

**BEFORE THE ENVIRONMENTAL APPEALS BOARD
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C.**

In re:)
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Powertech (USA) Inc.)
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UIC Permit No. CO51237-08412)
)

**PETITION FOR REVIEW OF UIC PERMIT
FOR POWERTECH (USA) INC. ISSUED BY REGION 8**

INTRODUCTION

Pursuant to 40 C.F.R. § 124.19(a), James B. Woodward (“Petitioner”) respectfully petitions for review of the conditions of UIC Class V Permit No. CO51237-08412 (“the Permit”), which was issued to Powertech (USA) Inc. (“Permittee) on December 3, 2010 by Environmental Protection Agency Region 8 (“EPA”). The permit at issue in this proceeding authorizes Permittee to reinject groundwater from an aquifer pump test at the proposed Centennial uranium site in Weld County, Colorado. Petitioner contends that certain permit conditions are based on clearly erroneous findings of fact and conclusions of law or an exercise of discretion, or an important policy consideration which the Environmental Appeals Board (“Board”) should review. Specifically, Petitioner challenges the following permit conditions:

- (1) Permit condition E.1. allowing the Region 8 UIC Program Director (“Director”) to add “additional monitoring requirements” upon notice from the Permittee of “any modification in injection procedures that might result in the potential for the injectate to move outside the A2 sandstone.”

- (2) Permit condition E.4. requiring review of aquifer pump test results by the Director and allowing “additional monitoring requirements” upon a finding by the Director that a breach in confinement is indicated by the aquifer pump test results.
- (3) Permit condition E.5. stating that the Director will review the analytical results from the samples of stored groundwater and require that “corrective action” be performed if the concentration of any analyzed constituent over the permit limit also shows a “significant increase” from the levels measured in the groundwater sample described in Section E.1(a).
- (4) Permit condition F.2. requiring Permittee to demonstrate Part II Mechanical Integrity by submitting to the Director a well completion report.

In addition, Petitioner believes the following new permit condition should be included in the Permit:

- (5) A condition specifying a Maximum Allowable Injection Pressure of zero psig at the wellhead.

FACTUAL BACKGROUND

On April 30, 2009, EPA received an application for a Class V Underground Injection Control (UIC) permit submitted by Permittee. Permittee proposes to reinject groundwater pumped from the upper portion of the Fox Hills Formation during an aquifer pump test back into the same aquifer using the pumping well that pumped the groundwater to the surface. EPA issued a Final Permit to authorize the injection of groundwater back into the aquifer from which it was pumped. The pump test and injection site is located in NE quarter of Section 33 in Township 10 North and Range 67 West, Weld County, Colorado. This location is 17 miles

northeast of Fort Collins, 29 miles northwest of Greeley, 8 miles northwest of Nunn, and 8 miles northeast of Wellington.

Powertech proposes to conduct the aquifer pumping test to meet the following objectives:

- Site specific and regional characterization of geology and groundwater.
- Assessment of hydrological characteristics and their lateral continuity within the A2 sandstone, the formation within the Fox Hills Formation containing uranium mineralization.
- Evaluation of hydrologic communication within the A2 sandstone between the pumping well and surrounding observation wells.
- Assessment of the presence of hydrologic boundaries, if any, within the A2 sandstone.
- Evaluation of integrity of the confinement zones above and below the A2 sandstone to determine the degree of hydrologic communication, if any, between the A2 sandstone and the overlying and underlying aquifers in the test area.

THRESHOLD PROCEDURAL REQUIREMENTS

Petitioner satisfies the threshold requirements for filing a petition for review under Part 124. Petitioner has standing to petition for review of the permit decision because he participated in the public comment period on the permit. *See* 40 C.F.R. § 124.19(a). Petitioner participated by submitting comments to EPA during the public comment periods on the first and second draft permits (written comments attached as Exhibit 1). The issues raised by Petitioner in this petition were either raised with EPA during the public comment period and therefore were preserved for review, or arise from significant changes from the draft permit to the final permit.

