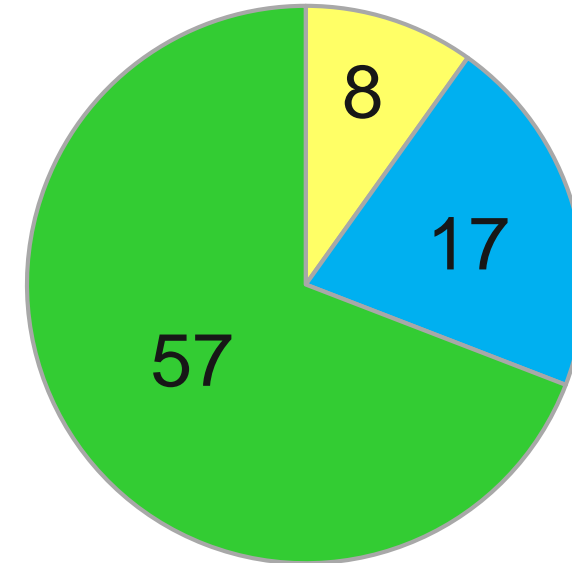
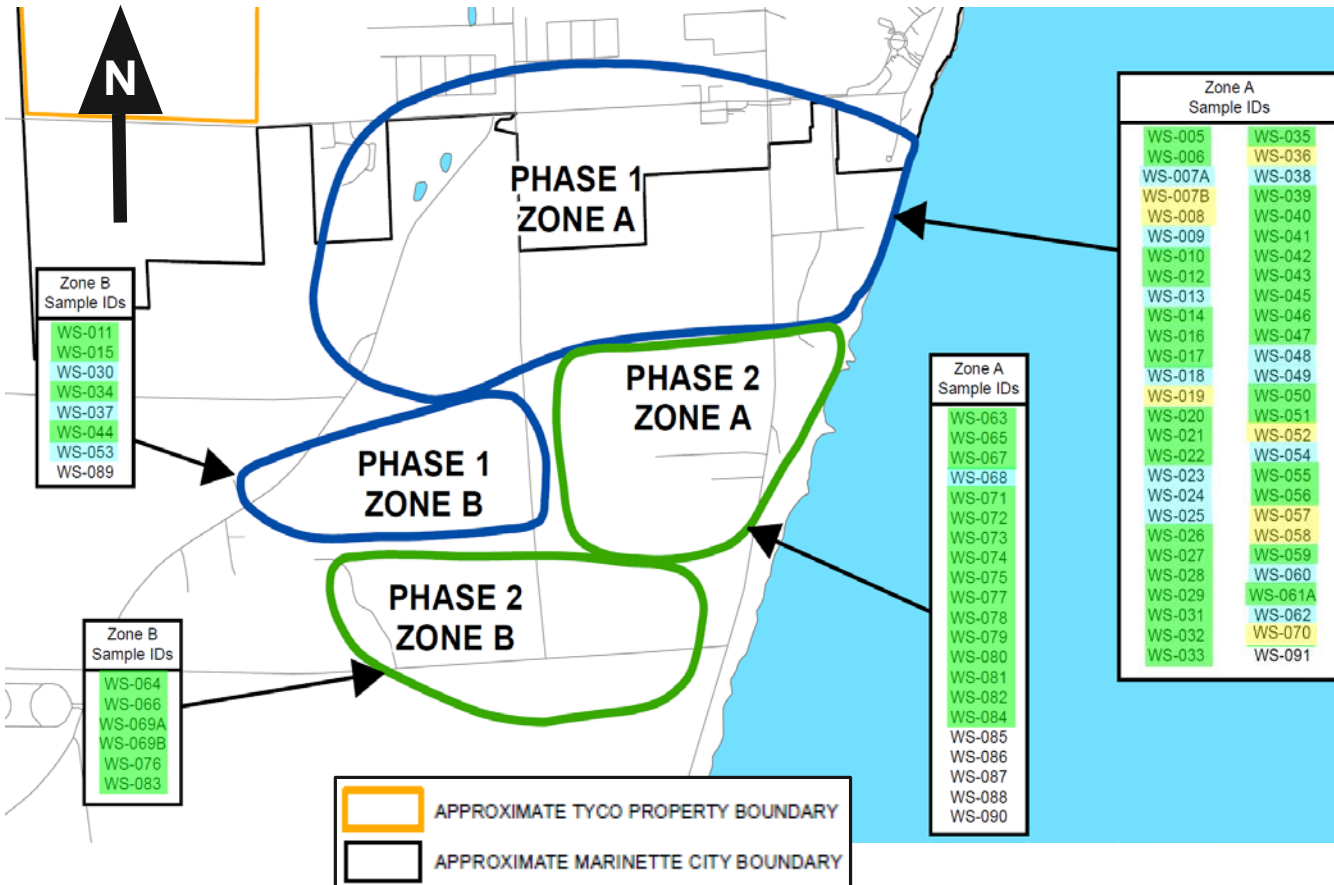
Image Courtesy:
Agency for Toxic Substances
and Disease Registry 2017

Overview of Investigation

- Sampling Overview – Groundwater and Ditch Water
 - Groundwater
 - 24 borings, 98 intervals sampled, concentrations from ND to 1,653 ppt
 - Ditch Water (on site)
 - 4 samples, concentrations from 417 to 4,620 ppt

Note: Combined PFOS + PFOA concentration values referenced above

Drinking Water Wells Investigation Summary



■ Result > HAL
■ Result < HAL
■ Result Non-detect

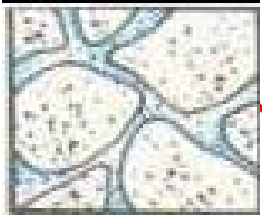
- Range for detections below HAL: 3.9 to 44 ppt
- Range for detections above HAL: 84 to 690 ppt

Note: Status as of January 22, 2018

Geologic Background/Setting

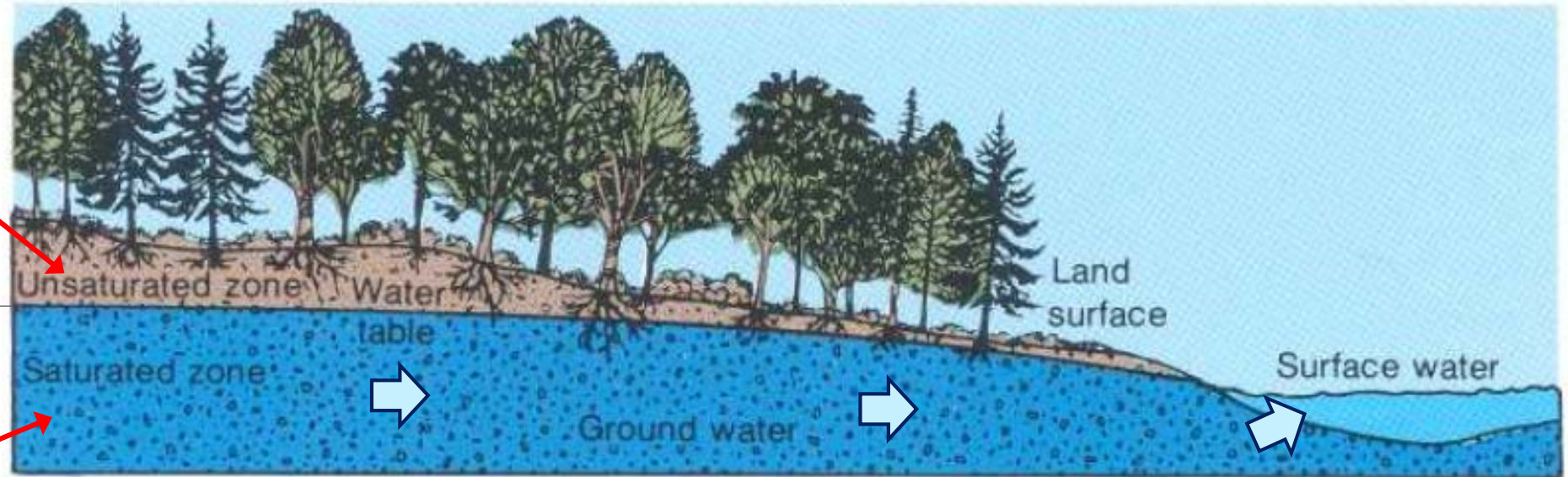
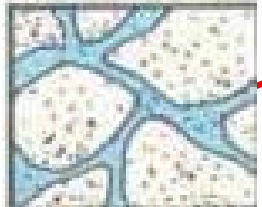
Groundwater

Unsaturated Zone



Water Table

Saturated Zone

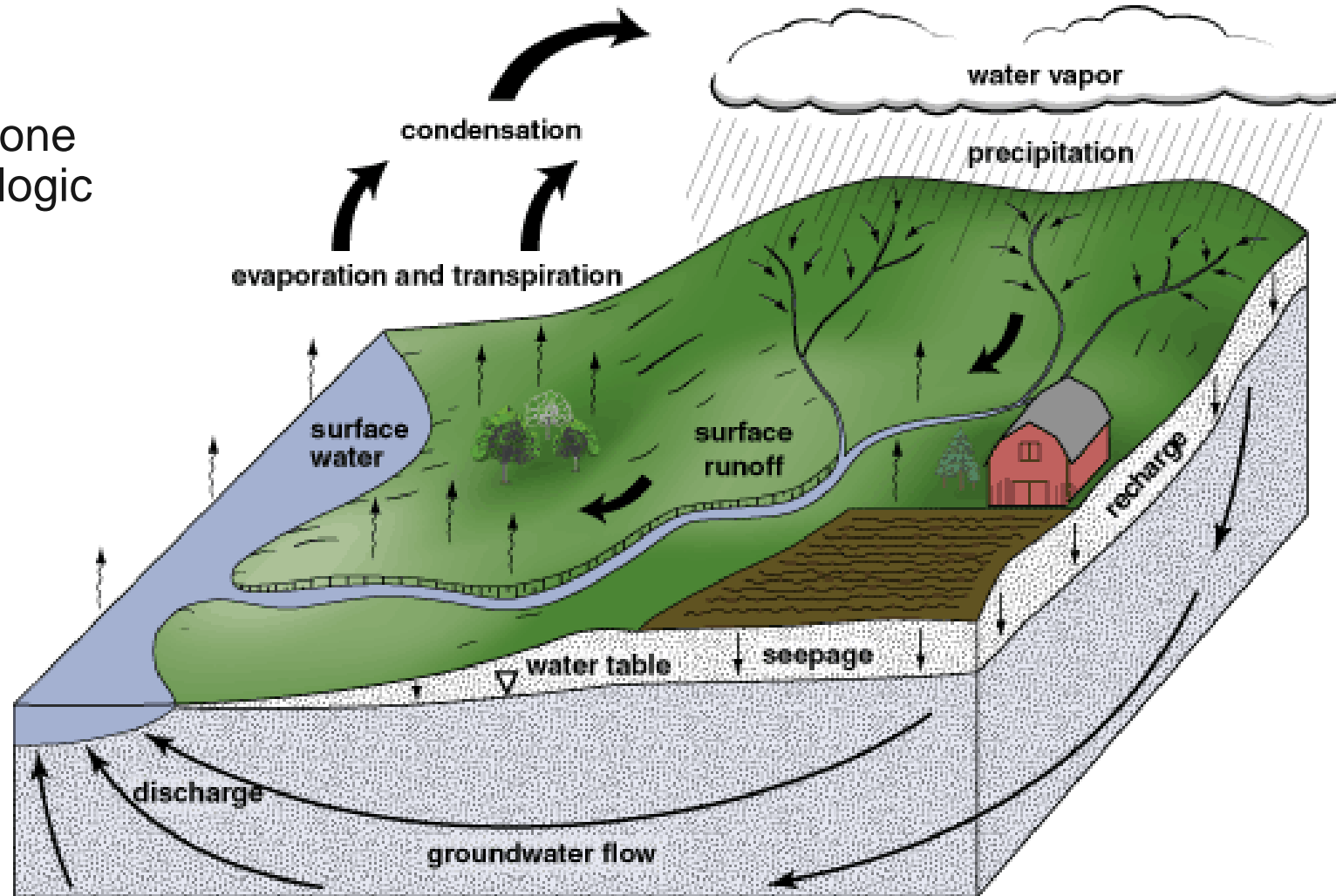


From: Waller, Roger M. (USGS) *Ground water and the rural homeowner*, 1994.

