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Subject: Submittal of Comments on Final Environmental Impact Statement (FEIS) for Interim Storage Partner's (ISP's) License Application for a Consolidated Interim Storage Facility (CISF) in Andrews County, Texas, Docket ID NRC-2016-0231

- Reference:
1. "Environmental Impact Statement for Interim Storage Partners LLC's License Application for a Consolidated Interim Storage Facility for Spent Nuclear Fuel in Andrews County, Texas, Final Report," NUREG-2239, Published on August 5, 2021, Docket ID NRC-2016-0231-0387 (ML2120A120).
 2. Federal Register Notice: Issuance of Environmental Impact Statement for Interim Storage Partners Consolidated Interim Storage Facility License Application, August 5, 2021 (86 FR 43277) (ML2120A120).
 3. Federal Register Notice: Environmental Protection Agency Receipt of Environmental Impact State for Interim Storage Partners Consolidated Interim Storage Facility License Application, August 13, 2021 (86 FR 44711 at 44712)

Undersigned counsel represents Permian Basin Coalition of Land and Royalty Owners and Operators (PBLRO) and Fasken Land and Minerals, Ltd. (FLML or Fasken) relating to the above-referenced matter. PBLRO and FLML have engaged consultants in the review of the FEIS for ISP's License Application for a CISF in Andrews County, Texas relating to Docket ID NRC-2016-0231. Please find enclosed consultant comments presented in Attachment 1 identifying procedural and environmental gaps, insufficient technical analyses and mitigation planning, and improper dismissal of major viewpoints with respect to the U.S. Nuclear Regulatory Commission's (NRC) assessments provided in ISP's FEIS for consideration.

PBLRO and/or FLML previously submitted comments in the ISP scoping process, in response to ISP's draft EIS, as well as actively participating in the underlying NRC administrative proceeding.¹

We look forward to the NRC's and/or the U.S. Environmental Protection Agency's (EPA) responses to attached.

Sincerely,

/s/ Allan Kanner
Allan Kanner

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¹ PBLRO and FLML intend on submitting additional comments in response to ISP's FEIS under separate cover.

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Attachment 1

Final Environmental Impact Statement Review for Consolidated Nuclear Storage Facility, Andrews County, TX

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1.0 OVERVIEW

A private company, Interim Storage Partners (ISP) applied in 2016 to license and construct a Consolidated Interim Storage Facility (CISF) of high-level nuclear waste (HLW) in Andrews County, Texas (FIGURE 1). The facility, located at the Texas-New Mexico border in the county, is proposed as an “interim” measure before a permanent repository of such materials is approved and constructed. The Nuclear Regulatory Commission (NRC) is the lead agency overseeing the National Environmental Protection Act (NEPA) process to determine what environmental impacts could exist if such a facility was constructed, operated, and (ultimately) decommissioned. The NRC released its Final Environmental Impact Statement (FEIS) in July 2021, with NRC staff recommending that “subject to the determinations in the staff’s safety review of the application, the proposed license be issued to ISP to construct and operate a CISF at the proposed location to temporarily store up to 5,000 MTUs [metric tons of uranium] of SNF [spent nuclear fuel] for a licensing period of 40 years” (NRC 2021, page 2-29).

Myself and my team at Great Ecology have reviewed relevant materials from NRC’s FEIS for the Andrews County CISF. This project has met severe opposition from local, regional, and national stakeholders. Prominent environmental advocacy groups like the Sierra Club are on the same side as private companies in oil and gas exploration, with both groups raising concerns over the destructive impacts HLW storage would have in the region. There is bipartisan political opposition to the project from both the Democratic and Republican governors of New Mexico and Texas. This project will likely continue to face significant backlash from concerned citizens and industries, NEPA regulations notwithstanding.

Figure 1: Proposed ISP CISF Facility (from NRC 2021: Figure 2.2-1)



I believe the FEIS was conducted with a pre-determined outcome and did not take the requisite “hard look” as required by NEPA. Many components were not accurately evaluated such as:

- The purpose and need of the facility is not “interim;”
- The technical studies undertaken for the NEPA analysis were piecemealed across several years and therefore the FEIS does not provide a thorough and consistent evaluation for some issues;
- The alternatives analysis does not sufficiently evaluate all ‘reasonable’ alternatives to the project;
- The Environmental Justice analysis should be updated after NRC completes its internal policy;
- The No Action Alternative was poorly elucidated and not evaluated adequately;
- Not all cumulative impacts are identified for transportation, groundwater, ecology (particularly wildlife), and climate change, and the geographic extents used for cumulative impact evaluation are arbitrary and incorrect;
- The mitigation analysis is not robust, does not place any responsibility on NRC for ensuring mitigation is implemented, and does not include an analysis of the likelihood of implementation of those mitigation measures outside the NRCs jurisdiction. For example, NRC assumes that mitigation for emergency response will be the responsibility of local first responders, even though the additional risks, training, and costs for such emergency response were not evaluated in the FEIS;
- NRC showed an almost total disregard for public input on the FEIS, and dismissed several comments without adequate explanation or evaluation;
- Several categories were determined to have SMALL/MODERATE impacts, without a careful evaluation of the magnitude of actual impacts; and
- The ecological resource analysis is incomplete and insufficient for multiple wildlife species of conservation significance.

2.0 PROCEDURAL GAPS

The NRC received over 10,000 comments as part of the public comment process, with multiple comments highlighting deficiencies in the FEIS evaluation (see: NRC 2021, Comments D.2.1.1 through D. 2.1.17, pages D-2 through D-12). My team and I identified many issues with the FEIS that are illustrative of a poorly done NEPA process by NRC, discussed further below.

2.1 *Purpose and Need: Not an “Interim” facility*

The “interim” facility described by NRC does not provide adequate assurance that the CISF project is not a permanent repository. “Interim” implies that there is a final, long-term solution established already (i.e., a permanent repository of HLW has already been approved and constructed). The current purpose and need states that the facility would receive and store HLW “before a permanent repository is available” (NRC 2021, page 1-3), which heightens the risk that this facility could serve as a *de facto* permanent repository.

This is a major concern that has been brought up by multiple experts and government officials, including the governors of New Mexico and Texas. In public comments submitted by Tami Thatcher on behalf of the Environmental Defense Institute (November 2018), the “interim” status without the existence of licensed permanent disposal effectively results in the stranding of NSW at the ISP facility for an undetermined duration potentially exceeding the ISP facility’s license period or the time horizon upon which the NEPA evaluation was based. Governor Greg Abbott of Texas wrote a letter opposing after reviewing the draft Environmental Impact Statement (EIS) in November 2020. Governor Abbott also raised concerns about the “interim” definition of the facility, and noted that the EIS

“[S]imply assumes ... that a permanent geologic repository will be developed and licensed before 60 years are up, without addressing any contingency for the spent nuclear fuel if such a repository is not ready when ISP’s license expires” (Abbott 2020).

Governor Michelle Lujan Grisham of New Mexico has raised similar concerns about “interim” storage, pointing out that “at this time, the NRC cannot guarantee that a permanent repository for spent nuclear fuel in the United States will be developed in 40, 80, or 120 years” (Grisham 2020).

The statement that this will be an “interim” storage facility of HLW is deliberately misleading. Policymakers and experts are rightly pointing out the high risk of the waste becoming abandoned, since a permanent repository does not exist to eventually accept the waste, nor is there a reasonable evidentiary basis for NRC to so find.

2.2 NEPA Studies: Piecemeal

The studies for NEPA were performed in piecemeal, which weakens the overall FEIS analysis and does not present a clear picture of all impacts from these discrete sections. Study timelines vary in the document, with some studies being performed in the early and mid-2010s (Socioeconomics and Environmental Justice, Cultural and Historical Resources) and others as recent as 2020. Several studies were not performed by NRC, rather by other federal agencies or by other third parties that did not perform studies explicitly for NEPA. NRC relies on these analyses without further evaluating how each individual study relates to the others; with this piecemeal approach, impacts cannot be evaluated across time or space. The FEIS should not have been siloed.

The deference to NRC's authority should only be limited to their subject(s) of expertise and should not extend to all categories in the FEIS. NRC staff are experts in nuclear safety and radioactive exposures/risks, and as such their opinions on the FEIS should be deferred to if making a decision on safety risks. However, NRC grants itself deference for their NEPA determinations on issues outside of their realm of expertise, although such deference is illogical. For example, nationwide transportation is regulated by the Department of Transportation (USDOT) and the Federal Highway Administration (FHWA); as such, USDOT and FHWA should be deferred to for opinions and interpretations. NRC cannot be an expert in every evaluation; if an impact is not within their purview for evaluation, their determinations should be given less deference.