ARGUMENTS

Petitioner makes the following arguments with respect to the permit conditions included above:

- (1) Permit condition E.1. allows the Director to add “additional monitoring requirements” upon notice from the Permittee of “any modification in injection procedures that might result in the potential for the injectate to move outside the A2 sandstone.” The EPA has taken 19 months to review the Permittee’s proposed injection procedures. This should be sufficient time to understand the potential of such procedures to result in the movement of injectate outside of the A2 sandstone. Presumably, EPA has established permit conditions that would prevent such movement. However, permit condition E.1. appears to give Permittee the ability to modify its injection procedures in a way that might result in a potential for the injectate to migrate into the overlying Laramie Formation, an Underground Source of Drinking Water (“USDW”). Such a modification to procedures could occur simply by the Permittee notifying the EPA, and would not be subject to public review and comment. Since the Permit was written based on the injection procedures proposed by Permittee, this section of permit condition E.1. is not protective of USDWs and should be removed from the Permit.
- (2) Permit condition E.4. requires review of aquifer pump test results by the Director and allows “additional monitoring requirements” upon a finding by the Director that a breach in confinement is indicated by the results. Such a breach in confinement between the A2 sandstone and the overlying Laramie Formation creates the potential for the injectate to migrate into a USDW. Permit condition E.4. is vague and makes no distinction between

confinement breaches that are serious enough to deny Authorization to Inject and those that appear to be minor and require only additional monitoring, and should be rewritten.

(3) Permit condition E.5. states that the Director will review the analytical results from the samples of stored groundwater and require that “corrective action” be performed if the concentration of any analyzed constituent over the permit limit also shows a “significant increase” from the levels measured in the groundwater sample described in Section E.1(a). This permit condition addresses the potential for contamination of the injectate resulting from possible residues inside the metal storage tanks. According to Permittee, the tanks may have been used to store hazardous wastes during the tank use event immediately preceding their use for storage of the proposed injectate. In fact, the Colorado Division of Reclamation, Mining & Safety (“DRMS”) has specifically granted approval to Permittee to use tanks that may have held hazardous waste during the last tank use event. The DRMS will require cleaning of the tanks before use, but permit condition E.5. recognizes the potential for contamination of the injectate resulting from inadequately cleaned storage tanks. This permit condition is flawed because it does not include numerical limits to determine whether an analyzed constituent shows a “significant increase” over the level measured in the groundwater sample. In response to my question about this, a December 10, 2010 email from EPA states that they “will consider an increase above 25% of the background value to be significant, depending on evaluation of quality control sample results.” Permit condition E.5. should be modified to include this definition of a significant increase.

(4) Permit condition F.2. requires Permittee to demonstrate Part II Mechanical Integrity by submitting to the Director a well completion report. Part II Mechanical Integrity is

demonstrated when the well completion report shows that the cementing of the annulus between the well casing and the borehole is adequate to prevent fluid movement into a USDW through vertical channels adjacent to the injection well bore. Upon completion of the proposed injection well, Permittee submitted a Well Construction and Test Report to the Colorado State Engineer. The same report was submitted to EPA as part of the Class V permit application. According to a December 23, 2010 email from an EPA official, the Region 8 UIC program has adopted the State Engineer's requirements for the proposed injection well, and "the injection well was constructed according to the State Engineer's requirements." The completion report for the proposed injection well indicates that the well was grouted with 829 gallons of "Bent-cem" with a density of 13 lbs., and that the grout was pumped into the well using the Halliburton method of placement. This appears to be a sufficient volume of grout to seal the annulus. However, the grout mix is also an important factor to consider when determining a well's mechanical integrity. The Colorado State Engineer's "Water Well Construction Rules" contains a "Table 3 – Grouts" which defines approved grouts for sealing well annuli. For a pumped cement-bentonite grout to be approved, it cannot contain more than 8% bentonite per dry weight of cement. Section 10.5.1 of the rules requires that "the volume percent of each additive used in the grout mixture shall be reported on the well construction report." The well construction report submitted by Permittee does not specify the volume percent of bentonite used in the grout mixture, and therefore is not in compliance with the State Engineer's requirements. In addition, the addition of bentonite to a grout mix allows the contractor to use less cement and more water (bentonite acts to keep the cement suspended in the mix until setting.) As the percentage of bentonite in the mix increases,

the compressive strength of the grout is reduced and the risk of mechanical integrity failure increases. Permit condition F.2. should be rewritten to require that the proposed injection well must be constructed in compliance with the requirements of the Colorado State Engineer and that written evidence of such compliance must be provided to EPA.

