

**UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION  
Before the Atomic Safety and Licensing Board  
and  
The Commission**

In the Matter of	)	Docket No. 72-1050
	)	
Interim Storage Partners, LLC	)	January 21, 2020
	)	
(Waste Control Specialists Consolidated	)	
Interim Storage Facility)	)	

**FASKEN OIL AND RANCH, LTD AND PERMIAN BASIN LAND AND ROYALTY OWNERS MOTION FOR LEAVE TO AMEND CONTENTION FOUR REGARDING INTERIM STORAGE PARTNER’S NEW DESCRIPTION OF GROUNDWATER LOCATED BELOW THE SITE AND THE POTENTIAL IMPACT THE SITE WILL HAVE ON THE GROUNDWATER**

**I. INTRODUCTION**

Pursuant to 10 C.F.R. §§ 2.309(c)(1), Fasken Oil and Ranch, Ltd. and Permian Basin Land and Royalty Owners (together “Petitioners”) hereby move to amend Contention Four previously filed in Interim Storage Partner’s (ISP’s) licensing application proceeding to build and operate a centralized interim storage facility (CISF) for spent fuel in Andrews County, Texas. Petitioners’ amended contention is based on new information arising from recently submitted ISP responses to NRC Staff requests for additional information (RAIs).

Background information regarding Petitioners’ original contention, changes to ISP’s license application, and the RAI response is provided in § II below. The amended contention is stated and supported in § III. Petitioners demonstrate that they have good cause to file their amended contention after the original filing deadline in § IV.

**II. BACKGROUND**

**A. Development of ISP’s License Application**

In April 2016, Waste Control Specialists LLC (WCS) submitted its initial license application to construct and operate a CISF for a term of forty years. One year later, WCS requested that the NRC suspend its license and any public participation concerning the application. During this time, WCS and Orano CIS LLC formed ISP. On August 29, 2018, after receiving a revised license application from ISP, the NRC issued Federal Register Notice 44,070, 44,070-75 which notified the public that ISP's proposed CISF application in Andrews County, TX was active. The notice allowed the public to request a hearing and file petition to intervene no later than October 29, 2018.

### **B. Petitioners' Hearing Request**

On September 28, 2018, Petitioners filed a motion to dismiss the proceeding. The motion to dismiss was based on the application's reliance on the U.S. Department of Energy (DOE) taking title to the spent nuclear fuel and the Nuclear Waste Policy Act and the Administrative Procedure Act prohibiting the DOE from taking title to high level waste and/or spent fuel until a permanent repository is established. On October 29, 2018, Petitioners filed a Petition to Intervene and Request for a Hearing which included Contention Four; the contention that Petitioners now seek to amend.

#### *i. Background of Contention Four*

Contention Four challenged ISP's license application on the ground that ISP "failed to adequately discuss and evaluate the impact the proposed site will have on the environment and...failed to include adverse information specifically relating to potential of waste-contaminated groundwater."<sup>1</sup>

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<sup>1</sup> Petition of Fasken and PBLRO at 26 (ADAMS #ML18302A412) (hereinafter "Petition").

Specifically, Contention Four criticized ISP's ability to fully evaluate the impact that the CISF will create in the environment because ISP's descriptions of the subsurface and hydrological formations and aquifers located below the CISF were vastly different than those provided in Contention Four. Before submitting responses to RAIs, ISP's Environmental Report (ER) claimed that "[t]he shallowest water bearing zone is about 225 ft deep at the site."<sup>2</sup> The ER also stated that "[t]he Ogallala Formation, if present, is not water bearing in the Waste Control Specialists permitted area."<sup>3</sup> Contention Four challenged the application's description of the subsurface and depth to groundwater stating that "the Ogallala formation is present along the North and East sides of the WCS-Flying "W" Ranch at a depth of 45-105 feet."<sup>4</sup> Contention Four's description of subsurface hydrology also concluded that "cross-formational groundwater is known to exist between the Ogallala and the Antler Formations."<sup>5</sup> The Antler Formation, which spans the entire WCS area and supplies potable water to the City of Midland, Texas, is in some areas located "within a few feet" of the surface of the CISF.<sup>6</sup>

### **C. Atomic Safety and Licensing Board's Order Denying Petition**

On August 23, 2019, the Atomic Safety and Licensing Board (Board) ruled that Petitioners demonstrated standing, but that none of Petitioners' five proffered contentions were admissible.<sup>7</sup> The Board found that Petitioners failed to raise a genuine dispute on a material issue based on Petitioners' theory that a large, fully-fueled aircraft crash could cause a pathway to

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<sup>2</sup> ER, Sec. 3.4.14 at 3-24; *See also* ER Sec. 4.4 at 4-29 "water resources at the site are virtually nonexistent...and appreciable groundwater resources are at depths greater than approximately 340 m (1,115 ft)."

<sup>3</sup> ER, Sec. 3.4.14 at 3-26.

<sup>4</sup> Petition at 28 (citing Declaration of Aaron Pachlhofer at 4 n. 3).

