

**Case No. 18-36082**

---

**IN THE UNITED STATES COURT OF APPEALS  
FOR THE NINTH CIRCUIT**

---

KELSEY CASCADIA ROSE JULIANA, *et al.*,  
Plaintiffs-Appellees,

v.

UNITED STATES OF AMERICA, *et al.*,  
Defendants-Appellants.

---

On Interlocutory Appeal Pursuant to 28 U.S.C. § 1292(b)

---

**DECLARATION OF VICE ADMIRAL LEE GUNN, USN (RET.),  
IN SUPPORT OF PLAINTIFFS' URGENT MOTION UNDER  
CIRCUIT RULE 27-3(b) FOR PRELIMINARY INJUNCTION**

---

JULIA A. OLSON  
(OSB No. 062230, CSB No. 192642)  
Wild Earth Advocates  
1216 Lincoln Street  
Eugene, OR 97401  
Tel: (415) 786-4825

PHILIP L. GREGORY  
(CSB No. 95217)  
Gregory Law Group  
1250 Godetia Drive  
Redwood City, CA 94062  
Tel: (650) 278-2957

ANDREA K. RODGERS  
(OSB No. 041029)  
Law Offices of Andrea K. Rodgers  
3026 NW Esplanade  
Seattle, WA 98117  
Tel: (206) 696-2851

*Attorneys for Plaintiffs-Appellees*

I, Lee Gunn, hereby declare and if called upon would testify as follows:

1. I am a retired Vice Admiral and former Inspector General of the United States Department of the Navy.
2. In this declaration, I offer my expert opinion on how climate change is *the* most serious national security threat facing our Nation today. Climate change contributes to increased extreme weather events, rapidly changing coastlines, and conflicts over basic resources like food and water, which lead to humanitarian crises with increased migration and refugee flows. Climate change is a “threat multiplier” and “catalyst for conflict” and directly threatens our military and the “Department of Defense’s ability to defend the Nation.”<sup>1</sup> Climate change poses unprecedented risks to our Nation’s economic prosperity, public health and safety, and international stability.
3. With changes to our climate system already registering in the danger zone, increasing our ability to adapt and improving our resilience will only serve to reduce the long-term risk to our Nation’s national security *if* accompanied by comprehensive, coordinated action by the U.S. government to stabilize the climate system. Because the science tells us that we are running out of time,

---

<sup>1</sup> U.S. Dep’t of Defense, *2014 Climate Change Adaptation Roadmap* 1 (2014), [https://www.acq.osd.mil/eie/downloads/CCARprint\\_wForward\\_e.pdf](https://www.acq.osd.mil/eie/downloads/CCARprint_wForward_e.pdf); *National Defense Authorization Act for Fiscal Year 2018*, Pub. L. No. 115-91 (Dec. 12, 2017), <https://www.congress.gov/115/plaws/publ91/PLAW-115publ91.pdf>.

it is vital to the public interest and national security of our Nation that at a bare minimum we reverse the current status quo of the U.S. government continuing to pursue and promote a national fossil-fuel based energy system. Reversing our government's course is essential to preserving our ability to mitigate and prevent the worst of the many projected climate change impacts.

4. The requested injunctive relief to pause new federal approvals for fossil fuel infrastructure and the leasing of federal public lands for coal and offshore lands for oil and gas development is not only rational and reasonable while these young people's case is being appealed, but important for the national security of our Nation. Put simply, the further we go down the fossil fuel energy pathway, the more we threaten our national security and the future security of young people.

#### **Expert Qualifications and Experience**

5. I currently serve as the Vice Chairman of CNA's Military Advisory Board, and I am engaged full-time in advising on energy, water, climate and national security. The CNA Military Advisory Board (MAB) is an elite group of retired three- and four-star flag and general officers from the Army, Navy, Air Force, Marine Corps and Coast Guard that studies pressing issues of the day to assess their impact on America's national security. In 2007, 11 retired Generals and Admirals came together under the moniker of CNA's Military Advisory

Board to examine the security implications of climate change. Their landmark report, *National Security and the Threat of Climate Change*, was the first time that such an elite body of military leaders expressed their concern over the security implications of climate change. Seven years later, in 2014, the Military Advisory Board gathered again to re-examine and re-emphasize the nexus of projected climate change and national security in the report, *National Security and the Accelerating Risks of Climate Change*.

6. I also serve on the board of directors for the American Security Project, a nonpartisan organization created to educate the American public and the world about the changing nature of national security in the 21st century.
7. I served in the U.S. Navy for thirty-five years in destroyers, frigates and the amphibious forces prior to my retirement from active duty in 2000. My last sea assignment was as Commander of the U.S. Third Fleet Amphibious Force; my last active duty Navy assignment was as Inspector General of the Department of the Navy, managing the department's overall inspection program and its assessments of readiness, training and quality of service for Sailors and Marines.
8. My awards include the Distinguished Service Medal, the Defense Superior Service Medal, six Legions of Merit, two Meritorious Service Medals, the Navy Commendation Medal (with Combat Distinguishing Device), the Navy

Achievement Medal, the Combat Action Ribbon and numerous theater and service awards.