(5) EPA should include a permit condition specifying a Maximum Allowable Injection Pressure of zero psig at the wellhead. Page three of EPA's Responsiveness Summary for the final permit decision includes the following statement under the heading of "Changes to the Permit":

The Final Permit establishes a Maximum Allowable Injection Pressure of zero at the well head. This requirement is included as a response to concerns that injection under pressure could result in A2 sandstone groundwater moving across a confinement zone into another underground source of drinking water.

On page eight, EPA says "the groundwater will not be injected under pressure." An EPA response on page 13 also addresses this issue:

The Final Class V Permit includes a requirement that the injection will be conducted under zero injection pressure at the wellhead. Because the proposed injection activities will be conducted at zero pressure, even if historic boreholes have compromised the integrity of the confinement zone, the injection pressure will not induce the migration of injectate into the Laramie Formation or the underlying WE sandstone unit that is not already occurring under existing conditions.

Page 21 includes a similar response on Maximum Allowable Injection Pressure:

Therefore, the Final Class V Permit allows a maximum injection pressure of zero at the wellhead. A pump will be used to move the stored groundwater from the storage tanks to the wellhead. At the wellhead, the groundwater will be gravity fed into the injection well.

On page 22, EPA responds to a commenter's question about confinement breaches:

Even if the aquifer-pump test identifies a breach in a confinement zone, as long as injection into the Class V well is not under pressure, the proposed injection activity will not result in any movement of groundwater across a confinement zone that is not already occurring under present conditions. As stated above, the Final Class V Permit limits the maximum allowable injection pressure to be zero at the wellhead.

EPA must have thought this permit condition was important since it was discussed five different times in the Responsiveness Summary. But oddly, the condition is missing from the final permit. It is unclear if the omission was an oversight or was intentional. In email communications following issuance of the final permit, EPA confirmed that "EPA has committed to limiting the maximum allowable injection to zero pressure pounds per square inch gauge (psig) at the wellhead." The email states that the requirement will be specified in the Authorization to Inject, but EPA appears to leave the door open to a different requirement based on the results of the aquifer pump test:

The details of this plan, and the Authorization to Inject requirements are very much dependent on the data produced by the aquifer pump test. DRMS and EPA will review the data and impose requirements for reinjection based on the aquifer characteristics.

To be consistent with the position taken by EPA in the Responsiveness Summary, and to protect USDWs by minimizing the potential for injectate to move along vertical channels into the overlying Laramie Formation, the final permit should be modified to include the requirement that Maximum Allowable Injection Pressure at the wellhead should be zero psig.

CONCLUSION

Petitioner respectfully requests that the Board remand the Permit to EPA to make the following modifications:

- (1) Remove the section of permit condition E.1. allowing Permittee to modify injection procedures.
- (2) Rewrite permit condition E.4 to be more specific and to make a distinction between confinement breaches that are serious enough to deny Authorization to Inject and those that appear to be minor and require only additional monitoring.
- (3) Rewrite permit condition E.5. to define “a significant increase” as an increase above 25% of the background value, depending on evaluation of quality control sample results.
- (4) Rewrite permit condition F.2. to require that the proposed injection well shall be constructed in compliance with the requirements of the Colorado State Engineer and that written evidence of such compliance shall be provided to EPA.
- (5) Add a permit condition requiring that Maximum Allowable Injection Pressure at the wellhead should be zero psig.

Respectfully submitted on December 3, 2011

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