

United States Nuclear Regulatory Commission Official Hearing Exhibit	
In the Matter of:	CROW BUTTE RESOURCES, INC. (License Renewal for the In Situ Leach Facility, Crawford, Nebraska)
	<b>ASLBP #:</b> 08-867-02-OLA-BD01
	<b>Docket #:</b> 04008943
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**CBR-054**

June 8, 2015

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of:	)	
	)	Docket No. 40-8943
CROW BUTTE RESOURCES, INC.	)	
	)	ASLBP No. 08-867-02-OLA-BD01
(License Renewal)	)	

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REBUTTAL TESTIMONY OF CROW BUTTE RESOURCES WITNESS  
LARRY TEAHON ON CONTENTION 12

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**REBUTTAL TESTIMONY OF CROW BUTTE RESOURCES  
WITNESS LARRY TEAHON ON CONTENTION 12**

**EXPERT WITNESS**

**Q1. Please state your full name, your employer, and your position.**

A1. Larry Teahon. I am employed by Crow Butte Resources as the Safety, Health, Environment, and Quality (SHEQ) Manager at the Crow Butte facility. A copy of my qualifications statement was previously provided as Exhibit CBR-006.

**Q2. What is the purpose of your testimony?**

A2. The purpose of my testimony is to address the issues raised in Contention 12 . and, in particular, to respond to the intervenors' and NRC Staff's testimony.

**Q3. What documents have you reviewed to prepare your testimony?**

A3. I am fully familiar with the Crow Butte Resources, Inc. ("CBR") license renewal application ("LRA"), the NRC Staff review documents, including the Environmental Assessment ("EA") and the final Safety Evaluation Report ("SER"), and the testimony and exhibits filed in this proceeding.

**BACKGROUND**

**Q4. What is your understanding of Contention 12?**

A4. Contention 12 is entitled “[t]he EA omits a discussion of the impact of tornadoes on the license renewal area, and inadequately discusses the potential impacts from land application of ISL mining wastewater.” Contention 12 therefore involves two distinct issues. While the license renewal application and the Safety Evaluation Report both address the risks associated with tornadoes, the EA itself does not explicitly discuss them. The intervenors also argue that the NRC Staff failed to account for potential impacts from land application of wastewater, including selenium.

#### **ASSESSMENT OF INITIAL TESTIMONY**

***A. Tornados***

**Q5. Did the intervenors present any witnesses on tornado hazards?**

A5. No. The intervenors did not address tornadoes in their testimony or in their statement of position. As a result, there is no testimony on tornado hazards to address. This aspect of Contention 12 will not be discussed further.

***B. Land Application of Wastewater***

**Q6. Do you have any general comments regarding the intervenors’ presentation on land application of wastewater.**

A6. Yes. Linsey McLean’s testimony (Exh. INT-048) addresses the consequences of selenium contamination, but nowhere provides a site-specific assessment of the impacts of ISR mining at Crow Butte. Her generalized assertions provide no information that calls into question the conclusions of the LRA or EA regarding land application of wastewater. Moreover, she spends a lot of her testimony discussing evaporations ponds, which, as I understand it, is not part of the

admitted contention. Nevertheless, to ensure a comprehensive record, I address her concerns with the evaporation ponds.

**Q7. Are there leach ponds at Crow Butte, as claimed by Ms. McLean?**

A7. No. The evaporation ponds at Crow Butte are not designed as leach ponds. They are described by the EPA as *Non-Conventional Impoundments*, which includes evaporation holding ponds. The design requirements for our ponds are derived from the Resource Conservation and Recovery Act (“RCRA”) requirements for impoundments. The design of the ponds was submitted to the NRC for approval prior to construction. The ponds are designed with a liner and leak detection system prescribed at 40 C.F.R. § 192.32(a). During decommissioning the remaining liquids in the ponds will be processed through the Pond Water Treatment circuit, which is currently in place, to remove uranium. The remaining water will be disposed of in the deep disposal well. The remaining sludge will be de-watered and sent to an 11(e).2 disposal facility or to an alternate feed mill. The liners will be removed and sent to an 11(e).2 disposal facility. The soil beneath the ponds will be surveyed and tested for contamination and, if necessary, disposed of accordingly. The ponds will be filled in and the top soil that has been stockpiled will be placed on top and seeded back to native grasses.

**Q8. Are the ponds designed to accommodate seasonal weather changes (e.g., rains and snow) as well as dry periods?**

A8. Yes. Crow Butte is required to maintain a minimum “freeboard” to accommodate rain events. Crow Butte is also required to keep the sediments in the pond covered by liquid.