9. In addition to my work with the CNA Military Advisory Board and the American Security Project, I am the former President of CNA's Institute for Public Research (2001-2015). CNA is a non-profit and science-based research and analysis institution with a 70-year record of objective, independent research and solutions serving Americans through their federal, state and local governments. CNA's talented, experienced staff emphasizes defense and national security research, as well as education, homeland security and justice, health research and policy, air traffic research analysis and management, and energy, climate and water.
10. I also served two terms (2004-2018) as Chair of the Board of Advisors to the Presidents of the Naval Postgraduate School in Monterey, California and the Naval War College in Newport, Rhode Island; as an Advisor to the Global Perspectives Initiative at the University of Central Florida; and a member and Executive Board member of the Surface Navy Association, the professional association of more than 7000 surface warriors and supporters. I served as President of the Surface Navy Association from 2001-2006.
11. I hold a Bachelor's degree in Experimental and Physiological Psychology from the University of California, Los Angeles and a Master of Science degree

in Operations Research and Systems Analysis from the Naval Postgraduate School in Monterey, California.

### **Security Threats Within the United States**

12. Military leaders have long recognized and foreseen the dangerous security threats our Nation faces due to unmitigated climate change.<sup>2</sup> Unfortunately, the impacts that were projected even a decade ago are being seen and experienced even more quickly and with greater severity than predicted, in both the United States and around the world. The current status quo in our Nation of increasing greenhouse gas emissions, with no plan to mitigate the ongoing risks, promises irreparable injury to our Nation as a whole. It would be tragic to miss the closing window of opportunity to prevent this irreparable injury to our Nation and, especially to its young people.
13. Our Nation's intelligence community has similarly recognized that the impacts of climate change, including increasingly intense and frequent extreme weather events and rising sea level, pose significant national security challenges in the near future with both direct and indirect social, economic, political and security implications.<sup>3</sup> The National Intelligence Council has

---

<sup>2</sup> See, e.g., CNA Military Advisory Board, *National Security and the Threat of Climate Change* (2007).

<sup>3</sup> National Intelligence Council, *Implications for US National Security of Anticipated Climate Change 5* (Sept. 2016), <https://www.dni.gov/files/documents/Newsroom/Reports%20and%20Pubs/Implica>

stated that “[t]hese effects will be especially pronounced as populations continue to concentrate in climate-vulnerable locales such as coastal areas, water-stressed regions, and ever-growing cities.”<sup>4</sup>

14. The ongoing and irreparable harm to our Nation’s economy and national security from business as usual greenhouse gas emissions cannot and must not be ignored or trivialized. Indeed, our Nation has already experienced the devastation to homes, land, infrastructure and military assets that comes with increased frequency and severity of extreme weather events and wildfires. In 2018 alone, “Congress appropriated more than \$130 billion for disaster-related purposes.”<sup>5</sup> According to NOAA, as of Fall 2018, our Nation “has sustained 238 weather and climate disasters since 1980 in which overall damages/costs reached or exceeded \$1 billion. . . . The total cost of these 238 events exceeds \$1.5 trillion.”<sup>6</sup> Our Nation cannot continue to sustain these

---

tions\_for\_US\_National\_Security\_of\_Anticipated\_Climate\_Change.pdf; *see also* Central Intelligence Agency, News & Information, *CIA Opens Center on Climate Change and National Security* (Sept. 25, 2009), <https://www.cia.gov/news-information/press-releases-statements/center-on-climate-change-and-national-security.html>.

<sup>4</sup> National Intelligence Council, *Implications for US National Security of Anticipated Climate Change* 5 (Sept. 2016), [https://www.dni.gov/files/documents/Newsroom/Reports%20and%20Pubs/Implications\\_for\\_US\\_National\\_Security\\_of\\_Anticipated\\_Climate\\_Change.pdf](https://www.dni.gov/files/documents/Newsroom/Reports%20and%20Pubs/Implications_for_US_National_Security_of_Anticipated_Climate_Change.pdf).

<sup>5</sup> U.S. House of Representatives Committee on the Budget, *The Budgetary Impact of Climate Change* 2 (Nov. 27, 2018).

<sup>6</sup> NOAA, *Billion Dollar U.S. Weather/Climate Disasters 1980-2018* (2018), <http://www.ncdc.noaa.gov/billions/events.pdf>.

costs and damage to our infrastructure and economy without significantly compromising our national security.

15. Since 2013, the U.S. Government Accountability Office has placed climate change on its “High-Risk” list, recommending that the federal government limit its fiscal exposure by better managing climate change risks.

Climate change creates significant financial risks for the federal government, which owns extensive infrastructure, such as defense installations; insures property through the National Flood Insurance Program; and provides emergency aid in response to natural disasters. The federal government is not well positioned to address the fiscal exposure presented by climate change, and needs a government wide strategic approach with strong leadership to manage related risks.”<sup>7</sup>

The Fourth National Climate Assessment has also projected growth in economic losses reaching hundreds of billions of dollars.<sup>8</sup> Unfortunately, we do not have a government wide strategic approach with strong leadership to manage these risks.