<sup>5</sup> *Id.* (citing Declaration of Aaron Pachlhofer at 4).

<sup>6</sup> *Id.*

<sup>7</sup> *Interim Storage Partners* (WCS Consolidated Interim Storage Facility), LBP-19-07 at 20 & 106, \_N.R.C.\_ (August 23, 2019) (hereinafter "ASLB Decision").

groundwater contamination.<sup>8</sup> The Board held that Petitioners failed to contradict four independent reasons why the proposed facility could not contaminate aquifers and other groundwater formations that underlie and surround the CISF. These reasons include “[t]he method of storage (dry casks), the nature of the canisters, the extremely low permeability of the red clay and the depth to groundwater.”<sup>9</sup>

#### **D. Petitioners’ Appeal of Board’s Order**

On September 17, 2019, Petitioners appealed the Board’s order.<sup>10</sup> The appeal defended Contention Four’s challenge of the application, specifically, how the Board abused its discretion by failing to address a material issue of fact.<sup>11</sup> Rather than focus on Contention Four’s argument that ISP failed to adequately describe the subsurface, environment, and the impact the proposed CISF would have on the environment pursuant to 10 CFR § 51.45, the Board turned a blind eye to the different descriptions of the subsurface because “[a]bsent a pathway to groundwater contamination, [Petitioners’] claims are not material because their resolution would make no difference in the outcome of the licensing proceeding.”<sup>12</sup>

#### **E. New Information: ISP’s January 6, 2020 Response to RAIs**

On January 6, 2020, the “package” titled “Interim Storage Partners Submission of Responses for RAIs and Associated Document Markups from First Request for Additional Information, Part 3” was uploaded to the NRC’s ADAMS Public Library portal.<sup>13</sup> ISP’s

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<sup>8</sup> ASLB Decision at 103.

<sup>9</sup> *Id.* at 102 (citing ISP Safety Analysis Report at 2-21).

<sup>10</sup> Fasken and PBLRO’s Notice of Appeal of LBP-19-07 (September 17, 2019) (ADAMS # ML19260J386) (hereinafter “Petitioners’ Appeal”).

<sup>11</sup> Petitioners’ Appeal at 19.

<sup>12</sup> ASLB Decision at 103.

<sup>13</sup> Hereinafter (“ISP Response to RAIs) (ADAMS # ML19337B502).

Response to RAIs included documents containing new descriptions of the subsurface located below the proposed CISF.

### **III. REQUEST FOR LEAVE TO AMEND PETITIONER'S CONTENTION Four**

#### **A. Applicable Standards**

NRC regulation 10 C.F.R. § 2.309(c) allows a petitioner to amend its contention if the presiding officer finds that the petitioner “has demonstrated good cause” by satisfying the following factors:

- (i) the information on which the filing is based was not previously available;
- (ii) the information upon which the filing is based is materially different from information previously available; and
- (iii) the filing has been submitted in a timely fashion based on the availability of the subsequent information.

An amended contention generally is considered timely if it is filed within 30 days of the date upon which the new information became available.<sup>14</sup>

Given the importance placed by the NRC on “completeness and accuracy of information submitted by applicants” and the demand for “[n]othing less than candor,” Petitioners respectfully suggest that permitting the amendment of a contention is appropriate where new information shows that an applicant materially changes statements and factual conclusions it previously relied on in a license application.<sup>15</sup>

#### **B. Request for Leave to Amend Contention Four**

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<sup>14</sup> *Shaw AREVA MOX Services* (Mixed Oxide Fuel Fabrication Facility), LBP-08-11, 67 NRC 460, 493 (2008) (“Many times, boards have selected 30 days as [the] specific presumptive time period” for timeliness of contentions filed after the initial deadline).

<sup>15</sup> *See, Randall C. Orem, D.O.*, CLI-93-14, 37 NRC 423, 427 (1993) (citing *Petition for Emergency and Remedial Action*, CLI-78-6, 7 NRC 400, 18 (1978); *Hamlin Testing Laboratories, Inc.*, 2 AEC 423, 428 (1964), *aff’d*, 357 F.2d 632 (6<sup>th</sup> Cir. 1966); *Virginia Electric and Power Co.* (Norther Anna Power Station, Units 1 & 2), CLI-76-22, 4 NRC 480 (1976), *aff’d*, 571 F.2d 1289 (4<sup>th</sup> Cir. 1978)).

Petitioners seek to amend Contention Four. Contrary to the requirements of 10 C.F.R. § 51.45, ISP has failed to objectively, adequately and thoroughly evaluate the potential for radiological and other environmental impacts directly connected to their proposed CISF. Their failure to include newly revealed, adverse information, to contradict their own previously disclosed information and their failure to objectively evaluate the threat and potential harm related to this information gives rise to this amended contention, which is within the scope of these proceedings. All information supported by ISP's past, and contradictory, description of the subsurface must be reevaluated to ensure that the CISF will not have an impact on the environment.

