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AMERICA'S NUCLEAR PAST: EXAMINING THE EFFECTS OF RADIATION IN INDIAN COUNTRY

FIELD HEARING

BEFORE THE

COMMITTEE ON INDIAN AFFAIRS
UNITED STATES SENATE

ONE HUNDRED SIXTEENTH CONGRESS

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AMERICA'S NUCLEAR PAST: EXAMINING THE EFFECTS OF RADIATION IN INDIAN COUNTRY

MONDAY, OCTOBER 7, 2019

U.S. SENATE,
COMMITTEE ON INDIAN AFFAIRS,
Albuquerque, NM.

The Committee met, pursuant to notice, at 10:45 a.m. at the Southwestern Indian Polytechnic Institute (SIPI) Auditorium, Hon. Tom Udall, Vice Chairman of the Committee, presiding.

OPENING STATEMENT OF HON. TOM UDALL, U.S. SENATOR FROM NEW MEXICO

Senator UDALL. Good morning. Good morning, everyone. Good morning. Before we start the formal hearing, I would ask Governor Zuni to please come up here and give a prayer for us. Governor Zuni is with Isleta Pueblo.

Mr. ZUNI. Good morning.

[Prayer.]

Senator UDALL. Governor Zuni, thank you very much for that prayer. It seems like you're everyplace. I was just with you two days ago, recognizing veterans down at Isleta Pueblo.

So with that, let me call this hearing to order. Good morning, and welcome to Indian Country. I'm Tom Udall, and as the Vice Chairman of the Senate Committee on Indian Affairs, it's my pleasure to chair today's hearing in my home state of New Mexico. I look forward to a good discussion.

But before we begin, let me cover a few housekeeping items. Today's hearing is an official Senate Committee hearing on the Senate Indian Affairs. It's a field hearing. The Committee will hear testimony from two panels of witnesses, and Members of Congress will ask questions of those witnesses.

As an official Committee business meeting, the format for today's hearing is the same as the format we use for hearings in Washington. It's not a town hall, for example, where folks can speak out from the audience and ask questions. So while we are here to take testimony from our invited witnesses, anyone is welcome to submit written testimony that will be made part of the record for these proceedings. I invite you to e-mail your written submissions to *testimony@Indian.Senate.gov.* That's *testimony@Indian.Senate.gov.* The official record will remain open for two weeks, until October 21st.

Also, please feel free to talk to my staff or Chairman Hoeven's staff after the hearing with any questions. They are seated behind me and around the auditorium.

And I'd like to thank the witnesses for being here, and for Congresswoman Deb Haaland and Congressman Ben Ray Luján for joining us today. Both members are champions for their districts, for New Mexico, and for all of Indian Country. Thank you, Deb and Ben Ray, for being here.

I also want to acknowledge New Mexico State Representative Harry Garcia, who represents the area where much of today's discussion takesplace, and is here today on behalf of his constituents.

Congressman O'Halleran of Arizona, our bordering district over there, also has sent staff to observe today. Welcome to Congressman O'Halleran's staff.

And finally, a special thanks to our host, to the Southwest Indian Polytechnic Institute for hosting us in their wonderful facilities, and for SIPI staff for working with us to pull together this hearing. I believe I talked to her a minute ago. President Allison is here in the audience.

Today's hearing, entitled "America's Nuclear Past: Examining the Effects of Radiation in Indian Country," is an opportunity for us to reflect on the unique history and legacy of the atomic age in Indian Country. Uranium mining played a key role in our country's development of its nuclear arsenal during the Cold War. Much of that mining took place in Indian Country here in New Mexico, Arizona, Utah, and across the West, exposing uranium mine workers to toxic levels of radiation in the process.

My father, Stewart Udall, and I brought the stories of deceased Navajo uranium miners to light and sued on their behalf and their widows' forfair compensation from the federal government. In addition to the Navajo miners, countless others were unknowingly exposed to radiation, sacrificing their health and even their lives to the Cold War effort. Many of these downwinders, miners, and millers have long since passed. Others are still living with the effects of uranium contamination decades after the mining ceased. So I am working hard in Congress for legislation that would provide just treatment to victims of radiation exposure through amendments to the Radiation Exposure Compensation Act.

Today's hearing is about understanding the past and remedying past wrongs. It is also a call to action for the present and future. Native Americans, in particular, have been disproportionately impacted by nuclear weapons development, testing, and uranium ore mining. For instance, Eight Northern Pueblos sit at the foothills of the Los Alamos National Laboratory. For generations, tribal members have worked at the Labs during the development of the first atomic bomb and to this day. Being in close proximity to highly toxic and radioactive materials has led many to experience serious health conditions linked to radiation exposure. And during the testing atTrinity, in southern New Mexico, and the Nevada Test Site, many tribal nations including the Mescalero Apache, Navajo, and Hopi were downwind of nuclear fallout, exposing their citizens, livestock, water, and food supply to dangerous radiation with little or no warning. Cancer, respiratory illness, and many other health problems soon followed and continue to this day.

