


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)	
	ASLBP #: 08-867-02-OLA-BD01
	Docket #: 04008943
	Exhibit #: CBR-007-00-BD01
	Admitted: 8/18/2015
	Rejected:
	Identified: 8/18/2015
	Withdrawn:
	Stricken:
	Other:

CBR-007

May 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))	

INITIAL WRITTEN TESTIMONY OF CROW BUTTE RESOURCES
WITNESS LARRY TEAHON ON CONTENTION 1

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**INITIAL WRITTEN TESTIMONY OF CROW BUTTE
RESOURCES WITNESS LARRY TEAHON ON CONTENTION 1**

EXPERT WITNESS

Q1. Please state your full name.

A1. Larry Teahon

Q2. By whom are you employed and what is your position?

A2. I am employed by Crow Butte Resources as the Safety, Health, Environment, and Quality (SHEQ) Manager at the Crow Butte facility. I oversee radiation protection, health and safety, and environmental programs at the site and ensure compliance with all applicable regulatory requirements.

Q3. Please summarize your professional qualifications.

A3. A copy of my qualifications statement is attached to Exhibit CBR-006. I have been extensively involved in the identification, protection, and assessments of cultural resources at the Crow Butte site for many years.

Q4. What is the purpose of your testimony?

A4. The purpose of my testimony is to address the issues raised in Contention 1.

Q5. What documents have you reviewed to prepare your testimony?

A5. I am fully familiar with the Crow Butte license renewal application and the NRC Staff review documents, including the Environmental Assessment ("EA"), and the

final Safety Evaluation Report (“SER”). I have reviewed past and recent cultural resource surveys of the site, facilitated recent cultural resources surveys of Crow Butte properties, and followed the Section 106 consultation process carefully. Additionally, to prepare this testimony I have reviewed the filings made to date by the Intervenors.

BACKGROUND

Q6. What is your understanding of Contention 1?

A6. Contention 1, which was merged with Contention 2, addresses “[w]hether the cultural surveys performed and incorporated into the EA formed a sufficient basis on which to renew Crow Butte’s permit.” According to the Board, Contentions 1 and 2 encompass three admissible issues: (1) whether there was meaningful consultation with the Tribe, (2) whether a class III archaeological study — even if adequate under the NHPA — satisfies the “hard look” requirement under NEPA, and (3) whether the surveys performed and incorporated into the EA formed a sufficient basis on which to renew Crow Butte’s permit.

According to the Board, Issues (1) and (2) are “legal” issues that will be addressed on a separate schedule. Issue (3) will be addressed at the hearing.

For Issue (3), the intervenors contend that the EA lacks an adequate description of either the affected environment or the impacts of the project on archaeological, historical, and traditional cultural resources. Intervenors maintain that surveys from 1982 and 1987 do not provide proper baseline information, and claim that the NRC Staff should have conducted a new survey of the license area.

ASSESSMENT OF CULTURAL RESOURCE ISSUES

Q7. Can you briefly summarize your approach to responding to the issues raised in the contention?

A7. Yes. I will describe the various surveys and reports relating to cultural resources that have been prepared with respect to the Crow Butte site since it was first permitted and licensed. I also will describe the steps that Crow Butte has taken, and will continue to take, to protect cultural resources at the Crow Butte site. I also will describe the various restrictions on ground disturbance activities associated with Crow Butte's NRC license and permit from the State of Nebraska.

A. Background on Cultural Resources at Crow Butte

Q8. What information did Crow Butte consider when evaluating cultural resources?

A8. Information for known or previously recorded historic and cultural properties comes from several sources, including the National Register of Historic Places ("NRHP"), State registers, and project-specific field inventories. Administered by the National Park Service, the NRHP is the official Federal list of districts, sites, buildings, structures, and objects significant in American history, architecture, archeology, engineering, and culture. NRHP properties have significance to the history of their community, their State, or the Nation. The State of Nebraska does not have a formal State register of historic places, but it does maintain a list of the State's historic significant events, people, places, sites, movements, and traditions through the Nebraska Historical Marker Program, which is overseen by the Nebraska State Historical Society. Evaluation criteria for qualification for the Historical Markers Program are found in *Nebraska Revised Statutes*, Section 82-

120. The final source for previously-known and recorded historic and cultural sites is results from past field inventories of the project lands.

1. *National Register of Historic Places and Nebraska Historical Markers*

Q9. What sites were identified on the NHRP or the Nebraska Historical Marker Program?

