


United States Nuclear Regulatory Commission Official Hearing Exhibit	
In the Matter of: POWERTECH USA, INC. (Dewey-Burdock In Situ Uranium Recovery Facility)	
	ASLBP #: 10-898-02-MLA-BD01 Docket #: 04009075 Exhibit #: OST-012-00-BD01 Admitted: 8/19/2014 Rejected: Other:
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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
POWERTECH (USA) INC.,	)	Docket No. 40-9075-MLA
	)	ASLBP No. 10-898-02-MLA-BD01
(Dewey-Burdock In Situ Uranium Recovery	)	
Facility)	)	

**STATEMENT OF CONTENTIONS OF THE OGLALA SIOUX TRIBE FOLLOWING  
ISSUANCE OF FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT**

**I. INTRODUCTION**

Pursuant to 10 C.F.R. § 2.309, and this Board's Scheduling Order dated March 4, 2013, Intervenor Oglala Sioux Tribe (Tribe) sets forth the following statement on contentions in this proceeding regarding the Final Supplemental Environmental Impact Statement (FSEIS) for Powertech (USA) Inc.'s proposed Dewey-Burdock Project in-situ leach (ISL) uranium mine. The Tribe's standing was confirmed in this Board's Order of August 5, 2010, which was not appealed. As such, pursuant to 10 C.F.R. § 2.309(c)(4), the Tribe is not required to address issues related to standing in this filing.

The Oglala Sioux Tribe is a federally-recognized Indian Tribe, located on the Pine Ridge Reservation. The Oglala Sioux Tribe is a body politic comprised of approximately 41,000 citizens, with territory of over 4,700 square miles in the southwestern portion of South Dakota. The Oglala Sioux Tribe is the freely and democratically-elected government of the Oglala Sioux people, with a governing body duly recognized by the Secretary of Interior. The Oglala Sioux Tribe is the successor in interest to the Oglala Band of the Teton Division of the Sioux Nation, and is a protectorate nation of the United States of America. The Oglala Band reorganized in

1936 as the “Oglala Sioux Tribe of the Pine Ridge Indian Reservation” under section 16 of the Indian Reorganization Act of June 18, 1934, ch. 576, 48 Stat. 987, 25 U.S.C. § 476, and enjoys all of the rights and privileges guaranteed under its existing treaties with the United States in accordance with 25 U.S.C. § 478b. The Tribe’s address is P.O. Box 2070, Pine Ridge, South Dakota 57770-2070.

As discussed at length in the Tribe’s Petition for Hearing filed on April 6, 2010, and supported by declarations of Tribal government officials, the Tribe opted to enter these proceedings because the project may pose serious threats to the Tribe’s cultural, historic, economic, and conservation interests. As detailed herein and in the Tribe’s Statement of New Contentions on the Draft Supplemental Environmental Impact Statement (DSEIS), NRC staff has failed to meet the requirements of the National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4231, *et seq.*, the National Historic Preservation Act (NHPA), 16 U.S.C. § 470, *et seq.*, and implementing regulations, including NRC regulations in 40 C.F.R. Part 51. These failures remain troubling given that the majority of the same issues were identified both in the Tribe’s initial statement of contentions premised on Powertech’s Environmental Report, Technical Report, and Supplemental Report that comprised the application as well as the Tribe’s statement of contentions on the DSEIS. Although Powertech has had more than four years since the date of the application to collect the necessary data and information, it appears that very little, if any, additional primary data or information has been collected by Powertech. Similarly, NRC Staff has not required, independently collected, or confirmed the data and information necessary to resolve the serious environmental and cultural issues identified by the Tribe starting with its April 6, 2010 filing and identified in the January 25, 2013 DSEIS contentions submission.

As discussed herein, the Final SEIS has failed to address substantial concerns regarding impacts to the Tribe's cultural and historic resources, and the lack of information necessary to determine the hydrogeology and geochemistry of the site. In fact, the NRC Staff's decision to separate the National Historic Preservation Act section 106 consultation from the NEPA process has exacerbated the problems, and effectively relegated cultural and historic resource protection to an afterthought. Instead, NRC Staff has swept these stubborn issues under the rug by relegating them to an internal NRC post-licensing decisionmaking process. The result is that any meaningful review of the impacts associated with cultural and historic resources and any mitigation associated with these impacts has been inappropriately and illegally excluded from the NEPA process. Ongoing hydrologic and geologic inadequacies include the lack of a defensible baseline ground water characterization, the lack of a thorough review of the natural and manmade interconnections between aquifers in the area that may allow for cross-contamination with the aquifer slated for chemical mining, and the lack of the required analysis of proposed mitigation measures.

The attached Second Supplemental Declaration of Dr. Robert E. Moran incorporates by reference and attaches his prior Supplemental Declaration, and further details the lack of scientifically-defensible analysis in the FSEIS regarding potential impacts to ground water associated with the proposed Project. See Second Supplemental Declaration of Dr. Robert E. Moran, attached as Exhibit 1. Dr. Moran's Second Supplemental Declaration supports many of the contentions raised and admitted to this proceeding. As discussed below, these contentions as admitted should be considered both contentions of omission and contentions of inadequacy and revolve around the failure of the FSEIS to portray the required analyses and review regarding necessary components of the project.

## **II. DISCUSSION OF ADMITTED CONTENTIONS, CONTENTIONS OF OMISSION AND INADEQUACY, AND MIGRATION TENET**

As required by 10 C.F.R. § 2.309, the Tribe sets forth below the specific contentions that it seeks to have litigated in this proceeding. Each contention presents issues with respect to the sufficiency of the FSEIS under the National Environmental Policy Act (“NEPA”), National Historic Preservation Act (“NHPA”), and applicable regulations, including those of NRC, the federal Advisory Council on Historic Preservation (“ACHP”), and the Council on Environmental Quality (“CEQ”). At minimum, each contention set forth below implicates and asserts violations of 10 C.F.R. §§ 51.10, 51.70, and 51.71, which require NRC compliance with all provisions of NEPA as well as the NHPA, and any other applicable federal, state, and local requirements.

As stated by the Board in its February 20, 2014 Memorandum, the Board considers the “migration tenet” to apply to contentions in this case. Memorandum at 4-5. As a result, where information in the FSEIS is sufficiently similar to the information in the DSEIS, the Tribe need not file a new or amended contention. Rather, the previously admitted contention will simply be viewed as applying to the FSEIS, “so long the FSEIS analysis or discussion is essentially in para materia with the DSEIS analysis or discussion that is the focus of the contention.” *Id.* at 5. The Tribe contends that the FSEIS discussion of each of the already-admitted contentions is in para materia with the analysis from the DSEIS. However, in an abundance of caution and because FSEIS claims arguably did not ripen until the FSEIS was released, this pleading addresses each admitted contention in turn, with reference and discussion to any new analysis or discussion in the FSEIS, to the extent it exists. The Tribe notes that is compelled to address each admitted contention again in large part due to the aggressive opposition asserted by NRC Staff and Powertech throughout this proceeding and with respect to each and every contention heretofore

filed in this case. Indeed, Powertech even saw fit to challenge any standing of the Tribe to participate. Thus, while the Tribe hereby affirmatively asserts that each admitted contention is already slated for hearing and immune from dismissal at this stage, the following discussion bolsters those claims.

Lastly, the Tribe affirmatively asserts that each admitted contention already consists of a contention of adequacy or a combined contention of adequacy and omission. This is borne out by the verbiage used to describe the contentions as set forth in the Board's July 22, 2013 Order (LBP-13-09) at 95-96, where the Board uses the word "adequate" in the context of admission of Contentions 2, 3, 4, 6. Based on the discussions provided in both the Tribe's prior contention pleadings on the application and the DSEIS, along with the discussion presented herein, the Tribe asserts that inadequacy is also alleged with respect to the subject matter contained in Contentions 1A, 1B, 9, 14A, and 14B. Thus regardless of how the Tribe's DSEIS contention pleading referred to some of these contentions as contentions of omission, the discussions contained therein and in the original contention pleading on the application materials clearly demonstrate that these contentions are also contentions of omission and inadequacy.

**Contention 1A: Failure to Meet Applicable Legal Requirements Regarding Protection of Historical and Cultural Resources.**

Read together, the Board's August 5, 2010 Order (LBP-10-06) and July 22, 2013 Order (LBP-13-09) admitted Contention 1 in two parts based on (1A) the failure to meet the requirements of NEPA, the NHPA, and 40 C.F.R. §§ 51.10, 51.70 and 51.71, along with the NRC, ACHP, and CEQ regulations because the application and SEIS lacked an adequate description of either the affected environment or the impacts of the project on archaeological, historical, and traditional cultural resources, and (1B) the failure to involve or consult with all

interested tribes as required by federal law. The Board recognized in LBP-13-09 that these contentions “question the adequacy of the protection of historic and cultural resources” and “the adequacy of the consultation process with interested tribes.” LBP-13-09 at 15. These contentions of inadequacy carry over to the FSEIS, despite the NRC Staff’s attempts to include additional cultural and historical resource impacts discussion in the FSEIS.

Regarding cultural and historic resources, the FSEIS carries forward serious problems from the application and DSEIS stage. As stated previously, despite having years to do so, neither Powertech nor NRC Staff has conducted an adequate and competent cultural resources survey within the project area, as required by NEPA. This is even despite express promises from NRC Staff to do so. As stated in the NRC Staff Answer to Contentions on the Draft Supplemental Environmental Impact Statement:

As the Staff explained when it issued the DSEIS, however, it is working to facilitate a field survey of the Dewey-Burdock site in order to obtain additional information on historic properties. When the survey is complete, the Staff will supplement its analysis in the DSEIS and circulate the new analysis for public comment.

NRC Staff Answer at 13. Thus, the only Class III level archaeological survey conducted in this case is the original survey by the students at Augustana College, which was critiqued in prior pleadings and expert reports related to this contention at the application stage and DSEIS stage.

The FSEIS discusses the NRC Staff’s unsuccessful attempt to secure a scientifically-valid independent cultural survey of the project area, but shows that instead of having such a survey completed, NRC Staff abandoned that approach and did not pursue it any further. FSEIS at 1-23 to 24. NRC Staff and the applicant will no doubt point to the concerns of various Tribes, including the Oglala Sioux Tribe with regard to the proposed survey as the basis for abandoning that approach. See FSEIS at 1-24. However, the Tribe’s request for a competent survey does

not excuse NRC Staff's failure to have a proper survey conducted in a timely manner at the earliest stages of the NEPA process or at all. The Tribe's objections centered on the methodology sought to be employed, not on the survey itself.

Rather than put together a competent survey that included proper scientific expertise, proper methodology, and the participation of the Tribal representatives, NRC Staff instead simply invited Tribes to visit the site for themselves, making no provision for methodologies or scope. Several Tribes, including the Oglala Sioux Tribe, rejected the terms of the NRC Staff directed survey as improper and insufficient. FSEIS at 1-25. Instead of resolving these issues, NRC Staff simply charged forward, collecting information from the small selection of Tribes that did participate in the exercise and deemed it sufficient.

During this time period, NRC Staff also opted to "separate" the NHPA 106 process from the NEPA process. FSEIS at 1-26. The result of this separation is that the NHPA 106 process is still ongoing, despite the finalization of the FSEIS – relegating any analysis, mitigation, or project alternatives that result from that consultation as an afterthought to the NEPA process. Further, regardless of how NRC Staff attempts to discharge its duties under NHPA and NEPA, the fact remains that the FSEIS lacks the required competent, adequate, and scientifically-valid cultural resources inventory – despite having committed to the Tribe and this Board to provide the survey and analysis for public comment and review in a NEPA document prior to finalizing the FSEIS. As a result, the NRC Staff's cultural and historic resources impact analysis violates NEPA.

This contention is supported by the Declaration of Wilmer Mesteth, Oglala Sioux Tribe Tribal Historic Preservation Officer (Attached as Exhibit 7 to the Tribe's April 6, 2010 Petition to Intervene), record documents referenced in the FEIS as described and in Appendix A to the

FSEIS, recent letters to the NRC Staff from Oglala Sioux President Bryan Brewer and Standing Rock Sioux Tribe Tribal Historic Preservation Officer (attached hereto as Exhibit 2), as well as omissions in the DSEIS.

As described in the contention submittal on the DSEIS, NEPA and its implementing regulations from both NRC and CEQ require an analysis beyond that contained in the FSEIS. Specifically, 10 C.F.R. § 51.71(d) and NEPA require each FSEIS to include an analysis of all environmental impacts of a proposed action, including cultural impacts. 10 C.F.R. § 51.70(a) places an affirmative duty on NRC Staff to conduct all NEPA analysis in conjunction with other surveys or studies required under federal law. This includes necessary surveys required under NEPA and the NHPA. In this case, the FSEIS demonstrates that a significant number of archaeological, historical, and traditional cultural resources on site have not been evaluated because the agency never completed an independent cultural resource inventory as it committed to in the DSEIS (DSEIS at xxxix); therefore, the potential impacts to these resources have not been adequately addressed.

The FSEIS concedes that the required analysis has not been completed, despite the issuance of a final NEPA document. FSEIS at 1-26. This includes the failure to have any finalized Programmatic Agreement (PA) which by its own terms is designed to set forth the process for identifying impacts, future processes for identifying sites while construction and operations occur, and mitigation measures to be implemented. The lack of this necessary information in the FSEIS demonstrates the violation of NEPA and implementing regulations.

As a result of this confirmed lack of adequate survey, the FSEIS determines that the impacts from the proposed action will range from “small to large.” This broad range may be appropriate for a generic analysis, but demonstrates the lack of information inherent in the site-



specific NEPA analysis. In any case, any pre-ordained and categorical conclusions, without the benefit of necessary information and a competent analysis demonstrate a lack of scientific integrity of the FSEIS cultural and historic resource impact analysis, and form the basis for a contention as to whether or not the FSEIS conforms with NRC regulations, the NHPA, and NEPA, and the implementing regulations for these laws.

**Contention 1B: Failure to Involve or Consult All Interested Tribes as Required by Federal Law.**

Among the applicable requirements to NRC's licensing process are those under the National Historic Preservation Act ("NHPA") and related Executive Orders. Under these authorities, the NRC is required to fully involve Native American Tribes in all aspects of decision-making affecting Tribal interests such as those directly impacted by the project. These mandates require NRC to consult with Tribes as early as possible in the decisionmaking process.

Here, despite having the applicant's materials since 2009, and the Tribe's contentions regarding lack of adequate surveys since April 6, 2010, the NRC has not meaningfully engaged in the required consultation process. These problems were described in email and letter correspondence between affected Tribes and the NRC Staff (see communications regarding NEPA and NHPA compliance attached to OST Statement of Contentions on the DSEIS as Exhibit 3) and detailed in the Tribe's DSEIS contentions pleading. See List of Contentions of the Oglala Sioux Tribe Based on the Draft Supplemental Environmental Impact Statement at 6, 9-10. More recently OST President Bryan Brewer and the Standing Rock Sioux Tribal Historic Preservation Officer have described at length the problems they have encountered with a lack of adequate consultation and lack of meaningful review of cultural resources in the NEPA process.

See Exhibit 2 attached hereto. These detailed concerns have not been addressed and support both Contention 1A and 1B in this proceeding.

As these letters make abundantly clear, these problems are a significant issue and reveal that NRC Staff is not carrying out its agency responsibilities in a manner that recognizes and respects the government-to-government relationship. Indeed, as stated in the FSEIS, the 106 consultation process is ongoing. FSEIS at 1-26. This includes the failure to have any finalized Programmatic Agreement (PA) which is designed to set forth the process for identifying impacts, future processes for identifying sites while construction and operations occur, and mitigation measures to be implemented. Yet, remarkably, the FSEIS has already been finalized, a proposed action selected, all but finalizing the issuance of a completed license to the applicant. The failure to engage the Tribe on NHPA issues in a meaningful way, including failing to do so at the earliest possible time and within the NEPA process violates the NHPA and NEPA.

The federal courts have addressed the strict mandates of the National Historic Preservation Act:

Under the NHPA, a federal agency must make a reasonable and good faith effort to identify historic properties, 36 C.F.R. § 800.4(b); determine whether identified properties are eligible for listing on the National Register based on criteria in 36 C.F.R. § 60.4; assess the effects of the undertaking on any eligible historic properties found, 36 C.F.R. §§ 800.4(c), 800.5, 800.9(a); determine whether the effect will be adverse, 36 C.F.R. §§ 800.5(c), 800.9(b); and avoid or mitigate any adverse effects, 36 C.F.R. §§ 800.8[c], 800.9(c). The [federal agency] must confer with the State Historic Preservation Officer (“SHPO”) and seek the approval of the Advisory Council on Historic Preservation (“Council”).

*Muckleshoot Indian Tribe v. U.S. Forest Service*, 177 F.3d 800, 805 (9th Cir. 1999). See also 36 CFR § 800.8(c)(1)(v)(agency must “[d]evelop in consultation with identified consulting parties alternatives and proposed measures that might avoid, minimize or mitigate any adverse effects of

the undertaking on historic properties and describe them in the [NEPA document].”) These requirements are impossible to fulfill when the consultation process is still ongoing, including discussion of impacts and proper mitigation, when the NEPA process is completed.

NRC Staff interpretations of these requirements are not entitled to deference. The Advisory Council on Historic Preservation (“ACHP”), the independent federal agency created by Congress to implement and enforce the NHPA, has exclusive authority to determine the methods for compliance with the NHPA’s requirements. See *National Center for Preservation Law v. Landrieu*, 496 F. Supp. 716, 742 (D.S.C.), *aff’d per curiam*, 635 F.2d 324 (4<sup>th</sup> Cir. 1980). The ACHP’s regulations “govern the implementation of Section 106,” not only for the Council itself, but for all other federal agencies. Id. See *National Trust for Historic Preservation v. U.S. Army Corps of Eng’rs*, 552 F. Supp. 784, 790-91 (S.D. Ohio 1982).

NHPA § 106 (“Section 106”) requires federal agencies, prior to approving any “undertaking,” such as this Project, to “take into account the effect of the undertaking on any district, site, building, structure or object that is included in or eligible for inclusion in the National Register.” 16 U.S.C. § 470(f). Section 106 applies to properties already listed in the National Register, as well as those properties that may be eligible for listing. See *Pueblo of Sandia v. United States*, 50 F.3d 856, 859 (10<sup>th</sup> Cir. 1995). Section 106 provides a mechanism by which governmental agencies may play an important role in “preserving, restoring, and maintaining the historic and cultural foundations of the nation.” 16 U.S.C. § 470.

If an undertaking is the type that “may affect” an eligible site, the agency must make a reasonable and good faith effort to seek information from consulting parties, other members of the public, and Native American tribes to identify historic properties in the area of potential

effect. *See* 36 CFR § 800.4(d)(2). *See also* *Pueblo of Sandia*, 50 F.3d at 859-863 (agency failed to make reasonable and good faith effort to identify historic properties).

The NHPA also requires that federal agencies consult with any “Indian tribe ... that attaches religious and cultural significance” to the sites. 16 U.S.C. § 470(a)(d)(6)(B). Consultation must provide the tribe “a reasonable opportunity to identify its concerns about historic properties, advise on the identification and evaluation of historic properties, including those of traditional religious and cultural importance, articulate its views on the undertaking’s effects on such properties, and participate in the resolution of adverse effects.” 36 C.F.R. § 800.2(c)(2)(ii).

Apart from requiring that an affected tribe be involved in the identification and evaluation of historic properties, the NHPA requires that “[t]he agency official **shall ensure that the section 106 process is initiated early in the undertaking’s planning**, so that a broad range of alternatives may be considered during the planning process for the undertaking.” 36 CFR § 800.1(c) (emphasis added). This requirement exists so that the agency does not put itself in the exact position NRC Staff has here – finalization of the NEPA process prior to gaining all relevant information necessary to assess impacts and design effective mitigation. The ACHP has published guidance specifically on this point, reiterating in multiple places that consultation must begin at the earliest possible time in an agency’s consideration of an undertaking, even framing such early engagement with the Tribe as an issue of respect for tribal sovereignty. ACHP, *Consultation with Indian Tribes in the Section 106 Review Process: A Handbook* (November 2008), at 3, 7, 12, and 29.

Regarding respect for tribal sovereignty, the NHPA requires that consultation with Indian tribes “recognize the government-to-government relationship between the Federal Government

and Indian tribes.” 36 CFR § 800.2(c)(2)(ii)(C). See also Presidential Executive Memorandum entitled “Government-to-Government Relations with Native American Tribal Governments” (April 29, 1994), 59 Fed. Reg. 22951, and Presidential Executive Order 13007, “Indian Sacred Sites” (May 24, 1996), 61 Fed. Reg. 26771. The federal courts echo this principle in mandating all federal agencies to fully implement the federal government’s trust responsibility. See Nance v. EPA, 645 F.2d 701, 711 (9<sup>th</sup> Cir. 1981) (“any Federal Government action is subject to the United States’ fiduciary responsibilities toward the Indian tribes”).

Here, the application was initially submitted to the NRC in February of 2009, more than five years ago. Yet, the FSEIS was pushed to completion even though no adequate cultural survey of the site has yet been conducted with the requisite level of Tribal participation. The result is to effectively exclude the Tribe from the NEPA/NHPA process until after the critical NEPA document is finalized. This scheme contravenes the requirements of the NHPA and NEPA, and NRC and NHPA regulations, and harms the Tribe’s ability to participate in the identification of historic/cultural properties and hampers its ability to effectively participate at the later stage when the specific impacts from a particular project are analyzed. See, e.g., 36 C.F.R. §§ 800.4 (“Identification of historic properties”) and 800.5 (“Assessment of adverse effects”).

Given these requirement of the NHPA, NEPA, and applicable regulations, the harms to the Tribe began accruing immediately upon NRC consideration of the Application in a manner that segregated the Tribe’s interdisciplinary, culturally-based consultation on the project from what NRC Staff considers technical and environmental concerns. These harms are exacerbated by the NRC Staff’s decision to issue the FSEIS despite the incompleteness of NHPA section 106 consultation and the lack of meaningful involvement the survey of the affected areas. The only

meaningful relief available in a case as egregious as this is to reissue a draft SEIS for public review and comment once the requisite reviews are completed, so that the analysis, alternatives, and mitigation measures in the NEPA document and public comments on the new draft SEIS, can take these reviews into account.

In sum, this contention seeks to reintegrate the interdisciplinary study requirements of NEPA to ensure that the purposes of NEPA, the NHPA, and the government-to-government relationship are honored by NRC Staff, and included in a new, comprehensive SDEIS issued for review and comment for the Tribe, Tribal members, the public, and other interested persons.

**Contention 2: Failure to Include Necessary Information for Adequate Determination of Baseline Ground Water Quality**

The FSEIS violates 10 C.F.R. Part 40, Appendix A, Criterion 7, 10 C.F.R. §§ 51.10, 51.70 and 51.71, and the National Environmental Policy Act, and implementing regulations – each requiring a description of the affected environment and impacts to the environment – in that it fails to provide an adequate baseline groundwater characterization or demonstrate that ground water samples were collected in a scientifically defensible manner, using proper sample methodologies.

With regard to this contention, there appears to be no significant or additional baseline water quality information in the FSEIS and this contention migrates from the DSEIS. Indeed, in response to comments from the Tribe on the DSEIS specifically detailing the problems with lack of adequate baseline water quality data, NRC Staff confirms that the applicant collected data from 2007 to 2009 and that “the NRC staff used this information when drafting the affected environmental section of the SEIS as well as analyzing impacts of the proposed action.” FSEIS at E-32.

Exacerbating these problems previously alleged in detail by the Tribe as the basis for this contention, NRC Staff states that:

the applicant will be required to conduct additional sampling if a license is granted to establish Commission-approved background groundwater quality before beginning operations in each proposed wellfield in accordance with 10 CFR Part 40, Appendix A, Criterion 5B(5). However, this does not mean that the NRC staff lacks sufficient baseline groundwater quality information to assess the environmental impacts of the proposed action.

**No change was made to the SEIS beyond the information provided in this response.**

FSEIS at E-32(emphasis added). This establishes that not only has NRC Staff not required or used the collection of any additional baseline data for its characterization of baseline water quality, it will require additional data in order to establish a credible baseline for use in the regulatory process. Simply put, while the FSEIS contains data from 2007-2009, the “real” background water quality will be established a future date, outside of the NEPA process, and outside of the public’s review.

In an abundance of caution, the Second Supplemental Declaration of Dr. Robert E. Moran (attached as Exhibit 1)(hereinafter “Moran Second Suppl. Decl.”) provides additional support for migrating the admitted contention as applicable to the FSEIS. Moran Second Suppl. Decl. at ¶¶ 3, 26, 38 This declaration supplements, but does not materially differ from the previously submitted Supplemental Declaration of Dr. Moran and the Declaration of Dr. Richard Abitz detailing the requisite standards for scientific validity in a baseline analysis. *See e.g.* Moran Suppl. Decl. at ¶58 (“The DSEIS, like the Powertech Application, fails to define pre-operational baseline water quality and quantity—both in the ore zones and peripheral zones, both vertically and horizontally.”); ¶¶ 47-74, 75, 82-84, 92-94, 95.

10 C.F.R. §§ 51.10, 51.70 and 51.71, and the National Environmental Policy Act, and implementing regulations, require a description of the affected environment containing sufficient data to aid the Commission in its conduct of an independent analysis. Further, applicable regulations require the applicant to provide “**complete** baseline data on a milling site and its environs.” 10 C.F.R. Part 40, Appendix A, criterion 7(emphasis added). These authorities and scientific bases for the Tribe’s contention were discussed at length in the Tribe’s original contention pleading and its DSEIS contention pleading, including the improper reliance on the outdated NRC Regulatory Guide 4.14 (1980), and those discussions are expressly incorporated herein by reference.

The FSEIS carries forward the NRC Staff’s failure to adequately describe the affected aquifers at the site and on adjacent lands and fails to provide the required quantitative description of the chemical and radiological characteristics of these waters necessary to assess the impacts of the operation, including potential changes in water quality caused by the operations.

**Contention 3: Failure to Include An Adequate Hydrogeological Analysis To Assess Potential Impacts to Groundwater**

The FSEIS fails to provide sufficient information regarding the hydrologic and geological setting of the area to meet the requirements of 10 C.F.R. § 40.31(f); 10 C.F.R. § 51.45; 10 C.F.R. § 51.60; 10 C.F.R. §§ 51.10, 51.70 and 51.71, 10 C.F.R. Part 40, Appendix A, Criteria 4(e) and 5G(2), and the National Environmental Policy Act, and implementing regulations. As a result, the FSEIS similarly fails to provide sufficient information to establish potential effects of the project on the adjacent surface and ground-water resources, as required. In its ruling on the DSEIS contentions, the Board held that “to the extent the intervenors have concerns with the adequacy of the hydrogeologic analysis necessary to show adequate confinement and potential



impacts to groundwater, this is already an issue set for hearing.” July 22, 2013 Order (LPB-13-09) at 24. This contention is both one of omission and inadequacy.

As with Contention 2, the FSEIS does not identify new data associated with the proposal that could defeat the migration tenet with respect to this contention. Indeed, in the FSEIS response to comments on issues related to confinement and fluid migration, NRC Staff repeatedly state that “no change was made to the SEIS” based on those comments. See e.g., FSEIS at E-30 to 31, E-150. The result is that the bases for this contention as set forth in the DSEIS remains fully applicable to the FSEIS.

As with the DSEIS, where the FSEIS contains any changes, it notes only that a proposed license condition was added to further clarify that the applicant will be required to submit adequate hydrogeologic data, but only after the NEPA process is completed, after a license is issued, and with no chance for any public review. See e.g., FSEIS at E-51 (“The commenter is correct in stating that wellfield hydrogeologic data packages will not be made available for public review. However, by license condition, all wellfield data packages must be submitted to NRC for review prior to operating each wellfield (NRC, 2013b). . . . Text was revised in SEIS Section 2.1.1.1.2.3.4 to clarify NRC license conditions with respect to review and approval of wellfield data packages at the proposed Dewey-Burdock ISR Project.”). This was the gravamen of the DSEIS contention on this point – the lack (and deferral of collection and review to a later date) of necessary data and analysis to ensure a credible and NEPA and NRC regulation-compliant review of impacts to groundwater.

Given the material similarity and lack of additional data, the Supplemental Declaration of Dr. Robert E. Moran (attached as Exhibit 2 to the Tribe’s DSEIS contention pleading) and the extensive discussion of the issue contained in the Tribe’s application and DSEIS contention

pleadings on this contention continue to provide adequate support for this contention. See e.g., Moran Suppl. Decl. at ¶33. (“The DSEIS fails to provide detailed, site-specific information / data on the hydrogeologic characteristics of the relevant D-B water-bearing and other bounding geologic units, including the mineralized zones.”), see also e.g., ¶¶33-36, 39-48, 49, 54-56, 82-84, 8; OST List of Contentions on DSEIS at 15-18 (including substantial discussion of NEPA statutory, regulatory, and case law); OST Statement of Contentions on Application at 21-25.

The only possible exception to the lack of new information related to this contention is a 2012 report referenced in the FSEIS from Petrotek regarding modeling of the hydrogeology. The FSEIS appears to rely heavily on this report throughout its discussion of confinement issues, as well as geology and water usage impacts. See FSEIS 3-17 to 18; 4-57, 4-59, 4-61 to 62, 4-64, 4-68, 4-71, 4-73, 4-75, 5-25. Disturbingly, this report appears to have been submitted to NRC Staff in February of 2012, months before the DSEIS was published. Yet, despite this fact, the DSEIS makes no reference, citation, nor any discussion of the document.

Dr. Moran’s Second Supplemental Declaration discusses this Petrotek modeling report and sets forth his opinion as to why it is not sufficient to resolve the issues associated with the Tribe’s Contention 3. See Moran Second Suppl. Decl. at ¶¶ 51-56. As such, to the extent any argument can be made that the Petrotek report affects the migration of this contention, Dr. Moran’s analysis suffices to explain why the report does not resolve the issues raised in the Tribe’s Contention 3. Further, to the extent the Petrotek modeling report may be considered significant new information, there has been no opportunity for the Tribe, the public, or other agencies to comment on this report within the NEPA process.

Based on this demonstration (including the information incorporated by reference), the FSEIS continues to fail to provide an adequate geology and hydrogeology analysis and as a

result fails to adequately analyze the impacts associated with the proposed mine, particularly on groundwater resources.

#### **Contention 4: Failure to Adequately Analyze Ground Water Quantity Impacts**

The FSEIS violates the National Environmental Policy Act in its failure to provide an adequate analysis of the ground water quantity impacts of the project. Further, the FSEIS presents conflicting information on ground water consumption such that the water consumption impacts of the project cannot be accurately evaluated. These failings violate 10 C.F.R. §§ 51.10, 51.70 and 51.71, and the National Environmental Policy Act, and implementing regulations.

As with the prior admitted contentions, this contention migrates forward from the contentions admitted on the application materials and the DSEIS. The Board's ruling on this contention in its July 22, 2013 Order (LBP-13-09) confirmed that "the Oglala Sioux Tribe's concerns with the adequacy of the analysis of groundwater quantity impacts is already an issue set for hearing." Order at 27. As such, the Supplemental Declaration of Dr. Robert E. Moran (attached as Exhibit 2 to the Tribe's List of Contentions on the DSEIS) continues to provide adequate support for this contention. See e.g., Moran Suppl. Decl. at ¶21 ("the DSEIS provides imprecise, conflicting information on the volumes of water to be used throughout the various sections of the DSEIS"); ¶¶ 20-32, 37-38, 50-51, 86-91, 101. Additionally, the discussions of the basis for this contention presented in the Tribe's contention pleadings on the application and on the DSEIS are incorporated herein. Petition to Intervene and Request for Hearing at 25-28; List of Contentions on DSEIS at 18-20.

The FSEIS does include one additional piece of information that was not present in the DSEIS claiming to be a "water balance" for the project. The lack of a "water balance" formed a part of the basis for the Tribe's Contention 4 based on the application materials and the DSEIS.

However, as discussed in Dr. Moran’s Second Supplemental Declaration, the “water balance” contained in the FSEIS does not provide sufficient information to adequately analyze the groundwater quantity impacts.

Specifically, Dr. Moran opines that:

In order to evaluate the adequacy of mine water-related data and water management practices, it is standard practice for EISs and similar mine environmental reports to include a detailed water balance. Such a balance includes measured data for all water inputs and outputs related to all mine operations and all sources of water that might influence these operations. Essentially any detailed ground water textbook describes the workings of such water balances (e.g. Freeze & Cherry, 1979) and ICM (2012) and Golder Assoc. (2011) represent two industry-sponsored studies that describe how water balances should be applied at mine operations.

Moran Second Suppl. Decl. at ¶ 31. Dr. Moran further provides his analysis with regard to the additional information provided in the FSEIS:

On page 2-36 the SEIS (see Fig. 2.1-14) contains what the authors claim is a water balance, but it clearly is not. In fact, it is actually labeled as “Typical Project-Wide Flow Rates”. This is not a water balance for the D-B site or D-B operations. It lacks basic components of a water balance, including detailed, measured data for volumes of water entering the system and losses (e.g. volumes of ground water available in the various aquifers, evaporation from land-application facilities, volumes under-going UIC injection, etc.), and *fails to calculate an actual balance*.

Moran Second Suppl. Decl. at ¶ 32 (emphasis in original). Dr. Moran concludes that “the NRC has not cured the deficiency by including a flow rate figure, which lacks the basic components of a water balance.” *Id.* at ¶ 33.