2.3 Alternatives Analysis: Insufficient

NEPA requires a review of reasonable project alternatives. Alternative analyses should clearly indicate why and how the range of project alternatives was developed, including what kind of public and agency input was used. In addition, alternatives analysis should explain why and how alternatives were eliminated from consideration. It must be made clear what criteria were used to eliminate alternatives, at what point in the process the alternatives were removed, who was involved in establishing the criteria for assessing alternatives, and the measures for assessing the alternatives' effectiveness.

Section 2.2 of the FEIS identifies the alternatives considered for detailed analysis including the Proposed Action and the No Project Alternative. Meanwhile, Section 2.3 of the FEIS identifies eight alternatives eliminated from detailed analysis including:

- 1) Storage at a government-owned CISF operated by the Department of Energy (DOE);
- 2) Alternative Design or Storage Technologies, which had three alternatives including:
 - a) DCSS Design Alternatives,
 - b) Hardened Onsite Storage Systems (HOSS),
 - c) Hardened Extended-Life Local Monitored Surface Storage (HELMS); and
- 3) Location Alternatives (four options).

The alternatives eliminated from consideration were eliminated (respectively) for the following reasons:

- 1) In planning stages lacking siting and design necessary for comparison of impacts.
- 2) a) new technology too speculative to be considered.
b) generalized concept lacking detailed plans necessary for detailed safety, environmental, and cost/benefit analysis and does not meet the purpose and need for the proposed action.
c) lacking sufficient location-specific information for detailed analysis and would not fully meet the purpose and need of the proposed action.
- 3) None clearly environmentally preferable to ISP's proposed site.

Section 2.3 of the FEIS does not explicitly state objective criteria used to eliminate alternatives instead eliminating some alternatives based on the stage of development, speculative nature of technologies, or the failure of an alternative to meet the proposed action's purpose and need. If an alternative is eliminated from further consideration because it "does not meet the purpose and need," the lead agency must adequately explain how or why this alternative doesn't meet the purpose and need (USDOT 2021). Narrowly written purpose and need statements, which are designed to limit alternative review, are dubious and, as described above, the purpose and need stated in the ISP FEIS fails to adequately acknowledge the possibility that the ISP project may in fact become *de facto* permanent storage without better assurances to the contrary. Finally, Section 2.3 of the FEIS identifies who was involved in establishing the criteria for assessing alternatives or measures for assessing the alternatives' effectiveness as required under NEPA.

Previous NEPA documents for "interim" nuclear storage facilities have evaluated multiple alternatives as part of the general analysis. For instance, NRC compiled an FEIS for a proposed CISF storage facility in Utah that incorporated three different alternatives for analysis, including alternatives for technology, sites, and transportation options (NRC et al. 2001). This current FEIS does not follow past precedent, and as such needs to include a more thorough evaluation and analysis of any and all alternatives to the proposed project.

2.4 Environmental Justice: Evaluation Needs to be Updated

President Joe Biden issued Executive Order (EO) 14008 in January 2021, which addresses several environmental issues like climate change, deforestation, and non-renewable energy. Chief among the Administration's priorities is environmental justice, and the EO directs federal agencies to "develop programs, policies, and activities to address the disproportionate health, environmental, economic, and climate impacts on disadvantaged communities" (White House 2021). The NRC is in the process of updating its policy and guidance documents relating to environmental justice evaluations and is currently accepting public comments through September 22, 2021. Therefore, it is likely that NRC will update its policy by the end of September or October 2021. With this in mind, the current FEIS should be suspended until NRC establishes a policy and guidance reflective of the goals in the 2021 EO. When NRC has established final guidance in the future, the environmental justice portion of the FEIS should be re-evaluated.

2.5 No Action Alternative: Dismissed and Not Carefully Evaluated

The FEIS does an insufficient job of elucidating the status quo or No Action Alternative and of analyzing the impacts of a No Action Alternative. NEPA requires Federal lead agencies to always describe and analyze a “no action” alternative in an EIS. In simple terms, a No Action Alternative considers the effects of not approving the action under consideration. The No Action Alternative analysis provides a benchmark to allow decision makers and the public to compare the levels of environmental effects of the alternatives.

Within the FEIS, characterization of the No Action Alternative or status quo is entirely dismissed. It is not purely a default to the existing environmental setting. Implicit in the comparison of impacts is consideration that status quo itself has benefits as well as drawbacks, and very little if any effort is provided in the FEIS to explicitly identify these. For example, within Table 2.4-1, under the topic of Socioeconomics, the No Action Alternative is indicated to have no impact significance, while clearly, some sort of beneficial impact to local finance (identified in the adjacent column for the proposed action) is being sacrificed under the No Action Alternative without being included in the analysis. This illustrates that a thoughtful analysis is lacking because the No Action Alternative or status quo was insufficiently evaluated.

2.6 Cumulative Impacts Analysis: Insufficient

Cumulative impacts under NEPA are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes such other actions” (40 CFR § 1508.7). The FEIS does not thoroughly evaluate the cumulative impacts of the ISP CISF Project along with all other past, present, and reasonably foreseeable future projects in the project vicinity. Of major concern, many cumulative impacts are evaluated across geographic scales that do not accurately represent the scope and scale of potential impacts or underlying social, ecological, geological, or hydrological processes. FIGURE 2 and TABLE 1 depict all impact radii across categories; of note, these are variable and are not applied across all categories. For example, cumulative impacts to ecological resources are only evaluated within a 5-mile buffer around the ISP site; in contrast, transportation is evaluated within a 50-mile buffer. There is little to no explanation for why ISP chose these radii for ecology and transportation, and if in fact these buffers truly represent cumulative impacts from the site (which, in the case of these two categories, they do not). For these and other radii chosen by ISP, NRC blindly accepted these values without further discussion or evaluation in the FEIS.

Notably, several categories of assessment show considerable deficiencies in the depth and detail of analysis, including (but not limited to):

- Transportation;
- Groundwater resources;
- Ecological impacts on wildlife; and
- Climate change.

Figure 2: Cumulative Impact Radii from ISP FEIS (NRC 2021)

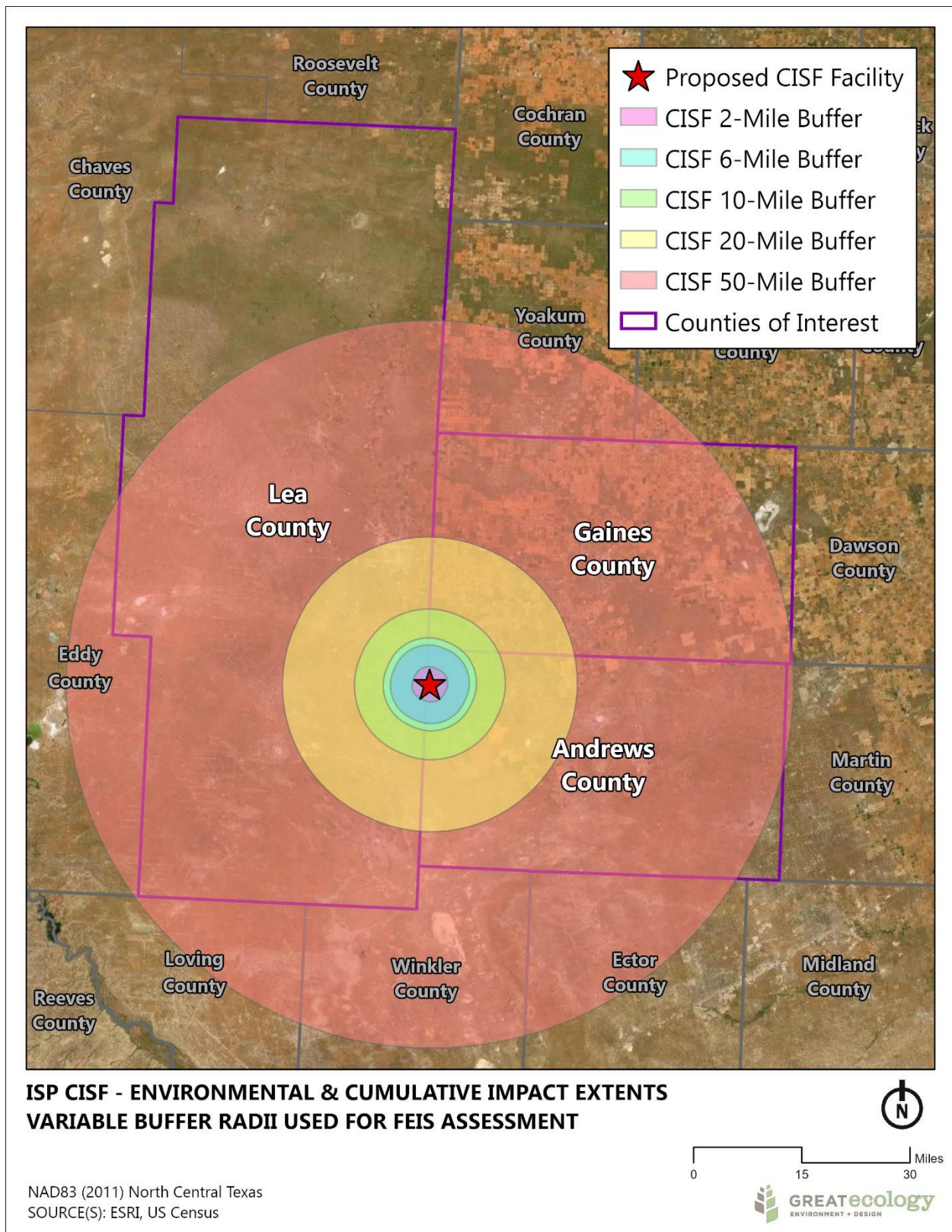


Table 1: Variable Radii for Environmental and Cumulative Impacts Analysis, ISP FEIS

