

Indian Point Development Sodium & Chloride Investigation 2009

Monmouth County Health Department





Monmouth County Health Department

Millstone Township Sodium & Chloride Investigation 2008 -2009

Utilizing NJBSDWs 2000ft grid system for PWTA data presentation



11/21/2008 - 01/09/2009
 10 private wells in the Indian Path Development have been sampled for Sodium (Na), Chloride (Cl), & Nitrate (N)
 2 wells Na results were higher than the RUL of 50mg/l
 3 wells Cl results were higher than the RUL of 250mg/l
 10 wells N results (NDs & <2 mg/l) were below the MCL of 10mg/l



Symbology

Chloride results
 Chloride_mg_l

- 2 - 250
- 251 - 725

Sodium results
 Sodium_mg_l

- 2 - 50
- 51 - 80

PWTA 2000ft grid

GW FLOW



Map data provided by ESRI, DeLorme, GeoEye, IGN, GeoEye, DigitalGlobe, GeoEye, AeroGRID, IGN, Esri, Swire

What does this mean, higher than the recommended limit?

- New Jersey Safe Drinking Water Act (N.J.A.C. 7:10) has **primary** and **secondary** drinking water standards
- **Primary** standards are legally enforceable standards
 - Primary standards protect public health by limiting the levels of contaminants in drinking water.
 - Nitrate is considered a primary contaminant – testing required by the PWTA
- **Secondary** standards are non-enforceable guidelines regulating contaminants
 - may cause cosmetic effects (such as skin or tooth discoloration)
 - aesthetic effects (such as taste, odor, or color) in drinking water.
 - sodium and chloride are considered secondary contaminants; neither are required to be tested by the PWTA
 - *Although a secondary standard, sodium is considered significant for consumers requiring a low sodium diet*

Safe Drinking Water (N.J.A.C. 7:10) drinking water standards

Compound	Concentration	
	Primary standard (mg/l)	Secondary Standard (mg/l)
– Nitrate	10	*
– Sodium	*	50
– Chloride	*	250

Understanding Sodium & Chloride in Drinking Water

- Salt is about 40% sodium and 60% chloride
- Normal salt intake of about 5 grams/day from all sources equates to about 2 grams (2000mg) of sodium
- Drinking eight glasses of water a day (about 2 liters) with the sodium concentration at 50mg/l (the RUL) will contribute 100 mg of sodium to the daily intake
- Typically food accounts for 90% of the daily sodium intake
- Typically water accounts for 10% of the daily sodium intake
- DEP/DHSS consider a very restrictive sodium diet 500 – 1000mg per day. The recommended maximum is 20 mg/l of sodium in water for people on a 500 mg day sodium diet
- FDA currently advises a diet of 2500 mg per day. The typical US diet is between 3000 – 6000mg per day.

Example: If you are on a sodium restricted diet

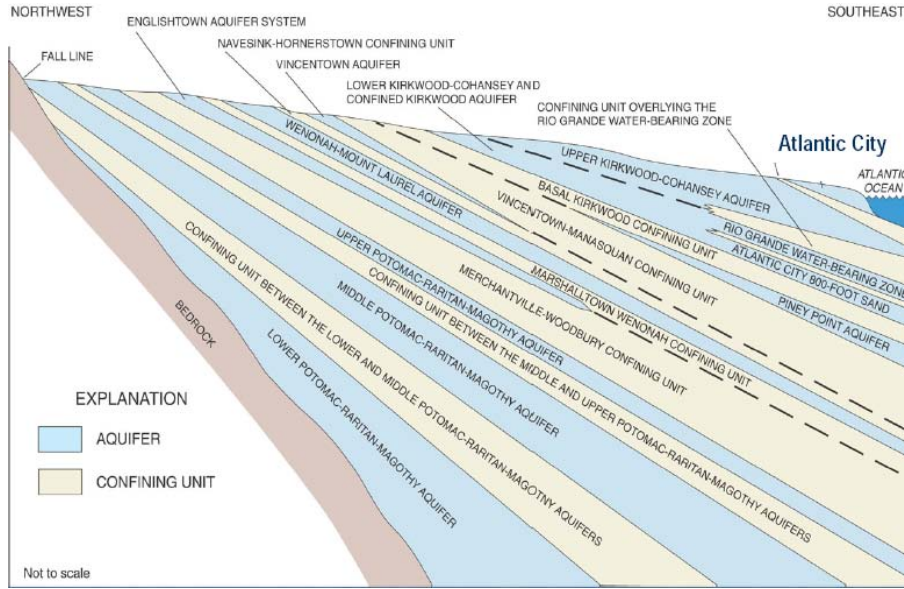
According to the FDA, a low sodium food contains 140 mg or less of sodium

