

**Written Testimony of J. Michael Chavarria, Governor  
Governor of the Santa Clara Pueblo**

**"The Impacts of Climate Change on Tribal Communities"  
Subcommittee for Indigenous People of the United States  
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**Introduction.** Thank you Chairman Gallego, Ranking Member Cook, and members of the Subcommittee for this opportunity to testify on the critically important issue of climate change and its impact tribal communities like the Pueblo of Santa Clara. My name is J. Michael Chavarria and I am the Governor of the Pueblo of Santa Clara, located in north-central New Mexico. I also serve as Chairman of the Eight Northern Pueblos Council, Inc. and Vice-Chair of the All Pueblo Council of Governors (APCG). In the last decade, Santa Clara has had five Presidential Disaster Declarations: three by the request of the State of New Mexico and two directly by the Pueblo after the Stafford Act was amended. Overall, the ability to directly request Presidential Disaster Declarations has given Santa Clara Pueblo greater control over our own disaster relief efforts. My community has faced numerous natural disasters whose impacts and severity have been heightened, in part, by the increasing effects of climate change on our natural environment.

**Climate Change Poses an Existential Threat to Our Pueblo Beliefs and Identity.** The Pueblo of Santa Clara is certified as a National Historic Landmark under the National Historic Preservation Act (16 U.S.C. § 470 *et seq.*; NRHP ref. # 74001199). As such, our Pueblo is recognized as a finite, irreplaceable resource. The land and its natural resources form the essence of who we are as Pueblo People across generations: our origin stories are rooted in its geographic features, our contemporary life finds sustenance in its flora and fauna, and our future generations will shape their identity and dreams in the light of its sun-drenched plateaus. This intimate relationship is replicated in indigenous communities across the country. For all of us, climate change poses a disconcerting and tangible threat to the continued existence of our traditional practices and unique cultural identities. My testimony focuses on the experience of the Santa Clara Pueblo and its multi-generational effort to restore our forests and watershed after the devastating Las Conchas wildfire.

**Federal Trust Responsibility and Environmental Justice.** The Federal Government has a solemn trust responsibility to protect the interests and welfare of pueblos, tribal nations, and Native communities – including from the harmful and increasingly dangerous effects of climate change. Changes in vegetation cover, the adequacy of water supplies, and the frequency and intensity of wildfires, among other natural phenomena, impact the short- and long-term well-being of our tribal members. In 1994, President Clinton issued Executive Order 12898, which directs all federal agencies to make achieving environmental justice part of their missions. Accordingly, as agencies work to fulfill the federal trust responsibility, they must take into consideration the drivers and ongoing needs of environmental justice in Native communities.

**Background on the Las Conchas Wildfire.** Historically, the Santa Clara Canyon and watershed have provided timber, pasture, traditional, economic, and recreational resources for our Pueblo. The Santa Clara Creek watershed occupies a vast majority of our Reservation lands and is home to many of our Pueblo members. Our infrastructure, governmental services, and economic

activities are concentrated in the downstream end of the Creek near its confluence with the Rio Grande. Countless traditional cultural sites occupy this landscape.

In the summer of 2011, the Santa Clara Pueblo was devastated by the Las Conchas Fire, then the largest wildfire in New Mexico history. Although mercifully no lives were lost and no homes at Santa Clara were burned, we still saw our traditional and treasured homeland and spiritual sanctuary, the Santa Clara Canyon, practically destroyed. It is estimated that more than 16,000 acres of our forestlands were burned. Together with the lands that we lost in the Oso Complex Fire of 1998 and the Cerro Grande Fire of 2000, over 80% of our forests and an immeasurable part of our cultural heritage has been destroyed.