While these stories are tragic and must be told, I should acknowledge that the federal government has made some progress to make amends. Federal compensation laws like the Radiation Exposure Compensation Act and the Energy Employees Occupational Illness Compensation Program Act were passed and have been making payments and working with victims. Federal agencies like the Department of Energy Office of Legacy Management were established to clean up and maintain abandoned uranium mines and sites.

However, much work remains. Thousands of abandoned uranium mines dot the western landscape, hundreds on the Navajo Nation alone, continuing to expose families to the ill effects of radiation, including kidney failure and cancer, conditions linked to uranium contamination. New research fromthe Centers for Disease Control report uranium in babies born even today.

I vow to continue to fight for the Cold War victims of radiation exposure. I will continue to push my legislation to amend RECA to include post 1971 miners and the Trinity downwinders, and to ensure that the federal government lives up to its legal and fiduciary obligations to clean up and properly manage the abandoned mines and sites, to live up to its trust and treaty obligations to tribes, which is why we are holding this hearing today.

I want to ensure accountability when it comes to cleanup and hear directly from the administration on what it is doing to address the legacy of uranium mining in Indian Country, and to hear from tribal leaders and stakeholders whose constituencies have been impacted.

I'll conclude my opening statement by simply acknowledging how personal this issue is to me. I already mentioned that my father and I first began working with the widows of Navajo uranium miners in 1977, to fight for justice and government accountability. We sued the federal government on behalf of those widows to get the benefits theydeserved for the preventible deaths of their husbands working in the mines and for their years of suffering. The money would never make up for their loss, but it was the least we could do. We fought against the federal government's king-can-do-no-wrong ideology of sovereign immunity under the guise of national security, and reminded the Courts that the federal government has a trust and treaty obligation to Native Americans recognized by the Supreme Court.

Well, we lost in the Supreme Court, but we persevered and were able to make some progress with respect to RECA. And we will continue to persevere. I will keep up the Udall family fight for justice for America's Cold War victims, and I look forward to today's testimony.

Again, thank you to the witnesses for being here. And now, we will have opening statements by both Congressman Luján and Congresswoman Deb Haaland. And then we will proceed with our witnesses.

STATEMENT OF HON. BEN RAY LUJAN,
U.S. REPRESENTATIVE FROM NEW MEXICO

Mr. LUJÁN. Mr. Chairman, thank you so very much, Senator Udall, for the work that you have done, the work that former Sec-

retary of the Department of Interior Stewart Udall has done, notjust in fighting to represent victims and families, but raising awareness to move legislation forward with the adoption of the Radiation Exposure Compensation Act. The work that we continue to do, to build on the progress that was made by Senator Udall and Secretary Udall is critically important, which has culminated in the introduction of amendments to the Radiation Exposure Compensation Act.

It's also an honor to work side by side with Congresswoman Deb Haaland, who has been a tireless champion for New Mexicans.

My gratitude to everybody who is here today. I see family members, I see uranium mine workers, I see many friends that I have had the honor of getting to know throughout the years, who have traveled by car to our nation's capital because they're not able to fly, because of what that pressure would do to their lungs with the cancers that they're currently fighting.

I look forward to hearing the testimony from any of our leaders, as well, and President Nez and Governor Chavarria. I see Council Delegate Amber Crotty with the work that she has always done in making sure that constituents are always listenedto.

And finally, I want to thank the witnesses and the audience members for joining in this critical discussion. We're here to give voice to Hispanic communities, to Native American people of the Jemez Plateau, the blue collar workers of the Grants uranium belt, and the families whose lives were upended by the Trinity test. We are here, as well, to showcase the importance of the United States Government taking responsibility for the anguish it has caused these lands and families that call them home.

Seventy years ago, rural New Mexico became ground zero for the detonation of the first nuclear bomb. This marked the beginning of sickness and suffering for generations of people in the Tularosa Basin and other communities that sacrificed for our collective national security. Seventy years, and the federal government has failed to do enough to recognize, to fully compensate, even though there's progress that has been made, or protect those impacted by the Trinity test.

They're not alone. In fact, from 1945 to 1962, the United States conducted nearly 200 atmospheric nuclear weapon tests while building the1 arsenal that became the cornerstone of our nation's Cold War security strategy. The mining and processing of uranium ore was essential to the development of those weapons and was conducted by tens of thousands of workers throughout New Mexico alone.

And it wasn't just the workers. It was the families that were waiting for them when they got home, where those tailings were still on their jeans or their jackets. Families that were taught that even though that yellowcake would be in liquid form, it would stay on their clothing, but they were told it was easier to clean when it dried. So wear it home wet, let it dry, and then it would be shaken. Families would inhale those tailings.