Chicken noodle soup , 890 mg per serving (37% daily value),

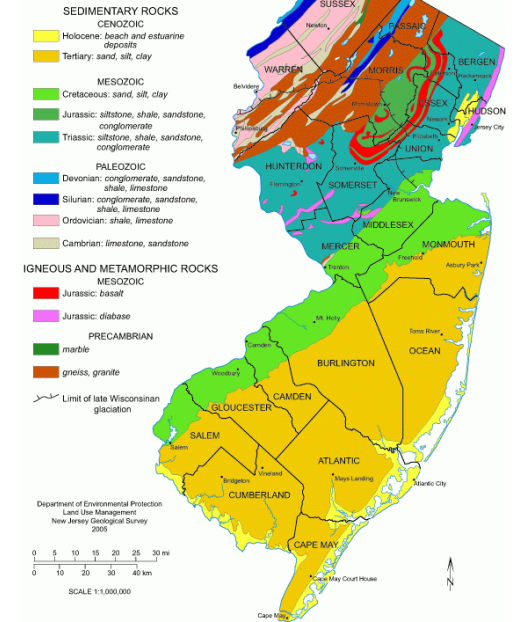
Low sodium cream of mushroom soup, 65mg per serving (3%)



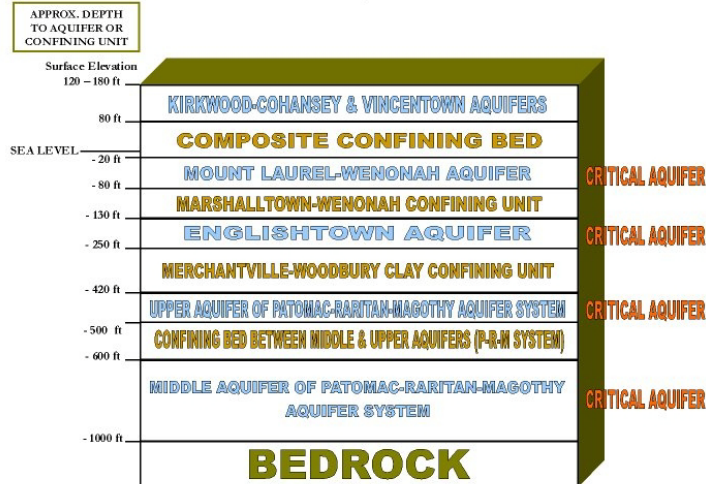
Coastal Plain Geology & Aquifers



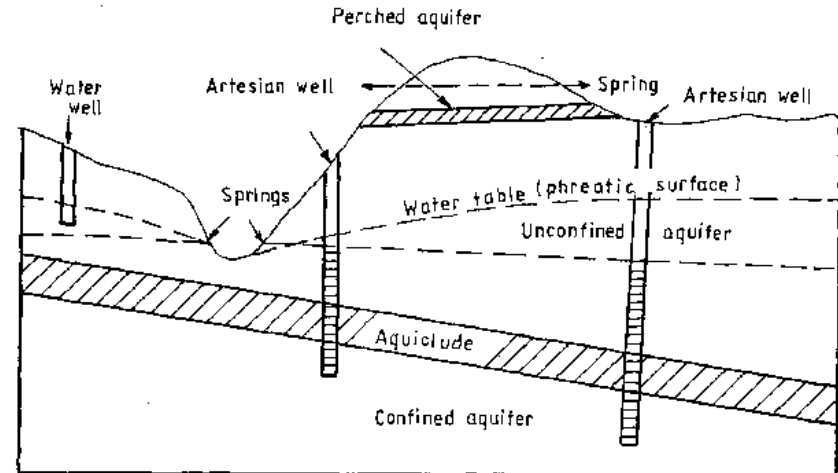
GEOLOGIC MAP OF NEW JERSEY



HYDROGEOLOGIC UNITS UNDERLYING THE ROUTE 537 CORRIDOR
MILLSTONE TOWNSHIP, MONMOUTH COUNTY



Reference: "Hydrogeologic Framework of the New Jersey Coastal Plain" U.S. Geological Survey Open-File Report 84-730.



Investigation of Sources of Sodium & Chloride

- *MCHD has sampled 10 (~70ft deep) wells in the water table aquifer (Englishtown) to delineate the impacted area. The next aquifer is the Raritan Magothy at ~400' deep with a clay aquiclude separating the two units*
- 1. Industry on Rt. 33, checked practices of local businesses, and with DEP – all down gradient
- 2. Area was a farm before 1990 - historical aerial photography to determine prior landuse & landcover at www.HistoricAerials.com
- 3. Backsiphonage of water softener brine into well
 - municipal code enforcement notified on 12/2/2008- backsiphonage, plumbing inspected by WB Well Drilling, Roosevelt, and Aqua Soft, Millstone
- 4. Review of Private Well Testing Act PWTa (Ch 40. Title 58) sampling results for 3 homes in the area
 - results naturally elevated for pH, iron, and manganese - results within limits for all other regulated contaminants
- 5. Discharge of water softener brine to septic, a dry well, or onto ground in proximity to well head
 - all nitrates ND, not septic related
 - advising residents at this point that they should route their backwash $\geq 50'$ away from the wellhead
- 6. Construction of wells during development -1990
 - same well driller for all development
 - Tilton Pump Service – Colts Neck

