



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
denr.sd.gov

May 25, 2012

Richard Blubaugh, Vice President
Powertech (USA), Inc.
5575 DTC Parkway, Suite 140
Greenwood Village, Co 80111

Re: Preliminary Technical Comments on the Ground Water Discharge Plan Application for
Powertech (USA), Inc., Dewey-Burdock Project, Custer and Fall River Counties, SD

Dear Mr. Blubaugh:

This letter is in response to the above referenced facility's application for a Ground Water Discharge Plan, received on March 14, 2012 and supplemental information received on April 17, 2012. The South Dakota Department of Environment and Natural Resources (Department) has started the technical review of this application and has the following preliminary list of technical comments and/or concerns:

1. On Figure 3.6-4, the lithology and water levels depicted on the cross sections do not appear to correspond to the lithology and water levels described on the alluvial drill hole logs in Appendix 3.6-A or the features on the map on Figure 3.6-4. Please correct these discrepancies and submit larger depictions of the two cross sections to include geology/hydrology data from the alluvial drill hole logs. If additional drill hole logs were used to construct these cross sections, please identify them on the cross sections and map, and include the logs with the application.
2. Sections 3.7.2.3.1 and 3.7.2.3.2 state that the existing domestic wells (13, 40 and 4002) will be removed from domestic use and replaced as needed. Please elaborate as to the proposed locations (approximate in relation to the land application areas and POP zones) and construction of any replacement domestic wells.
3. As replacement domestic wells for existing wells 13, 40 and 4002 could be drilled, please include a discussion on protective, mitigation and corrective action plans in regards to area drinking water wells in Section 6 and in the contingency plan discussion under Section 8.1.
4. Section 5.3 includes a very brief discussion of leak detection systems for facility ponds. Please expand on this discussion by verifying which of the ponds that are located either wholly or partially within the proposed POP zones will have leak detection systems, and

actions to be taken to differentiate land application water from potential pond seepage/leakage.

5. Section 5.8 and Table 5.8-1 present the “estimated end-of-production water quality in the ISR well fields...” Please clarify if this is the water quality at the start of the final restoration phase of the well field/mine, or if this is the treated effluent water quality being sent to the irrigation systems. Is the water quality at this stage of the operation anticipated to represent the worst water quality encountered during operation?
6. Table 5.8-2 presents the estimated quality of the water being land applied. As water quality may change throughout the life of the mine with initially most of the water being production phase bleed water, changing to a mixture of production bleed and restoration water, to finally all restoration water; for what stage is this table representative, and does this represent the estimated worst water quality being land applied? If not, provide an estimated worst-case scenario land application water quality.
7. Wells 15 and 43 are both located within land application areas, however, depending on the condition of these wells, they could potentially act as conduits for land application waste water to enter ground water. Please submit well completion logs for well 15 and 43 and a discussion of the condition of the wells, and measures to protect these wells from potential damage. The application states that well 43 is to be converted to a monitoring well. Is well 15 going to remain a stock well, or will it be converted to a monitoring well or abandoned?
8. Please submit the well logs and construction information for the existing wells listed in Tables 6.1-1 and 6.1-2.
9. Section 6.2.1 states samples collected from the sampling locations in Table 6.2-1 will be analyzed for constituents listed in Table 4.1-2. However, Section 6.2.1 also states samples collected from the sampling locations in Table 6.2-1 will be analyzed for parameters presented in Table 6.2-2. Please clarify which parameter list, or both, will be used for analyses on samples collected from locations listed in Table 6.2-1.
10. Please submit a map showing the locations of the sampling locations listed in Table 6.2-1.
11. Section 8.3 includes an introduction to a discussion on trigger levels for metals and metalloids and the potential for buildup of metals and metalloids over time in the land application areas. However, the discussion of these trigger levels includes only the metalloids arsenic and selenium. What are the soil trigger levels for metals and other metalloids?
12. Appendix 3.6-A does not appear to include all of the logs from alluvial wells discussed in the application and associated figures. Please provide the logs for all alluvial wells discussed in the application.

