



Investigation of PFAS Sources and Receptors in Southwestern New Jersey

Stephen E. Maybury

NJ Department of Environmental Protection

NEWMOA Workshop

Danielson, CT

May 2017



Legend

- ★ Site Locations
- Site Boundaries

Public Community Supply Wells

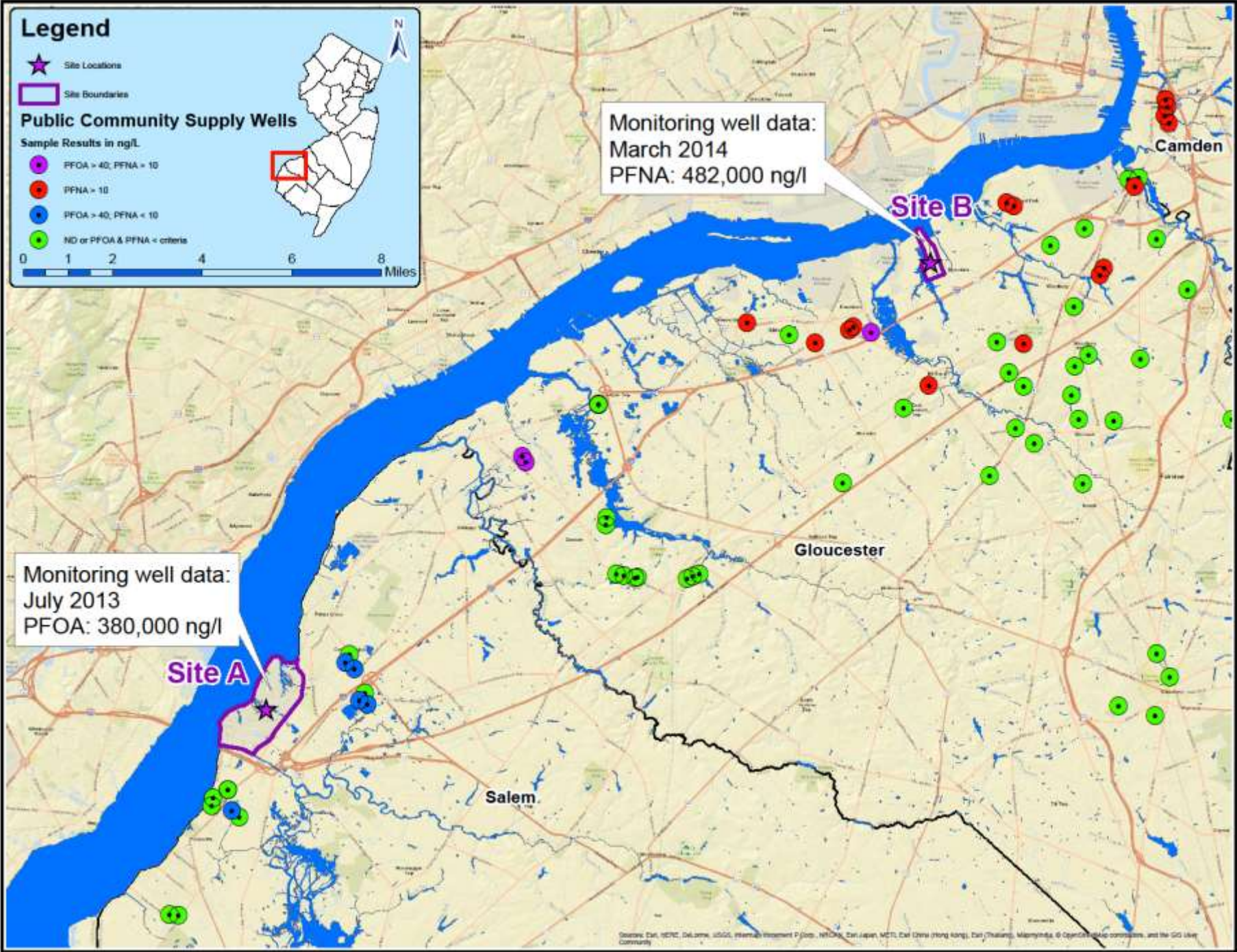
Sample Results in ng/L

- PFOA > 40; PFNA > 10
- PFNA > 10
- PFOA > 40; PFNA < 10
- ND or PFOA & PFNA < criteria



Monitoring well data:
March 2014
PFNA: 482,000 ng/l

Monitoring well data:
July 2013
PFOA: 380,000 ng/l



Sources: EPA, MDE, Delaware, USGS, Pennsylvania P (pa.), WFOA, East Japan, MFL, East China (Hong Kong), East Thailand, Malaysia, © OpenStreetMap contributors, and the GIS User Community