As such, despite the inclusion of the additional information in the FSEIS, the Tribe’s DSEIS contention with respect to the lack of adequate analysis of ground water quantity impacts conforms with the migration tenant and encompasses deficiencies in the FSEIS.

### **Contention 6: Failure to Adequately Describe or Analyze Proposed Mitigation Measures**

The FSEIS violates 10 C.F.R. §§ 51.10, 51.70 and 51.71, and the National Environmental Policy Act and implementing regulations by failing to include the required discussion of mitigation measures. This contention migrates from the DSEIS stage, as there is no substantial additional discussion of mitigation measures or their effectiveness in the FSEIS. As such, the Supplemental Declaration of Dr. Robert Moran provides ongoing support for this contention. See e.g., Moran Suppl. Decl. at ¶ 114 (“the mitigation consists only of proposals to make plans to restore groundwater in the future. There is no detail as to the effectiveness of these proposed mitigation measures, nor any analysis of whether any such plans have succeeded in the past.”); ¶¶ 92-94, 102-103, 104-113, 116-119. The Tribe’s discussion of the relevant statutory, regulatory, case law pertaining to mitigation, along with examples of the difficulties in achieving mitigation of expected impacts (particularly with groundwater impacts) are expressly incorporated herein. See List of Contentions of the Oglala Sioux Tribe based on the DSEIS at 23-27.

NRC regulations at 10 C.F.R. §§ 51.10, 51.70, and 51.71 require all SEIS documents to include all analyses required under NEPA, and that compliance with NEPA “be supported by evidence that the necessary environmental analysis have been made.” With respect to mitigation, NEPA requires the agencies to: (1) “include appropriate mitigation measures not already included in the proposed action or alternatives,” 40 C.F.R. § 1502.14(f); and (2) “include discussions of: . . . Means to mitigate adverse environmental impacts (if not already covered under 1502.14(f)).” 40 C.F.R. § 1502.16(h). NEPA regulations define “mitigation” as a way to avoid, minimize, rectify, or compensate for the impact of a potentially harmful action. 40 C.F.R.

§§ 1508.20(a)-(e). “[O]mission of a reasonably complete discussion of possible mitigation measures would undermine the ‘action-forcing’ function of NEPA. Without such a discussion, neither the agency nor other interested groups and individuals can properly evaluate the severity of the adverse effects.” *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 353 (1989).

Specifically in the mining context, federal courts hold that NEPA also requires that the agency fully review whether the mitigation will be effective. See *South Fork Band Council v. Dept. of Interior*, 588 F.3d 718, 728 (9<sup>th</sup> Cir. 2009). “The [agency’s] broad generalizations and vague references to mitigation measures ... do not constitute the detail as to mitigation measures that would be undertaken, and their effectiveness, that the [agency] is required to provide.” *Neighbors of Cuddy Mountain v. U.S. Forest Service*, 137 F.3d 1372, 1380-81 (9<sup>th</sup> Cir. 1998). The DSEIS’s reliance on a future, as yet-unsubmitted, mitigation to prevent/mitigate adverse impacts to these resources also violates NRC duties under NEPA and the National Historic Preservation Act [NHPA]. The NHPA, NEPA, and implementing regulations, require full review of these impacts as part of the public review process – something which has not occurred here.

Indeed, with regard to the cultural resources impacts, the FSEIS concedes that consultation is not even complete, and the Programmatic Agreement, which is supposed to describe mitigation measures has not been finalized, and is subject to considerable controversy and objection by the Tribes. See FSEIS at 3-94 (“At this time, consultation on the evaluation and effects determination of historic properties is ongoing with all consulting parties, including interested tribes. The outcome of this consultation effort will be included in the programmatic agreement.”); “Mitigation measures identified in the licensee’s management plan or site specific Memorandum of Agreement (MOA) or Programmatic Agreement (PA) could reduce an adverse impact to a historic or cultural resource by reducing the adverse effect on a historic property.

(NRC, 2009a).” FSEIS at 4-157. See also, FSEIS at 1-16, 1-22, 5-47, 5-48, E-190, E-197(all expressly relying on as-of-yet uncompleted PA, with as-of-yet undersigned and unreviewed future plans to mitigate impacts). Compare, letters from OST President Brewer and Standing Rock Sioux Tribe (attached hereto as exhibit 2).

Because the FSEIS relies on mitigation for an array impacts, NEPA requires such mitigation must be specifically spelled-out, at least in reasonable detail, and the effectiveness of the proposed mitigation must be analyzed. Here, as with the DSEIS and apart from the cultural resources discussion above, NRC Staff expressly and repeatedly relies on mitigation in gauging the level of impacts and in justifying its recommendation to issue the proposed license. FSEIS at xxxii. Unfortunately, like the DSEIS, the proposed mitigation consists largely, if not exclusively, of a list of plans to be developed later, outside the NEPA process. FSEIS at 6-1 through 6-19. Much like the failure to analyze baseline data, the FSEIS fails to provide the any of the required detailed analysis of proposed mitigation measures, and makes no attempt to evaluate the effectiveness of the proposed mitigation.

Instead of providing a reasonably complete NEPA discussion of mitigation and providing an interdisciplinary analysis of the effectiveness of those mitigation measures, the FSEIS repeatedly refers to various commitments by the applicant to mitigate impacts by submitting plans in the future as a result of license conditions imposed by NRC Staff. These future plans encompass mitigation for a broad scope of impacts, including such basic elements as requiring the applicant to conduct hydrogeological characterization and aquifer pumping tests in each wellfield to examine the hydraulic integrity of the Fuson Shale, which separates the Chilson and Fall River aquifers; a commitment from the applicant to locating unknown boreholes or wells identified through aquifer pump testing, and committing to plugging and abandoning historical

wells and exploration holes, holes drilled by the applicant and any wells that fail mechanical integrity tests. FSEIS at 135. However, no discussion or analysis is provided to explain how an applicant might go about identifying abandoned holes or analyzing the effectiveness of long-after-the-fact plugging and abandonment, nor is any discussion given to what methodology or effectiveness criteria accompanies the pump tests or monitoring well systems. Similar gaps in the analysis exist in the failure in the FSEIS to assess its plan to review groundwater restoration only for a period of 12 months. FSEIS at 2-40. There is no support of basis for this time period, nor any discussion of the basis or effectiveness of such a time period. See Moran Suppl. Decl. at ¶ 115. Further, no alternative time periods were analyzed.

Other proposed groundwater impact mitigation that lacks reasonably complete NEPA review and analysis as to effectiveness include a proposed, but unevaluated, monitoring well network for the Fall River aquifer in the Burdock area for those wellfields in which the Chilson aquifer is in the production zone in order to “address uncertainties in confining properties of the Fuson Shale” because leakage may occur through the Fuson Shale and “draw-down induced migration of radiological contaminants from abandoned open pit mines in the Burdock area.” FSEIS at E-135 to 136. Despite having none of this information or plans developed, the FSEIS nevertheless concludes that the risks of this type of contamination is “expected to be small” and therefore NRC Staff actually revised this risk level down from the draft. FSEIS at E-136. Such unsubstantiated conclusions based on unsubmitted, unreviewed, and even undeveloped mitigation plans is not allowable under NEPA.

The same problems exist where the FSEIS lacks sufficient detail and simply requires plans to be submitted in the future to address air impacts (FSEIS at E-163 to 164), land disposal of radioactive waste (FSEIS at E-56), and wildlife protections (FSEIS at E-158 to 159)



(conceding that the applicant is still in the process of “actively working on an avian monitoring and mitigation plan.”). For the most part, these mitigation measures are simply plans to make plans at some point in the future – outside of the NEPA process and shielded from public review or comment. Such assurances, without any details as to the mitigation to be proposed and without evaluation of how effective these restorations efforts are expected to be, do not satisfy NEPA.

As detailed in the Tribe’s DSEIS contention pleading, historic evidence demonstrates that ISL uranium mines have a very poor record of restoring ground water aquifers – in fact, none have ever actually restored an aquifer used to conduct ISL uranium mining. See List of Contentions of Oglala Sioux Tribe based on DSEIS at 25-26 (referencing J.K. Otton, S. Hall, “In-situ recovery uranium mining in the United States: Overview of production and remediation issues,” U.S. Geological Survey, 2009 (IAEA-CN-175/87), Hall, S. “Groundwater Restoration at Uranium In-Situ Recovery Mines, South Texas Coastal Plain,” USGS Open File Report 2009-1143 (2009), Darling, B., “Report on Findings Related to the Restoration of In-Situ Uranium Mines in South Texas,” Southwest Groundwater Consulting, LLC (2008).

In summary, an evaluation of the effectiveness of any proposed mitigation measure is required by NEPA. As discussed, this lack of analysis of proposed mitigation measures is expansive, and not limited to ground water mitigation. The current mitigation measure discussion consists of a multi-page chart which simply lists a series of proposed mitigation measure, with no elaboration or other analysis of how the operator expects to accomplish these items, or the expected effectiveness/limitations of each measure, as required by NEPA. The references to mitigation in Chapter 4 of the FSEIS and in the Response to Comments Appendix E do nothing to rehabilitate this failure, as those sections also merely reference mitigation plans

to be proposed in the future. To comply with NEPA, each mitigation measure must be detailed with specific description, supporting data, and analysis of process and effectiveness within the context of a NEPA document. As detailed in the legal citations provided here and in the DSEIS contention pleading, NEPA requires the NRC to conduct this necessary work as part of the NEPA process and not at some future time after any opportunity for public involvement has passed.

### **Contention 9: Failure to Consider Connected Actions**

The applicant's proposal to conduct ISL operations and conduct associated waste disposal activities is being considered by multiple federal agencies. As enunciated by the Board in admitting this contention, "NRC allegedly inappropriately defers to the EPA and South Dakota in determining that environmental impacts of the proposed project will be small." July 22, 2013 Order (LBP-13-09) at 51. This improper deference continues in the FSEIS, no significant new information is provided, and thus this contention is subject to the migration tenet. As detailed in the Tribe's DSEIS contention pleading, these failings and inadequacies violate 10 C.F.R. §§ 51.10, 51.70 and 51.71, and the National Environmental Policy Act and implementing regulations.

The applicant has filed applications with the Environmental Protection Agency ("EPA") for both a Class III injection well and a Class V injection well. However, the FSEIS fails to conduct any NEPA analysis of the proposal for these injection wells. Both the Class III and Class V injection wells are "connected actions" and even though EPA is the permitting agency, the injection well proposals must be analyzed in the same NEPA analysis as the full Powertech proposal. To the extent NRC Staff or Powertech may argue that the injection well plans could somehow avoid analysis as "connected actions," these injection well activities must still be fully

analyzed in the “cumulative impacts” analysis, or even just as part of the NRC’s “hard look” review – and are expressly incorporated into the contentions presented herein with respect to those issues.

Like the DSEIS, the FSEIS repeatedly relies upon EPA analyses to require appropriate mitigation measures to lessen impacts, and uses those permitting processes to simply defer analysis of impacts to EPA. For instance, in making its determination that impacts from the use of Class V underground waste injection wells is “small”, the FSEIS, like the DSEIS defers to the fact that “EPA will evaluate the suitability of the formations proposed for Class V well injection. Class V injection disposal will be allowed only when the applicant demonstrates liquid waste can be isolated safely in a deep aquifer.” FSEIS at 4-34. See also FSEIS at 4-45 (“EPA will evaluate the suitability of the formations proposed for Class V well injection.”), 4-69, 5-27, 5-33 to 34 (all relying without analysis on EPA’s UIC Class V permitting). NRC similarly continues to defer to a future EPA analysis related to the UIC Class III well permitting process and Subpart W radon controls, and to the South Dakota state processes. FSEIS at 6-6 (relying on EPA review of Class III permit as mitigation); E-71 (To ensure compliance with 40 CFR Part 61, Subpart W, the applicant may need to acquire an approval from EPA prior to commencing operations in any wellfield. NRC does not have a similar requirement for ISR facilities. However, if NRC were to grant Powertech a license based on the satisfactory compliance of NRC’s regulatory requirements, Powertech is still responsible for obtaining other federal, state, and local permits or approvals, as necessary before commencing operations.”); 4-42 (“The NPDES permit sets limits on the amount of pollutants entering ephemeral drainages that may be in hydraulic communication with alluvial aquifers at the site. The NPDES permit will also specify mitigation measures and BMPs to prevent and clean up spills. The applicant has not yet submitted an

application for an NPDES permit to SDDENR.”); 4-71 (same); 1-26 (“SDDENR would coordinate with SDGFP to mitigate the potential effects of surface impoundments on wildlife; mitigation measures discussed included the use of netting and fencing to protect wildlife and implementing protocols to assess the effects of wastewater constituents on wildlife.”).

In this way, the FSEIS simply defers analysis of the potential impacts to EPA permits under the Safe Drinking Water Act (SDWA) and Subpart W and to South Dakota permitting processes. Critically, however, neither EPA UIC or Subpart W permits nor any South Dakota state permits are subject to NEPA. See, e.g., 40 C.F.R. § 124.9(b)(6)(explicitly excusing EPA UIC permitting processes from NEPA review).

The NRC is prohibited from such blind reliance on other agencies to conduct its analysis of the baseline, potential impacts, and proposed mitigation associated with a uranium mine proposal. See 10 C.F.R. § 51.71 (“The environmental impact of the proposed action will be considered in the analysis with respect to matters covered by environmental quality standards and requirements irrespective of whether a certification or license from the appropriate authority has been obtained.”). The FSEIS cannot rely on EPA and South Dakota permitting processes to excuse NRC’s responsibilities to fully review the environmental impacts. *South Fork Band Council v. BLM*, 588 F.3d 718, 726 (9th Cir. 2009)(“A non-NEPA document -- let alone one prepared and adopted by a state government -- cannot satisfy a federal agency's obligations under NEPA.”).

Lastly on this point, the FSEIS continues to rely on Powertech’s intent to dispose of its liquid chemical waste via a Class V underground injection control permit. However, the disposal of waste, and particularly radioactive waste, below the lower-most aquifer that serves as an Underground Source of Drinking Water (USDW), as proposed here, is not a Class V activity.

Rather, such disposal is a Class I underground disposal well. Compare, 40 C.F.R. § 144.80(a) (Class I – deep injection) with 40 C.F.R. § 144.80(e) (Class V – shallow injection). Further demonstrating this fact is the State of South Dakota’s Department of Environment and Natural Resources, which classifies any well that proposes to be used for injection of either hazardous or non-hazardous liquid waste, or municipal waste, as a Class I UIC well. See, Chart located on the State of South Dakota’s website: [http://denr.sd.gov/des/gw/UIC/UIC\\_Chart.aspx](http://denr.sd.gov/des/gw/UIC/UIC_Chart.aspx). Importantly, the State of South Dakota specifically and unambiguously precludes operation or construction of any Class I UIC wells within its borders. Indeed, the applicable regulatory provision is even broader, stating in its entirety: “Class I and IV disposal wells prohibited. No injection through a well **which can be defined as** Class I or IV is allowed.” S.D. Admin. R. § 74:55:02:02 (emphasis added). This is a significant issue, which the FSEIS addresses in response to comments, but only by again deferring to EPA analysis and without review of the effectiveness of mitigation or impacts associated. See FSEIS at E-71 to 72; E-231.

Overall, the FSEIS is required to review the proposed activities and the potential impacts associated with the other federal and state permits associated with the project, including any proposal to inject waste underground through an Underground Injection Control permit – and has inadequately or failed entirely to do so.

**Contention 14 and FSEIS Contention 1: Failure to Adequately Review Impacts on Wildlife and Fails to Comply with Migratory Bird Treaty Act, and Bald and Golden Eagle.**

The FSEIS violates 10 C.F.R. §§ 51.10, 51.70, 51.71, the National Environmental Policy Act and implementing regulation failing to conduct the required “hard look” analysis of impacts of the proposed mine on species of birds and bats receiving special protection by the Bald and Golden Eagle Protection Act (“Eagle Protection Act”) (16 U.S.C. 668-668c) and Migratory Bird

Treaty Act (“MBTA”), 16 U.S.C. § 703-711. This contention also addresses the NRC staff’s failure to consult with the U.S. Fish & Wildlife Service (“U.S. FWS”) on MBTA and Eagle Protection Act listed species and their habitat during the NEPA process. Id.

Correspondence between NRC staff and U.S. FWS staff on September 9, 2013 confirms that NRC did not conduct the required consultation under the MBTA and Eagle Protection Act species. A-157 (U.S. FWS email confirming that satisfaction of ESA consultation requirements does not satisfy MBTA and Eagle Protection Act requirements). This issue was raised in previously, and ripened again with the issuance of the FSEIS that did not include U.S. FWS consultation. As stated by the Board in its July 22, 2013 Order (LBP-13-09), “[t]he Board does not expect intervenors to raise a concern regarding each portion of the process, but instead notes that, in situations such as this, intervenors need not file a contentions until all relevant parts of a process are completed.” Order at 77. In this case, the U.S. FWS letter is new information in the FSEIS that, along with the issuance of the FSEIS, confirms NRC Staff has completed its efforts with respect to the MBTA and Eagle Protection Act requirements as far as they relate to the NEPA process, making this contention both ripe and timely.

The FSEIS confirms that the NRC licensing action may effect MBTA-listed species, bald eagles, and their habitat and confirms that mitigation plans for protected species is being developed, but will not be completed until after licensing, during the pre-construction phase:

For example, as previously stated in Section E.5.22.5, the applicant (Powertech) is actively working on an avian monitoring and mitigation plan with FWS, SDDENR, and SDGFP that will be approved before construction activities begin and will be incorporated into the SDDENR large-scale mine permit. The avian monitoring and mitigation plan will include mitigation measures to protect all birds, including whooping cranes and raptors.

FSEIS E-156. Although the applicant may be working on impacts identified in the DSEIS comments that were not addressed FSEIS, NRC has taken inadequate steps to fulfill its duties under federal laws. FSEIS at E-154.

NRC has violated the “hard look” requirements of the NEPA, MBTA, and the Eagle Protection Act by delaying the consultation, collection of data, analysis, and adoption of mitigation measures until after the NEPA process is complete. The Eagle Protection Act and MBTA contain civil and criminal enforcement provisions that protect listed species on public and private lands. A violation of the MBTA or Eagle Protection Act, including NRC licensing activities that cause the unpermitted disturbance of breeding behavior or a current or previously used nest site, can result in significant fines that double for organizational violators and can include imprisonment for a first offense.

The Migratory Bird Treaty Act, MBTA provides protection to avian species (any bird or bat listed in 50 C.F.R. § 10.13) throughout the U.S., Canada, and Mexico. Under the MBTA, taking, killing, and possession of migratory birds and bats, and their eggs, young, or active nest is prohibited unless authorized by permit from the Secretary of the Interior. In conjunction with NEPA analysis, NRC must consult with U.S. FWS concerning potential impacts to migratory birds. 16 U.S.C. § 703.

Species of eagles that nest or feed in or near the project site are protected by the Bald and Golden Eagle Protection Act (“Eagle Protection Act”) (16 U.S.C. §§ 668-668c). Similarly, the Eagle Protection Act also requires action agencies to seek U.S. FWS’ expert analysis and permitting where impacts may result, including Powertech’s future activities near a previously used nest site, even if conducted during a time when eagles are not present. Here, the proposed

action may cause “take” of protected eagles by impacting known nesting habitat and disturbing normal breeding, feeding, and/or sheltering behavior. Id.

The FSEIS reveals that active bald eagle and other raptor nests are known to exist in and near the proposed project site. FSEIS at 4-147, *accord* at 3-46 (“Five confirmed, intact raptor nests and one potential nest site were observed within the proposed project area, and the applicant identified two additional nests within a 1.6-km [1-mi] radius of the study area (Powertech, 2009a)”). However, the FSEIS omits analysis or project mitigation measures informed by U.S. FWS consultation regarding the direct and cumulative impacts on normal breeding, feeding, and/or sheltering behavior of bald eagles, despite a confirmed, active nest in the project area. FSEIS at 3-46 to 3-47.

Likewise, the FSEIS contains no analysis or mitigation based on consultation with U.S. FWS concerning MTBA-listed raptor species, including “red-tailed hawk, American kestrel, and northern harrier [which] were the most commonly seen raptor species in the proposed project area and will be the primary raptor species impacted by project activities.” FSEIS at 4-149. Although Powertech “will have to abide” by federal laws and obtain various FWS permits for its activities (FSEIS at 4-96), Powertech promises do not relieve NRC of statutory duties regarding eagles and migratory birds and bats that spring from NEPA, MBTA, and the Eagle Protection Act. Further, the NRC staff who prepared the FSEIS have no apparent expertise in such matters, and are wrong to assert that these acts do not protect habitat. Id. (“these statutes do not provide for habitat protection”).

The FSEIS confirms impacts to other MTBA-listed species. See, e.g., FSEIS at 4-97 to 4-98 (“All of these birds are BLM sensitive species and protected by the MBTA.”). The text of



the FSEIS confirms that NRC staff did not seek expert consult with U.S. FWS in preparation of the SEIS:

NRC staff expect that similar potential impacts described in SEIS Section 4.6.1.1.1.1.2, including injury or mortality from vehicles and electrical lines, fragmentation, vegetation conversion, and loss of breeding habitat, for nongame and migratory birds will also potentially impact chestnut-collared longspur, dickcissel, loggerhead shrike, and blue-grey gnatcatcher.

FSEIS at 4-98. Reliance on what “NRC staff expect” cannot substitute for the expert analysis of U.S. FWS that is required by federal law. See FEIS at 4-86 - 4-92 (portion of Section 4.6.1.1.1.1.2 that addresses birds and raptors).

NRC Staff correspondence presented for the first time in the FSEIS regarding ESA consultation duties confirm that MBTA and Eagle Protection Act consultation with U.S. FWS has not taken place, even though U.S. FWS alerted NRC Staff to these consultation requirements during correspondence regarding Endangered Species Act requirements. FSEIS at A-157. In short, NRC Staff completed the NEPA process without the procedural and substantive protections afforded these species by NEPA, MBTA, and the Eagle Protection Act.

**FSEIS Contention 2: Inadequate Analysis of Direct, Indirect, and Cumulative Impacts of Disposal of Solid 11e2 Byproduct Material or the Reasonable Alternatives to Transportation and Disposal at the White Mesa Facility**

The FSEIS indicates that after the DSEIS was released for comment, Powertech, NRC staff, and other ISL facility operators have finalized their designation of the White Mesa Uranium Mill near the White Mesa Ute Community in Utah as the site for disposal of more than 300 cubic yards of 11e2 Byproduct generated annually by at the proposed Powertech Facility and other ISL facilities in the region. FSEIS at 2-53. This information was not available in the DSEIS and thus forms the basis for a new contention. The FSEIS correctly confirms that the

solid 11e2 Byproduct Materials is subject to licensing requirements of 10 CFR Part 40, Appendix A, Criterion 2. FSEIS at 2-53.

The White Mesa Mill is not licensed to receive or dispose of Powertech's solid 11e2 Byproduct Material. The draft license does not authorize Powertech to dispose of solid 11e2 Byproduct Material at White Mesa. Although comparisons of alternatives forms the heart of the NEPA process, the impacts of transporting and disposing of the solid 11e2 Byproduct Material in Utah was not compared against any other alternative disposal site. Further, neither the FSEIS nor the GEIS address the cumulative impact or alternatives to Utah licensing the White Mesa Mill as the disposal facility for the NRC-licensed ISL wastes.

The FSEIS fails to provide a meaningful review of foreseeable impacts of generating many tons of solid 11e2 Byproduct Materials by merely stating that permanent disposal will occur in conformance with applicable laws, but does not analyze any of the applicable criteria of regulations applicable to solid 11e2 Byproduct Material disposal. FSEIS at 2-53. This lack of NEPA analysis violates 10 C.F.R. §§ 51.10, 51.70 and 51.71, and the National Environmental Policy Act and implementing regulations.

A properly conducted NEPA process must ensure that the impacts and alternatives of creation, storage, and disposal of mill tailings – aka 11e2 Byproduct Material - are fully analyzed and addressed. Permanent disposal of solid 11e2 Byproduct material is a central feature of the modern Uranium Mill Tailings Radiation Control Act licensing regime under which Powertech seeks to operate its ISL facility. 10 C.F.R. Part 40, Appendix A. Nowhere do NRC regulations or NEPA allow NRC staff to merely assert that solid 11e2 Byproduct Materials will be handled in accordance with applicable law without further analysis. The opposite is required by federal law: now that the FSEIS, for the first time, firmly identifies the White Mesa Mill as to repository

for its waste, the FSEIS must analyze all impacts and alternatives involved with disposing of wastes created at an ISL facility, including the permanent disposal of solid 11e2 Byproduct Materials generated at the facility. The FSEIS reveals that NRC staff proposes to issue a license permitting Powertech to create and store solid 11e2 Byproduct Materials (aka tailings or UMTRCA wastes) on site for an indefinite period, with no disposal license, and no analysis of the impacts or alternatives to shipment and disposal at White Mesa.

This contention is a combination contention of omission and inadequate NEPA analysis, and thus does not require expert support. The relevant regulations applicable to new uranium processing operations state in plain language:

***Every applicant for a license to possess and use source material in conjunction with uranium or thorium milling, or byproduct material at sites formerly associated with such milling, is required by the provisions of § 40.31(h) to include in a license application proposed specifications relating to milling operations and the disposition of tailings or wastes resulting from such milling activities.***

40 C.F.R. Part 40 Appendix A (emphasis added). This regulation implements the UMTRCA amendments to the Atomic Energy Act, which require NRC to ensure that the specific proposal for disposition of tailings and wastes involved in milling is subjected to license scrutiny and approval in initial license application that allows creation of the wastes in the first instance. However, the FSEIS now identifies a plan to dispose of the 11(e)2 Byproduct that will be produced by Powertech and other ISL facilities. The FSEIS confirms that White Mesa lacks a license approval from Utah to accept and dispose of the wastes created by the draft license or other NRC-licensed ISL facilities in the region. FSEIS at 3-116. However, the FSEIS does not analyze the impacts such disposition would entail, does not compare those impacts to other reasonable disposal alternatives, and does not analyze whether disposal at White Mesa facility

can be accomplished in accordance with 40 C.F.R. Part 40 Appendix A or the corresponding Utah Agreement State provisions.

The FEIS contains is no analysis of whether or not Utah law or the Mill owner's (Energy Fuels) license would allow the interstate transport and disposal of Powertech's 11(e)2 byproduct given the history of leaks and violations at the White Mesa facility. Interstate transportation impacts across the Intermountain West are recognized, but are dismissed without specific analysis asserted on the naked assertion that impacts of shipping yellowcake to Tennessee in sealed containers poses the same risks as shipping solid 11e2 Byproduct Materials across the Intermountain West, for disposal at White Mesa. FSEIS at 4-22. The FSEIS presents no information on the type of containers that would be required for the shipments to White Mesa and no corresponding information on the moisture content of the solid 11e2 Byproduct Materials or the anticipated decommissioning wastes. FSEIS at 4-22.

Although NEPA requires comparison across reasonable alternatives, the FSEIS identifies no other site that is currently licensed to dispose of 11e2 Byproduct Material. The reader of the FSEIS is left to conclude that no other licensed facility exists in the United States that could accept the Powertech 11e2 Byproduct Material. Whether or not this is the case, White Mesa is not currently licensed to accept Powertech wastes, or wastes from other facilities identified in the GEIS.

The failure to address and license the disposal of solid 11e2 Byproduct Material is not a technical deficiency that can be ignored or pushed off until a later time. UMTRCA requires disposal of solid 11e2 Byproduct Material is subject to licensing, from the time the facility is first issued a license to create these regulated wastes to such time as final disposal and closure

takes place. 10 C.F.R. Part 40, Appendix A. Both the draft license and the FSEIS ignore this key feature of the post-UMTRCA licensing requirements.

Further, the agency has a duty to provide specific information, analysis, and alternatives regarding on this major feature of an ISL license in order to allow the Tribe, the Ute Mountain Ute Tribe, the public, NRC, and other government decisionmakers to conduct a meaningful analysis of the full scope of environmental impacts involved with Powertech's license application.

The policies set forth by NEPA prevent the NRC staff from segmenting the disposal issues from the inquiry into whether applicant will be allowed to create solid 11e2 Byproduct Material in the first instance. *In re Pac. Gas & Elec. Co.*, 67 N.R.C. 1, 13 (N.R.C. Jan. 15, 2008)(“There is no genuine dispute that NEPA and AEA legal requirements are not the same [ . . . ] and NEPA requirements must be satisfied.”). Failure to analyze the permanent disposal facility in the FSEIS avoids examination of all direct, indirect, and cumulative impacts of the proposal and alternative disposal options, as required by NEPA. *Custer County Action Ass’n v. Garvey*, 256 F.3d 1024, 1035 (10th Cir. 2001)(Where a “federal action” exists, the NEPA process must “analyze not only the direct impacts of a proposed action, but also the indirect and cumulative impacts of ‘past, present, and reasonable foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.’”).

Where “federal action” triggers NEPA -- here, the applicant's proposal to conduct ISL mining activities that create solid 11e2 Byproduct Materials -- an agency cannot define “the project's purpose in terms so unreasonably narrow as to make [NEPA] ‘a foreordained formality.’” *City of Bridgeton v. FAA*, 212 F.3d 448, 458 (8th Cir. 2000)(citations omitted). Here, NEPA mandates that the NRC consider the ISL mining activities which create tailings at

the same time it considers the specific method, transportation requirements, and site for the solid 11e2 Byproduct Material disposal. This mandate of federal law attaches at such time as the need for disposal of solid 11e2 Byproduct material is reasonably foreseeable and is already confirmed in the FSEIS as a necessary component of the licensed activity. FSEIS at 2-53. Ongoing NRC problems with delaying waste disposal decisions until after wastes are created should confirm that NEPA analysis and UMTRCA licensing cannot reasonably wait until a later time to be determined after the waste-generated activity is licensed. See *New York v. NRC*, 681 F.3d 471, 483 (D.C. Cir. 2012)(rejecting NRC attempts to avoid NEPA analysis of permanent disposal options).

The NRC regulations and CEQ regulations that apply to each agency's implementation of NEPA state that the requisite site-specific environmental impact statement for disposal activities should be available at all stages of the decision-making. Id. Upon selecting the White Mesa Mill as the proposed destination for the waste from this proposal and the region, as has been done at the FSEIS stage, the NRC Staff must follow through with the necessary analysis. The FSEIS lacks site-specific analysis of disposal alternatives, including, but not limited to, access, geology, hydrogeology, quantitative impacts upon water supplies for domestic use, livestock, agriculture, non-domesticated plants and animals, and qualitative on-going and subsequent impacts to water supplies of all the same due to releases of chemicals into the surface, groundwater and aquifers flowing through the licensed disposal site.

Failure of the FSEIS to analyze the site-specific impacts and alternatives sites, along with cumulative impacts of shipping other regional wastes not analyzed in the GEIS, means that the final decision cannot comply with NEPA. At a minimum, without a completed, site-specific environmental impact statement as a guide, NRC staff, the public, other governmental entities,

and the Tribe have no basis to identify and access alternatives to the license application and find ways to avoid or mitigate possible adverse environmental impacts of the licensed activity.

These NEPA requirements are consistent with the requirement in Subpart 40, Appendix A's *Criteria One*, which requires that the applicant and the NRC examine "alternative tailings disposal sites" when considering a milling application. See *Natural Resources Defense Council v. Hodel*, 865 F.2d 288, 299 (D.C. Cir. 1988)(citing *Kleppe v. Sierra Club*, 427 U.S. 390, 410 (1976)(formulation of alternatives during the NEPA disclosure and study process is at the heart of the NEPA-mandated procedures).

**FSEIS Contention 3: Failure to Provide NEPA Comment Opportunity for Impacts Associated with Air Emissions**

The DSEIS violates 10 C.F.R. §§ 51.10, 51.70, 51.71, the National Environmental Policy Act and implementing regulations, by failing to conduct the required "hard look" analysis at impacts of the proposed mine associated with air emissions and liquid waste disposal.

Although significant new information was provided in the FSEIS, no opportunity was provided for the Tribe or the public to comment on the data and analysis provided for the first time in the FSEIS. FSEIS at E-164 to E-167 (summarizing new air information and analysis in the FSEIS). This is a contention of omission and of inadequate NEPA analysis, where a main purpose of NEPA - allowing public involvement and comment - was denied by delaying meaningful analysis of air emissions until the FSEIS. This NEPA analysis used by NRC denied the public and NRC decisionmakers the benefit of comments of other agencies with jurisdiction, control, and expertise on air emissions, including the Environmental Protection Agency and the National Park Service.

NEPA “prevent[s] or eliminate[s] damage to the environment and biosphere by focusing government and public attention on the environmental effects of proposed agency action.” *Marsh v. Oregon Natural Resources Council*, 490 U.S. 360, 371 (1989). NEPA requires the federal agency to ensure “that the agency will inform the public that it has indeed considered environmental concerns in its decision making process.” *Baltimore Gas and Electric Company v. NRDC*, 462 U.S. 87, 97 (1983). Federal courts have ruled that in the mining context specifically, “[w]e must also ensure that the agency took a hard look at the environmental consequences of its action.” *Great Basin Mine Watch v. Hankins*, 456 F.3d 955, 962 (9th Cir. 2006).