13. Appendix 4.2-A, the Table of Contents for this appendix list several data qualifiers, however the data tables do not indicate in which data set these qualifiers were encountered. Please update the application accordingly.
14. Appendix 5.7-A has values that are unreadable on several tables, please resubmit these tables so that all of the values can be clearly read.
15. Please submit a map showing the proposed ISR well fields in relation to the land application areas, bermed catchment areas and proposed POP zones.
16. Several sections and figures in the application discuss collection areas, berms and catchment areas; however, the application is not very clear about these areas. Please elaborate and include discussions on the locations of collection areas, catchment areas, land application berms and catchment area berms; construction of the berms around both the catchment areas and land application areas (include a typical cross section construction design that traverses the land application berms, land application area, catchment area, catchment area berms and collection area); and how water is to be conveyed to the collection and catchment areas. Please also include a discussion of berm elevation and design freeboard.

Additionally, as the SPAW model is a one-dimensional model that does not include flow routing or channel descriptors, please include a discussion and map indicating where in the collection or catchment areas, standing water likely is to occur, how much standing water may be anticipated during normal operations and during heavy precipitation events, the impacts this standing water would have on groundwater, and what threshold levels of runoff and/or standing water would trigger land application rates to be adjusted to mitigate and eliminate ponding or standing water.

17. An additional compliance point monitoring well will be required to be drilled along the proposed POP zone in the NW¼ of the NW¼ of Section 3, Township 7S, and Range 1E, between the land application area and the residence located in Section 3.

The following typographical issues were also identified:

1. On Table 3.2-2, the sum of the "Acreage" column does not match the value listed for totals. Please correct this table as necessary or provide an explanation for the discrepancies.
2. On Figure 3.6-4, the cross sections show a feature with grey shading, but do not identify it. Please identify or otherwise label this feature. Please also identify the light green circles that are shown on the map, in the legend.
3. Sections 3.7.2.3.2 and 7.0, Table 3.7-4 and Figure 3.7-10 all discuss a domestic well (well 43) within the proposed POP zone and land application area, but there are discrepancies between these sections, table and figure as to the existence and/or status of this well. Please correct the application as needed.

4. Section 5.6 discusses data in Tables 5.1-1 and 5.1-2. Table 5.1-2 could not be located in the application materials, please update the application accordingly.
5. Section 5.7.2.2 discusses locations shown on Figure 3.2-4. Figure 3.2-4 could not be located in the application materials, please update the application accordingly.
6. On Plates 3.6-5 through 3.6-9, please indicate the location on the corresponding reference maps, the logs that were used to generate the cross sections. Please also identify the boundaries of the land application and catchment areas on the cross sections.

The Department agrees with the locations of the proposed interior and compliance point monitoring wells, however as the technical review continues and additional ground water information becomes available, the need for additional wells may be considered. Construction of the proposed wells should begin as soon as possible so that ambient sampling can be conducted in accordance with ARSD 74:54:02:18. Ambient sampling should also be conducted at the surface water sampling locations identified on Table 6.2-1.

These technical comments enclosed are preliminary and are based on issues noted during the completeness review and do not represent a complete technical review. The Department will continue with the technical review of the application and will follow up with additional technical comments, which may include requests for additional information. Any additional information may be submitted as supplemental information or replacement pages. If you have any questions regarding this letter, please feel free to contact me at 605-773-3296.

Sincerely,



Matt Hicks, Senior Hydrologist
Ground Water Quality Program

cc: Mike Cepak, DENR Minerals and Mining Program, Pierre, SD
Jack Fritz, P.E., WWC Engineering, Sheridan, WY
Ron Burrows, NRC, Washington, D.C.
Valois Shea, USEPA, Region VIII, Denver, CO