Impact Type*	NEPA Category	Radius of Evaluation
Environmental	Ecology	2 miles
	Air Quality	
	Historical & Cultural Resources	
	Visual & Scenic Resources	
	Land Use	5 miles
	Transportation	
	Geology & Soils	
	Water Resources	
	Environmental Justice	50 miles
	Public & Occupational Health	
	Waste Management	
	Socioeconomic	Andrews County and Gaines County, TX; Lea County, NM
Cumulative	Land Use	5 miles
	Ecology	6 miles
	Air Quality	
	Noise	
	Visual & Scenic Resources	10 miles
	Historical & Cultural Resources	
	Groundwater	20 miles
	Transportation	50 miles
	Geology & Soils	
	Water Resources	
	Environmental Justice	
	Public & Occupational Health	
	Waste Management	
	Socioeconomic	Andrews County and Gaines County, TX; Lea County, NM

2.6.1 Transportation

The FEIS assumes all effects from transportation would be incremental over time. This does not appear to be the case as this facility would increase the region's importance as a HLW storage and disposal destination increasing traffic volumes in a more than incremental manner. In addition, the arbitrary radius imposed on the cumulative impact assessment does not appear to appropriately consider the national and regional sources of HLW and long-distance freight system impacts.

The FEIS also downplays the nationwide extent of where HLW would be arriving from, since HLW is currently stored at nuclear energy facilities dispersed throughout the country. FIGURE 3 shows the locations of nuclear reactor sites across the US, along with the railroad network that would need to be utilized to transport waste currently existing at these sites. Illustrations and figures in the FEIS do not show the true breadth of this problem, and instead separately show the rail network and decommissioned nuclear power plants (FIGURE 4). HLW is spread throughout the country, and the extent of its transportation to the ISP CISF facility has a much larger impact (and would be more than 'incremental') than the FEIS presents. It also ignores what the surrounding local community looks like, and what sensitive receptors could be most impacted. FIGURE 5 depicts several facilities with vulnerable populations in the area (an extrapolation of the rail network presented by NRC in FIGURE 4); many of these sensitive receptors are located quite close to the railroads in the area. Should any accident occur in the future, these people would certainly be impacted quite heavily.

Figure 3: Nuclear Reactor Sites throughout the United States and Nationwide Railroad Network

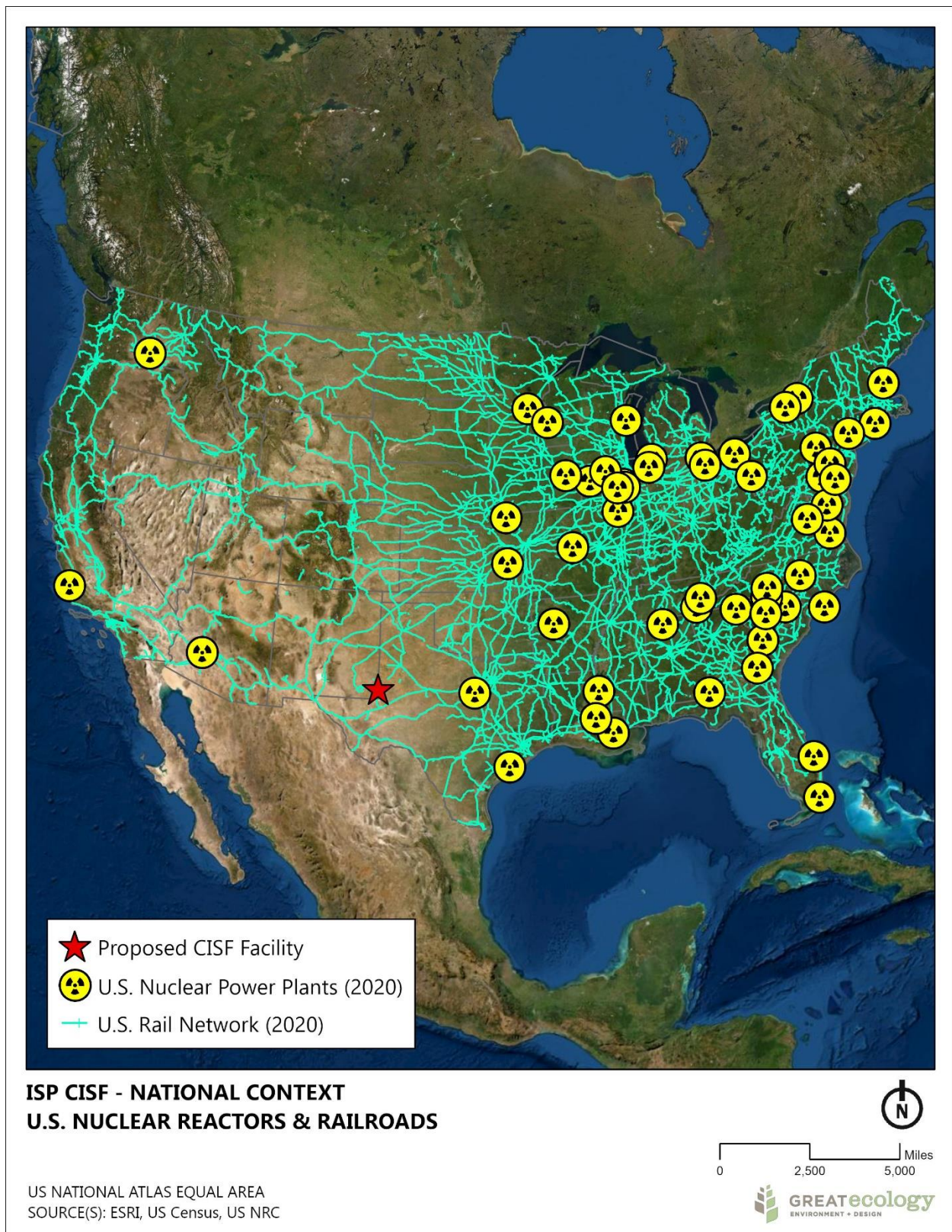


Figure 4: Nuclear Transportation Figures from the ISP FEIS. CISF Facility is depicted by red star. **Top:** Decommissioned Nuclear Waste Sites in the United States (Figure 2.2-4). **Bottom:** Location of Railroads in West Texas and Southeastern New Mexico (Figure 2.2-7) (NRC 2021)