The complete Contention Four and Petitioners' Appeal, with amendment wording in bold-face and italicized, is attached to this Motion and incorporated fully herein as though rewritten.

#### **IV. DEMONSTRATION OF GOOD CAUSE FOR LATE FILING**

Petitioners satisfy the three-prong test for good cause to file an amended contention based on new information as follows:

**i. The information upon which the filing is based was not previously available**

The "package" uploaded to ADAMS titled "[ISP's] Submission of Responses for RAIs and Associated Document Markups from First Request for Additional Information, Part 3" was not uploaded to, or available in, the ADAMS Public Library until January 6, 2020.

**ii. The information upon which the filing is based is materially different than information previously available**

ISP has completely revised its description of the groundwater located below the CISF. Originally, ISP's ER claimed that "[t]he shallowest water bearing zone is about 225 ft deep at the

site.”<sup>16</sup> The ER stated that “water resources at the site are virtually nonexistent...and appreciable groundwater resources are at depths greater than approximately 340 m (1,115 ft).”<sup>17</sup> The ER also claimed that “[t]he Ogallala Formation, if present, is not water bearing in the Waste Control Specialists permitted area.”<sup>18</sup>

Upon review of ISP’s response to RAIs, it is clear that descriptions of groundwater location and depth are materially different than descriptions provided before. In his affidavit, Mr. Pachlhofer points out that ISP’s response to RAI WR-6 supports Contention Four’s argument that the description of groundwater location and depth, contrary to the requirements of 10 C.F.R. § 51.45, was not properly described.<sup>19</sup> In fact, a significant number of the erroneous descriptions in ISP’s ER were derived from insufficient boring data derived from WCS, which caused ISP to erroneously report in its filings a lack of groundwater below the site.<sup>20</sup> Prior descriptions of groundwater were “not based on sufficient boring data to distinguish the contacts between the Antlers and the Ogallala in the proposed CISF area, nor between the Antlers and the Gatuna on the south side of the ridge.”<sup>21</sup> In their responses, ISP further admitted that its previous description of the site’s shallowest water bearing zone of 225 ft was actually the depth to groundwater “at the neighboring Waste Control Specialists facility.”<sup>22</sup> ISP’s response now concludes “[t]he shallowest groundwater beneath the proposed CISF footprint is a few inches to a

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<sup>16</sup> ER, Sec. 3.4.14 at 3-24.

<sup>17</sup> ER, Sec. 4.4 at 4-29

<sup>18</sup> ER, Sec. 3.4.14 at 3-26.

<sup>19</sup> See Affidavit of Aaron Pachlhofer, Sec. III(1)(A) (hereinafter “Pachlhofer Affd.”).

<sup>20</sup> *Id.* at I(1)(A).

<sup>21</sup> ISP Response to RAIs, Enclosure 3 at 45.

<sup>22</sup> *Id.* at 59.

few feet of saturation in the undifferentiated Antlers/Ogallala sediments” at the northern portion of the CISF site.<sup>23</sup>

While ISP's contradictory description of depth to, and presence of, groundwater more closely resembles Petitioners' assessment of groundwater in Contention Four, ISP's description is still lacking in other respects.<sup>24</sup> For example, ISP did not discuss aquifer sources of well TP-14, nor does it disclose the sampling location.<sup>25</sup> Overall, ISP failed to collect groundwater samples from all wells containing groundwater, “especially wells containing groundwater that are located on the CISF, particularly PZ-47 and PZ-57.”<sup>26</sup> ISP’s descriptions are generalized and are merely supported by data collected by their joint venture member, Waste Control Specialists (WCS).<sup>27</sup>

ISP’s new descriptions of groundwater are material. Information and descriptions of the environment contained in the original ER were intended to support the premise that the site would not have an impact on the environment nor contaminate surface and groundwater.<sup>28</sup> Without a proper description of the affected environment, an applicant cannot properly conduct an impact analysis. Any safety and environmental reports, data, and analysis based on the previously faulty descriptions of the subsurface are in and of themselves, faulty. Until ISP reevaluates the impact that the site will have based on the new descriptions of groundwater, ISP cannot meet the burden of 10 C.F.R. § 51.45(b)(1) to adequately discuss the impact the CISF will have on the actual environment.

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<sup>23</sup> *Id.*

<sup>24</sup> *See generally* Pachlhofer Affd. at I.

<sup>25</sup> *Id.* at I(4)(A).

<sup>26</sup> *Id.*

<sup>27</sup> *Id.* at I(2)(B).

<sup>28</sup> Pachlhofer Affd. II(1)(A) (citing to ER Section 4.4) (“the potential for negative impacts on surface water resources is very low due to lack of water presence and formidable natural barriers to any surface or subsurface water occurrences.”).



**iii. The filing has been submitted in a timely fashion based on the availability of the subsequent information.**

This amended contention is being filed well within 30 days of Petitioners' having learned of the issuance of the "package" containing ISP's response to RAIs and is therefore timely.<sup>29</sup>

**V. CONCLUSION**

For the foregoing reasons, the ASLB should grant the request of Petitioner's to amend Contention Four.