RM 90
PFNA and PFOA in Surface Water
2007 - 1.7 ng/l & 3.5 ng/l
2008 - 3.2 ng/l & 4 ng/l
2009 - 1.7 ng/l & 3.3 ng/l

RM 105.4
PFNA and PFOA in Surface Water
2007 - 3.32 ng/l & 5.8 ng/l
2008 - 4.25 ng/l & 5 ng/l
2009 - 3.68 ng/l & 5.3 ng/l

RM 90
PFNA and PFOA in Surface Water
2007 - 265 ng/l & 10.8 ng/l
2008 - 196 ng/l & 10.2 ng/l
2009 - 240 ng/l & 11.5 ng/l

RM 80
PFNA and PFOA in Surface Water
2007 - 976 ng/l & 23.8 ng/l
2008 - 552 ng/l & 19.2 ng/l
2009 - 546 ng/l & 16.4 ng/l

RM 68.1
PFNA and PFOA in Surface Water
2007 - 847 ng/l and 75.4 ng/l
2008 - 650 ng/l and 48 ng/l
2009 - 338 ng/l and 27.7 ng/l

RM 50
PFNA and PFOA in Surface Water
2007 - 331 ng/l & 57.3 ng/l
2008 - 301 ng/l & 47.5 ng/l
2009 - 108 ng/l & 20.4 ng/l

