I agree with Tate, that the NJ PWTA is ridiculous. My first point, before I go on, is what I think is one of most importance. The PWTA was finished in 2008, and only includes data from 2007 that is still yet to be improved, considering it's what; 2015? Any policy that dates back over a couple years, from what I have learned so far about how drastically and disastrous things can change when not monitored and regulated efficiently, is a policy that doesn't do much good unless re-evaluated sooner. Day by day we are still learning what impact we have on this earth. If you can imagine a policy as time capsules for the amount of destruction allowed to be done, this fits it to a tee. Also, if you consider how most privatized businesses work, which is making money as fast as they can by getting as much work done in a season as possible, you can understand that short-cuts are always taken and it's never for the customer or anyone's benefit in the long run. The time capsule of the PWTA 2008 says in my mind, "Get done as much as you can before you need to pay, or become responsible for paying more money to do it the right way!" Society has evolved through time as a speculation. The pressure to earn money can arguably be considered the driving force in the way humans live there life in present day. For many different reasons some people need it sooner than others, but unfortunately that doesn't involve the long term beneficial expenses or consequences. Humans are consistently changing the landscape and altering natural resources. The fact is, everyone's decision making impacts others in ways we can't imagine.

The PWTA not only exposes vital changes throughout the process of sampling that extends until 2008 where it still stands and regulates 7 years later, but the amount of private wells used in the sampling in order to base a decision is very discouraging. According to the NJ Private Well Testing Act Program, "The 51,028 wells sampled represents about 13%of the estimated 400,000 private wells used for drinking water in New Jersey," (NJDEP, PWTAP). Also, "A total of 55,749 well water samples were analyzed from 51,028 separate wells during the period of September 2002 to April 2007," which tells me that most of the wells they tested were only tested once and not during the summer, where I would think would expose much higher levels of contaminants. This alone, is most definitely not enough information and data to base a policy off of the most important natural resource known to mankind. Not to say this can't be updated, but better adaptive policies gain effectiveness after continued revisions and substantial effort.

Another important factor that needs to be addressed is, "the Act and its associated regulations require that buyers and sellers, and landlords and tenants, whose potable water supply is provided by a private well, share information about the quality of that water," basically revealing the rest of the private wells in NJ don't need testing unless the owner decides to sell their house or rent it (NJDEP, PWTA). This is very controversial because many people have lived in the same house for a long time, don't plan on selling anytime soon, and still don't get their well tested or updated. We share aquifers in this country guys! If they don't periodically update their home this means they most likely have an outdated well and septic system that not only adds to the problem of water quality for them, but also for the people around them as well. I feel a lot of this is because fear of spending a lot of money, but ultimately if they don't fix the problem when needed, knowingly or not, expenses can become much more detrimental to people's pocket and health. Another alarming quote from the PWTA program specifically, "Many houses or wells may already have treatment systems in place to remove or lessen the degree of contamination and the PWTA test results do not measure if the treatment is working," (NJDEP, PWTA). How do you know if your water is safe, if your treatment system is not even proven to work?

Trace elements pose many potential risks from long term exposure and can be very harmful to humans when exposed over time. According to the PWTA program, "the greatest percentage of private wells that exceeded a primary drinking water standard were naturally occurring contaminants: arsenic and gross alpha particle activity," (NJDEP, PWTA). Specifically I examined the different regions of NJ the PWTA sampled for arsenic and in the northern/central NJ section they sampled from had some of the largest concentrations of arsenic on the borders of that section. This tells me that arsenic is present in other areas outside of the defined designated region where the PWTA doesn't even require arsenic testing. Also the PWTA Plan explains, "It should be noted that sampling for gross alpha particle activity is only required in counties where NJDEP has historically found elevated levels," (NJDEP, PWTA). If what they say is true, and I believe it is of great concern, than neither arsenic nor gross alpha particles should be limited to any region on the fact that, "both of these contaminants are known to cause serious human health effects, including certain cancers, when consumed for an extended period of time above the MCL," (NJDEP, PWTA). On that note, I enthusiastically note that arsenic, as well as gross alpha particle activity need and should be tested all throughout NJ.