Respectfully submitted,

\_/signed electronically by/\_  
Timothy J. Laughlin  
PO Box 481582  
Kansas City, MO 64148  
(913) 662-1274  
tijay1300@gmail.com  
Counsel for Petitioners

\_/signed electronically by/\_  
Monica Perales  
6101 Holiday Hill Road  
Midland, TX 79707  
(432) 687-1777  
monicap@forl.com  
Counsel for Petitioners

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<sup>29</sup> See *Shaw AREVA MOX Services*, 67 NRC at 493.

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**CERTIFICATE OF SERVICE**

I hereby certify that on January 21, 2020, the foregoing FASKEN OIL AND RANCH, LTD AND PERMIAN BASIN LAND AND ROYALTY OWNERS MOTION FOR LEAVE TO AMEND CONTENTION FOUR REGARDING INTERIM STORAGE PARTNER'S NEW DESCRIPTION OF GROUNDWATER LOCATED BELOW THE SITE AND THE POTENTIAL IMPACT THE SITE WILL HAVE ON THE GROUNDWATER was deposited by me in the NRC's Electronic Information Exchange system.

/signed electronically by/  
Timothy J. Laughlin  
Counsel for Petitioners

/signed electronically by/  
Monica Perales  
Counsel for Petitioners

*PETITIONERS' AMENDED CONTENTION FOUR AND AMENDED APPEAL OF  
CONTENTION FOUR*

(NOTE: amended contention wording appears as bold-faced and italicized)

CONTENTION NO. 4:

ISP has failed to adequately discuss and evaluate the impact the proposed site will have on the environment and has also failed to include adverse information specifically relating to potential of waste-contaminated groundwater traveling to aquifers and other groundwater formations located below and around the proposed site.

i. Basis for Contention

The potential for radiological and other environmental impacts on a region must be evaluated pursuant to subpart A, part 51 of title 10.<sup>30</sup> As required by this section, “[an] environmental report shall contain a description of the...environment affected, and discuss...[t]he impact of the proposed action on the environment.”<sup>31</sup> The information submitted pursuant to paragraph (b) “should not be confined to information supporting the proposed action but should also include adverse information” as well.<sup>32</sup> Contrary to the requirements of 10 C.F.R. § 51.45, WCS has failed to adequately evaluate the potential for radiological and other environmental impacts on the environment based on the proposed action and has also failed to include adverse information regarding the proposed action. Thus, this contention is within the scope of these proceedings.

More specifically, pursuant to NUREG-1567, any site located over an aquifer that is a source of well water should consider “[a]n analysis bounding the potential groundwater

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<sup>30</sup> 10 C.F.R. § 72.90(e).

<sup>31</sup> 10 C.F.R. § 51.45(b)(1).

<sup>32</sup> 10 C.F.R. § 51.45(e).

contamination from the site operations.” NUREG-1567 § 2.4.5.<sup>33</sup> The SAR should contain “adequate information for an independent review of all subsurface hydrology-related design bases and compliance with dose radiological exposure standards.” *Id.* There are aquifers and formations present in the subsurface throughout the WCS area, which are also exposed within the excavation walls at the WCS llrw facility.<sup>34</sup> Of these formations, one provides well water to the city of Midland, TX.<sup>35</sup> The SAR fails to provide an analysis bounding the potential groundwater contamination from site operations, and therefore fails to meet the requirements of 10 C.F.R. § 51.45(b)(1).

ii. Facts Upon Which Petitioner Intends to Rely in Support of This Contention

ISP contends that the method of storage (i.e. dry cask) and the nature of the canisters precludes the possibility of groundwater contamination from the operation of the WCS CISF.<sup>36</sup> WCS states that an airplane crash impacting hazardous material on the facility is a credible incident, but fails to consider as directed by NUREG-1567 § 2.4.5 the potential of casks releasing radioactive material upon impact of large, fully-fueled aircrafts.<sup>37</sup> Furthermore, environmental reports must contain “an analysis of the cumulative impacts of the activities...in

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<sup>33</sup> Post-construction environmental reports made during a “license renewal term” require an applicant to assess the impact of any documented inadvertent releases of radionuclides into groundwater—including aquifers—and the projected impact such release had on the environment. See 10 C.F.R. § 51.53(c)(3)(ii)(P). This directly correlates to NUREG-1567’s guidance that applicants should consider potential groundwater contamination for sites located over aquifers as part of their design basis analysis in an SAR.

<sup>34</sup> Exhibit 3, pg. 4.

<sup>35</sup> *Id.*

<sup>36</sup> SAR at 2-21.