Paulsboro Municipal Well
PFNA Sampling Data
2009 - 96 ng/l
2013 - 150 ng/l

Legend

**Paulsboro Municipal Wells
PFNA Sampling Results**

- > 10 ng/L
- Site Boundaries

DRBC Sampling Points

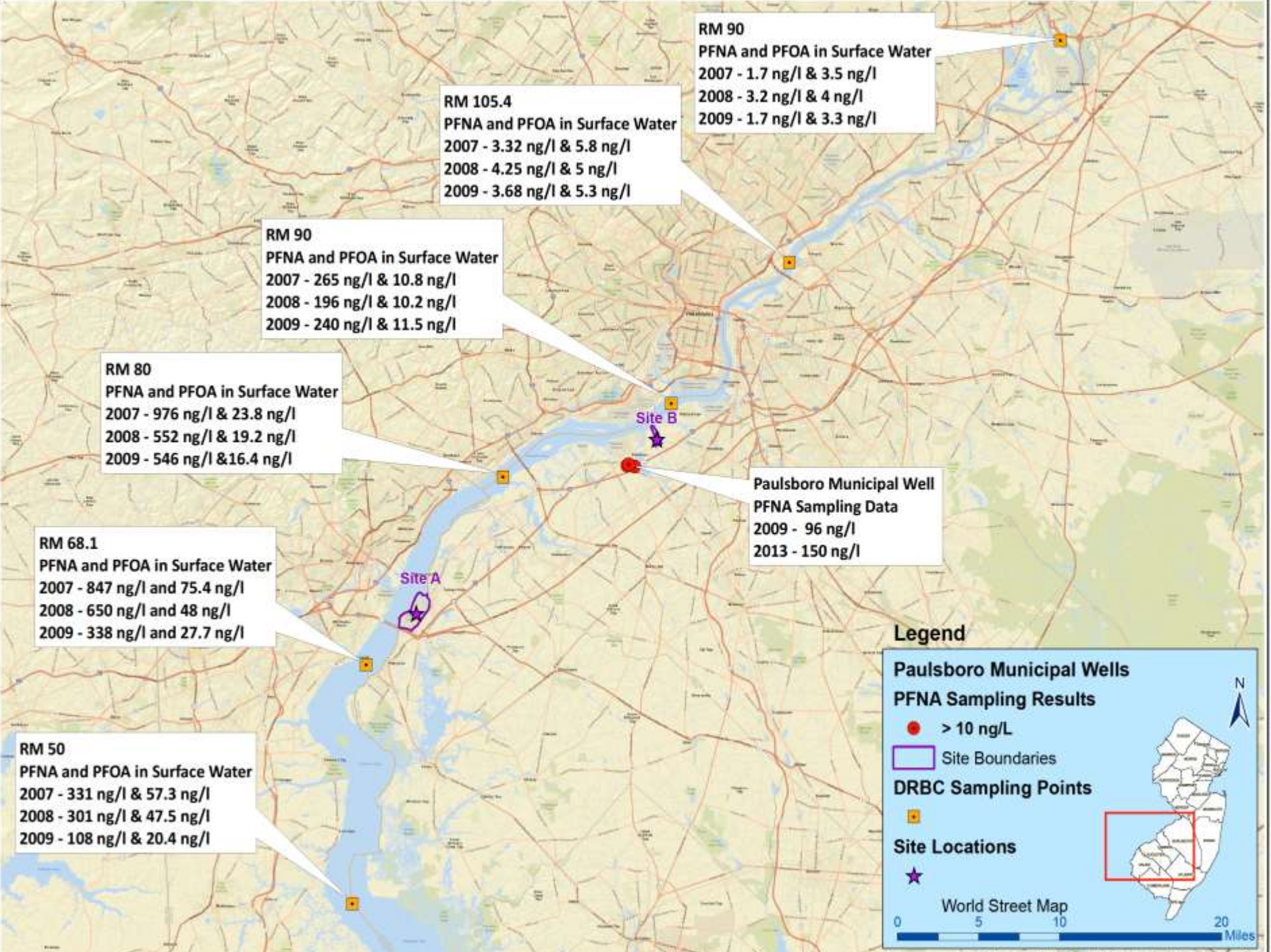
-

Site Locations

- ★

World Street Map

0 5 10 20 Miles



Legend

Potable Well Data

Sample Results in ng/L

- ▲ PFNA > 10; PFOA > 40
- ▲ PFNA > 10; PFOA < 40
- ▲ PFOA > 40; PFNA < 10
- ▲ ND or PFOA & PFNA < criteria

Public Community Supply Wells

Sample Results in ng/L

- PFOA > 40; PFNA > 10
- PFNA > 10
- PFOA > 40; PFNA < 10
- ND or PFOA & PFNA < criteria

DRBC Sampling Points

-
- 0 0.75 1.5 3 4.5 6 Miles



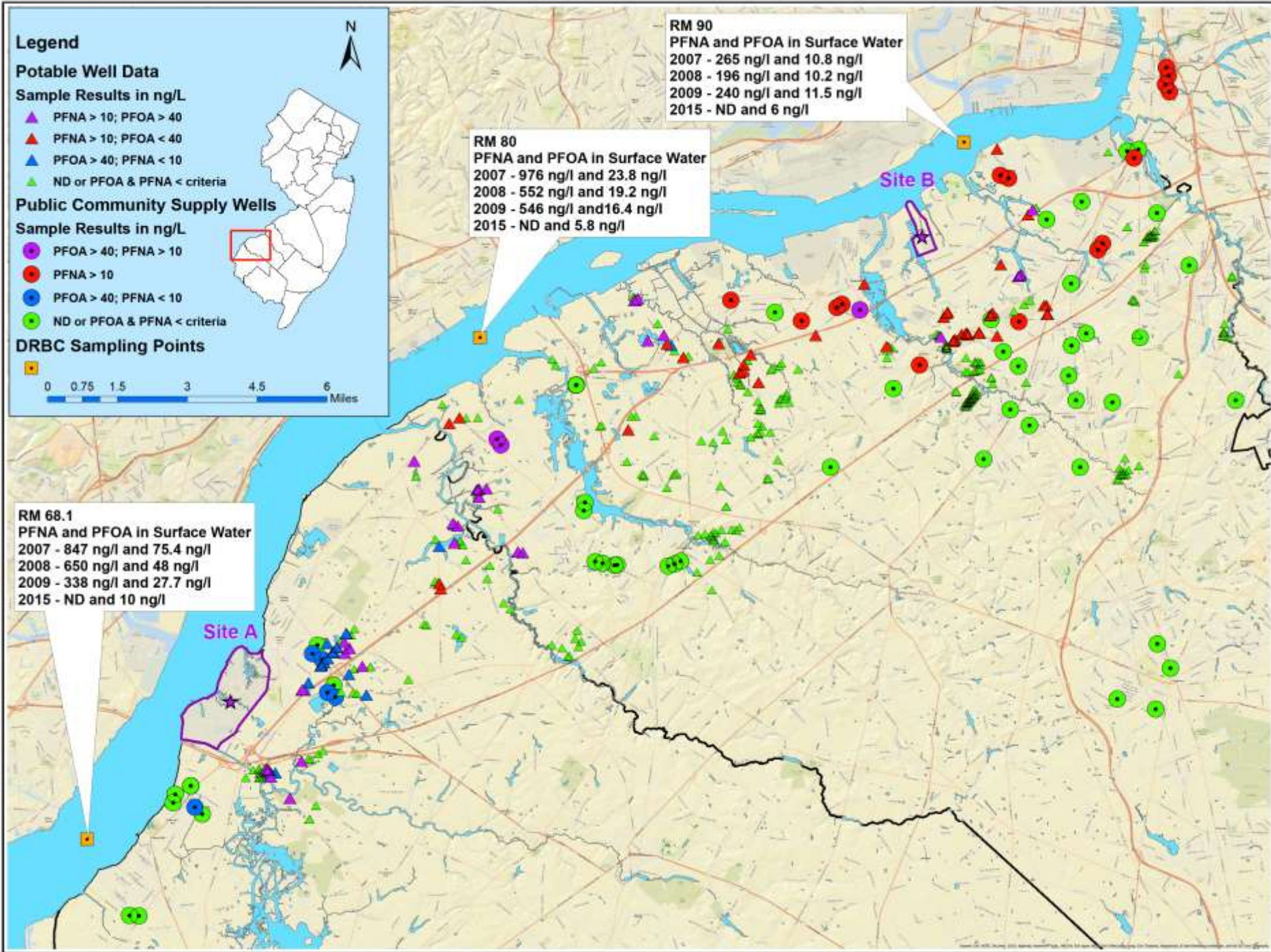
RM 90
PFNA and PFOA in Surface Water
2007 - 265 ng/l and 10.8 ng/l
2008 - 196 ng/l and 10.2 ng/l
2009 - 240 ng/l and 11.5 ng/l
2015 - ND and 6 ng/l

