

NEW JERSEY'S PRIVATE WELL TESTING ACT: GEOGRAPHIC SUMMARY AND RECENT COMMUNITY INTERVENTION ACTIVITIES

Nicholas A. Procopio, Ph.D., GISP

nick.procopio@dep.nj.gov

New Jersey Department of Environmental Protection

New Hampshire Arsenic Consortium
October 13, 2017
Concord, NH



The unfortunate exposure paradigm for nearly 45 million Americans on private domestic water supply

Arsenic exposure reduction in the U.S. requires individual private well owners to take a series of protective actions

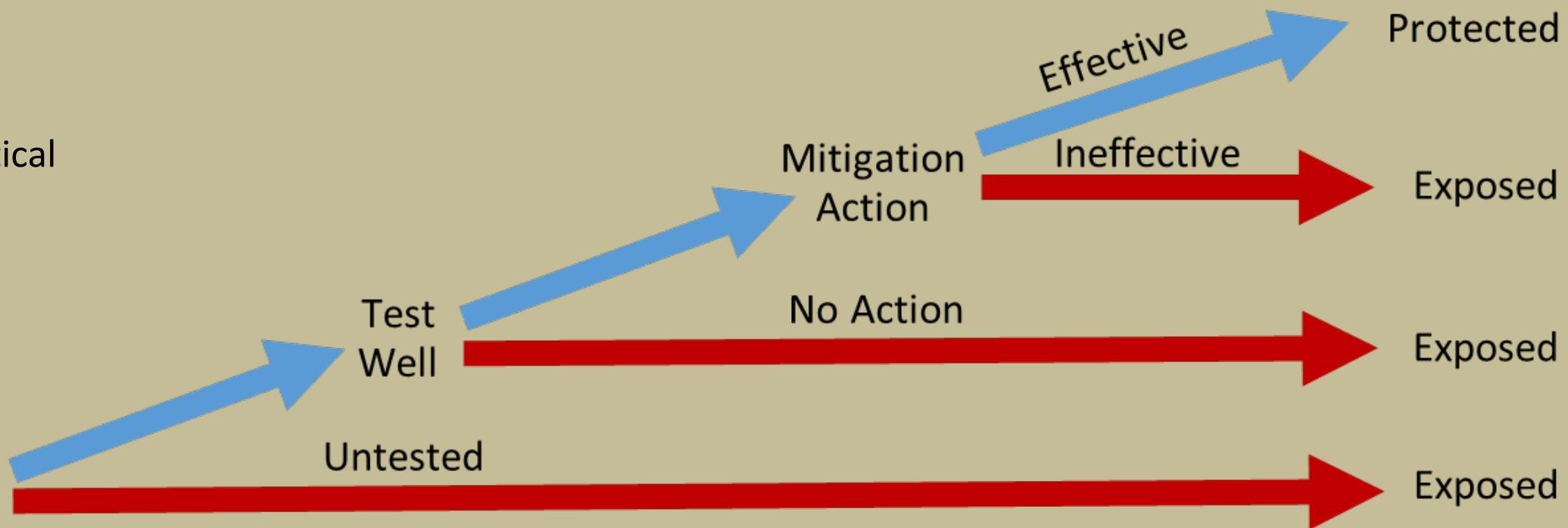
Barriers

Socioeconomic

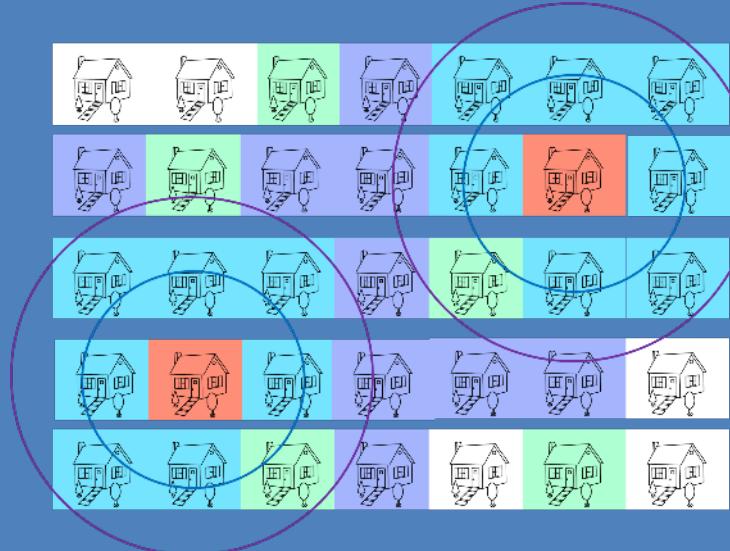
Psychological

Situational/Logistical

**Contaminated
Private Well**



A survey of neighbors of wells with high arsenic



230 private wells tested

30% of households previously tested for arsenic

Among the 70% who have not tested for arsenic:

- 80% didn't know arsenic was a problem in their area
- 11% kept forgetting/never got around to it
- 7% had never heard of arsenic before
- 5% testing is too expensive

So what to do...?

- **Test, Test, Test!**



Private Wells in New Jersey

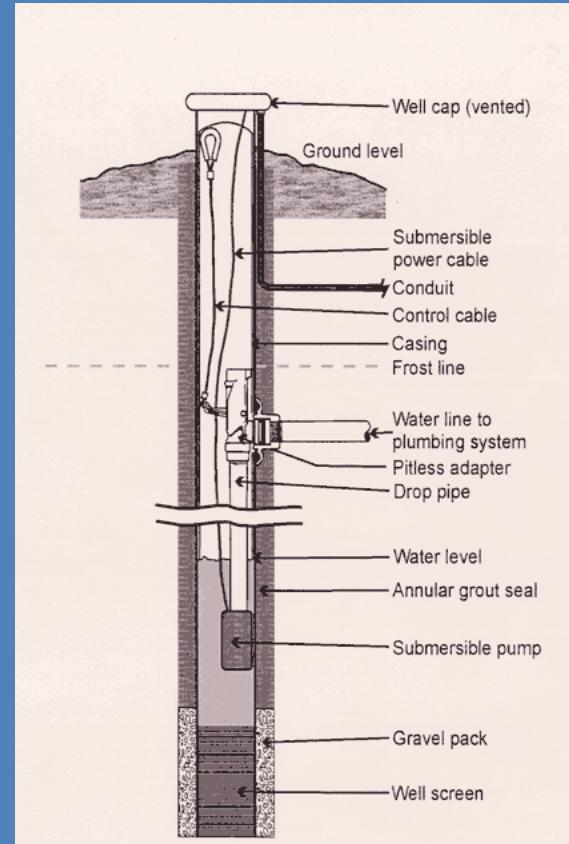
- **NJ Population: 8.9 million (2015 est.)**
 - **13%** of the population (1,150,000 people) have private wells for their drinking water supply.
- **An estimated 400,000 private (domestic) wells in New Jersey.**
- **No federal regulations cover private wells.**
- **Before 2002: state regulations applied only to newly-constructed wells.**





NJ Private Well Testing Act

- Became effective 9/16/2002.
- Real estate with wells. Untreated well water must be tested during real estate transactions for up to 35 parameters (county-dependent).
- Testing done by private, state-certified labs. Cost paid by seller or buyer (currently \$450-600).
- Results provided to client and submitted electronically to the NJDEP.
- No action required if a parameter limit is “exceeded” (a right-to-know law).



What does New Jersey's PWTA Measure?

PRIMARY STANDARDS

- Total Coliform (if positive, fecal or E. coli)
- 26 Volatile Organic Chemicals
- Inorganics
 - Arsenic (12 northern counties)
 - Mercury (9 southern counties)
 - Nitrates
 - Lead
- Radiological
 - Gross Alpha (12 southern and central counties)