<sup>37</sup> Fasken and PBLRO argue in Contention No. 3 that ISP also does not fulfill the requirements of 10 C.F.R. § 72.122(c) which require an ISFSI to be designed to perform its safety functions effectively under credible fire and explosion exposure conditions.

light of the preconstruction impacts.”<sup>38</sup> While Section 9.4.2.1 of NUREG-1567 states that “confinement calculation of the doses under normal off-normal and accident conditions is unnecessary for storage casks having closure lids that are designed and tested to be ‘leak tight,’” WCS still has a duty under 10 C.F.R. § 72.122(c) and NUREG-1567 § 2.4.5 to ensure the ISFSI is designed to effectively protect against the release of radioactive material involving credible incidents, which includes airplane crashes.<sup>39</sup> Since WCS concedes this credible incident, Movants rely on Section 2.4.5 of NUREG-1567 which states that any site located over an aquifer that is a source of well water should consider “[a]n analysis bounding the potential groundwater contamination from the site operations.”

ISP’s SAR also states that the shallowest water bearing zone at the WCS CISF is about 225 feet deep.<sup>40</sup> However, the Ogallala Formation “is present in the subsurface along the north and east sides of the WCS-Flying “W” Ranch at a depth of 45-105 ft.”<sup>41</sup> The SAR also states that the closest downgradient drinking water well is located approximately 6.5 miles to the east of the proposed WCS CISF and that the Ogallala, Antlers, and Gatuña (OAG) aquifers are “largely unsaturated” beneath the WCS.<sup>42</sup> To the contrary, cross-formational groundwater is known to

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<sup>38</sup> 10 C.F.R. § 51.45(c); See also In the Matter of N. States Power Co. (Prairie Island Nuclear Generating Plant Indep. Spent Fuel Storage Installation) 76 NRC 503, 513 (2012) (instructing applicants to “[d]iscuss any past, present, or reasonably foreseeable future actions which could result in cumulative impacts when combined with the proposed action.”).

<sup>39</sup> WCS Consolidated Emergency Response Plan, Revision 03-15-2017 at pg. 5 (stating an airplane crash is a credible incident and defining the crash as an “airplane crash impacting a hazardous material or radiologically controlled area.”) (Accession No. ML17082A054).

<sup>40</sup> SAR at 2-21; *but see, ISP Response to RAIs, Enclosure 3 at 45 (January 6, 2020) (“[t]he shallowest groundwater beneath the proposed CISF footprint is a few inches to a few feet of saturation in the undifferentiated Antlers/Ogallala sediments” located in the northern portion of the CISF site.)*.

<sup>41</sup> See Exhibit 3, pg. 4, f.n. 3 (citing Exhibit 4).

<sup>42</sup> SAR at 2-21.

exist between the Ogallala and the Antler Formations.<sup>43</sup> Even if the OAG aquifers are “largely unsaturated”, this doesn’t detract from the fact that they are still aquifers situated below the vicinity of the WCS site. Thus, pursuant to NUREG-1567 § 2.4.5, ISP should analyze the potential for radiological and other environmental impacts based on WCS’s location above an aquifer. ***Pursuant to ISP’s Response to RAIs, it admits that that previous descriptions of groundwater were “not based on sufficient boring data.”***<sup>44</sup>

The SAR further states that the local Ogallala aquifer “contains fresh to slightly saline water” and that “[t]he Ogallala Formation, if present, is not water bearing in the WCS CISF area.”<sup>45</sup> The purpose of an SAR is to provide specific and adequate information regarding a site’s features regarding the installation;<sup>46</sup> the analysis is not meant to accommodate “ifs” related to the same. As mentioned, the Ogallala formation is present in the subsurface along the WCS Flying “W” Ranch.<sup>47</sup> Contrary to the SAR’s findings, “[g]roundwater [has been] found in 3 borings that penetrated the Ogallala” along the north and east sides of the WCS-Flying “W” Ranch, it is “present...beneath the WCS site itself,” and “cross-formational groundwater is known to exist between [the Antler and the Tertiary Ogallala] formations.”<sup>48</sup> ISP’s statement regarding “if” the Ogallala formation is present or not bolsters this contention’s premise that the SAR has not adequately described the potential for groundwater contamination. ISP’s equivocal

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<sup>43</sup> Exhibit 3, pg. 4.

<sup>44</sup> ***See, ISP Response to RAIs, Enclosure 3 at 45.***

<sup>45</sup> SAR at 2-22 (emphasis added).

<sup>46</sup> The objective of NUREG-1567 is to “ensure that the applicant has provided a non-proprietary description of major components and operations that is adequate to familiarize reviewers and other interested parties with the pertinent features of the installation.” NUREG-1567 § 1.1 at 1-1.

<sup>47</sup> Exhibit 3, pg. 4.

<sup>48</sup> *Id.*

characterization of the aquifers in the area of the proposed facility is an inadequate basis to conclude that groundwater is not present.