RM 80
PFNA and PFOA in Surface Water
2007 - 976 ng/l and 23.8 ng/l
2008 - 552 ng/l and 19.2 ng/l
2009 - 546 ng/l and 16.4 ng/l
2015 - ND and 5.8 ng/l

RM 68.1
PFNA and PFOA in Surface Water
2007 - 847 ng/l and 75.4 ng/l
2008 - 650 ng/l and 48 ng/l
2009 - 338 ng/l and 27.7 ng/l
2015 - ND and 10 ng/l

Site B

Site A





Major Lessons Learned

- All pathways must be evaluated
 - soil
 - groundwater
 - groundwater to surface water
 - surface water to groundwater
 - air dispersion (manufacturing sites)
- Surface water sampling indicates that EPA's TSCA voluntary phase out of Long-Chain PFCs reduced levels in the Delaware River
- Evaluate statutory/regulatory authority to address emerging contaminants
 - Modifications needed:
 - Regulations
 - Guidance
 - Training





NJDEP PFAS Strategy

- Continue to evaluate and address receptors
- Expand regulatory authority
 - Develop and promulgate standards
 - Hazardous Substance Listing
- Identify potential sources





Confirmed NJ PFAS Source Sites

- Four Industrial Sites
 - 3 primary manufactures of PFAS
 - 1 manufacturer used PFAS
- Four Federal Facility AFFF Sites