- Below the water table (about 10 feet in Marinette) all pore-spaces in soil are water-filled
- Like surface water, groundwater flows under force of gravity
- The water flows “downhill” and replenishes rivers and lakes

Water Cycle

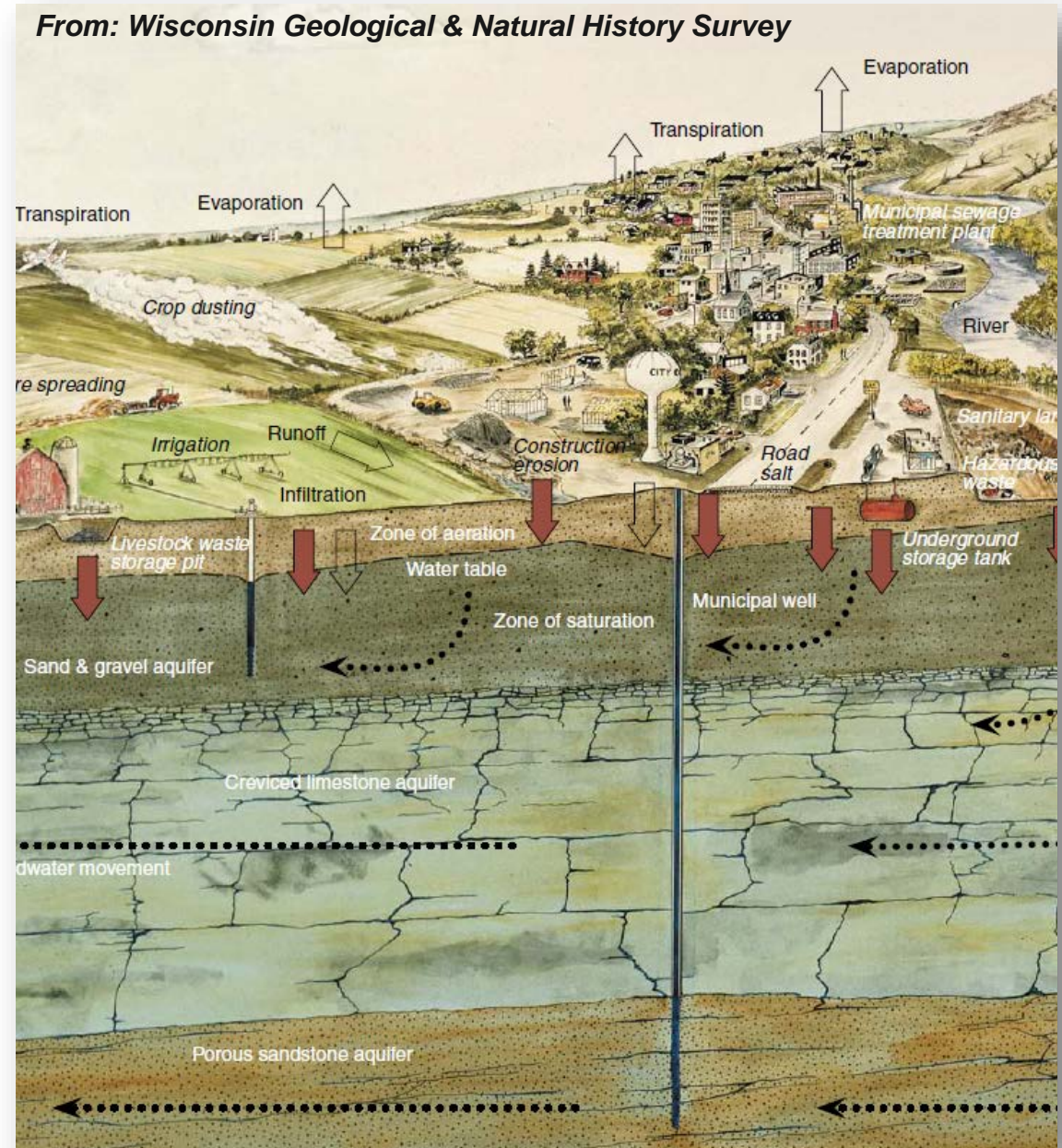
Groundwater is just one component of hydrologic cycle.



From: Illinois State Geological Survey

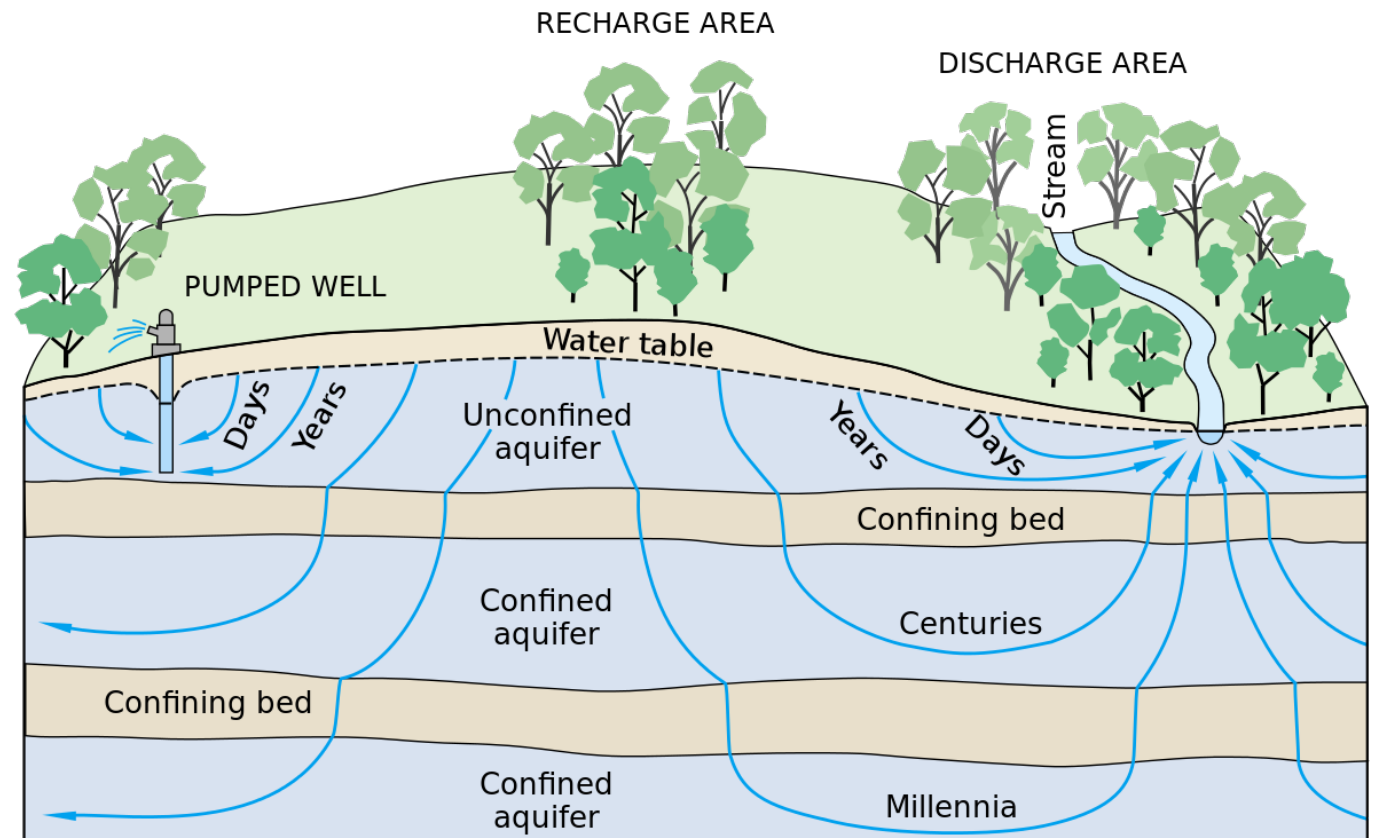
Aquifers

- Groundwater may exist in multiple aquifers at different depths
- Aquifers behave differently depending on the material
- Shallow aquifers are most sensitive to contamination



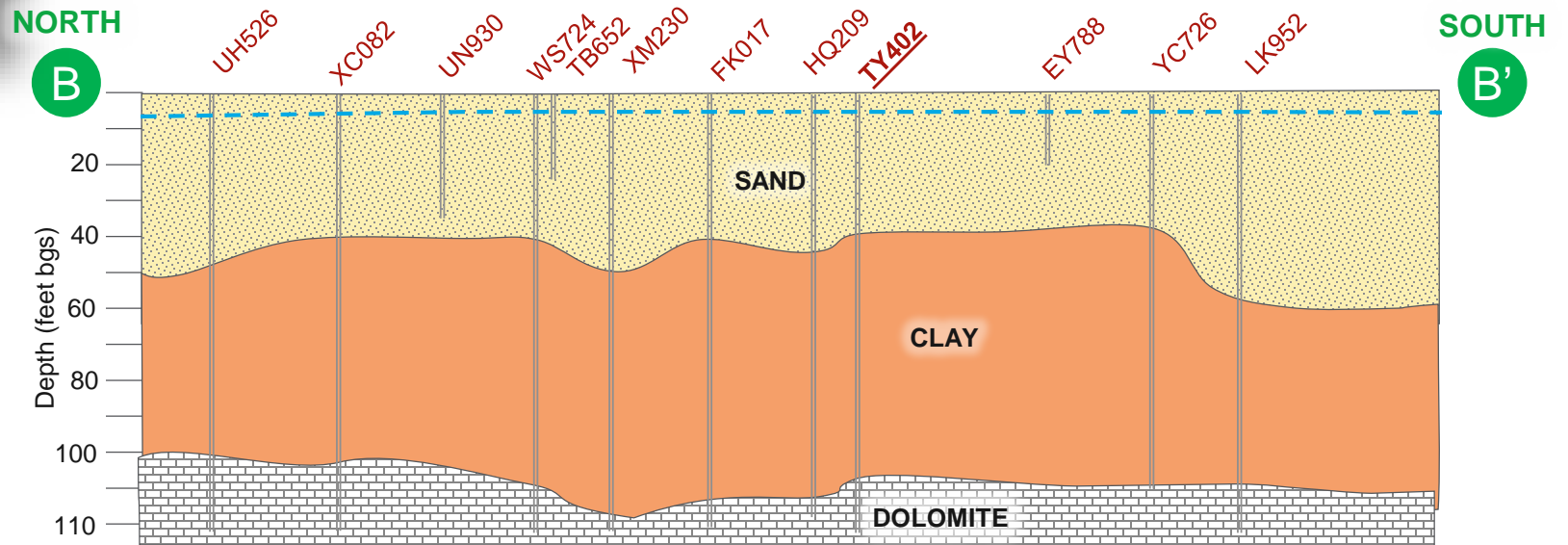
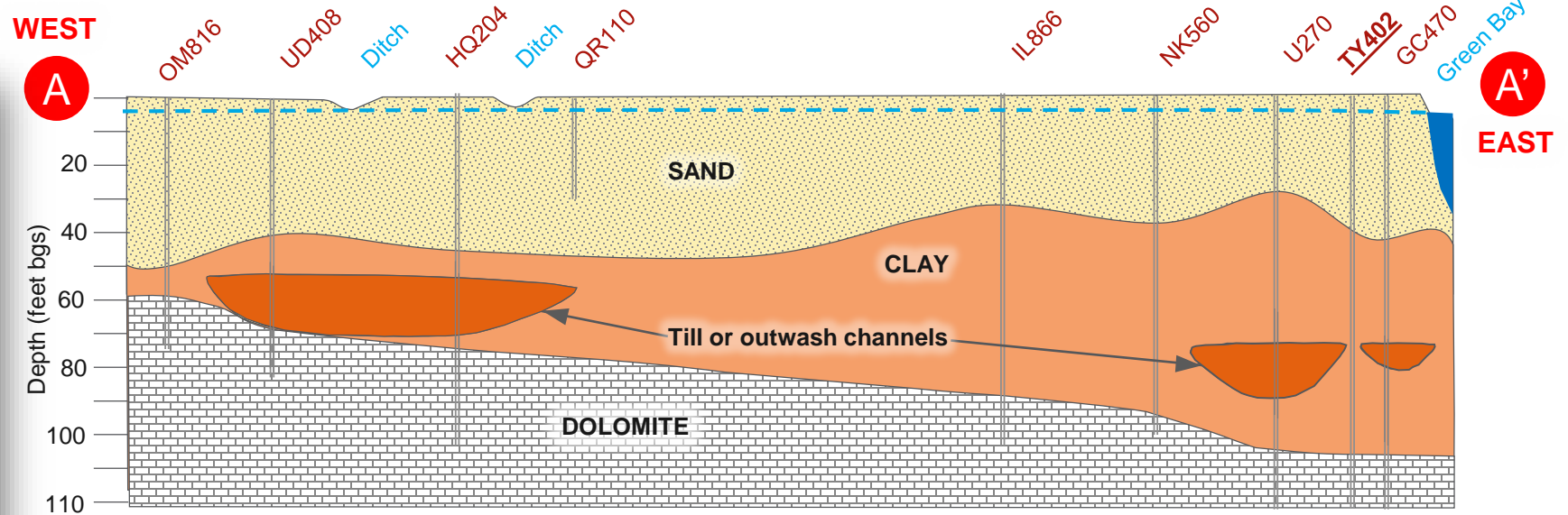
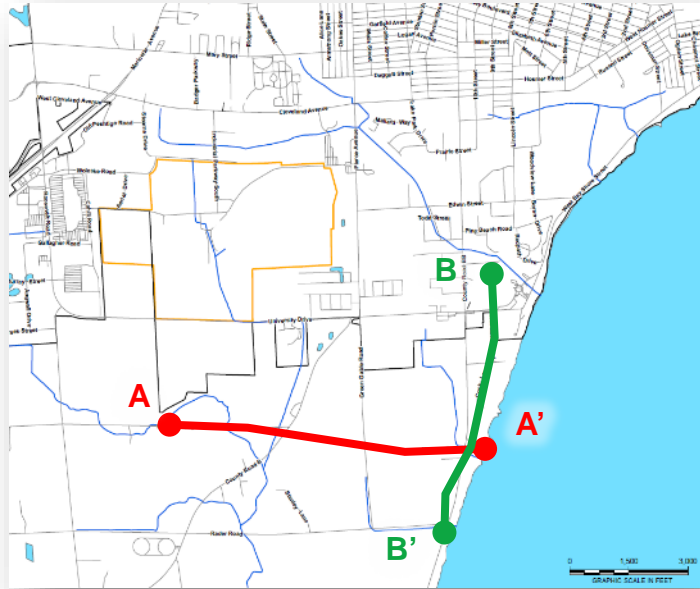
Groundwater Flow