A9. Five historic period sites within 10 miles of the CBR facility have been listed in the NRHP. In addition to being included on the NRHP, the Fort Robinson and the Red Cloud Agency property, located west of the town of Crawford within the boundaries of the Fort Robinson State Park, is also designated a National Historic Landmark (“NHL”) by the U.S. Department of the Interior. NHLs are nationally significant historic places designated by the Secretary of the Interior because they possess exceptional value or quality in illustrating or interpreting the heritage of the United States. Nebraska Historical Markers have been placed at 21 sites and places in proximity to the town of Crawford. All but three of these are related to events, places, and buildings associated with Fort Robinson and the Red Cloud Agency. The remaining three include two locales in the town of Crawford, and a “Buttes Country” marker, located 4 miles east of Crawford. No NRHP-listed properties are present within the boundaries of the Crow Butte Area of Potential Effect (“APE”).

2. *Previous Cultural Resources Surveys*

a. Bozell and Pepperl

Q10. Was a site-specific cultural resource survey conducted for the Crow Butte site?

A10. Yes. Crow Butte engaged qualified archeological contractors to conduct a cultural resource survey prior to beginning site operations. Specifically, a Class III inventory, which is the standard for locating and recording archaeological resources having exposed indications in an APE, was conducted. Intensive (100-percent coverage) field surveys for historical and archaeological sites within the CBR license area were conducted in two phases. The University of Nebraska conducted in-field identification and assessment of cultural resources in the CBR research and development area in March and April 1982. The Nebraska State Historical Society surveyed the remainder of the license area during April and May 1987. The results of the two surveys were presented in a single report. *See* Bozell and Pepperl, "A Cultural Resources Study of the Crow Butte Uranium Prospect, Dawes County, Nebraska," Main Report (September 1987) (Exh. CBR-027); *see also* Bozell and Pepperl, "A Cultural Resources Study of the Crow Butte Uranium Prospect, Dawes County, Nebraska," Appendices (September 1987) (Exh. CBR-028).

i. Survey Procedures

Q11. Can you describe the manner in which the survey was conducted in more detail?

A11. The survey methodology is described in detail in Bozell and Pepperl at 18 (Exh. CBR-027). All lands within the project area were subjected to intensive (100%) pedestrian surface survey. The investigation procedure consisted of walking in a zigzag reconnaissance pattern at closely spaced intervals, normally 20-30 m. Intervals were modified as necessary to meet varying terrain and vegetation

conditions. Inspection of all exposed areas, such as animal burrows, exploratory drill pads and eroded surfaces, was completed. An intensive effort was made to examine all cutbanks exposed along creeks and adjacent intermittent tributaries for buried cultural deposits. Surface visibility varied within the study area. Much of the tract surface was covered with short bunch grass offering fair visibility. Roughly 300 acres was cultivated (winter wheat) providing good to excellent visibility. About 100 acres in the extreme southeastern corner of the survey area are sparsely covered with evergreen forest where visibility was fair. The surface of the wooded creek bottomland was generally obscured, however creek bank exposures facilitated subsurface observations throughout this area.

Q12. What steps were taken when cultural sites were observed?

A12. All cultural sites identified during the surveys were plotted on maps. A detailed examination of the immediate area of each located cultural resource was performed to identify horizontal limits and composition of surface materials. A preliminary field inventory of observed materials and a sketch map of the immediate site vicinity were also made at this time. In addition, photographic documentation of all site locations was completed. More extensive field documentation, such as instrument mapping, test unit excavation, collection of select surface specimens, and cutbank profiling, was carried out during further investigations of potentially significant sites.

ii. Survey Results

Q13. Can you please summarize the survey results?

A13. The efforts in 1982 and 1987 recorded a total of 21 prehistoric and historic period archaeological sites. Cultural affiliation of the recorded sites included eight with Native American components, 12 historic period locations, and a buried bone deposit of undetermined cultural association. Two Native America sites, an isolated fragment of chipped stone flaking debris (FN-1) and a subsurface deposit of bone (bison) and charcoal (FN-2) exposed along the Squaw Creek cutbank were identified within the pilot plant unit. Site 25DH114 consists of an extensive scatter of chipped stone tools, flaking debris, bone, and trade goods. Site 25DH116 was limited to three specimens of chipped stone flaking debris. All of these sites are located within 100 meters of Squaw Creek in the northeastern portion of the section. Five additional Native American lithic or lithic and bone scatters were identified during survey of the remainder of the study area (25DW194-25DW198). All of these resources are located northwest of the pilot unit on either upland divides or level terraces of English or Squaw Creeks. *See* Bozell and Pepperl, Main Report, at 18-24 (Exh. CBR-027). The locations of the sites are shown in a figure (Exh. CBR-036)

Q14. Were the sites considered culturally significant?

A14. Investigators from the University of Nebraska and the State Historical Society found that 15 of the newly recorded sites, including four Native American and nine historic period locales, contained limited scientifically important cultural remains or were not determined to be of significant historic value based on archival research. These 15 sites were evaluated as being “not eligible” for nomination and potential listing on the NRHP.