16. The impacts of climate change will destroy critical national infrastructure, which is essential to our Nation’s economic security and the safety and personal security of its citizens. Extreme heat has already significantly

---

<sup>7</sup> U.S. Government Accountability Office, *High-Risk Series, An Update* (Feb. 2013), <https://www.gao.gov/assets/660/652133.pdf>.

<sup>8</sup> U.S. Global Change Research Program, “Summary Findings”, *Fourth National Climate Assessment, Volume II, Impacts, Risks, and Adaptation in the United States* 26 (2018), <https://nca2018.globalchange.gov/>.



damaged the national transportation infrastructure, including roads, rail lines and airport runways. Much of our Nation's energy infrastructure is located in coastal floodplains and "increasingly threatened by more intense storms, extreme flooding, and rising sea levels."<sup>9</sup> Higher temperatures and drought across our Nation "will strain energy systems with more demand for cooling, possibly dislocate and reduce food production, and result in water scarcity."<sup>10</sup>

17. Climate change impacts will harm major sections of our society and social support systems like first responders. Degradations in our critical infrastructure, widespread or simultaneous extreme weather events and/or wildfires that are accompanied by mass evacuations will outstrip government resources as the impacts worsen, and require the increased use of military and private sector support.<sup>11</sup> As discussed below, we have already seen the increased use of U.S. military men, women and equipment in responding with humanitarian assistance and disaster relief, both at home and abroad.

---

<sup>9</sup> CNA Military Advisory Board, *National Security and the Accelerating Risks of Climate Change 4* (2014), [https://www.cna.org/cna\\_files/pdf/MAB\\_5-8-14.pdf](https://www.cna.org/cna_files/pdf/MAB_5-8-14.pdf).

<sup>10</sup> CNA Military Advisory Board, *National Security and the Accelerating Risks of Climate Change 4* (2014), [https://www.cna.org/cna\\_files/pdf/MAB\\_5-8-14.pdf](https://www.cna.org/cna_files/pdf/MAB_5-8-14.pdf).

<sup>11</sup> CNA Military Advisory Board, *National Security and the Accelerating Risks of Climate Change 4* (2014), [https://www.cna.org/cna\\_files/pdf/MAB\\_5-8-14.pdf](https://www.cna.org/cna_files/pdf/MAB_5-8-14.pdf).

18. Climate-driven increases in wildfire frequency and intensity<sup>12</sup> are threatening the lives, property, personal security, safety and health of Americans.<sup>13</sup>
19. Climate change is threatening national public health in other ways as well. For example, changes in high and low temperature extremes and precipitation patterns are significantly altering the seasonality, distribution, and prevalence of vector-borne diseases, such as Lyme disease and West Nile virus.<sup>14</sup>
20. Another growing public health concern in our Nation is water security, which is “increasingly in jeopardy.”<sup>15</sup> Significant changes in water quantity and quality across the Nation are being caused by the impacts of climate change.<sup>16</sup>
21. Food security is another risk posed by climate change, which is threatening agricultural productivity in our Nation through changes in rainfall patterns,

---

<sup>12</sup> For example, it is “estimated that the area burned by wildfire across the western United States from 1984 to 2015 was twice what would have burned had climate change not occurred.” U.S. Global Change Research Program, *Fourth National Climate Assessment, Volume II, Impacts, Risks, and Adaptation in the United States* 1104 (2018), <https://nca2018.globalchange.gov/>.

<sup>13</sup> U.S. Global Change Research Program, *Fourth National Climate Assessment, Volume II, Impacts, Risks, and Adaptation in the United States* 514, 1116, 1208 (2018), <https://nca2018.globalchange.gov/>.

<sup>14</sup> U.S. Global Change Research Program, “Ch. 5: Vectorborne Diseases,” *The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment* 130 (2016), <http://dx.doi.org/10.7930/J0765C7V>.

<sup>15</sup> U.S. Global Change Research Program, “Ch. 3 Water”, *Fourth National Climate Assessment, Volume II, Impacts, Risks, and Adaptation in the United States* 149 (2018), <https://nca2018.globalchange.gov/>.

<sup>16</sup> U.S. Global Change Research Program, “Ch. 3 Water”, *Fourth National Climate Assessment, Volume II, Impacts, Risks, and Adaptation in the United States* 152 (2018), <https://nca2018.globalchange.gov/>.

increased frequency of climate extremes (e.g., high temperatures or drought) and altered patterns of pests.<sup>17</sup> Higher temperatures are expected to result in a decline in yields from major U.S. commodity crops, putting rural livelihoods at risk.<sup>18</sup>

22. Unprecedented amounts of human migration and increases in the number of climate refugees are other significant climate-induced national security risks for the United States. Sea level rise of 6 feet by the year 2100, a conservative estimate, puts 13.1 million people living in the United States at risk of forced interstate migration and threatens to reshape the population distribution in the United States.<sup>19</sup>
23. Forced climate migration is already taking place within the United States. In 2016, \$48 million of federal tax dollars was allocated by the U.S. Department of Housing and Urban Development to move the entire Native American community of Isle de Jean Charles, Louisiana, a 320 acre barrier island that

---

<sup>17</sup> U.S. Global Change Research Program, “Ch. 10 Agriculture and Rural Communities”, *Fourth National Climate Assessment, Volume II, Impacts, Risks, and Adaptation in the United States* 393 (2018), <https://nca2018.globalchange.gov/>.