NEPA’s analysis and disclosure goals are two-fold: (1) to insure that the agency has carefully and fully contemplated the environmental effects of its action, and (2) “to insure that the public has sufficient information to challenge the agency.” *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989). By focusing the agency’s attention on the environmental consequences of its proposed action, NEPA “ensures that important effects will not be overlooked or underestimated only to be discovered after resources have been committed or the die otherwise cast.” *Robertson*, 490 U.S. at 349. “NEPA procedures must ensure that environmental information is available to public officials and citizens before decisions are made and before actions are taken.” 40 C.F.R. § 1500.1(b). The NEPA document offered for comment must consider all direct, indirect, and cumulative environmental impacts of the proposed action. 40 C.F.R. §§ 1502.16; 1508.8; 1508.25(c). NRC regulations at 10 C.F.R. §§ 51.10, 51.70, and 51.71 carry forward and supplement these requirements.

In this case, with respect to air emissions, the FSEIS confirms that the DSEIS lacked accurate, current, and confirmed information on air emissions and their local and regional impacts. FSEIS at E-164 - 165 (summarizing new information and analysis in the FSEIS).



Although not identified or analyzed in the DSEIS, the FSEIS confirms impacts to people, plants, animals, water bodies, soil, National Parks, etc. Although significant new emissions information was provided in the FSEIS, no opportunity was provided for the Tribe or the public to comment on the data and analysis provided for the first time in the FSEIS. This is a contention of omission and NEPA inadequacy, where a main purpose of NEPA – allowing public involvement and comment by other agencies - was denied by delaying the air analysis until the FSEIS. That portion of the emissions permitting is being done by another agency does not relieve NRC of the NEPA duty to analyze the direct, indirect, and cumulative impacts of the project in a NEPA document that is subjected to comment by the public and other agencies. 10 C.F.R. § 51.70(a) (“To the fullest extent practicable, environmental impact statements will be prepared concurrently or integrated with environmental impact analyses and related surveys and studies required by other Federal law.”).

The proper course of action is to invalidate the FSEIS and direct NRC Staff to release a supplemental DSEIS with accurate air emission information and modeling data that allows comment by the Tribe, the public, and other state and federal agencies. Where the DSEIS was released without the necessary information and analysis required for meaningful public comment, the FSEIS and NEPA process are invalid and cannot support the proposed licensing decision.

### **III. CONCLUSION**

For the foregoing reasons, the Tribe has demonstrated that its FSEIS contentions are admissible, including under the migration tenet and as contentions of both omission and adequacy. Therefore, the Tribe is entitled to a hearing on each of these contentions.

Respectfully Submitted,

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Dated at Lyons, Colorado  
this 17<sup>th</sup> day of March, 2014

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
POWERTECH (USA) INC.,	)	Docket No. 40-9075-MLA
	)	ASLBP No. 10-898-02-MLA-BD01
(Dewey-Burdock In Situ Uranium Recovery	)	
Facility)	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing Statement of Contentions in the captioned proceeding were served via the Electronic Information Exchange (“EIE”) on the 17<sup>th</sup> day of March 2014, and via email to those parties for which the Board has approved service via email, which to the best of my knowledge resulted in transmittal of same to those on the EIE Service List for the captioned proceeding.

/s/ signed electronically by \_\_\_\_\_

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**SECOND SUPPLEMENTAL DECLARATION OF DR. ROBERT E. MORAN**

I, Dr. Robert E. Moran, do hereby swear that the following is true to the best of my knowledge:

**1. Professional Qualifications and Introduction**

**Robert E. Moran, Ph.D.**  
Michael-Moran Assoc., LLC  
Water Quality/Hydrogeology/Geochemistry  
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I am a hydrogeologist and geochemist with more than 42 years of domestic and international experience in conducting and managing water quality, geochemical and hydrogeologic work for private investors, industrial clients, tribal and citizens groups, NGO's, law firms, and governmental agencies at all levels. Much of his technical expertise involves the quality and geochemistry of natural and contaminated waters and sediments as related to mining, nuclear fuel cycle sites, industrial development, geothermal resources, hazardous wastes, and water supply development. In addition, I have significant experience in the application of remote sensing to natural resource issues, development of resource policy, and litigation support. I have often taught courses to technical and general audiences, and has given expert testimony on numerous occasions. Countries worked in include: Australia, Greece, Bulgaria, Mali, Senegal, Guinea, Gambia, Ghana, South Africa, Iraqi Kurdistan, Oman, Pakistan, Kazakhstan, Kyrgyzstan, Mongolia, Romania, Russia (Buryatia), Papua New Guinea, Argentina, Bolivia, Chile, Colombia, Guatemala, Honduras, Mexico, Peru, El Salvador, Belgium, France, Canada, Great Britain, United States. My curricula vitae is attached.

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#### NRC Responses to Comments do not Address or Change Previous Opinions.

3. The Final SEIS contains almost no technically-substantive responses to my past comments (attached). They frequently avoid discussing technical details by stating that the approach taken in this SEIS complies with appropriate regulations---disregarding the real-world experiences from previously-operated sites. Furthermore, the Final SEIS contains no new data, either from Powertech sources, but more importantly from any independent sources. The conclusions presented in this Final SEIS are based almost entirely on data collected by Powertech or their consultants, and on summaries and interpretations presented by Powertech to the NRC. The responses provided in the FSEIS do not substantively change the assertions or conclusions put forward in my previous declarations.

#### Water Resources and Related Impacts.

4. These opinions focus predominantly on the water resources and related impacts within the proposed Dewey-Burdock (D-B) area. The D-B waters are natural resources presently used collectively by numerous parties (ranchers, municipalities, tribal groups, fish and wildlife, mineral and oil and gas developers, etc.). The actions proposed in the SEIS will result in negative impacts on water and additional costs for the general public that are clearly not renewable. These include:
  - allowing Powertech to use tremendous volumes of water, which will increase competition for this water with other users;
  - removal of ground waters from public use (exempted aquifer);
  - contaminate and degrade the quality of much of this water;
  - divert much of the water to deep aquifers where it will be unusable;
  - evaporate much local ground water into the air where it will not be usable locally;
  - these short-term actions are likely to render these ground waters unusable for future, long-term uses, many of which may not be anticipated until many years in the future.
5. The Final SEIS must, but does not, realistically anticipate what will be the true *long-term* uses of these waters---especially when many generations must be

considered. Thus, *truly conservative assumptions* should be employed—which is not the case in this Final SEIS.

#### SEIS Water-related Sections Predominantly Based on Information from Biased Parties.

6. It is my experience that the agency preparing the NEPA document is responsible for ensuring accurate data, , but almost all of the data and fundamental, technical opinions in the SEIS were taken directly from reports generated by the applicant or their consultants. Even where the applicant has presented controversial flow pathway interpretations (for example, that the D-B site contains no faults, fractures, collapse structures), the NRC has repeated these interpretations in the SEIS as accepted conclusions. The presence of such geologic structures has been described in other historical documents (i.e. TVA, 1979; Butz, et. al. 1980), yet the NRC chose not to address these well-respected scientific opinions in the SEIS.

#### The SEIS quotes *generic* sections from the GEIS, but the NRC staff then fail to provide independent interpretations of the site-specific (D-B) data and information.

7. For example, on SEIS p.4-60: “Consumptive water use during ISR operations could impact those who use local water from the production aquifer outside the exempted zone. This potential impact will lower water levels in nearby wells and reduce the yield of these wells. In addition, if the production zone is hydraulically connected to other aquifers above and/or below the production zone, consumptive use may impact the water levels in these overlying and underlying aquifers and reduce the yield in any nearby wells withdrawing water from these aquifers. (NRC, 2009a)”.
8. Such generic statements are made throughout the SEIS, yet the NRC then proceeds to use the data and assumptions from Powertech to explain why such impacts are not likely to occur. This is a disingenuous use of GEIS language to imply future site-specific safety and minimal impacts at D-B. In my experience, independent verification of an applicant’s site-specific data and analysis is conducted by the reviewing agency.

#### Many Unknowns.

9. The SEIS fails to provide verifiable, detailed information on quantities of water available in aquifers to be impacted, or on the interactions (hydraulic and chemical) between these aquifers when pumped long-term. The NRC has allowed the applicant to delay collection of such detailed data until after permit approval. As such, there is no reason to accept Powertech’s optimistic claims about the volumes of water to be used, or the impacts to be generated. They simply have not performed adequate testing to provide detailed answers to these questions.

10. Additional fundamental water “unknowns” that are not answered in the SEIS, but which are delayed until after permit approval include:

**-Pre-mining “Baseline”** will be determined after permit approval. [SEIS, V.1, p. 2-37 (131). Throughout the SEIS it is confusingly and inconsistently called “background”.

**- Aquifer clean-up criteria** will not be determined until after permit approval and could change (be weakened) depending on the applicant’s ability to remediate the aquifer(s). [SEIS, V.1, p. 2-35 & 2-37(129-131)].

**-Detailed hydrogeologic characteristic** of aquifers and inter-beds, surface water-ground / water interactions, including long-term pump tests; to be performed and determined after permit approval (SEIS Section 2.1.1.1.2.3).

**-Long-term water level declines** during and after long-term pumping and operation. For example, what will be long-term water level declines in the Madison aquifer at Edgemont where Madison wells supply municipal water? No detailed testing data have been supplied in the SEIS. To be determined after permit approval.

**-Specific lithologic details** of site sediments. These details to be determined after permit approval (SEIS Section 2.1.1.1.2.3).

**-Detailed Operating Procedures**, such as whether the applicant will mine in partially-saturated, eastern zones of the Chilson; to be determined after receipt of permits.

**-Detailed Water Rights** / hydrogeologic studies necessary to determine that adequate **unappropriated** ground waters exist in the Madison or Inyan Kara. Such detailed studies have been conducted and **relevant South Dakota Water Rights permits have not been received**. To be done after receipt of NRC permits.

**-Methods of liquid waste disposal** to be employed. Will deep-well injection or land application methods, or some combination be employed, and what are the technical details. To be determined after permit approval.

**-Deep-well, underground injection (UIC) permits**. These issued by US EPA, but EPA has not commented on these issues or awarded the permits. To be determined after NRC permit approval. In order for EPA to reliably evaluate the UIC options, they must have access to the detailed hydrogeologic data and information mentioned above, but which will not be available until after NRC permit award.

**-Aquifer Exemption (Inyan Kara)**. Must be approved by US EPA, but will not be done before NRC permits are issued.

**-Detailed chemical compositions** of pregnant leach solutions, liquid waste solutions (to be disposed by deep-well injection or land application), solid wastes accumulating in land application facilities, etc. are unknown and not reported in the SEIS. Powertech has publicly-stated that they have completed at least one Feasibility Study, so all such detailed information must already be known.

**-Financial Assurance details and amounts**. All such details are unknown and should be public before the NRC license is approved. Financial Assurance calculations are presently handled by three separate federal and state agencies.

Since NRC predicts that water-related impacts will be SMALL, then the Financial Assurance dollar amounts are likely to be relatively SMALL. Thus, there will be little protection for the taxpayers in the event of unforeseen impacts or unexpected project closure.

**-Detailed Water-related Impacts.** Because *detailed*, site-specific geologic, hydrogeologic, and geochemical data are not presently available, it has not been possible to reliably evaluate future water-related impacts (i.e. specific volumes of water available from the Inyan Kara aquifers). Thus, the estimates of impacts [SMALL, MODERATE, LARGE] presented by the NRC in the SEIS are based on inadequate data. Clearly such impacts will only be determined after permit approval.

**-Historical Data on Aquifer Restoration at Other ISL Sites.** The NRC, both in the SEIS and in their responses to public comments, repeatedly cites the results they have compiled from three NRC-licensed ISL facilities (COGEMA's Irigary/Christensen Ranch facility, PRI's Smith Ranch/Highland Uranium Project facility, and Crow Butte Resources' Crow Butte facility) (NRC, 2009b). However, it is misleading to selectively cite the results from only three ISL operations when data from at least 30+ such ISL operations should have been compiled for comparison. All such data / information I have reviewed—in addition to the three cited by NRC-- also indicate an inability to return the ground water quality to preoperational baseline. While the NRC did not directly regulate many of these operations, surely the NRC could have obtained these data if they truly wanted to evaluate the success or failure of aquifer water quality restoration over numerous decades. As such, it is clear that no one has conducted a reliable, representative study to evaluate long-term effectiveness of aquifer restoration (of preoperational water quality) at the vast majority of operating and closed ISL sites—at least not one that is publicly-available.

11. Clearly, the post-restoration water quality within the exempted aquifers, for many chemical constituents at the three sites cited by the NRC, was not returned to preoperational conditions / concentrations. Thus, these exempted waters are lost to the public for numerous future uses without some form of additional, costly treatment.

D-B Uranium ore zones are NOT hydraulically-isolated from other geologic units, other aquifers, or zones outside the project area.

12. The NRC has disregarded the conclusions of numerous hydrogeologic experts (both Powertech-funded and independent experts) in stating the following (Final SEIS, Exec. Summary, p. xxxvi): "Alluvial aquifers are separated from production zone and surrounding aquifers by thick aquitards (confining units) and, therefore, are not hydraulically connected to production zone and surrounding aquifers."
13. This incorrect and overly-simplistic statement clearly contradicts expert opinions which state or infer that, long-term, all of the relevant D-B water-bearing zones are hydrogeologically-interconnected (i.e. Keene 1973; Gott, et. al., 1974; TVA,

1979; Butz, et. al., 1980; Smith, 2005; Boggs & Jenkins, 1980, Boggs, 1983, Bredehoeft et. al., 1983; Knight Piesold, 2008.

14. After reviewing the relevant data, reports and various combinations of satellite imagery, I also conclude that these relevant D-B water-bearing zones are hydrogeologically-interconnected, especially when subjected to long-term pumping.
15. Powertech's management and ground water experts have made inconsistent statements about whether the D-B confining units are leaky or not, varying between individual reports, deposition opinions and public hearing testimony. In this Final SEIS, Powertech (through the NRC authors) states that all of the relevant pumping tests indicated that the D-B sandstones behaved as leaky-confined aquifers (SEIS, p. 3-34). The consultants who conducted these pumping tests reported the same conclusions. Nevertheless, on SEIS, p. 3-36, it states:  
  

"Based on results of the numerical model, the applicant concluded that vertical leakage through the Fuson Shale is caused by *improperly installed wells or improperly abandoned boreholes.*"
16. These inconsistencies make clear that Powertech has failed to define the detailed, long-term hydrogeologic characteristics and behavior of the relevant D-B aquifers and adjacent sediments.
17. It is not unusual for the inter-fingering sands, shales, etc. of sedimentary uranium deposits to be hydrogeologically interconnected, when pumped, long-term. In fact, it is the norm.

#### Potential Groundwater-Flow Pathways at D-B.

18. D-B sediments are hydrogeologically-interconnected by several potential pathways, which include:
  - inter-fingering sediments;
  - fractures and faults;
  - breccia pipes and / or collapse structures;
  - 4000 to 6000 exploration boreholes (Bush, 2010, Update Technical Report, prepared for Powertech, states approximately 6000 drill holes are present at D-B);
  - oil test wells.
19. **Drilling of hundreds and thousands of wells since the 1880s has caused drop in artesian pressure of the various sedimentary aquifers in the southern Black Hills areas** (Keene, 1968; Darton, 1909; Davis, Dyer & Powell, 1961). Therefore, many wells and boreholes that formerly flowed to the land surface no longer do so, but still contained water under pressure. Thus, contrary to the NRC and applicant comments in the SEIS, upward flowing waters in these



wells and boreholes can interconnect and mix between the various vertical water-bearing zones without showing any expression at the land surface.

[Keene (1968) p.24: Re. Fall River Fm: “ Interview reports indicate that the yields from the Fall River sands have dropped within recent years. Part of this problem is probably due to incrustation.....However, some of this loss of head may result from the recent uranium exploration program. The author personally saw uranium test holes that were uncased, unplugged, and flowing at the surface. This practice is not only wasteful of water, but will ultimately lead to loss of pressure in the aquifer and possible contamination of the Fall River and Lakota aquifers.”]

20. Powertech has repeatedly claimed, and apparently the NRC accepts, that no significant geologic structures are present at the D-B site, structures which could allow migration of water vertically or horizontally. Again, this claim is contradicted by numerous published reports, such as: Braddock, 1963; Butz, et. al., 1980; Gott, et. al., 1974; Smith, 2005; TVA, 1979. In addition, review of several forms of D-B-area satellite imagery by myself and senior remote-sensing experts at Front Range Natural Resources, Ft. Collins, CO, shows clearly that this area is intersected by numerous faults and fractures. The imagery also shows evidence of circular geologic features at the land surface, indicating the presence of collapse structures.

#### Breccia Pipes / Solution or Collapse Features.

21. Numerous authors state that breccia pipes / collapse structures allow upward flow of ground waters from the Paleozoic formations to the Inyan Kara rocks at the southern margins of the Black Hills [Bowles, 1968; Braddock, 1963; Keene, 1973; Gott, et. al., 1974; TVA, 1979; Butz, et. al., 1980. Carter, et. al., 2003 state such recharge to the Inyan Kara may occur via such pathways.]
22. However, several Powertech reports and the Final SEIS argue that there is no evidence that breccia pipes or related collapse structures exist within the D-B property [i.e. NRC, 2014(Final SEIS); NRC, 2013 (March), Safety Evaluation Report, p.40; Clarification of Breccia Pipes, LSMPA, Append. 3.2-C. [Sept. 2012].
23. In Appendix 3.2-C of the Large Scale Mine Permit Application [Powertech 2012 (Sept.)] Powertech presents a map, Plate 2, which shows a red line that supposedly represents the area in which evidence of breccia pipes and collapse structures have been reported. This Plate was modified by Powertech from an original map in Gott, et. al., 1974, [U.S.G.S. Professional Paper 763], Plate 4. However, Powertech has misrepresented the data on the original U.S.G.S. map, neglecting to include several locations within the outcrop areas of the Inyan Kara rocks that were originally described as being “topographic depressions” or “structures of possible solution origin”. Clearly the original U.S.G.S. authors mapped these areas within the Inyan Kara rocks—near the D-B project-- as probable locations of solution features, such as breccia pipes.

24. Similar circular, topographic features can be seen on modern, satellite imagery of the D-B site and surrounding areas. It is my opinion and that of senior remote-sensing experts at Front Range Natural Resources, Ft. Collins, CO, that these features likely represent solution / collapse structures.
25. Neither Powertech nor the NRC have presented any detailed interpretations of the D-B structural geology using high-quality satellite imagery. Until such studies have been performed, it is reasonable to assume that these circular features are potential pathways for upward migration of ground waters into the Inyan Kara sediments.
26. Instead of meaningfully addressing my opinions, or the cited literature confirming the complex hydrology of the project area, this SEIS continues to allow Powertech to delay conducting detailed hydrogeologic testing and determination of detailed aquifer cleanup standards until after the NRC has given project approval. Detailed hydrogeologic and water quality studies must be conducted **prior to** issuance of NRC / State permits. Otherwise, it is not possible for regulators or the public to reliably evaluate potential impacts and consequences to natural resources and the environment.

The applicant will use and contaminate tremendous quantities of ground water.

27. Because differing water use volumes are presented in different sections of the SEIS, and because of the numerous operational uncertainties, reliable estimates of D-B water use volumes are unclear. The SEIS confirms that there are known volumes of water the applicant has applied for from the State of South Dakota [SEIS, p. 4-54 & 4-55 (360-361)]:
28. Powertech has applied for water from the Inyan Kara: 274.2 ac-ft of water **annually** at a rate of 8500 gpm = 12,240,000 gpd (gallons per day) = **4.5 Billion gallons per year = 89.4 Billion gallons over 20 years.**  
  
Powertech has applied for water from the Madison: 888.8 ac-ft water annually at a maximum rate of 551 gpm = 793,440 gpd = 289,605,600 gallons per year **(289.6 Million gallons per year) = 5.8 Billion gallons over 20 years.**  
  
If deep disposal wells prove feasible, up to about 160 gpm will be required from the Madison. At 160 gpm = 84 Million gallons per year  
20 years = 1.7 Billion gallons over 20 years.
29. Referring to the Inyan Kara waters, the SEIS states that consumptive use will be relatively small as only 2 percent of the water will be disposed of as liquid waste (assuming UIC option is accepted). However, this estimate clearly neglects the fact that much of the water from either aquifer will have been contaminated, and that the water undergoing land application will be lost via evaporation /

evapotranspiration. In either case, this water is no longer available for present or future uses within the exempted aquifer zone. Clearly, the SEIS under-estimates the volumes of water that are lost or contaminated through these processes.

30. Because disclosure and analysis of detailed hydrogeologic evaluations have been delayed until after NRC permit approval, it seems untenable to state that approval of the application “will not result in average annual withdrawals from the Inyan Kara aquifer that exceed the average annual recharge to the aquifer.” Likewise, using such limited testing data and modeling results, any estimates of long-term water level drawdown in either the Madison or Inyan Kara are semi-quantitative, at best.

#### No Adequate, Detailed Water Balance Presented in SEIS.

31. In order to evaluate the adequacy of mine water-related data and water management practices, it is standard practice for EISs and similar mine environmental reports to include a detailed water balance. Such a balance includes measured data for all water inputs and outputs related to all mine operations and all sources of water that might influence these operations. Essentially any detailed ground water textbook describes the workings of such water balances (e.g. Freeze & Cherry, 1979) and ICMM (2012) and Golder Assoc. (2011) represent two industry-sponsored studies that describe how water balances should be applied at mine operations.
32. On page 2-36 the SEIS (see Fig. 2.1-14) contains what the authors claim is a water balance, but it clearly is not. In fact, it is actually labeled as “Typical Project-Wide Flow Rates”. This is not a water balance for the D-B site or D-B operations. It lacks basic components of a water balance, including detailed, measured data for volumes of water entering the system and losses (e.g. volumes of ground water available in the various aquifers, evaporation from land-application facilities, volumes under-going UIC injection, etc.), and *fails to calculate an actual balance*. Clearly a reliable water balance was not prepared and moreover, could not be prepared until the detailed testing has been completed.
33. Apparently this misleading figure was added to the SEIS because of past criticisms of the lack of water balance in the Draft SEIS. However, NRC has not cured the deficiency by including a flow rate figure, which lacks the basic components of a water balance.

#### Tens of Thousands of Pages.

34. As of the end of 2013, one of the South Dakota law firms representing various citizen’s groups against Powertech stated they had already received roughly 70,000 pages of documents related to D-B issues. The two volumes of the Final SEIS add another 1310 pages. **Nevertheless, the Final SEIS authored by**

**Powertech and the NRC still fails to provide some of the most basic information necessary to answer fundamental questions relating to the D-B water resources and possible impacts to these resources.**

35. The original Draft Environmental Statement for the Edgemont Uranium Mine, prepared by the Tennessee Valley Authority (TVA, 1979) was only 208 pages in total.

#### Short-term versus Long-term Impacts.

36. The SEIS fails to consider true, long-term impacts from either the proposed D-B operations or regional CUMULATIVE impacts. On pg. 5-28 (596) of the SEIS it states: "The timeframe for the analysis is 2009 to 2030 (see Section 5.1.2 for the estimated operating life of the facility)." Clearly the SEIS fails to consider long-term impacts that are likely to occur, such as changes and increases in water demand.

#### Past Uranium Mining and Other Contamination.

37. The D-B region has been impacted by past mining and related activities, which were permitted by the AEC / NRC, and which have resulted in negative impacts to the local water resources and environment. Activities at the Black Hills Ordinance Depot (operational from 1942 through 1967) have also impacted waters in this region. While limited remediation of surface facilities at portions of these two areas has occurred, no remediation of the historic water contamination has occurred at either site.

#### Inadequate Baseline Concept and Baseline Data.

38. Throughout the Final SEIS, the NRC fails to consider that past uranium exploration and mining activities have degraded the quality of much of the D-B-area ground and surface waters. The SEIS presents no baseline water quality data from prior to such activities, or as a minimum, from samples collected in the early periods of these mining activities. Instead, the NRC assumes that the degraded water quality represents "baseline", against which all proposed activities are to be judged. This regulatory approach is an indirect path towards approving increased degradation of the original D-B area water quality.

#### Fundamental Hydrogeologic Information Lacking.

39. In addition to using a "degraded" concept of baseline water quality, the NRC has failed to require Powertech to provide *detailed water-related* data and information **prior to approval** of this Final SEIS. Such detailed information is necessary to develop reliable conclusions about future impacts, and includes publication of the following categories of information:

- detailed hydrogeologic testing, including long-term aquifer testing, coupled with simultaneous water-quality sampling;
- detailed* chemical compositions and volumes of all solid and liquid wastes and operating fluids, such as pregnant lixiviant solutions;
- specific aquifer restoration “clean-up standards / criteria (including ACLs—see Append. B);
- risk assessment studies of chemical constituents that will require an ACL;
- final selection of actual waste disposal methods to be employed;
- EPA aquifer exemption;
- detailed analyses and data relating to the specific Underground Injection Control (UIC) Well studies required by the US EPA. EPA approval of the UIC well permits should precede approval of the NRC license.
- specific details concerning the Financial Assurance measures that will be required of Powertech if the NRC permit is approved.

40. The Final SEIS states repeatedly, that the NRC will require Powertech to collect such detailed data / information **after** NRC license approval. Such information is needed to reliably evaluate risks, impacts, costs / benefits, etc. In my opinion, the delayed production of information until after licensing prevents disclosure and analysis of the environmental impacts, alternatives, and mitigation measures involved with the D-B project.

#### Price of Water.

41. The SEIS makes no mention of the price that the applicant will pay for the water used in the sum total of all operations, either consumptively or otherwise. Because all other users must pay some price for the water they use, the SEIS should include a table of comparative unit costs paid by various users (e.g. domestic, municipal, agricultural, industrial, etc.). Likewise, no price for water seems to have been included in the cost-benefit analyses presented in the SEIS, even for situations where water quality has been degraded.

#### Data all provided by the applicant.

42. Almost none of the relevant Application data were collected by financially-independent parties. Preparation of most of the documents was directed and paid for by the applicant. The “independent” federal agency with the most, long-term hydrogeologic experience in this region, the Rapid City USGS staff, have not been included as cooperating agencies in the preparation of the SEIS.
43. Some of the recent documents are largely authored by the applicant, not their consultants. In my experience, this is a signal of significant conflict of interest and the possibility that the consultants were unwilling and unable to give the applicant the desired answer. Many of the significant conclusions disregard unfavorable details and lack the analytical methods and rigor used by professional hydrogeologists and other water experts.

### Historic ISL Water Data from U.S. Operations.

44. Review of actual, detailed, historical data from operating and closed ISL sites is the best method for anticipating future problems and impacts. Such actual long-term, data provide much more reliable information on future impacts than do the typical, overly-optimistic computer simulations often presented in EISs. Some of these sites have operated since at least the early 1970s. Thus, considerable information / data must exist for all these sites. Despite the fact that the NRC has had a role in permitting such ISL operations for more than 40 years, no publicly-available, *detailed database* on aquifer restoration water quality (and quantity) data has been compiled, summarizing data from all, or the majority of such ISL sites. Some limited data summaries have been released [i.e. the present GEIS (US NRC, 2014); US EPA, 2011; Davis & Curtis, 2007; Hall, 2009; Darling, 2008; Sass, 2011]. Dr. Susan Hall, U.S.G.S., Lakewood, CO stated (Feb. 2014) that she expects to release a summary of the publicly-available ISL water quality data (pre-and post-remediation) sometime later in 2014. She also stated that long-term, historic ISL data are very limited.
45. Most importantly, the limited aquifer restoration data that are available provide ample evidence to show that the leached aquifers at most, if not all ISL operations, have never truly been restored to their pre-operational, baseline water quality.

**Otton, J.K., & S. Hall, 2009, In-situ recovery uranium mining in the United States: Overview of production and remediation issues.** IAEA-CN-175/87  
[www-pub.iaea.org/mtcd/meetings/PDFplus/2009/.../08\\_56\\_Otton\\_USA.pdf](http://www-pub.iaea.org/mtcd/meetings/PDFplus/2009/.../08_56_Otton_USA.pdf)

“To date, no remediation of an ISR operation in the United States has successfully returned the aquifer to baseline conditions.”

US EPA, 2007, TENORM, V.2, Append. III, P. AIII-10 last paragraph of section.  
 “Finally, in situ leaching poses a problem from a restoration standpoint. Although there are multiple techniques to restore the mined aquifer to its preoperational state, in many cases the lixiviant can never be completely purged from the site. Attempts to bring the aquifer to a chemically reduced state cannot account for all types of contaminants, and the entire rehabilitation process is both expensive and time consuming.”

46. Hence, summaries of water quality and hydrogeologic data from all operating or closed ISL sites within the U.S., together with interpretation of the impacts from these operations should be made publicly-available, prior to approval of the DB NRC license. Clearly some of these sites operated under State regulation, but it appears that the US NRC did not obtain and summarize the available information regarding actual performance of past and present ISL operations at similar sites, relying instead on generic information or no information at all.

Injection of wastes into major aquifers like Deadwood & Minnelusa.

47. Carter, et. al. (2003) p.11(electronic)

**“The major bedrock aquifers are the Deadwood, Madison, Minnelusa, Minnekahta, and Inyan Kara aquifers.”**

GDP, P. 99: The Fall River Formation, along with the Chilson Member of the Lakota Formation, are the principal sources of water in the vicinity of the project area for domestic, livestock, and agricultural uses. These same formations are the host rocks for uranium mineralization within the project area.

Disposal capacities for these aquifers are not disclosed. No justification given to allow contamination of Madison waters via mixing / dilution by contaminated ISL process waters. [Madison Application, p. 6-7(electr.)]

Applicant's Performance in the Application process is flawed.

48. Despite the fact that the applicant has collected no new aquifer-testing or hydrogeologic information since their original Application, the applicant's "story" keeps changing with each new document and new deposition or hearing testimony. The applicant has presented a moving target of opinions [i.e. in early reports no leakage occurred between the Inyan Kara aquifers and the finer-grained, bounding sediments. Now, the applicant admits that leakage occurs between these units, but according to the applicant, this has no significant influence on operational details or project impacts]. Frequently the applicant's managers have been authors of the technical language which appears to "soften" the unfavorable conclusions of the original technical authors.

49. These sequential changes in the applicant's opinions based on the same, original test data came about only because of significant, costly opposition from the public and their experts (and not from changes required by the NRC or State). This pattern clearly demonstrates that the NRC should have required the applicant (or preferably, independent experts) to conduct the necessary *detailed*, long-term hydrogeologic testing and baseline sampling prior to issuance of the SEIS.

50. This raises the question as to whether other relevant applicant-generated or contracted water / hydrogeology-related reports exist, besides those listed in the various Applications and the SEIS. I would expect that other reports exist, as the reports listed in the Application and SEIS do not include the critical analysis and information I would expect to find in an unbiased inquiry.

Petrotek (2012) hydrogeologic model does not consider presence of faults, fractures, breccia pipes, or open boreholes, etc.

51. The predictions from such flow models are all based on the **simplifications and assumptions entered into the model**. At D-B, detailed, long-term testing has not been performed, so Petrotek lacked the detailed information necessary to reliably define many of the hydrogeologic processes. For example, many of the historic pump test data on hydraulic conductivity (vertical and horizontal) differ greatly from the data generated by lab testing of core. Thus the hydraulic conductivity inputs into this model are questionable, and any conclusions about leakage from one water-bearing unit to another are quite speculative. Also, the model assumes that no water flows vertically through some of the bounding geologic units (e.g. the underlying Morrison), but inadequate testing has been conducted to prove this. Likewise, several independent authors have argued that vertical flow does occur through the Morrison into the Inyan Kara. Inadequate data exist to reliably demonstrate the rates of recharge from the Graneros Group and surficial alluvium into the Inyan Kara, or the extent of other surface water-ground water relationships.

52. The simulations presented in Petrotek (2012) report are unable to reflect the complex inter-fingering of these sediments (facies changes, laterally and vertically), and assume that the Inyan Kara sediments are homogeneous sediments.

Site boring data were used to calculate the tops and bottoms of formations---which were often inconsistent—but these borehole data failed to indicate whether the holes were functionally plugged or acted as conduits for vertical leakage. The statements (by the applicant and Petrotek) that some of the anomalous results are likely the result of leaking boreholes is simply a supposition, not based on actual data obtained from these wells and boreholes. Also, this explanation fails to explain the percentage of error that might be the result of cross-facies leakage, rather than communication through unplugged boreholes and wells.

It is not reasonable to assume that where historic boreholes and wells have been functionally-plugged in the past, that these plugs remain stable forever. Numerous studies show this is simply untrue, and the various seals, surface casings, plugs, etc, begin to deteriorate after several years, leading to cross-communication between the water-bearing zones.