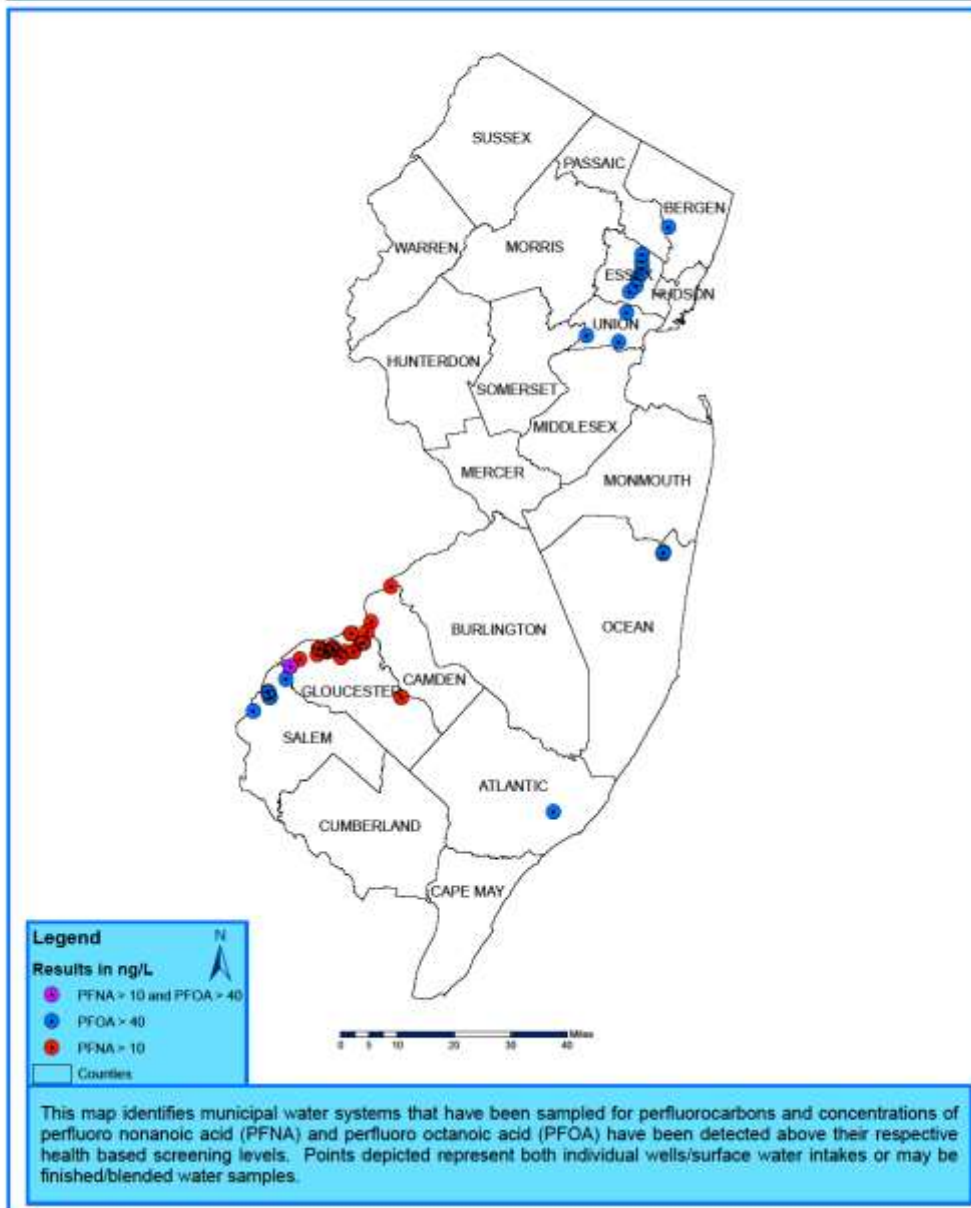


PFAS Issues

- Migration pathways/fate and transport
- Exposure and/or remediation standards
- Regulatory authority and funding
- Universe of potential sources unknown



PFNA and PFOA Exceedances Detected in NJ Public Water Supply Systems





NJDEP- Initiatives

- Development of NJ Drinking Water MCLs and Groundwater Quality Standards (GWQS)
 - PFNA
 - Established 10 ng/L Interim GWQS
 - Proposed 10 ng/L as final GWQS
 - Potential MCL proposal of 13 ng/L (2017)
 - PFOA
 - Established a preliminary drinking water guidance level of 40 ng/L (2007)
 - NJDEP currently evaluating a MCL recommendation of 14 ng/L
 - PFOS
 - MCL under development





NJDEP- Initiatives

- Enhance remediation regulations - NJ currently regulates PFAS remediation as “pollutants” under NJ Water Pollution Control Act
 - Proposed addition of PFNA to the NJ Hazardous Substance List/Spill Regulations to enhance;
 - identification of contamination,
 - NJ cleanup and funding
 - Evaluating the addition of PFOA & PFOS to Hazardous Substance List





NJDEP- Initiatives

- Collaborative Research - NJDEP & EPA-National Research Exposure Laboratory & EPA Region II (expected to begin summer 2017)
 - Evaluate air deposition impacts
 - Source signature analysis
 - Identification of replacement and precursor compounds





NJDEP- Initiatives

- Additional Scientific Studies
 - NJDEP conducted (2006, 2009) a limited public supply occurrence testing and identified PFAS in drinking water systems (Final Report 2014)
 - 2016 & 2017 PFAS Fish Species Study- results pending
 - Currently evaluating potential for wastewater treatment plant & bio-solids study.





NJDEP- Initiatives

- Track-down of Sources
 - Technical assistance provided to water purveyor to backtrack and identify a specific source of PFOA in a surface water intake. The facility was confirmed as a source site and is currently under investigation.
 - Requests for Information sent to > 50 facilities based on:
 - NAICs consistent with PFAS contaminated manufacturing sites
 - Facilities with operations that may of use PFAS near public supplies detecting contamination.
 - Does not appear that there are additional primary producers of PFAS
 - No additional sources to impacted public water supplies identified
 - Additional GIS and NAICs based information requests of potential sources based on impacted public water supply locations.
 - Considering coating mills as next NAICs evaluation





NJDEP PFAS Contact

Steve Maybury

steve.maybury@dep.nj.gov

(609) 633-1455