<sup>18</sup> U.S. Global Change Research Program, “Ch. 10 Agriculture and Rural Communities”, *Fourth National Climate Assessment, Volume II, Impacts, Risks, and Adaptation in the United States* 400 (2018), <https://nca2018.globalchange.gov/>.

<sup>19</sup> U.S. Global Change Research Program, “Ch. 8 Coastal Effects”, *Fourth National Climate Assessment, Volume II, Impacts, Risks, and Adaptation in the United States* 335 (2018), <https://nca2018.globalchange.gov/>.

was a 22,400 acre island in 1955.<sup>20</sup> Several indigenous communities in Alaska also face imminent threats to life, culture, personal security and property and are being forced to relocate due to climate-induced erosion and coastal inundation. Erosion and inundation are related to melting permafrost and reduction in sea ice, which is no longer providing protection during fall and winter storms.<sup>21</sup> The cultural consequences of climate induced migration are devastating to the communities facing relocation and economically harmful to the public. Supporting the movement of climate-forced migrants is expensive, as well as disruptive.

24. People are already beginning to be forced to migrate from other countries to the United States by the consequences of the changing climate: extreme weather events, drought conditions and sea level rise that results in population displacement.<sup>22</sup> The increasing frequency and severity of hurricanes, extreme

---

<sup>20</sup> Louisiana Office of Community Development, Disaster Recovery Unit, Press Release, *LA Receives \$92 Million from U.S. Dept. of Housing and Urban Development for Coastal Communities, Disaster Resilience* (Jan. 25, 2016), <https://www.doa.la.gov/OCDDRU/NewsItems/Louisiana%20Receives%20NDRC%20Award.pdf>; Carol Davenport & Campbell Robertson, *Resettling the First American 'Climate Refugees'*, N.Y. Times (May 2, 2016).

<sup>21</sup> U.S. Global Change Research Program, "Ch. 26 Alaska", *Fourth National Climate Assessment, Volume II, Impacts, Risks, and Adaptation in the United States* 1211 (2018), <https://nca2018.globalchange.gov>.

<sup>22</sup> U.S. Global Change Research Program, *Fourth National Climate Assessment, Volume II, Impacts, Risks, and Adaptation in the United States* 613 (2018), <https://nca2018.globalchange.gov/> ("For example, in 1999 the United States granted Temporary Protected Status to 57,000 Honduran and 2,550 Nicaraguan

weather events and prolonged drought promises to increase the numbers of people displaced from their homes and forced to migrate due to climate disruption, creating humanitarian crises at our borders.

### **Threats to Our Nation's Security Institutions**

25. Climate change directly threatens U.S. servicemen and women, military installations, military operations and the “Department of Defense’s ability to defend the Nation.”<sup>23</sup> In a recent report, for example, the U.S. Government Accountability Office summarized the complex array of geopolitical and geostrategic challenges posed by the prospect that the Marshall Islands will become uninhabitable because of climate change.

This prospect threatens the existence of the Marshall Islands as a sovereign state, as well as the United States defense facilities located on the islands. The total loss of land could result in the Marshall Islands being uninhabitable, which raises problems of migration, resettlement, cultural survival, and sovereignty.

---

nationals in response to Hurricane Mitch.”); U.S. Global Change Research Program, “Ch. 27 Hawai’i and U.S.-Affiliated Pacific Islands”, *Fourth National Climate Assessment, Volume II, Impacts, Risks, and Adaptation in the United States* 1275 (2018), U.S. Government Accountability Office, *Climate Change Activities of Selected Agencies to Address Potential Impact on Global Migration* 51 (Jan. 2019), <https://www.gao.gov/assets/700/696460.pdf> (“Drought is a particular concern in Central America, where declines in rainfall have reduced crop yields and threatened livelihoods in recent years. Some evidence shows that drought in parts of Central America has contributed to migration north, including to the United States.”).

<sup>23</sup> U.S. Dep’t of Defense, *2014 Climate Change Adaptation Roadmap* 1 (2014), [https://www.acq.osd.mil/eie/downloads/CCARprint\\_wForward\\_e.pdf](https://www.acq.osd.mil/eie/downloads/CCARprint_wForward_e.pdf); *National Defense Authorization Act for Fiscal Year 2018*, Pub. L. No. 115-91 (Dec. 12, 2017), <https://www.congress.gov/115/plaws/publ91/PLAW-115publ91.pdf>.