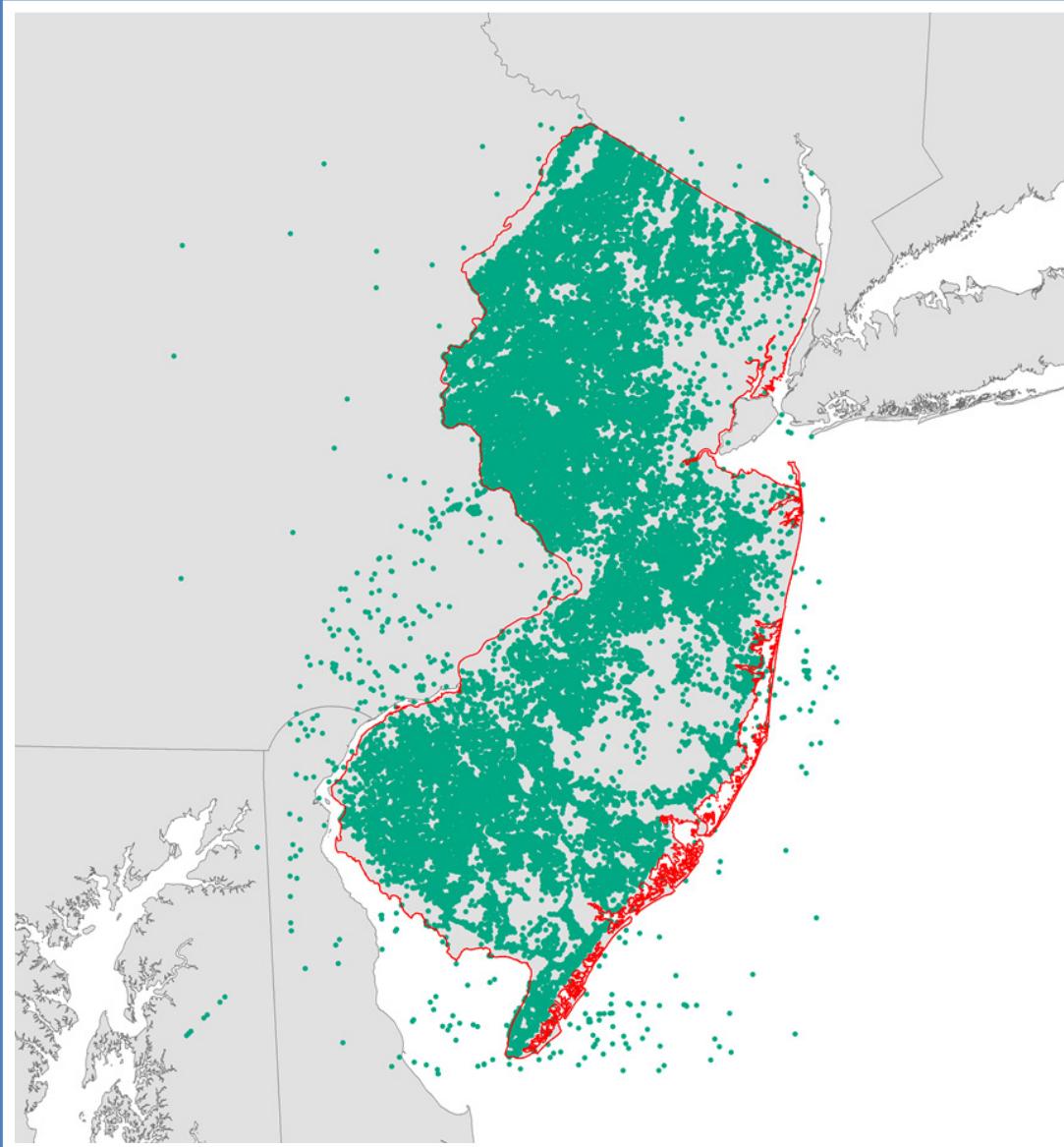
SECONDARY STANDARDS

- Iron, Manganese & pH



Uncorrected Well Locations

Several People, Several Years To Correct Well Location Information

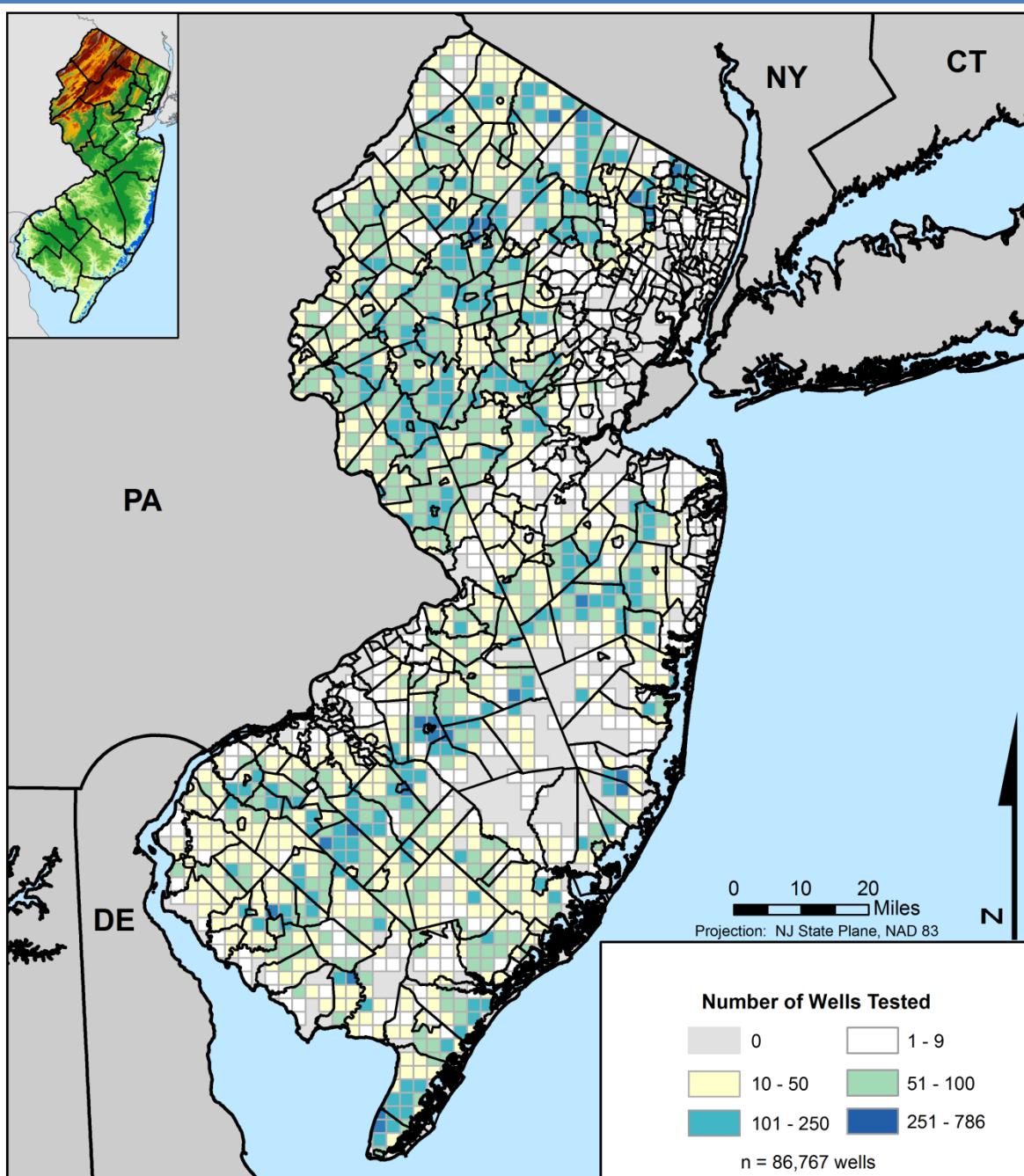


Regional Data Analyses

- As part of the PWTA any analysis must protect confidentiality of the homeowner
- Data were summarized by:
 - Municipality and County
 - a 2 mile x 2 mile grid
 - It was desired to evaluate data at a non-political boundary level.
 - A minimum sample size of 10 wells per grid was deemed acceptable for analysis.
 - A 2x2 mile grid provided for the retention of 98% of all wells sampled for statewide parameters.
 - In other words, 2.0% of wells were in grids with less than 10 wells.



Wells Sampled:



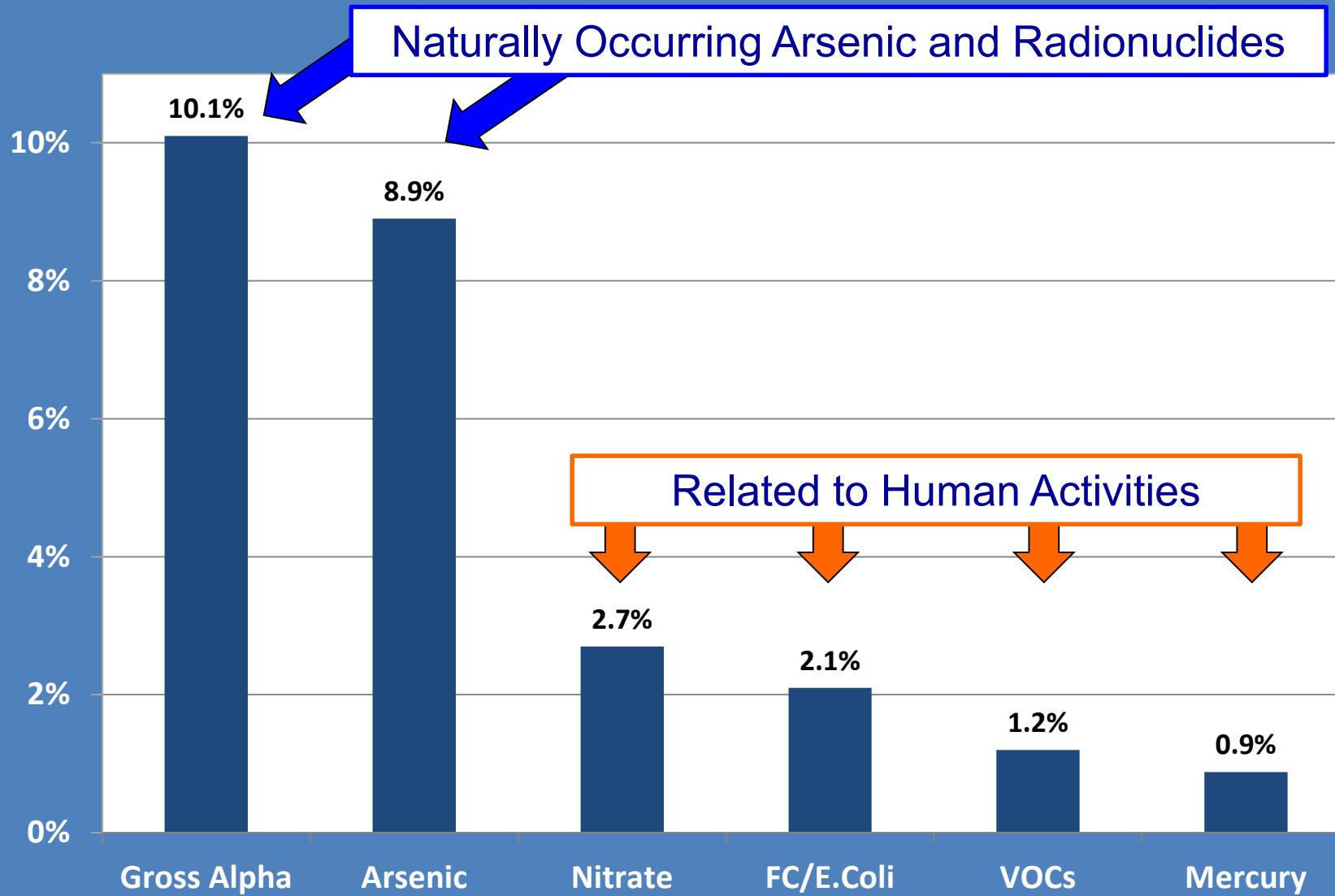
Most Frequently Sampled:

| Municipality | County | Wells |
|------------------|------------|-------|
| West Milford Twp | Passaic | 2,316 |
| Franklin Twp | Gloucester | 1,938 |
| Vernon Twp | Sussex | 1,808 |
| Lower Twp | Cape May | 1,780 |
| Jackson Twp | Ocean | 1,741 |
| Raritan Twp | Hunterdon | 1,466 |
| Hopewell Twp | Mercer | 1,443 |
| Middle Twp | Cape May | 1,417 |
| Hopatcong Boro | Sussex | 1,289 |

| County | Wells |
|------------|-------|
| Sussex | 8,810 |
| Hunterdon | 8,456 |
| Morris | 7,923 |
| Burlington | 7,528 |
| Gloucester | 5,690 |
| Ocean | 5,598 |
| Cape May | 5,015 |
| Atlantic | 4,995 |
| Cumberland | 4,938 |
| Somerset | 4,796 |
| Monmouth | 4,613 |
| Warren | 4,187 |
| Passaic | 3,586 |
| Salem | 2,879 |
| Mercer | 2,413 |
| Bergen | 2,195 |
| Camden | 2,185 |
| Middlesex | 757 |
| Essex | 139 |
| Union | 60 |
| Hudson | 4 |



Percent of Tested Wells that Exceed Specific MCLs in NJ



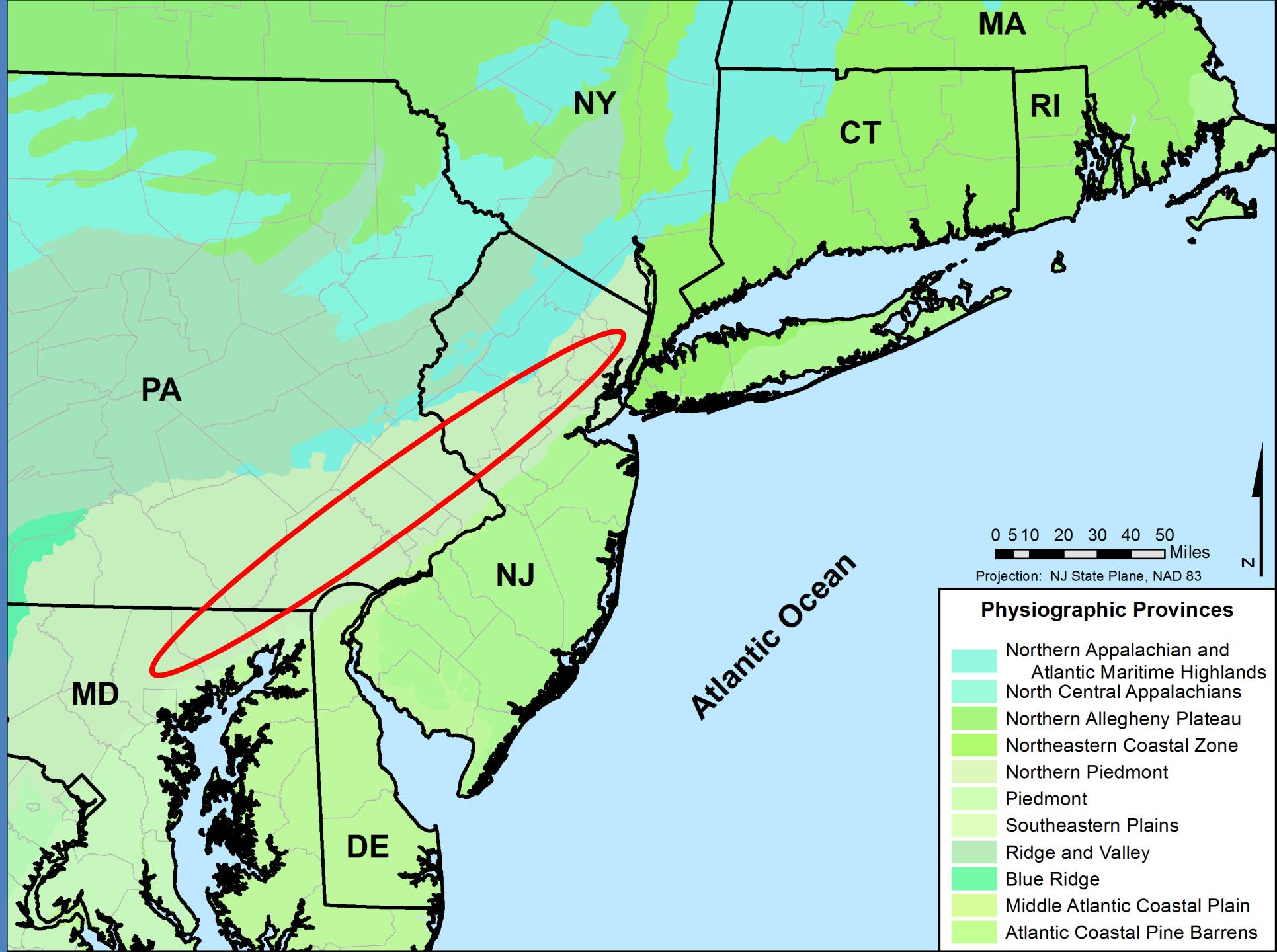
Arsenic Exceedances*

Overall 8.9% of wells exceeded the NJ MCL and
3.0% exceed the Federal MCL

| Province | Exceedance of NJ Standard (5 ug/l) | Exceedance of Federal Standard (10 ug/l) |
|------------------|------------------------------------|--|
| Valley and Ridge | 2.0% | 0.5% |
| Highlands | 1.1% | 0.5% |
| Piedmont | 17.1% | 5.7% |
| Coastal Plain | 1.0% | 0.6% |

