UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the matter of	)	
	)	
POWERTECH (USA) INC.	)	Docket No. 40-9075-MLA
	)	ASLBP No. 10-898-02-MLA-BD01
(Dewey-Burdock In Situ Uranium	)	
Recovery Facility)	)	

OPENING WRITTEN TESTIMONY OF INTERVENOR - SUSAN HENDERSON

I. Background Information:

The Henderson Family has owned and operated our 8,000 acre cattle ranch since 1902. My Grandfather, Andrew Murray Henderson, originally began operating a sheep ranch on 36 sections of land including the property we now own in Fall River County, southeast of the proposed Dewey-Burdock ISL uranium mine. He employed sheepherders who supervised the grazing of the sheep by living on the open prairie with them. This was necessary because livestock water was often unavailable and they had to move the herds of sheep to find water.

Grandfather Henderson began immediately to work on water and built the first large dam in the country using teams of horses and day laborers. He wrote back to Scotland that this was "an inhospitable country because the streams dried up".

After Grandfather Henderson's death, my father, also Andrew Murray Henderson, began operating the ranch, converting to cattle. He developed a natural spring on the property which we still use and drilled our first deep water well. He also built some 60 dams and dugouts and piped the well and spring water around the ranch so that every pasture would have "pipeline" water. We now have 60 miles of pipeline.

In l991 I took over the management of the ranch and drilled a new 1700 foot Lakota Sandstone well for livestock water. I primarily use well water from the Lakota Sandstone aquifer for my residence and cattle operation. I also buy

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water for livestock use which comes from the Madison aquifer. There is further a deep-sourced spring on my ranch from which I also draw water. It is from my years of experience with utilizing this water source that I understand it to be affected by local and other underground water sources in the area.

Without these sources of water, I would be unable to operate the ranch since there are just too many years and seasons in which the surface water dries up. This is classed as a semi-arid area and we experience large swings in annual rainfall, ranging from deep drought to more abundant rainfall years in which hay crops can grow.

I served for 10 years as the Chairwoman of the Restoration Advisory Board for the Black Hills Army Depot cleanup (located at Igloo, SD). I also have served for 15 years as the Chair of the Igloo-Provo Water Project District. In these two capacities I have studied all sorts of government and corporate documents involving water quality, movement, toxicity, and the like. One of our issues has been whether the Army project has contaminate our local water supplies. There is no question that the activities of the Army Cheyenne R. basin, Cottonwood Creek and the surrounding aquifers. Thus we already have a severely damaged watershed.

It is my understanding from published scientific research studies that a portion of the Inyan Kara formation, the formation proposed to be mined by Powertech, like the Minnelusa below it and the Madison below that, flows first southwest from the proposed mining area and then flows eastward around the southern boundary of the Black Hills. This would include the area where I live and operate my ranching business in western Fall River County.

II. Contention: Pollution and Depletion of Underground Water Sources

The quality of water for our ranches is vital. The closer we get to water suitable for human consumption the better the livestock do. Clean water and lots of it are the secret to getting the cattle to gain weight properly and yield strong good quality calves.

Most of the large ranches in our county, Such as mine, are now dependent on underground sources for livestock water. We have discovered that the purer

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underground sources far outpace surface water which becomes too alkaline and concentrated with runoff contaminants.

We now find ourselves in a highly competitive cattle market with much of beef sold in the United States coming from Brazil, Argentina, and Mexico. Protecting the water is vital to ensuring the long term viability of US Beef production.

Of grave concern to me is the potential for Powertech to use vast amounts of water, (8500+ gallons per minute for 20 years) and to pollute the aquifers by essentially dumping mining residues back into the aquifers in huge quantities.

My ranch is essentially downstream from the Dewey Burdock area. Polluted water from Dewey Burdock will make its way south through Edgemont toward the Black Hills Army Depot, (Igloo), turn left and flow across my ranch. Over time this will render my Lakota well and my spring unuseable. **This would be a catastrophic event that would ruin my ranch forever.**

Drilling a Madison Well on the ranch at a 4000 foot level would be financially out of reach. Indeed few ranchers in our area would be able to support such an expensive undertaking. I note that the Powertech application calls for a 500 gallon per minute well from the Madison. I know of no Madison water deposit in the area that would deliver such a large amount of water.

