

# Establishing a Collaborative National Network of Reference Watersheds for Freshwater Streams

National Water Quality Monitoring Council

8<sup>th</sup> National Monitoring Conference  
Portland, Oregon  
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Big Thompson River  
Rocky Mountain National Park

# Acknowledgements

- ▶ States – CT, DE, IA, IL, IN, MA, MD, ME, MI, MN, NH, NJ, NY, OH, PA, VT, RI, WI
- ▶ NPS – Gary Rosenlieb
- ▶ USFS – Ann Mebane, Deb Hayes, Steve Sebestyen
- ▶ USEPA – Britta Bierwagen, Clara Funk, Richard Mitchell, Steve Paulsen
- ▶ Tetra-Tech – Jen Stamp
- ▶ USGS NAWQA Program – Denise Argue, Robin Brightbill, Anne Choquette, James Falcone, Laura Hayes, Marilee Horn, Mike McHale, Jessica Thompson, John Wilson
- ▶ Executive Committee – Rick Haeuber, Neil Kamman, Doug McLaughlin, Bill Wilber, Mark Nilles (ex-officio)



# Objectives and Approach

- ▶ Collaborative effort across multiple agencies
- ▶ Frame of reference for stream assessments
- ▶ Determine current picture of monitoring
- ▶ Inventory and catalog of sites and data
- ▶ Systematic review of existing sites and data
- ▶ Tiered framework – long term and synoptic