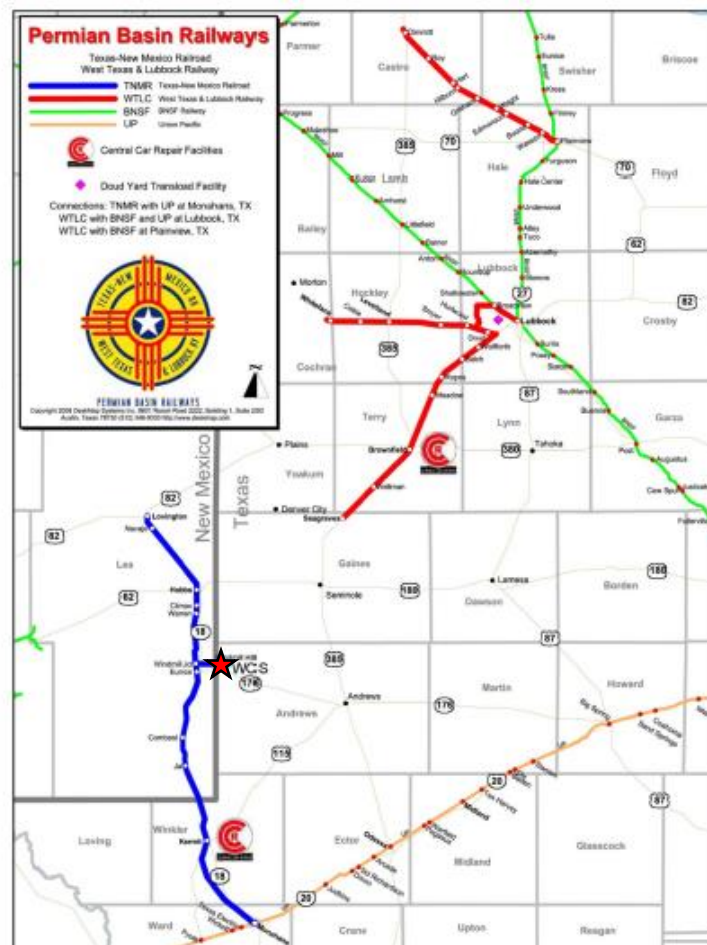
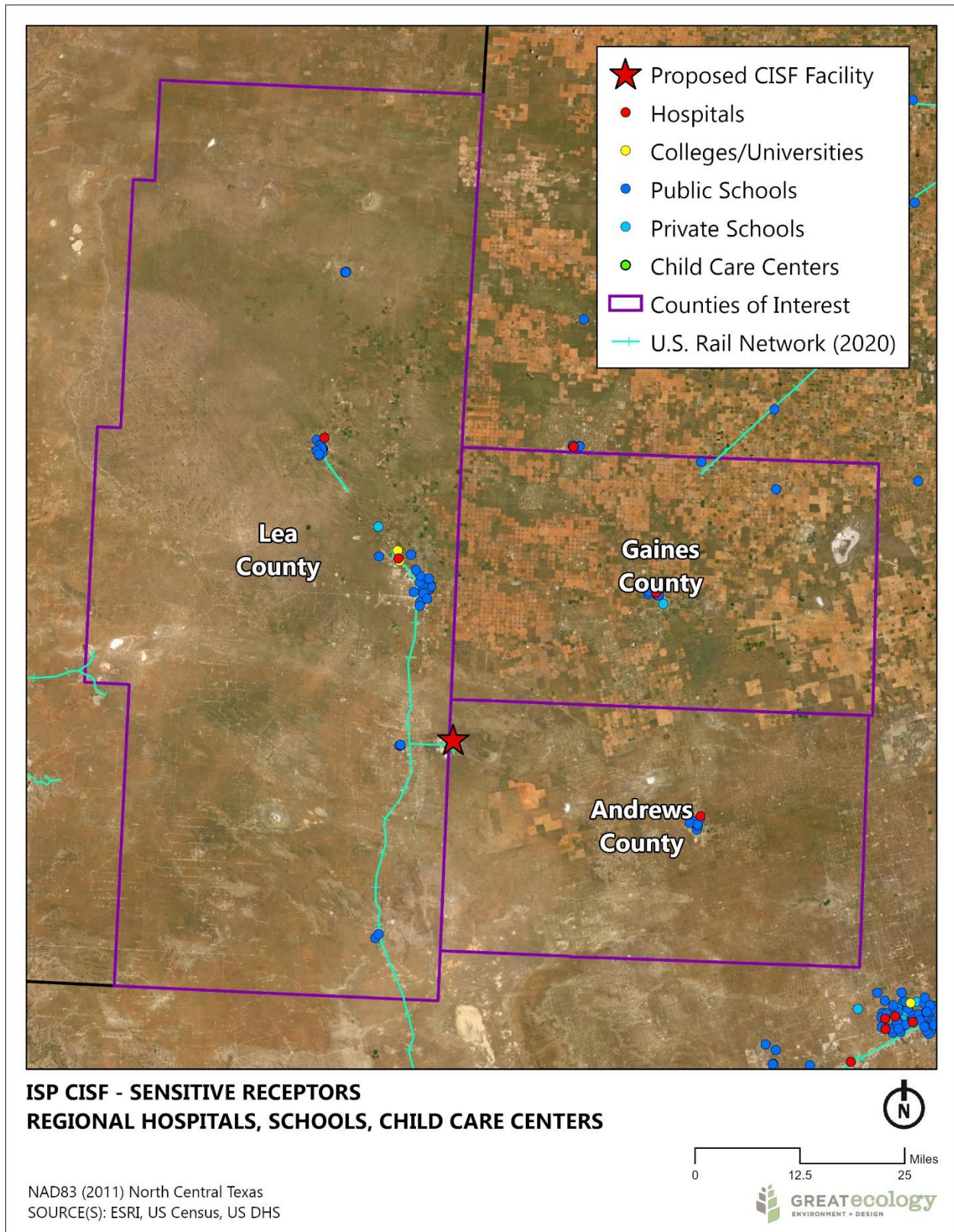


Figure 5: Sensitive Receptors Close to the ISP CISF and Regional Railroad Network



As New Mexico Governor Grisham accurately critiques in her letter to NRC, the transportation of spent nuclear fuel across the nation to CISF facilities is complex and extremely dangerous (Grisham 2020). Safe transportation of spent nuclear fuel requires both well-maintained infrastructure and highly specialized emergency response equipment and personnel that can respond quickly to an incident at the facility or on transit routes. Routes have to be agreed upon, weight capacity limits for existing rail systems need to be addressed, local first responders (emergency and medical) across the country have to be trained, and critical infrastructure and equipment need to be designed and deployed. Even with well-maintained infrastructure and best practices, some spent nuclear fuel in storage is not fit for transport.

Sections 3.3.2 and 4.3 of the FEIS indicate that prior transportation analyses including the final State Environmental Impact Report (SEIR) for Yucca Mountain and NRC's NUREG-2125 risk assessment provide sufficient information about potential transportation routes to support the analysis of transportation impacts. The NRC evaluation considers the routes evaluated in these prior transportation analyses to be representative or bounding for SNF shipments to and from the proposed ISP CISF project because they were derived based on typical transportation industry route selection practices. However, in comments on the draft EIS, the Western Interstate Energy Board (WIEB) High-Level Radioactive Waste (HLRW) Committee (WIEB 2020) encouraged the NRC to fully evaluate all reasonable modes and routes that could be used for nuclear waste transportation to the ISP CISF and opined that operational factors that should have been fully considered including:

- An analysis of the effects of different transportation operating protocols on shipment safety;
- Of the level of emergency preparedness along likely shipping routes;
- Of requisite coordination and communication with affected states, tribes, and other important stakeholders; and
- An analysis of the impact on shipment numbers and safety of using any of the variety of transportation casks that are licensed for use.

The WIEB HLRW Committee also stated that "NUREG-2125 is an obsolete and inapplicable reference for an environmental impact analysis of the ISP CISF." NRC does not provide justification for disregarding this valid criticism of their risk assessment procedures.

The WIEB HLRW Committee also offers valid evidence that the existing railroad infrastructure and equipment is currently inadequate for the task of HLW transportation to the ISP CISF facility noting: "there would have to be enough railcars (assuming a mostly-rail transportation system) to support this shipment rate, and the railcars would have to be compliant with the Association of American Railroads (AAR) S-2043 standard. As of now, there are no manufactured railcars that are compliant with this standard. DOE's Atlas railcar design is currently being tested to certify its compliance with S2043, but this certification is not expected to be complete until 2022 at the earliest."