- Groundwater moves slowly (measured in years)
- In shallow aquifers, water is youngest and recharged nearby
- In deeper aquifers, water is typically older and recharged farther away
- Aquifer often separated by confining beds, that restrict vertical flow



T.C. Winter, J.W. Harvey, O.L. Franke, and W.M. Alley - [Ground Water And Surface Water A Single Resource. U.S. Geological Survey Circular 1139](#), Figure 3.

Local Geology



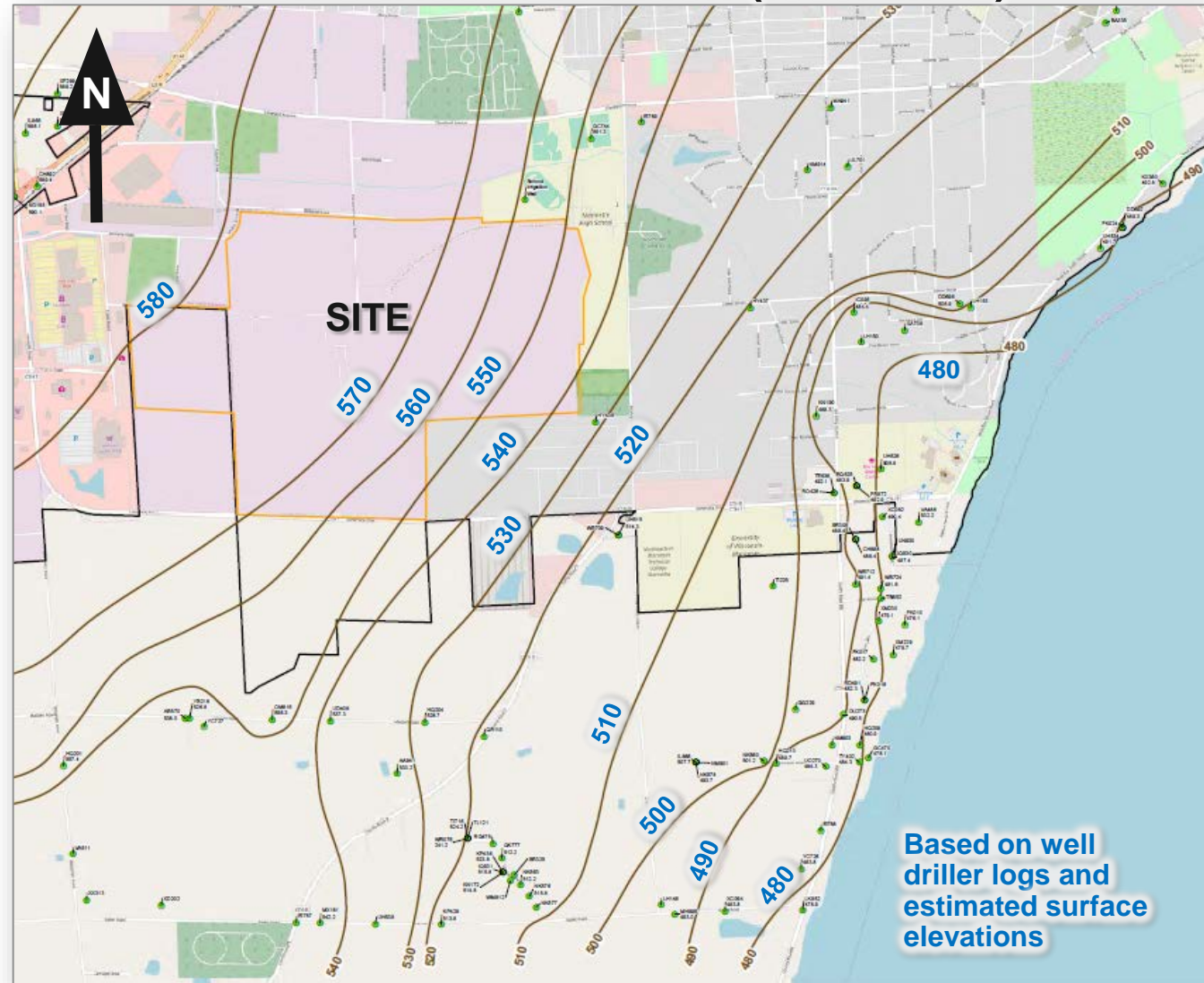
Generalized Sections

- Based on publicly available well logs (diagrams)
- General view of soils and bedrock in this area

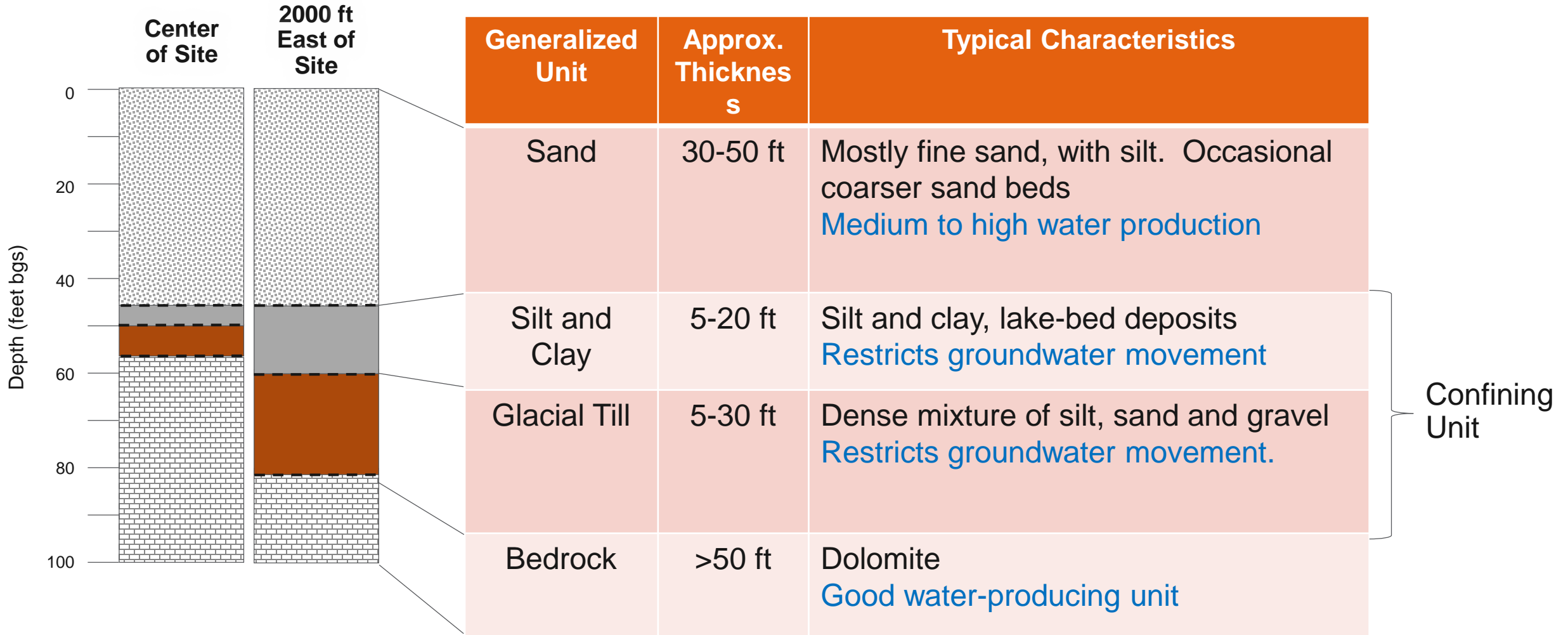
Bedrock Surface

- Bedrock surface slopes steeply to east
- Rock may be as shallow as 30 feet bgs, in west of Site
- Rock more than 100 feet deep adjacent to Green Bay

Bedrock Surface Elevation (feet AMSL)



Below-Ground Profile



Investigations and Data Update

Objectives of Investigation

- Objectives of investigation work
 - Define nature and extent of PFOA and PFOS in groundwater, on-site ditch standing water, and drinking water wells
 - Collect data that can be used to develop the most appropriate measures to address PFOA and PFOS in the environment

Groundwater Investigations

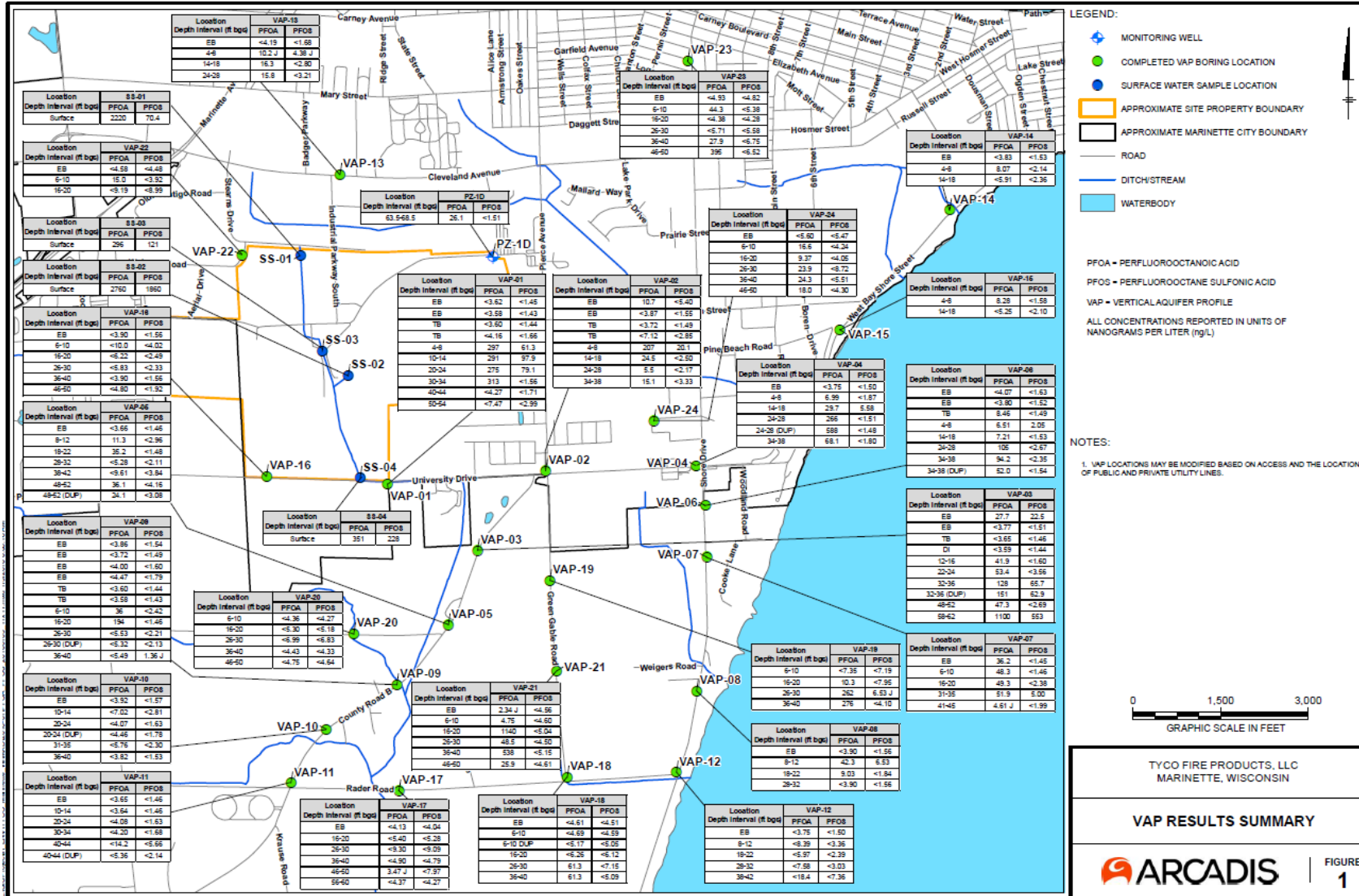
- How investigations like this work; stepwise approach
- How samples are collected
- Data review and quality control
- How results are communicated