Considering NJ is one of the most developed states and the most densely populated, where human population and demands are still growing. Yes the primary parameters in the plan are important, for instance lead. Ironically, "lead-containing plumbing materials are still being sold," and happens to be very harmful to humans, but especially children (NJDEP, PWTA). Nitrates are one of the primary parameters in water testing as well, but how can you measure the previous demand for nice lawns and agriculture, considering development increases from municipality to municipality? Well storm-water runoff is one the leading causes for nitrates from fertilizer, and results in continuous distributions thrown into water sources which eventually lead to our groundwater. This brings up another issue! As municipalities continue to expand, so does impervious surfaces. In other words roads, driveways, or anything that directly runs into water sources and drains due to rainfall. According to the USGS, "land use may not have a direct effect but can result in changes in groundwater pH, TDS, or redox conditions, which in turn can affect the solubility of naturally occurring trace elements," (Trace elements). Specifically, this exposes the PWTA present program's definition of their secondary parameters, "a drinking water contaminant regulated for aesthetic purposes rather than health effects under the SDWA rules at N.J.A.C.7:10," and, "secondary parameters include pH, iron and manganese," (NJDEP, PWTA). This is important because pH can increase the mobility of trace elements, specifically, "because trace elements tend to occur at different concentrations in dry and humid climates, the rates of HHB exceedance also vary by climate," (Trace elements). If you don't already know, when HHB levels exceed the recommendation levels by the PWTA, you failed your house selling/buying water test because it's unhealthy or harmful to drink. This is another area of debate because long term research, as well as data isn't really out there, or considered I guess, to give us that actual HHB level from long term exposures. Anyways when the pH is anoxic or acidic, trace elements are easily scooped from soils, roads, etc. during storm-water discharges and carried back into the water system. According to the PWTA sample data, "out of the wells tested 22,373 wells (44%) of the wells had a pH below 6.5," (NJDEP, PWTA). That's nearly half of the wells tested proven to have high acidity, and should definitely be an area of primary concern. Another secondary parameter of trace elements in the PWTA that's frequently present in NJ and according to USGS, "Mn occurred most often at concentrations greater than its HHB," (Trace elements).

We haven't even mentioned a handful of contaminants that needed to be added to the test, like estrogen and antidepressants that are showing up significant levels of intrusion in our river/watershed systems and water bodies that connect to our groundwater. Could these future contaminants already be causing health problems for future generations? My answer is yes. Besides the stuff we don't test for that are very important, if ever tested, are factors like the quality of effort in conducting research and analyzing data? Well, I looked on the NJDEP website to specifically find out what laboratories the tests are being analyzed at, and a message came up that said, "too many people trying to access data," so I decided to look up certified laboratories in NJ for well water testing and in relation to PWTA. New Jersey Analytical Laboratories in Ewing, NJ, was certified and their website had some interesting things to say. For example, the website explained that the NJDEP regulations are necessary and, "without them in place, some companies would simply do whatever they needed to keep costs down and profits up – even if that meant poisoning the very customers they wanted to buy their products," but, "most companies care about the people they serve, they just don't realize that they are doing anything wrong," (NJAL). Then I went on to read and noticed that during the water testing program, PWTA, the NJDEP decided to hire privatized companies to take care of the water testing because there was immense amounts of work that needed to be done in too short of time. This is where everything changes and supports the first point I made, because now you involve people who are working with real estate agents, who need to sell a property to make money, and may not be able to sell if the water test doesn't pass inspection. So not only is the problem a shortened non-informed test, unconsidered regional approaches, poorly updated regulations, but also privatized people who will make sure that test passes so they can move on to the next, do another, and put food on the table at the end of the day.

Considering there are all these issues that need to be addressed, and people that need to make money at the end of the day. There are always solutions and when people work together it doesn't need to be done the wrong way. Clearly there are many families and people out there that don't realize the potential hazards of their decisions, as well as the information they are being misled by. The fact of the situation is, just because you're well passes the PWTA doesn't mean your water is essentially good enough to drink. Yes, this is very outrageous, but I am positive if someone is educated on and aware that the water they drink is potentially going to get them and their future relatives sick or detrimentally transform genes, they are going to want to help. Education and awareness needs to happen and people need to know what's really threatening there future, then they will contribute. It really starts with the local municipalities because people will always point fingers at different sources, but funds can be acquired. It's not just about the fact things aren't tested right, it's merely about the fact that public awareness is at an all-time low, where people avoid certain things. At the same time businesses make decisions based on instant financial boosts; a.k.a. short term benefits. Private businesses should not be taking advantage of people with the most vital natural resource on this planet to earn money, that for most cases is no different then what comes out of your sink. That money needs to be used to clean up the water we need for the future. Good judgment seems very complex these days, but one thing is certain if we don't periodically test every private well in NJ, we may never be able to get a hold of the future concern of contaminants the average NJ citizen ingests day by day.

In order to get the money for frequent water testing with all trace elements the, "EPA requires that these nine elements be addressed in watershed plans funded with incremental Clean Water Act section 319 funds and strongly recommends that they be included in all other watershed plans intended to address water quality impairments," (9 trace elements). This is a very serious issue and needs to grab attention of the public and federal level sooner than later.