Relocation of the population of the Marshall Islands, and of other Pacific Island nations at risk of rising seas, could cause significant geopolitical challenges. The Marshall Islands are also of strategic importance for the United States. Under the Compact of Free Association, the United States has permission to use several islands—including Kwajalein Atoll, the location of the Ronald Reagan Ballistic Missile Defense Test Range—until 2066. The country’s proximity to the equator makes the Marshall Islands ideal for missile defense and space work. Yet the island’s defense infrastructure and operations are at significant risk due to rising sea levels, flooding, and diminishing supplies of potable water. As the Department of Defense has noted, climate change will have serious implications for the department’s ability to maintain its infrastructure and ensure military readiness in the future.”<sup>24</sup>

26. This is just one example of how climate change is directly undermining the readiness of our security institutions. In 2018, the Department of Defense reported that over 1,800 U.S. military primary installations and associated sites worldwide had already experienced the climate-induced impacts of drought, wind, flooding, storm surges, extreme temperatures and/or wildfire.<sup>25</sup>
- In October 2018, Hurricane Michael caused catastrophic damage to 95% of

---

<sup>24</sup> U.S. Government Accountability Office, *Climate Change Activities of Selected Agencies to Address Potential Impact on Global Migration* 50 (Jan. 2019), <https://www.gao.gov/assets/700/696460.pdf>; see also *National Defense Authorization Act for Fiscal Year 2018*, Pub. L. No. 115-91, 131 Stat. 1358 (Dec. 12, 2017), <https://www.congress.gov/115/plaws/publ91/PLAW-115publ91.pdf> (“In the Marshall Islands, an Air Force radar installation built on an atoll at a cost of \$1,000,000,000 is projected to be underwater within two decades.”).

<sup>25</sup> Department of Defense, *Climate-Related Risk to DoD Infrastructure Initial Vulnerability Assessment Survey (SLVAS) Report 2* (Jan. 2018), <http://www.oea.gov/file/896/download?token=v13GXIKg>.

the buildings at Tyndall Air Force Base, as well as 17 of the 55 total stealth fighter jets based there, which cost \$339 million each.<sup>26</sup>

27. Sea level rise currently poses a major threat to our national security infrastructure, both at home and abroad. Navy Region Mid-Atlantic and the greater Hampton Roads area contain critical, strategic defense assets, the importance of which cannot be overestimated. According to a recent Department of Defense report, this region “. . . is one of the most vulnerable to flooding military operational installation areas in the United States. Sea level rise, land subsidence and changing ocean currents have resulted in more frequent nuisance flooding and increased vulnerability to coastal storms.”<sup>27</sup> A 2014 study by the Department of Defense determined that “several critical systems” at the Naval Station Norfolk, a key installation in the region, were “likely to be incapacitated” if the sea rose more than 1 meter, a conservative

---

<sup>26</sup> Letter from U.S. Senators Marco Rubio, Bill Nelson, & Representative Neal Dunn to Senate and House Committees on Appropriations (Dec. 13, 2018), [https://www.rubio.senate.gov/public/\\_cache/files/007f2d07-7bfb-4ebe-832b-08c35f2302d7/1752E76AF5384A704D57D65A85539029.12142018-rubionelsondunn-ltr-approps-re-tyndall-rebuild-w-f35-final.pdf](https://www.rubio.senate.gov/public/_cache/files/007f2d07-7bfb-4ebe-832b-08c35f2302d7/1752E76AF5384A704D57D65A85539029.12142018-rubionelsondunn-ltr-approps-re-tyndall-rebuild-w-f35-final.pdf); Dave Philipps, *Tyndall Air Force Base a ‘Complete Loss’ Amid Questions About Stealth Fighters*, N.Y. Times (Oct. 11, 2018), <https://www.nytimes.com/2018/10/11/us/air-force-hurricane-michael-damage.html>.

<sup>27</sup> Department of Defense, *Report on Effects of a Changing Climate to the Department of Defense* 6 (Jan. 2019), <https://media.defense.gov/2019/Jan/18/2002081124/-1/-1/1/FINAL-CLIMATE-REPORT.PDF>.



scenario. Even sea level rise of 0.5 meter would represent a “tipping point” after which “the probabilities of damage to infrastructure and losses in mission performance increased dramatically.”<sup>28</sup>

28. As climate change increases the intensity and frequency of extreme weather events, the strain on the U.S. military increases, as more forces are called upon to respond with humanitarian assistance and disaster relief, both at home and abroad. For example, following Hurricane Harvey in 2017, the Army deployed over 16,000 personnel from 23 states, all supporting response efforts in Texas and Louisiana, including aviation, transportation, engineer, communications and medical support.<sup>29</sup> And in 2013, the United States committed 13,400 military personnel to the relief effort in the Philippines following Super Typhoon Haiyan, which resulted in the internal displacement of more than 4 million people.<sup>30</sup>

---

<sup>28</sup> Department of Defense Strategic Environmental Research and Development Program, *Risk Quantification for Sustaining Coastal Military Installation Assets and Mission Capabilities*, Final Technical Report, SERDP RC-1701, 2 (June 2014).

<sup>29</sup> U.S. Army, *U.S. Army by the numbers – Hurricane Harvey Relief* (Sept. 1, 2017), <https://www.youtube.com/watch?v=njaPmvSC5Uk>; U.S. Department of Defense, Army Spc. Dustin D. Biven, *Solders Take Pride as Hurricane Harvey Response Continues* (Sept. 3, 2017), <https://dod.defense.gov/News/Article/Article/1298837/soldiers-take-pride-as-hurricane-harvey-response-continues/>.