# Example of Monitoring Networks

USGS

USEPA

USFS

NPS

Streamflow  
(GAGES, HCDN, NSIP)  
HBN, NAWQA

NARS,  
LTM, TIME

Experimental  
Forest's, Stream  
Assessments

I & M Networks

NSF

States

Tribes

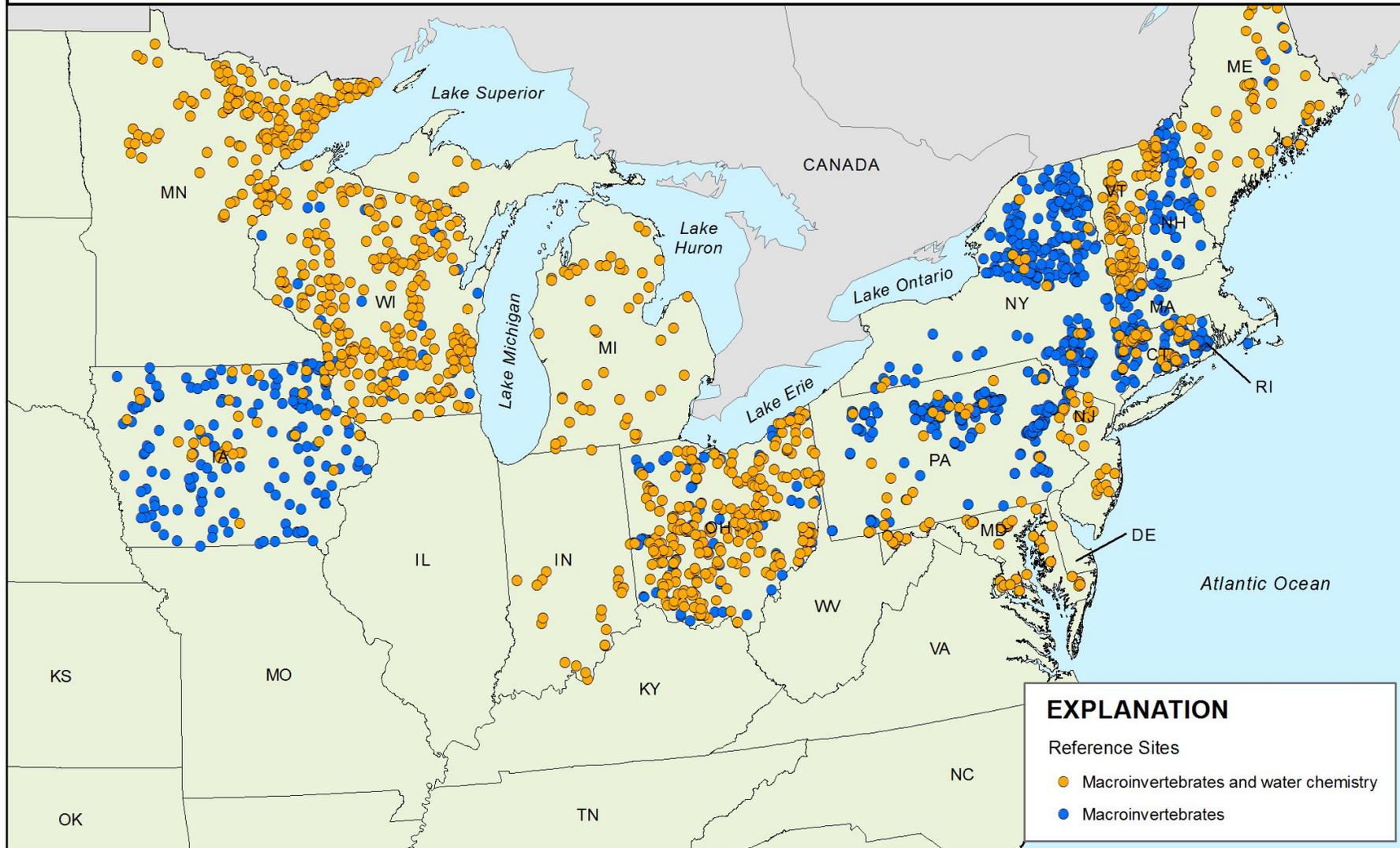
NEON, STREON,  
LTER, CZO,  
CUAHSI

Water-Quality  
Assessments,  
Biomonitoring, Volunteer  
Monitoring

Water-Quality  
Assessments,  
Biomonitoring, Volunteer  
Monitoring

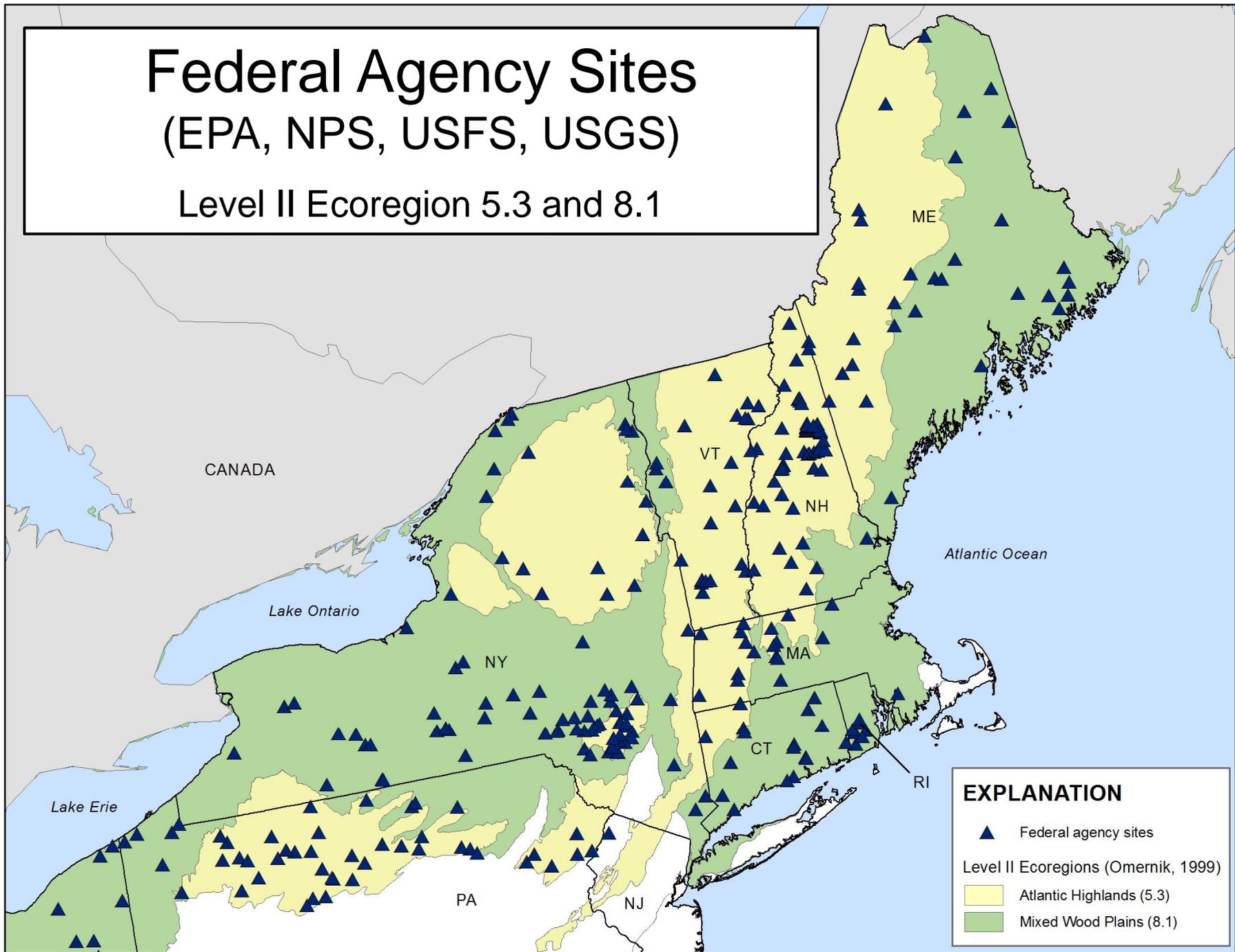
# Historic and Current Reference Sites in the Northeast-Midwest Region for Streams / Rivers