My conclusion is that this project will forever pollute the aquifers with contaminants that we cannot remove from the water and in many cases will run us out of any volume of water for livestock uses. It is totally impractical to suggest that we ranchers could afford to replace the water wells with deeper ones or that we could afford the multi-million dollar drilling investments that this would require.

We also have a great many smaller operators who run under 100 head of cattle or horses and who are also very dependent on shallower water sources. These people often have outside commercial jobs and raise a few head of livestock for extra income. Taken together, these smaller operators account for a substantial portion of our overall livestock production. There are about 2700 shallow water wells in Fall River and Custer Counties. I believe many of these would either be run out of water or have it become so polluted that it could no longer be used.

The three major aquifers - the Madison, Minnelusa, Lakota - all support all our surrounding towns such as Edgemont, Provo, and Hot Springs. If we contaminate the water supplies of these communities, it will be catastrophic as there is no other water supplies for these towns to continue to exist. , ranches and the impact - tourism. You cannot run ranches without local towns to provide schools, banking and other local services. We will also no longer be a desirable place for tourists to come and enjoy our area and thereby promote and sustain local businesses.

The loss of these shallow wells for the two counties would impact most housing developments and small livestock operations, ruining the tax base and rendering our beautiful area uninhabitable.

III. Determination of Baseline Ground Water Quality:

The Dewey Burdock site consisting of 10,500 acres was mined extensively in the 1950's and 1960's using more conventional open pit mining techniques. There were four mining companies who mined uranium in essentially an unsupervised manner. These companies established claims and drilled or dug holes which they then enlarged to extract uranium ore which was then processed at a mill located on the outskirts of Edgemont. There are now some 85 open pit mines that have been abandoned, some over a mile across. Most have deep pools of radioactive water in them. The site drains toward the Cheyenne River. The Cheyenne has two major tributaries, Pass Creek and Beaver Creek which drain toward wetlands that eventually end up in the Cheyenne.

There are at least 4000 unremediated bore holes left from this mining activity which intersect with natural fissures and underground cave structures in the area. Thus the underground structure resembles Swiss Cheese. Jewel Cave is nearby. Last year, on December 8, 2013 the Rapid City Journal ran a front page story about the discovery of another cave tunnel of over 2000 feet in length associated with the Jewel Cave structure. Cave explorers reported 30 foot deep caverns and traced the tunnel toward the Dewey Burdock area.

I am aware that the Wind Cave Structure extends under the 21,000 acre former Black Hills Army Depot located just 8 miles south of Edgemont. Some of these caves also have deep caverns.

Beginning in 1991, I served as the Restoration Advisory Board Chairperson for the clean-up of the Black Hills Army Depot which is the largest chemical warfare agent dumping site in the nation. This huge munitions depot handled thousands of tons of chemical warfare agents such as sarin, soman, toban, GB, and VX, plus

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mustard, phosgene, and Lewisite. The Depot also received thousands of tons of conventional explosives which were burned and exploded in open pits from 1941 to 1968. The BHAD hosted 7000 workers and had a town (Igloo) consisting of 5000 residents. The RAB Board which I chaired for 10 years, reviewed thousands of pages of documentation about the operation of the BHAD. I refer you to the Archive Search Report and its addendum for the BHAD. It outlines the enormity and danger of the chemical agent dumping.

Sadly the Army dumped most of these agents in 200 miles of trenches and covered the dumped material with dirt. Over the years, the chemical warfare agents and the munitions residues have begun to percolate down into the shale. Chemical warfare agents never decompose and are soluble in water and oil. Most are a lethal gas at 55 degrees. The amount of Sarin gas on a pinhead kills a 200 lb. person; the amount in the back of a pickup would kill everyone in a city the size of Denver if distributed properly.

The 4,000 foot Madison well at Igloo is already showing increased levels of arsenic, radioactivity and other heavy metals. Since the U.S. Army insists that the Black Hills Army Depot was not a nuclear or atomic site, I feel that the increased levels of heavy radioactive metals and arsenic are from the older uranium mines in the area form the 1950s has begun to enter the aquifer.

It is mind boggling to contemplate the potential destructive quality of this chemical warfare agent dumping ground. When one considers that the Wind Cave Structure lies beneath the depot, once comes to the inescapable conclusion that we should never disturb this area with any mining activity.