**Q9. Ms. McLean also asserts that the liner is made of everyday plastics that are easily degraded. Can you respond?**

A9. Yes. Her characterization of the pond liner is incorrect. The HDPE plastic that is used is designed specifically for use in evaporation ponds, not for use in the food and bottled water industry. Moreover, the seams in the pond liner are fusion welded and are re-welded if they are found to have failed. In December 2013, an evaluation of the liners was performed by a third party. The liners were in satisfactory condition for continued operation.

**Q10. Ms. McLean also alleges that “[t]he clay liner underneath will not be impervious to the leakage, as we have found with clay pits of old that are now deemed superfund sites.” Is there a clay liner at Crow Butte?**

A10. No. The liner system is constructed of a double geomembrane liner over the entire pond interior with geonet between the two synthetic liners. A leak detection system was also incorporated within the liner during installation. The liners were installed over a compacted base. A clay liner was not used.

**Q11. Did Ms. McLean provide an assessment of land application of wastewater by Crow Butte?**

A11. No. She does not acknowledge that Crow Butte has not performed land application at the site or that Crow Butte has no plans to conduct land application. She also does not account for the limitations on Crow Butte’s use of land application for wastewater — both by the NRC and by Nebraska — should it be considered for use in the future. Both the NRC license and NDEQ permit together impose stringent limits on the use of land application. Any land

application wastewater is subject to water quality limits derived from NRC, EPA, and State of Nebraska rules. For example, the permit from Nebraska authorizing land application (Exh. CBR-043) sets specific water quality limits on chemical oxygen demand, total suspended solids, zinc, radium-226, uranium, and pH. Limits for other parameters are set by Nebraska regulations, including a limit for selenium of 0.05 mg/L. And, in practice, the pre-discharge processing and treatment results in water quality that is well below those limits. Water must be tested before discharge to ensure compliance with water quality limits, and the land application area is also subject to periodic post-discharge monitoring and testing to ensure that long-term environmental impacts, if any, are small. The rate and manner by which water may be discharged is also designed to prevent both ground-water impacts and surface runoff. Lastly, areas of the site where land application of treated water has been used are included in decommissioning surveys to ensure soil concentration limits are not exceeded. Rather than address any of these limitations or restrictions on land application at Crow Butte (should it hypothetically be used in the future), Ms. McLean simply referenced studies done at other ISR facilities. She made no effort to correlate those studies to the groundwater present at Crow Butte or the limits on land application imposed by regulators. As a result, she has provided no information to suggest any issue with land application at Crow Butte, even if it were to be considered for use in the future.

**Q12. Can you please summarize your position on the issues in Contention 12?**

A12. Since Crow Butte currently does not use land application, does not have the facilities to do so, and does not have plans to begin land application, there is no current or expected environmental impact. Even if Crow Butte were to begin land application of wastewater as provided for in its NRC license and NDEQ permit (and there is no indication this will actually happen), the environmental impact would be minimal.

**Q13. Based on the above, do you have concerns about the potential for bioaccumulation of selenium from land application at Crow Butte?**

A13. No. As noted above, Crow Butte has no plans for land application of wastewater. Therefore, no impact is expected. And, if land application did occur, it would be subject to restrictions imposed by the NRC and NDEQ that would limit or avoid environmental impacts from such land application. For these reasons and using the NRC's impact categories, the environmental impacts to soil or wildlife from land application of treated wastewater, if any, would be SMALL — that is, the environmental effects would not be detectable or would be so minor that they would neither destabilize nor noticeably alter any important attribute of the resource.

### **CONCLUSIONS**

**Q14. What are your overall conclusions regarding the environmental impact of tornados at Crow Butte?**

A14. Based on my professional expertise, the materials I have reviewed, and my familiarity with the Crow Butte site, the risk posed by tornados is very small. The probability of a tornado at the site, let alone of a tornado at a particular spot on the site where it could cause an environmental impact, is very low. Further,

there are emergency response plans and procedures in place in case of a natural hazards phenomenon, such as a tornado, that would mitigate the impact if a tornado did occur at the site.

**Q15. What are your overall conclusions regarding the environmental impact of land application of wastewater at Crow Butte?**

A15. Based on my professional expertise, the materials I have reviewed, and my familiarity with the Crow Butte site, the risk posed by land application of water at Crow Butte is very small. Indeed, since Crow Butte does not currently practice land application, does not have the appropriate facilities to do so, and has no plans to start doing so, there is currently no risk. If Crow Butte were to nevertheless begin land application as allowed under its NRC license and NDEQ permit, the impact would be small due to the strict water quality standards Crow Butte would need to abide by and the many other restrictions on how land application must be conducted. For these reasons, the impacts, if any, to soil or wildlife from land application of treated wastewater would be SMALL.