Data Source: State Agencies



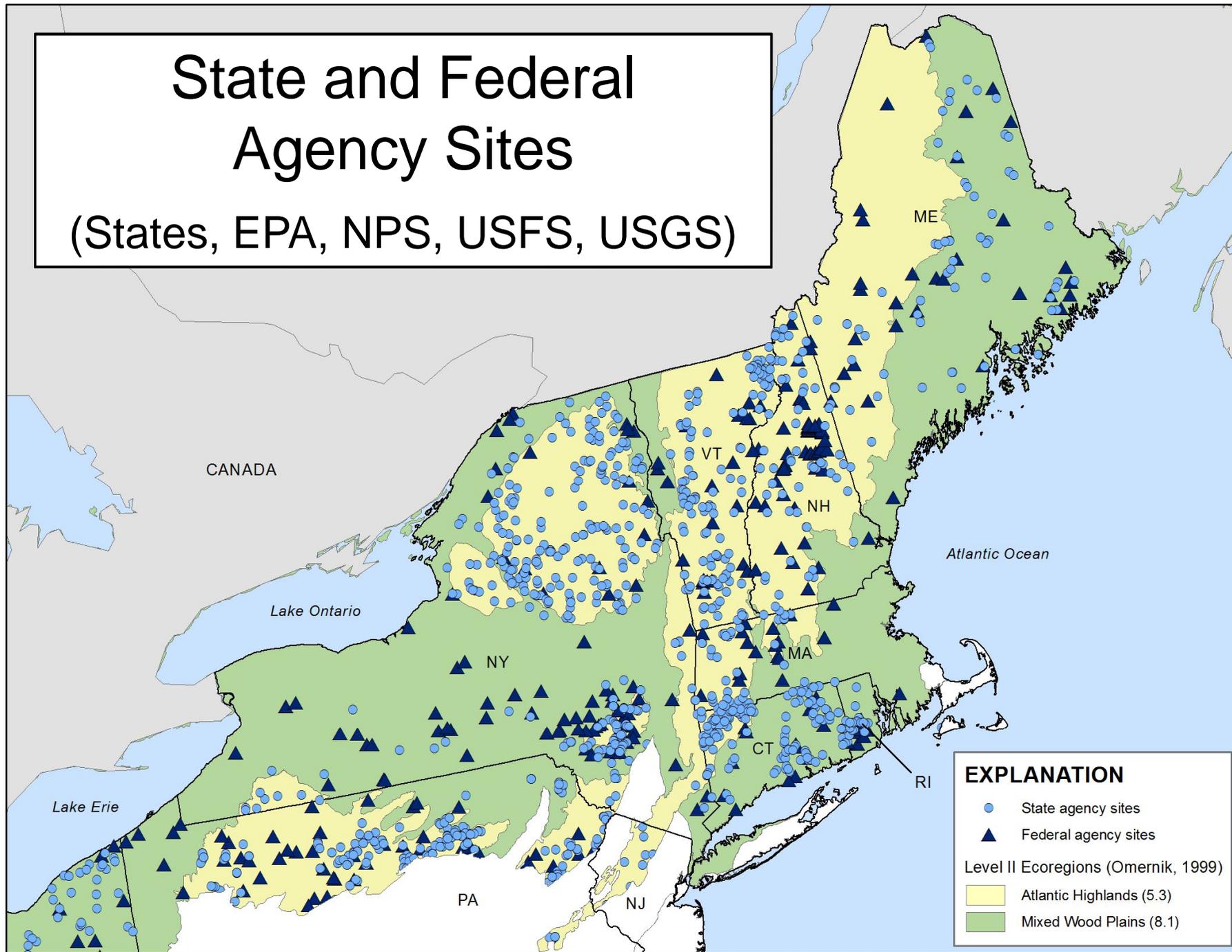
# Federal Agency Sites (EPA, NPS, USFS, USGS)