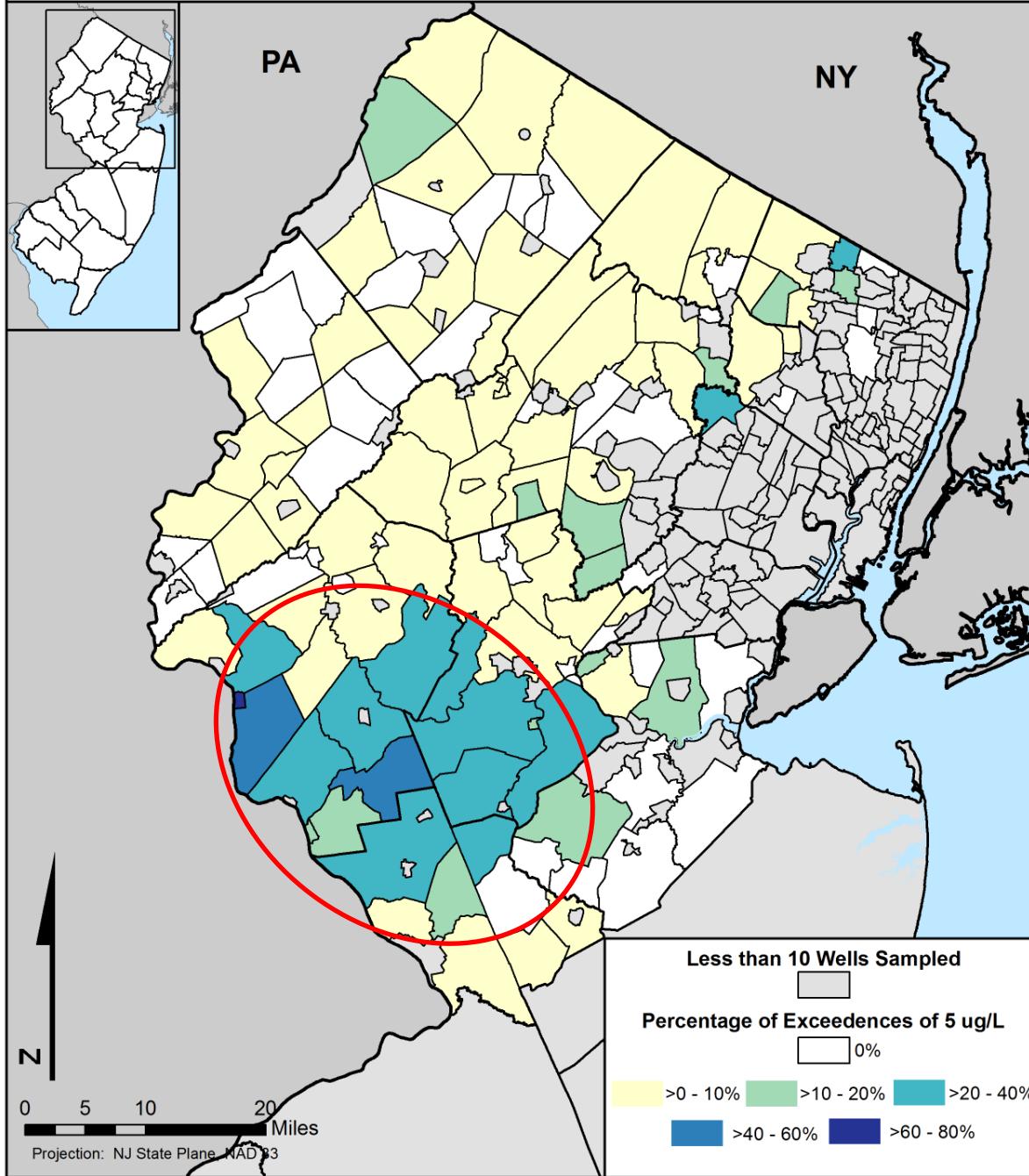
*Current through March 2014



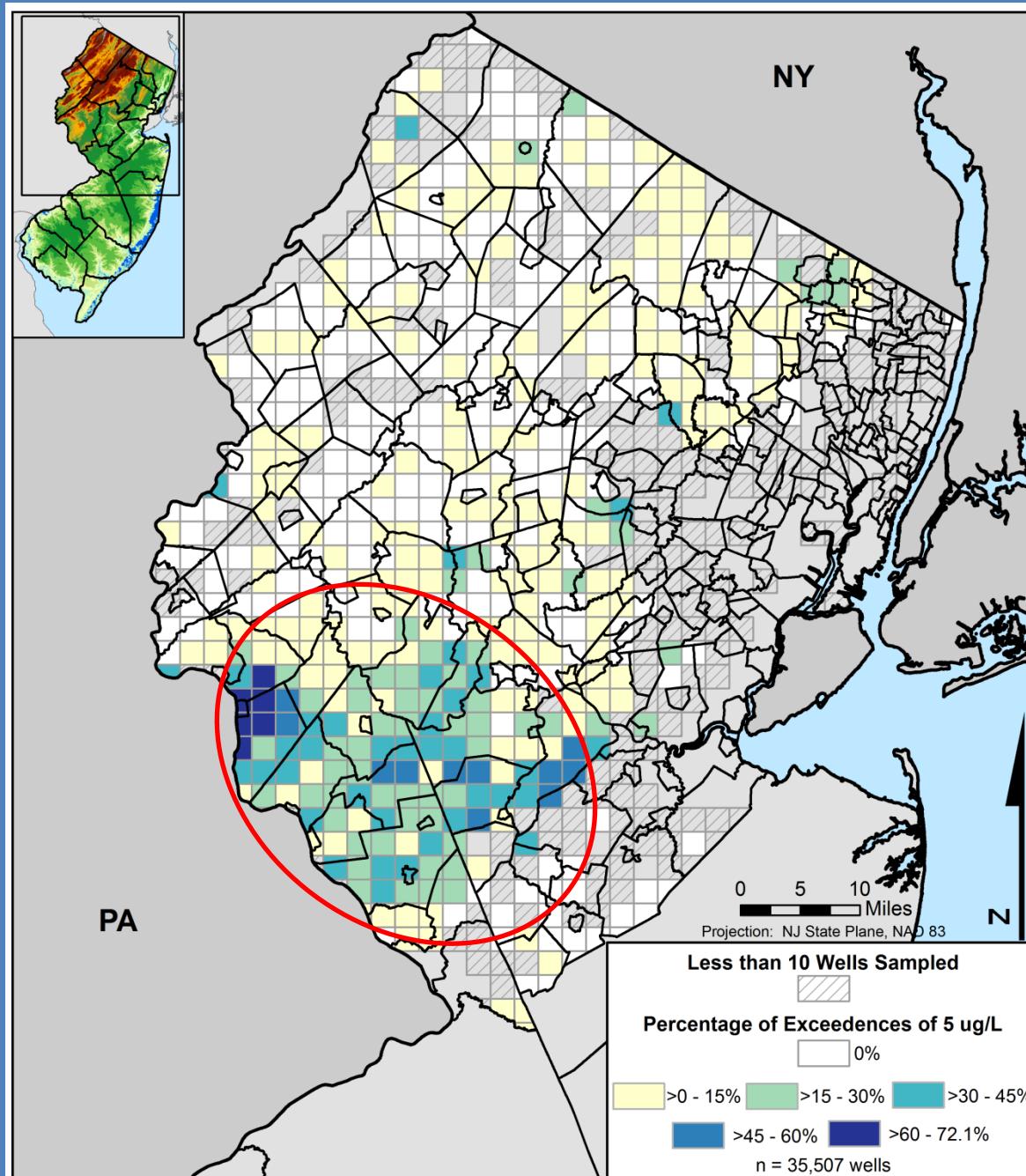


Arsenic - Percentage of Wells Exceeding 5 ug/L