In addition, the fire burned thousands of acres of traditional lands located outside of our reservation that contain cultural sites and resources of great importance to us. This area encompasses our lands of origin, the P'opii Khanu - the headwaters of our Santa Clara Creek, as well as numerous cultural and traditional sites. In addition, the loss of the forest is devastating to wildlife and wildlife habitat, recreational resources, and to the purity of our water – which we use for irrigation and many traditional purposes. (See Attachment 1 for fire impact on Santa Clara watershed.) Throughout this tragedy, the Santa Clara People have shown grit and determination to persevere on the long road to recovery so that while this generation may never see the canyon in its glory again, that will not be said of the next generation.

**Contribution of Climate Change to the Disaster.** Climate change played a significant role in heightening the severity of the Las Conchas fire, along with several factors that contributed to its spread. At the time of the fire, it was reported that drought conditions in the Southwest caused living trees in the canyon to have a lower moisture content than the wood that you would typically buy at a lumberyard. This is a result of drought conditions in the Southwest that the scientific community continues to associate with climate change. In addition, higher temperatures in general create more conducive conditions for wildfires. While drought and wildfires can be a natural part of life, the severity and frequency of these phenomena are intensified by climate change.

- According to EPA and National Research Council research, an annual temperature increase of just 1.8°F could result in *four times* the number of wildfires in New Mexico every year.<sup>1</sup>
- Higher temperatures affect the retention of water in plants and soil, as well as in reservoirs and streams, which creates a more conducive environment for the rapid spread of wildfires.
- Increasing temperatures also degrade the quality of ecosystems making it difficult for native species to flourish, thus, hindering recovery efforts and leaving the area vulnerable to invasive species.

Climate change was not the only reason this fire was so devastating. The forest had become unhealthy, with excessive undergrowth and too great a tree density, making conditions ripe for an

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<sup>1</sup> "The Age of Western Wildfires," Climate Central at 9 (Sept. 2012), *available at* <https://www.climatecentral.org/wgts/wildfires/Wildfires2012.pdf>.

intense fire that would kill the mature trees. As a part of managing the impact of climate change, we must manage the conditions in our forests.

**Increased Risk of Flooding due to the Fire and Climate Change.** All five of the Pueblo's Presidential Disaster Declarations have involved infrastructure damage stemming from catastrophic flash floods. Three of the Declarations were made by request of the State of New Mexico and two were made by the Pueblo after the Stafford Act was amended. Flooding has wiped out existing water control structures within the canyon, destroyed once-pristine native cutthroat fish habitat, impacted roads, taken away culverts, and damaged the traditional cultural properties of our sanctuary.

Because the Santa Clara Canyon has been stripped of its vegetation, the area has a heightened risk of flooding and landslides. Over 50% of the Santa Clara Pueblo watershed burned during the Las Conchas fire. Because of the high severity of the burn, there has been a dramatic reduction in the infiltration rates in the burned area and the soil is now what is hydrophobic. This has resulted in a four-to eight-fold increase in runoff and sediment/debris flow into the Santa Clara Creek, posing a threat to the lives and safety of the people of Santa Clara Pueblo and increasing the potential for widespread property damage. The channel through Santa Clara Pueblo no longer has the conveyance capacity necessary to safely pass large post-fire flows. Hundreds of residential structures including several public structures are at risk from flood and debris flows if no action is taken immediately. (*See Attachment 2 on the potential flood risk zone to Santa Clara for a ten-year event.*)

An average monsoon season storm one inch rain event over 8 hours on August 21, 2011 led to intense flooding and the emergency evacuation of Santa Clara and US Army Corps of Engineer personnel. This rain event resulted in a Presidential Disaster Declaration. As the Department of the Interior, Interagency Burned Area Emergency Response ("BAER") Team noted, the intense flames from the fire burned trees and vegetation off the steep slopes of the canyon and heated the soils causing severe damage to the natural resources of the area and placing the downstream tribal members of the Santa Clara Pueblo at risk to extreme flooding. The post-fire watershed effects were rife for massive landslides and debris flows which occurred on August 21, 2011. The event produced massive debris (including boulders) and severe mud flows to the canyon bottom. The canyon reservoirs were overwhelmed by this average rainfall event and filled with sediment. Flood protection emergency measures put in place after the Las Conchas fire were inches away from being compromised. It is important to note that this storm was an isolated thunderstorm over a small portion of the Santa Clara watershed (one drainage) and not over the entire watershed. Another similar event occurred in July 2012, destroying much of the recovery undertaken over the prior year. If the rain event of August 21, 2011 had occurred over the entire post-fire watershed, our Pueblo would have been devastated.