2.6.2 Groundwater

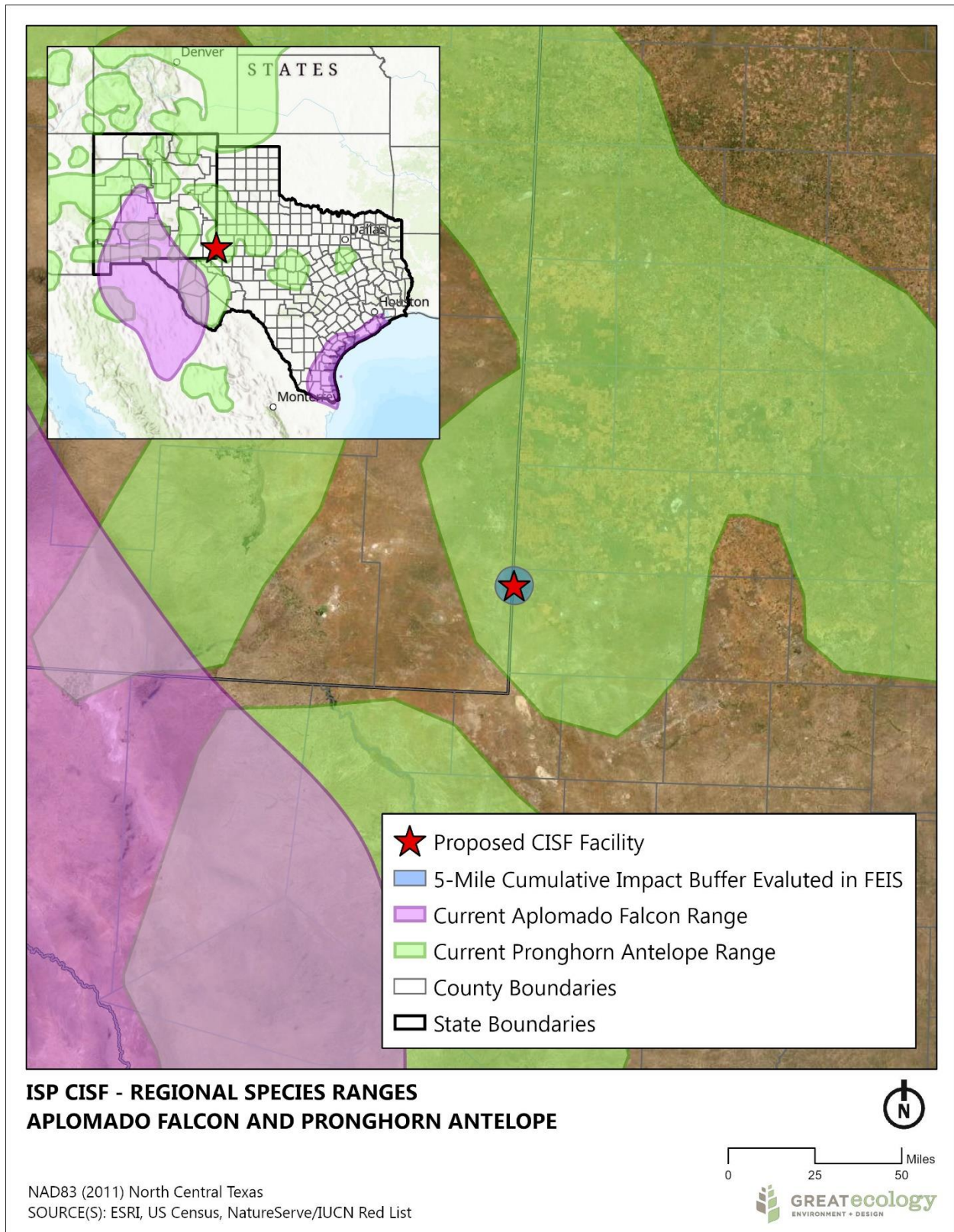
The FEIS arbitrarily identifies a 20-mile cumulative impact evaluation radius for groundwater from the ISP Project. The FEIS further states that, of the nuclear facilities in the region only the existing Waste Control Specialists (WCS) facility, National Enrichment Facility (NEF), and Eden Radioisotopes are within the 20-mile groundwater study area. By arbitrarily limiting the study area dimensions, thorough evaluation of cumulative impacts of ISP and other past, present, and reasonably foreseeable projects to groundwater resources are precluded. As the Permian Basin Coalition and Fasken Land and Minerals' previous comments on the ISP draft EIS (PBLRO & FLML 2020) noted, the geographic formation (Central Basin Platform) is heavily-faulted and the Project's seismic hazard analysis was deficient. The PBLRO/FLML letter also calls attention to the ISP environmental analyses' failure to mention and characterize the Rio Grande Rift (RGR), which it characterizes as critical in understanding the geological and geohydrological history of the aquifers at the CISF and potential risks to groundwater resources and seismology (PBLRO/FLML 2020). In light of the analysis' arbitrarily limited spatial scale in a region of obvious seismic risk, evaluation of cumulative impacts to groundwater resources is clearly inadequate.

2.6.3 Wildlife (Ecology)

Once again, the FEIS arbitrarily identifies a small, 5-mile cumulative impact evaluation radius for wildlife from ISP Project. NRC states that their ecological cumulative impacts analysis is "limited to this radius because ecological resources are not anticipated to influence or to be influenced by the proposed CISF project outside of this area." This statement is not supported by any real scientific evidence and does not consider the wide ranges of several species with the potential to occur onsite. Migratory birds would most certainly be impacted outside of a 5-mile radius from the project, along with any highly mobile species.

We discuss two species with wide-reaching ranges that were not examined thoroughly as part of the ecological cumulative impacts analysis: the endangered northern Aplomado falcon (*Falco femoralis septentrionalis*), and a regionally important game species, the pronghorn antelope (*Antilocapra americana*). Both species have a much wider reaching range than five miles, which is not captured by the FEIS cumulative impact radius (FIGURE 6).

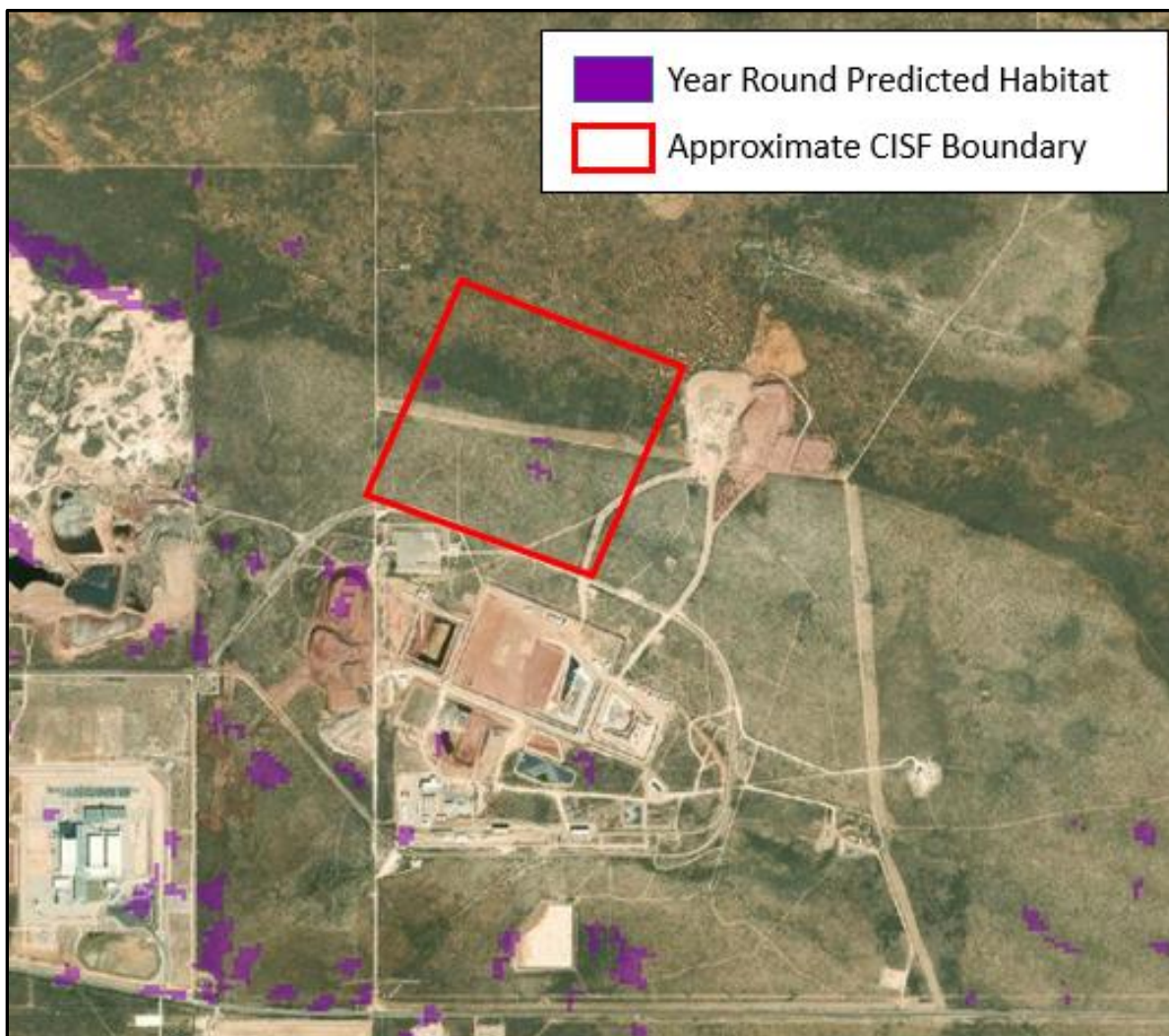
Figure 6: Current Species Ranges for Northern Aplomado Falcon and Pronghorn Antelope



Northern Aplomado Falcon

The U.S. Endangered Species Act of 1973 (ESA) regulates the 'take' of federally-listed threatened and endangered species. One federally-listed endangered species has a known range that includes the ISP Project site and surrounding environs (FIGURE 7). The northern Aplomado is a federally-listed Endangered Species with mapped range in western Texas and eastern New Mexico and a published Recovery Plan (USFWS 1990). The ESA has a recovery standard: in other words, the goal of the ESA is to recover a listed species to the point at which it can be delisted. This project, as well as other past, present, and reasonably foreseeable future projects in the region would together have cumulative impacts across a fairly substantial part of the historical former range of the species precluding the recovery of the species. Since this project is located within the species' historic range, it follows that destruction of habitat would inhibit the recovery of this species and potential future delisting. The FEIS does not evaluate or address the recovery plan currently in place for this species and needs a more thorough analysis of the ESA relating to the northern Aplomado falcon.