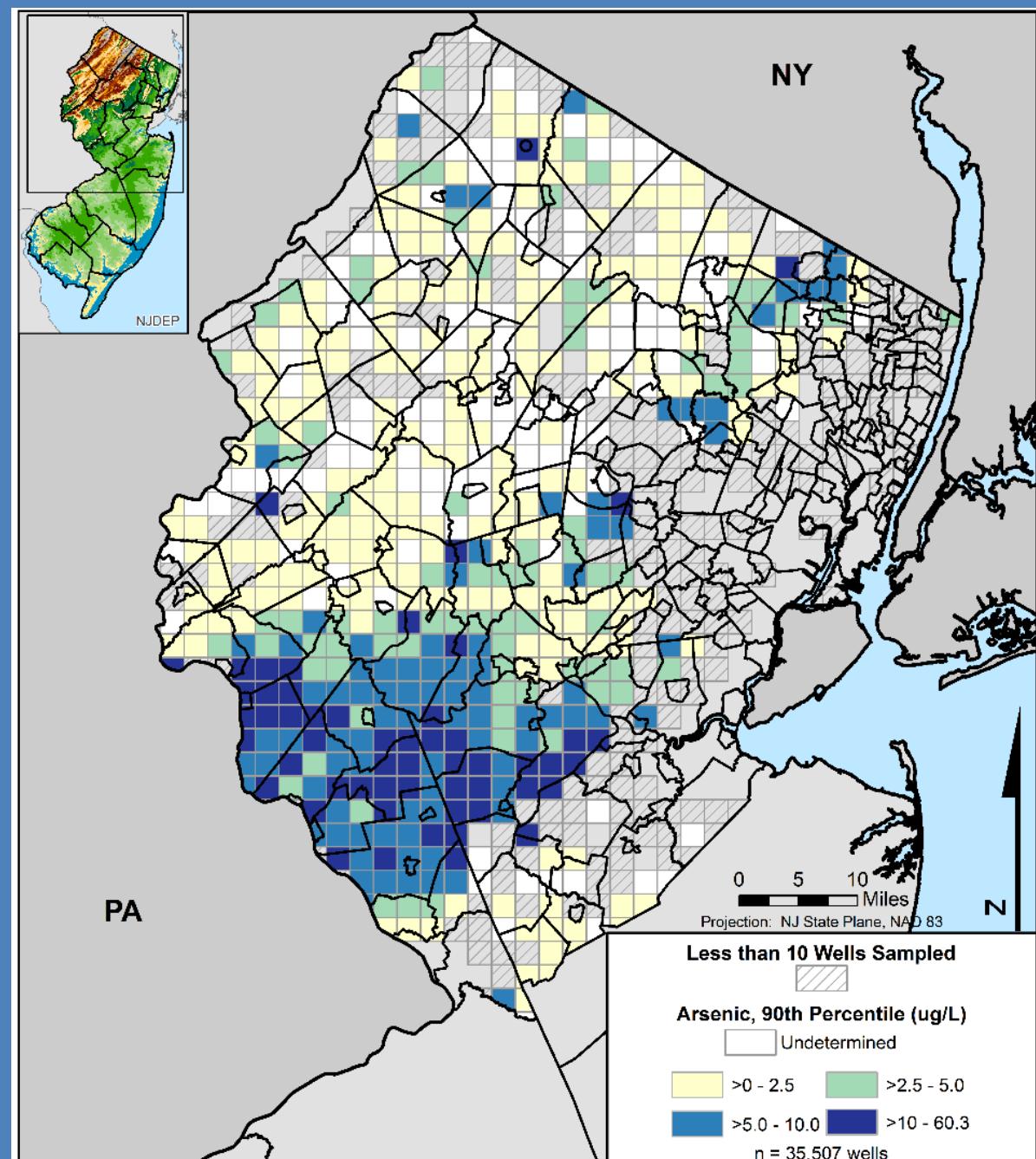
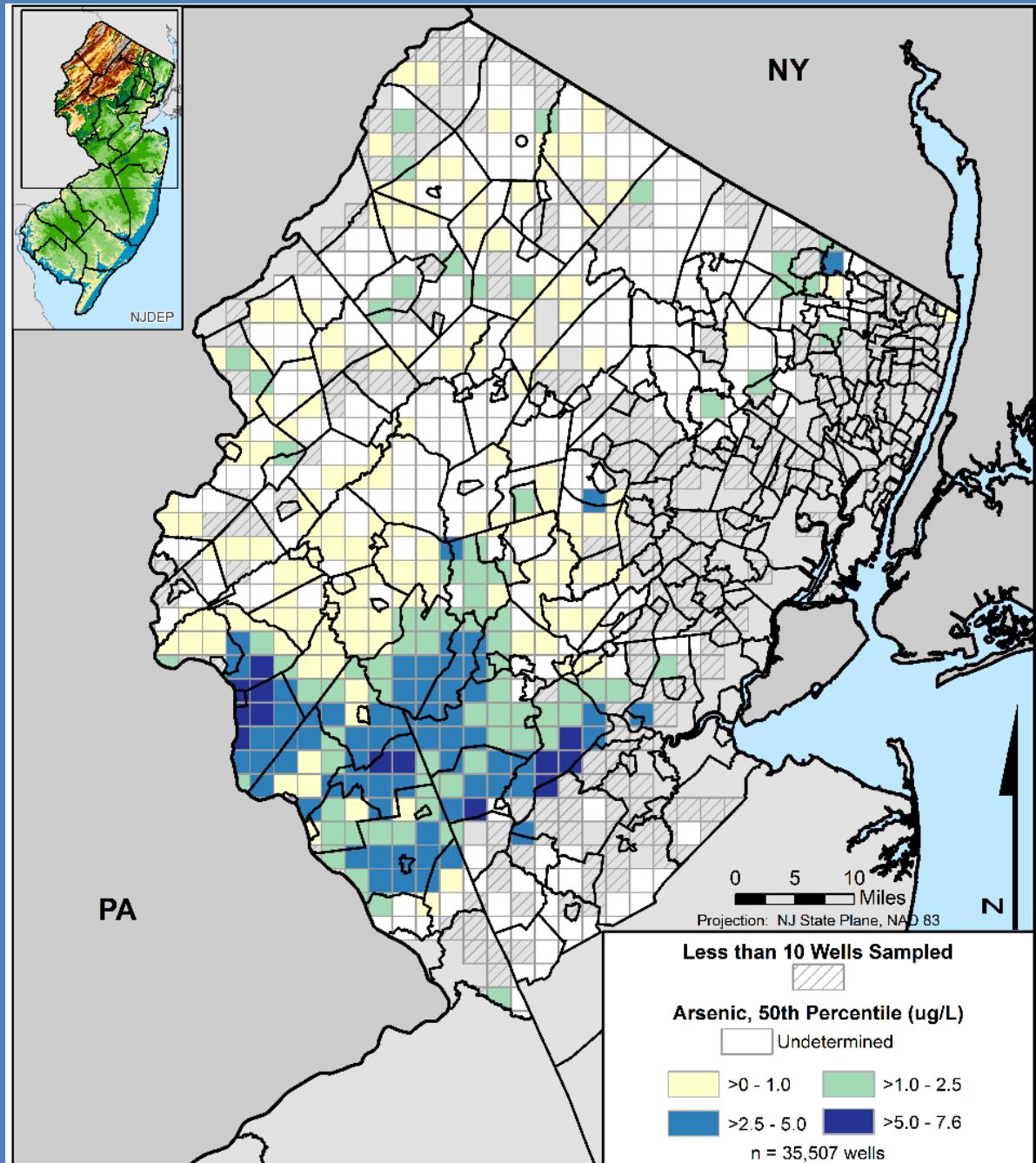
Northern New Jersey



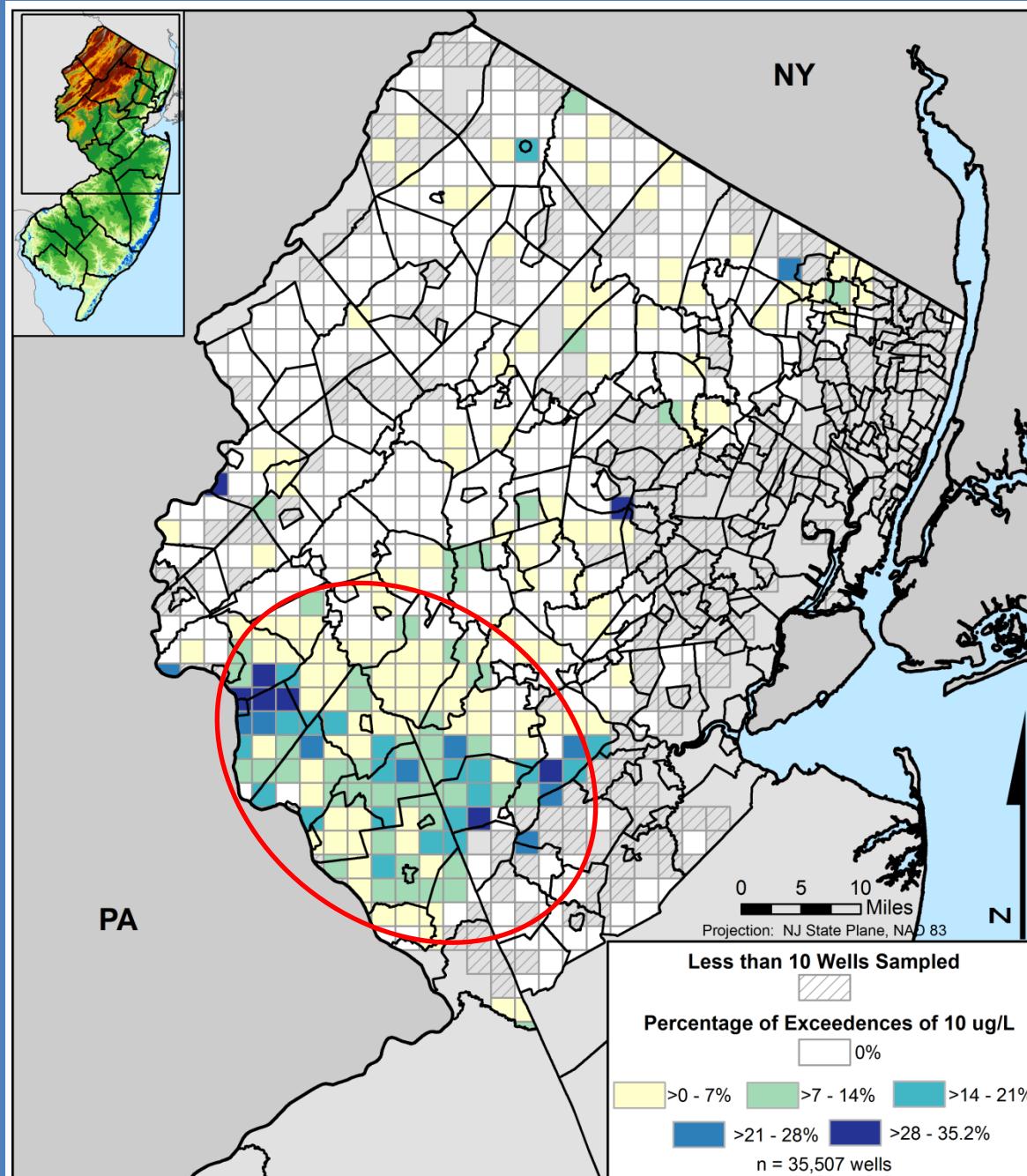
Arsenic – Percentage of wells exceeding 5 ug/L