<sup>30</sup> U.S. Global Change Research Program, *Fourth National Climate Assessment, Volume II, Impacts, Risks, and Adaptation in the United States* 613 (2018), <https://nca2018.globalchange.gov/>.



29. Climate change is altering the operational environment of the U.S. military in significant ways that directly impact our military's ability to defend our Nation. Military bases exist to generate military readiness, and lost training days due to flooding or drought harm readiness. For example, "wildfires are a constant concern on many military installations" during training and testing activities involving significant ignition sources (live-fire).<sup>31</sup> The impacts of climate change have made "training more difficult, while at the same time, putting at greater risk critical military logistics, transportation systems, and infrastructure, both on and off base"<sup>32</sup>

### **Climate Change as a Catalyst for Conflict and Threats to Geopolitical Stability**

30. The U.S. military has long recognized that climate change acts as a "threat multiplier."<sup>33</sup> The Department of Defense's 2014 Quadrennial Defense Review detailed how the impacts of climate change "are threat multipliers that will aggravate stressors abroad such as poverty, environmental

---

<sup>31</sup> U.S. Department of Defense, *Report on Effects of a Changing Climate to the Department of Defense* 6 (Jan. 2019), <https://media.defense.gov/2019/Jan/18/2002081124/-1/-1/1/FINAL-CLIMATE-REPORT.PDF>.

<sup>32</sup> CNA Military Advisory Board, *National Security and the Accelerating Risks of Climate Change* 4 (2014), [https://www.cna.org/cna\\_files/pdf/MAB\\_5-8-14.pdf](https://www.cna.org/cna_files/pdf/MAB_5-8-14.pdf).

<sup>33</sup> CNA Military Advisory Board, *National Security and the Threat of Climate Change*, 6 (2007).

degradation, political instability, and social tensions – conditions that can enable terrorist activity and other forms of violence.”<sup>34</sup>

31. In many areas, however, the impacts of climate change are more than just “threat multipliers” of existing causes of global disruption. Climate change impacts are now serving as active and direct causes of instability and conflict—or “catalysts for conflict”—in vulnerable areas of the world.<sup>35</sup>

In Africa, Asia, and the Middle East, we are already seeing how the impacts of extreme weather, such as prolonged drought and flooding—and resulting food shortages, desertification, population dislocation and mass migration, and sea level rise—are posing security challenges to these regions’ governments.<sup>36</sup>

These security challenges are growing and pose a threat to our national security interests at home and abroad.

32. The severity of the geo-strategic security risks of climate change is amplified by complex changes in the global security environment, such as rapid population growth in urban and coastal areas and geopolitical power

---

<sup>34</sup> Department of Defense, *2014 Quadrennial Defense Review* 8 (2014), [http://archive.defense.gov/pubs/2014\\_quadrennial\\_defense\\_review.pdf](http://archive.defense.gov/pubs/2014_quadrennial_defense_review.pdf).

<sup>35</sup> CNA Military Advisory Board, *National Security and the Accelerating Risks of Climate Change 2* (2014), [https://www.cna.org/cna\\_files/pdf/MAB\\_5-8-14.pdf](https://www.cna.org/cna_files/pdf/MAB_5-8-14.pdf).

<sup>36</sup> *Id.*; see also World Bank Group, *Groundswell - Preparing for Internal Climate Migration* xxi (2018), <https://openknowledge.worldbank.org/handle/10986/29461> (predicting that in “the worst-case or ‘pessimistic’ scenario, the number of internal climate migrants could reach more than 143 million (around 86 million in Sub-Saharan Africa, 40 million in South Asia, and 17 million in Latin America) by 2050.”).

becoming more dispersed. The world is increasingly economically and financially interconnected and interdependent, particularly in manufacturing, and food and energy production.<sup>37</sup>

33. In particular, climate induced stress on the “water-food-energy nexus” is a growing national security concern for the United States. Water stress contributes to and intensifies instability, conflict and crises that are impacting U.S. national interests abroad.<sup>38</sup> Water stress is “becoming increasingly prominent as a driver of violence and conflict” and “directly causes civil unrest and localized violence,”<sup>39</sup> which “[w]hen combined with other negative factors . . . can escalate and threaten local governments and U.S. interests, including U.S. citizens abroad, businesses, and supply chains.”<sup>40</sup>

---

<sup>37</sup> CNA Military Advisory Board, *National Security and the Accelerating Risks of Climate Change* 11 (2014), [https://www.cna.org/cna\\_files/pdf/MAB\\_5-8-14.pdf](https://www.cna.org/cna_files/pdf/MAB_5-8-14.pdf).

<sup>38</sup> CNA, *The Role of Water Stress in Instability and Conflict* 2-4 (2017), [https://www.cna.org/CNA\\_files/pdf/CRM-2017-U-016532-Final.pdf](https://www.cna.org/CNA_files/pdf/CRM-2017-U-016532-Final.pdf).

<sup>39</sup> CNA, *The Role of Water Stress in Instability and Conflict* 47 (2017), [https://www.cna.org/CNA\\_files/pdf/CRM-2017-U-016532-Final.pdf](https://www.cna.org/CNA_files/pdf/CRM-2017-U-016532-Final.pdf).