Figure 7: Predicted Habitat Map, Northern Aplomado Falcon (USGS GAP 2021)



Pronghorn antelope

Similarly, the pronghorn antelope is a highly migratory game species which ranges across the southwestern U.S. It is an important, state-managed game species in both Texas and New Mexico which attracts hunters and wildlife enthusiasts to the region. Because of this, the herds of pronghorn antelope possess interstate commerce value as harvestable game. The proposed project, as well as other past, present, and reasonably foreseeable future projects (and their freight and construction traffic) would result in fragmentation of pronghorn antelope range and loss of habitat connectivity, potentially affecting the management and viability of herds migrating in both states. Habitat fragmentation and cumulative project impacts to migratory corridors for pronghorn antelope and other wide-ranging species are not discussed in the FEIS.

2.6.4 Climate Change

The FEIS evaluates climate change as part of air quality impacts (NRC 2021, Section 3.7.1.1 and Section 4.7.2). However, climate change does not solely impact atmospheric processes or the abiotic environment. All species (humans included) will have to adjust their behavior and range in response to climate or perish. Cumulative impacts of the ISP Project and other past, present, and reasonably foreseeable future projects on land use must be evaluated in tandem with reduced agricultural productivity of cropland and rangeland in the west Texas / eastern New Mexico region resulting from anthropogenic climate change. Similarly, the analysis of cumulative impacts of the ISP Project and other past, present, and reasonably foreseeable projects (notably highly consumptive mining and oil and gas production facilities) on groundwater resources and their sustainability must acknowledge growing uncertainty related to precipitation patterns, drought intensity, and other projections identified in Section 3.7.11.

Additionally, NRC (and the U.S. Fish and Wildlife Service [USFWS]) should take shifting species distributions resulting from climate change into consideration when evaluating the cumulative impacts of current and reasonably foreseeable future projects on federally-listed and potential candidate species.

2.7 Mitigation Planning: Insufficient

One of the main stated purposes of NEPA is to “promote efforts which will prevent or eliminate damage to the environment and biosphere” (42 USC § 4321). This is generally accomplished through mitigation measures, such as restoration, avoidance of habitat, and/or reduction of harm. Monitoring is also an important factor to determine mitigation success, so any mitigation strategy needs to also include a robust monitoring program.

Mitigation planning is a critical part of the NEPA process; however, I find the NRC’s mitigation strategy lacking in several areas, including:

- No timeline for execution of mitigation;
- Proposed mitigation is not the responsibility of the lead agency (NRC); and
- No probability analysis of mitigation implementation.

2.7.1 Nonexistent Mitigation Timeline

All the mitigation measures provided by NRC appear to be deferred actions (as in, mitigation for project impacts is proposed but not evaluated further within a project timeline). No timeline is clearly stated in the document as to when mitigation would occur, and whether or not mitigation would delay or change their construction timeline. As an example, for surface water resources ISP proposes mitigation through “compliance with the Construction General Permit requirements and a Storm Water Pollution Prevention Plan (SWPPP)” (NRC 2021) However, ISP does not indicate when this SWPPP would be developed. NRC appears to push all mitigation (voluntary or required) to the future, thus thorough evaluation of proposed mitigation is not presented.

2.7.2 Mitigation Outside of Lead Agency Jurisdiction

Time and again in the FEIS, NRC indicates that permits and plans will be developed for the project which will identify future mitigation requirements.

For project-related impacts and cumulative impacts to geology and soils, ecological resources, groundwater, surface water, and logically public health and other issues NRC indicates that mitigation measures and Texas Pollutant Discharge Elimination System (TPDES) permit requirements (including spill prevention and cleanup plans) would limit soil loss, avoid soil contamination, and minimize stormwater runoff impacts. For impacts to surface waters and wetlands, NRC indicates that the applicant would develop and implement a Stormwater Pollution Prevention Plan (SWPPP). Meanwhile, a TPDES industrial stormwater permit would set limits on the amounts of pollutants entering ephemeral drainages.

Similarly, during the operations phase of the ISP Project, the applicant would be expected to implement a Spill Prevention, Control, and Countermeasures (SPCC) Plan to minimize the impacts of potential soil contamination, and stormwater runoff would be regulated under TPDES permit requirements.

This reliance on TPDES general construction permit, industrial stormwater permit, SWPPP, SPCC, and other plans and permits represents a whole suite of mitigation measures outside of the jurisdiction of NRC where enforcement would become the responsibility of the State of Texas / Texas Commission on Environmental Quality (TCEQ) or other responsible parties.

2.7.3 Probability of Mitigation Unclear

NEPA guidance stipulates that if a mitigation measure is not within the jurisdiction of the Lead Agency that the probability of implementation needs to be discussed:

"[T]hus the EIS and the Record of Decision should indicate the likelihood that such measures will be adopted or enforced by the responsible agencies. Sections 1502.16(h), 1505.2. If there is a history of nonenforcement or opposition to such measures, the EIS and Record of Decision should acknowledge such opposition or nonenforcement. If the necessary mitigation measures will not be ready for a long period of time, this fact, of course, should also be recognized" (46 FR 18026, March 23, 1981).

The ISP FEIS makes no determination of the likelihood of mitigation implementation by other responsible parties, therefore there is not adequate assurance (or enforcement) that the identified mitigation will be implemented as described. In this respect, the language of Section 6.3 of the FEIS is incomplete and inadequate.

This is concerning, especially considering NRC will not be responsible for this facility beyond approval and licensing. As an example, the FEIS assumes emergency response actions will be mitigated through coordination with local authorities, fire departments, medical facilities, and other emergency services before operations begin (NRC 2021, page 6-11). NRC also acknowledges that any first responders will require additional training and equipment to handle an emergency involving highly radioactive nuclear waste but did not evaluate these or the costs of such actions any further. NRC states that:

"ISP did not provide a detailed estimate of the additional training and equipment that would be necessary to respond to an incident at the proposed CISF project that are not currently available to first responders, and local agencies nor officials have not conducted studies with this type of information. Therefore, a detailed analysis of the costs associated with these potential additional resources are not evaluated in detail in this EIS" (NRC 2021, page 4-74).

No such analysis in the FEIS is an obvious and glaring omission in evaluating the facility's operations and demonstrates once again that NRC is not carefully considering the impacts this facility will have on local communities. NRC is placing both the burden and cost of risk management onto local authorities, without assuring that those entities are well-informed of the responsibilities, costs, and risks, to approve, monitor, and enforce these mitigation actions. These omissions are further examples of systemic problems and persistently inadequate analyses throughout the FEIS, and further evidence of NRC's failure to take a "hard look" at impacts in violation of NEPA.

2.8 Public Input: Dismissed or Ignored

There is very high public and private interest in this project, with the public raising several valid concerns on both the project itself and the NEPA process. NRC initially received almost 29,300 comments during their 2016–2018 scoping period (NRC 2020). Responses to specific sections from the public included:

- Transportation: safety/accident increases, radiation dose to citizens near rail lines;
- Geology: induced seismicity from activities;
- Water Resources: water is located near the surface, potential contamination of the Ogallala Aquifer;
- Location/Land Use: facility is located within an existing waste storage facility, other co-located activities;
- Socioeconomics: Greater impact on New Mexico since the site is directly adjacent to its border; and
- Environmental Justice: disproportionate impacts on Hispanic populations (NRC 2020).

In its FEIS, NRC categorizes the public comments into major sections and summarizes their response to the generalized comments, presented in D.2 of the FEIS. For every comment section, the NRC justifies their response and made virtually no changes or edits to the FEIS in response to public input. This is alarming, especially considering the wide range of concerns the public raised in response to the proposed facility. NRC's dismissal of the public points even closer to a predetermined outcome of this evaluation – to permit a highly risky facility quickly and without approval for the people most impacted by its operations.

Of note, the site selection process for the Andrews CISF facility required public input and consent. However, NRC decided that they had sole purview over this decision and did not seek public input on alternative sites. NRC relied solely on ISP's assessment process and did not perform any additional due diligence or consult with the public in the area. Public comments pointed out that "ISP's site selection process was not rigorous and focused on political community input and location rather than environmental impacts" (NRC 2021, page D-42). This shows a clear lack of concern for the surrounding community and stronghold to put a facility wherever the applicant (ISP) decides fit.