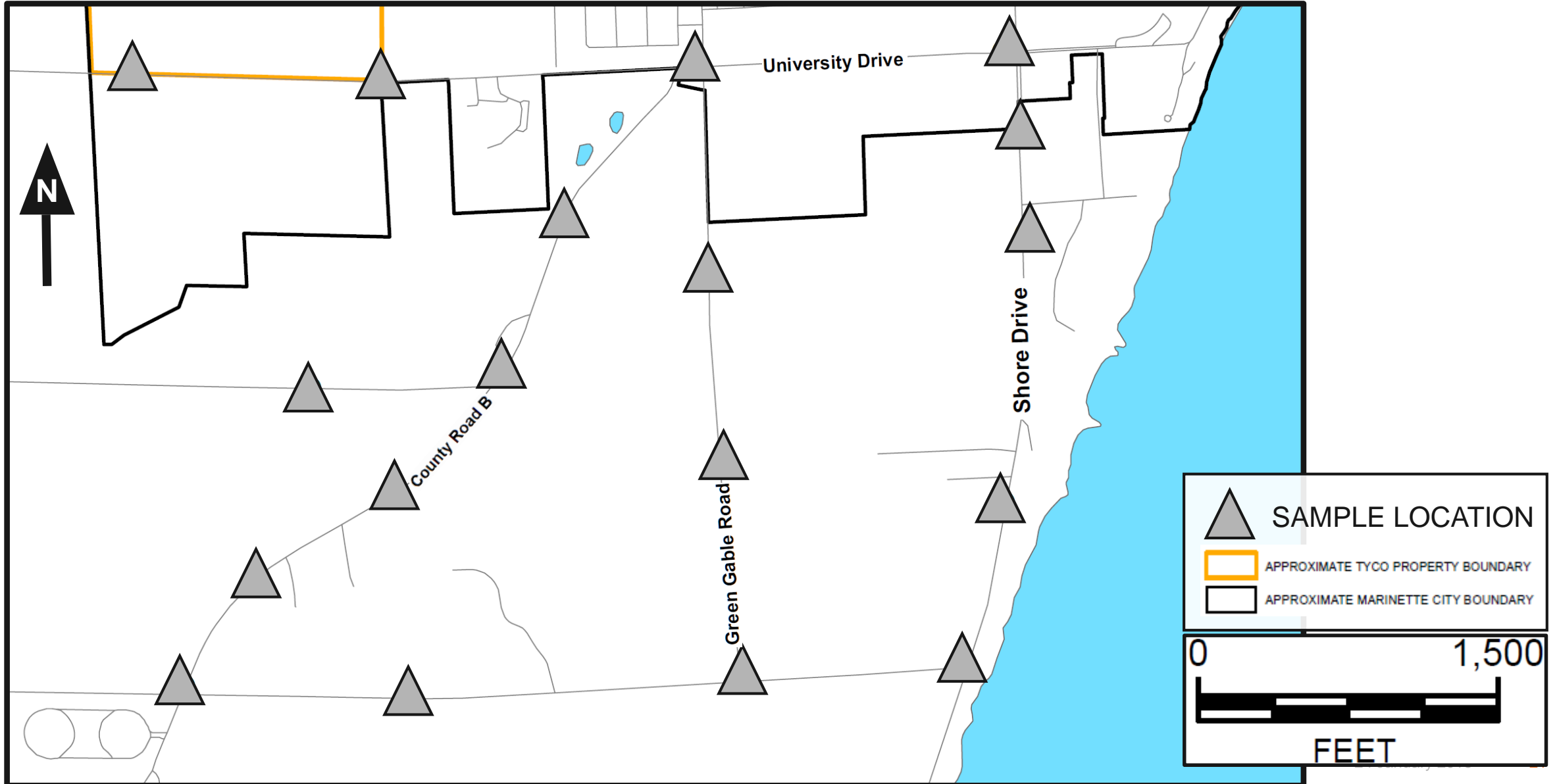
Groundwater Investigations

- Actions taken based on initial VAP results
 - Identified Phase 1 private well sampling area
 - December resident meeting
 - Bottled water distribution
 - Drinking water well sampling
- Actions taken based on additional VAP results
 - Identified Phase 2 private well sampling area
- Private well results and data privacy