<sup>40</sup> CNA, *The Role of Water Stress in Instability and Conflict* 2 (2017), [https://www.cna.org/CNA\\_files/pdf/CRM-2017-U-016532-Final.pdf](https://www.cna.org/CNA_files/pdf/CRM-2017-U-016532-Final.pdf).

“Civil unrest associated with water stress can be associated with water conditions geographically separated from where the unrest is taking place, such as when a population in one location is dependent on an import—wheat, for instance—from another part of the world experiencing drought. For example, prior to the 2010–11 uprisings in the Arab world, extended droughts in Russia, Ukraine, and parts of China led to widespread increased wheat prices, including in Arab nations dependent on imports. The rise in food prices, experts conclude, was a factor (among many) in the political upheaval that swept the Arab regions, leading to

34. Water stress also “contributes to some of the conditions necessary for intra-state conflicts such as insurgencies, civil wars, and those involving [violent extremist organizations].”<sup>41</sup> Water stress is being exploited by non-state actors, violent extremist organizations, and insurgents.<sup>42</sup> According to the National Intelligence Council, the “terrorist group Al-Shabaab exploited the 2011-13 famine in Somalia to coerce and tax international aid agencies, and it withheld food from those it deemed uncooperative.” And in 2015, “insurgent groups in northern Mali exploited deepening desertification, worsened by persistent drought, to enlist locals in a ‘food for jihad’ arrangement.”<sup>43</sup>

---

government collapse in Tunisia, Egypt, and Libya, and eventually the civil wars in Syria and Yemen.” *Id.* at 24.

<sup>41</sup> CNA, *The Role of Water Stress in Instability and Conflict* 47 (2017), [https://www.cna.org/CNA\\_files/pdf/CRM-2017-U-016532-Final.pdf](https://www.cna.org/CNA_files/pdf/CRM-2017-U-016532-Final.pdf).

<sup>42</sup> CNA, *The Role of Water Stress in Instability and Conflict* 2, 29-35 (2017), [https://www.cna.org/CNA\\_files/pdf/CRM-2017-U-016532-Final.pdf](https://www.cna.org/CNA_files/pdf/CRM-2017-U-016532-Final.pdf).

<sup>43</sup> National Intelligence Council, *Implications for US National Security of Anticipated Climate Change* 9 (Sept. 2016), [https://www.dni.gov/files/documents/Newsroom/Reports%20and%20Pubs/Implications\\_for\\_US\\_National\\_Security\\_of\\_Anticipated\\_Climate\\_Change.pdf](https://www.dni.gov/files/documents/Newsroom/Reports%20and%20Pubs/Implications_for_US_National_Security_of_Anticipated_Climate_Change.pdf).

## **The Arctic**

35. The rapidly changing Arctic region is one of the most immediate and underestimated national security risks posed by climate change and reflects many of the issues discussed above. Air temperatures in Alaska and across the Arctic have increased more than twice as fast as the global average, causing sea ice, ice sheets and glaciers to melt and permafrost to thaw, which in turn is triggering feedbacks that amplify and accelerate the warming.<sup>44</sup> Arctic glaciers and the Greenland ice sheet are melting and losing ice rapidly, and at an accelerating rate; this melting of land ice contributes to sea level rise.<sup>45</sup>
36. Arctic sea ice, which once covered most of the Arctic ocean, is also melting at an alarming rate. Warmer temperatures have resulted in the unprecedented loss of Arctic sea ice area (dropped by 40%) and sea ice volume (dropped by 70%) over the last four decades.<sup>46</sup>
37. Without a dramatic shift away from the current status quo of increasing greenhouse gas emissions, the Arctic Ocean, for the first time in 2 million

---

<sup>44</sup> U.S. Global Change Research Program, *Fourth National Climate Assessment, Volume II, Impacts, Risks, and Adaptation in the United States* 91-92 (2018), <https://nca2018.globalchange.gov>.

<sup>45</sup> *Id.* at 92.

<sup>46</sup> U.S. Global Change Research Program, *Fourth National Climate Assessment, Volume II, Impacts, Risks, and Adaptation in the United States* 1497 (2018), <https://nca2018.globalchange.gov>.

years, will be entirely free of sea ice in the summer by mid-century at the latest.<sup>47</sup>

38. As an Arctic nation, the United States has unique and substantial security interests in the region that are now at risk.<sup>48</sup> National security infrastructure in the Arctic, such as radar and communication installations, runways, seawalls and training areas, are being damaged by the “combination of melting sea ice, thawing permafrost, and sea-level rise . . . eroding shorelines.”<sup>49</sup> And as discussed above, these same climate-induced impacts are destroying the culture and livelihood of Alaska Native communities.
39. The climate induced transformation of the Arctic region in recent years has essentially opened up a new ocean, posing unprecedented risks from increased resource extraction; an oil spill and the unique challenges posed by Arctic

---

<sup>47</sup> U.S. Global Change Research Program, *Fourth National Climate Assessment, Volume II, Impacts, Risks, and Adaptation in the United States* 94 (2018), <https://nca2018.globalchange.gov/>.