2.9 Impact Analysis: Not Robust for Several Categories

An agency preparing an EIS takes a hard look at the environment affected by a project, by dividing the 'affected environment' into several categories. Impacts are then categorized into one of three terms defined by NEPA, based on the severity of the impact:

- **SMALL:** effects are not detectable or are so minor that they neither destabilize nor noticeably alter any important attribute of the resource.
- **MODERATE:** effects are sufficient enough to alter noticeably but not destabilize important attributes of the resource.
- **LARGE:** effects are clearly noticeable and are sufficient enough to destabilize important attributes of the resource.

NRC's evaluation of the affected environment determined most impacts would be SMALL, with only two categories (Ecology and Socioeconomic) potentially having MODERATE impacts (TABLE 2).

Table 2: Impact Evaluation of ISP's CISF facility. Taken from NRC's October 5, 2020, public comment webinar (NRC 2020)

Resource	Impact Evaluation (includes proposed action and additional phases)
Land Use	SMALL
Transportation	SMALL
Geology and Soils	SMALL
Surface Water	SMALL
Groundwater	SMALL
Ecology	SMALL to MODERATE
Air Quality	SMALL
Noise	SMALL
Historic and Cultural	SMALL
Visual and Scenic	SMALL
Socioeconomic	SMALL to MODERATE* (* on population growth and beneficial on local finances)
Environmental Justice	There would be no disproportionately high and adverse impacts to either minority or low-income populations
Public and Occupational Health	SMALL
Waste Management	SMALL

After evaluating the FEIS and feedback from the public, I find it difficult to believe that most impacts would only be SMALL. As described above, many of these analyses were constricted by application of an arbitrary geographic scope of evaluation for cumulative impacts. If evaluated with a more appropriate radius for transportation, as an example, effects would at least be MODERATE, if not LARGE. NRC seems to deliberately obfuscate the environmental justice effects of the project and does not make a decision if the impacts fit into one of the three levels of significance. Rather, NRC states that there would be no 'disproportionately high and adverse' impacts to low income or minority communities - leading to the conclusion that impacts could, in fact, be MODERATE or LARGE on *all* populations in the area. We discuss the ecological impacts further below in this document; however, based on our evaluation of both immediate and cumulative impacts, effects on ecological resources would be MODERATE and/or LARGE, especially for the two species discussed above (the Aplomado falcon and pronghorn antelope). These final impact determinations are clearly skewed towards a favorable outcome where impacts are only SMALL; both short-term and cumulative impacts therefore require a new evaluation to determine which impacts are not truly SMALL.

3.0 ENVIRONMENTAL GAPS

Great Ecology is comprised of a team of several interdisciplinary ecologists. As such, myself and my team evaluated the FEIS through the lens of the environment surrounding this project. Water resources and geology/seismology were not evaluated thoroughly for cumulative impacts, as discussed above. In addition, we found several deficiencies with the ecological resource analysis, particularly related to impacts on resident and migratory wildlife species. The cumulative impacts of the ISP Project and other past, present, and reasonably foreseeable future projects on two such species (northern Aplomado falcon and pronghorn antelope) were discussed above. In this section, additional species and concerns are discussed.

3.1 Ecology

The project is located within High Plains Levell III ecoregion (CMEC 2019). Previously surveyed habitat within the CISF project footprint includes:

- 230.5 acres of Mesquite thorn-scrub;
- 76.0 acres of Havard oak (*Quercus havardii*, also referred to as shinnery oak) dunes; and
- 17.8 acres of maintained grassland (CMEC 2019).

NRC states that the proposed project would result in the destruction of 109 acres of mesquite scrub and the disturbance of all shinnery oak dune habitat onsite (76 acres), resulting in total direct habitat impacts of at least 185 acres (NRC 2021 pages 4-40 and 4-42).

Both mesquite thorn-scrub and shinnery oak dunes were identified in the FEIS and ecological survey with the potential to support migratory birds and sensitive species (CMEC 2019, NRC 2021 page 3-38). Mesquite thorn-scrub onsite was identified as suitable habitat for the Texas horned lizard (*Phrynosoma cornutum*), a state threatened species (CMEC 2019). Shinnery oak dunes were also identified as suitable habitat for dunes sagebrush lizard (*Sceloporus arenicolus*) and lesser prairie-chicken (*Tympanuchus pallidicinctus*), two species of conservation interest in both Texas and New Mexico (CMEC 2019).

Shinnery oak systems are a rare habitat type in the United States, with the geographic extent limited to southeastern New Mexico, western Texas, and western Oklahoma (Peterson and Boyd 1998). Species who occupy these habitats are, in turn, often specialists and rare themselves – as is the case with the dunes sagebrush lizard and lesser prairie-chicken. The U.S. Fish and Wildlife Service estimated approximately one million acres of habitat in 1982; by 2010, that number had decreased to 600,000 acres (USFWS 2010). This is an approximate 40 percent loss in shinnery oak dune habitat over time; this number is almost certainly higher based on the widespread amount of development (and proposed development) in these areas, suggesting today maybe only 400,000 acres remain.

NRC reviewed ecological surveys and federal/state databases and identified one federally protected species (the northern Aplomado falcon) and several species of interest that could be impacted by the CISF project, as previously discussed. However, impacts to these species were not adequately evaluated by the FEIS, and/or other species of regional or state interest were not (but should have been) evaluated. Although many species identified are not currently listed under the federal ESA, they are on state endangered/threatened species lists and/or of conservation interest. These species need suitable attention and evaluation of impacts.

Based on the information presented in the FEIS, I identified the following deficiencies in ecological impact analysis:

- No thorough evaluation of the ESA with regards to recovery of the Aplomado falcon;
- No alternatives or contingencies presented to account for potential future listing of endangered species (i.e., lesser prairie-chicken and dunes sagebrush lizard);
- No analysis or presentation of destructive impacts of habitat fragmentation on species;
- No impact determination on interstate game species (pronghorn antelope); and
- No evaluation of additional sensitive species with the potential to occur onsite.

Individual species and concerns surrounding their analysis are discussed further below.

3.1.1 Northern Aplomado Falcon

The project site was identified within the habitat range for northern Aplomado falcon, a federally- and state-listed endangered species. The falcon nests in abandoned nests created by other raptors; these inactive nests were observed onsite during the most recent ecological survey (CMEC 2019). The FEIS assumes that the project will have no impacts on the Aplomado falcon; however, this analysis shows a very limited scope of evaluation under the ESA, in particular with respect to identifying obstacles to species recovery. This is discussed further above as a deficiency in evaluating cumulative impacts under NEPA.

3.1.2 Dunes Sagebrush Lizard

A species of greatest conservation need in Texas, the dunes sagebrush lizard occupies shinnery oak dune habitat found onsite. ISP has acknowledged that this species has been observed in the area northwest of the proposed CISF project area in past surveys; NRC therefore assumes that this lizard may be present during the project (NRC 2021, page 3-52 and page 4-40). NRC acknowledges in the FEIS that “the project would potentially disturb or kill lizards during Phase 1 construction, but not in sufficient numbers to affect the local populations of these species” (NRC 2021, page 4-40). NRC recommends ISP implement several conservation measures within suitable habitat during the project (NRC 2021, page 6-8 through 6-9).

First, the NRC does not provide any evidence that dunes sagebrush lizards harmed or killed would not be in ‘sufficient numbers’ to affect the local population. Although no study yet exists on the exact population, the estimated number of lizards is estimated between 10,000 and 100,000, with a conservative estimate of one adult per hectare of suitable habitat (Hammerson 2007). Previous surveys in Texas have found dunes sagebrush lizards in all sites surveyed in Andrews County (n =

19; Fitzgerald et al 2011); therefore, lizard populations are likely higher in the County and more vulnerable to habitat threats. Any impacts to their habitat will likely have a major effect on this already rare species. The NRC does not clearly define how many lizards could be impacted by construction of the facility, nor does it explain how killing lizards will 'not affect' the local population.

The dunes sagebrush lizard is not a migratory species and only occupies shinnery-oak habitat; any habitat loss (including loss resulting from this project) will have dramatic effects on the lizard populations in both Texas and New Mexico. NRC is aware of this, stating that the dunes sagebrush lizard is "not a highly mobile species and is confined to small home ranges within the active sand dune-shinnery oak habitat type, between 0.044 to 0.28 hectare [0.1 to 0.7 acre] in size" (NRC 2021, page 4-40). As a result of their small range, the dunes sagebrush lizard is highly sensitive to fragmentation; a study in New Mexico found that these lizards were found significantly less in fragmented areas, compared to unfragmented habitat (Walkup et al 2017). In many cases, the study found *zero* dunes sagebrush lizards in fragmented habitat, where lizards had been present in previous years (Walkup et al. 2017). These effects are well documented in literature, and the FEIS should analyze the foreseeable/cumulative effects of habitat fragmentation on the lizard that, in their own admission, has been observed onsite.