Level II Ecoregion 5.3 and 8.1



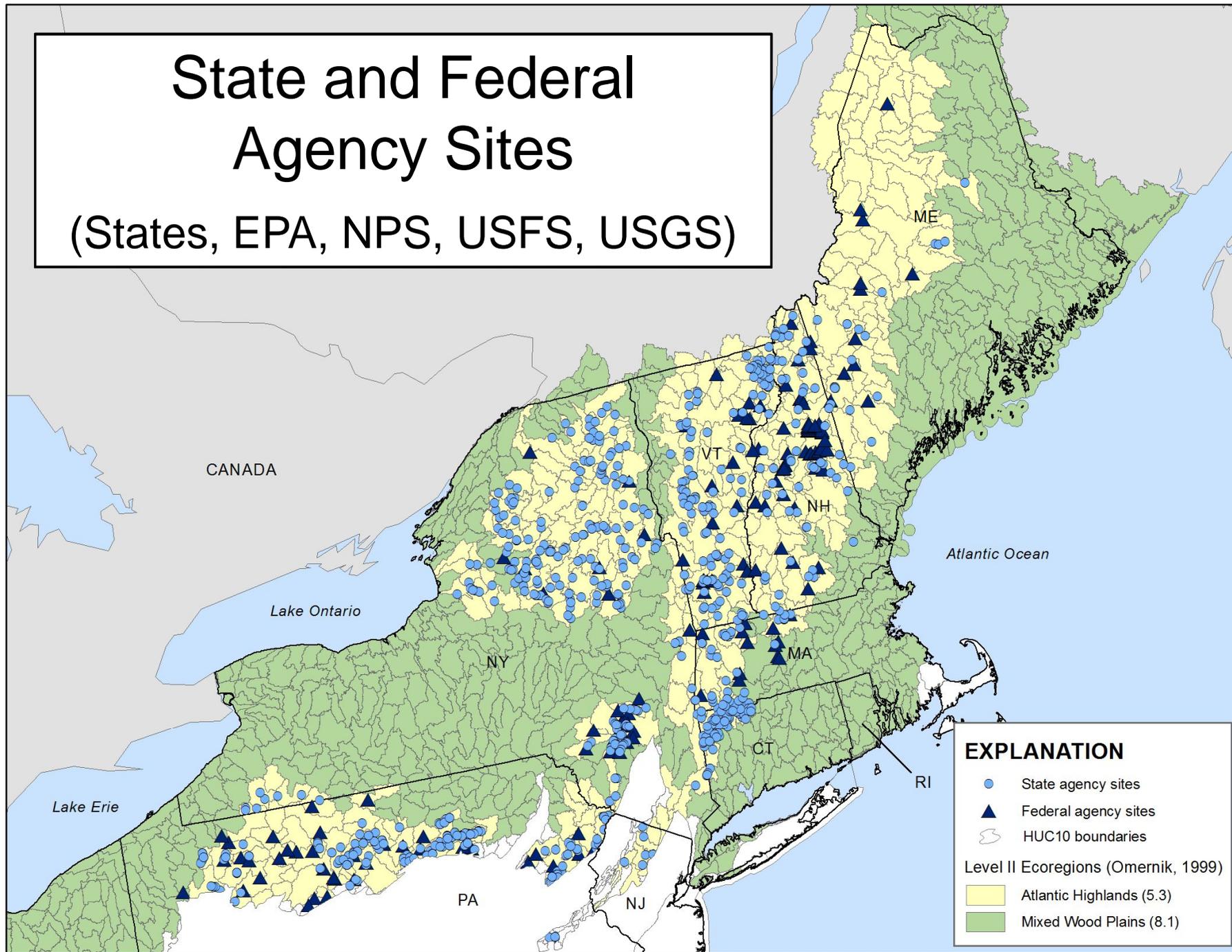
# State and Federal Agency Sites

(States, EPA, NPS, USFS, USGS)