53. This flow model assumes that all ground water flow is via porous media and that no permeable faults, fractures or collapse structures act as flow pathways within the D-B property. In this model, even the Dewey Fault is considered a no-flow boundary (see below), despite the fact that Boggs (1983) presents conflicting statements about the Dewey Fault zone (p.12-13). Boggs states it is a barrier to flow, but also that upward recharge may occur at relatively low rates. Obviously detailed testing is needed to answer this question. More importantly, numerous



independent investigators have reported the presence of faults within the D-B area, contrary to the claims of the applicant. Additionally, significant information from independent remote-sensing indicate that faults do exist, and that surficial evidence of multiple, circular collapse structures are visible at the D-B site. Likewise, structural interpretations and production data from Cretaceous oil fields indicate that oil and gas have been generated from fractures within shales in these formations. These same Cretaceous formations exist within the D-B region, and it seems obvious that the entire package of D-B area Cretaceous sediments are fractured. **The Petrotek model assumes that none of these secondary geologic features transmit water, thus the flow rates are questionable, as would be the changes to water quality resulting from long-term dewatering of the various sand and shale formations.**

54. The model does include one simulation assuming the presence of **one** collapse structure at the D-B site, and assuming it transmits water vertically at 200 gpm. Evidence exists that several other vertical collapse structure pathways may exist, thus upward flows may be much greater than 200gpm. However, throughout the SEIS, the applicant and the NRC state that no evidence exists for and such collapse structures. Despite all of the evidence to the contrary, p. 4-61 of the SEIS P.4-61 states: “Because there is **no evidence for fast flow paths, such as fractures, in the ore-bearing aquifers**, NRC staff conclude that the cone of depression will be maintained during ISR operations.”
55. Computer simulations only provide rough approximations of quantitative results--- (flow volumes, not chemistry) even in simple, homogeneous, porous media. Often, when predicted results are compared to future, actual data, the results may be in error by hundreds of percent. One of the main goals of such model exercises is to promote a belief that someone can predict future impacts with real quantitative accuracy (Pilkey, 2007; Sarewitz, et. al. 2000)—which is often untrue. Where unreasonable assumptions and faulty evidence is used, the model cannot be relied upon to disclose impacts or to design monitoring and mitigation measures
56. Several examples of sections within Petrotek (2012) that support my analysis of the unreasonable assumptions and unreliable conclusions in the hydrogeologic modeling are provided below:
  - 8: “The Morrison Formation beneath the Chilson is considered an aquitard for the region and is represented as a **no flow boundary in the model**. The Graneros Group is also considered an aquitard in the region but was included in the model to provide a reference point for water level elevations within the Fall River and Chilson aquifers relative to ground surface.”
  - 8: “The data within the Project Area are based on site borings. Outside of the Project area, geologic picks are largely based on available oil and gas well logs. The geologic dips of the surfaces are projected out to the model limits.”

- 8: "Therefore, the assumption used in the development of the model is that there is no flow across the (Dewey) fault in either the Fall River or Chilson aquifers. The model domain north of the Dewey Fault system is simulated using the NFB condition."

-11: "During model construction, there was difficulty in maintaining integrity between the various layers of the model. Based on projection of the available data, some of the layers intersected each other in space. This occurred primarily because the data sets were not entirely consistent,...."

-11: As previously noted, the Fuson ranges from 20 to 80 feet thick across the Project Area (Dewey- Burdock TR), therefore, **a simulated thickness of 45 feet** is a reasonable approximation for purposes of the model.

-12: "Because of the uncertainty in the discharge rates from the pumping and artesian wells, the calibration is considered to be more of a representative steady state than a true steady state calibration."

-14: "The model was **unable to replicate drawdown in the Fall River** on the scale of what was observed during the test despite extensive efforts to do so. It is possible that the drawdown observed in the Fall River during the 495 gpm pumping test in the Chilson was the **result of improperly completed wells or exploration boreholes that provided a hydraulic connection between the two units.**"

-17: "In summary, changes to the conductance and head of the GHBs in the vicinity of Pass Creek do not appreciably alter the flux of the Fall River and Chilson aquifers across the Project Area, but do result in significant increases to the RSS, indicating a **generally poorer calibration. Increasing the recharge rate also changes the calibration substantially and causes large increases in the flux of both the Fall River and Chilson.** Decreasing the recharge has negligible effect on either flux or calibration."

-18: "For purposes of this modeling effort, the Fall River and Chilson are not subdivided and are each simulated as a single layer within the model."

-22: "Use of a numerical model can assist in this effort. However, real time monitoring of water levels during operations and adjustment of flow rates in response to water level changes provides the best engineering control to minimize wellfield interference."

-26: "The calibrated numerical model developed for the Dewey-Burdock ISR Project was used to assess the potential hydraulic impacts of a hypothetical

breccia pipe release. A breccia pipe release into the Fall River and or Chilson was simulated by placing an injection well into the model layers representing those hydrostratigraphic units and running a steady state simulation. A value of 200 gpm was selected for the simulations. Much higher flow rates have been documented at known breccia pipe locations. Discharge rates much lower than 200 gpm would probably have minimal impact on ISR operations and could be controlled using engineering practices."

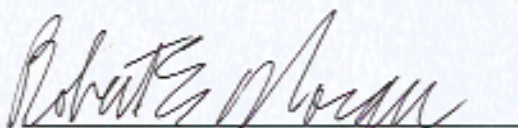
-26: "Because of the large change in the potentiometric surface, the occurrence of discharge from a breccia pipe into either the Fall River or Chilson should be observable with the existing monitor well network and **would definitely be noticed once a monitor ring has been installed around a proposed production unit.**"

Surface Water Predictions of 100-year floodplains are likely merely semi-quantitative representations.

57. The September 2013 flood events in the Colorado Front Range and Blizzard in the Black Hills of South Dakota demonstrate the degree of error routinely encountered in such hydrologic predictive models. In both areas, actual flooding and snowfall exceeded not simply 100-year, but 500-year predictions for many of the affected areas.

Pursuant to 10 C.R.F. § 2.304(d) and 28 U.S.C. § 1746, I declare under penalty of perjury, that the foregoing is true and correct to the best of my knowledge and belief.

Signed on the 17<sup>th</sup> day of March, 2014,



Robert E. Moran, PhD.

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
POWERTECH (USA) INC.,	)	Docket No. 40-9075-MLA
	)	ASLBP No. 10-898-02-MLA-BD01
(Dewey-Burdock In Situ Uranium Recovery	)	
Facility)	)	

**SUPPLEMENTAL DECLARATION OF DR. ROBERT E. MORAN**

I, Dr. Robert E. Moran, do hereby swear that the following is true to the best of my knowledge:

**Professional Qualifications and Introduction**

**Robert E. Moran, Ph.D.**  
Michael-Moran Assoc., LLC  
Water Quality/Hydrogeology/Geochemistry  
Golden, Colorado, U.S.A.  
[remwater@gmail.com](mailto:remwater@gmail.com)

1. I am a hydrogeologist and geochemist with more than 40 years of domestic and international experience in conducting and managing water quality, geochemical and hydrogeologic work for private investors, industrial clients, tribal and citizens groups, NGO's, law firms, and governmental agencies at all levels. Much of his technical expertise involves the quality and geochemistry of natural and contaminated waters and sediments as related to mining, nuclear fuel cycle sites, industrial development, geothermal resources, hazardous wastes, and water supply development. In addition, I have significant experience in the application of remote sensing to natural resource issues, development of resource policy, and litigation support. I have often taught courses to technical and general audiences, and has given expert testimony on numerous occasions. Countries worked in include: Australia, Greece, Bulgaria, Mali, Senegal, Guinea, Gambia, Ghana, South Africa, Iraqi Kurdistan, Oman, Pakistan, Kazakhstan, Kyrgyzstan, Mongolia, Romania, Russia (Buryatia), Papua New Guinea, Argentina, Bolivia, Chile, Colombia, Guatemala, Honduras, Mexico, Peru, El Salvador, Belgium, France, Canada, Great Britain, United States.

## **Literature Reviewed**

2. In addition to my professional experience, the opinions and comments that follow are based on review of all, or significant portions of the following documents:

Powertech Application for NRC Uranium Recovery License, Dewey-Burdock Project, Feb. 2009:

- ☐ Technical Report (TR)
- ☐ Environmental report (ER)
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### **Summary Comments**

3. These opinions focus predominantly on the water resources and related impacts within the proposed Dewey-Burdock (D-B) area. These waters are natural resources presently used collectively by numerous parties (ranchers, municipalities, tribal groups, fish and wildlife, mineral and oil and gas developers, etc.). However, the DSEIS must realistically anticipate what will be the true *long-term* uses of these waters---especially when many generations must be considered. Thus, *truly conservative assumptions* should be employed—which is not the case in this DSEIS.

4. Some of these waters are already contaminated by past uranium exploration and mining, with little or no remediation required by any regulatory agency, which suggests a great deal about the future oversight. The D-B site contains numerous old uranium workings (shallow open-pit and underground), accumulations of various contaminated waste materials, 1000s of unplugged

boreholes, which likely provide hydraulic connections between various water-bearing units. To allow for a meaningful review, all available borehole information needs to be assembled and presented in a comprehensive manner.

5. Past exploration and mining activities have exposed the mineralized rocks to reactive surface waters and ground waters and bacteria, increasing the concentrations of numerous contaminating chemical constituents in local waters, soils, etc. *Nevertheless, some of the water-bearing units within and around the DB area will still contain high or relatively-uncontaminated waters, suitable for numerous other uses.* This pattern is the norm at typical metal mine locations worldwide, including uranium sites. The proposed D-B activities will increase the concentrations of such contaminants in some local ground waters, as a minimum. Thus, it is imperative that the specific locations and characteristics of these contaminated and uncontaminated waters be defined in a DSEIS available for public review and comment prior to publication of a FEIS and project approval.

6. The DSEIS gives the impression that all of the D-B-area waters (surface and ground) are already contaminated. However the DSEIS fails to supply the detailed data necessary to support that contention. Experience at similar sedimentary uranium sites indicates that significant quantities of uncontaminated ground water likely exist, and could be used for other livestock, agricultural, domestic, etc. uses. The NRC has failed to require Powertech to provide statistically-adequate, reliable, *preoperational* baseline data, either within the D-B project area, or in surrounding regions. Without adequate baseline data, the presently-uncontaminated waters could become contaminated through ISL-related activities, but the public would have no way of discovering this impact.

7. The DSEIS fails to provide basic information necessary to reliably evaluate future, LONGTERM impacts. If the D-B-area resources had been evaluated in a truly detailed, interdisciplinary, scientific manner, the DSEIS would have collected and summarized the most fundamental technical information relating to water resources, such as:

- a detailed inventory of all present water users within a radius of at least 2 miles of the proposed D-B boundaries. Such an inventory would include statistically-valid, preoperational data on well yields, water levels, detailed water quality;
- a detailed, statistically-valid summary of BASELINE data for water quality and quantity from the relevant water-bearing units, *based on pre-operational data*. These would already include evaluation of hydrogeologic characteristics for all of the relevant water-bearing units based on actual, long-term aquifer / pump testing data. Such baseline data would also incorporate all relevant data collected prior to Powertech's involvement, including data collected during the 1950s to the present (including, for example, TVA data).

- detailed data on the presence and condition of all subsurface borings (exploration holes, oil and gas holes, etc.)
- a detailed spring and seep survey, which would have included statistically-reliable (and seasonally-meaningful) measurement of field parameters and yields, detailed water quality---all based on preoperational data.
- all such actual data / information could easily be summarized in the form of maps, tables, and graphs, without resorting to thousands of pages of disorganized text, which has been the approach taken by Powertech and the NRC.

8. In addition, a technically-reliable study of the D-B area would have summarized the detailed data and long-term impacts from the numerous actual, operating and closed ISL sites (throughout the USA and other countries), to gain insight on actual results and impacts obtained from a *population* of sites. It is technically-meaningless to make deterministic predictions about such impacts at a *single* site, especially a site to be operated by a company that has never operated another ISL mine.

9. Impact evaluation (by NRC, PT and consultants) in this DSEIS fails to follow accepted approaches used in the wider scientific community. The DSEIS fails to use reliable scientific investigation to assess or compare known impacts at *populations* of other operating and closed ISL sites. Most importantly, it is not possible to reliably-rank future D-B impacts [SMALL, MODERATE, LARGE] when the NRC and public lack reliable baseline data to use as a measure of change. Such approaches would not be acceptable in most technical, scientific (academic-research) publications.

10. The data and information described above are required for an analysis in a DSEIS prior to FEIS or license approval. Otherwise reliable evaluations of future impacts cannot be made. In addition, without such data, it will be largely impossible to hold the operators responsible for future, unremediated impacts.

### **Specific Comments**

**The DSEIS has been publicly-released at a period specifically inconvenient for public review.**

11. By releasing the DSEIS over the winter holiday season, NRC has obviously made review and commenting on these documents more difficult and precluded the public from making a useful site visit to verify data and claims made in the DSEIS.

**The DSEIS comprises thousands of pages of convoluted, poorly-organized and inadequately-summarized material.**

12. The various D-B documents submitted to the NRC encompass more than **14,512 pages**, yet fail to adequately present the most basic data (see below).

For example:

--the 2009 Application was almost 6000 pages;

□ [Technical Report (TR)-- 3103 pages; Environmental Report (ER)-- 2615 pages;

Supplement to Application-- 66 pages.]

--the 2011 Powertech submittal totaled roughly 5000 pages;

--the present DEIS (Vols. 1 & 2) comprises 858 pg., which is only part of the GEIS;

--the GEIS, to which much of the DSEIS refers comprises 3512 pages.

13. The relevant D-B information, if compiled in a direct, transparent manner using predominantly maps, tables and graphs, could easily have been summarized in 150 pages for the DSEIS. Instead, the DSEIS is so duplicative and poorly-organized that it makes informed review by both the regulators and general public unnecessarily convoluted.

**The DSEIS fails to adequately respond to the weaknesses and written criticisms of the Powertech Application.**

14. The Powertech Application submittals (2009, 2011) were prepared by Powertech and its consultants, based largely on data collected by these same parties. While the DSEIS states that it was prepared by the NRC [and the CNWRA (Center for Nuclear Waste Regulatory Analyses)], it appears that it is based entirely on these same Powertech data, with no new water-related data added since the application. Clearly most of the DSEIS opinions are also based on the technical opinions of Powertech and their consultants.

15. Also, the DSEIS fails to adequately respond or address most of my written Opinions made regarding the D-B Application, which were submitted to the NRC in April 2010 (Moran Declaration, April 2010).

**The DSEIS is Technically-deficient, lacking fundamental data that are needed to reliably evaluate likely impacts to the D-B-area water resources and related environment.**

16. The DSEIS admits that important water quality data collection and aquifer testing will only be conducted after license issuance (e.g. DSEIS p. 2-16, 7-8, 7-14, 7-17).

17. Such data are needed *now*, as part of any useful EIS and certainly prior to issuance of an operating permit. These data include: reliable preoperational

baseline data on water quality and quantity / yields of all relevant surface and ground waters; specific data on the total water volumes to be used by all D-B operations; detailed data on hydrogeologic characteristics of all relevant geologic units; detailed evaluations of the hydraulic interconnections between the uranium production zones and the other relevant water-bearing and confining units; data on the detailed chemical compositions of barren and pregnant solutions, evaporation pond waters, etc.; a detailed inventory of all water users within at least a 2 mile distance of the D-B project boundaries. Details on these categories are discussed below.

### **Concerns Expressed by Other Federal and State Agencies not Addressed**

18. The DSEIS mentions on p. 1-15 and 16 that several other Federal and State agencies have expressed concerns regarding impacts to Water Resources, etc. from the proposed D-B project, but fails to discuss or address in any detail these criticisms. This omission gives the false impression that the present comments (for the Oglala Sioux) are made in isolation from those of these other regulatory agencies.

19. A brief review of the coordination conducted with other agencies reveals the following points of concern with respect to these agencies:

- Coordination with BLM: South Dakota BLM field office: provided NRC staff with information on **oil and gas leases** in the proposed project area. DSEIS, P1-16. Additionally, BLM staff expressed **concerns related to water quality and hydrology, land use, and cumulative effects**.

- Coordination with U.S. Army Corps of Engineers: USACE documented the presence of 20 wetlands within the project area and determined that 4 were jurisdictional waters; these are Beaver Creek, an unnamed tributary to Beaver Creek, Pass Creek, and an unnamed tributary to Pass Creek (Powertech, 2009b, Appendix 3.5–H).

- Coordination with USFS: it expressed concerns that construction and operational activities could impact the nearby Black Hills National Forest and Buffalo Gap National Grasslands. USFS staff noted a concern about the cumulative groundwater effects of the project on the USFS-managed aquatic recreation areas of Cascade Springs and Keith Park Springs. USFS also expressed concerns about potential effects the project could have on Craven Canyon, known to have traditional cultural significance to Native American tribes.

- Coordination with USGS: With respect to the proposed Dewey-Burdock ISR Project, USGS staff expressed a concern that **contaminated groundwater** may travel from the project area and discharge into Beaver Creek within the proposed

project area and the Cheyenne River south of the proposed project area [via groundwater or surface water].

-Coordination With South Dakota Department of Environment and Natural Resources expressed concerns regarding:

(i) the adequacy of subsurface characterization, (ii) groundwater flow rates within and in the vicinity of the project area, (iii) potential complications in hydrology caused by past exploratory drill holes, (iv) potential hydrologic connection of production zones and abandoned onsite surface mines, and (v) the effectiveness of confining layers in isolating ore-bearing aquifers. NRC and SDDENR staffs also discussed the applicant's Class III UIC permit application (Powertech, 2010) and the water appropriation and waste management permitting processes for the proposed project. Potential risks to wildlife from wastewater surface impoundments associated with the proposed project were also discussed. SDDENR would coordinate with SDGFP to mitigate the potential effects of surface impoundments on wildlife; mitigation measures discussed included the use of netting and fencing to protect wildlife and implementing protocols to assess the effects of wastewater constituents on wildlife.

-Coordination with S.D. Game, Fish and Parks:

focused primarily on threatened or potentially threatened and endangered species (e.g., the plains topminnow, sage-grouse, and black-footed ferret) and species of local concern (e.g., raptors). SDGFP expressed a **major concern: the potential effects on birds flying through the proposed project area and drinking at exposed wastewater evaporation ponds**. SDGFP suggested two measures to mitigate effects on bird populations: (i) **testing** to determine the **toxicity of constituents in the evaporation ponds** and (ii) using **netting and fencing to restrict wildlife access to exposed ponds**. SDGFP also noted the **need for testing and monitoring of soils** at the proposed site to **identify any buildup of salts and metals** that could result from proposed land application of **treated wastewater**.

**Water Use: The D-B Project will use and contaminate tremendous volumes of ground water. How much water will be used throughout the life of the proposed DB operation?**

20. The D-B project area is semi-arid, having an average yearly precipitation of about 12.4 inches, and the range of evaporation for the So. Dakota-WY-Nebraska uranium region is between 40 and 50 inches (NRC GEIS 2009). Thus evaporation is roughly 3 to 4 times the yearly precipitation (ER, pg. 3-176 and 177; Fig. 3.6-27). Because the project is presently expected to operate for between 7 and 20 years, it will require the use of tremendous volumes of local ground water, and will result in losses of significantly greater quantities of water via evaporation.

21. Unfortunately, the DSEIS fails to provide reliable estimates for the volumes and sources of water to be used (consumptive and non-consumptive uses) during all stages of the proposed operation. Actual, detailed data on amounts of water required for operations are not presented (e.g. ISL operations, human consumption, dust suppression, evaporation from disposal ponds, waste disposal, etc.). In mining hydrogeologic studies, such data would routinely be included in a detailed Water Balance.
22. No detailed Water Balance is provided in the DSEIS. Instead the DSEIS provides imprecise, conflicting information on the volumes of water to be used throughout the various sections of the DSEIS (e.g. p.2-15, 2-34, 4-57-59, etc.).
23. Powertech calculates that the sustainable pumping rate from the Inyan Kara Group / Aquifer is about 40 gpm for the life of the project (DSEIS p. 4-59). However, the NRC / Powertech state that the operational requirements for the Burdock CPP alone would require a sustained pumping rate of 65 gpm (at DSEIS p. 4-59). Powertech has applied to the SDDENR for permits to extract water from the Madison Aquifer. Thus, it is presently unclear which aquifer will be the source for long-term, operational phase water. If the permits for using Madison Aquifer waters are denied, additional sources (besides Inyan Kara) would be required.
24. The applicant estimates the wellfield production bleed would be approximately **0.5 to 3.0 percent** of the **production flow rate**, yielding a wellfield production bleed rate between 20 gpm and 120 gpm (DSEIS, P. 2-34).
25. Powertech estimates that approximately 52.6 million gallons of ground water would be required for the Construction phase alone (DSEIS p.5-30). **No data are provided for the volumes of ground water required for the other phases, throughout the life of the project.**
26. Clearly, the DSEIS fails to reveal reliable long-term water use data for all phases of the entire project. Greater uncertainty is shown when one reads the water use data originally presented in the 2009 Powertech Application, ER pg. 8-2 (Table 8.1-1), which states that **ground water consumption will be 320 gpm.**
27. Because no Water Balance is presented, it is unclear how much of this volume is recycled, re-injected as waste in other formations, etc. In addition, one must assume that quality of much of the recycled and re-injected water would be degraded as compared to any reliable preoperational baseline data.
28. Aside from the obvious lack of consistency, the estimates (above) translate into massive amounts of ground water when considered over the full life of the project. Using two of the estimated ground water use rates stated above, total water consumption over the life of the project can be estimated as follows:

**65 gpm = 34.2 Million gpy (gals / yr).**

**After 7 yrs = 239,148,000 gallons, or 239.15 Million gallons.**

**After 17 yrs = 580,788,000 gals or 580.8 Million gallons.**

**320 gpm = 168.2 Million gpy (gals. / yr).**

**After 7 yrs = 1,177,344,000 = 1.2 Billion gallons**

**After 17 years = 2,859,264,000 gallons = 2.86 Billion gallons.**

29. Clearly, this range of estimates indicates that vast quantities of ground water will be extracted from these aquifers over the long-term. At a minimum, Powertech should be required to construct a credible project water balance and to more seriously investigate the potential that such large-volume water use might impact local / regional ground water levels and well yields.

30. At present, I see no evidence that the Application contains a reliable compilation of *baseline water level and pumping-rate data for the surrounding domestic and stock wells (see discussion below)*. Without such reliable, summarized data, there will be no viable method to demonstrate that ground water levels (and related pumping costs) have not been impacted by project-related activities.

31. The public must assume that Powertech will pay no cost for the actual water (the commodity) used during operations---while numerous other users do. The specifics of this issue should be addressed by Powertech in writing.

32. Despite the central role of water in the operation of the project, water use, availability, depletion, and consumption are not seriously analyzed through a water balance investigation, or other similar technique. This analysis is critical to understanding the anticipated impacts during project review and for monitoring actual water impacts should this project actually begin using and consuming groundwater.

### **Hydrogeologic Performance of the Water-bearing and Other Geologic Units.**

33. The DSEIS fails to provide detailed, site-specific information / data on the hydrogeologic characteristics of the relevant D-B water-bearing and other bounding geologic units, including the mineralized zones. Such data must be obtained by performing and interpreting *long-term*, aquifer test data. The DSEIS admits that such long-term, detailed testing will not be performed until after the NRC license is issued (e.g. DSEIS at 2-17, 7-11).

34. The hydrogeologic data presented in the DSEIS are **inadequate** to reliably portray and predict the following:  
-the baseline, detailed directions of ground water flow in the relevant water-bearing units;



- the extent of long-term hydraulic connections between the various geologic units, both within the project area and outside;
- the horizontal / regional extent of water level declines (and impacts on pumping rates) outside the project boundaries;
- the degree to which ground water withdrawals may impact local surface waters;
- the operator's ability to contain the migration of contaminants;
- the operator's ability to restore aquifer water quality to baseline / acceptable conditions.

35. Such inadequate hydrogeologic data also mean that any ground water flow simulations based on these data are likely to provide highly imprecise and unreliable predictions (e.g. SEIS, P.2-16, L 30-37).

36. In addition, such inadequate hydrogeologic data, coupled with the lack of reliable baseline water quality data (see below), render the NRC staff predictions about impacts (both incremental and Cumulative) to water resources *largely meaningless* (e.g. the Executive Summary and Section 5.0). For example, despite failing to define the extent (areal, vertical) and specific, detailed chemical compositions of past contamination, the NRC staff predicts that Cumulative Impacts to *Surface Waters and Wetlands* will be MODERATE TO LARGE (p.5-17), but that the D-B project will have a SMALL incremental impact on surface waters and wetlands when added to all other past and present impacts (p. 5-30). *Given the lack of detailed baseline data (hydrogeologic and water quality) such conclusions sound more like public relations statements than science.*

### **Impacts from Long-term Pumping of Ground Waters.**

#### **Radius of Impacts / Influence. (modified from Moran Declaration, 2010)**

37. The DSEIS presents no specific hydrogeologic information on the anticipated declines in water levels at domestic and stock wells outside the D-B project. Despite lacking adequate, long-term aquifer test data, the Powertech ER (2009) presented *predictions* of **water level declines** after 8 years of continuous pumping:

- - **9.9 to 42.8 feet** at the nearest domestic well in the Fall River Aquifer, located 15,075 feet [**about 2.9 mi.**] from the approximate center of pumping (ER pg 4-23);
- - **4.9 to 12.6 feet** at the nearest domestic well in the **Lakota Aquifer**, located 10,915 feet [**about 2.07 mi.**] from the approximate center of pumping.

38. With such uncertainty, it is quite possible that some neighboring wells will be negatively impacted (water level declines / reduced pumping rates). These data interpretations indicate that domestic and stock, etc. wells should be inventoried and monitored out to at least 2 miles from the D-B boundary.

### **The D-B water-bearing units are hydrogeologically interconnected.**

39. The DSEIS avoids discussing definitively the likely hydraulic interconnections between the various D-B water-bearing units. The 2009 Powertech Application does discuss these issues, but presents overly-optimistic conclusions about the isolation of the ore-bearing zones, aquifers, and the lack of fluid excursions that will occur, both vertically and horizontally. Powertech's description and evaluation of possible water-related impacts [2009 Application, ER pg. 8-2 (Table 8.1-1)] are unreasonably optimistic. It is unlikely that the process waters can be contained within the project boundaries given the following pathways that connect the project area with surrounding aquifers: 1) sedimentary formations; 2) geologic fractures, 3) exploration boreholes, 4) mine workings, 5), other anthropogenic fractures and borings.

40. The D-B uranium deposits occur in subsurface, fluvial channel, sandstone deposits in the Lakota and Fall River formations (Smith, 2005). These sandstones *inter-finger* with finer-grained silts and shales, often associated with lignites and coals, which form the typical lithologic sequences often seen in classic sedimentary uranium deposits (Abitz, 2005; Gott, 1974; Henry, 1982; Galloway, 1982; Henry, 1980; Harshman, 1972).

41. Hydraulically, such sedimentary packages typically allow ground waters to flow between the inter-fingering facies, both vertically and horizontally, when the coarser-grained sediments are *stressed by long-term pumping*. The hydraulic inter-connections are verified by conducting ***long-term aquifer tests integrated with sequential water quality sampling and in-situ measurement of field parameters*** (Henry, 1982; Galloway, 1982; Moran, R.E.—hydrogeochemical research activities, U.S.G.S., Water Resources Div., 1973—1978). *The hydraulic interconnections of such inter-fingering facies has been well known for decades within the petroleum industry research groups (e.g. Fisher, et. al., 1969).*

42. Thus, ore-bearing sandstones in typical sedimentary packages associated with roll-front uranium deposits do *not routinely behave as hydraulically-isolated bodies*. Numerous specific lines of evidence from the 2009 D-B Application documents indicate that the project sediments possess various pathways for the migration of water and contaminants from the ore zones into neighboring sediments, both vertically and laterally. For example, thousands of exploration boreholes have been drilled since the 1950's at the D-B site (Smith, 2005; TR, ER), many of which were not correctly plugged and abandoned (TR, Pg. 2-157; Append. 2.7-B, sub-Appendix D, pg. 1484; TR, Append. 2.6- A, pg. 972-1111). In addition, several sources (Smith, 2005, pg. 9; ER, pg. 3-106) report that the area contains historic shallow mine workings, both open pits and short tunnels that would provide additional flow pathways.

43. There are numerous old and existing water wells and old oil test wells in the D-B area, many with rusty and leaky casings, often unplugged or partially-plugged, drilled through several formations which act as potential pathways for

flow between water-bearing units (ER, pg.3-40; TR, Append. 2.2-A, pg. 740-779; 2.2-B, especially pg. 864- 902).

44. The 2009 Application, TR, pg. 2-153-154, states that hydraulic connections between local D-B aquifers often result because confining units are thin or are absent in many areas (ER, pg.3-56-57). In addition, Gott (1974) and others have mentioned the presence of breccia / evaporite pipes (collapse structures), which create vertical permeability pathways between aquifers. Gott (1974, pg. 27-29) and others discuss the common presence of faults and joints throughout the region, which could easily act as flow pathways. The DSEIS states that detailed geologic mapping conducted by Powertech found no indication of such breccia pipes (p. 3-32), but the document fails to state that a detailed examination of all the subsurface data was searched for the presence of such breccia pipes.

45. Vertical and lateral hydraulic connectivity between the ore zones and the neighboring facies / formations are also indicated by the aquifer test results conducted in both 1979 and 2008 (ER, pg.3-56-57; TR, pg. 2-170 & 2-180, for example; TR Append. 2.7-B, Knight-Piesold Pumping Test Report, pg. 1290).

46. The DSEIS fails to assess the forgoing conditions, or likely impacts associated with these conditions in any scientifically meaningful way, nor does it consider that geologic materials with geologic / hydraulic characteristics similar to the D-B target formations frequently yield both water and oil and gas from **geologic fractures**. A classic example is the Florence oil field in Colorado, which has been producing continuously from fractures in the Cretaceous Pierre Formation since 1862, making it the second oldest producing field in the U.S. [<http://ghostdepot.com/rg/library/magazine/florence%20oil.htm> ].

47. The Pierre Formation exists in the Black Hills region and lies stratigraphically above the Inyan Kara Group, the target formations at D-B (Tourtelot, 1962; DSEIS p.3-14). Thus, it is likely that several of the geologic units in the D-B area can also transmit fluids via fracture pathways. This indicates that future computer simulations of D-B ground water flow and leach field performance should be capable of modeling fracture flow characteristics.

48. The aquifer testing already performed *demonstrates leakage between the various formations / facies bounding the ore zone. However, it seems equally likely that longer-duration aquifer tests conducted at even higher pumping rates would demonstrate even more clearly the leaky nature of these site sediments.*

**Potential hydrogeologic pathways to nearby wells have not been adequately investigated and documented.**

49. The discussion above presents ample evidence that the D-B area sediments contain numerous possible subsurface pathways for project leach fluids to migrate vertically between water-bearing units and outside the project

boundaries. Unfortunately, as noted above, Powertech has not adequately defined the baseline water levels or water quality conditions of neighboring wells within a 2-mile radius of the D-B project. In addition, the 2009 Application, TR pg. 2-180, states that no public data are available on the use of aquifers in Fall River or Custer counties. Such data should have been compiled by Powertech as part of the DSEIS and Application, and should be required before any licenses are given.

### **Toxic and Hazardous Substances to be Used at D-B.**

50. The following chemicals are proposed to be used / stored at D-B (DSEIS, p.4-19):

“The applicant proposes to store, use, and receive shipments of the following chemicals: sodium chloride (NaCl), sodium carbonate (NaHCO<sub>3</sub>), sodium hydroxide (NaOH), hydrochloric acid (HCl), hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>), carbon dioxide (CO<sub>2</sub>), oxygen (O<sub>2</sub>), anhydrous ammonia (NH<sub>3</sub>), diesel fuel, gasoline, and bottled gases (Powertech, 2009b).”

51. All these chemicals are likely stored / used in concentrations that would qualify them as toxic or hazardous substances. Releases of such chemicals can contaminate local soils and waters. Despite the proposed use of these chemicals, the proposed water quality (surface and ground waters) and soils monitoring does include constituents adequate to demonstrate the presence of several of these chemicals, especially the fuels / organic compounds (see below).

### **Chemical Analyses (Detailed) of Ores, Pregnant Leach Solutions, Liquid Wastes are not presented in the DSEIS.**

52. The DSEIS fails to provide actual, detailed chemical analyses (numerous) of representative pregnant leach solutions (ore reacted with lixiviant), both before and after undergoing ion exchange treatment. Such data would routinely include both in-situ measurements of fluid temperature, pH, specific conductance, possibly D.O. (dissolved oxygen) and Eh (redox). Similar representative, detailed data should also have been included for the detailed chemical composition of liquid wastes to be disposed of via deep-well injection, land application and evaporation.

53. Because most mining projects at a similar stage of advancement have already conducted extensive laboratory testing and prepared Feasibility Studies to present to potential investors, such detailed chemical composition data would be available. It is not sufficient to present theoretical / expected chemical compositions, as has been done in the 2009 Powertech ER, pg. 4-83. Smith & Assoc. (2005), pg. 5, reports that TVA, one of the previous mineral right holders, had a “pre-mine feasibility study” prepared, probably in the late 1970’s or 1980’s. If TVA had obtained such detailed data in earlier decades, certainly Powertech would have obtained the older Feasibility information and contracted to have an

updated Feasibility Study performed. Clearly some information in Feasibility Studies is considered proprietary, but detailed chemical composition data on the pregnant solutions and liquids / wastes described above should be analyzed and available to the public and included in any complete DSEIS.

### **Characterization of Water Resources: Inadequately Described and Characterized.**

54. The DSEIS fails to clearly distinguish site surface waters, ground waters (including springs and seeps), wetlands, and waters flowing from boreholes. As all of these waters are ultimately interconnected, hydraulically, this prevents a clear understanding of future impacts to water resources. In several sections, the DSEIS actually confusingly describes ground waters as surface waters. For example, on p. 3-23, it discusses ground waters in abandoned mine pits as though they are surface waters. Page 3-23 states that there are *no known natural springs* within the proposed Dewey-Burdock ISR Project area, which does not mean that a detailed attempt to locate and characterize such springs was ever conducted. On p. 3-27-28, the DSEIS confusingly describes water flowing from an old well as the source of a wetland, when it is obviously not a natural wetland.