Further, in November 2013, Santa Clara Pueblo became the first tribal government to request and receive federal disaster recovery assistance under the National Disaster Recovery Framework (NDRF). The Federal Emergency Management Agency used the NDRF to create a comprehensive federally-led strategy for the Pueblo to identify all possible actions that would build the community's resiliency to future flooding. The NDRF provided the Pueblo with an opportunity to effectively develop recovery strategies for our respective areas.

**Heightened Human Health and Environment Impacts.** The recent natural disasters have raised numerous interrelated short and long-term concerns for Santa Clara and nearby tribal communities, almost all of which are further complicated by climate change. The environmental impacts of the disasters include water quality deterioration from ash, debris, and sediment changes that affect fisheries, wildlife, flora, and agriculture. The destabilized ecosystem also poses a physical safety risk due to erosion and shifting or falling trees and boulders. Runoff from the Santa Clara Creek also flows into the Rio Grande, which affects downstream communities like Santa Fe, Albuquerque, and our neighboring Pueblos who all rely upon these waters for municipal water sourcing. Ash contamination and sediment transport have impacted these resources, while limiting water holding capacity in reservoir facilities. The U.S. Army Corps of Engineers has noted that sediment deposition from the Los Conchas Fire remains an existential threat to the holding capacity of Cochiti reservoir.

In terms of human health, the effects range from physical impacts from the smoke and compromised environmental quality to deep emotional strain caused by the unprecedented loss of or damage to our cultural and sacred sites. We are still processing how to recover from the loss of these places and the diminishment of animal and plant species that have been integral to Santa Clara cultural and spiritual practices for generations. Further, our community has taken on increased financial burdens in response to these disasters and changes in the environment to reinforce infrastructure, implement fire suppression measures, and support the work of our award winning Santa Clara Pueblo Forestry Department, among other expenditures.

**Working to Mitigate the Risks of Climate Change at the Pueblo Level.** Santa Clara has a highly regarded Forestry Department, numbering some 40 personnel. Santa Clara fire crews and equipment served on the front lines of the Las Conchas fire. We have a dedicated commitment to the maintenance and restoration of healthy forests on, around, and adjacent to the Pueblo. We work diligently to effectively and efficiently manage our natural resources for the safety of our community and property. For example, our work on installing fuel breaks on tribal lands was effective at stopping the spread of the Las Conchas fire in those areas. In areas that lacked proper management techniques, the land, trees, and wildlife were devastated. In the past decade, we have faced four forest fires that have threatened our forests – the Oso, Cerro Grande, South Fork and Las Conchas fires – and none of them originated on Pueblo lands. Although fate and climate change play their part, we have suffered horrible consequences largely due to the failure of others to properly guard in some fashion against causing a fire.

Tribal-Federal Partnerships. For several years, the Pueblo has worked to establish a partnership with the U.S. Forest Service under the Tribal Forest Protection Act to address the long-term health of Forest Service lands around our reservation. Further, the Pueblo is in negotiations with the U.S. Park Service to assume responsibility for federal functions in managing the Valles Caldera National Preserve, which is adjacent to our Pueblo in the Jemez Mountains. Each of these efforts is founded on the desire to strengthen tribal sovereignty and advance land management practices for the protection of our resources and community. As part of managing the impacts of climate change, the Pueblo is and must remain an active leader in the management of our forestlands.