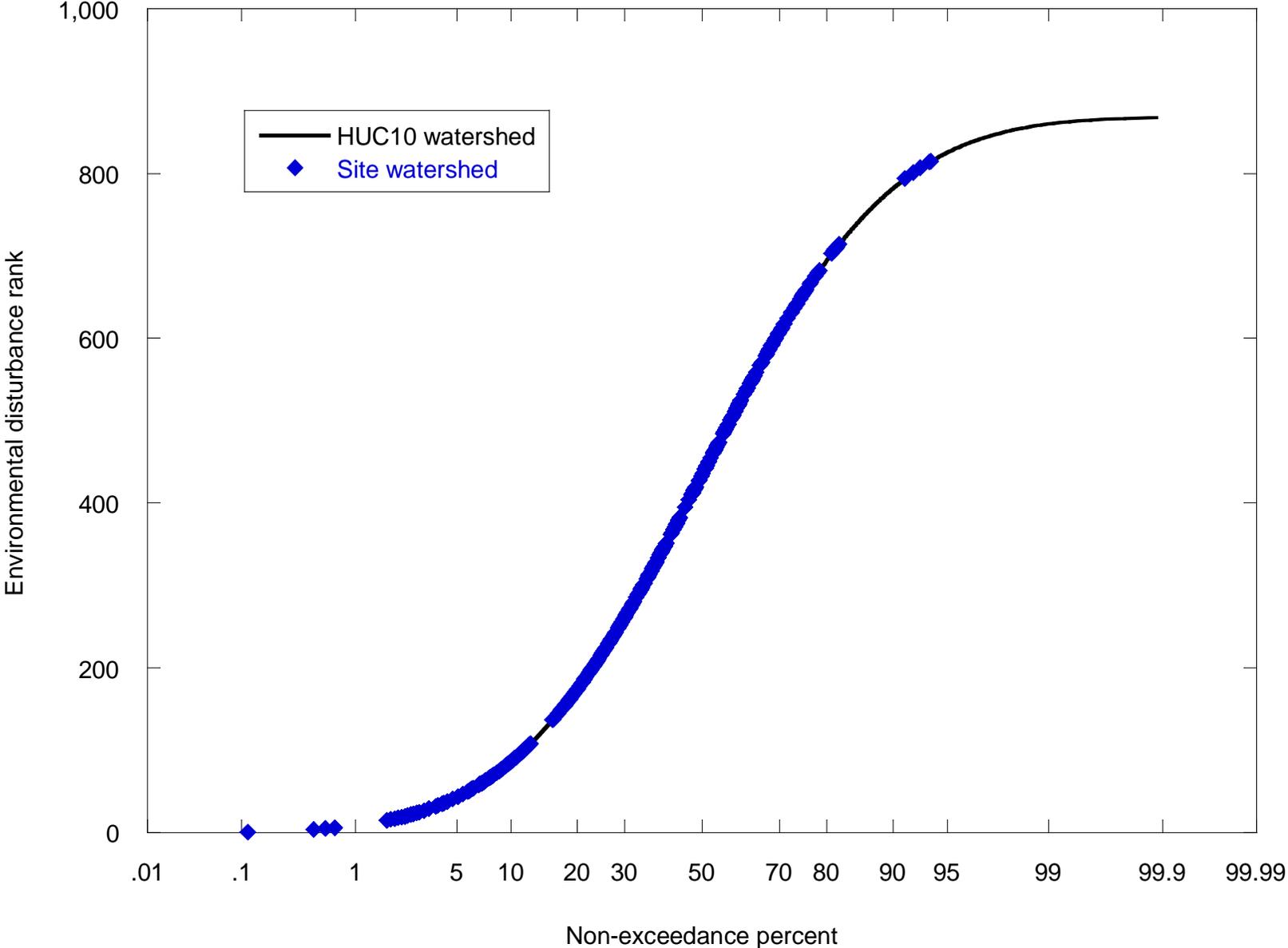


# State and Federal Agency Sites

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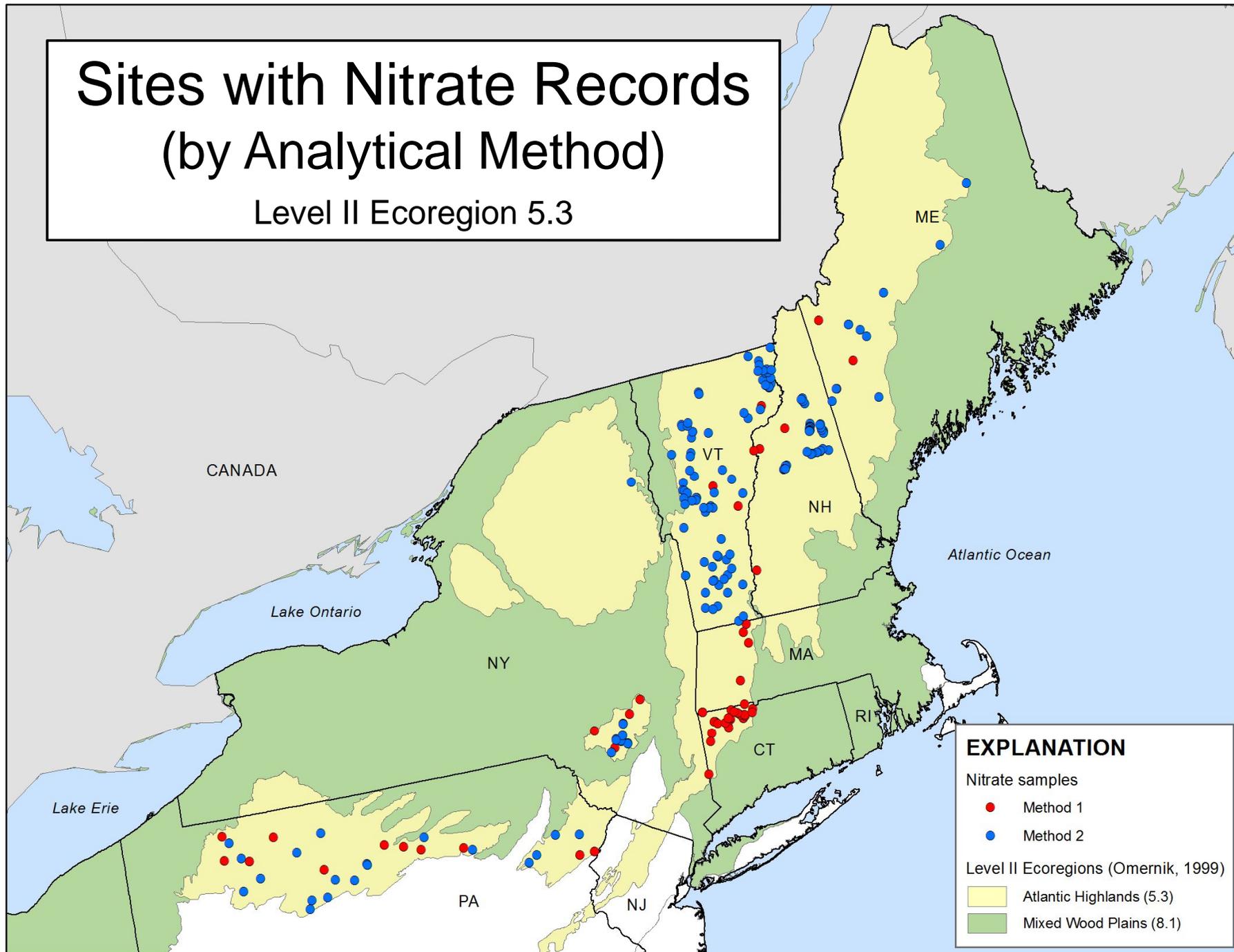