55. DSEIS page 3-20 contains a section disingenuously entitled “Artificial Penetrations”, but which is strangely not included in the discussions pertaining to either Surface or Ground Waters. It states: “According to the environmental report, there are 4,000 exploration drill holes representing historic exploration activities (Powertech, 2009a). The applicant has drilled approximately 115 exploration holes, including 20 monitoring wells in the project area. While the applicant cannot confirm that all historic borings were properly plugged and abandoned, the applicant has made commitments to ensure that unplugged drill holes will not impact human health or the environment during operations (Powertech, 2009b, 2011). In the technical report (Powertech, 2009b), the applicant stated that little evidence of unplugged boreholes has been observed given infrared photography data. However, an infrared map of a portion of the Burdock area shows an alkali pond area (Powertech, 2011). The applicant states unplugged borings appear to explain the presence of this pond area. No other pond areas or springs appear in infrared photography data of the Dewey-Burdock site. There is no other evidence indicating that previously unplugged borings are current groundwater flow pathways (Powertech, 2011).”

56. This section makes several half-explained statements as though they are proven facts, and diverts from the likely hydraulic interconnections these boreholes have created between the site surface and ground waters. It implies that a careful study of the site using infra-red photography has been performed, when it is clear that a map of only a portion of the site was available. Despite this tortured language, there is no reason to dismiss the likelihood that many of the old boreholes are acting as conduits between the various water-bearing units, at least below the land surface. Strangely, the DSEIS describes the presence of

several water-filled mine pits (p. 3-23), yet they are not mentioned as being visible on the “infrared photography data of the Dewey-Burdock site”. Clearly a more thorough investigation using infra-red photography and satellite imagery is called for.

### **Baseline Water Quality**

57. The D-B project area has been historically mined and thousands of exploration holes have been drilled within the properties. Hence, it is imperative that high-quality baseline data be supplied to evaluate the actual extent of past impacts to water resources, and the success of future containment or aquifer restoration.

58. The DSEIS, like the Powertech Application, fails to define pre-operational baseline water quality and quantity—both in the ore zones and peripheral zones, both vertically and horizontally. Without adequate baseline water quality data (both ground water and surface water), there is no reasonable method for either the public or the NRC to evaluate the success or failure of either fluid containment or aquifer restoration. The DSEIS and Powertech Application documents repeatedly attempt to convey the impression that the D-B ground water quality is already degraded, rather than compile statistically-defensible data from both the ore zones and non-mineralized zones.

59. This approach contradicts NRC guidance, which requires that pre-mining baseline conditions be defined *before licensing* (NRC, 2003, pg. 2-24). Failing to define specific baseline conditions prior to license approval also contradicts NEPA regulations (Parsons, 2013, p.2).

60. Failing to define and quantify preoperational baseline is also scientifically unsupportable as it allows Powertech and the DSEIS to avoid discussing which specific water sources are contaminated by past uranium mining activities and which represent naturally-contaminated waters.

61. The DSEIS, Table 3.5-4 misleadingly presents what is entitled: Baseline Groundwater Samples with Values Exceeding the MCLs(p. 3-38). Firstly, this table and related discussion fail to make clear that many of these sites are contaminated by past, un-remediated uranium mining and processing. Secondly, the table leaves out most of the important baseline constituents a competent evaluation would have included. Thirdly, the table leaves out any values below the MCLs. Thus, this table does not represent baseline ground water quality. *Most importantly, the DSEIS does not contain tables of any of the detailed water quality data, baseline or otherwise.* Further, there is no data or analysis of the hydrogeological mechanisms by which the previous contamination occurred, spread, or was contained.

62. Clearly the DSEIS / Powertech ground water baseline data should include, as a *minimum*, the chemical constituents listed in Table 2.7.3.1 of the NRC's Standard Review Plan (NRC, 2003, pg. 2-25), and Table 7.3-1 of the DSEIS. In addition, baseline water quality monitoring (both ground and surface water) should be expanded to include nitrate, ammonia, aluminum, antimony, strontium, lithium, thallium, turbidity, scans for organic compounds, and / or total organic carbon, and be integrated with *in-situ* field measurements (temperature, pH, S.C. turbidity), water levels and well yields and / or flows.

63. It is only logical that the actual list of baseline constituents should be based on analyses of pregnant solutions resulting from leach testing of the D-B ores and lixiviants—not on theoretical assumptions about what might be the chemical compositions. Such pregnant solution analyses should be made public in the DSEIS prior to Application approval.

64. Frequently, uranium roll-front ores will also mobilize significant concentrations of additional constituents, such as antimony, lithium, and strontium (Moran, 1976). In addition, it is common to detect elevated concentrations of aluminum, sometimes as the result of well-drilling and completion techniques. Thus, it is recommended that these constituents be included in routine determinations of baseline water quality. In fact, standard lab analytical scans, such as ICP (inductively-coupled plasma spectroscopy) routinely report all (or most) of these metals and metalloids at the same cost. It should be noted that almost all of these constituents were included in the data in Appendix 3.4-C of the Powertech ER.

65. I suggest that nitrate and ammonia determinations be included to allow future analysis and determinations regarding impacts from agricultural or industrial sources (ammonia may enter the aquifer via numerous agricultural or industrial activities).

66. Section 2.7 of NRC (2003) is unclear whether applicants shall provide water quality data from unfiltered (Total concentrations) or 0.45-micrometer-filtered ("dissolved") samples. Table 7.3-1 of the DSEIS states that only dissolved constituents will be reported. Much of the D-B data in the Powertech Application Appendices includes both dissolved and Total determinations. It is recommended that unfiltered samples be collected and analyzed, as a minimum, for baseline ground water evaluation. These provide more *conservative* characterization of the ground waters, and waters used in rural areas (human and livestock consumption from wells; other agricultural uses; irrigation; fisheries) are not filtered. Furthermore, contaminants carried in particulate form are ingested by humans and other organisms when consuming unfiltered waters. These particles / colloids are dissolved by the extreme biochemical conditions found in the guts of such organisms, mobilizing the contaminants into the blood and other tissues. In addition, many trace constituents are mobile in ground waters as colloidal

particles (McCarthy, 1989; Ramsey, 2000), which would be removed by filtration, generating unreasonably-low concentrations.

67. Determination of “suspended” fractions is of little utility as there are no regulatory criteria or standards for suspended forms, and such data are subject to much greater error (from the combination of sampling and analytical errors) than are either simple filtered (Dissolved) or unfiltered (Total) determinations.

68. To ensure data quality, the D-B baseline data should include:

- statistical comparisons of the field and lab determinations of pH, and S.C. for the same samples;
- comparisons of Dissolved versus Total determinations from the same samples;
- ion balances, to assist in evaluating the reliability of the analytical data, with comparisons of TDS and S.C. (Hem, 1985).

69. No coordinated, statistically-sound data set for all Baseline Water Quality data (both surface and ground water) is presented in these documents—as is required in NUREG-- 1569. The DSEIS makes clear that baseline water quality will actually be established after operations begin (e.g. DSEIS p.7-13, 14: Projectwide GW monitoring ). The DSEIS fails to include reliable baseline water quality data for any of the categories of ground water or surface water.

70. The 2009 Powertech Application, carried forward in the DSEIS, include what it incorrectly calls baseline. For example, on pg. 2-14 and 2-15 of the Technical Report (TR), Sect. 2.2.3.2.2, Powertech states: “At the project site, baseline groundwater sampling was conducted in general (sic) accordance with NRC Regulatory Guide 4.14 (NRC, 1980). ... A summary of the results and methods for the groundwater quality monitoring program, as well as the historical TVA data, is presented in Section 2.7.” However, when the reader goes to TR Section 2.7, there are no tables that actually statistically summarize complete baseline field and lab water quality data for the complete data sets—both historic and recent. Instead, for ground waters, Powertech presents statistics for field data from individual wells or selected aquifers, but fails to statistically-summarize the laboratory data and leaves out the historic TVA data. Powertech then states (TR, pg. 2-203): “Complete groundwater quality data results are available in Appendix 2.7-G.” However, on TR, pg. 2-205 (Sect. 2.7.3.2.2.2, Results for Laboratory Parameters) Powertech then states: “Summary statistics for baseline monitoring program laboratory samples are contained in Appendices 2.7-H and 2.7-I. Appendix 2.7-H gives statistics for all groundwater constituents detected at or above PQL by constituent.” Thus, it appears that Powertech has not included “qualified values,” that is data reported as “less than” some concentration. By deleting the “less than” values, Powertech has severely biased the data set, rendering it useless as a reliable source for evaluating baseline conditions.



71. Furthermore, Powertech states (TR, pg. 2-217-218) that they have arbitrarily selected some analyses from the voluminous historic TVA data, but the reviewer is never allowed to see a statistical summary of the total original data set. This error is carried forward in the DSEIS. Portions of the relevant data are scattered throughout the Appendices of the various documents, and disingenuously organized to leave out all baseline data that had concentrations reported below the detection limits (i.e. “less than” values). Obviously, this approach biases the data. The NRC must require Powertech to statistically summarize all historic water quality data and all recently collected data in separate tables, including all “less than values.” Both historic and recent baseline data should be segregated by water-bearing unit. Even should averaging of water quality data over a portion of the aquifer be acceptable, the methodology employed in the Application and DSEIS of discounting relevant data points is untenable.

72. To further confuse the baseline issues, Powertech’s Supplement to the Application (August 2009) states on pg. 3-3: “A minimum of eight baseline water quality wells will be installed in the ore zone in the planned well field area.” Thus it appears that the Applicant intends that the massive amounts of water quality data (historic and recent) presented in both the TR and ER (Environmental Report) will not actually be used to determine baseline. More importantly, it is unclear whether Powertech has true baseline (pre- operational) ground water quality data that describe the **non-ore zone regions of the relevant aquifers**. It is imperative that baseline data for the non-ore zone ground waters be collected and summarized separate from those of the ore zones – a review the DSEIS fails to conduct.

73. Any revision of the DSEIS should incorporate the comments made in Abitz (2009) regarding baseline characterization and data interpretation.

74. Lastly, the DSEIS should already contain a statistically-reliable database of baseline ground water quality data from all known wells within at least 2 miles of the DB boundary

### **Confusion of Baseline and Background**

75. Table 7.3-1 of the DSEIS (p. 7-8 to 7-11), and the accompanying text confusingly and incorrectly use the terms “Background” and “Baseline” as having the same meaning. For many decades, “background” in geochemical / water quality literature has been defined as: “The normal abundance of an element in unmineralized earth materials is commonly referred to as background.” (Rose, Hawkes & Webb, 1979, p. 30). Baseline in environmental studies has routinely been used to define a starting criterion, or yardstick, against which subsequent data are to be compared. Baseline has been used in this sense for many decades. In mining-related studies, the most common “baseline” is either pre-mining or preoperational conditions.

**The DSEIS fails to clearly and adequately describe the detailed methods employed for collecting water quality and water quantity data, for both surface and ground waters.**

76. Because the specific sampling and handling procedures can drastically change the results obtained when collecting water quality samples (both surface and ground water), it is imperative that the DSEIS include detailed descriptions of the various sampling, sample handling, preservation and shipment methods employed. Likewise, the DSEIS contains inadequate detail concerning the specific methods employed in collecting field water quality measurements and measurements of well yield, stream flow, etc.

77. For example, such details should provide information similar to those contained in the U.S.G.S. methods documents cited below:

[USGS] United States Geological Survey, variously dated, National field manual for the collection of water-quality data: U.S. Geological Survey Techniques of Water-Resources Investigations, book 9, chaps. A1-A9, available online at: <http://pubs.water.usgs.gov/twri9A>.

**Surface Water Quality Baseline Data: The DSEIS fails to adequately characterize these resources, or to include statistically- reliable summaries of detailed surface water data.**

78. Tables 3.5-1 and 3.5-2 (p.3-25-26) present totally incomplete and inadequate summaries of surface water quality. Most hydrogeologically-important chemical constituents are missing from these tables and they contain no indication of whether samples were field-filtered, or if the data are Total concentrations. (unfiltered samples).

79. The DSEIS contains no substantive discussion of the interactions between ground and surface waters, especially when the hydrogeologic system would be under pumping stress---as would be expected during the operating life of the D-B project. The DSEIS contains no detailed analysis or discussion of potential impacts to site surface waters due to ground water pumping, or potential spills and permitted discharges to surface waters. All such operations generate short-term impacts to surface waters, as a minimum.

80. The DSEIS no longer contains the questionable statements included in the 2009 application at ER pg. 4-16, which state: "Most ISL operations extract slightly more groundwater than they re-inject into the uranium bearing formation. ***The groundwater extracted from the formation could result in a depletion of flow in nearby streams and springs if the ore-bearing aquifer is hydraulically connected to such features.*** However, because most, if not all ISL operations are expected to occur where the ore- bearing aquifers are

confined, local depletion of streams and springs is unlikely, and potential impacts would be anticipated to be SMALL (NUREG-1910, 2008).” However, the DSEIS provides no detailed technical analysis to support the contention that surface waters will not be impacted because water-bearing units having confined aquifer conditions underlie much of the D-B site.

81. More importantly, the DSEIS and Application fail to provide a summarized, statistically-reliable surface water quality baseline database. As such, there will be no defensible method for verifying whether impacts to surface water quality have or have not occurred.

### **A Baseline Spring and Seep Survey is not presented in the DSEIS.**

82. Disingenuously the DSEIS states that: “There are **no known natural springs** within the proposed Dewey-Burdock ISR Project area (Powertech, 2011). There is one area in the southwest corner of the Burdock area, known as the “alkali flats” or the “alkali area,” where **groundwater is discharging** to the ground surface from the Fall River aquifer and Chilson aquifer (Chilson Member of the Lakota Formation) **through improperly plugged exploratory boreholes** (Powertech, 2011). Two springs are present along the Dewey Fault near the town of Dewey approximately 2 km [1.2 mi] northwest of the proposed project boundary (DSEIS p. 3-23).”

83. The DSEIS presents no information to indicate that either the NRC or Powertech have conducted an actual spring and seep survey. Such a survey would have included and characterized the springs along the Dewey Fault, and any others located within the D-B area and a reasonable perimeter, which should be at least 2-miles from the project boundary—given the results of the short-term pump test data in the 2009 Application.

84. The region surrounding the D-B project contains numerous springs in both the Madison and Minnelusa formations (DEIS p.3-32; Driscoll, et al., 2002). Baseline surveys of springs and seeps are crucial in studies where large volumes of ground water are to be extracted. The flows of such seeps and springs often decline or stop after large-scale, long-term ground water extraction begins, especially in arid or semi-arid regions, such as the D-B area. If such impacts begin to occur, disputes will arise as to the possible roles of the project water extraction and overall climate change, for example. Hence, it is imperative that such a survey be performed prior to issuance of any licenses, and such a survey should include, as a minimum:

- locate and survey all springs and seeps within some reasonable radius of the project boundary;
- measure and record flow / discharge quarterly for at least one year prior to issuance of any licenses;
- during all field episodes, make field measurements of in-situ pH, water temperature,

and S.C.(specific conductance) and collect samples for laboratory analysis.

Samples should be analyzed for the same list of constituents noted in the Baseline water Quality comments above. Spring and seep water quality data should be interpreted as representative of local ground water quality (Freeze and Cherry, 1979; Hem, 1985).

**The presence of high quality ground waters within the D-B Project boundary have not been adequately defined.**

85. Much of the DSEIS discussion concerning ground water quality seems focused on showing that the site waters are already contaminated. This would not be surprising given the presence of the uranium mineralization and the past mining and exploration activities---all of which would have caused increased concentrations of numerous chemical constituents above true pre-mining baseline. However, based on statements and data presented in the DSEIS, Powertech has not adequately defined whether zones peripheral to the D-B ore-bearing geologic formations and bounding formations (above and below) also contain zones of high-quality, possibly potable ground water. Such zones should already have been defined as part of the DSEIS and Application documents.

**Potential impacts to ground waters have been unrealistically minimized and inadequately characterized.**

86. The DSEIS fails to provide adequate baseline data to demonstrate that portions of the ore-bearing zones do not contain high quality ground water. In fact, it is clear that the NRC has relied on Powertech data that clearly are biased against revealing the extent of high quality ground waters. For example, Table 3.5-4 includes only water quality concentrations that exceed the MCLs (maximum contaminant levels), and discards all data having lower concentrations (p. 3-38). The discussion on p. 3-37 also is clearly intended to convey the message that most of the D-B area waters are already contaminated. A similar bias is presented in the DSEIS discussions of D-B area surface water quality (p.3-23, 25, 26, 27).

87. The DSEIS continues the unbalanced discussion of contaminated “baseline” that was presented in the 2009 Application. The ER (pg. 4-18) states that all D-B ore zone ground water quality is degraded by natural mineralization processes, but there are no data provided to support this allegation and in many similar situations it is simply not true. Furthermore, many ground water- bearing zones in mineralized areas do not contain elevated concentrations of metals, non- metals, etc. until they have been exposed to air and bacteria---often as the result of previous mining or exploration drilling—as has occurred here. Even following exploration and mining activities, some portions of ore-bearing formations continue to contain high-quality ground water.

88. Hence, it is not defensible for NRC and Powertech to state, as the company does in ER Sect. 4.6.2.2 (Potential Impacts of Production on Ore Zone Groundwater Quality) that: “Potential environmental impacts to groundwater are changes to water quality in well fields within the exempted aquifer. The impact, in and of itself, is of limited significance, due to the fact that the groundwater quality is very poor prior to ISL operations; due to the presence naturally occurring radionuclides, heavy metals, and other constituents that exceed EPA and/or state drinking water limits. Accordingly, the exempted aquifer is not and can never serve as a USDW (HRI, 1997; NMA, 2007).” The citations provided here by Powertech do not pertain to the specific D-B situation and one, the NMA citation, is simply a routine public relations statement made by the industry’s lobbying group. The DSEIS inadequately addresses these issues.

89. The public relations statements continue on ER, pg 4-18, where they state: “Powertech (USA) has proposed to use gaseous oxygen and carbon dioxide lixiviant. The interaction of the lixiviant with the mineral constituents of the exempted ore zone results in a slight increase in trace elements and primary constituents of sulfate, chloride, cations and TDS above pre production levels. There is no introduction of non-naturally occurring constituents from the leach fluids into the ore body.”

90. To support these unsubstantiated statements, Powertech needs to supply actual, detailed chemical analyses of the pregnant leach solutions (multiple analyses)--solutions resulting from the chemical interaction of the proposed lixiviant and the ore zone rocks. It is a basic purpose of an ISL operation to introduce these lixiviants to drastically change the local ground water chemistry, routinely producing significantly-elevated concentrations of many major and trace metals and metalloids, plus other constituents: i.e. arsenic, antimony, molybdenum, selenium, vanadium, uranium, strontium, iron, manganese, lead, lithium, nickel, chromium, sulfate, chloride, etc. It is a total “red-herring” to claim that: “There is no introduction of non- naturally occurring constituents.....”

91. *In addition, there is ample evidence in the technical and regulatory literature to show that the leached aquifers at most, if not all ISL operations, have never truly been restored to their pre-operational, baseline water quality.*

**Ground Water Monitoring Methods are Inadequate to Reliably Define Past or Future Impacts. Domestic and Stock Wells.**

92. DSEIS p.7-13 and 14 (Project-wide GW monitoring), states that all domestic and stock wells within **2km** (1.2 mi.) of the project area will be sampled quarterly for a year to establish baseline water quality after operations begin [based on NRC, 1980, Regulatory Guide 4.14]. “All the preoperational groundwater samples will be analyzed for the constituents listed in Table 7.3-1.”

93. The stated approach presents several *serious flaws*:

- if the samples are collected after operations begin, they cannot be considered true baseline;
- the list of constituents to be monitored is inadequate;
- The NRC Guidance Document cited is inappropriate: it refers only to uranium mills, not ISL operations, and deals only with radiological effluent.
- This Guidance Document does not define the radius to which domestic and stock, etc. wells should be monitored, for any type of uranium operation--ISL or mill. The authors have incorrectly applied the 2-Km distance as the Guidance speaks only with regard to tailings impoundments at conventional mills (section 2.13; p. 4.14-4).
- sampling of these wells *during operations* is proposed to be done *once per year*, which is totally inadequate to note changes in water quality or water level.

94. The definition of the area containing domestic and stock wells to be monitored needs to be expanded and defined more precisely. Because the DSEIS fails to show that Powertech has ever performed a detailed well inventory of all wells outside the proposed DB boundary, such an inventory is needed to evaluate present and future impacts as part of any acceptable EIS. A preliminary inventory should investigate and summarize the characteristics of all wells within at least 2 miles of the DB boundary. The inventory should plot the locations of all such wells on appropriate maps and summarize their uses; date drilled; completion characteristics, including depths; well yields; availability of water quality data. Once such an inventory is completed, all of these wells should be monitored for detailed water quality and water levels quarterly for a year, with all data summarized in a revised EIS.

#### **Baseline Water Quality Within Proposed Operation Areas.**

95. The DSEIS states (p. 7-8) that selected wells completed within the mineralized zones will be used to evaluate “baseline” water quality and they will then be converted into injection or production wells. Clearly the water quality in many of these zones is no longer true baseline due to all of the historical drilling / mining in many of these areas. These activities would have altered the original geochemical and bacteriological conditions, leading to significant changes in the water quality. In addition, if the “baseline” wells are converted to injection or production uses, these wells must be maintained, post-closure, to allow for long-term monitoring to evaluate the success or failure of aquifer restoration.

#### **Land application is not an approved method of radioactive liquid waste disposal.**

96. The DSEIS proposes that various liquid wastes may be disposed via land application. However, US EPA (2008) guidance states that land application is not an approved method for disposal of such wastes. Equally importantly, the DSEIS has failed to supply detailed chemical analyses of these proposed wastes (see discussion below) to clarify the chemical nature of the materials being disposed.

97. Such detailed chemical composition data should be included in the DSEIS available for public comment and technical review prior to FEIS and license approval.

98. It is ironic that the Supplement to the 2009 Application erroneously states on pg. 4-7 that irrigation pivots have been used to dispose of non-hazardous wastes via surface application “with no deleterious effect on the environment” at Hobson, Mount Lucas, and Highland. In 2008, the operators of the Highland and Smith ISL mines in Wyoming were forced into a settlement agreement with the WY Dept. of Environ. Quality, because land application of liquid wastes containing elevated concentrations of selenium had contaminated soils. Part of the settlement agreement required the operators of Highland to immediately pay \$8 million to accelerate reclamation activities and to increase their financial assurance bonds for these two sites to \$80 million (WY DEQ, 2008). Furthermore, Faillace and others (1997) report that release of such waters will contaminate the soil at the land application areas. Radionuclides adsorbed by the soil will become a source term for radioactive release through wind erosion processes.

**Deep Well Injection of Liquid Wastes. The DSEIS fails to provide necessary details on the chemical composition of the wastes and water treatment specifics.**

99. At present, the public has not been told what specific measures will be used to dispose of D-B liquid wastes. One option mentioned is to dispose of such wastes via deep wells completed into the Minnelusa and / or Deadwood Formations (DSEIS p. 2-22). However, the public has no idea of the detailed chemical compositions of these liquid wastes. Detailed chemical analyses of these liquids should have been included in the DSEIS, including, as a minimum, all chemical constituents for which any category of environmental standard or criterion exists. These should include determinations of S.C., TDS, pH, all commonly-reported inorganics, trace elements, radiochemicals, and a detailed organic-constituent scan. Such data should be provided in the EIS for both treated and untreated liquid wastes.

100. While both the Minnelusa and Deadwood Formations are deep below the land surface, it is quite short-sighted to assume that these waters, once contaminated by the process wastes, could never generate negative impacts—especially if one considers the cumulative impact of the other industrial wastes that are or will be injected into these formations, long-term. Long-term scenarios should consider timeframes of at least 100s to 1000s of years in the future, when these deep waters may be required for other foreseeable domestic, agricultural, or industrial uses, and the economics of water are likely to be quite different than has been assumed in the GEIS (DSEIS p. 5-31). Thus, detailed water quality

analyses should be performed on these deep aquifer waters, both pre-injection and at various periods after injection is initiated.

**The technical and regulatory literature amply documents the numerous failures to restore aquifer water quality at other ISL sites. Thus, it is reasonable to assume that portions of the D-B ground water surrounding the leached zones will have degraded water quality and may be unfit for future uses.**

101. GEIS Section 2.5 described aquifer restoration activities within wellfields that *ensure water quality in surrounding aquifers would not be adversely affected by the uranium recovery operations* (DSEIS p. 2-35; NRC, 2009a). However, neither the DSEIS or the GEIS contain detailed discussions to demonstrate that the population of other in-situ operations have been able to do so. Indeed, the historical reality from other operating or closed ISL sites demonstrates an inability to restore to pre-operational or baseline WQ conditions for all constituents. (Otton, 2009; Hall, 2009).

**The public has no detailed information concerning the specific aquifer restoration standards / criteria that will actually be employed. The DSEIS presents no such specific aquifer clean-up standards / criteria.**

102. Because the DSEIS does not contain actual baseline data for D-B water resources, the DSEIS does not contain any such specific aquifer restoration standards / criteria. Instead, the DSEIS has the following convoluted, bureaucratic language (p.2-35):

“The primary goal of aquifer restoration is to return groundwater quality within the production zone of wellfields to the preoperational water quality conditions or to standards consistent with NRC requirements at 10 CFR Part 40, Appendix A, Criterion 5B(5) (Powertech, 2009b, 2011).”

103. The subsequent language makes clear to the reader that the public will not be told what the specific aquifer clean-up criteria will be until long after aquifer restoration has begun, and that the criteria are totally flexible.

“10 CFR Part 40, Appendix A, Criterion 5B(5) requires that groundwater quality in the exempted ore-bearing aquifer be restored to (i) a Commission-approved background (CAB) concentration; (ii) the maximum contaminant levels (MCLs) listed in 10 CFR Part 40, Appendix A, Table 5C, for constituents listed in Table 5C and if the background level of the constituents fall below the listed value; or (iii) an alternate concentration limit (ACL) established by the Commission, if the constituent background level and the values listed in Table 5C are not reasonably achievable. The ACL development is described in SEIS Appendix B. These groundwater quality standards would be implemented, as part of the aquifer restoration phase, to ensure public health and safety.”



**Target Restoration Goals and UCL Parameters and standards should all be selected by the NRC and presented publicly in the EIS, prior to license approval.**

104. The DSEIS uses unnecessarily convoluted and inconsistent terms to describe aquifer restoration standards / criteria. Various parts of the DSEIS use the following terms (DSEIS p. 2-35):

Commission-approved background (CAB)

Maximum contaminant levels (MCLs)

Alternate concentration limit (ACL)

target restoration goals

lixiviant migration indicators (DSEIS p. 7-11)

105. It is impossible to discern whether or not the target restoration goals are the same as lixiviant migration indicators.

106. DSEIS p. 7-11 states: “The constituents and parameters selected as lixiviant migration indicators and for which UCLs will be set at the proposed Dewey-Burdock ISR Project are **chloride, conductivity, and total alkalinity** (Powertech, 2011).”

107. The 2009 Powertech Application Supplement, pg. 5-6, Sect. 5.2.7, states: “Powertech management has always used **Chlorides, Sulfate, and Uranium** as Upper Control Limit (UCL) Parameters. **Sometimes Total dissolved Solids** is used.” This statement fails to provide necessary clarity, as Powertech has never operated an ISL mine.

108. The descriptions of proposed water quality monitoring (surface and ground waters) on pages DSEIS 7-4 through 7-15 are unclear and unnecessarily convoluted. Instead of the pages of unclear wording presented here, these details should have been summarized using tables to show: the specific sites / wells to be sampled; specific constituents & parameters; sampling frequency, reporting protocol and frequency.

109. The procedures describing how UCLs will be determined are inconsistent (p. 7-11, L 24-38). The UCLs named in the 2009 Application supplement and the DSEIS (2012) are different. How could the procedures used in both cases comply with NUREG-1569 (NRC 2003)? Furthermore, setting the UCLs at the mean concentration plus 5 standard deviations is excessively lax. It would be much more meaningful to present means plus the 95 percent confidence intervals.

110. Apparently only water level and UCL data (chloride, conductivity, and total alkalinity) will be reported to EPA, and only quarterly (DSEIS p. 7-11). Such reporting is totally inadequate in both frequency and constituents. In essence it

prevents the public and the EPA from understanding what is happening at the site.

111. The NRC has considerable experience with numerous operating and closed ISL / ISR operations. Clearly NRC, not the operator, should select the appropriate “target restoration goals”. Yet, the DSEIS p. 2-35, L 37-38, states: “The applicant would establish target restoration goals [CAB concentrations per.....].” Selection of such target restoration goals and UCL parameters and standards should be done by the regulatory agency in the DSEIS to avoid possible conflicts of interest and reveal these foreseeable impacts at the earliest possible stages of project analysis.

112. *Such specific restoration goals and standards should be presented in the DSEIS for public review and comment prior to FEIS or license approval.*

**The SDEIS does not clearly define the various zones that are contemplated to contain, monitor, and control migration of lixiviant-mobilized groundwater and chemical constituents.**

113. D-B Application Supplement, pg. 5-5 describes an aquifer exemption boundary, which acts as an additional buffer zone outside the monitor well rings **“to provide protection to adjacent water from the excursions that occur in the normal course of operations.”** Page 5-6 of the Supplement further states that the aquifer exemption boundary is proposed to be up to 1200 ft. outside the monitor well ring, and **would be considered the point of regulatory compliance. Apparently simply pumping to create an inward flow direction is not adequate to control “excursions.”** It appears this aquifer exemption boundary is actually an expanded ground water sacrifice zone.

**Mitigation is Not Detailed In a Manner That Allows Any Meaningful Review**

114. The DSEIS portrays mitigation to account for impacts, but the mitigation consists only of proposals to make plans to restore groundwater in the future. There is no detail as to the effectiveness of these proposed mitigation measures, nor any analysis of whether any such plans have succeeded in the past.

115. The DSEIS provides for monitoring of restored groundwater aquifers for only 12 months. DSEIS, P. 2-37. However, there is no assessment as to whether 12 months is adequate. Aquifer restoration activities at numerous other ISL sites have failed to return aquifer water quality to baseline conditions following years of attempts at clean-up. Hence, at minimum, the NRC should conduct these effectiveness reviews and require that post-operational monitoring of D-B aquifer water quality continue until baseline conditions are attained.

## Financial Assurance

116. DSEIS, p. 2-35 states that: “The applicant would also be required to provide financial sureties to cover the costs of both planned and delayed restoration programs, in accordance with 10 CFR Part 40, Appendix A, Criterion 9. NRC reviews financial sureties annually.” Although a final decision on surety amounts will come at a later date, the revelation and analysis of the likely amount of surety must be revealed and analyzed in the DSEIS.

117. The NRC and the public know several general facts about the usefulness of most company-generated financial assurance estimates:

1-They generally are based on overly-optimistic assumptions about future water quality, thereby under-estimating costs. Kuipers (2000) conducted a survey of bonding practices at metal mines throughout the western U.S. and found that the bond amounts available were hundreds of millions of dollars below that necessary to conduct actual clean-ups. Many of the “problem” sites have been foreign-owned entities, especially those with their corporate headquarters and assets based in Canada.

2-Aquifer restoration at most, if not all previously-licensed and operated ISL sites has failed to actually return ground water quality to baseline conditions [Hall (2009); Otton and Hall (2009);

3-Predictions of future aquifer restoration success made by the project proponents seldom use truly conservative assumptions. Calculation of financial assurance amounts made by representatives of the party that stands to profit from project licensing represents an extreme conflict of interest.

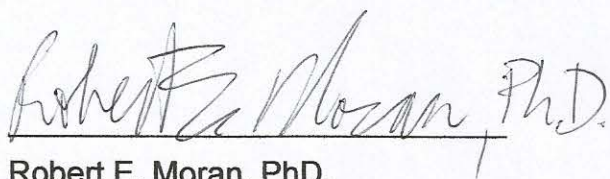
4-The technical literature is filled with documentation that quantitative predictions of future water quality at *specific* sites cannot be done reliably [Sarewitz, et. al. (2000); Moran (2000); Pilkey & Pilkey-Jarvis(2007); Kuipers & Maest (2006)], and the general failure to restore aquifers back to pre-operational baseline concentrations supports this. This approach must be totally rejected because it assumes one can make accurate and precise *deterministic* predictions.

118. For these reasons, at least preliminary financial assurance calculations should be included in the DSEIS, preferably made by some independent party, not paid or directed by the project proponents. These calculations should also consider the actual reclamation and restoration costs incurred, long-term, from a statistical sampling of the previously-licensed ISL sites. Furthermore, these financial assurance amounts and mechanisms should be made public prior to award of any licenses.

119. To ensure protection of the general public, such financial assurance agreements (bonds, etc.) should be made with the parent corporation, not simply the local operating entity.

Pursuant to 10 C.R.F. § 2.304(d) and 28 U.S.C. § 1746, I declare under penalty of perjury, that the foregoing is true and correct to the best of my knowledge and belief.

Signed on the 24<sup>th</sup> day of January, 2013,

A handwritten signature in cursive script that reads "Robert E. Moran, PhD." The signature is written in dark ink and is positioned above a horizontal line.

Robert E. Moran, PhD.