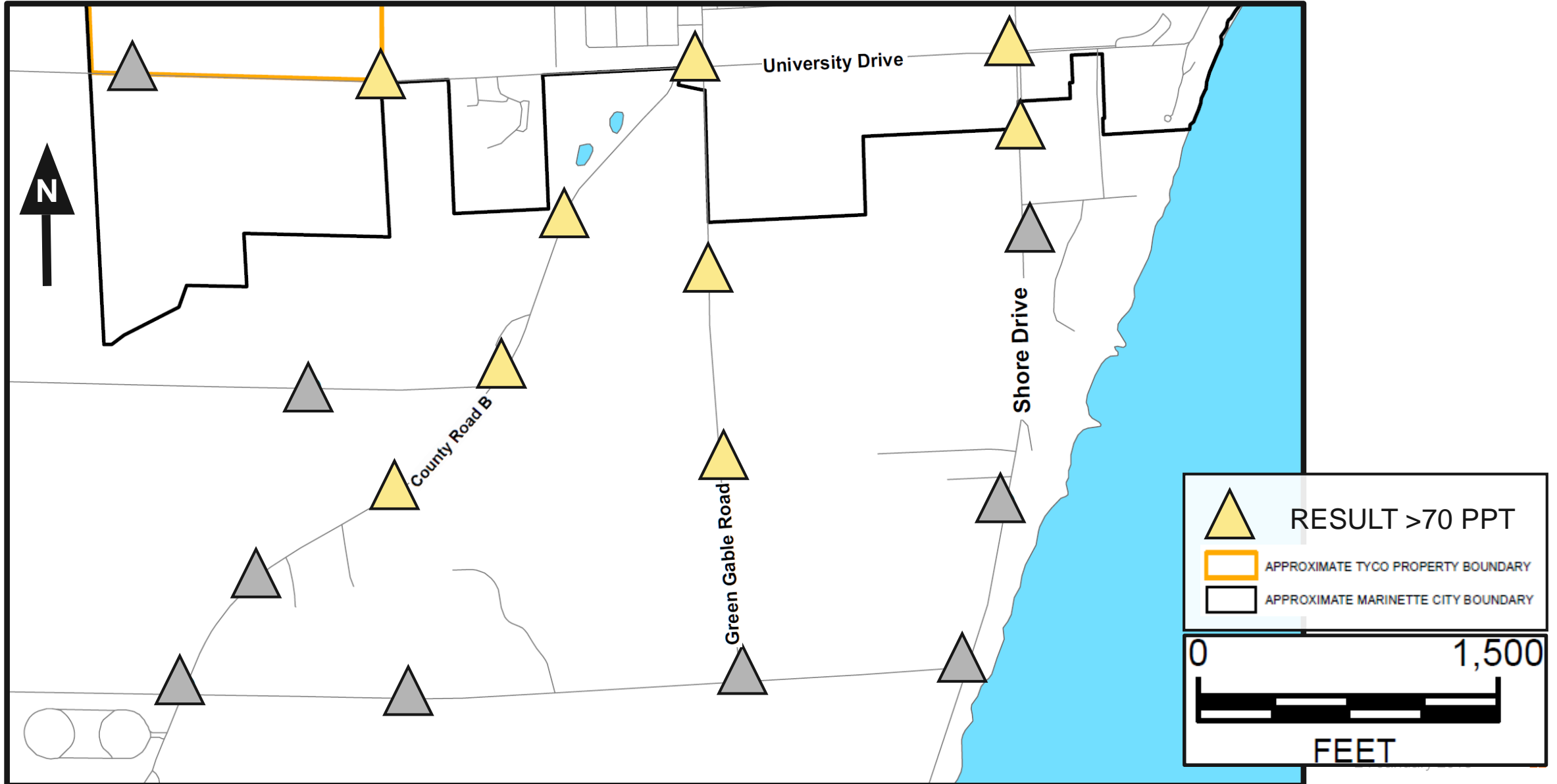
Groundwater Investigations



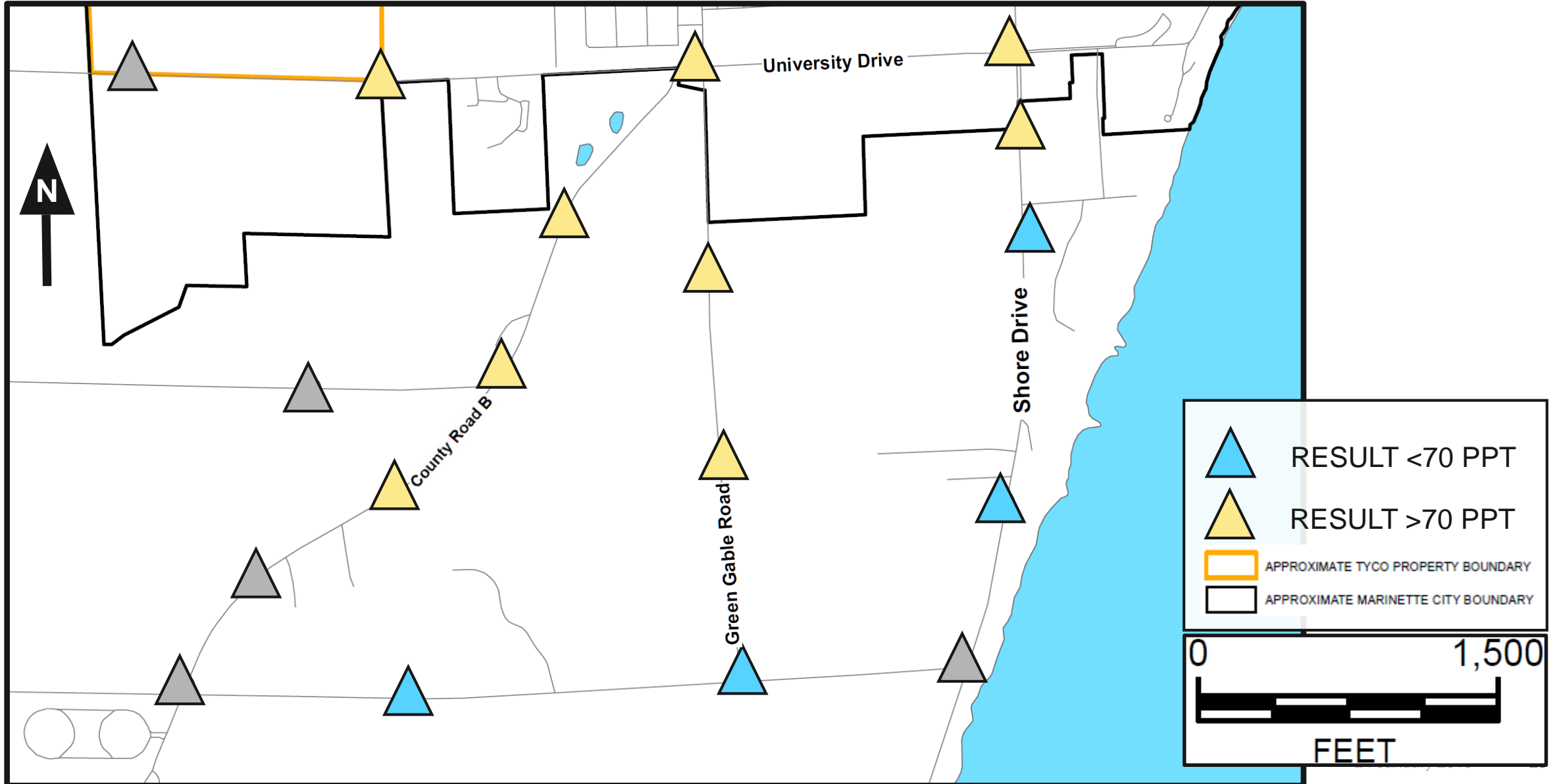
Groundwater Investigations



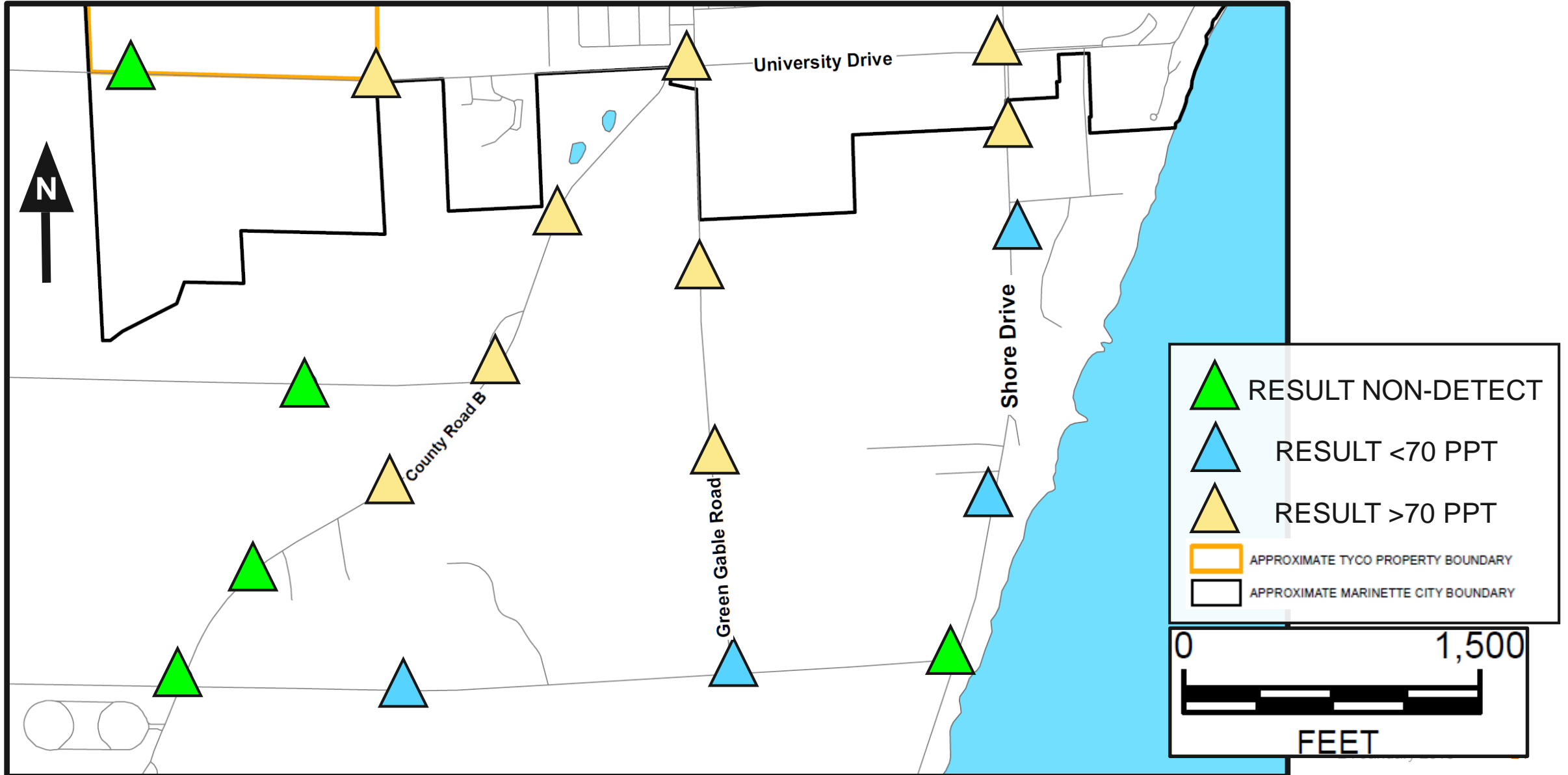
Groundwater Investigations



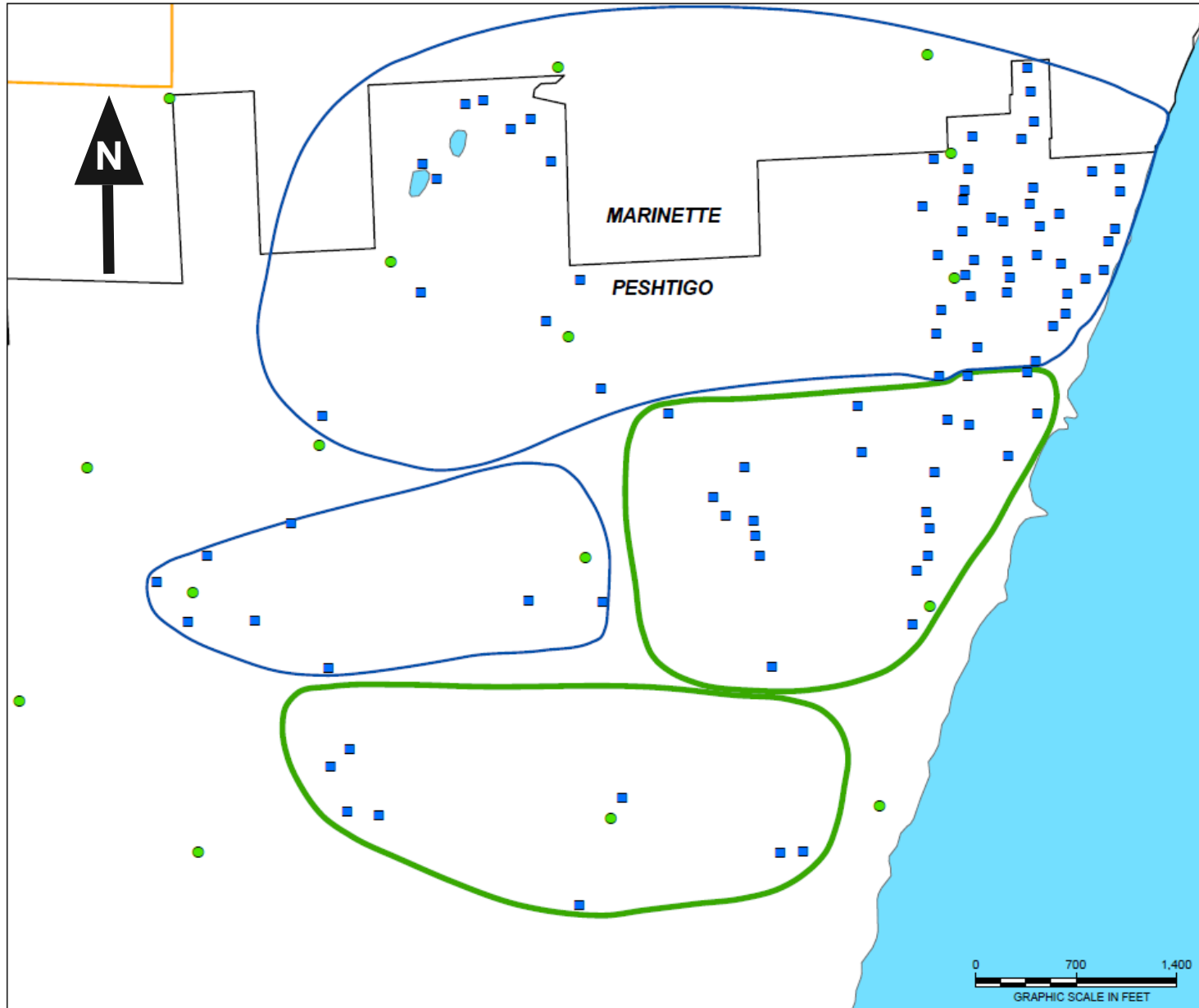
Groundwater Investigations









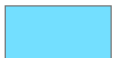
Groundwater Investigations



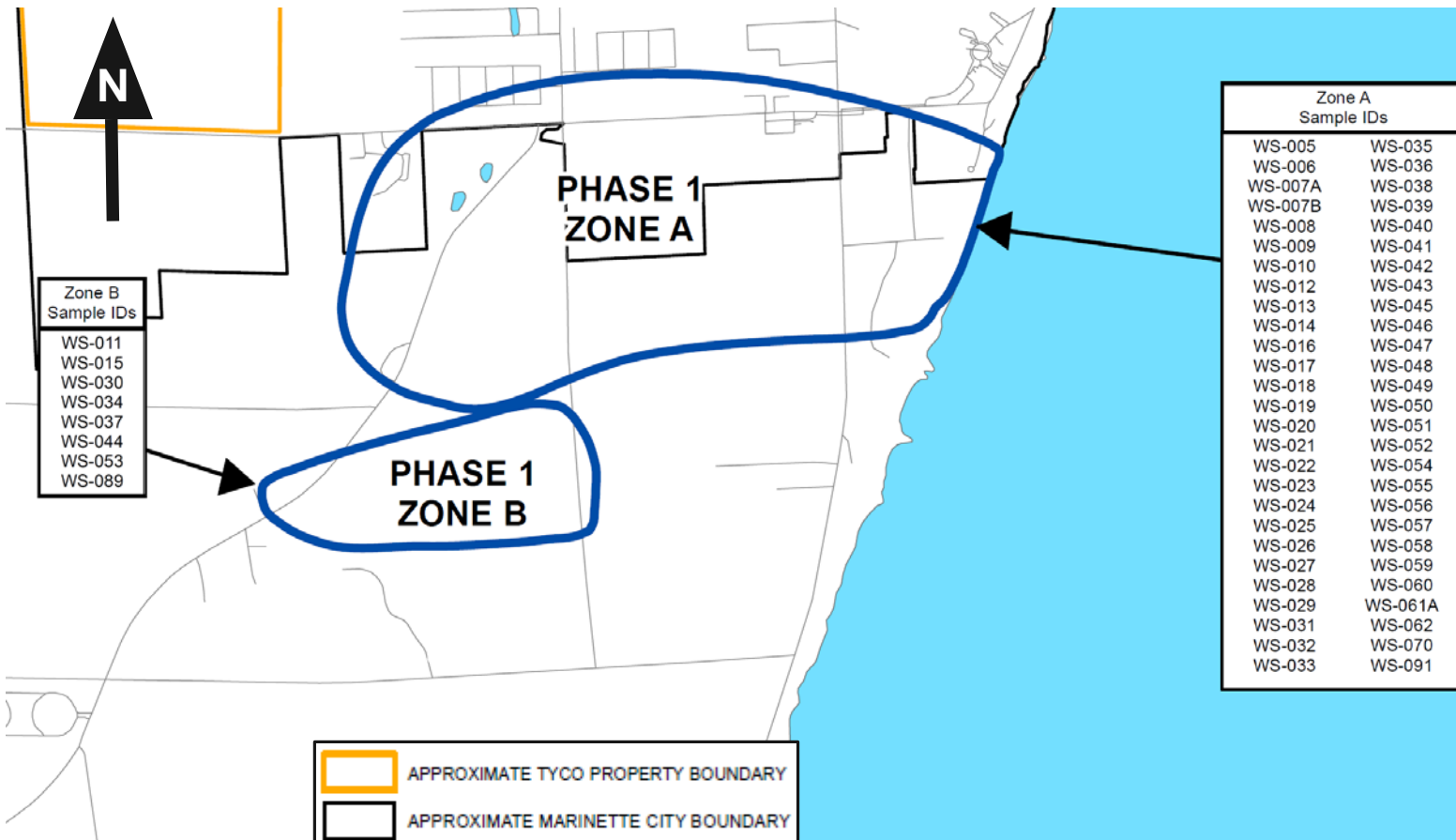
Drinking Water Well Investigation



LEGEND:

-  VAP BORING LOCATION
-  PRIVATE WELL LOCATION
-  APPROXIMATE TYCO PROPERTY BOUNDARY
-  APPROXIMATE MARINETTE CITY BOUNDARY
-  PHASE 1 PRIVATE WELL SAMPLING AREA
-  PHASE 2 PRIVATE WELL SAMPLING AREA
-  WATERBODY

Drinking Water Wells Investigation – Phase 1

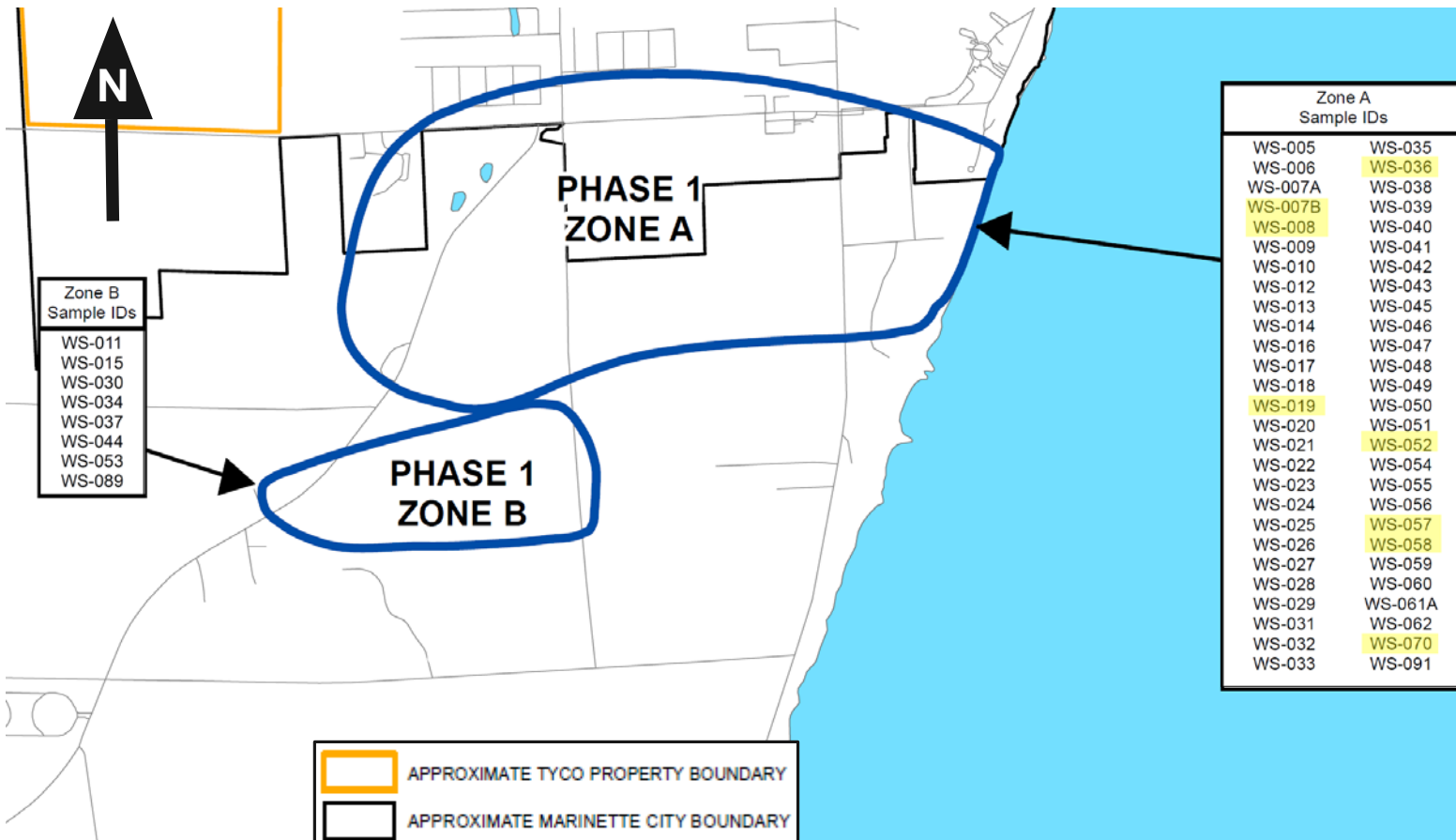


Results Summary:

- 62 Wells Sampled to Date
- 60 Results Received
- 2 Results Pending

Note: Status as of January 22, 2018

Drinking Water Wells Investigation – Phase 1

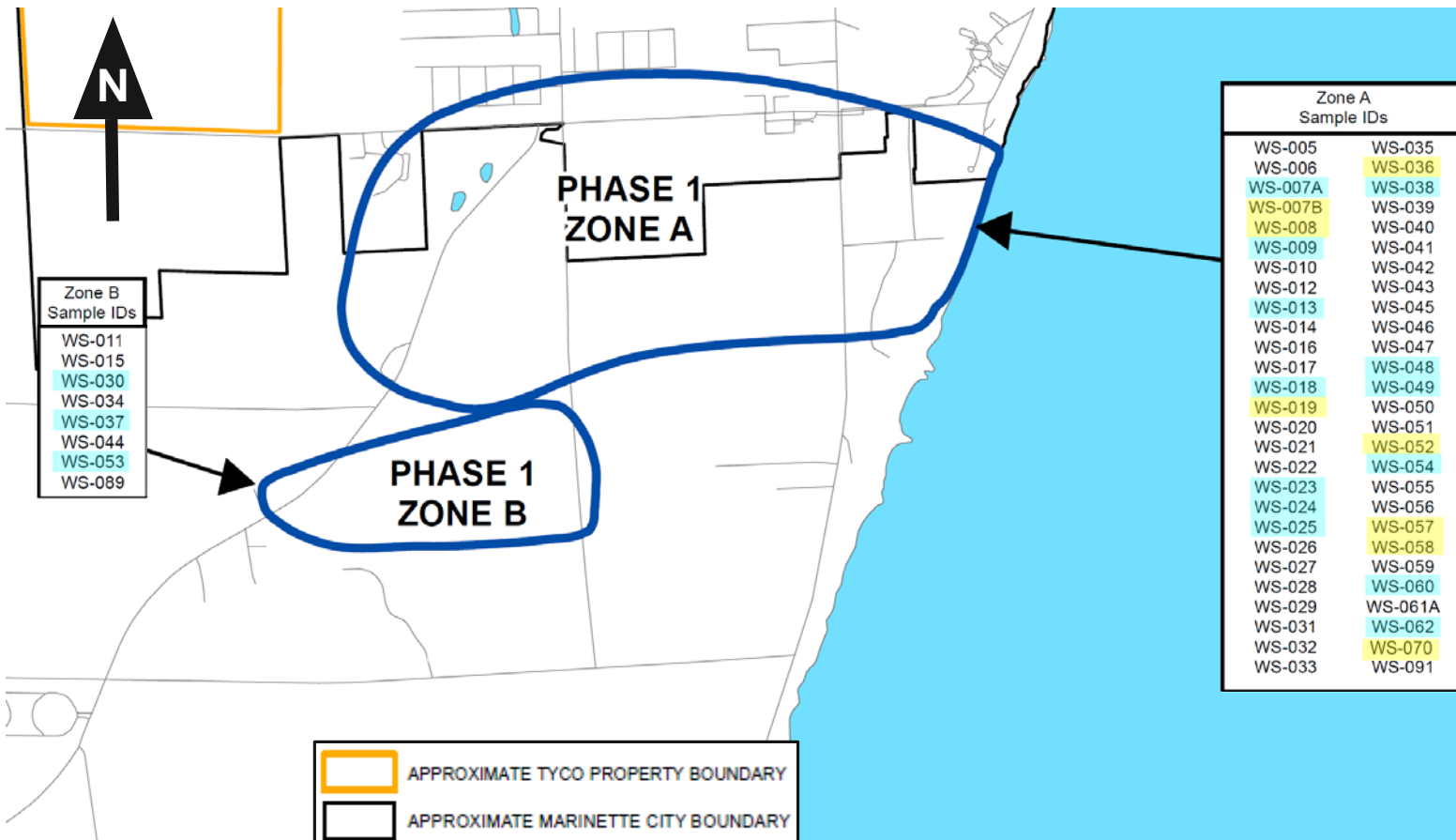


Results Summary:

- 62 Wells Sampled to Date
- 60 Results Received
- 2 Results Pending
- **8 Results >HAL (70 ppt)**

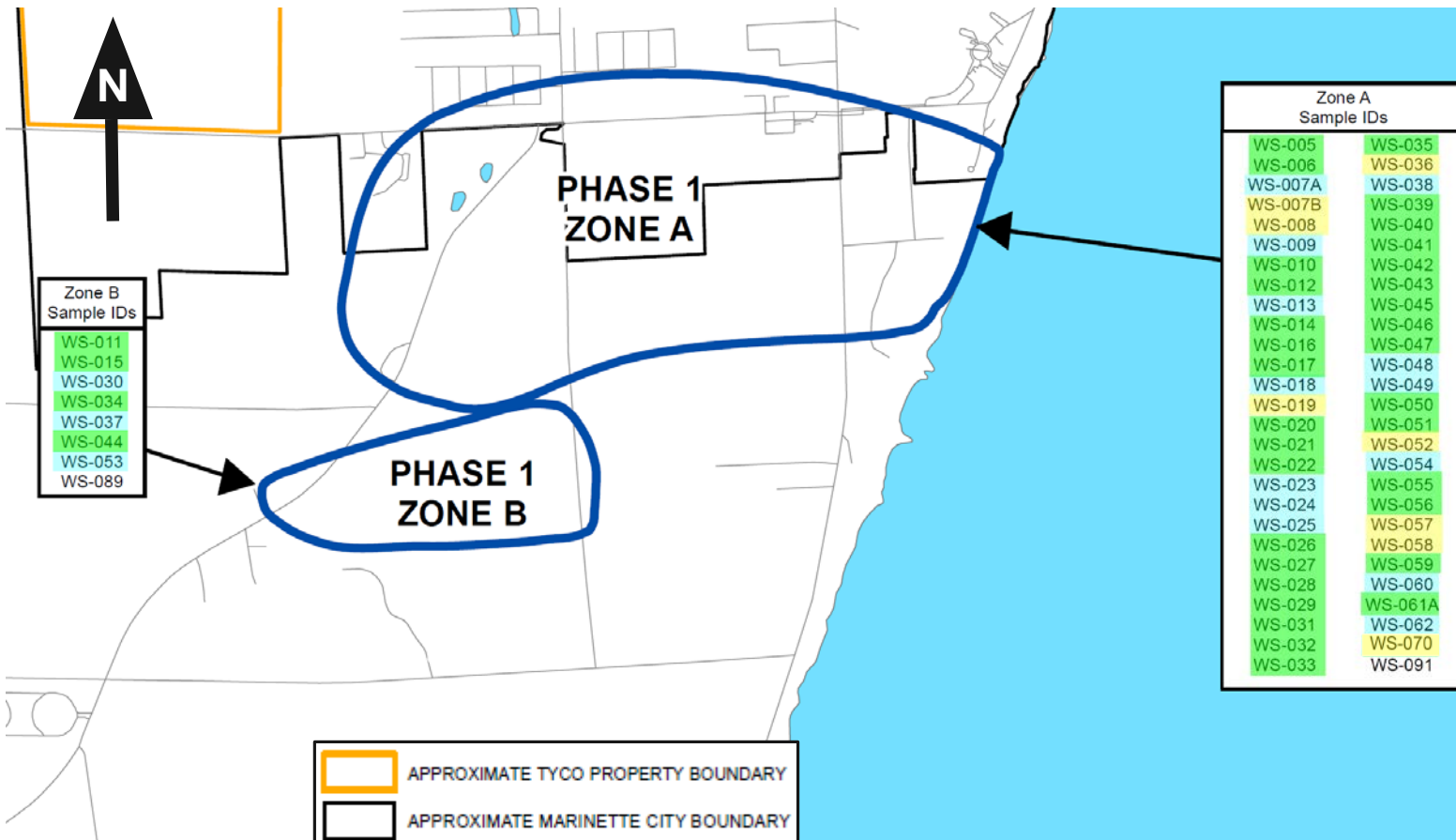
Note: Status as of January 22, 2018

Drinking Water Wells Investigation – Phase 1



- Results Summary:
 - 62 Wells Sampled to Date
 - 60 Results Received
 - 2 Results Pending
 - 8 Results >HAL (70 ppt)
 - 16 Results Detected <HAL