ISP also contends that the extremely low permeability and presence of red bed clay precludes the possibility of groundwater contamination.<sup>49</sup> To the contrary, Pachlhofer cites a memo created by TCEQ titled “Uncertainty of Performance Assessment” which studied the WCS area and stated there were extensive fractures in red bed clays overlying the Santa Rosa aquifer.<sup>50</sup> Pachlhofer suggests that the fractures as indicated by the memo “may provide a direct pathway to the Santa Rosa aquifer.”<sup>51</sup> The Antler Formation used to provide water to Midland, Texas overlies the Dockum Formation which contains the Santa Rosa.<sup>52</sup> While water from the Dockum and Santa Rosa is saline and not suitable for consumption, the water in the Antler Formation is used as potable water in Midland, TX.<sup>53</sup> Since fractures in red bed clay overlying the Santa Rosa provide a direct pathway to the aquifer, this pathway would have to begin in the Antler Formation, directly overlying the Dockum formation containing the Santa Rosa. Given that the Antler Formation consists of permeable sandstone and pebble conglomerates, and that these deposits are exposed in the excavation walls of the WCS llrw facility and are present within a few feet of the land surface of the WCS area,<sup>54</sup> ISP’s analysis of subsurface permeability—or lack thereof—has overlooked the potential for groundwater contamination of

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<sup>49</sup> SAR at 2-21; ISP’s only well borings were drilled between 2005-2009 with the shallowest well depth being 49.02 feet and the deepest well depth being 99.56 feet. See SAR “Boring Logs”.

<sup>50</sup> Exhibit 3, pg. 5.

<sup>51</sup> *Id.*

<sup>52</sup> *Id.* at pg. 4.

<sup>53</sup> *Id.*

<sup>54</sup> *Id.*

the Antler and Santa Rosa Formations. This failure is contrary to the requirements of 10 C.F.R. 51.45(b)(1) and NUREG-1567 § 2.4.5.

*Now that ISP's description of groundwater clearly shows that the red bed clays do not provide a "natural barrier" to prevent groundwater contamination,<sup>55</sup> ISP's environmental impact analysis is flawed. Furthermore, because there are new descriptions of groundwater located below the site, 10 C.F.R. § 51.45 requires ISP to re-analyze the impact to the actual groundwater located below the site. Any impact analysis based on previous descriptions of groundwater, including the conclusion that radioactive runoff from storage pads will not impact groundwater due to the presence of "natural barriers"<sup>56</sup> should be re-evaluated. Clearly, the red bed clays will not provide a natural barrier to the groundwater located inches below the site. 10 C.F.R. § 51.45(b)(1)'s burden requiring an application to discuss the impact on the environment cannot be met when the applicant's conclusions regarding the impact to the environment are based on faulty descriptions of the environment.*

Lastly, ISP contends that the depth of the groundwater beneath the WCS CISF precludes the possibility of groundwater contamination. However, ISP fails to consider the Ogallala Formation's presence in the subsurface along the WCS-Flying "W" Ranch at a depth of 45-105 feet and the aquifer's presence beneath the WCS site itself.<sup>57</sup>

For the above-mentioned reasons, ISP fails to properly provide an adequate description of the environment and the impact that the proposed action will have on the environment pursuant

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<sup>55</sup> *ER, Sec. 4.3 at 4-28 provides that red bed clays are "covered with about 6.7 to 16 m (22 to 54 ft) of silty sand, sand, sand and gravel, and alluvium that are part of the Gatuana and/or Antlers Formation."*

<sup>56</sup> *See Pachlhofer Affd. at II(1)(A) (citing ER, Sec. 4.4).*

<sup>57</sup> *See Exhibit 3, pg. 4.*



to 10 C.F.R. §§ 51.45(b)(1) and NUREG-1567 § 2.4.5. ISP also fails to include critical adverse information in its SAR pursuant to 10 C.F.R. §§ 51.45(e).

\* \* \* \* \*

## APPEAL

### CONTENTION 4: (GROUNDWATER AND AQUIFERS)

Contention 4 demonstrates that ISP failed to adequately discuss and evaluate the impact that the Site will have on the environment; specifically, the potential for contamination of groundwater resulting from the Site's operation.<sup>58</sup>

- i. Petitioners' failure to cite ISP's ER is not material because Petitioners cite to relevant sections of ISP's SAR which are found verbatim in ISP's ER.

The Board concluded that Petitioners did not cite or mention any portion of ISP's ER, including sections that specifically evaluate potential groundwater impacts.<sup>59</sup> While Petitioners cited to sections of ISP's SAR, these sections can be cited verbatim in ISP's ER.<sup>60</sup>

Because the cited sections of ISP's SAR can be found verbatim in ISP's ER, this "form over substance" issue should not preclude Contention 4 from being admitted.

- ii. An accident resulting from a large, fully-fueled aircraft crash at the Site may be used to support Petitioners' stance that radioactive material could be released to potential pathways that lead to underground water resources.

Petitioners argue that the potential release of radioactive material resulting from a plane crash is a legitimate concern because NUREG-1567 requires applicants to review and assess the

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<sup>58</sup> Petition at 26.

<sup>59</sup> ASLB Decision at 104.

