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Administrative Judge William J. Froehlich, Chairman
c/o Nicholas Sciretta, Law Clerk
Atomic Safety and Licensing Board Panel
Mail Stop T-3F23
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Subject: Powertech's Dewey-Burdock In Situ Recovery Facility, Docket No 40-9075-MLA.

To: The Honorable William J. Froehlich,

I am concerned about Powertech's in-situ leach mining proposal referred to as the Dewey Burdock mine close to Edgemont, SD and Strata's Ross Project near Oshoto, WY for the same reasons. I have been interested in the environmental impact of uranium mining as well as its entire fuel cycle since the 1970's but especially after the Three Mile Island disaster. In 1981 I was fortunate to be able to attend a two week workshop at the University in Boulder, CO entitled "Radiation and Human Health" where I met several of the authors of books I had read or wanted to read. My paper dealt with the mining and processing of uranium because there had been some interest in opening a uranium mill near or in Hulett. That all dissolved after Three Mile Island. But the legacy of the Hauber Mine and the extensive prospecting that had taken place in the form of something less than 6000 bore holes anywhere from 200 to 600 feet deep and located in a swath of land taking in Oshoto to Alladdin remains. It is uncertain if these holes were plugged or capped. A six inch diameter hole 600 feet deep would require more than 4 cubic yards of material to fill. The degree of uncertainty tends to the latter as one person had witnessed an employee of the prospecting company dump a single bag of bentonite into one such hole. At this point many of these holes are not recorded or obvious as to their location.

I have read the 2007 NRC publication NUREG/CR-6870 entitled "Consideration of Geochemical Issues in Groundwater Restoration at Uranium In-Situ Leach Mining Facilities" to gain further information about this mining process. From this perusal it is apparent that uranium, thorium, radium, radon and all their daughter nuclides as well as arsenic, selenium, vanadium, et.al. are also mobilized when using a lixiviant containing NaHCO₃ in combination with oxidants to place these elements and their compounds in solution. Uranium and all these other elements once in solution are able to move with the flow of water and diffuse within the aquifer, since without the iron pyrite reducing field that had previously isolated these elements they are free to migrate and depend on the existence of the uptake pipe in the mining process to prevent this from happening. The roll front could have taken thousands of years to form in the first place.

Restoration following the cessation of mining typically involves a prolonged period of sweeping with multiple pore volumes of water (as many as 30) to wash out the lixiviant and the injection of reducing chemicals (H₂S) to precipitate the contaminating elements. As a process this can typically last from five

to ten years before the levels of these contaminants are brought down to close to baseline values. Unfortunately, not all of the lixiviant chemicals can be removed nor the contaminants after ten to twenty years of mining because of recurrent oxidations arising from the fresh up gradient incursions of water, uranium and other radioactive and toxic chemicals are repeatedly placed into solution long after the attempts at recovery using millions of gallons (or acre feet) of water have been used to sweep the aquifer. The example cited by the NRC at the Smith Highland ranch (near Douglas, WY) in the document referred to above left arsenic levels remained at 30X, selenium at 70X and uranium at 70X baseline levels eight years after the cessation of mining operations.

If this were to happen in the mining areas proposed by both Powertech and Strata many more people would be affected than in the Highland area as the population densities are much greater in the Edgemont and Oshoto areas. And because of the numerous bore holes from previous explorations and peculiar geologic conditions (stepped beds in the Dewey Burdock mine area and breccias pipes) there exists abundant possibilities for excursions from the mined aquifer into other aquifers both horizontally and vertically. The results of these migrations might not be known for months or even years. Since water tests are quite expensive many would be drinking this water, feeding their stock or watering their gardens for years before the long term repercussions would manifest themselves as cancer clusters and birth abnormalities. Without potable water land values would also plummet as people have found who live near hydraulic fracturing sites.

I see these mining operations as being fraught with too many risks for the people living in the area and unless the bond represents a significant amount of money in comparison to the value of the product mined and the potential risks to the people's health, the corporations do not sufficiently share in the risks (as if the only risks were monetary). Unfortunately, the corporation may be long gone before all these problems manifest themselves and the bond repaid to the corporation.

Sincerely,

Rodney G. Knudson