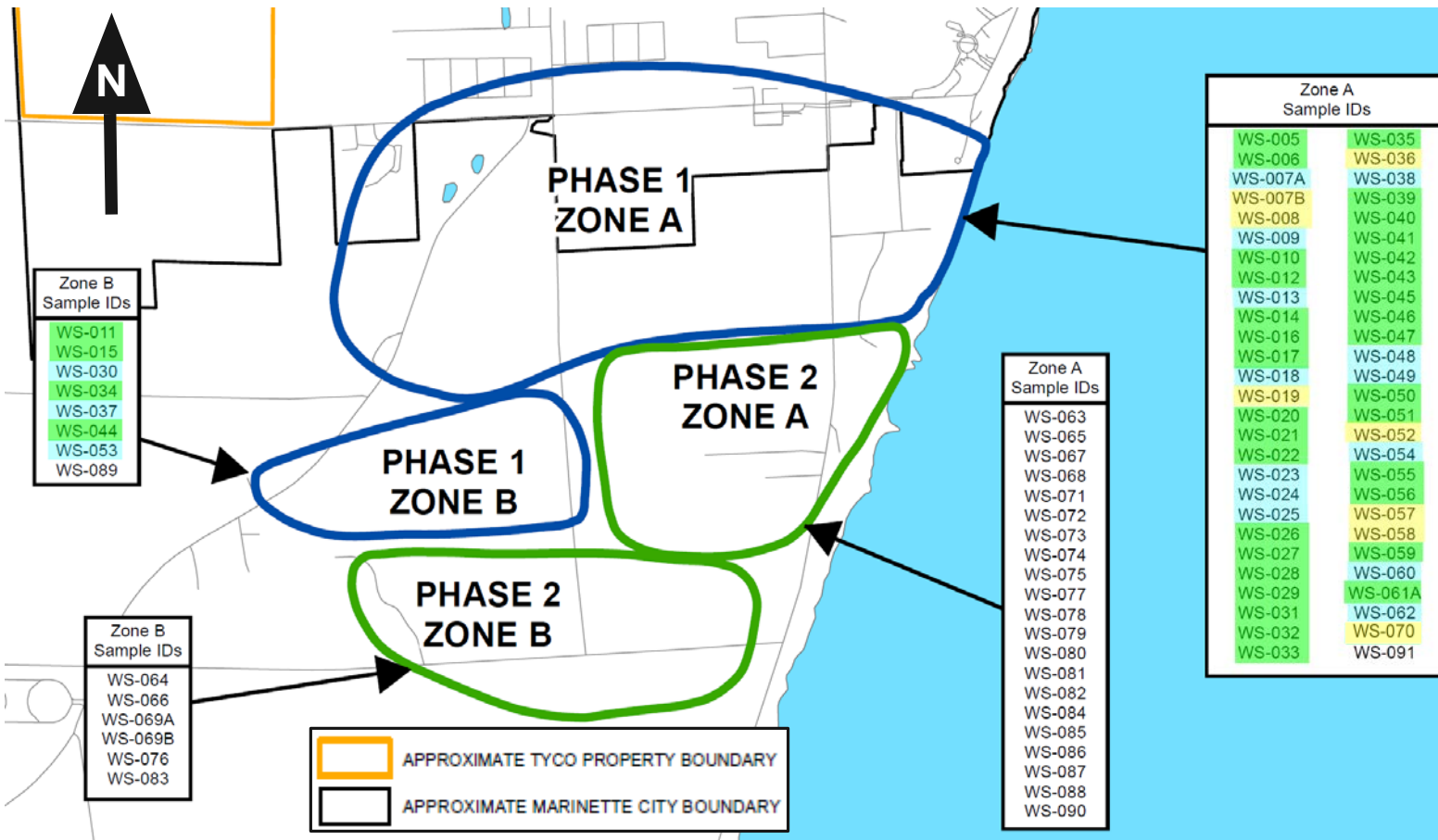
Drinking Water Wells Investigation – Phase 1



- Results Summary:
 - 62 Wells Sampled to Date
 - 60 Results Received
 - 2 Results Pending
 - 8 Results >HAL (70 ppt)
 - 16 Results Detected <HAL
 - 36 Results Not Detected

Note: Status as of January 22, 2018

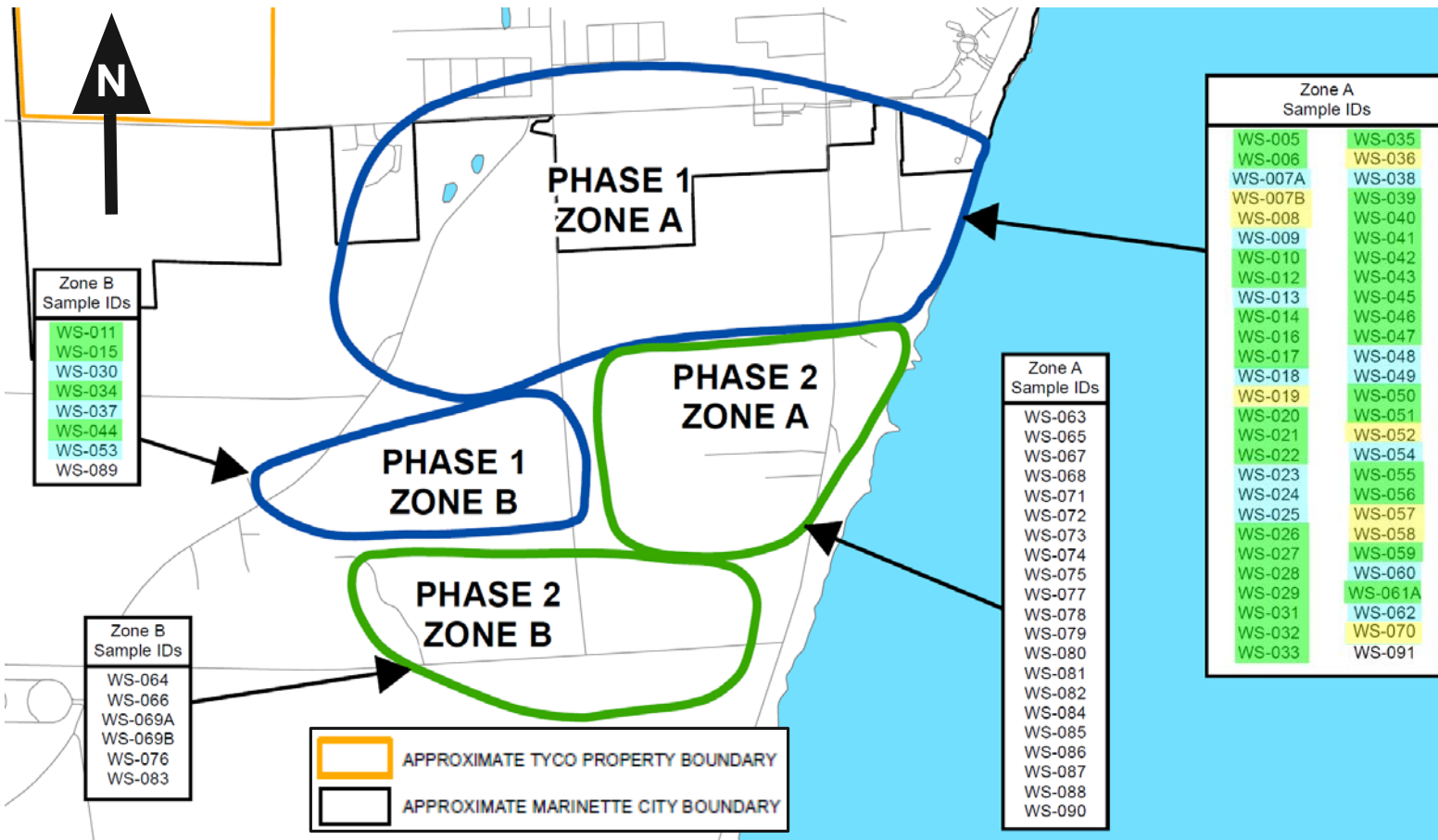
Drinking Water Wells Investigation – Phase 2



- Results Summary:
 - 27 Wells Sampled to Date
 - 22 Results Received
 - 5 Results Pending

Note: Status as of January 22, 2018

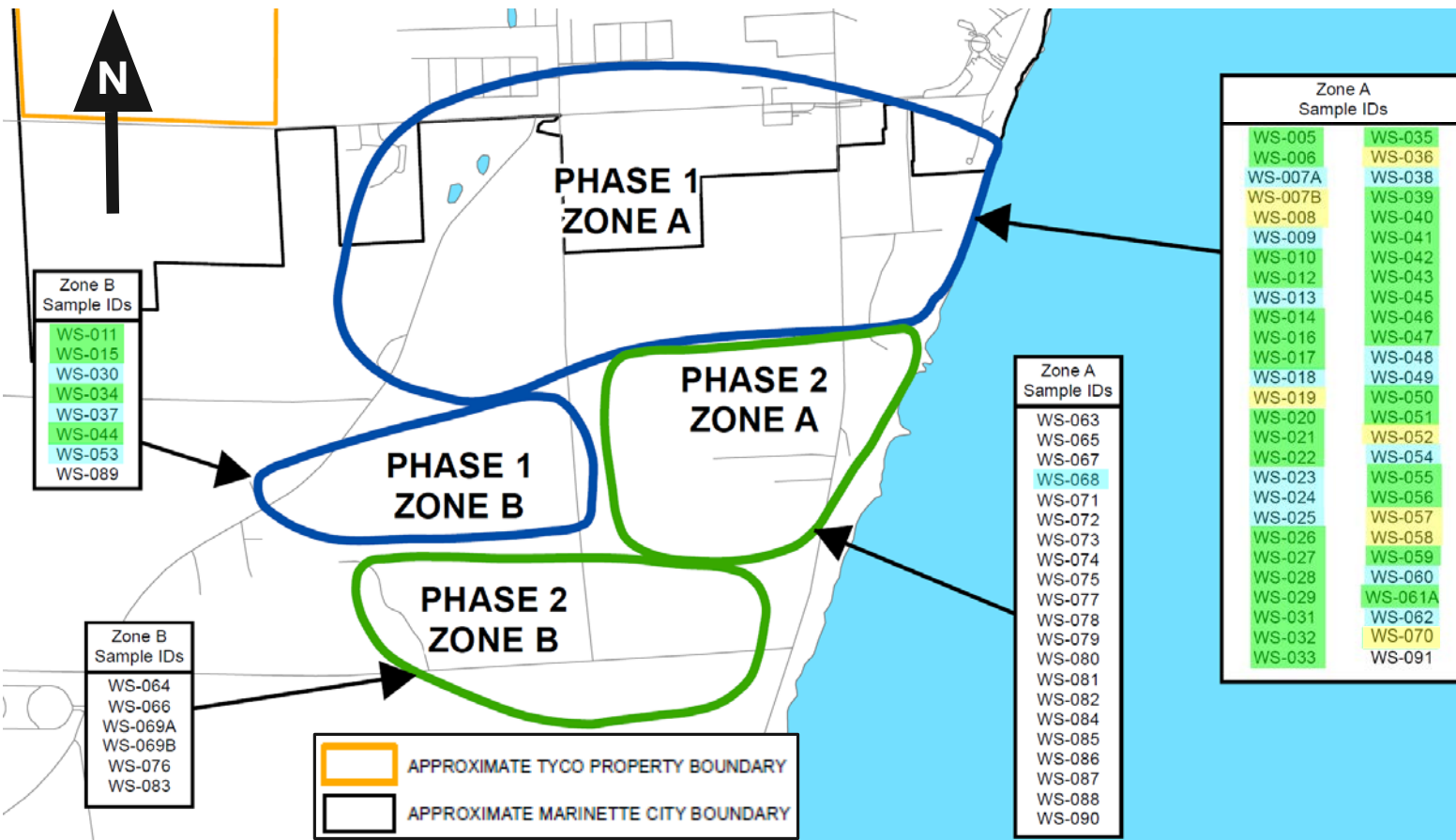
Drinking Water Wells Investigation – Phase 2