<sup>60</sup> Petitioners cite to SAR Section 2.5 at 2-21 ("The shallowest water bearing zone is about 225 feet deep at the WCS CISF.") and SAR Section 2.5 at 2-22 ("The Ogallala Formation, if present, is not water bearing in the WCS CISF area."); Compare to, ER Section 3.4.14 at 3-24 ("The shallowest water bearing zone is about 225 ft deep at the site.") and ER Section 3.4.14 at 3-26 ("The Ogallala Formation, if present, is not water bearing in the Waste Control Specialists permitted area.").

hazards that a plane crash may have on a site.<sup>61</sup> However, because the Board determined that Contention 3 did not support the assertion that an aircraft crash was a credible event, it concluded that Petitioners failed to provide a factual basis on these same grounds in Contention 4.<sup>62</sup>

Nonetheless, as described *supra* in Section III.B., NRC guidance documents require an applicant to analyze and consider hazards resulting from an airplane crash. Applicants should consider an airplane's size, velocity, weight and fuel load when an installation is located near an airport.<sup>63</sup> And, given that the Antler Formation, which provides potable water to Midland, Texas, is located throughout the WCS Site—in some areas, within a few feet of the ground surface<sup>64</sup>—the potential that an airplane crash could release radioactive contaminants into the Antler Formation is plausible.

Given that the NUREG emphasizes the importance of analyzing airplane crashes, it is both legitimate and reasonable to conclude that an airplane crash is a real possibility and that such an accident could result in a release of radioactive material in both the atmosphere and the subsurface of the Site. As such, the Board's decision should be reversed.

- iii. The Board inappropriately ignored a legitimate issue of fact regarding whether aquifers and water formations are located below the site.

Petitioners have shown that there is a genuine dispute of fact regarding the presence, location, and permeability of aquifers and formations below the proposed Site.<sup>65</sup> However, contrary to 10 C.F.R. § 51.45 and NUREG-1567 Section 2.4.5, the Board reasoned that because

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<sup>61</sup> Petition at 27; *See supra*, Section III.B.

<sup>62</sup> ASLB Decision at 103.

<sup>63</sup> NUREG-1567 Sec. 2.5.2.

<sup>64</sup> Pachlhofer Dec. at 4.

<sup>65</sup> Petition at 29.

Petitioners did not challenge ISP's determination that the facility's design precludes a pathway to groundwater contamination, ISP's characterization and evaluation of groundwater formations "d[id] not raise a genuine dispute on a material issue."<sup>66</sup> The Board's reasoning is misplaced.

Even though the determination of a facility's design is not applicable to whether an issue of fact exists, Petitioners have challenged the facility's ability to prevent contamination of groundwater based on the plausible airplane crash scenario.<sup>67</sup> Furthermore, if an applicant's site is located over an aquifer that is a source of well water, the groundwater aquifers beneath the site, the associated hydrological units, and their recharge and discharge areas should be described.<sup>68</sup> As it relates to an applicant's description of such hydrological units, the applicant's ER "should contain adequate information" describing such.<sup>69</sup> ***Pursuant to ISP's Response to RAIs on January 6, 2020, ISP now admits that that previous descriptions of groundwater were "not based on sufficient boring data."***<sup>70</sup> ***ISP now concludes that "[t]he shallowest groundwater beneath the proposed CISF footprint is a few inches to a few feet of saturation in the undifferentiated Antlers/Ogallala sediments" located in the northern portion of the CISF site.***<sup>71</sup>

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<sup>66</sup> ASLB Decision at 103

<sup>67</sup> See *supra*, Section III.C.i.; Cf. Even if the NRC finds that Petitioners' airplane crash scenario does not preclude a pathway to groundwater contamination, ISP's cask storage pads are "potential source[s] of low-level radioactivity" and rainwater runoff could contaminate the groundwater below the Site. See ER Sec. 4.4 p. 4-31. This is a highly probable scenario given ISP's concession that abandoned wells drilled on-Site from the 1940s through the 1980s are "likely not lined or closed properly and are potential sources of contamination..." ER at 2-40. While ISP states that potential levels of radioactivity from rainwater runoff due to surface contamination from the casks "would be well below (two orders of magnitude or more) the effluent discharge limits" this analysis is based on ISP's contested description of the subsurface and the permeability of such. ER Sec. 4.4. p. 4-31.

<sup>68</sup> NUREG-1567 Sec. 2.4.5.

<sup>69</sup> *Id.*

<sup>70</sup> See, ***ISP Response to RAIs, Enclosure 3 at 45.***

<sup>71</sup> *Id.*

The Board's determination that Contention 4 is inadmissible is flawed because an applicant's ability to satisfy 10 C.F.R. § 51.45 and NUREG-1567 Section 2.4.5 has nothing to do with whether a petitioner proves that a facility's design precludes a pathway to groundwater. Pursuant to 10 C.F.R. § 72.90(e), applicants must evaluate the potential for radiological and other environmental impacts on a region pursuant to subpart A, part 51 of title 10.<sup>72</sup> An applicant's ER must "contain a description of the...environment affected, and discuss...[t]he impact of the proposed action on the environment."<sup>73</sup> This description should include both "supporting" and "adverse" information.<sup>74</sup> Clearly, 10 C.F.R. § 51.45 has nothing to do with Petitioners' ability to prove that a facility's design precludes a pathway to groundwater contamination. Similarly, NUREG-1567 Section 2.4.5 is not predicated on whether a petitioner challenges an applicant's determination that a facility's design precludes a potential pathway to groundwater either. When a site is located over an aquifer, NUREG-1567 Section 2.4.5 requires applicants to provide adequate information related to groundwater aquifers and the hydrological units and recharge and discharge areas associated with those aquifers.

