Testimony for Interim Energy Development and Transmission Committee April 8, 2014

Mr. Chairman and Members of the Committee,

My name is Galen Peterson from Maxbass, North Dakota. I have lived for 60 years and farmed for 42 years in western Bottineau County. Most of what I know about science, I learned from the Chairman of this committee. If I fail to demonstrate sound science, accurate data, and logical conclusions....you will know why.

My testimony will focus on spills of produced water, brine, and why it is of great concern to landowners, and why it should be a great concern to everyone in North Dakota.

My main topic is "Spills contained on location and completely recovered"

I browsed through the Health Department's Oilfield Environmental Incidents website *Oilfield Environmental Incidents that occurred within the last 12 months which were contained within the boundaries of the production or exploration facility.* Which by the way, was an excellent addition and is a good resource. Interestingly, most brine spills reported, were completely recovered. Some required removing some contaminated gravel. This is the "dinner tray theory" which is the theory being presented by the regulating agency and the Petroleum Council, stating that all spills contained on location are 100% contained, 100% recoverable, and 100% recovered.

To demonstrate that recovering all of the brine spilled on a location without removing all of the impacted medium, (the subsoil, not just a bit of the gravel) is next to impossible, I have a homework assignment for you.

In your yard, or a place of your choosing:

1. Remove the sod and topsoil from a 3 foot by 3 foot square.
2. Pack the exposed subsoil, add a dike for realism.
3. Warm a 5 gallon pail of water to 140 degrees
4. Add 20 pounds of water softener salt, or the amount required to saturate the solution, to the water
5. Pour the solution into your 3x3 square
6. Let stand for 4 hours. (The minimum time from when a brine spill occurs until cleanup begins)
7. Use a wet/dry vacuum to suck up the water
8. Compare recovered water to amount poured onto location
9. Repeat in 3 months
10. Replace topsoil and sod
11. Watch for green grass, continue watching.....watching.....

Getting back to spill reports, some of the reports had the amount recovered listed before cleanup began or was finished.

To establish a degree of credibility to these reports, there needs to be an initial spill report indicating the quantity spilled, followed by a report after the cleanup in completed. This report would include the actual recovered brine quantity, the amount of impacted medium removed, and where that material was delivered to. There must be accountability that the brine is completely recovered and removed.

Now, to add some knowledge that I have acquired over the past 42 years of working with North Dakota soils and subsoils. The 'clays' used to construction and dike oil production sites, is the same subsoil that I work with. It is not impermeable, water moves through it all of the time on my farm. It swells, contracts, and forms cracks with the freeze/thaw cycle. It does not make an impenetrable barrier to hold brine.

Back to your homework assignment. Multiply the size of your 3x3 square by 15,000 to get an idea of the typical production or disposal site size. By the time this location is done producing and ready for reclamation, there will have been numerous brine spills on it. The salts from these spills will not be just on the location. These salts will have leached off of the location with water movement through the subsoil medium. Imagine the monumental task to reclaim this location so that it will be capable of the same production as it had before.

Unless requirements are established to completely remove all contaminated soils from brine spills that occur on location, we will have thousands of locations that will rival the devastation that is the legacy of evaporation pits.