<sup>48</sup> Congressional Research Service, *Changes in the Arctic: Background and Issues for Congress* (Dec. 13, 2018), <https://crsreports.congress.gov/product/pdf/R/R41153>.

<sup>49</sup> *National Defense Authorization Act for Fiscal Year 2018*, Pub. L. No. 115-91, 131 Stat. 1358 (Dec. 12, 2017), <https://www.congress.gov/115/plaws/publ91/PLAW-115publ91.pdf>.

conditions for response and cleanup; a shipping accident; and changing geopolitics in the region.<sup>50</sup>

40. The increasing geostrategic importance of the region is in turn leading to increased tension and “risk of disputes between Arctic and non-Arctic nations over access to Arctic shipping lanes and natural resources.”<sup>51</sup> Some experts characterize the Arctic as “rife with geopolitical tension as Russia militarizes its portion of the Arctic and China expands its reach and influence through the Polar Silk Road.”<sup>52</sup> In recent years, there has been a “significant increase in Russian military capabilities and operations in the Arctic.”<sup>53</sup>

---

<sup>50</sup> Congressional Research Service, *Changes in the Arctic: Background and Issues for Congress* (Dec. 13, 2018),

<https://crsreports.congress.gov/product/pdf/R/R41153>.

<sup>51</sup> Department of Defense, *Report to Congress on Strategy to Protect United States National Security Interests in the Arctic Region 7* (Dec. 2016)

<https://dod.defense.gov/Portals/1/Documents/pubs/2016-Arctic-Strategy-UNCLAS-cleared-for-release.pdf>.

<sup>52</sup> Rachel Fleishman & Sherri Goodman, *Climate Change and the U.S. Military*, 23 Defense Dossier 5 (Dec. 2018).

<sup>53</sup> Congressional Research Service, *Changes in the Arctic: Background and Issues for Congress 71* (Dec. 13, 2018),

<https://crsreports.congress.gov/product/pdf/R/R41153>.

41. Congress has recognized that “climate change is a direct threat to the national security of the United States and is impacting stability in areas of the world both where the United States Armed Forces are operating today, and where strategic implications for future conflict exist.”<sup>54</sup> It is deeply concerning to me that the National Security Strategy does not mention this long-recognized threat. This concern is amplified by looking at the January 2019 Department of Defense report,<sup>55</sup> which does not include a list of the ten most vulnerable military installations within each branch of the armed services, as required by Congress in the 2018 National Defense Authorization Act.<sup>56</sup>
42. Our government must protect the security and futures of our young people. Stewardship of our planet is a profound responsibility. The American people have every right to expect and demand more leadership from our public servants and elected officials in the face of the most serious threat to our national security—climate change.

---

<sup>54</sup> *National Defense Authorization Act for Fiscal Year 2018*, Pub. L. No. 115-91, 131 Stat. 1358 (Dec. 12, 2017),

<https://www.congress.gov/115/plaws/publ91/PLAW-115publ91.pdf>.

<sup>55</sup> Department of Defense, *Report on Effects of a Changing Climate to the Department of Defense* 6 (Jan. 2019),

<https://media.defense.gov/2019/Jan/18/2002081124/-1/-1/1/FINAL-CLIMATE-REPORT.PDF>.

<sup>56</sup> *National Defense Authorization Act for Fiscal Year 2018*, Pub. L. No. 115-91, 131 Stat. 1358 (Dec. 12, 2017),

<https://www.congress.gov/115/plaws/publ91/PLAW-115publ91.pdf>.

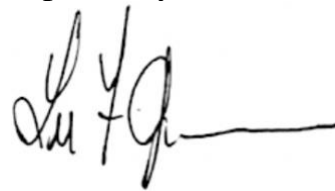


43. The current status quo in our Nation with increasing greenhouse gas emissions and no plan to mitigate them is already causing irreparable harm to many parts of society in our Nation and promises irreparable injury to our Nation as a whole without comprehensive, coordinated action by the U.S. government to stabilize the climate system. Military leaders have long recognized and foreseen the dangerous, high-consequence security risks and threats to our Nation from the impacts of unmitigated climate change. It is vital to the public interest and national security of our Nation that we reverse the current status quo of the U.S. government's pursuance and promotion of a national fossil-fuel based energy system. We must make the most of whatever time remains for us to preserve our ability to mitigate and prevent the worst projected climate change impacts.
44. The U.S. Office of Naval Research began supporting research in the science of climate change as early as 1945. The U.S. Navy has long understood the threat climate change poses to our oceans and our national security. To ignore those threats today and to continue supporting the source of those threats, through further extraction and development of fossil fuels, is folly given the dangerous state of our climate system today and the abundant threats it poses to our national security.

45. In my expert opinion, pausing new investments in fossil fuel infrastructure and the use of public lands for fossil fuel extraction while this case is being resolved is wholly in the public's best interest and minimally necessary until a full national plan for decarbonization and climate stabilization is prepared.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct. Executed on February 7, 2019.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Lee Gunn", followed by a horizontal line extending to the right.

---

Vice Admiral Lee Gunn, USN (Ret.)