Contrary to the Board's decision, there is a genuine issue of fact regarding whether aquifers and water formations are located below ISP's Site. ISP suggests that the shallowest water bearing zone at the WCS CISF is about 225 feet deep.<sup>75</sup> To the contrary, the Ogallala Formation is present along the North and East sides of the WCS-Flying "W" Ranch at a depth of 45-105 feet.<sup>76</sup> Furthermore, the Antler Formation, which spans the entire WCS area and supplies potable water to the City of Midland, Texas, is in some areas located "within a few feet" of the

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<sup>72</sup> Petition at 26.

<sup>73</sup> *Id.* (citing 10 C.F.R. § 51.45(b)(1)).

<sup>74</sup> *Id.* (citing 10 C.F.R. § 51.45(e)).

<sup>75</sup> *See* SAR at 2-21.

<sup>76</sup> *Id.* at 28 (citing Pachlhofer Dec. at 4 n.3).

surface of the Site.<sup>77</sup> The Antler Formation is also exposed in the excavation walls of the WCS LLRW facility.<sup>78</sup> ISP states that “if” the Ogallala aquifer is present, it is “not water bearing in the WCS CISF area.”<sup>79</sup> While Petitioners and ISP disagree on the presence of groundwater from the Ogallala being located below the Site, water from the Ogallala is likely present below the Site because the Antler Formation spans the entire Site and cross-formational groundwater is known to exist between both the Ogallala and the Antler formations.<sup>80</sup> Given that the Antler and Ogallala Formations are lithologically similar and often misidentified, the presence of water originating from the Ogallala becomes an even more contested issue.<sup>81</sup>

*Now that ISP’s description of groundwater clearly shows that the red bed clays do not provide a “natural barrier” to prevent groundwater contamination,<sup>82</sup> ISP’s environmental impact analysis is flawed. Furthermore, because there are new descriptions of groundwater located below the site, 10 C.F.R § 51.45 requires ISP to re-analyze the impact the site will have on the actual groundwater located below the site. Any impact analysis based on previous descriptions of groundwater, including the conclusion that radioactive runoff from storage pads will not impact groundwater due to the presence of “natural barriers”<sup>83</sup> should be re-evaluated. Clearly, the red bed clays will not provide a natural barrier to the groundwater located inches below the site. 10 C.F.R. § 51.45(b)(1)’s burden requiring an applicant to*

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<sup>77</sup> Pachlhofer Dec. at 4. (emphasis added).

<sup>78</sup> *Id.*

<sup>79</sup> SAR at 2-22.

<sup>80</sup> Petition at 28 (citing Pachlhofer Dec. at 4).

<sup>81</sup> Pachlhofer Dec. at 4.

<sup>82</sup> *ER, Sec. 4.3 at 4-28 provides that red bed clays are “covered with about 6.7 to 16 m (22 to 54 ft) of silty sand, sand, sand and gravel, and alluvium that are part of the Gatuana and/or Antlers Formation.”*

<sup>83</sup> *See Pachlhofer Affd. at II(1)(A) (citing ER, Sec. 4.4).*

***discuss the impact on the environment cannot be met when the applicant's conclusions regarding the impact to the environment are based on faulty descriptions of the environment.***

Petitioners have shown with reasonable scientific certainty that the Ogallala aquifer and water from the hydrological units and formations associated with the aquifer underlie the construction site of the proposed CISF.<sup>84</sup> ISP's description of the subsurface hydrology and the conclusions it makes based on its description are vastly dissimilar to those made by Petitioners' experts.<sup>85</sup> This raises a serious issue of fact.

Pursuant to the requirements of 10 C.F.R. § 51.45(b)(1) and (e) and NUREG-1567 Section 2.4.5., ISP "fail[ed] to properly provide an adequate description of the environment"<sup>86</sup> and "fail[ed] to include critical adverse information"<sup>87</sup> regarding the subsurface hydrology below the Site. While it is an Applicant's duty to raise critical adverse information, here, Petitioners picked up ISP's burden of doing so and have raised a significant issue of fact. As such, the Board's decision should be reversed and an evidentiary hearing should be held.

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<sup>84</sup> See Pachlhofer Dec. at 5.

<sup>85</sup> 5ER, Section 4.4.14 and SAR, Section 2.5 ("The Ogallala Formation, if present, is not water bearing in the WCS CISF area.")

<sup>86</sup> Petition at 31.

<sup>87</sup> *Id.*