Arsenic: median and 90th Percentiles estimates



Arsenic – Percentage of wells exceeding 10 ug/L



PWTA Data Display

Interactive set of web maps – website launched November 2015

<http://arcg.is/1CPkHyC>

Maps summarized by county, municipality, and 2 x 2 mile grids

Presents the number and percent of tested wells that exceed an MCL

NJ Private Well Testing Act Data Summary (Sep. 2002 to Apr. 2014)

Click a tab for more information then click a location on the map for data.

Background Counties Municipalities Grids Arsenic Fecal coliform or E. coli Gross Alpha Iron Manganese Mercury Nitrate pH Volatile Organic Compounds (VOCs)

The goal of the Private Well Testing Act is to ensure that purchasers of residences and lessees of properties served by private potable wells are fully aware of the quality of their drinking water source prior to purchasing or leasing an apartment, home, or business.

The New Jersey Private Well Testing Act (N.J.S.A. 58:12A-25 et seq.) became effective in September 2002. The PWTA requires the buyer or the seller of a property to test the untreated well water prior to the sale and review the results prior the closing of title. It also requires landlords to test the private well water supplied to their tenants every five years and provide their tenants with a written copy of the results. The data generated by this program are provided to the homeowners by the laboratory performing the analyses and then sent to the New Jersey Department of Environmental Protection (NJDEP). The NJDEP notifies local health agencies when a well within their jurisdiction is tested under the PWTA. The data from the PWTA are used by NJDEP to assess the quality of the water from private wells throughout the state.

The information presented here meets the confidentiality requirements of the Act. The Act allows the release of PWTA information as a compilation of test results by county and municipality or other appropriate geographic areas. The names of specific property owners, their addresses or locations are not included.

Please visit the [PWTA webpage](#) for additional information.

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER SUPPLY AND GEOSCIENCE

Private Well Testing Act (PWTA)
Required when selling or leasing a home or multi-unit dwelling with private well

- [An Overview](#)
- [Free online lessons developed by the National Ground Water Association with support from the U.S. Environmental Protection Agency.](#)
- [Frequently Asked Questions](#)
- [Statutory and Regulatory Authority](#)
 - [Private Well Testing Act, N.J.S.A. 58:12A-26 et seq.](#)
 - [Private Well Testing Act regulations, N.J.A.C. 7:9E et seq.](#) – Full text of the rules that implement the Act
 - [Regulations Governing the Certification of Laboratories & Environmental Measurements, N.J.A.C. 7:18 et seq.](#)
 - [List of New Jersey Certified Laboratories](#)
 - [Additional Resources](#): educational, remediation/treatment funding, treatment devices and health effects
- [Technical Resources](#)
 - [Required Parameters for Private Well Testing](#)
 - [Global Positioning System \(GPS\) Requirements for Spatial Data Collection](#)
 - [Groundwater Resource Management \(GRM\), Bureau of Geographic Information Systems \(BGIS\)](#)
 - [U.S. Army Corps of Engineers – Army Geospatial Center](#)
 - [New Jersey Private Well Water Test Reporting Form](#) - A form used exclusively by laboratories reporting well test results to their clients.
- [Directory of New Jersey Health Departments](#)
- [PWTA data](#)
 - [Initial Well Test Results for September 2002 – March 2003](#)
 - [Well Test Results For September 2002 – April 2007](#)
 - [Addendum to Well Test Results For September 2002 – April 2007](#)
 - [Well Test Results, September 2002-April 2014](#)
- [Laboratory Reporting of Results](#)
- [Contact us](#)

[Contact DEP](#) | [Privacy Notice](#) | [Legal Statement & Disclaimers](#) | [Accessibility Statement](#)

Department: [NJDEP Home](#) | [About DEP](#) | [Index by Topic](#) | [Programs/Units](#) | [DEP Online](#)
Statewide: [NJ Home](#) | [Services A to Z](#) | [Departments/Agencies](#) | [FAQs](#)
Copyright © State of New Jersey, 1996-2016
Last Updated: February 11, 2016

New Jersey Department of Environmental Protection 



NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION

NJ Arsenic Awareness Website

<http://njarsenic.superfund.ciesin.columbia.edu>
or tinyurl.com/arsenichelp

HOME VIDEOS HEALTH RISKS TESTING OPTIONS TREATMENT OPTIONS FAQ ABOUT US

New Jersey Arsenic Awareness Initiative

HOME VIDEOS HEALTH RISKS TESTING OPTIONS TREATMENT OPTIONS FAQ

Frequently Asked Questions

Choosing an arsenic treatment system

1. Why is there arsenic in my well?
2. Do I really need an arsenic water treatment system?
3. What does it mean that the maximum contaminant level goal for arsenic is 0 mcg/L in drinking water?
4. What are my arsenic water treatment system options?
5. In the case of a home sale, who should choose the type of arsenic treatment system to install?
6. What are the advantages and disadvantages of Whole-House or Point-of-Entry (POE) systems?
7. Why is the Whole-House Point-of-Entry (POE) system strongly recommended in New Jersey?
8. Some vendors offer a one-tank Point-of-Entry system. What are the advantages and disadvantages of a one-tank system compared to a two-tank system?
9. Why is the two-tank Point-of-Entry (POE) system significantly better than a one-tank POE system?
10. How much space is required for a two-tank POE arsenic water treatment system?
11. Are there any disadvantages of the Point-of-Entry (POE) system compared to the Point-of-Use (POU) system?
12. What are the advantages and disadvantages of the Point of Use (POU) System?
13. What water treatment options are NOT effective at removing any arsenic?
14. What forms of arsenic are found in New Jersey well water?
15. Is there any way to determine which arsenic species is in my water (Arsenic 3 or Arsenic 5)?
16. What water treatment options are only effective at removing Arsenic 5?
17. Are there any important differences between arsenic treatment media that are offered by treatment providers to filter out arsenic in a water system?
18. Are pre-treatment sediment filters required in an arsenic treatment system?
19. Why is it essential to have a post-treatment sediment filter?
20. What would the recommended arsenic treatment system include?

OPERATION: CLEAN WATER an arsenic awareness video for schoolchildren

What's in your well awareness video

Using and maintaining your arsenic treatment system

Copyright © 2015 - 2017 The Lamont-Doherty Earth Observatory, Columbia University | EARTH INSTITUTE

- Videos on testing and treatment
- Health risk FAQs
- Testing options – list of labs
- Treatment guidance, FAQs, companies

Private Well Testing and Outreach Efforts



Private Well Consortium



1. Convene professionals from all areas of the private well community;
2. Identify emerging and priority issues and develop innovative solutions;
3. Encourage partnerships and collaborations to ensure promotion and implementation of evidence-based program activities.



Private Well Testing and Outreach Events



FREE Water Testing for Arsenic and Boron
Fill your water bottle and return it by Thursday, May 26th

Dear Alexandria Township Resident:

Recent studies have shown that over 24% of the private wells in our Township have elevated levels of arsenic.

- Arsenic is naturally occurring in our local bedrock aquifers.
- Arsenic is known to cause cancer, increase the risk of many diseases, and may affect children's IQ.
- Wells with arsenic may also have unregulated naturally occurring boron above USEPA health advisory levels.

FREE water testing for arsenic and boron is being offered to interested residents by Alexandria Township and the NJ Geological and Water Survey with support from a Centers for Disease Control grant. Your water test results will be strictly confidential and a water test report will be emailed or mailed to you by the end of June. If arsenic or boron is found in your well water above levels of concern, you will also receive information about water treatment.