### Eco-region 5.3



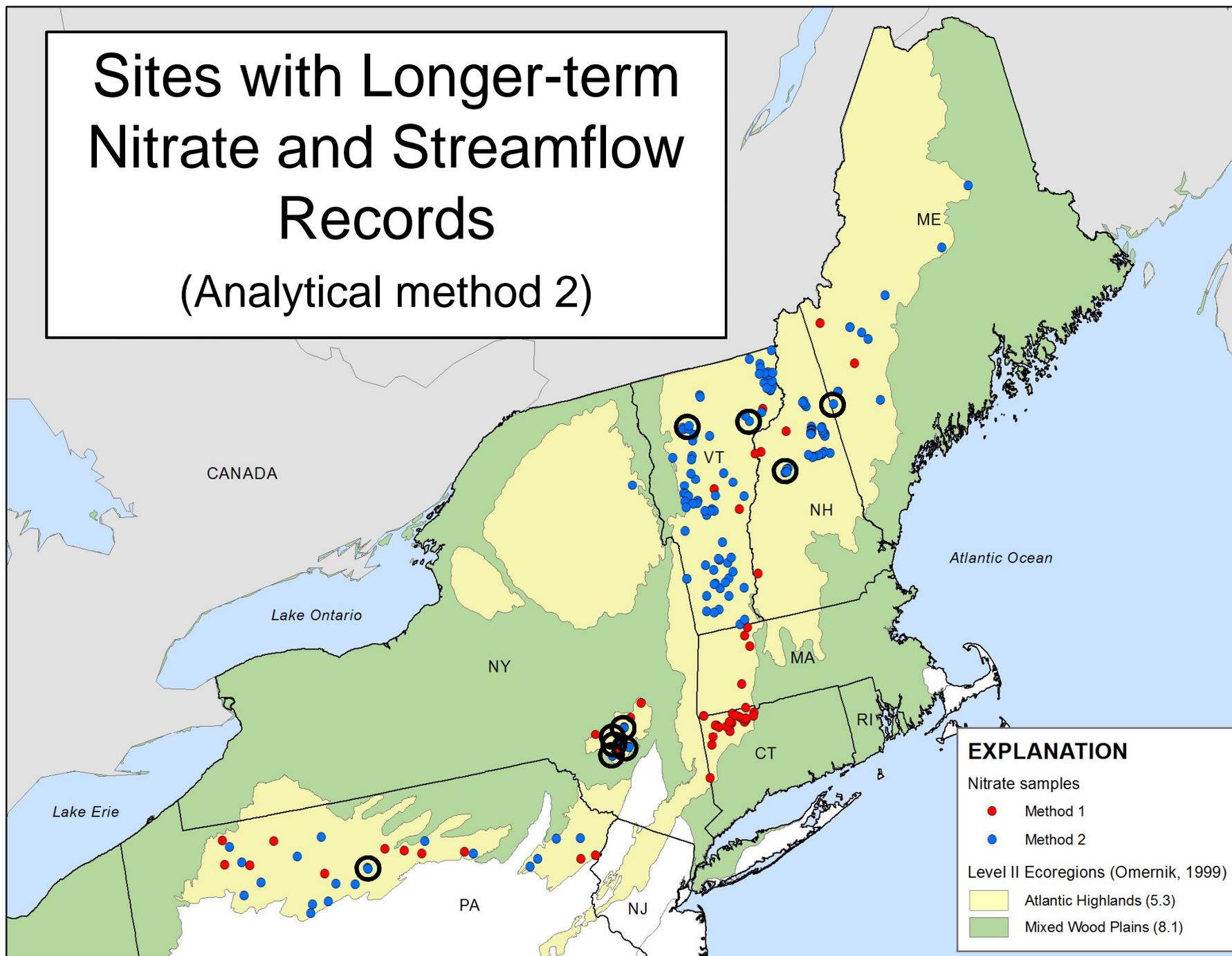
# Sites with Nitrate Records (by Analytical Method)