- Results Summary:
 - 27 Wells Sampled to Date
 - 22 Results Received
 - 5 Results Pending
 - **0 Results >HAL (70 ppt)**

Note: Status as of January 22, 2018

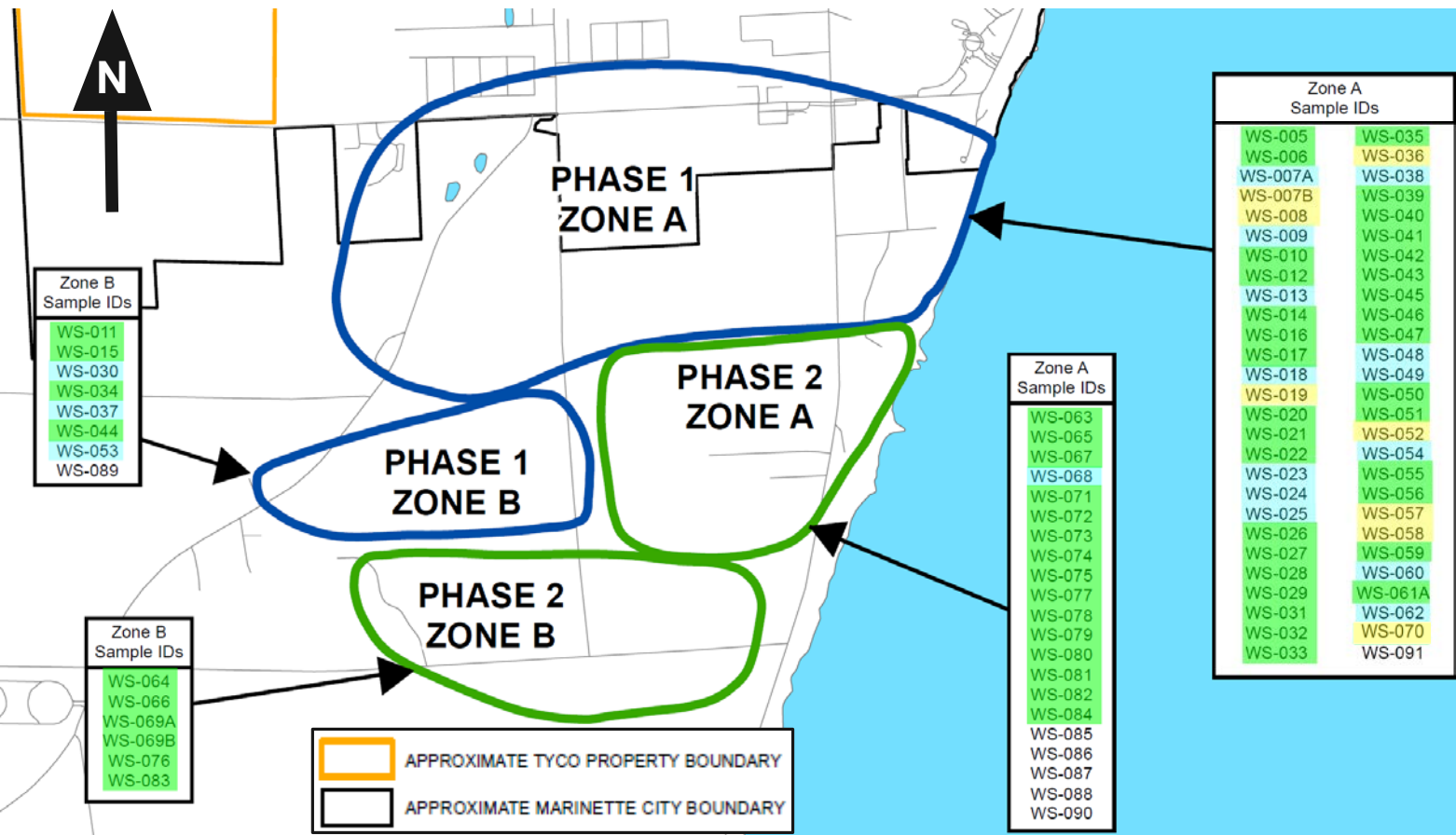
Drinking Water Wells Investigation – Phase 2



- Results Summary:
 - 27 Wells Sampled to Date
 - 22 Results Received
 - 5 Results Pending
 - 0 Results >HAL (70 ppt)
 - 1 Result Detected <HAL

Note: Status as of January 22, 2018

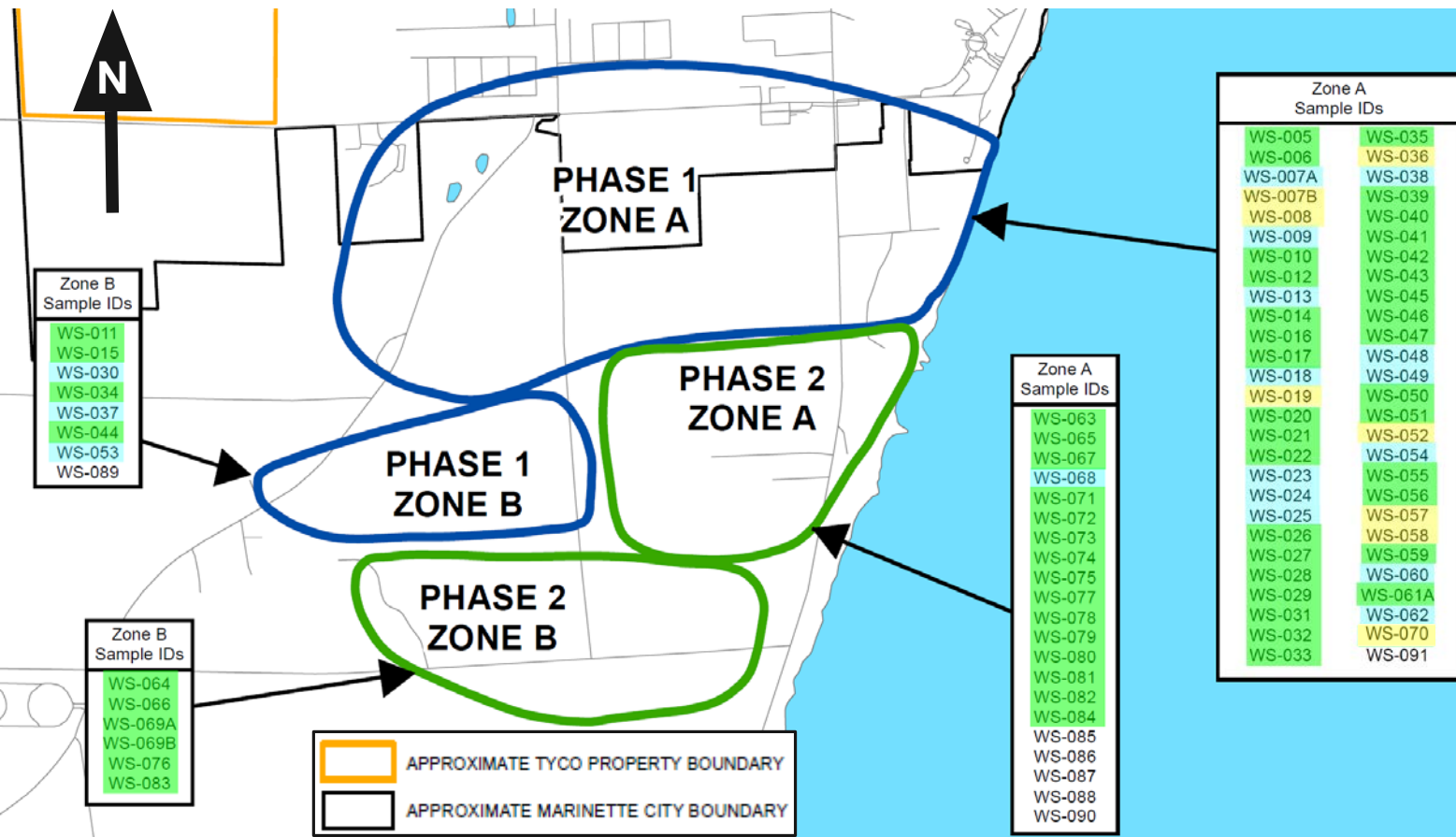
Drinking Water Wells Investigation – Phase 2



- Results Summary:
 - 27 Wells Sampled to Date
 - 22 Results Received
 - 5 Results Pending
 - 0 Results >HAL (70 ppt)
 - 1 Result Detected <HAL
 - 21 Results Not Detected

Note: Status as of January 22, 2018

Drinking Water Wells Investigation Summary



Phase 1 and 2 Results Summary:

- 89 Wells Sampled to Date
- 82 Results Received
- 7 Results Pending
- 8 Results >HAL (70 ppt)
- 17 Result Detected <HAL
- 57 Results Not Detected

Note: Status as of January 22, 2018

Review of Drinking Water Options

Private Drinking Water Wells – Primary Options

- Bottled water (immediate/interim measure)
- Water treatment system (point of entry treatment or POET system)
- New deep well (bedrock)
- Public water

- Further evaluation needed in order to determine the most feasible/available option for each well

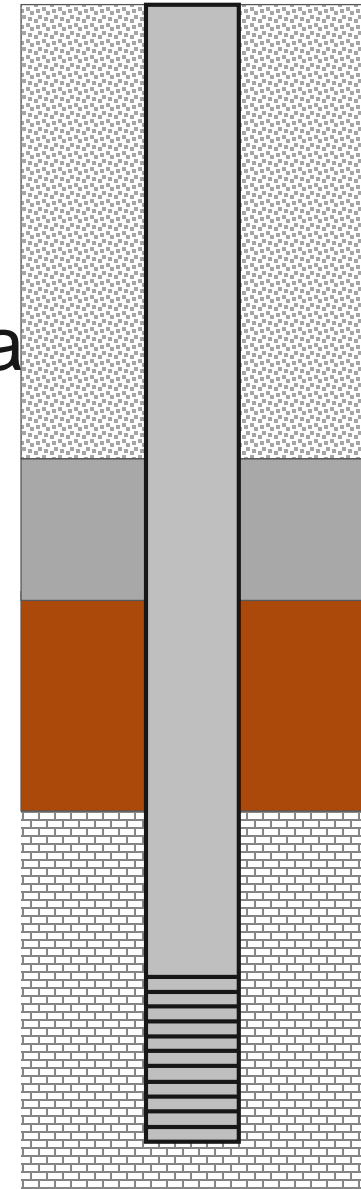
Water Treatment Systems

- Rapid deployment
- Installation process
- Performance monitoring



Bedrock Wells and Public Water

- Evaluation of options – considerations
 - Remaining data from private well sampling program
 - Further delineation of groundwater levels
 - Better understanding of bedrock conditions
 - Property owners uses and locations
 - Town of Peshtigo and City of Marinette input
 - Road/property access



Next Steps and Information Resources

Upcoming Activities

- Further groundwater and soil investigation
- Additional ditch investigation – sediments, groundwater/surface water interaction, water
- Drinking water well re-sampling by end of Spring
- Long-term monitoring program
- Future community updates

Information Resources

- Tyco website and WDNR website (BRRTS on the Web)
- Contact sheet available tonight (toll-free number, WDNR, WDHS, web links)
 - Toll-free number: **800-314-1381**
 - Some web sites:

Tyco Fire Products website for this matter:

<http://marinette.tycofpp.com/>

WDNR - Bureau for Remediation and Redevelopment Tracking System (BRRTS) on the Web:

<http://dnr.wi.gov/botw/GetActivityDetail.do?adn=0238580694&siteId=1552500&crumb=1&search=b>

United States Environmental Protection Agency:

<https://www.epa.gov/pfas/what-are-pfcs-and-how-do-they-relate-and-polyfluoroalkyl-substances-pfass>

Agency for Toxic Substances and Disease Registry:

https://www.atsdr.cdc.gov/pfc/docs/Talking_to_Doctor.pdf

Meeting Break and Question & Answer Tables