Forest Restoration and Recovery. The Pueblo is also engaged in the complex process of forest regeneration and recovery in the canyon with a variety of federal and state partners. As we work

to develop forest resiliency to the future effects of climate change, our efforts have taken into account research on the effect of climate change on forest regeneration, including a study of the Greater Yellowstone Ecosystem undertaken by the University of California – Merced.<sup>2</sup> The study predicts that the expected rising temperatures caused by climate change could increase the frequency of large wildfires in Yellowstone to an unprecedented level. The study also predicts that the increased occurrence of wildfires will alter ecosystems, resulting in "fewer dense forests and more open woodland, grass and shrub vegetation, with forests becoming younger, the mix of tree species changing and some forests failing to regenerate after repeated fires. This would affect the region's wildlife, hydrology, carbon storage and aesthetics. These conditions are already present in our forestlands and local ecosystem.

Other climate change related stressors are expected to further complicate our forest and ecosystem regeneration efforts going forward. These include an increased severity of droughts, the introduction and proliferation of invasive species, soil degradation, and habitat fragmentation. Alone, each of these issues could cause significant damage to our fragile ecosystem and watershed. Together, they pose an alarming threat to our future. Take the tamarisk, for example. The tamarisk, or salt cedar, is an aggressive invasive species that can uptake nearly 200 gallons of water per day.<sup>3</sup> It displaces native vegetation and destabilizes local habitats. This directly impacts avian and other species that depend on native vegetation for breeding and sustenance.<sup>4</sup> As a result of climate change, the tamarisk is expected to expand its geographic distribution throughout the southwest and other regions. When compounded by the increasing scarcity of water and increasing severity of weather events, tamarisk and other invasive species have the capacity to severely hinder forest restoration efforts in the Santa Clara Canyon and watershed.

**Conclusion.** In New Mexico, and across the Southwest, we have experienced the harmful effects of major wildfires, most recently the truly devastating Camp Fire in California. The ecosystems and well-being of our environment are being dramatically affected and sometimes permanently altered with each new occurrence. At the Pueblo of Santa Clara, we need only look out from our backyards to see the fundamental changes wrought by natural disasters heightened by climate change on the Santa Clara Creek and Canyon ecosystems. Never again in our lifetime will we see our traditional and treasured homeland and spiritual sanctuary, the Santa Clara Canyon, as we have known it. It will take generations for our community and lands to recover from the devastation of this fire and, because of climate change, it is not clear how that future will unfold.

*This is our only homeland;* it is the place we have been entrusted with since time immemorial. We devote the resources we can to the healing of our land and the protection of our community, but we do not have the resources to do it alone. The Federal Government must take steps to effectively manage the meta-factors that drive climate change – such as worldwide deforestation, fossil fuel consumption, and greenhouse gas emissions – before it is too late. Acting on climate change today

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<sup>2</sup> Please see <http://www.ucmerced.edu/news/study-climate-change-increase-yellowstone-wildfires-dramatically>.

<sup>3</sup> "Saltcedar (*Tamarix*)," National Riparian Service Team, Bureau of Land Management (Dec. 12, 2007), available at [https://www.blm.gov/or/programs/nrst/files/tamarisk\\_paper.pdf](https://www.blm.gov/or/programs/nrst/files/tamarisk_paper.pdf).

<sup>4</sup> "Tamarix spp. In: Fire Effects Information System," U.S. Department of Agriculture, Forest Service (Feb. 21, 2019), available at <https://www.fs.fed.us/database/feis/plants/tree/tamspp/all.html>.

is a moral and legal imperative, essential to all of us as Pueblo People, Americans, and citizens of this world during a period of what now appears to be almost inevitable rapid climate change.

**Attachment 1**  
**Impact of the Las Conchas Fire on the Santa Clara Watershed**



**Attachment 2**  
**Potential Flood Risk Zone to Santa Clara for a Ten-Year Event**