**Robert E. Moran, Ph.D.**

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**EDUCATION**

University of Texas, Austin: Ph.D., Geological Sciences, 1974  
 San Francisco State College: B.A., Zoology, 1966

**PROFESSIONAL HISTORY**

Michael-Moran Associates, LLC, Partner, 2003 to present  
 Woodward-Clyde Consultants, Senior Consulting Geochemist, 1992 to 1996  
 Moran and Associates, President, 1983 to 1992; 1996 to 2003  
 Gibbs and Hill, Inc., Senior Hydrogeologist, 1981 to 1983  
 Envirollogic Systems, Inc., Senior Hydrogeologist / Geochemist, 1980 to 1981  
 Tetra Tech Intl./ Sultanate of Oman, Senior Hydrogeologist, 1979 to 1980  
 Science Applications, Inc., Geochemist / Hydrologist, 1978 to 1979  
 U.S. Geological Survey, Water Resources Div., Hydrologist / Geochemist, 1972 to 1978  
 Texas Bureau of Economic Geology, Research Scientist Assistant, summers:1970 & 1971

**REPRESENTATIVE EXPERIENCE**

Dr. Moran has more than 42 years of domestic and international experience in conducting and managing water quality, geochemical and hydrogeologic work for private investors, industrial clients, tribal and citizens groups, non-governmental organizations, law firms, and governmental agencies at all levels. His experience includes the following representative project assignments.

***2003 to Present: Michael-Moran Associates, LLC:***

- Contraloría General de la República & IKV Pax Christi, Bogota, Colombia. Provide assistance and training to the independent auditing arm of the Colombian government on mining & environmental audits and legislation.
- The Black Hills Wild Horse Sanctuary, and Bangs, McCullen, South Dakota. Expert opinions and testimony before State regulatory agencies regarding Large-Scale Mine and Water Use permits for the proposed Dewey-Burdock in-situ uranium operations.
- Sims Murray Ltd. and the Town of Florence, Arizona. Review of Town nuisance ordinance related to proposed in-situ mining and aquifer impacts. Expert opinions for litigation.
- Wild Salmon Center & World Wildlife Federation (Russia), Moscow, Russia. Elaboration and presentation of mining and water-related issues to members of Russian government, industry and the environmental communities.

- Citizens of Cañon City / Colorado Citizens Against Toxic Waste, Inc. (CCAT); Cañon City, Colorado. Technical assistance to citizen's group on hydrogeologic and geochemical issues related to contamination from disposal of radioactive, etc. materials at the Cotter uranium mill site.
- Environmental Defender Law Center and GRUFIDES (NGO), Cajamarca, Peru. Review of Environmental documents relating to the Conga Mine; site visit; report preparation.
- Roanoke River Basin Association; Virginia. Assistance on technical issues related to proposed uranium mine and processing facilities; presentations to public and regulators; participation in government planning meetings.
- Human Development Center "Tree of Life"; Bishkek, Kyrgyzstan. Review of operations at Kumtor Gold Mine using funds from Bankwatch, Kiev, Ukraine.
- Za Zemiata (Sofia) and the University Autònoma de Barcelona; Krumovgrad, Bulgaria. Review of the EIS for a proposed gold mine; municipal / public meeting presentations; prepare report using E.U. funds.
- Powder River Basin Resource Council; Oshoto, Wyoming. Review of Strata Energy NRC License Application to operate an in-situ leach uranium operation; provide technical opinions.
- Pro Património (the National Trust of Romania); Brussels, Belgium. Presentation to members of European Union Parliament regarding environmental aspects associated with the proposed Rosia Montana Mine, Romania.
- Trustees for Alaska. Prepared expert report on hydrogeologic and water quality impacts from exploration activities at the Pebble Mine site. Opinions prepared for litigation in Alaska Superior Court on behalf of *Nunamta Aulukestai, et. al. v. State of Alaska, et. al.* (Pebble Limited Partners); deposition and trial testimony.
- Bank Information Center and Earthworks, Washington, D.C. Report on hydrogeologic and geochemical impacts at the proposed Weda Bay, Indonesia, cobalt-nickel mine; delivered to Multilateral Investment Guarantee Agency.
- IKV Pax Christi (Netherlands), Bogota, Colombia. Prepare mining-environmental best practices report for presentation to Colombian Ministry of Environmental Affairs.
- Oglala Sioux Tribe, Western Mining Action Project, Gonzalez Law Firm, South Dakota. Review of Powertech License Application, EIS and provide expert opinions: Dewey-Burdock In Situ Uranium Project.
- Comisión de Gestión Integral de Aguas de Bolivia (Commission for the Integrated Management of Bolivian Waters) and Federación Regional Única de los Trabajadores Campesinos del Altiplano Sud (Regional Farmers Federation of the Southern Altiplano), Bolivia. Review of present mining activities and documents related to the San Cristobal Mine. Activities funded by the Municipality of Colcha K (Potosí, Bolivia), the Centro de Estudios de la Universidad de San Simón, Cochabamba, and Global Green Grants Fund.

- Shute, Mihaly & Weinberger / San Diego State University Research Foundation. Review of hydrogeologic / environmental impacts associated with quarry construction near a university wildlife refuge.
- Sarah Vogel Law Firm, North Dakota. Litigation support and evaluation of environmental impacts resulting from a release of oilfield waters onto livestock lands and waters.
- IKV Pax Christi (Netherlands), Tolima, Colombia. Technical review of proposed La Colosa gold project (Anglo Gold Ashanti); interaction with regulators, civil society and company; prepare recommendations & report.
- Thompson Divide Coalition, Western Colorado. Technical assistance to a consortium of environmental groups in designing and conducting a baseline water sampling program in anticipation of gas drilling activities. Preparation of summary report.
- Global Green Grants / Nature's Own, Papua New Guinea. Prepare technical / policy papers on marine disposal of mining wastes.
- SAVIA, School of Ecological Thought / Comision Pastoral Paz y Ecologia, Guatemala. Presentations on ecological aspects of resource legislation to Guatemalan government ministries, high-level officials, and educational institutions. Conduct water quality training classes; assist with development of laboratory capabilities.
- Astrella & Rice, Colorado, U.S.A. Technical assistance in preparing litigation arguments for citizen lawsuit involving alleged drinking water contamination by oil and gas activities.
- Office of the Prime Minister, Iraqi Kurdistan. Development of information infrastructure and management training for numerous ministries in Northern Iraq; done in partnership with faculty of American University, Washington, D.C. Headed an audit team for the Regional Statistics Organization.
- Southwest Research and Information Center / Buryat Regional Organization on Baikal / Mongolia Nature Protection Coalition; Buryatia, Siberia, Russia and northern Mongolia. Technical information exchanges with local NGOs, government officials and mining company staffs.
- Rulison Citizens Group / Public Counsel of the Rockies. Colorado. Development of technical arguments and potential litigation support intended to define environmental issues related to gas development near the Rulison underground nuclear test site. Hearing testimony.
- The Nature Conservancy, Trout Unlimited, Alaska Conservation Foundation, Trustees for Alaska and Renewable Resources Coalition, Alaska. Presentations to public interest groups and development of technical issues and papers relating to construction of the Pebble copper-molybdenum-gold mine, proposed for operation above the largest sockeye salmon fishery in the world.
- Wild Salmon Center, Alaska. Technical evaluation of hydrogeological and chemical issues that may impact fisheries near the proposed Pebble Mine.

- Miller, Axline & Sawyer / Meyers, Nave, Riback, Silver & Wilson / City of Grass Valley, California. Technical and litigation support in a suit alleging contamination by Newmont Mining Corporation; deposition testimony.
- Latin American Water Tribunal. San Salvador, El Salvador. Prepare presentations and conduct workshops on water and water quality. Funding: Heinrich Boll Foundation.
- Alburnus Maior, Rosia Montana, Romania. Evaluation of EIA and preparation of summary report on a proposed gold mine in Transylvania. Funded by the Staples Trust, U.K. and the Open Society Foundation, Romania.
- Asociacion de Desarrollo Social Santa Marta (ADES), El Salvador. Evaluate EIA and related documents, El Dorado Mine; technical presentation at national forum; prepare review report. Funded by DIAKONIA, Swedish Ecumenical Action.
- Alburnus Maior, Romania. Review documents and prepare comments related to development of proposed Rosia Montana Mine for a Romanian NGO.
- La Lumiere, Senegal and WACAM, Ghana. Conducted water quality training sessions for NGO and government staffs, as related to mining and other development activities. Funded by Oxfam America.
- ESRI (Environmental Systems Research Institute). Provide technical assistance to several Iraqi Ministries to define information management needs, deploy map-based systems (GIS), and establish a Middle East-based Center of Excellence to support these ministries. Performed in conjunction with NGA.
- Colectivo Madre Selva, Guatemala. Evaluation of Marlin Mine site, review of EIA and preparation of report; attendance at national and indigenous mining forums; conducted water quality training; review of CAO / IFC documents. Funded partly by Misereor, Catholic Bishops' Development Organization, Germany.

**1996 to 2003: Moran and Associates, Inc.:**

- International Union for Conservation of Nature and Natural Resources (IUCN, Switzerland). Review of the Mining and Metals Supplement of the Global Reporting Initiative (GRI).
- World Bank, Extractive Industry Review. Member of Advisory Group assisting WB in evaluating extractive industry practices; London, Lisbon.
- Nishnawbe Aski and other Ontario First Nation bands---Ontario, Canada. Review of environmental documents relating to Montcalm Mine, a proposed copper-nickel facility. Activities paid for by Falconbridge Limited.
- Kazakh Institute of Physics and Technology / ISTC---Almaty, Kazakhstan. Technical oversight of environmental program, evaluating migration of radionuclides at the Semipalatinsk Nuclear Test site.
- Greenpeace Argentina / Mineral Policy Center---Esquel, Argentina. Review of EIA (water, environ. issues) and conditions at proposed mine in Patagonia.



- Oxfam America / Sahel Development Foundation: Syama Mine, Southern Mali. Review of environmental conditions and documents related to an IFC-funded gold mine (2003); conduct technical workshops and policy meetings with Mali government and press (2004).
- Kivalina Relocation Planning Committee---Alaska. Litigation support to Center on Race, Poverty & the Environment regarding water quality issues, Red Dog Mine. Deposition testimony.
- Asociation de Organismos No Gubernamentales—Santa Rosa de Copan, Honduras. Independent review of water / environmental issues at San Andres mine; funded by Dan Church Aid (Danish government and NGOs) and Christian Aid (English NGO).
- Oxfam America / Friends of the Earth Int'l. / Global Green Grants---Quellaveco, Peru. Independent review of mining, water and environmental issues at request of Asociacion Civil "Labor", Lima.
- Oxfam America / Mineral Policy Center / Environmental Mining Council of B. C.: Tambogrande, Peru. Independent review of mining water and environmental issues. Includes numerous public presentations to citizens and governmental groups, including members of the Peruvian Congress.
- New Mexico Environment Department---New Mexico. Review of cost estimates for water treatment systems for closure plans / bonding calculations, Chino and Tyrone Mines.
- International Institute for Environment and Development—London, U.K. Consultant to MMSD project on sustainable development / mining issues.
- Technical Chamber of Greece---Thrace, Greece. Technical assistance to advisory arm of the Greek government and citizens groups regarding gold mining / environmental issues.
- Malerah-Wahlabul Native Title Claimants / Friends of the Earth—Sydney, Australia. Review of water quality issues related to cyanide leach gold operations on aboriginal lands, and testimony at Land and Environment Court.
- Loeb Aron & Co.---London, U.K. Preparation of report evaluating the Baia Mare, Romania waste spill for an investment banking firm.
- Centro de Investigacion y Planificacion del Medio Ambiental (CIPMA) / World Resources Institute / International Development Research Centre---Chile. Evaluation of environmental costs associated with copper mining in Chile.
- Carl Duisberg Gesellschaft / Univ. of Witwatersrand / United Nations---South Africa. Training in cyanide and environmental technology assessment issues.
- Dogrib Nation / Pape and Salter---Yellowknife, Canada. Geochemical consulting and testimony regarding the proposed Diavik diamond mine.
- Soros Foundation Kyrgyzstan---Bishkek, Kyrgyzstan. Water quality instruction to regulators and NGOs regarding mining, sampling, laboratory procedures, and general environmental issues. Review laboratory.

- General Chemical / Sierra Club---Piceance Basin, Colorado. Review of water quality, treatment, legal and policy issues regarding the proposed Yankee Gulch soda ash mine; hearing testimony.
- Sierra Club Legal Defense Fund / Okanogan Highlands Alliance---Crown Jewel Mine, Washington. Litigation support on water quality, geochemistry, treatment issues to groups opposing proposed gold operation; test case on federal mining law; deposition testimony.
- National Wildlife Federation---Carlota Mine, Arizona. Litigation support for challenge of EPA regarding water quality/ treatment issues at copper mine. Review of TMDL issues related to Pinto Creek for NWF and local citizens.
- International Rivers Network---Review of proposed dam project and associated mine water quality issues at the San Roque site, Philippines.
- Mineral Policy Center---Preparation of technical documents on the environmental behavior, analysis and toxicity of cyanides.
- Holnam Industries---Penrose, Colorado. Ground water quality/ geochemistry study for cement operation.
- World Resources Institute---mining water quality/ geochemistry assistance on Venezuelan forestry / mining environmental regulations, and environmental economics of copper mining practices, Chile.
- U.S. EPA / American Geological Services---French Gulch, Colo. Geochemical / treatment /remediation support at an abandoned mine site; negotiated Superfund issues.
- Stoel Rives / Richmond Hill Mine, So. Dakota. Review water quality treatment and geochemistry issues at a closed gold mine site with discharge violations.
- Nacho Nyak Dun First Nation / Pape and Salter---Yukon, Canada. Evaluation of proposed heap-leach gold mining facilities and practices for native group and barristers.

**1992—1996: Woodward-Clyde Consultants, Inc.**

-Molycorp / Unocal---Questa, New Mexico. Review of water quality, geochemical, & aquatic biology issues at a molybdenum mine / mill site.

-Minera Escondida Ltda.---Chile. Review of geochemical data for copper mine.

-Homestake Mining---Lead, South Dakota, U.S.A. Review of water quality and geochemical problems and waste rock storage and tailings stability issues.

-U.S. Bureau of Land Management / Summo Minerals---Lisbon Valley, Utah. Review of water quality and geochemistry, and assistance in preparation of an EIS at a proposed copper mining and recovery site.

-Southern Peru Copper Corp.--Toquepala, Peru. Design and oversight of water quality, geochemistry, and remediation issues at an open-pit copper mine, mill, and waste facilities.

-Cortez Mining/ Placer Dome / U.S. Bureau of Land Management - Pipeline Project, Nevada. Review of water quality and geochemistry and preparation of EIS-related reports at this proposed open pit gold site.

-Kennecott Utah Copper. Interacted with the law firm of Bogle and Gates to assist an active metal mining company in defending against a CERCLA listing. Activities involved interpreting water quality/geochemical and other environmental data within the Hazardous Ranking System (HRS) context.

-ASARCO - Leadville, Colorado. Oversight of water quality and geochemical activities at a historic metal mining and processing site where the client is involved in CERCLA negotiations. Interaction with State and EPA representatives and legal staff.

-Cambior Minerals - Metates Mine, Mexico. Water quality and geochemistry evaluation of a new gold property.

-Fraser Stryker and the Lindsey Chemical Co. - Nebraska. Technical support to legal staff involved in negotiations regarding a Superfund industrial processing site.

-W.R. Grace - Motorwheel Site, Michigan. Technical assistance to Grace legal staff involved in CERCLA negotiations at a hazardous waste site.

-Zortman Mining Co. / U.S. Bureau of Land Management. Technical and management responsibilities for water resources and geochemistry tasks in preparation of revised EIS at a gold-cyanide leach site with existing acid drainage problems.

-Echo Bay Mining, Lamefoot Mine, Republic, Washington. Responsible for geochemistry and water quality aspects of a supplemental EIS at a new gold mine site. Development of monitoring, testing and remedial recommendations to the BLM.

-Angelina Farms, Louisiana. Technical support to legal staff of oil production companies accused of contaminating groundwaters with brines.

-Amax Gold / Haile Mining, South Carolina. Water quality consulting at a gold mining site with existing acid drainage problems.

-Chino Mines, New Mexico. Technical evaluation of water quality and geochemical issues associated with leaching operations at an operating copper facility.

**1983 to 1992: Moran and Associates, Inc.:**

-Shea and Gardner / Rockwell--Rocky Flats Nuclear Plant, Colorado. Reviewed and evaluated geochemical studies; proposed future activities in preparation of potential environmental-criminal litigation.

-Saunders, Snyder, Ross and Dickson / American Water Development, Inc. - San Luis Valley, Colorado. Coordinated water quality and geochemistry activities in support of water rights litigation. Oversaw water quality sampling, evaluated water quality and remote sensing data, assisted attorneys in technical strategy development and opponents' depositions; supplied deposition testimony.

-Arnold and Porter / Keystone Ski Corporation - Keystone, Colorado. Designed water quality and geochemical sampling program for ski area expansion in a previously mined area. Evaluated data and proposed remediation activities.

-Advanced Sciences, Inc. / EG&G - Rocky Flats Nuclear Plant, Colorado. Evaluated existing water quality and geochemical sampling programs; prepared document on non-facility related sources of chemical constituents and background.

-City of Brighton - Brighton, Colorado. Evaluated existing surface and groundwater quality data and suggested remedial activities to deal with excessive manganese and dissolved organic concentrations. Provided testimony to City Council.

-Chadwick & Associates, Inc. / Newmont Mining - Telluride, Red Mountain, Colorado. Provided diverse water quality and geochemical consulting relating to remediation of acid mine drainage problems.

-Intergraph Corp. - Reston, Virginia. Assisted in technical development and marketing of a new environmental data management / GIS product.

-U.S. Forest Service - Salmon, Idaho. Geochemical / water quality consultant at the Beartrack mine site, a proposed cyanide-leach gold project.

-Earth Satellite Corporation / Navajo Nation / Patton, Boggs, and Blow - Window Rock, Arizona. Conducted a preliminary reconnaissance of water resources on the joint-use area of the Navajo/Hopi reservations using satellite imagery.

-Mission-Viejo / Morrison and Forester - Denver Basin, Colorado. Acted as a geochemical consultant in a groundwater rights dispute.

-Bunker Hill Corporation / Dames and Moore - Kellogg, Idaho. Reviewed field and laboratory water quality procedures at a CERCLA metal-mining and processing facility. Audited proposed laboratory.

-Saunders, Snyder, Ross, and Dickson / Adolph Coors Company - Golden, Colorado. Water quality consultant; reviewed data from Central City/Blackhawk, CERCLA site, and determined potential impact to the Coors water treatment plant. Provided testimony at stream classification hearings, Colorado Water Quality Control Commission.

-Colorado Water Resources and Power Authority - San Luis Valley, Colorado. Conducted water quality/geochemical and Landsat evaluations of deep groundwater to aid in development decisions.

-Armstrong, Teasdale, Kramer, Vaughan, and Schlafly / Anschutz Corp.-- Fredricktown, Missouri. Supervised technical activities of a CERCLA / SARA-related lawsuit; acted as a technical liaison with attorneys and regulators; managed consultants; authored reports; deposition testimony.

-Holland and Hart / White and Jankowski / Weller, Friedrich, Ward and Andrew / Breckenridge Ski Corporation - Breckenridge, Colorado. Technical supervision of water quality-related issues in a private lawsuit against Breckenridge Ski Corporation. Managed sampling and data interpretation; interacted with attorneys on strategy and assisted at depositions; authored reports; expert witness.

-Dames and Moore / Hecla Mining Corporation - Leadville, Colorado. Acted as hydrogeological/geochemistry consultant to Hecla on a natural resources damage suit; interacted with attorneys at Davis, Graham and Stubbs.

-Dames and Moore / Davis, Graham and Stubbs - Eagle Mine, Colorado. Supervised water quality/hydrogeology activities in preparation of a legal defense of Gulf and Western Corporation versus the State of Colorado in a natural resources damage suit; supervised and participated in all sampling; QA activities and report preparation; interacted with attorneys and regulators; assisted at depositions; deposition testimony; testified before Colorado Water Quality Control Commission on appropriateness of proposed metals standards.

-Jacobs Engineering - Albuquerque, New Mexico. Prepared policy documents on water quality/geochemistry procedures associated with the Uranium Mill Tailings Remedial Actions Project (UMTRA).

-University of Wisconsin. Designed a proposed groundwater exploration program for Gambia, West Africa, in conjunction with Earth Satellite Corporation.

-Harza Engineering Company / University of Michigan - Senegal, Guinea, and Gambia, West Africa. Evaluated potential impacts of new dam construction within the Gambia River basin. Reviewed local hydrogeology, mining production and exploration data; interacted with local officials.

-Engineering-Science, Inc. Faisalabad, Pakistan. Assisted in design of a well field for a groundwater supply in the central Punjab where high salinity and TDS were major problems; negotiated with local officials; prepared reports for Asian Development Bank.

**1981-1983: Gibbs & Hill, Inc.**

-Holme Roberts and Owen - Canon City, Colorado. Reviewed and interpreted existing hydrogeology and water quality data at the Cotter uranium mill and tailings; proposed future activities; interpreted background concepts, prepared position papers for attorneys in negotiations with State of Colorado.

-Earth Satellite Corporation - Sultanate of Oman. Conducted an interpretive study of regional groundwater potential in Oman, with the staff of Earth Satellite Corporation. Activities included interpretation of existing geology and Landsat imagery combined with conventional low altitude flight and ground reconnaissance. Prepared reports for government of Oman.

-Anschutz Mining Corporation - Fredericktown, Missouri. Managed water resource-related activities for environmental baseline studies at a proposed cobalt/ nickel mine. Designed sampling programs, oversaw sampling, data interpretation, and report preparation.

-Kemmerer Coal Company - Frontier, Wyoming. Managed and conducted hydrogeologic and water quality studies at a proposed open-pit coal mine. Supervised well installation, aquifer testing, sampling, report preparation; interacted with state regulators.

-Anaconda Copper Company - Rico, Colorado. Conducted an investigation of hydrology, water chemistry, and aquatic biology at a complex-ore mining district.

-Union Carbide Corporation - Uravan, Colorado. Managed and conducted a water quality monitoring program for a proposed uranium tailings disposal area and effluent evaporation basin. Assisted in design of geochemical testing program to evaluate potential leachate quality.

-Anschutz, Mining Corporation - Laredo, Texas. Managed and conducted an investigation of groundwater hydrology and soils geochemistry and associated hazardous wastes at a metal ore handling and reagent storage facility. Designed sampling protocol; prepared reports; negotiated with state regulators; interacted with attorneys at Baker, Botts.

-Snowmass Coal Company - Carbondale, Colorado. Managed and conducted hydrogeology investigation of an underground coal mine with steeply dipping seams.

-Marline Uranium Corporation / Union Carbide Corporation - Danville, Virginia. Managed water resources portion of a baseline investigation at a proposed hard-rock uranium mine site. Oversaw well installation monitoring programs and dewatering investigations.

-Southern Pacific Petroleum - Means, Kentucky. Conducted baseline hydrogeological/geochemical investigations at a proposed oil shale mine and retort facility.

**1980-1981: *Envirologic Systems, Inc.***

-Central Arizona Association of Governments - Globe/Miami, Arizona. Conducted study to determine hydrogeologic/geochemical impact of long-term copper mining and processing facility. Designed monitoring programs; interacted with federal, state, local and tribal officials; prepared numerous reports.

-United Nuclear - Homestake Partners - Milan, New Mexico. Conducted hydrogeological/geochemical evaluation of an existing monitoring program for a uranium milling and waste-disposal facility.

-Homestake Uranium - Marshall Pass, Colorado. Hydrogeological / geochemical evaluation of a proposed, hardrock, open-pit uranium mine.

**1979-1980: *Sultanate of Oman / Tetra Tech International*** - Muscat, Oman. Member of Water Resources Council Staff, Sultanate of Oman, based in Muscat, Oman. The Water Resources Council was an inter-ministerial body intended to coordinate all water-related activities within the Sultanate. Duties involved planning and design of surface and groundwater projects (both exploration and utilization) for the Omani government; development of water resources policy for the government; hydrogeological field work on both exploration and resource characterization projects - aquifer testing, borehole geophysics, water quality sampling, hydrogeologic mapping; review of work performed (or planned) by other consultants to the government, published reports on water resources of Oman.

**1978-1979: *Science Applications Inc.:***

-EG&G - Idaho National Engineering Laboratory, Idaho Falls, Idaho. Managed a hydrologic investigation of transuranic nuclide migration in groundwater. Contributed geochemical expertise to evaluation of waste isolation and transport modeling.

-Kerr-McGee Corporation - Grants, New Mexico. Conducted investigation into geochemistry of selenium associated with uranium mining/ milling.

**1972—1978: U.S. Geological Survey Water Resources Division;** responsible for the design, management, and implementation of the following hydrogeological / geochemical studies:

- Metal-Mine Drainage - Colorado. Study of impacts of mining activities (metals, uranium, coal) on the quality of streams in all major Colorado mining districts.
- Selenium in Groundwater - Golden, Colorado. Hydrogeological / geochemical investigation of selenium, uranium and associated constituents at the margins of the Rocky Flats nuclear plant.
- Geothermal Resources - Colorado. Reconnaissance investigation of potential geothermal resources throughout Colorado.
- Underground Coal Mine Water Quality - Colorado. Evaluation of existing and potential water quality problems from underground coal mines.
- In Situ Uranium Leaching - Grover, Colorado. Study of geochemical and hydrologic processes associated with in situ uranium mining and reinjection of waste products.
- Alluvial Metal Transport - Telluride, Colorado. Investigation of metal (especially chromium) movement from tailings ponds into alluvium.
- Southwest Colorado Groundwater - Colorado. Study to determine availability and quality of groundwater in southwestern Colorado.
- Oil Shale Waters - Piceance Basin Colorado. Evaluation of disposal of saline groundwater discharged to the surface during oil shale development.
- Grace Coal Site - Axial Basin, Colorado. Hydrogeological / water quality study of proposed open-pit coal site.

**1970, 1971, Summers: Texas Bureau of Economic Geology.** Evaluation of the aqueous geochemistry and biochemistry of Gulf Coastal sedimentary sulfur and uranium deposits and their relationships with hydrocarbons: interpretation of geologic and geophysical logs, water quality data.



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Harlan, R.L. and R.E. Moran, 1986. Closure of Metal Mining Sites: Hydrologic, Environmental and Legal Issues. Abstracts from Society of Mining Engineers Meeting, September 7-10, 1986, St. Louis, Missouri.

HRS Water Consultants and R.E. Moran, 1987. San Luis Valley Confined Aquifer Study. Three reports prepared for the Colorado Water Resources and Power Development Authority.

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# Oglala Sioux Tribe

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February 5, 2014

Haimanot Yilma  
Project Manager  
FSME/DWMEP/EPPAD/ERB  
U.S Nuclear Regulatory Commission  
Mail Stop: T8F05  
(via email)

RE: Submittal of comments on draft Programmatic Agreement for the proposed Dewey-Burdock ISR uranium mining project

Dear Ms. Yilma,

This is in response to the NRC's request for comment on the draft Programmatic Agreement (PA) for the proposed Powertech Dewey-Burdock in situ leach (ISL) uranium mine. As you know, the Oglala Sioux Tribe has attempted to maintain a high level of involvement in the National Historic Preservation Act (NHPA) Section 106 consultation process through our Tribal Historic Preservation Office (OSTHPO), as well as the preparation of the National Environmental Policy Act (NEPA) environmental impact statement. Unfortunately, these processes have not been conducted in a manner that complies with the letter or spirit of either the NHPA or NEPA, resulting in the effective exclusion of several of the most impacted Tribes to which ascribe this proposed project area as traditional homelands. As such, the Oglala Sioux Tribe, as part of the Great Sioux Nation, continues to have serious unresolved concerns with the proposed project, and cannot concur in the Programmatic Agreement as drafted.

We request that NRC revisit its NEPA and NHPA compliance on this proposed project in order to fulfill its prior commitments, and legal obligations, to provide meaningful opportunities for the OSTHPO participation within both the NHPA consultation and NEPA review. Principal among the Tribe's concerns are those raised previously regarding the lack of a credible cultural resources survey that includes the entire project area of 10,580 acres. As repeatedly communicated in prior correspondence by the Oglala Sioux Tribe and others, while the Tribe remains willing and able to participate in such a process, it must be done in a credible manner, using proper methodologies and expertise. In addition, it states on page 3 of the draft PA indicates that the Tribe has "participated in the preparation of this PA", which is incorrect. On the contrary, representatives of the Tribe were merely on a November 15, 2013 webinar

hosted by NRC for interested parties to review the draft PA prepared by the NRC, not with the OST. This is very misleading to anyone who reads this PA.

To date these cultural resources surveys, as well as the ones completed prior by archaeologists are not complete and the NRC and Powertech efforts to date have not provided sufficient resources nor incorporated sufficient THPO involvement to result in a credible product. The PA's repeated strong reliance on a prior "Class III" cultural survey is misleading at best, as that survey was conducted by Powertech consultants in 2008 and has been repeatedly criticized by the Tribe as incomplete, and even recognized by NRC Staff as insufficient. As the Staff explained when it issued the DSEIS, "it is working to facilitate a field survey of the Dewey-Burdock site in order to obtain additional information on historic properties. When the survey is complete, the Staff will supplement its analysis in the DSEIS and circulate the new analysis for public comment." NRC Staff's Answer to Contentions on Draft Supplemental Environmental Impact Statement, at 13. Indicative of the process thus far, this supplement to the draft SEIS never occurred. Instead, NRC Staff simply published a Final SEIS, with a selection of a proposed action and a purportedly complete cultural resource impact analysis, without providing the promised draft analysis in a NEPA context. It is a poor excuse for NRC to provide the Tribes and public an after-the-fact opportunity to comment on any cultural reviews outside of the NEPA process. NRC should rescind its statements in the PA that all effect determinations are considered "final" until all necessary information is collected and meaningfully reviewed within both the NEPA and NHPA processes.

In addition, the cultural resources survey findings conducted by the seven (7) participating Tribes have not been afforded to our Tribe for review. As we are to understand, only three (3) Tribes (Northern Arapaho Tribe, Northern Cheyenne Tribe, Cheyenne and Arapaho Tribes of Oklahoma) submitted their findings; however we have not seen those results for review. Additionally, there is a "Table. 1 Summary of Tribal Cultural Survey Activity and Participation during April-May 2013" received as an attachment that the field survey participating Tribes "examined approximately 95 percent of the entire project area within the license boundary". This brings to question how that claim can be true when only certain days were surveyed by those Tribes, and some for only three (3) days for the entire 10,580 acres.

Further compounding these problems is the PA's reliance on future analysis of the project area for cultural resources impacts and potential mitigation measures. Indeed, even the methodologies to be used for these future surveys and mitigation measure development are left without any specificity or clarification. Unspecified promises for Powertech to "provide funding to tribal representatives" to participate in future surveys is precisely the type of tactic that is partly to blame for the current problems with NRC's NHPA and NEPA processes. While some NHPA processes may be staged under certain circumstances, there is no compelling need to do so here, where proper surveys and analyses could be conducted and completed, albeit probably not on the applicant's preferred accelerated schedule. The applicant's preferred timeline for license approval should not supplant the need to ensure all data collection and analysis at the earliest possible time, as contemplated and required by both NEPA and the NHPA. The PA should not be finalized absent agreement with the Tribe on the methods and practices to be employed, and only those matters that truly cannot be accomplished beforehand should be left for the staged, future study and analysis.

We also remind you that there are two pending applications to the Environmental Protection Agency for underground injection control and plan for disposal of treated ISR processed fluids. Overall, the PA is not a document that the Tribe is comfortable signing at this stage. It fails to take account of the lack of a complete cultural resource survey to date and improperly and needlessly leaves significant data collection and analysis to future unspecified efforts, outside of the NEPA process. We continue to express our interest in fully engaging in the cultural resource analysis and protection processes related to this Project, and ask that NRC Staff abandon its current approach of prematurely finalizing its NEPA and NHPA documents until the proper steps can be taken to ensure a competent cultural resource impact review, as well as consideration for environmental concerns are met.

Sincerely,

A handwritten signature in black ink, reading "Bryan V. Brewer". The signature is fluid and cursive, with a stylized "B" and "V".

Bryan V. Brewer

President, Oglala Sioux Tribe

**From:** [Waste"Win Young](#)  
**To:** [Caverly, Jill](#); [Yilma, Haimanot](#); [Moore, Johari](#); [Hsueh, Kevin](#); [Goodman, Nathan](#); [Melissa.Ryan@nrc.gov](#); [Magwood, William](#); [Mark.Sartorius@nrc.gov](#); [Jamerson, Kellee](#); [hluhman@louisberger.gov](#)  
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**Subject:** SRST Comments  
**Date:** Thursday, February 20, 2014 12:27:38 PM  
**Attachments:** [Final draft PA Dewey-Burdock SRST-THPO comments.doc](#)

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Good Morning,

It has come to my attention reading through the proposed programmatic agreements for Ross and Dewey Burdock how much tribal information, suggestions and critical issues raised by the tribes are purposefully being ignored and omitted. Initially, I did not want to bother you guys again because you are all aware of my sentiments but the gnawing disappointment of how you all have handled the Section 106 process under the NHPA is too overwhelming. (On another note, I seen a job opening for a Native American specialist to assist the NRC with Section 106 NHPA. That's such great news! I mean... In the meantime, 3 areas of historical, cultural and spiritual significance to our tribe will have been destroyed by NRC projects, but hey! At least you guys will get some guidance:)

I have attached comments for the proposed Dewey-Burdock PA to this email.

I am cautious to submit these knowing full well that the NRC has repeatedly ignored tribes who have historic, cultural and spiritual properties in proposed project areas.