Level II Ecoregion 5.3

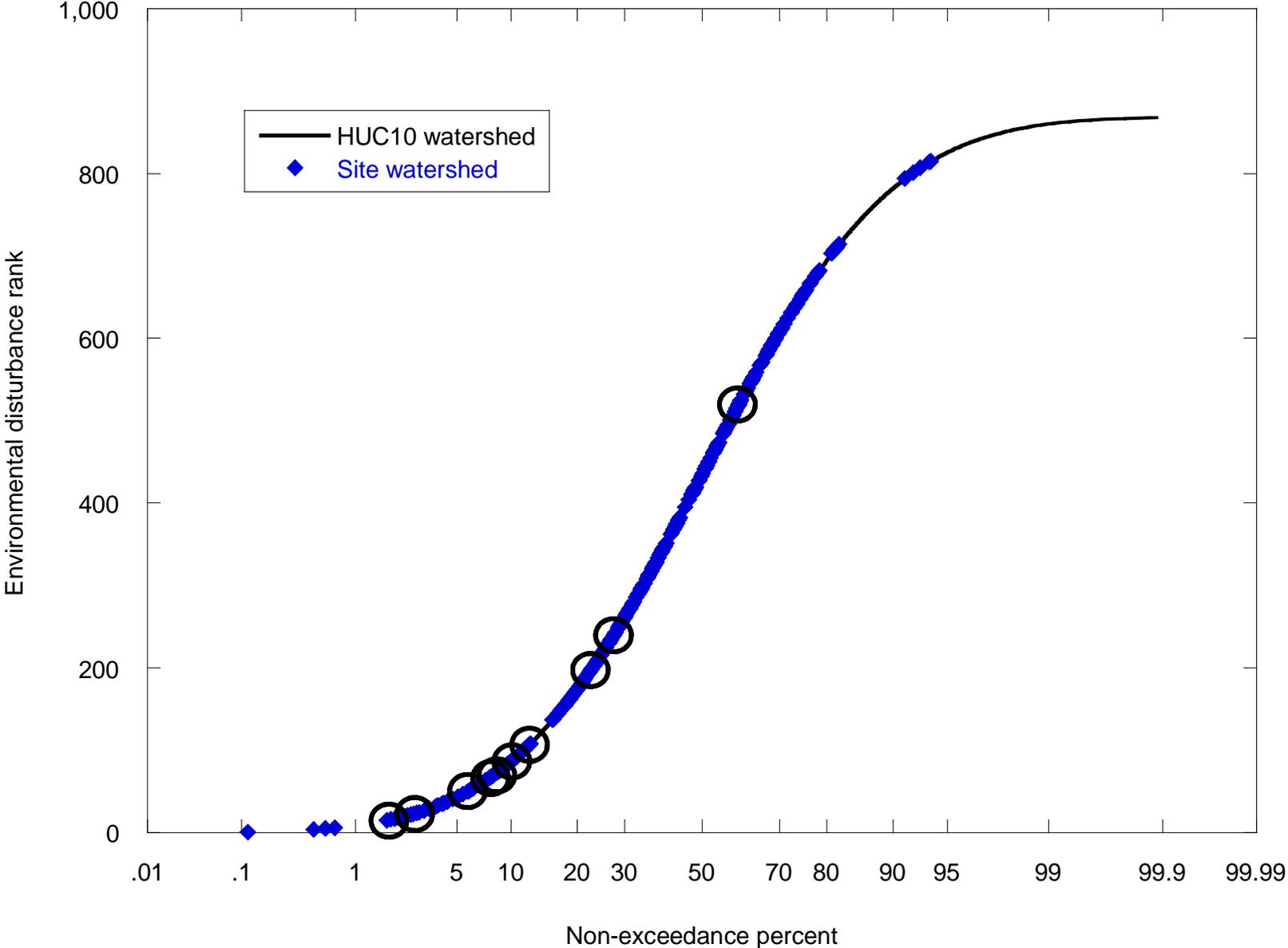


# Sites with Longer-term Nitrate and Streamflow Records

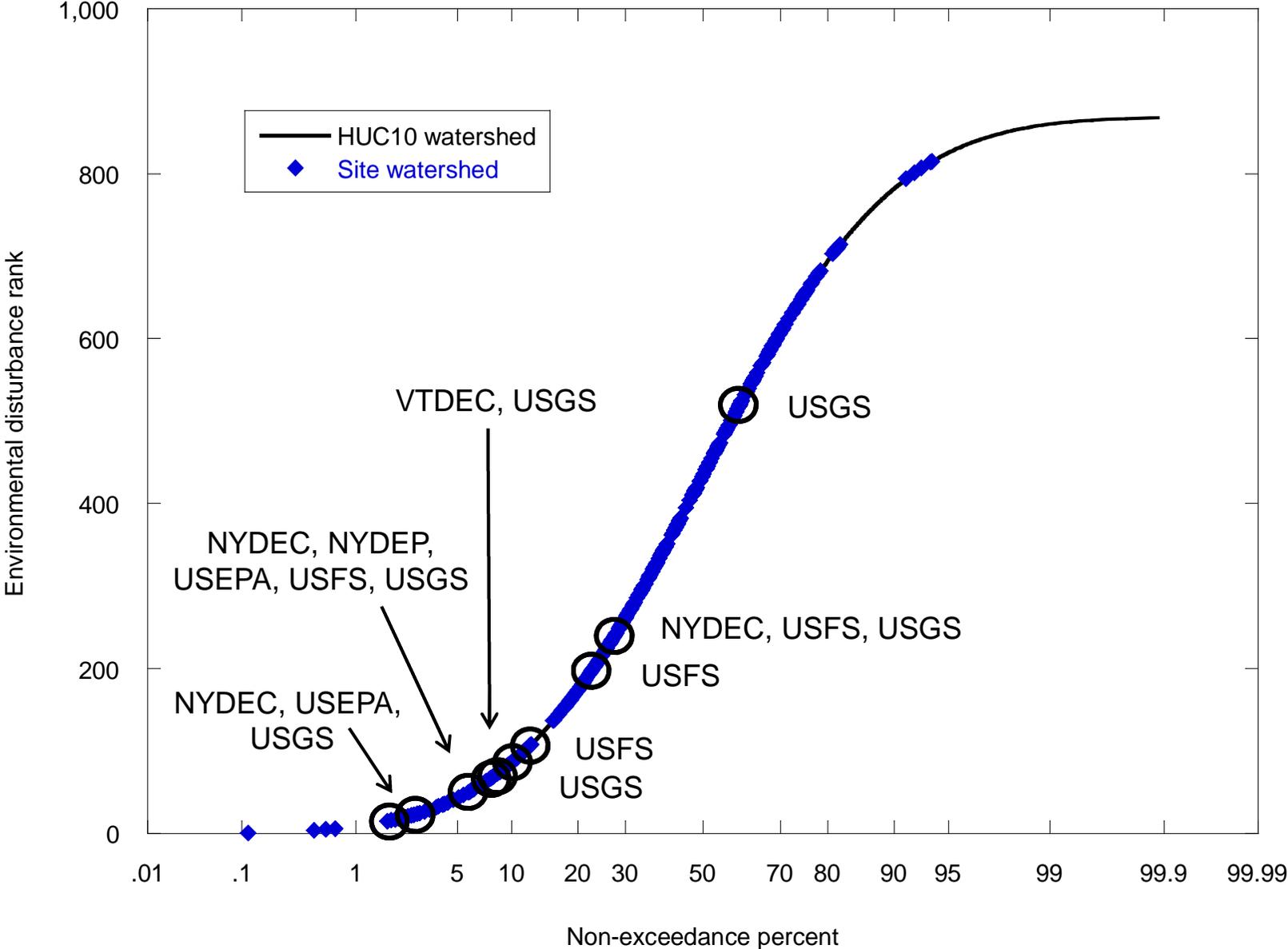
(Analytical method 2)



### Eco-region 5.3



Eco-region 5.3



# Next Steps

- ▶ Continue developing collaborative support
- ▶ Continue developing the inventory and catalog
- ▶ Acknowledge and address the challenges
- ▶ Build off existing ACWI/Council data portal
- ▶ Retain flexibility–strive for inclusion–local knowledge



# Questions...

## Executive Committee

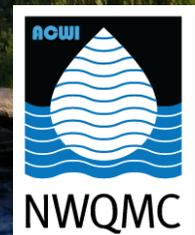
Rick Haeuber, USEPA

Neil Kamman, VTDEC

Doug McLaughlin, NCASI

Bill Wilber, USGS

West Fork Gila at Gila Cliff Dwellings National Monument, NM – photograph courtesy of NPS



# Water-Quality and Research Sites, Groundwater Wells, Weather Stations, and Deposition Sites

**Legend**

- ▲ USGS
- ✱ NEON
- ◆ NOAA CRN
- ★ EPA TIME/LTM
- EPA NARS
- ✓ Park Service
- ★ LTER
- ▲ U.S. Forest Service
- ⚓ NADP
- USGS GW CRN

**Level II Ecoregions**

- Atlantic Highlands (5.3)
- Mixed Wood Plains (8.1)