If you have any questions please contact:

- Alexandria Township Clerk, Michele Bobrowski at 908-996-7071 Ext. 210.
- Jay Arancio, Alexandria Township Environmental Commission at jmarancio@gmail.com
- Dr. Steve Spayd of the NJ Geological and Water Survey at steve.spayd@dep.nj.gov

Please fold and attach the below form to your water bottle with a rubber band and return by Thursday May 26th.

Easy Water Test Instructions

1. Run your *cold kitchen tap* for 10 minutes. 
2. Put your name, address, and email on the sample bottle label.
3. Fill bottle to the neck with *cold water* and screw the cap on tightly. 
4. Have your student return the bottle and the below form to school by **THURSDAY, MAY 26th**.

NAME: _____ PHONE: _____
ADDRESS: _____ EMAIL: _____

Help us understand the benefits of this type of program by answering the following questions:

1. Have you tested this well for arsenic in the past? _____ Yes No Not Sure
IF YES: a. Did your well water exceed the drinking water standard for arsenic? _____ Yes No Not Sure
b. Did you install a system to treat for arsenic? _____ Yes No Not Sure
c. Why did you test for arsenic? *Check all that apply:*
 Sale/Purchase of Home Neighbor Found High Levels School Testing Event in 2010
 Community Well Test Event Other: _____

2. Was today's sample collected at the Kitchen Sink? Yes No If no, where was it collected: _____

3. Do you have any of the following water treatment systems installed in your home? *Check all that apply:*

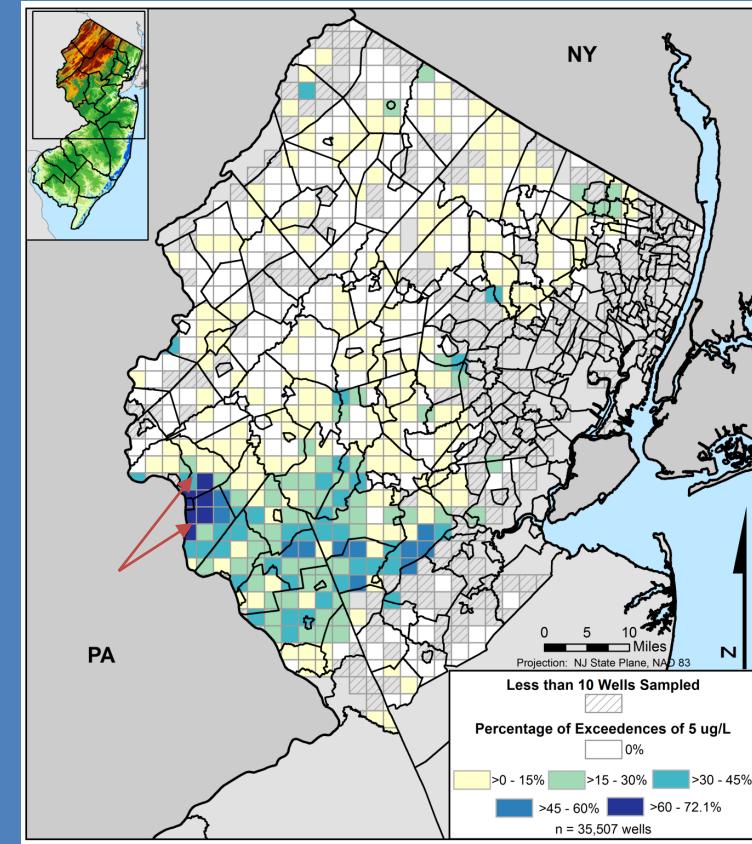
| | | | | |
|--|--------------------------------------|---------------------------------------|---|---|
| <input type="checkbox"/> Water Softener | <input type="checkbox"/> Neutralizer | <input type="checkbox"/> Iron Removal | <input type="checkbox"/> Chlorinator | <input type="checkbox"/> Reverse Osmosis |
| <input type="checkbox"/> Arsenic Removal | <input type="checkbox"/> Carbon | <input type="checkbox"/> Isolux | <input type="checkbox"/> Anion Exchange | <input type="checkbox"/> Ultra Violet Light |



Testing from Alexandria and Kingwood Townships

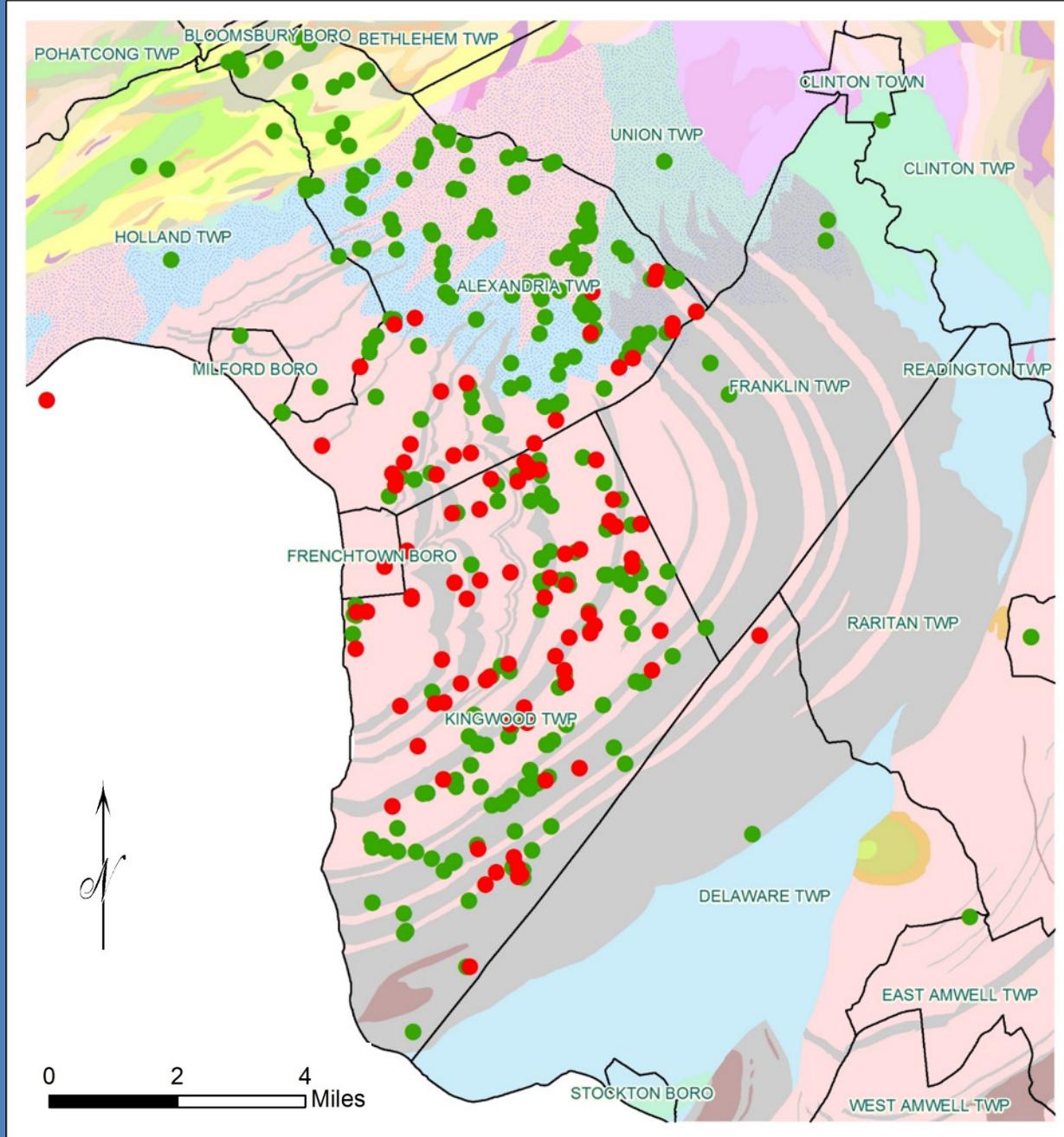
Percent of wells exceeding an MCL*

| | <u>Alexandria</u> | <u>Kingwood</u> |
|------------------|-------------------|-----------------|
| Arsenic | 24% | 43% |
| Iron | 23% | 23% |
| Manganese | 8% | 29% |
| Radioactivity | 1% | 9% |
| Chemical Contam. | <1% | <1% |