Yesterday our office was told by Haimanot that other tribes are too scared to speak up in meetings or feel that their voice is not heard when Sioux tribes are present. I do not know which Sioux tribes she is referring to but I work for the Standing Rock Sioux Tribe—THPO. We will continue to hold federal agencies and call them out—including other tribes who attempt to bypass the federal regulations and smooth things over with false promises. For us, this is not about a ten thousand dollar pay check for three, five or ten days of work as what overwhelmingly happened on Dewey Burdock.

Another troubling incident is that the SD SHPO already received the letter to *concur* on eligibility determinations for Dewey Burdock in December 2013. In the meantime, tribes were sent a letter seeking comments on eligibility



determination at that same time and tribal comments were due January 7, 2014. The SD SHPO issued their concurrence on Jan 14 2014. This was all done without tribe's knowledge. When SD state legislators hosted a meeting in Rapid City two weeks ago staff from the Oglala Sioux Tribe said that tribes were still involved in the Section 106 process. A SD legislator said that SD had already signed off on it, tribal concerns were fixed and that the NRC was issuing their permit for Dewey Burdock shortly.

This timeline was confirmed yesterday with the SD SHPO via telephone. If Section 106 is a federal process between agencies and tribes—why was the SD SHPO given a concurrence letter on eligibility determinations the same date that tribes were asked for comments on those determinations? Why would the NRC issue a permit for an incomplete process based on incomplete Section 106 identification results? Why would it base those results off of 3 reports issued from tribes out of 23 the NRC claims to consult with—although only 7 tribes went out? This is not majority rules. It does not take an environmental or cultural resource manager to see that this is wrong. This also needs to be clarified in the PA.

Yesterday Haimanot told our staff that there will be no new identification efforts for Dewey Burdock—which is contrary to what Commissioner Bill Magwood told the Oglala Sioux Tribe and the SRST last summer in Kyle, SD. [I have the exact date. Our legal department and a Tribal councilperson was present].

The PA for Dewey Burdock needs to be accurate. It needs to document tribal concerns. It needs to detail the unbalanced, unfair process that the tribes were up against. It needs to detail the incestuous relationship between the NRC and applicant Powertech. Powertech is calling the shots and because the NRC does not know how to implement Section 106 or has no clue how to work with tribes, it is responsible for the destruction of this spiritual, cultural and historical landscape.

It has been made very clear to us that the NRC wants these projects over and done with. They will continue to operate haphazardly to accomplish this.

**YOUR PA NEEDS TO TELL THE TRUTH.** The NRC did not consult with 23 tribes. That is like me saying that I sat down and met with the 500 NRC employees in Rockville last January when actually I sat in a room with 7 of



you. Why would you willfully lie?

Just to make your PA and efforts look good and faithful? Dewey Burdock is an incomplete catastrophe that has an incomplete Section 106 process. Your sentiments are, “ Why are you guys the only tribe speaking up?” We have a spiritual, cultural and historical tie to this area. We are not one to take the money and move onto the next project. The SRST THPO tried to meet with the NRC in good faith and offer our comments. Yet you decided to listen to the applicant and offer \$10,000.00 per tribe because the applicant didn't like the idea of paying over \$100,00.00 for the tribal identification survey. Our suggestions were ignored and instead, we were given pacifying promises of future collaboration.

The SRST is not your trustee. The tribal THPO's are the Section 106 experts, more so than the applicants and their cultural resource contractors who are hired to write documents that you think fulfills your regulatory responsibility.

If you think we were going to take your \$10,000.00 for an inept survey tantamount to a payoff and not fight for what is right and what is ours then I guess what you have heard from other tribes is true. We are overbearing when it comes to protecting our future generations' land and water.

Thank you for your invitation to the Standing Rock Sioux Tribe inviting us to participate in Section 106 Consultation under the NHPA for Reno Creek. Due to the complete lack of confidence, bad faith and ill will that the Nuclear Regulatory Commission has shown towards the SRST as well as other tribes we will have to decline to participate in this consultation.

Please see our attached comments for the Dewey Burdock PA.

Wašté Win Young  
Standing Rock Sioux Tribe  
Tribal Historic Preservation Officer  
(701)-854-8645 work  
(701)-854-2138 fax

Final DRAFT

**PROGRAMMATIC AGREEMENT  
AMONG  
U.S. NUCLEAR REGULATORY COMMISSION  
U.S. BUREAU OF LAND MANAGEMENT  
SOUTH DAKOTA STATE HISTORIC PRESERVATION OFFICE  
POWERTECH (USA), INC.  
AND  
ADVISORY COUNCIL ON HISTORIC PRESERVATION  
REGARDING THE  
DEWEY-BURDOCK IN SITU RECOVERY PROJECT  
LOCATED IN CUSTER AND FALL RIVER COUNTIES  
SOUTH DAKOTA**

Date 02-14-14

**WHEREAS**, the U.S. Nuclear Regulatory Commission (NRC) received an application from Powertech (USA), Inc. (Powertech or applicant) for a new radioactive source materials license to develop and operate the Dewey-Burdock Project (the undertaking) located near Edgemont, South Dakota in Fall River and Custer counties (Project) pursuant to the NRC licensing authority under the Atomic Energy Act of 1954 (AEA), 42 U.S.C. §§ 2011 *et seq.*; and

**WHEREAS**, NRC is considering issuance of a license for the Dewey-Burdock In Situ Recovery [ISR] Project pursuant to its authority under the Atomic Energy Act of 1954 (AEA), 42 U.S.C. §§ 2011 *et seq.* which makes the project an undertaking requiring compliance by NRC with Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. § 470, and its implementing regulations (36 CFR § 800 (2004)); and

**WHEREAS**, if licensed, the proposed project will use an In Situ Recovery (ISR) methodology to extract uranium and process it into yellowcake at the Dewey-Burdock site; and

**WHEREAS**, the proposed project area consists of approximately 10,580 acres (4,282 ha) located on both sides of Dewey Road (County Road 6463) and includes portions of Sections 1-5, 10-12, 14, and 15, in Township 7 South, Range 1 East and portions of Sections 20, 21, 27, 28, 29, and 30-35 in Township 6 South, Range 1 East, Black Hill Meridian, (see Appendix A and Figure 1.0, for fuller description and a map of the project area); and

**WHEREAS**, under the terms of the General Mining Act of 1872 Powertech has filed Federal Lode mining claims and secured mineral rights on 240 acres [97 ha] of public lands open to mineral entry and administered by the U.S. Department of the Interior, Bureau of Land Management (BLM), and has the right to develop the mining claims as long as this can be accomplished without causing unnecessary or undue degradation to public lands and in accordance with pertinent laws and regulations under 43 CFR Subpart 3809; and

**WHEREAS**, review and approval of a Plan of Operations (POO) for the project that meets the requirements of 43 CFR Subpart 3809 by the BLM-South Dakota Field Office makes the project an undertaking requiring compliance by BLM with Section 106 of the NHPA, 16 U.S.C. § 470 and 36 CFR Part 800; and

**Comment [TC1]:** This "project area" conflicts with statements made throughout the consultation process that the project area would be confined to the area of direct impacts (2k acres). The tribes were specifically told they could not survey the license boundary (10k acres) during meetings between June 2011 and August 2012 even though this was what the tribes felt was the proper area of potential effects (APE). Why is the project area now suddenly the entire license boundary when that was a major stumbling block during consultation for over one year? The NRC switched gears at the last moment and allowed for the tribes to access the entire 10,000+ acres with the caveat that they only had 10k dollars to work with and a restricted timeline of 1 month. There is no way a proper tribal survey could be conducted with those caveats but this is the ultimatum that was forced upon the tribes.

**Final DRAFT**

**WHEREAS**, the BLM, by letter dated April 7, 2011, has designated the NRC as the lead agency for compliance with requirements of Section 106 of the NHPA regarding the Dewey-Burdock Project (ADAMS Accession No. ML11116A091) pursuant to 36 CFR § 800.2(a)(2) of the Section 106 regulations; and

**WHEREAS**, under the terms of the Safe Drinking Water Act, Powertech has submitted to the Environmental Protection Agency (EPA) two Underground Injection Control (UIC) Permit Applications for ISR uranium recovery and the disposal of treated ISR process fluids at the Dewey-Burdock site; the EPA will issue draft permit decisions that meet the requirements of UIC regulations found at 40 CFR Parts 124, 144, 146 and 147; and

**WHEREAS**, the NRC determined a phased process for compliance with Section 106 of the NHPA is appropriate for this undertaking, as specifically permitted under 36 CFR § 800.4(b)(2), such that completion of the evaluation of historic properties, determinations of effect on historic properties, and consultation concerning measures to avoid, minimize, or mitigate any adverse effects will be carried out in phases, as set forth in this Programmatic Agreement (PA) (see Appendix A for details); and

**WHEREAS**, the area of potential effects (APE) for the undertaking is the area at the Dewey-Burdock Project site and its immediate environs, which may be directly or indirectly impacted by construction and operation activities associated with the proposed project, as described in Appendix A; and

**WHEREAS**, Project activities may occur on lands outside the license boundary for the installation of electrical transmission lines, and will be addressed in accordance with Stipulations 3 and 4 of this PA; and

**WHEREAS**, in accordance with 36 CFR § 800.6(a)(1)(i)(C), the NRC, by letter dated April 24, 2013, notified the Advisory Council on Historic Preservation (ACHP) of the potential for adverse effects to historic properties from the undertaking and invited the ACHP to participate in Section 106 consultation and in the preparation of this PA; and

**WHEREAS**, the ACHP, by letter, dated October 28, 2013, formally entered the consultation; and

**WHEREAS**, the NRC initiated consultation with the South Dakota State Historic Preservation Officer (SD SHPO) on December 2, 2009 during a face-to-face meeting held in Pierre, South Dakota; and

**WHEREAS**, the NRC invited Powertech to participate in Section 106 consultation and preparation of this PA; and

**WHEREAS**, by letters dated March 19, 2010 (ML100331999) and September 8, 2010 (ML102450647), the NRC invited 23 federally-recognized Indian Tribes who may ascribe religious and cultural significance to historic properties that may be affected by the undertaking, including the Cheyenne and Arapaho Tribes of Oklahoma, the Cheyenne River Sioux Tribe, the Crow Nation, the Crow Creek Sioux Tribe, the Eastern Shoshone Tribe, the Flandreau Santee Sioux Tribe, the Fort Peck Assiniboiné and Sioux Tribes, the Lower Brule Sioux Tribe, the Lower Sioux Indian Community, the Northern Arapaho Tribe, the Northern Cheyenne Tribe, the Oglala Sioux Tribe, the Omaha Tribe of Nebraska, the Pawnee Nation of Oklahoma, the Ponca Tribe of Nebraska, the Rosebud Sioux Tribe, the Santee Sioux Tribe of Nebraska, the Sisseton-Wahpeton Oyate, the Spirit Lake Sioux Tribe, the Standing Rock Sioux Tribe, the Three Affiliated Tribes (Mandan, Hidatsa & Arikara Nations), the Turtle Mountain Band of Chippewa Indians, and the Yankton Sioux Tribe (collectively referred to as Tribes), to each be a consulting party in the Section 106 process; and

**Comment [HXY12]:** EPA to revise this Whereas clause later.

**Comment [TC3]:** Has the disposal method been determined? This was also a matter of contention in determining the APE for this project based on only surveying the direct effects.

**Comment [TC4]:** 36CFR800.14 (a) (1) requires the federal agency to consult with the public in the development of alternate procedures for Section 106 compliance. This allows for the public to have their input into the development of alternate procedures. Where is the documentation that this was ever conducted? 36CFR800.4 (2) also requires the federal agency to take into account the views of the tribes for a phased approach. The SRST-THPO has disagreed with the actions of the NRC since September of 2012. We disagree with the determinations of non-eligibility (TABLE 1) for any sites containing stone features. How is the NRC accounting for this in this PA and in their phased approach?

**Comment [TC5]:** Appendix A is not attached to any email for this PA. The SRST-THPO would like copies off all appendixes for this PA. It is impossible to make fully informed comments without the proper information being given to the tribes.

**Comment [TC6]:** This conflicts with the project area being licensed as pointed out in TC1 comment. Why is the NRC not considering the entire license boundary as the APE?

**Comment [TC7]:** A proper survey of the entire license boundary as the APE would have eliminated the need to develop this PA. The tribes pushed for this throughout 2011 and 2012 and were denied. The identification effort that was forced upon the tribes to accept could in no way properly document the sites given the time and money that was forced upon the tribe.

**Final DRAFT**

**WHEREAS**, the following 23 Tribes participated in consultation at varying levels with the NRC and BLM regarding the proposed Dewey-Burdock Project: the Cheyenne and Arapaho Tribes of Oklahoma, the Cheyenne River Sioux Tribe, the Crow Nation, the Crow Creek Sioux Tribe, the Eastern Shoshone Tribe, the Flandreau Santee Sioux Tribe, the Fort Peck Assiniboin and Sioux Tribes, the Lower Brule Sioux Tribe, the Lower Sioux Indian Community, the Northern Arapaho Tribe, the Northern Cheyenne Tribe, the Oglala Sioux Tribe, the Omaha Tribe of Nebraska, the Pawnee Nation of Oklahoma, the Ponca Tribe of Nebraska, the Rosebud Sioux Tribe, the Santee Sioux Tribe of Nebraska, the Sisseton-Wahpeton Oyate, the Spirit Lake Sioux Tribe, the Standing Rock Sioux Tribe, the Three Affiliated Tribes (Mandan, Hidatsa & Arikara Nations), the Turtle Mountain Band of Chippewa Indians, and the Yankton Sioux Tribe; and

**WHEREAS**, the NRC worked with consulting Tribes between November 2011 and October 2012 to develop an approach for identifying historic properties of cultural and religious significance to Tribes; the NRC conducted a face-to-face consultation focused on the identification of these properties in February 2012. Although several work plans for a Tribal survey were prepared and discussed by the consulting parties throughout 2012, the parties were unable to reach agreement on the scope and the cost of the Tribal survey (see Appendix B for details); and

**WHEREAS**, in October 2012, the NRC requested alternative approaches to conduct a field survey by a group representing all consulting Tribes and subsequently proposed opening the project area to all interested Tribes to complete the survey according to needs and interests, and with payments made to participating Tribes (see Appendix B for details); and

**WHEREAS**, the NRC offered all 23 consulting Tribes the opportunity to participate in a tribal field survey to identify properties of religious and cultural significance to them for the proposed Dewey-Burdock project ISR facility by letter dated February 8, 2013; and

**WHEREAS**, the following seven Tribes participated in the tribal field survey: the Northern Arapaho Tribe, the Northern Cheyenne Tribe, the Cheyenne and Arapaho Tribes of Oklahoma, the Crow Nation, the Santee Sioux Tribe, the Crow Creek Sioux Tribe, and the Turtle Mountain Band of Chippewa Indians as discussed in details in Appendix A; and

**WHEREAS**, surveys to identify historic properties have been completed for the project including Class III Archeological Surveys and tribal surveys to identify properties of religious and cultural significance; and

**WHEREAS**, the NRC received tribal survey reports with eligibility recommendations from the Northern Arapaho Tribe, the Northern Cheyenne Tribe, and the Cheyenne and Arapaho Tribes of Oklahoma, as well as field notes from the Crow Nation as discussed in Appendix A; and

**WHEREAS**, the NRC staff has reviewed and evaluated the results of the applicant's Class III archaeological surveys and tribal surveys in the development of its initial recommendations concerning eligibility of properties identified within the APE for the undertaking for inclusion on the National Register of Historic Places (NRHP) as presented in Appendix B; and

**WHEREAS**, the NRC has received concurrence from the SD SHPO on these eligibility determinations as discussed in Appendix B, eligibility determinations were also sent to the Tribes and requested a 30-day review and comment period; and

**WHEREAS**, the NRC invited each of the 23 consulting Tribes to participate in the development of this PA; and

**Comment [TC8]:** The applicant and their third-party consultant decided not to continue the discussions with the tribes by stating that further discussions would not be fruitful in an erroneous attempt to "move the project forward" in the 106 process. The applicant was unwilling to fund the project to a level that would have been acceptable to the tribes for proper identification efforts yet they funded all of the archaeological survey and evaluative testing with apparently no complaints. One of the main stumbling blocks was the definition of the APE between the tribes and federal agency and applicant.

**Comment [TC9]:** This request only came to the tribes due to the tribes not being intimidated by the NRC and their ultimatums. The NRC stated in September that if the tribes did not respond by a specified date that they would just move the process forward – echoing the words of the applicant and their third party consultant. The tribes pointed out that there is no provision for this within the regulation during the identification phase and that precipitated the "alternative approach" comments.

**Comment [TC10]:** The tribes were offered an ultimatum to either accept the proposal that would in no way properly identify sites of significance to them or be left out of the identification process. This is not a good faith effort to identify sites of significance to tribes. The proposal ignored the information gathered under 36CFR800.4 as to what is actually required to identify and instead the proposal amounted to just saying go drive around (... [1])

**Comment [TC11]:** This statement alone indicates that the identification process is incomplete for this project. The SRST-THPO objected to the approach adopted by the NRC as it in no way would properly document the sites in the license boundary in a manner consistent with Section 106.

**Comment [TC12]:** The SRST-THPO and other tribes have never been given the opportunity to identify sites of significance for their tribes in a manner consistent with their tribal identification efforts.

**Comment [TC13]:** 4 tribes providing comments on survey work somehow meets the standards of good faith effort? Almost three times that many were actively consulting since 2011 and their concerns for their sites are continuing to be ignored.

**Comment [TC14]:** The SRST-THPO disagrees with the recommendations made for the sites listed in Table 1. How will the NRC address our concerns as they are currently being ignored.

**Comment [TC15]:** The SRST-THPO is aware that the NRC submitted their eligibility determinations to the SD SHPO for concurrence on the same day that the tribes were asked to provide comments on eligibility in the 30 day window. How can the NRC imply that this was conducted in good faith? The SD SHPO issued their concurrence on Jan 14th, 2014. The (... [2])

**Final DRAFT**

**WHEREAS**, the following Tribes participated at varying levels in webinars and/or provided written comments during the preparation of this PA: Northern Cheyenne, Cheyenne River Sioux, Oglala Sioux, Standing Rock Sioux, Fort Peck Assiniboine and Sioux, and Cheyenne and Arapaho Tribes; (see Appendix B for list of participants) [TBD-include other tribes as necessary]; and

**WHEREAS**, each of the 23 consulting tribes will be invited to sign the PA as a Concurring Party; and

**WHEREAS**, the BLM, as a federal agency with a federal action related to this undertaking has participated in the Section 106 consultation and development of this agreement and will be a signatory; and

**WHEREAS**, the EPA has participated in discussions of this agreement; and

**WHEREAS**, the PA will be entered as a condition on the NRC license, if granted; and

**WHEREAS**, the PA will be entered as a condition of Powertech Inc.'s POO, if approved by the BLM; and

**WHEREAS**, Powertech, as the applicant for federal approvals has been invited to execute this agreement as an invited signatory in recognition of the responsibilities assigned to the applicant under the terms of this agreement;

**NOW, THEREFORE**, the NRC, BLM, SD SHPO, Powertech, and the ACHP agree that the undertaking will be implemented in accordance with the following stipulations in order to take into account the effects of the undertaking on historic properties.

### STIPULATIONS:

**NRC shall ensure that the following measures are carried out:**

#### 1) Conditions for Federal Approval:

i-a) The NRC will require that Powertech comply with all applicable stipulations and provisions of this PA, as a condition of the Powertech license for the Project.

ii-b) The BLM will ensure that a Record of Decision on an acceptable POO will not be signed until this PA has been executed by all required signatories.

iii-c) The NRC shall not grant a license to Powertech until all required signatories have executed this PA. Upon receipt of a fully executed PA, the NRC will issue the license provided that all other requirements for the license have been met.

#### 2) Identification and Evaluation of Historic Properties within the License Boundary:

a) Appendix B provides information on the archaeological and Tribal cultural resource surveys and describes the historic properties identified within and adjacent to the boundary of the 10,580 acre project site. More than 300 cultural resources were identified.

**Comment [TC16]:** Why are the tribes not signatory parties?

**Comment [TC17]:** Please provide the non-acronym definition.

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**Comment [TC18]:** This whole PA appears to be developed for this entire purpose. The NRC is well beyond its stated timelines for issuance of the Dewey-Burdock license. This is documented by the fact that they stripped their Section 106 compliance out of their NEPA process due to not being able to conduct both within their stated timelines.

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**Comment [TC19]:** The SRST-THPO has not been provided with this information. Once again, the definition of the APE has changed from the direct effects to the licensed boundary.

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- b) In consultation with SD SHPO and the Tribes, the NRC and BLM determined approximately 14 percent of identified sites are eligible for listing on the National Register of Historic Places (NRHP), 58 percent are not eligible, and 26 percent remain unevaluated.

\*move oldstipulation 3(Future identification of Cultural Resources for Transmission Lines) to after Stipulation 6

### 3) Protection and Evaluation of Unevaluated Properties within the APE

- a) Powertech will protect all unevaluated properties until an NHPA-eligibility determination is completed, in accordance with 36 CFR § 800.4(c).
- b) If changes in the design or operation of the Project, including wellfield configurations, result in ground disturbance that could affect unevaluated properties, Powertech shall sponsor necessary supplemental research and/or field investigations prior to commencing any ground-disturbance activities. The additional studies will provide information to enable NRC, BLM, consulting Tribes, and the SD SHPO to make NRHP-eligibility determinations for unevaluated historic properties.
- c) Powertech must provide a written plan of its investigation methodology at least four months prior to commencement of work, to enable the NRC and BLM to allocate staff resources for Section 106 reviews; additional review time may be necessary if NRC and BLM staff resources are limited or due to conditions beyond the staff's control.
- d) The NRC will distribute the proposed investigation plan to the 23 consulting Tribes soon after it is received from Powertech.
- e) Upon receipt of the Powertech investigation plan, the NRC, the BLM, consulting Tribes and the SD SHPO will have 30 days to review the proposed plan. If revisions to the plan are necessary, Powertech will circulate the revised investigation plan to the NRC, the BLM, consulting Tribes and the SD SHPO.
- f) Upon approval of the investigation plan, Powertech will conduct supplemental research and/or field investigations to evaluate determine NRHP-eligibility of unevaluated cultural resources for NRC consideration. Testing will be conducted under the supervision of individuals meeting the Secretary of the Interior's Professional Qualifications Standards. The report shall follow documentation standards outlined in 36 CFR § 800.11.
- g) After the completion of any additional studies, the NRC will submit the findings of NRHP-eligibility evaluation to BLM, SD SHPO, and consulting Tribes, with a 45 day period of review and comment.
- h) The NRC may request revisions to the reports or additional investigations after consideration of comments received from BLM, SD SHPO, and consulting Tribes. The NRC will provide revisions to BLM, SD SHPO, and consulting Tribes, with a 30 day period for a second review and comments.
- i) The NRC will submit final determinations of NRHP-eligibility and effects to SD SHPO for review and concurrence; this review will be completed by the SD SHPO within 30 days.

**Comment [TC20]:** Which tribes were consulted?

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**Comment [TC21]:** How will Powertech be conducting this? Who will be conducting this evaluation. In particular, if the site is a site of significance to the tribes what assurances do the tribes have that they will be consulted for their expertise on their sites? The SRST-THPO is unagreeable with a private entity protecting our sites.

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**Comment [TC22]:** Who exactly will participate in this additional survey work? Will it just be the seven tribes who accepted the NRC forced identification requirements while ignoring the other 16 tribes who disagreed with this process.

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**Comment [TC23]:** This PA will take the tribes completely out of the consultation process according to this statement. Tribes have a right to comment on identification efforts per 36CFR800.2 yet this PA will take that right out of the tribes hands and put it squarely in the applicants hands. This was attempted by the applicant in the initial identification effort in August of 2011 when the NRC asked them to develop a plan for identification. That plan was unanimously disagreed to by every tribe ... [3]

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**Comment [TC24]:** This didn't work the last time this was planned and once again it is being proposed. It resulted in the NRC dividing ... [6]

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**Comment [TC25]:** The SRST-THPO is opposed to any testing of our sites of significance. We have stated this multiple ... [8]

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j) When the NRC, BLM, and SD SHPO agree evaluated properties are NRHP-eligible, avoidance of the properties will be the preferred option. Avoidance measures may include, but are not limited to the relocation of pipelines, roads, facilities, monitoring wells, and other disturbances. When avoidance is unavoidable and adverse effects will result, adverse effects will be resolved in accordance with Stipulation 6.

k) If the NRC, BLM, and SD SHPO make the determination that identified historic properties are not eligible for listing on the NRHP, no further review or consideration of the properties will be required under this PA.

l) When the NRC and the SD SHPO disagree on NRHP-eligibility for a cultural resource, the cultural resource cannot be avoided, or the disagreement is not resolved by further consultation, the NRC will refer the issue to the Keeper of the National Register (Keeper) and request a formal determination of eligibility, in accordance with 36 CFR § 800.4(c)(2). The ACHP may also request referral of an NRHP-eligibility determination to the Keeper.

#### 4) Assessment of Effects:

a) As part of its consideration of the effects of construction and operations on the landscape, the NRC conducted a line-of-sight analysis to assess the potential for adverse visual effects on all known historic properties located within three miles of the tallest buildings on both the Dewey and Burdock facilities.

b) The NRC and BLM consulted with SD SHPO and consulting Tribes in making its determination that eligible or unevaluated archaeological sites and properties of religious and cultural significance will be adversely affected by the undertaking. The effects determination is presented in Appendix B Table 1.

c) The NRC and BLM will consult with signatories to this agreement and consulting Tribes to develop proposals to resolve these adverse effects (as summarized in Appendix B Table 2) in accordance with the process set forth in Stipulation 6.

#### 5) Resolution of Adverse Effects:

a) The NRC will solicit suggestions from consulting parties concerning potential measures to avoid, minimize, or mitigate adverse effects on historic properties described in Appendix B after the PA is executed.

b) The NRC and BLM, in consultation with consulting parties, will determine what treatment measures are appropriate to each adversely affected historic property.

c) Treatment measures can include, but are not limited to the following:

i. For archaeological historic properties that are significant for their research data potential (Eligibility Criterion D, National Register of Historic Places), the treatment measures may follow standard mitigation through data recovery. Treatment plan(s) for data recovery shall include, at a minimum, a research design with provisions for data recovery and recordation, analysis, reporting, and curation of resulting collection and records, and shall be consistent with the *Secretary of Interior's Standards and Guidelines* (48 FR 44734-44737). Treatment plan(s) must be consistent with easement and permit requirements of other agencies, when applicable. To the extent

**Comment [TC26]:** Include "in consultation with the tribes" as the SRST-THPO currently disagrees with the eligibility determinations made thus far and since the PA is made to supplant the requirements of Section B of 36CFR800.

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**Comment [TC27]:** Include "in consultation with the tribes" as the SRST-THPO currently disagrees with the eligibility determinations made thus far and since the PA is made to supplant the requirements of Section B of 36CFR800.

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**Comment [TC28]:** What provisions exist within this document if the tribes disagree with the determinations? This is never addressed throughout the entire document and since the PA will fulfil the NRC responsibilities for Section 106 compliance, the SRST-THPO would like this explained further.

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**Comment [TC29]:** Please provide the details of how this will be conducted. The tribes ... [12]

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**Comment [TC30]:** Please provide the documentation for this statement.

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**Comment [TC31]:** This will require an amendment to the PA. The SRST-THPO ... [17]

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**Comment [TC32]:** This should be developed currently within this PA and not at some ... [19]

**Comment [TC33]:** These treatment plans do not take into account any specialized ex ... [21]

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possible, treatment plan(s) should group related sites and areas, so related resources can be considered in context, and to minimize the burden of review and approval by agencies.

ii. Treatment plan(s) for properties eligible under Criteria A, B and C, or significant for values other than their potential research value, if warranted, shall specify approaches for treatment or mitigation of the property in accordance with the principles, standards, and guidelines appropriate to the resource. This may include, but not be limited to, use of such approaches as relocating the historic property, re-landscaping to reduce effects, public interpretation, ethnographic recordation, oral history, archival research, or prescribing use of a component or activity of this undertaking in such a way as to minimize effects to historic properties. Methods of recordation and documentation described in the treatment plan(s) shall conform to the *Secretary of the Interior's Standards for Architectural and Engineering Documentation* (48 FR 44730-44734) or other standards specified by NRC.

iii. In lieu of standard mitigation approaches described above, treatment plan(s) may adopt other alternative approaches to avoid, minimize or mitigate effects to historic properties, including, but not limited to, assisting in the development of Tribal historic preservation plans, developing detailed historic contexts for the region, developing educational materials, purchasing properties containing historic resources, or developing historic property management plans.

d) Following the development of potential treatment measures by consulting parties, to avoid, minimize, or mitigate adverse effects, Powertech shall prepare a treatment plan for each affected historic property.

e) In conjunction with the submission of their Plan of Activities, which detail construction and operations activities, for each year, Powertech will submit one or more draft treatment plans. A draft plan will identify properties that will be affected that year and measures that will be taken to avoid, minimize, or mitigate those effects. A draft treatment plan will be submitted for NRC and BLM review and approval four months prior to construction, so the NRC and BLM can appropriately allocate staff resources to the extent possible; additional time may be necessary in the event that NRC and BLM staff resources are limited due to conditions beyond the staff's control.

i. The treatment plan shall contain a description of the effects on each adversely affected historic property and a description of the proposed treatment for each of those historic properties.

ii. If any of the affected properties are unevaluated for NRHP eligibility, the treatment plan shall include provisions for evaluation, consistent with Stipulation 4.

iii. If monitoring by a qualified archaeologist and/or Tribal monitor is part of the strategy for resolving or preventing adverse effects, the treatment plan shall include a Monitoring Plan. The objective of monitoring is to protect known sites from construction impacts, identify at the time of discovery any archaeological materials exposed during ground disturbance, and protect such resources from damage until the procedures for discoveries per Stipulation 9 are implemented.

iv. If data recovery is part of the strategy for resolving adverse effects, the treatment plan shall specify all details of the research design, field and laboratory work methodology

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**Comment [TC34]:** Why is Powertech developing this for the Federal agency? This was attempted before and it failed to address tribal concerns. Why does the NRC keep relying on applicants to fulfil their Section 106 responsibilities?

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**Comment [TC35]:** This statement contradicts the statements concerning avoidance previously in the document. It doesn't sound like avoidance is the preferred option with such a statement.

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**Comment [TC36]:** Who decides when a tribal monitor is necessary? Powertech does according to this document. Once again the NRC is letting the applicant call the shots for Section 106 compliance for this project.

**Comment [TC37]:** The SRST-THPO will reiterate that testing should not occur on any stone feature site.



**Final DRAFT**

(including mapping, geomorphological or other specialized studies, controlled scientific excavation methods, analyses of data recovered, and photographic documentation as appropriate), and report preparation.

f) Upon receipt of a draft treatment plan, the NRC will submit the draft treatment plan to all signatories and consulting Tribes for a 45 day review and comment period. The NRC will consider any comments received in writing from consulting parties within the specified review period.

g) The NRC may ask Powertech to revise the draft treatment plan based on comments received from the consulting parties. The NRC will forward revisions to the draft treatment plan with a request for a second review by all signatories and consulting Tribes within a 30 day period.

h) The NRC will then distribute the final treatment plan to SD SHPO for a 30 day review period, and copies of the plan will be distributed to consulting parties.

i) Upon concurrence by the SD SHPO, or if the SD SHPO does not respond in writing within 30 days, the NRC shall direct Powertech to implement the treatment plan.

j) If, after consultation, the NRC and the SD SHPO cannot agree on appropriate terms for the treatment plan, the NRC will refer the matter to the ACHP for comment pursuant to Stipulation 14. The NRC will consider ACHP comments in making its final decision on measures to resolve the adverse effects.

**6) Future Identification of Cultural Resources for Installation of Power Transmission Lines in Areas to be Determined:**

a) Powertech will notify the NRC and BLM in writing, if it determines that ground-disturbing activities will be required for the installation of electrical transmission lines outside the license boundary. Powertech must provide written notification at least four months prior to commencement of work, to enable the NRC and BLM to allocate staff resources for Section 106 reviews; additional review time may be necessary if NRC and BLM staff resources are limited or due to conditions beyond the staff's control.

b) Powertech must provide the NRC, the BLM, and the SD SHPO a proposed work plan for an archaeological survey as part of the written notification. The plan will include methods for identification of all kinds of cultural properties within the transmission line corridor, including identification of properties of religious and cultural significance with the involvement of the Tribes. The proposed plan should also include report preparation requirements and schedules for the identification efforts.

c) The NRC will distribute the proposed work plan to the 23 consulting Tribes soon after it is received from Powertech.

d) Upon receipt of the Powertech work plan, the NRC, the BLM, consulting Tribes and the SD SHPO will review and provide comments on the plan within 30 days. If necessary, Powertech will revise work plan according to the instructions of the consulting parties.

e) Upon NRC approval of the work plan, Powertech will conduct surveys to identify cultural resources along the transmission corridor within an appropriate APE. Powertech will also

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**Comment [TC38]:** The SRST-THPO has submitted numerous comments to the NRC that were subsequently ignored. Other tribes have also submitted comments that were ignored by the federal agency. The fact that only 7 of 23 tribes participated in the NRC ultimatum for identification is proof of this. What assurances do the tribes have that their comments v ... [23]

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**Comment [TC39]:** These surveys should be conducted now so that a federal tie is maintained to the project. The SRST-THPO is more than a little concerned that the apf ... [24]

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**Comment [TC40]:** The tribes did not accept the Powertech proposal for the initial survey at Dewey-Burdock yet this PA puts the onus on them again to develop this portion of it. ... [25]

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undertake necessary testing to determine NRHP-eligibility of newly identified properties for NRC consideration. Survey and testing will be conducted under the supervision of individuals meeting the Secretary of the Interior's Professional Qualifications Standards. The report shall follow documentation standards outlined in 36 CFR § 800.11.