My great fear is that the drilling activity contemplated by Powertech in a concentrated time frame will cause the underground structure and its contaminants to move in a wholly unpredictable fashion. This could cause the chemical warfare agents to reach the surface spreading incalculable damage to the environment, killing every living thing in its path. Indeed we have sustained episodes of livestock deaths and wildlife deaths in the depot area from time to time. A fellow rancher who owned a creek on the east side of the depot lost 1200 sheep in a four day period one spring.

If these contaminants move the potential impact on groundwater would be catastrophic. Surface water, shallower aquifers, shale contaminants, and deeper better aquifers are all intertwined in this area. There is a wide variety of water quality in area wells and a wide variety of available flow. Because the chemical

warfare agents dumped in the area have not been considered by Powertech, this presents a sizeable risk to area water supplies that is simply unacceptable. Common sense tells us that fluids migrate, which explains why water in some areas has already degraded. The old mining bore holes have become conduits for contaminants. Over time these fissures become larger, allowing contaminants to seek new levels underground.

The acids and Carbon Dioxide to be injected by Powertech underground under pressure will surely create carbonic acid which will dissolve whatever it touches. The introduction of in situ leach chemicals will cause chemical reactions which will not only be unpredictable but will be totally unmanageable from a remediation sense. I believe fluid migration in this case presents massive risks that we simply should not take.

I am further concerned by my knowledge that the South Dakota Mining and Water Management Boards have recently changed the regulations which removed the requirement that any in-situ leach mining company to prove it could return ground water to its baseline conditions before it could get a mining permit. I am further concerned about the "reform" of these regulations which now only require this foreign company to do the best it can to restore water to pre-mining levels, which is not the same as returning to baseline and fails to protect my and our water supplies. My concern is increased by the knowledge that Powertech will have to seek a permanent exemption from the regulations and requirements of the federal Safe Drinking Water Act for the underground water at any moment located vertically below from the surface of its proposed 15,800 acre boundary mining operation. They wouldn't have to do this if existing technology and any amount of money could actually restore water to baseline levels and mine operation contamination of the underground water was not a health and safety issue.

Why would we consider giving this foreign corporation a permanent exemption from the Safe Drinking Water Act which is designed to protect our water resources, when other corporate or domestic activities are barred from similar exemptions, as they should be? As part of my involvement in this challenge to Powertech's in-situ leach mining operation, I intend to challenge any application for a permanent aquifer exemption by EPA and the State of South Dakota of the company from the requirements of this Act.

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Foreign corporations like Powertech understand that our State environmental enforcement capacity is limited and poorly financed, resulting it our state being incapable of realistically monitoring and controlling such a mining operation so as to prevent destruction of our water supplies. Powertech is therefore coming here because think they can get by without strict enforcement of already weakened regulations and laws designed to protect our water, because our State agencies have a history of not been able to and appear likely to continue to be unable to realistically protect our water.

I have additional concerns from the standpoint of our local and national security interest. Not only do we have no control over who ultimately gets the uranium mined here once it is shipped out of the country, but it does not make sense to make yellowcake in a remote area such as ours, which borders three states. and where there are few law enforcement resources around. The reality of this situation means that we will have only minimal protection from local theft of yellowcake for terrorist purposes. There are those who would attack us with radioactive materials who would have too easy a time to acquire it from this proposed operation.

IV. Conclusion:

I urge the NRC to reconsider its issuance of a license. I am aware that a 26 year "stay" was issued against one of Powertech's principle employees, Richard Clements, in connection with a New Mexico in situ leach mining site as reported by the Black Hills Pioneer newspaper earlier this year.

Once contaminants are unleashed into the underground aquifers, there will be no stopping the spread of contamination.

The volume of water they wish to use will literally run us out of water. Many springs in the Black Hills have simply disappeared after over-use, never to return. I believe that the spring on my ranch, the one in Hot Springs, and the ones on the Mark Tubbs ranch are all at risk. This project will also affect the so called "flowing" wells enjoyed by Hot Springs, Edgemont, and Igloo.

We do not have sufficient or believable information from the DSEIS about what is the actual character of groundwater in the area nor do we have any reasonable

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studies which indicate how the Dewey Burdock operation would impact the chemical warfare agents under Igloo, nor can we reliably extrapolate how groundwater might move or impact other local water quality. Without this information any attempt at restoring groundwater quality after mining seems impossible.

Please deny the Powertech USA Dewey Burdock permit.

I swear that the above statement is true to the best of my knowledge and belief.

Dated this *20th* day in June, 2014.

/s/ Susan Henderson
SUSAN HENDERSON

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