*PWTA Tests 2002-2014





Exceedance Rate
Overall: 24%

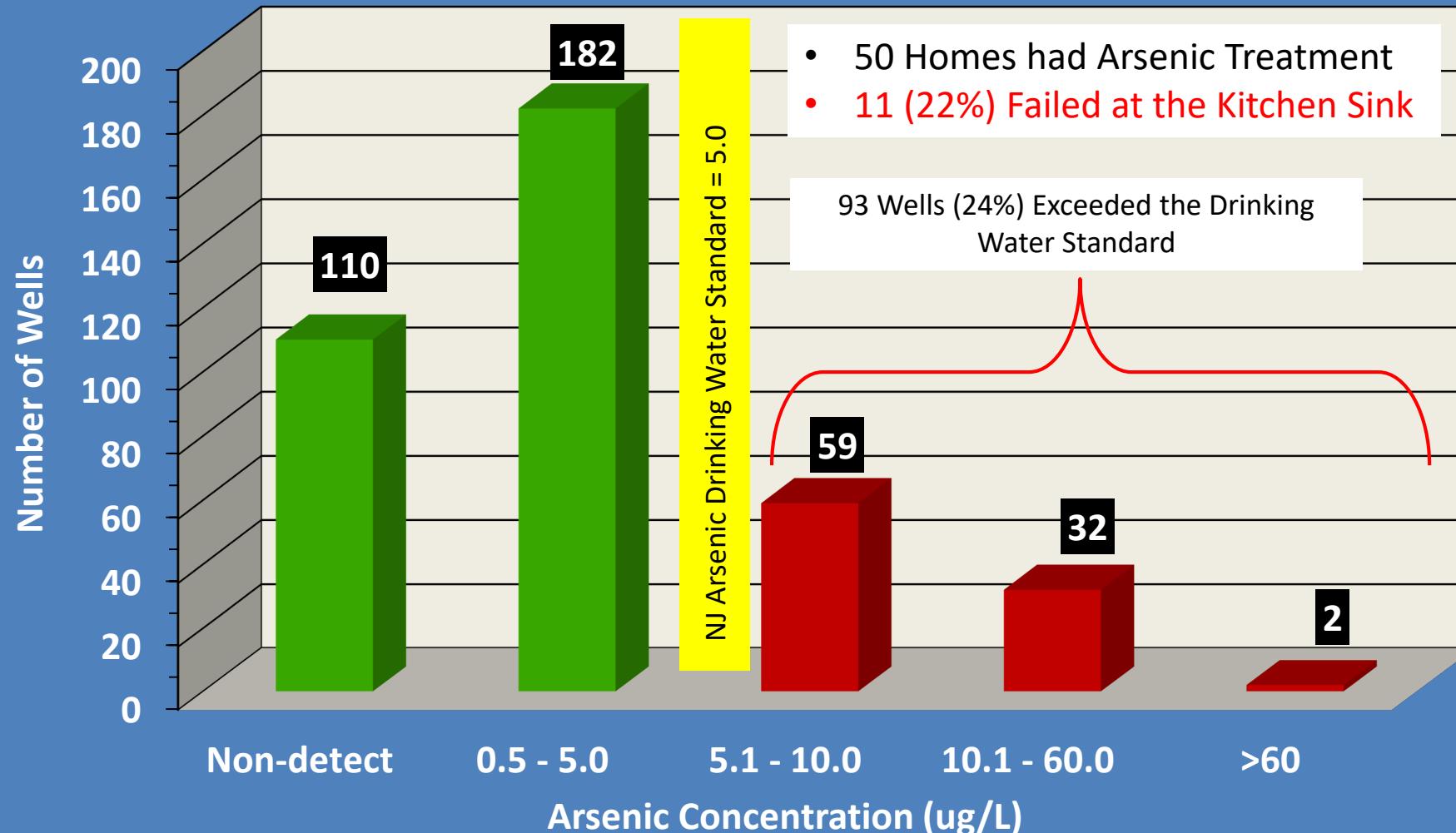
Arsenic ($\mu\text{g/L}$)

- 0 – 5.0
- 5.1 - 151



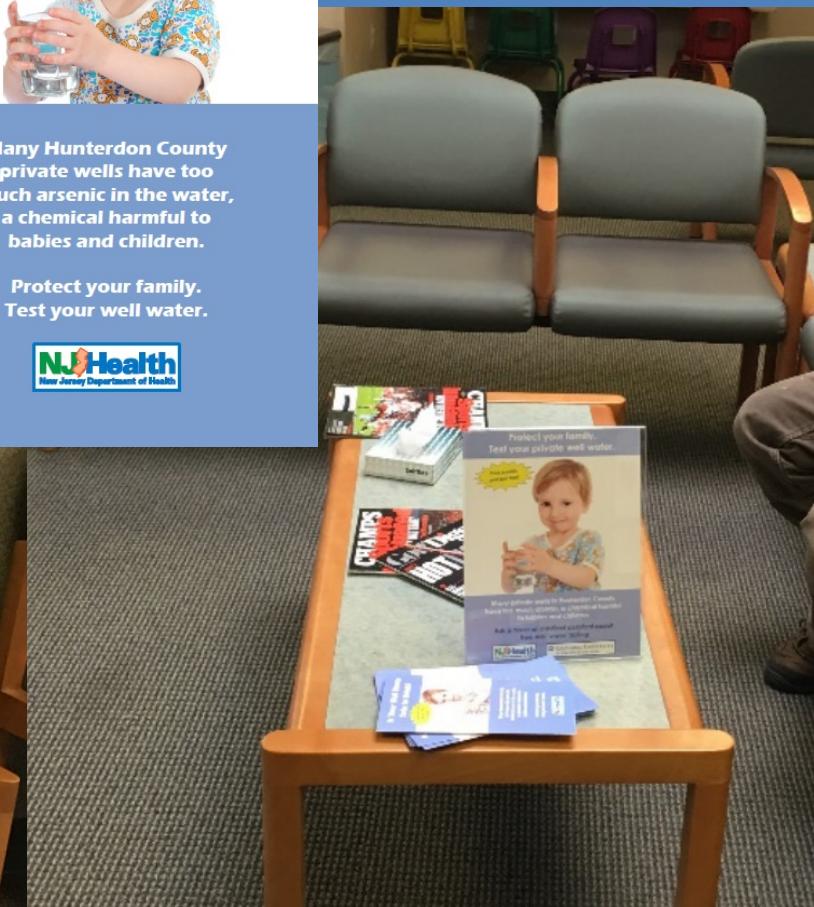
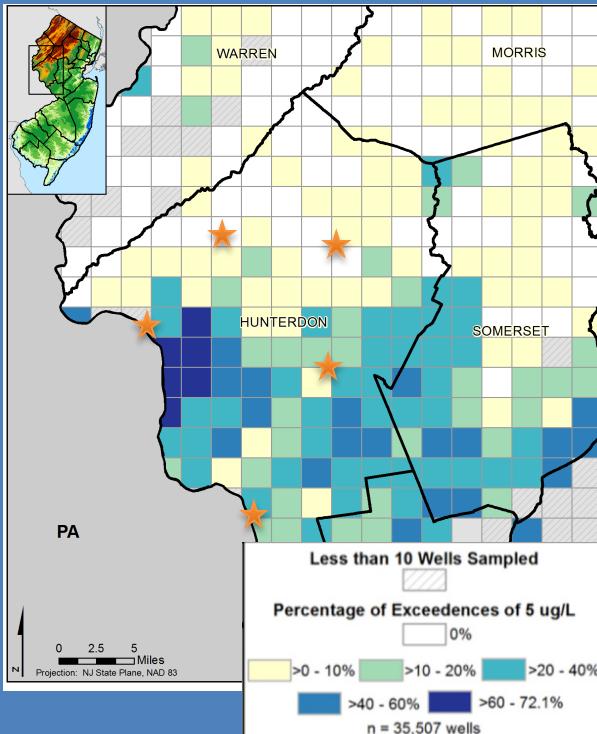
Alexandria and Kingwood Townships Arsenic Well Testing Results

385 wells tested through this program



Hunterdon Medical Center Outreach

- Collaboration largely driven by Columbia University
- Grand rounds Hunterdon Healthcare System
- First pilot clinic in February, 4 additional clinics added June
- Healthcare provider interest
- Addition of postcard to encourage bottle returns



Contact Information

Nicholas A. Procopio, Ph.D., GISP

nick.procopio@dep.nj.gov

or:

- **PWTA websites:**

<http://www.nj.gov/dep/dsr/pwta>

<http://arcg.is/1CPkHyC>

- **PWTA NJDEP:**

- Kristin Hansen (general calls)
- Sandra Goodrow, Rob Newby (database maintenance and analysis)
- Debra Waller (laboratory/method issues)
- Rich Gunoskey (database/software issues)
- Steve Spayd (treatment advice)

- **Health Effects Information:**

- NJDOH: Jessie Gleason, Rebecca Greeley (Environ & Occup Health Surveil Program)
- NJDEP: Gloria Post, Alan Stern (Division of Science, Research, & Env Health)

(firstname.lastname@dep/doh.nj.gov