USFWS has announced a 12-month finding review period to address listing the dunes sagebrush lizard on the ESA. The 12-month finding was expected as of July 2021; however, USFWS has not released any further information regarding listing as of this date. As with the lesser-prairie chicken, The FEIS should include alternatives that prepare for any potential ESA listing (including the lesser prairie-chicken), and how this would impact the project in the foreseeable future of the project.

3.1.3 Lesser Prairie-chicken

A species of greatest conservation need in Texas, this bird also occupies shinnery oak dune habitat found onsite. An online mapper confirms that suitable habitat exists for the chicken onsite (SGP CHAT 2021). NRC concluded in the FEIS that although the lesser prairie-chicken is unlikely to occur or be disturbed by construction (NRC 2021, page 4-41), ISP should follow recommendations to "monitor the listing status of the lesser prairie-chicken and enroll in the voluntary Range-Wide Conservation Plan" (NRC 2021, page 6-8).

Similar to the dunes sagebrush lizard, the lesser prairie-chicken faces threats from shinnery oak dune habitat destruction. The chicken is currently managed regionwide under a voluntary program called a Candidate Conservation Agreement with Assurances (CCAA). This voluntary program follows the guidelines established in a "Lesser Prairie-Chicken Range-wide Conservation Plan" established for the region (2013). Although the stated purpose of the program is to conserve and protect the species, the CCAA has ultimately led to further habitat destruction and not enough mitigation. An evaluation of the CCAA found that approximately 17,600 acres of restoration were complete from 2014 through 2019, which was two percent of the stated goal in the Lesser Prairie-Chicken Range-wide Conservation Plan (CBD 2021). Additionally, a total of 17,478 have reportedly been mitigated; this equates to a 124-acre positive difference between 'impacted' and 'restored' acres (CBD 2021). Clearly this plan is not enough to conserve this already rare habitat type, and

habitat destruction or fragmentation should be avoided to sustain the existing lesser-prairie chickens. As with the lizard, NRC did not look at shinnery oak dune habitat fragmentation impacts as a direct threat to this rare species, a threat that has been increasing over time.

There is also potential that the lesser prairie-chicken could be listed under the ESA in the future; however, the FEIS does not consider any alternative or contingency if any species becomes listed. The lesser prairie-chicken is currently being reviewed by the USFWS for ESA protection, with a public comment period ending on September 1, 2021. As currently written, the FEIS acknowledges that ISP will “monitor the listing status of the lesser prairie-chicken,” since “changes could potential require consultation, permitting, or mitigation with wildlife agencies in the future” (NRC 2021, page 4-43). Considering the lesser prairie-chicken was previously listed as a threatened species from 2014-2015 (USFWS 2021), it is reasonable to assume that the lesser prairie chicken could become listed again in the foreseeable future of this project. This shows a failure by NRC to consult or cooperate with the responsible federal agency (USFWS) regarding pending endangered species protection and critical habitat designation; furthermore, NRC did not evaluate the impacts or consult with USFWS should the shinnery oak dune habitat present at the site be designated as critical habitat. The FEIS should include alternatives that prepare for any potential ESA listing (including the lesser prairie-chicken), and how this would impact the project in the foreseeable future of the project.

3.1.4 Texas Horned Lizard (*Phrynosoma cornutum*)

A state-listed threatened species in Texas, this lizard occupies mesquite habitat present onsite. It is intertwined with the state, as it is the Texas state reptile and the mascot of Texas Christian University. Although not observed during onsite surveys, their main prey source (harvester ants) were observed during surveys. NRC acknowledges in the FEIS that “the project would potentially disturb or kill lizards during Phase 1 construction, but not in sufficient numbers to affect the local populations of these species” (NRC 2021, page 4-40). NRC recommends ISP implement several conservation measures within suitable habitat during the project (NRC 2021, page 6-8 through 6-9).

As with the dunes sagebrush lizard, NRC does not clearly state what the ‘sufficient number’ of lizards harmed or killed that would impact the population. Horned lizard populations are declining throughout the state, so the lizards are mainly found in West Texas (CMEC 2019). Additionally, their main prey source, the harvester ant, is in turn becoming increasingly rare due to competition with nonnative fire ants (CMEC 2019). In essence, the horned lizard is most likely to exist within suitable mesquite habitat and with harvester ants. Both of these conditions already exist onsite; therefore, impacts to their habitat, and particularly their prey source, will likely have a major effect on this beloved species. The NRC does not clearly define how many lizards could be impacted by construction of the facility, nor does it explain how killing lizards will ‘not affect’ the local population.

3.1.5 Pronghorn Antelope

Suitable habitat for the pronghorn antelope was observed within the project site. Although not a listed species, the pronghorn antelope represents an important game species in both Texas and New Mexico. The FEIS assumes that the project will have no impacts on the pronghorn; however, this assumption does not thoroughly evaluate pronghorn game management across state lines and related impacts on interstate commerce. This is discussed further above as a deficiency in evaluating cumulative impacts under NEPA.

3.1.6 Other Sensitive Species Not Evaluated in FEIS

Although not a strict requirement under NEPA, the NRC's FEIS evaluated several species of regional conservation concern, such as the dunes sagebrush lizard and lesser prairie-chicken. However, the 2019 ecological survey identified several species with the potential to occur in the area, and that would be impacted by the project. It seems strange that NRC would selectively pick which species to evaluate outside of scope and not others. One species in particular, the Western box turtle (*Terrapene ornata*), was identified in the ecological survey as a species of greatest conservation need and observed onsite during surveys (CMEC 2019). It seems incomplete, therefore, to only evaluate impacts to certain sensitive species and not others. As such, the FEIS should have included an evaluation of the Western box turtle.

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5.0 QUALIFICATIONS

I hold a Bachelor's degree in Environmental, Population, and Organismal Biology from University of Colorado, Boulder (1987), a Master's degree in Ecology and Evolution from Fordham University (1990), and a Doctor of Philosophy degree in Ecology and Evolution from Rutgers University (1995). I have lived in the City of San Diego, County of San Diego, California since 2010.

I am the CEO, President and Founder of Great Ecology and Environments, Inc. (dba Great Ecology), an environmental consulting firm, and have served in that capacity since 2001. The company ranges in size from 15 to 40 employees, and today has three main offices with full time staff based out of each office. Prior to founding Great Ecology, I worked as a senior scientist at TAMS, an engineering firm, and Exponent, Inc., a scientific consulting firm. In my more than 25 years of post-doctoral experience, I have worked on hundreds of projects in at least 25 states and Great Ecology has completed over 800 projects since its founding. I have worked on the ecological and environmental aspects of numerous projects, in part dealing with issues of contamination, fate and transport, and their impacts on ecological systems, with a focus on ecological site characterization, habitat restoration in urban areas, water quality impacts, and Natural Resource Damage (NRD) Assessments in all types of ecosystems, watersheds, and biological communities.

My work as an environmental expert involved in matters of pending, potential, or actual litigation includes cases across the United States. I have been deposed one time within the past two years. Several cases are in active litigation and are bound by confidentiality agreements. Some of my environmental projects involving litigation and/or expert or consulting witness work include:

- Release of PFAS at a US Air Force Base, New Mexico (current in MDL);
- Ethylene Oxide (EtO) release, New Mexico (current);
- Dollar General consumer fraud claim, New Mexico (current);
- NRDA and Habitat Restoration Hess/Buckeye Site, New Jersey (current);
- NRDA and Habitat Restoration Lail Site, New Jersey (current);
- NRDA and Habitat Restoration Quanta Site, New Jersey (current);
- NRDA and Habitat Restoration Curtiss-Wright Site, New Jersey (current);
- Alta Property, San Diego County, California (current);
- Pike Property, Riverside County, California (settled);
- Rainbow Property, San Diego County, California (settled);
- Vernal Pool Property, San Diego County, California (settled);
- Del Mar Fairgrounds, San Diego County, California (settled);
- Deepwater Horizon NRD Restoration Planning, Gulf Coast States & Federal Waters (settled);
- Port of Portland NRD, Oregon (settled);
- Raritan River Dam Removal NRD Settlement, New Jersey (settled);
- Woodbridge Remediation Case, New Jersey (settled);
- Missouri River Site NRD and Site Reuse Planning, Montana (settled); and
- Phosphate NRD, Idaho (settled).