- f) Powertech shall offer to provide financial compensation to Tribal Representatives for the work on the identification of properties of religious and cultural significance. The identification of properties of religious and cultural significance will occur at the same time or prior to identification of archaeological properties.

g) The NRC will consult with the 23 consulting Tribes on identification of properties of religious and cultural significance. This consultation could include using an open site approach to identify and evaluate places of religious and cultural significance to the Tribes.

- h) Upon receipt of Powertech's completed survey report, the NRC will submit the findings to the BLM, SD SHPO, and the Tribes for a review and comment period of 45 days.

i) The NRC may request revisions to survey reports or additional investigations, after consideration of comments made by BLM, SD SHPO, and Tribes. The NRC will provide revised documents to BLM, SD SHPO, and Tribes. A second review period of 30 days may be requested.

- j) The NRC will submit final determinations of NRHP-eligibility and effects to the SD SHPO for review and concurrence; this review will be completed within 30 days of the SD SHPO receiving complete information. The NRC will circulate copies of this correspondence to the other consulting parties. NRC will consider any comments received within the 30 day time period.

k) When the NRC, BLM, and SD SHPO agree evaluated properties are NRHP-eligible, avoidance of the properties will be the preferred option. When avoidance is unavoidable and adverse effects will result, adverse effects will be resolved in accordance with Stipulation 6.

l) If the NRC, BLM, and SD SHPO make the determination that identified historic properties are not eligible for listing on the NRHP, no further review or consideration of the properties will be required under this PA.

- m) When the NRC and the SD SHPO disagree on NRHP-eligibility of cultural resource and the cultural resource cannot be avoided, and the disagreement cannot not be resolved by further consultation, the NRC will refer the issue to the Keeper of the National Register (Keeper) and request a formal determination of eligibility, in accordance with 36 CFR § 800.4(c)(2). The ACHP may also request referral of an NRHP-eligibility determination to the Keeper. The decision of the Keeper is final.

## 7) Coordination with Other Federal Reviews:

In the event that the Powertech applies for additional approvals or other assistance from federal agencies for the undertaking and the undertaking remains unchanged, the approving agency may comply with Section 106 by agreeing in writing to the terms of this PA and notifying and consulting with SHPO and ACHP. Any necessary modifications to this PA will be in accordance with the amendment process in Stipulation 15.

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**Comment [TC41]:** The SRST-THPO and other tribes opposed this approach and continue to do so. It should not be acceptable as the preferred option as will be the case. It has been demonstrated by the NRC that they will use it regardless of the protestations by the tribes furthering the disharmony among the tribes and the federal agency. The NRC used this approach for the Crow Butte facility without consulting the tribes for their feedback on such an approach. The disharmony created by the NRC in dividing the tribes continues to be felt across the Indian Country today but the NRC does not care about the results of their actions as long as they can issue their permit ar... [26]

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**Comment [TC42]:** Will the process be the same flawed process that involved submitting the eligibility for sites for concurrence to the SD SHPO on the same day as the request f... [27]

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**Comment [TC43]:** What provisions will be in place if the tribes disagree on the eligibility?

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**Comment [TC44]:** This is highly subjective as the impacts from a new federal undertaking might be taken. A blanket statement such as this is inappropriate.

**Final DRAFT****8) Confidentiality:**

The NRC, BLM, and other parties to this agreement acknowledge the need for confidentiality concerning tribal spiritual and cultural information, which was or may be provided to the NRC and BLM during the consultation process. Information provided by consulted tribal representatives, which has been identified as sensitive and was accompanied by a request for confidentiality, will remain confidential to the extent permitted by state and federal laws.

All consulting parties shall restrict disclosure of information concerning the location or other characteristics of historic properties, including properties of religious and cultural significance to Tribes, to the fullest extent permitted by law in conformance with Section 304 of the NHPA, South Dakota Codified Laws (SDCL), § 1-20-21.2, Section 9 of the ARPA, and Executive Order on Indian Sacred Sites 13007 (61 FR 26771; May 29, 1996).

**9) Unanticipated Discoveries:**

In the event a previously unknown cultural resource is discovered during the implementation of the Dewey-Burdock Project, all ground disturbance activities shall halt within 150 feet of the area of discovery to avoid or minimize impacts until the property is evaluated for listing on the NRHP by qualified personnel. The following additional steps shall be taken:

- a) Powertech will notify the NRC, the BLM (if the site is on BLM land), and the SD SHPO of the discovery within 48 hours. Unanticipated discoveries may include artifacts, bone, features, or concentrations of these materials outside previously identified sites or in and adjacent to previously identified eligible and not eligible sites. Discoveries may also include stones and groups of stones that are out of place in their sedimentary contexts and may be parts of stone features. A "discovery" may also include changes in soil color and texture, or content suspected to be man-made, such as burned soil, ash, or charcoal fragments.
- b) The NRC and BLM (as appropriate) will contact the THPO and/or the Tribal Cultural Resource Office to notify them of an unanticipated discovery soon after notification from Powertech is received.
- c) Powertech will have the discovery evaluated for NRHP eligibility by a professional who meets the Secretary of the Interior's Professional Qualifications Standards in Archaeology (36 CFR § 61).
- d) Powertech will provide results of evaluation and initial eligibility recommendation to the NRC and BLM within ten business days of the discovery.
- e) The NRC and/or BLM, in consultation with signatories and consulting Tribes, shall evaluate the cultural resources to determine whether they meet the NRHP criteria and request concurrence of the SD SHPO. Evaluation will be carried out as expeditiously as possible in accordance with 36 CFR § 800.13(b).
- f) When the NRC, BLM, and SD SHPO agree evaluated properties are NRHP-eligible, avoidance of the properties will be the preferred option. When avoidance is unavoidable and adverse effects will result, adverse effects will be resolved in accordance with Stipulation 6.

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**Comment [TC45]:** Include" but are not limited to,"

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**Comment [TC46]:** What provisions will be included in this evaluation for sites of significance to tribes? The SRST-THPO has repeatedly commented about not testing sites of significance to the tribes.

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**Comment [TC47]:** What provisions will be put in place for the tribes to properly identify these properties that might have significance to the them to ensure that we can make informed decisions regarding the properties eligibility? Currently this PA process cuts the tribes from the process which has been the intent of the NRC and the applicant since September of 2012.

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**Comment [TC48]:** The statement is redundant. Change the first avoidance to property or change unavoidable to not an option. The SRST-THPO believes that sites will not be avoided as the preferred option as the applicant is once again calling the shots as it were for the federal agency.

**Final DRAFT**

g) If the NRC, BLM, and SD SHPO make the determination that identified cultural resources are not eligible for listing on the NRHP, no further review or consideration of the properties will be required under this PA.

**Comment [TC49]:** Include "in consultation with the tribes" as we are being ignored throughout this PA.

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h) Human remains identified during ground disturbance activities will be treated in accordance with Stipulation 10 and Appendix D.

**Comment [TC50]:** What provisions will be in place if the tribes disagree with the agencies and SHPO determinations? None currently.

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i) In the event of unanticipated discovery, Powertech may continue to work in other areas of the site; however, ground disturbance activities shall not resume in the area of discovery until the NRC and BLM have issued a written notice to proceed.

### 10) Human Remains:

a) The NRC, BLM, and Powertech recognize human remains, funerary objects, sacred objects, and items of cultural patrimony encountered during ground disturbance activities should be treated with dignity and respect.

**Comment [TC51]:** Please forward this appendix to the SRST-THPO. This document should not be signed until such time as all appendixes are attached.

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b) Native American human remains, funerary objects, sacred objects, or items of cultural patrimony found on BLM land will be handled according to Section 3 of the Native American Graves Protection and Repatriation Act (NAGPRA) and its implementing regulations (43 CFR §10). BLM will be responsible for compliance with the provisions of NAGPRA on Federal land.

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c) Native American human remains, funerary objects, sacred objects, or items of cultural patrimony found on state or private land will be handled in accordance with applicable law as described in Appendix D – Treatment of Human Remains.

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d) Non-Native American human remains found on federal, state, or private land will also be treated in accordance with applicable state law.

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### 11) Disposition of Archaeological Collections:

a) BLM will curate artifacts, materials or records resulting from archaeological identification and mitigation conducted on BLM land at the Billings Curation Center, in accordance with the Billings Curation Center Packaging Requirements in accordance with 36 CFR § 79, "Curation of Federally-Owned and Administered Archaeological Collections." BLM will consult with Indian Tribes as required in 36 CFR § 79.

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b) Where testing or excavation is conducted on private land, any recovered artifacts remain the property of the landowner. Powertech will return the artifacts to landowners. Powertech will encourage landowners to donate the artifacts to the SD Archaeological Research Center or a Tribal entity, in coordination with the NRC, SHPO, and participating Tribes. Where a property owner declines to accept responsibility for the artifacts and agrees to transfer ownership of the artifacts to SD Archaeological Research Center or Tribal entity, Powertech will assume the cost for curating the artifacts in a facility meeting the requirements of 36 CFR § 79, "Curation of Federally-Owned and Administered Archaeological Collections."

**Comment [TC52]:** Who will be making the determination that remains are non-native? All remains should be considered to be Native American until such time as they are proven otherwise.

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**Final DRAFT****12) Qualifications:**

All historic property identification, evaluation, and mitigation carried out pursuant to this PA shall be performed by or under the direct supervision of qualified individuals in the appropriate historic preservation discipline meeting, at a minimum, the appropriate standards set forth in 36 CFR § 61.

In recognition of the special expertise Tribal experts have concerning properties of religious and cultural significance, the standards of 36 CFR § 61 will not apply to knowledgeable, designated tribal representatives carrying out identification and evaluation efforts for properties of religious and cultural significance to Tribes.

**13) Compliance Monitoring:**

NRC affirms avoidance of adverse effects to historic properties remains the preferred course of action.

- a) Powertech will ensure employees and/or contractors involved in all phases of the Project are aware of and comply with the requirements of the PA. Powertech may use measures such as initial orientation training, as well as pre-job briefings to inform employees and contractors of their responsibilities under the PA. Compliance with this PA is a condition of the NRC license and a condition of the BLM POO.
- b) Prior to initiating construction activities, Powertech will develop a Monitoring Plan specific to the project, identifying specific areas, activities, and if appropriate, historic properties that require monitoring during development of the Project, ensuring the requirements of this PA and the treatment plans developed under the provisions of Stipulation 6 are met. The monitoring plan will include provisions for annual reporting of the results of the monitoring program to the signatories and the consulting Tribes to this PA.
- i) Powertech will provide the Monitoring Plan to the NRC, which will distribute it to the signatories and consulting Tribes to this agreement for a 30 day review and comment period.
- ii) The NRC will request that Powertech make any necessary revisions to the plan, and the revised Monitoring Plan will remain in effect for all covered ground-disturbing activities during the license period.
- c) Powertech will engage the services of a Monitor with specific responsibilities to coordinate the requirements of the monitoring plan, the treatment plans, and this agreement during project construction.
- i) The Monitor will meet the Secretary of the Interior's Professional Qualifications for Archaeology. Preference will be given to individuals meeting those qualifications who are employed by tribal enterprises, especially during phases of the monitoring program where sites with religious and cultural significance to the Tribes might be affected. In the case of an unanticipated discovery or imminent threat to an avoided historic property, the Monitor shall have authority to stop certain construction activities.
- ii) The Monitor will coordinate with Powertech and its contractors during the construction phases of the Project.
- d) Powertech will provide periodic updates to all consulting parties on the status of the monitoring program as specified in Appendix C.

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**Comment [TC53]:** Include "and eligibility determinations"

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**Comment [TC54]:** The plans developed thus far by Powertech have not been acceptable to the consulting tribes. Why does the NRC allow them to essentially make their decisions for them? This further enforces the widely held belief that Powertech is deciding the 106 process and not the federal agency.

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**Comment [TC55]:** This statement allows for the applicant to decide which areas need monitoring for the tribes. I'm unaware of any action from our chairman which allows Powertech to decide for the Standing Rock Sioux Tribe which sites we require monitoring on. Please provide this documentation to the SRST-THPO so that we may discuss the issue with our chairman. This statement alone demonstrates the lack of good faith consultation which the NRC has embarked upon with this and all of their projects. The SRST-THPO and all tribes should be involved in this process as our concerns for our sites are certainly different than that of an applicant who refused to negotiate with the tribes after August of 2012.

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**Comment [TC56]:** So Powertech is once again deciding who can monitor sites of significance to the Standing Rock Sioux Tribe. By tribal resolution that decision rests so ... [30]

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**Comment [TC57]:** Currently, there are very few archaeologists in the Great Plains who would meet those criteria and short of Powertech hiring Ben Rhodd there is no ... [32]

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**Final DRAFT****14) Dispute Resolution: \*formatting**

Should any signatory to this PA object in writing to any actions proposed or to the manner in which terms of the PA are implemented, the NRC shall consult with the party to resolve the objection. When the NRC determines an objection cannot be resolved, the NRC will:

- a) Forward all documentation relevant to the dispute, including the NRC proposed resolution, to the ACHP and send a copy to all other consulting parties. The ACHP shall provide NRC with its advice on the resolution of the objection within 30 days of receiving adequate documentation.
- b) Within 30 days after receipt of all pertinent documentation, the ACHP shall exercise one of the following options:
  - i. Advise the NRC that the ACHP concurs in the NRC proposed final decision, whereupon the NRC shall respond accordingly;
  - ii. Provide the NRC with recommendations, which the NRC will consider in reaching a final decision on the objection;
  - iii. Notify the NRC that the objection will be referred to the ACHP membership for formal comment and refer the objection to the ACHP membership for comment within 30 days. The NRC will consider comments in accordance with 36 CFR §800.7(c)(4);
  - iv. Should the ACHP not exercise one of the above options within 30 days after receipt of all pertinent documentation, the NRC may proceed with its proposed response.
- c) Prior to making a final decision on the dispute, the NRC will prepare a written response that addresses timely comments from signatories and consulting Tribes to the PA. The NRC will provide signatories, consulting Tribes, and the ACHP with a copy of its written response. The NRC may implement its final decision.
- d) The NRC will consider recommendations and comments made by the ACHP that are related to the objection. NRC responsibilities under this Agreement, which are not the subject of the objection, shall remain unchanged

**15) Amendment:**

A signatory to this agreement may request that it be amended, whereupon the signatory parties will consult to reach a consensus on the proposed amendment. Concurring parties will be provided an opportunity to consult and comment on the proposed amendment. An amendment will be effective on the date the amended PA is signed by all of the signatories to this PA. If a required signatory does not sign the amended PA, the amendment will be void. The amendment shall be appended to this PA as an Appendix.

Any federal agency, including the EPA, may in the future decide to rely on this agreement in connection with satisfying its Section 106 responsibilities and, may join the agreement by adding its signature and circulating the amended agreement to the appropriate parties.

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**Comment [TC58]:** Will this be the same timely comments that were utilized in the eligibility determinations in which the tribes were given the information on the sites on the same day that the SD SHPO was asked to concur on the eligibility determination by the NRC?

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**Comment [TC59]:** Will the NRC be considering any comments made by the tribes in any disputes according to section 14?

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**Comment [TC60]:** So basically, if one signatory decides the amendment does not fit into their plans they can refuse to sign it and the amendment is voided. Who wrote this statement? This greatly favors the applicant in all amendment decisions. If they disagree with a proposed amendment that would impact ... [35]

**Comment [TC61]:** The SRST-THPO opposes this statement being included as each undertaking must follow through its own Section 106 process and not adopt the incorrect ... [36]

Final DRAFT

**16) Termination:**

- a) Any Signatory to this PA may initiate termination by providing written notice to the other signatories of their intent. After notification by the signatory initiating termination, the remaining signatories shall have 30 days to consult to seek agreement on amendments or other actions that could address objections and avoid termination. If consultation fails, the termination will be effective after 30 days, unless all signatories agree to a longer period.
- b) In the event the PA is terminated, the signatories will comply with any applicable requirements of 36 CFR § 800.4 through 800.7 with regard to the original undertaking covered by this PA.

**17) Duration:**

Implementation of the stipulations in this agreement must begin within five years from the date of its execution. During that time, the NRC may consult with the signatories and concurring parties to amend the agreement in accordance with Stipulation 16. The agreement will be in place until ten years from the day of execution or the termination of the license.

**18) Anti-Deficiency Act:**

The stipulations of this Agreement are subject to the provisions of the Anti-Deficiency Act (Pub.L. 97-258, 96 Stat. 923; 31 U.S.C. §1341, Limitations on expending and obligating amounts). If compliance with the Anti-Deficiency Act alters or impairs the ability of the NRC to implement this Agreement, the NRC will consult in accordance with the amendment and termination procedures in this Agreement.

Execution of this PA by the NRC, BLM, SD SHPO, ACHP, and Powertech and the implementation of its terms is evidence the NRC and BLM have taken into account the effects of this undertaking on historic properties and afforded the ACHP an opportunity to comment.

**Signatories:**

United States Nuclear Regulatory Commission

By: \_\_\_\_\_ Date: \_\_\_\_\_  
 Title: Larry W. Camper, Director  
 Division of Waste Management and Environmental Protection

United States Bureau of Land Management

By: \_\_\_\_\_ Date: \_\_\_\_\_  
 Title: Marian M. Atkins, South Dakota Field Manager

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**Comment [TC62]:** These sections were not  
 followed in the original undertaking. What  
 provisions will be in place to ensure that the  
 same bad policies initiated by the NRC which  
 resulted in division amongst the tribes which  
 continues to this day will not just continue?

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**Comment [TC63]:** So what exactly will be  
 followed during the intervening 5 years? There  
 is no mention of what stipulation will be issued  
 between the time the NRC licensed this project  
 which will be the very same day they get this PA  
 signed and 5 years from now when it must be  
 enforced. Once again who wrote this section? It  
 heavily leans in the favor of the applicant.

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**Comment [TC64]:** This statement is an  
 outright fallacy and insulting to all of the tribes  
 who participated in consultation with this  
 project. In particular, with the tribes who  
 objected to the ultimatum enforced identification  
 effort endorsed by the NRC at the urging of third  
 party consultants. The tribes who did not accept  
 the forced ultimatum approach have never been  
 afforded the opportunity to address our sites of  
 significance within the license boundary in a  
 manner consistent with the needs of our  
 acceptable identification efforts even though  
 Commissioner Magwood assured the SRST-  
 THPO officer that they would be. PA's should  
 not be used to circumvent responsibilities within  
 the Section 106 process as they are being used  
 in this project. It is extremely premature of the  
 NRC and the ACHP to embark upon execution  
 of a PA when there are still so many questions  
 surrounding the original identification effort and  
 eligibility determinations. The NRC has and  
 continues to ignore the tribes by stating they will  
 not reopen identification under any  
 circumstances. We had our chance according to  
 them. That chance would not have resulted in a  
 meaningful identification process being  
 employed. The consulting tribes sent their  
 objections to the NRC. The NRC chose to adopt  
 it as the only solution anyway further enforcing  
 the view that this project is run by the ap [37]

**Final DRAFT**

South Dakota State Historic Preservation Office

By: \_\_\_\_\_ Date: \_\_\_\_\_  
 Title: Jay Vogt, State Historic Preservation Officer

Advisory Council on Historic Preservation

By: \_\_\_\_\_ Date: \_\_\_\_\_  
 Title: John Fowler, Executive Director

**Invited Signatories:**

Powertech USA, Inc.

By: \_\_\_\_\_ Date: \_\_\_\_\_  
 Title: \_\_\_\_\_

**Concurring Parties:**

Cheyenne and Arapaho Tribes

By: \_\_\_\_\_ Date: \_\_\_\_\_  
 Title: \_\_\_\_\_

Cheyenne River Sioux Tribe

By: \_\_\_\_\_ Date: \_\_\_\_\_  
 Title: \_\_\_\_\_

Apsaalooke (Crow) Nation

By: \_\_\_\_\_ Date: \_\_\_\_\_  
 Title: \_\_\_\_\_

Crow Creek Sioux Tribe

By: \_\_\_\_\_ Date: \_\_\_\_\_  
 Title: \_\_\_\_\_



**Final DRAFT**

Eastern Shoshone Tribe

By: \_\_\_\_\_ Date: \_\_\_\_\_  
 Title: \_\_\_\_\_

Flandreau-Santee Sioux Tribe

By: \_\_\_\_\_ Date: \_\_\_\_\_  
 Title: \_\_\_\_\_

Fort Peck Assiniboine/Sioux

By: \_\_\_\_\_ Date: \_\_\_\_\_  
 Title: \_\_\_\_\_

Lower Brule Sioux Tribe

By: \_\_\_\_\_ Date: \_\_\_\_\_  
 Title: \_\_\_\_\_

Lower Sioux Tribe

By: \_\_\_\_\_ Date: \_\_\_\_\_  
 Title: \_\_\_\_\_

Northern Arapaho Tribe

By: \_\_\_\_\_ Date: \_\_\_\_\_  
 Title: \_\_\_\_\_

Northern Cheyenne Tribe

By: \_\_\_\_\_ Date: \_\_\_\_\_  
 Title: \_\_\_\_\_

Oglala Sioux Tribe

By: \_\_\_\_\_ Date: \_\_\_\_\_  
 Title: \_\_\_\_\_

**Final DRAFT**

Omaha Tribe of Nebraska

By: \_\_\_\_\_ Date: \_\_\_\_\_  
 Title: \_\_\_\_\_

Pawnee Nation of Oklahoma

By: \_\_\_\_\_ Date: \_\_\_\_\_  
 Title: \_\_\_\_\_

Ponca Tribe of Nebraska

By: \_\_\_\_\_ Date: \_\_\_\_\_  
 Title: \_\_\_\_\_

Rosebud Sioux Tribe

By: \_\_\_\_\_ Date: \_\_\_\_\_  
 Title: \_\_\_\_\_

Santee Sioux Tribe of Nebraska

By: \_\_\_\_\_ Date: \_\_\_\_\_  
 Title: \_\_\_\_\_

Sisseton-Wahpeton Oyate Tribes

By: \_\_\_\_\_ Date: \_\_\_\_\_  
 Title: \_\_\_\_\_

Spirit Lake Tribe

By: \_\_\_\_\_ Date: \_\_\_\_\_  
 Title: \_\_\_\_\_

Standing Rock Sioux Tribe

By: \_\_\_\_\_ Date: \_\_\_\_\_  
 Title: \_\_\_\_\_

**Final DRAFT**

Mandan, Hidatsa & Arikara Nation  
Three Affiliated Tribes

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Title: \_\_\_\_\_

Turtle Mountain Band of Chippewa

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Title: \_\_\_\_\_

Yankton Sioux Tribe

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Title: \_\_\_\_\_

<b>Page 3: [1] Comment [TC10]</b>	<b>Terence Clouthier</b>	<b>02/19/2014 12:37:00 PM</b>
The tribes were offered an ultimatum to either accept the proposal that would in no way properly identify sites of significance to them or be left out of the identification process. This is not a good faith effort to identify sites of significance to tribes. The proposal ignored the information gathered under 36CFR800.4 as to what is actually required to identify and instead the proposal amounted to just saying go drive around where you want – stay for up to one month or leave after three days. That was essentially the proposal put before the tribes.		
<b>Page 3: [2] Comment [TC15]</b>	<b>Terence Clouthier</b>	<b>02/19/2014 4:16:00 PM</b>
The SRST-THPO is aware that the NRC submitted their eligibility determinations to the SD SHPO for concurrence on the same day that the tribes were asked to provide comments on eligibility in the 30 day window. How can the NRC imply that this was conducted in good faith? The SD SHPO issued their concurrence on Jan 14th, 2014. The SRST-THPO did not even receive the documents until January 7th, 2014 and the comment review period was barely a week old. This rush to complete the PA and SEIS to issue a licence is not being conducted in good faith. The SRST-THPO has no confidence that our concerns would have been addressed by the NRC as they did not even wait to receive any comments from tribes before asking for concurrence from SD SHPO. This amounts to token checkmarks by the federal agency and not good faith consultation. The SRST-THPO would require field visits to the sites to properly assess their eligibility per our tribal expertise.		
<b>Page 5: [3] Comment [TC23]</b>	<b>Terence Clouthier</b>	<b>02/20/2014 11:07:00 AM</b>
This PA will take the tribes completely out of the consultation process according to this statement. Tribes have a right to comment on identification efforts per 36CFR800.2 yet this PA will take that right out of the tribes hands and put it squarely in the applicants hands. This was attempted by the applicant in the initial identification effort in August of 2011 when the NRC asked them to develop a plan for identification. That plan was unanimously disagreed to by every tribe who was consulting at that time for this project. Yet, the NRC is once again trying to limit the participation of tribes.		
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<b>Page 5: [5] Formatted</b>	<b>hxy1</b>	<b>02/14/2014 6:26:00 PM</b>
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<b>Page 5: [6] Comment [TC24]</b>	<b>Terence Clouthier</b>	<b>02/18/2014 3:39:00 PM</b>
This didn't work the last time this was planned and once again it is being proposed. It resulted in the NRC dividing the tribes against each other and this will be the case again for this project. The NRC attempted to mislead some tribes into accepting their proposal by misconstruing the participation level of other tribes. There has been no good faith effort for identification on this project for the tribes who did not accept the powertech handout forced upon them by the NRC. An ultimatum is not good faith.		
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<b>Page 5: [8] Comment [TC25]</b>	<b>Terence Clouthier</b>	<b>02/18/2014 3:42:00 PM</b>
The SRST-THPO is opposed to any testing of our sites of significance. We have stated this multiple times in consultation yet our expertise for evaluating our sites is being ignored by this PA.		
<b>Page 5: [9] Formatted</b>	<b>hxy1</b>	<b>02/14/2014 6:26:00 PM</b>
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**Page 6: [12] Comment [TC29]** Terence Clouthier 02/19/2014 4:27:00 PM

Please provide the details of how this will be conducted. The tribes might have concerns not addressed by non-tribal personnel.

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**Page 6: [17] Comment [TC31]** Terence Clouthier 02/18/2014 3:51:00 PM

This will require an amendment to the PA. The SRST-THPO is concerned that an agreement is not binding if it is not included in this PA. The NRC should resubmit the PA with the proposals included so that no additional amendments or agreements are necessary. This further enforces the view that this PA is not a good faith effort but is rather a rush to issue the license.

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**Page 6: [19] Comment [TC32]** Terence Clouthier 02/20/2014 11:09:00 AM

This should be developed currently within this PA and not at some future date. Concerns for this are outlined in TC 27.

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**Page 6: [21] Comment [TC33]** Terence Clouthier 02/19/2014 12:23:00 PM

These treatment plans do not take into account any specialized expertise of the tribes for evaluating our sites of significance which can also be eligible under Criteria A-D. The SRST-THPO objects to this treatment plan as currently planned as it over emphasizes the use of archaeologists and not tribal expertise.

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**Page 8: [23] Comment [TC38]** Terence Clouthier 02/18/2014 4:02:00 PM

The SRST-THPO has submitted numerous comments to the NRC that were subsequently ignored. Other tribes have also submitted comments that were ignored by the federal agency. The fact that only 7 of 23

tribes participated in the NRC ultimatum for identification is proof of this. What assurances do the tribes have that their comments won't just be used to document "good faith" consultation without addressing them as is currently the case with the NRC for all of their projects

**Page 8: [24] Comment [TC39] Terence Clouthier 02/20/2014 10:38:00 AM**

These surveys should be conducted now so that a federal tie is maintained to the project. The SRST-THPO is more than a little concerned that the applicant will argue against having to involve the federal agency if there is no demonstrable tie to the transmission lines for the issuance of the NRC permit or no BLM involved land and therefore no tribal involvement due to no Section 106 tie. Keystone XL utilized this same maneuver. This represents a complete lack of understanding of the definition of APE according to the 36CFR800.16 (d) and was a huge stumbling block in the scope of work process throughout 2011 and 2012. The NRC's own failures at properly defining the APE helped to create the impasse so that they would attempt to move the process forward in their own words.

**Page 8: [25] Comment [TC40] Terence Clouthier 02/20/2014 11:13:00 AM**

The tribes did not accept the Powertech proposal for the initial survey at Dewey-Burdock yet this PA puts the onus on them again to develop this portion of it. This will result in the same failures occurring once again with the vast majority of the tribes unable to participate in the identification efforts because it will not meet our required standards for identification efforts. Should a PA really be used to circumvent the 106 process with a flawed methodology that did not already work and enforce it? The SRST-THPO submits that it should not.

**Page 9: [26] Comment [TC41] Terence Clouthier 02/20/2014 11:14:00 AM**

The SRST-THPO and other tribes opposed this approach and continue to do so. It should not be acceptable as the preferred option as will be the case. It has been demonstrated by the NRC that they will use it regardless of the protestations by the tribes furthering the disharmony among the tribes and the federal agency. The NRC used this approach for the Crow Butte facility without consulting the tribes for their feedback on such an approach. The disharmony created by the NRC in dividing the tribes continues to be felt across the Indian Country today but the NRC does not care about the results of their actions as long as they can issue their permit and be done with the tribes they are happy to create this disharmony. Other federal agencies have followed this practice as well now that the NRC has created it.

**Page 9: [27] Comment [TC42] Terence Clouthier 02/19/2014 4:32:00 PM**

Will the process be the same flawed process that involved submitting the eligibility for sites for concurrence to the SD SHPO on the same day as the request for comments on eligibility determinations to the tribes?

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**Page 12: [30] Comment [TC56] Terence Clouthier 02/20/2014 11:17:00 AM**

So Powertech is once again deciding who can monitor sites of significance to the Standing Rock Sioux Tribe. By tribal resolution that decision rests solely with the SRST-THPO office and not with an outside agency or entity. We can provide this resolution.

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**Page 12: [32] Comment [TC57] Terence Clouthier 02/20/2014 11:18:00 AM**

Currently, there are very few archaeologists in the Great Plains who would meet those criteria and short of Powertech hiring Ben Rhodd there is not a single one that can properly address Standing Rock Sioux Tribe concerns for our sites of significance. The SRST-THPO would have no confidence in any other

archaeologist currently working on the Great Plains. Tribal monitors utilizing our specialized expertise must be employed in addition to any Secretary of the Interior Standards qualified personnel. We will accept monitors from the following tribes to address our concerns in addition to our own: Oglala Sioux Tribe, Cheyenne River, Rosebud Sioux Tribe, and Sisseton Wahpeton Oyate.

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**Page 13: [35] Comment [TC60]** **Terence Clouthier** **02/20/2014 9:51:00 AM**

So basically, if one signatory decides the amendment does not fit into their plans they can refuse to sign it and the amendment is voided. Who wrote this statement? This greatly favors the applicant in all amendment decisions. If they disagree with a proposed amendment that would impact their practices all they have to do is not sign it and it doesn't pass. This does not surprise the SRST-THPO as the NRC has been favoring the applicant and their timeline since the inception of this project

**Page 13: [36] Comment [TC61]** **Terence Clouthier** **02/20/2014 10:26:00 AM**

The SRST-THPO opposes this statement being included as each undertaking must follow through its own Section 106 process and not adopt the incorrect and consistently terrible policies of the NRC to complete their Section 106 process. I'm surprised the ACHP would even consider this!

**Page 14: [37] Comment [TC64]** **Terence Clouthier** **02/20/2014 11:24:00 AM**

This statement is an outright fallacy and insulting to all of the tribes who participated in consultation with this project. In particular, with the tribes who objected to the ultimatum enforced identification effort endorsed by the NRC at the urging of third party consultants. The tribes who did not accept the forced ultimatum approach have never been afforded the opportunity to address our sites of significance within the license boundary in a manner consistent with the needs of our acceptable identification efforts even though Commissioner Magwood assured the SRST-THPO officer that they would be. PA's should not be used to circumvent responsibilities within the Section 106 process as they are being used in this project. It is extremely premature of the NRC and the ACHP to embark upon execution of a PA when there are still so many questions surrounding the original identification effort and eligibility determinations. The NRC has and continues to ignore the tribes by stating they will not reopen identification under any circumstances. We had our chance according to them. That chance would not have resulted in a meaningful identification process being employed. The consulting tribes sent their objections to the NRC. The NRC chose to adopt it as the only solution anyway further enforcing the view that this project is run by the applicants timeline and not any meaningful good faith effort. By endorsing this PA ; the ACHP is agreeing that a process whereby 4 tribes totalling 8 people were given two weeks to survey over 10,000 acres is a process that is acceptable under Section 106. This is unacceptable and unconscionable of the ACHP to agree to the execution of this PA knowing full well the issues that the tribes continue to have for this project and its identification and eligibility determination process.

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
POWERTECH (USA) INC.	)	Docket No. 40-9075-MLA
(Dewey-Burdock In Situ Recovery Facility	)	
Source Materials License Application)	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing **Email of the Standing Rock Sioux Tribe Sent to Commissioner William Magwood and Others** have been served upon the following persons by Electronic Information Exchange, and by electronic mail as indicated by an asterisk\*.

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POWERTECH (USA) INC., DEWEY-BURDOCK IN SITU RECOVERY FACILITY  
DOCKET NO. 40-9075-MLA

**Email of the Standing Rock Sioux Tribe Sent to Commissioner William Magwood and Others**

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