Six sites, including three Native American and three historic period locales, were evaluated as being “potentially eligible” for the NRHP, requiring further field assessment for a full evaluation as being “eligible.” Four of these sites (25DW114, 25DW192, 25DW194, and 25DW198) were evaluated as having potential importance for the recovery of archaeological data, and sites 25DW112 and 25DW00-25 have possible architectural values. The “potentially eligible” Native American and historic period sites were treated as “eligible,” pending further actual determination of their eligibility status. *See* Bozell and Pepperl, Main Report, at 69-77 (Exh. CBR-027).

Q15. Did the State Historic Preservation Officer concur with the conclusions in Bozell and Pepperl?

A15. Yes. In a letter, dated August 5, 1987, the Nebraska SHPO concurred with the findings and recommendations of the Bozell and Pepperl report (Exh. CBR-030).

b. 1998 Renewal

Q16. Did Crow Butte conduct additional site surveys to support the initial license renewal in 1998?

A16. Crow Butte did not conduct additional field studies at the site to support the current license renewal because the results of the prior surveys remained applicable. There were no major changes in site activities or disturbed areas since initial surveys were performed and the site was constructed. However, as part of the 1998 initial renewal of the CBR license to continue operation, a consultant conducted a Traditional Cultural Property (“TCP”) study that involved sending letters to Tribal governments, including the Oglala Sioux Tribe, and requesting any information on localities of potential traditional concern or value to Native

American groups. *See* RTG Technologies, “Survey of Traditional Cultural Properties, Crow Butte Project, Dawes County, Nebraska,” dated April 2, 1998 (Exh. CBR-029). No responses were received.

Q17. Did the Nebraska SHPO concur in the use of the prior surveys?

A17. Yes. During the license renewal process the Deputy State Historic Preservation Officer was contacted by the NRC. The Deputy SHPO stated that he considered the results of the 1987 survey still to be adequate and that Crow Butte’s continued policy of avoidance to be acceptable. *See* Letter from R Puschendorf, NSHS, to J Holonich, NRC, dated May 4, 1998 (Exh. CBR-031).

c. Current License Renewal

Q18. Did Crow Butte conduct additional site surveys to support this current pending license renewal application?

A18. Crow Butte did not conduct additional field studies at the site to support license renewal because the results of the prior surveys remained applicable. There were no major changes in site activities or disturbed areas since initial surveys were performed and the site constructed. Two of the Section 106 consulting Tribes, the Crow and Santee Sioux Nations, accepted an offer to visit the Crow Butte project areas during the November-December 2012 timeframe. Reconnaissance of the existing license area by the Crow Nation field crew determined that the project area is heavily impacted by past Euro-American settlement and farming practices, CBR project mining, and other activities over the past 25 years to the extent that little or no undisturbed areas exist. The Tribal field crews determined that additional field inspection of the existing license area for potential places of religious or cultural places beyond those previously identified was not practical.

Santee Sioux Nation, Tribal Historic Preservation Office, "TCP Survey Report" (2013) (Public) (ADAMS Accession No. ML13093A123) (Exh. NRC-052).

Q19. Did the Nebraska SHPO concur in the use of the prior surveys?

A19. Yes. In 2013, the Deputy SHPO again acknowledged the prior Class III field inventory and reiterated that the findings of the original Environmental Assessment in 1988 and the subsequent Environmental Assessment in 1998 addressed the SHPO's comments. The Deputy SHPO reconfirmed the findings of "no effect." Letter from R. Puschendorf, Deputy SHPO, to K. Hseuh, NRC, "Request for Concurrence for a Finding of No Historic Properties Present for the Proposed Crow Butte Resources, Inc. In-Situ Uranium Recovery License Renewal Project, Dawes County, Nebraska," dated July 15, 2013 (Exh. NRC-041).

B. Impacts to Cultural Resources

1. Plant Construction and Operation

Q20. How is Crow Butte handling the cultural resources identified in the earlier surveys?

A20. As noted above, the intensive field inventory of the entire license area resulted in the recording of 21 cultural resource sites, including 12 historic-period sites and 8 prehistoric archaeological sites. One of the cultural sites was of undetermined cultural affiliation. Of the total sites, six sites, including three Native American and three historic-period Euro-American locales, were determined to be potentially eligible for the NRHP, requiring further field assessment for a full evaluation of their eligibility. This further assessment has not been conducted to date for five of these potentially eligible sites because they have been totally

avoided over the years of plant operation. As a result, they remain in the “potentially eligible” status.

Q21. How were the six original “potentially eligible” treated?