Ongoing Work

- Continued sampling of homes in the neighborhood to better define the shape of the plume
- In discussion with the USGS (Chloride Network) re regional trends of chloride in NJ http://acwi.gov/sogw/May07/slide.lib/navoy_nj_gwnets_c.pdf
- In discussion with the DEP BSDW about adding a distance requirement between the backwash and the wellhead when the backwash is discharged onto the ground
 - Well Construction and Maintenance N.J.A.C. 7:9D-27 lists the required distance as 50ft between a drinking water well and a septic or a drywell.
 - There is no required distance between a drinking water well and discharge onto the ground

Agencies involved & consulted

- **New Jersey Department of Environmental Protection**
 - Bureau of Safe Drinking Water (well construction and PWTA)**
 - Site Remediation**
- **United States Geological Survey – NJ Water Science Center, Chloride Network**
- **NJ Dept. of Health & Senior Services**
- **New Jersey Geological Survey**
- **Freehold Township Health Department**
- **WB Drilling, Roosevelt**
- **Pickwick Well Drilling, Farmingdale**

Additional Information

- Bureau of Safe Drinking Water 1 609 292 5550
 - » John Shevlin
 - » Sandy Kritzman
- PWTA 1609 292 5550
 - » John Shevlin
- NJ Housing has 'Potable Water Program Loans' available to single family homes (1-800-NJ-house).
 - Whose source of water violates State Primary Drinking Water Standards
 - Including lead, mercury, sodium, chloride, iron, & manganese
 - Loans are for 10 years and will bear no interest
 - Loans will have a 1% annual service fee
 - The maximum of the loan is \$10,000
 - There is a \$75 application fee
- Any homeowner with additional concerns or information should contact the Health Department. This information can be given anonymously
732-431-7456