A21. “Potentially eligible” sites are treated in the same manner as “eligible” sites. The six original “potentially eligible sites” were designated for avoidance during construction activities, both at the time and for the future. Only one site, 25DW192, was located entirely in an area of potential disturbance at the time. This property was and remains protected by a fenced perimeter.

One of the six potentially eligible archaeological sites from the 1987 evaluation, Site 25DW198, was subsequently found to be in an area of new CBR well-drilling activities. This site received additional evaluative field testing in 2003. Späth and Walth, “Crow Butte Resources Evaluative Testing of Site 25DW198, Dawes County, Nebraska” (June 2003) (Exh. CBR-032). Before the fieldwork commenced, a site testing plan was prepared and sent to the Nebraska State Historic Preservation Officer, who concurred with the approach. Letter from Greystone to SHPO, “Evaluative Testing of 25DW198,” dated February 11, 2003 (Exh. CBR-033); Letter from NE SHPO to Späth, “Testing Plan for 25DW198,” dated February 24, 2003 (Exh. CBR-034). Site 25DW198 was again subjected to an intensive inventory of the previously mapped site surface and the adjacent areas, followed by excavation of four subsurface test units. Based on the findings of this field effort, a recommendation was made that the site lacked the potential to yield information important to the region’s prehistory and that it was not eligible for listing on the NRHP. The NE SHPO concurred with this

recommendation and the archaeological site was removed from the project list of potentially eligible archaeological sites. Letter from NE SHPO to Spath, “Site Testing,” dated June 16, 2003 (Exh. CBR-035).

Q22. What about the five remaining “potentially eligible” sites?

A22. Crow Butte has been able to avoid each of the remaining “potentially eligible” archaeological sites during the construction and operation phases of the project, so full assessments of the eligibility status of these five sites were not conducted. Documented field visits by the NRC made to each of the five “potentially eligible” sites in August 1995, and again in 2010, 2011, and 2012, confirmed that the sites did not incur any impacts during construction and operation.

Q23. Is there an NRC license condition related to discovery of cultural resources?

A23. Yes. According to LC 9.9 (now LC 9.8 in renewed license), before engaging in any construction activity not previously assessed by NRC, Crow Butte must complete a cultural resource inventory. In addition, to ensure that no unapproved disturbance of cultural resources occurs, any work resulting in the discovery of previously unknown cultural artifacts shall cease. The artifacts shall be inventoried and evaluated in accordance with 36 C.F.R. Part 800, and no disturbance shall occur until Crow Butte has received authorization from NRC to proceed. In addition, the license condition imposes a requirement that, prior to any developmental activity in the immediate vicinity of the six “potentially eligible” sites identified in Section 2.4 of the approved license application, the licensee shall provide documentation of its coordination with the Nebraska State Historical Society to NRC.

Q24. Is there any license condition in Crow Butte's UIC permit issued by Nebraska relating to cultural resources?

A24. Yes. According to Crow Butte's Class III UIC Permit No. NE0122611 (Exh. CBR-017), Crow Butte may not conduct mining activities or cause other modifications within a 100 foot radius of the five archaeological or architectural sites that could qualify for the national register without written approval from the Nebraska State Historical Society. Written approval must be supplied to the Department thirty days prior to any development or construction activity within the area.

2. *Impacts During Restoration*

Q25. Will Crow Butte also avoid impacts during restoration?

A25. Although aquifer restoration and plant decommissioning are out of scope for the current proposed action, the practice of avoiding potential impacts for the "potentially eligible" cultural resource sites would continue for the aquifer restoration and plant decommissioning phases of the project. Activities associated with restoration of the ground water in mining units occur at existing wells within established well fields and would result in little or no potential impacts to known cultural resource sites. While general earth-disturbing activities would be associated with decommissioning of the well fields and other facilities, the known cultural resource sites would be avoided during those activities. In addition, the license requirements to perform additional cultural resources surveys should any previously unsurveyed land be used for future developmental activity and cease work and immediately notify the NRC should a discovery of previously

unknown cultural artifacts take place during project disturbance activity would remain in place.

CONCLUSIONS

Q26. What are your overall conclusions regarding the adequacy of the EA assessment of impacts to cultural resources?

A26. Because the Crow Butte project area has been subjected to intensive cultural resources field surveys for archaeological and historical sites and because the five remaining properties evaluated as “potentially eligible” for the NRHP are being actively avoided during all phases of the overall project, there will be no effects to the known and recorded cultural resource sites from license renewal. In addition, the license conditions mandating that Crow Butte stop work upon discovery of new cultural resources ensure that newly-discovered cultural resources will be treated appropriately. As a result, I concur with the NRC Staff’s conclusion in the EA that there will be no effects to the known and recorded cultural resource sites if the operating license is renewed and that overall impacts to historic and cultural resources from the relicensing of the CBR facility would be SMALL.