So we see the legacy of the challenge that many families continue to be plagued by. In 1990 Congress did pass the Radiation Exposure Compensation Act. Again, I thank Senator Udall and Secretary Udall for their work. However, we have since learned

that there are many more individuals who are sick, who are dying, because they worked in the uranium industry, lived near a mining operation, or lived downwind from a test site.

We also know that tribal communities were particularly affected. That's why I have joined with Senator Udall and the other members of the New Mexico delegation to introduce the amendments to the Radiation Exposure Compensation Act. The bipartisan legislation is a matter of fairness and justice. I have heard from Navajo women elders who have made the journey to our nation's capital only to ask committees and panels, "Are you waiting for us all to die, so that the problem goes away?"

Last year President Jonathan Nez testified before the Senate Judiciary Committee. He said, quote, "To deliver the message that the Navajo Nation downwinders and uranium workers stand with the many others who are here today who deserve fair compensation and healthcare for the risks and sacrifices that their families have made," and he is right. This includes Leslie Begay, a veteran who, because he was unable to fly, has had to drive across our country. Larry King, a uranium worker who witnessed the radioactive spill at Church Rock mine, and many other miners and families who continue to suffer.

We'll hear from our leaders today, and we're going to hear these important stories that have to be told so we can act, including one from Henry Herrera, who described that it was morning and the ash began to fall on the laundry his mother had hung outside their home in Tularosa. He looked up to describe a large gray ball of smoke moving higher and higher as the wind blew it toward Capitan, Ruidoso, Hondo, and Roswell.

Henry and his two sisters are cancer survivors, but they had to bury their brother and their niece and their nephew because of the disease. This is just one of those stories.

And I'm reminded as I close, Senator, that according to the Centers for Disease Control and Prevention, New Mexico residents were neither warned before the 1944 Trinity blast, informed of health hazards, or afterwards, nor evacuated before, during, or after the test.

Church Rock still needs to be cleaned. Abandoned mines still need to be identified and cleaned. And families that are dying from cancer need to be helped. And here's what it comes down to: Exposure rates in public areas from the world's first nuclear explosion were measured at levels 10,000 times higher than currently allowed.

I thank you again, Mr. Chairman. I thank the Committee for making today possible, and the witnesses for providing testimony.

Senator UDALL. Thank you very much, Congressman Luján.

And I now recognize Congresswoman Haaland for her opening statement.

STATEMENT OF HON. DEB HAALAND,
U.S. REPRESENTATIVE FROM NEW MEXICO

Ms. HAALAND. Thank you very much, Chairman. Thank you to our witnesses, and thank you to the audience members.

I'd like to acknowledge that we have Laguna and Acoma Pueblo members here in the audience. I was proud to participate in the

Southwest Uranium Miners Coalition Post 71 Symposium on Saturday, and I thank you all so much for driving the distance to be here today. And we appreciate all of you being here.

Thank you, Chairman Udall, for inviting me, for holding this hearing, and Assistant Speaker, of course, I'm very proud to serve with you. Thank you for your service to all of our New Mexicans.

Good morning, and thank you all for your attendance. I also appreciate SIPI and President Allison for having us today and their hospitality, for putting on this lovely event. We all acknowledge our presence of pueblo lands today, and I respectfully ask you to keep this in mind as we proceed. May the dialogue be truthful, sincere, genuine, and may we all convene in good faith with each other.

Everyone in this auditorium probably knows someone who has been affected by the dangers of working in a uranium mine. I certainly do. A relative of mine lost his hearing in one ear due to working in the mines, and I know people who have experienced worse.

From 1950 to 1980 the Pueblo of Laguna was home to the world's largest open pit uranium mine in the world. Prolonged exposure to isotopes of uranium causes kidney failure, lung cancer, and respiratory problems. Other contaminants associated with the mining of uranium ore include arsenic, barium, chromium, cobalt, copper, lead, manganese, vanadium, selenium, and zinc.

I recently met with downwinders from Tularosa, New Mexico, in my office who produced a full page of Trinity site victims who were never given the opportunity to protect themselves. At the Jackpile Mine, these poisons were dumped in an open pit without any lining to protect the ground and the groundwater because that was the standard at the time. I know it's difficult for us to comprehend this today. In fact, it's been 45 years since cleanup of the uranium tailings began, and it's still not done. That is a responsibility of the federal government.

The then-new industry pumped cash into the wallets of pueblo workers who previously supported their families by primarily a bartering system. Back then, there were also a patriotic movement to help the war effort and the push toward nuclear energy, and the community welcomed the mining, and members enlisted to serve in the military.

The trade-off was stark. Local work with a steady paycheck later developed into a high incidence of substance abuse, broken families, and cancer and other illnesses, a tremendous cost to Laguna and communities all over New Mexico, each person affected, their family and their tribes. The health costs alone are devastating to those with cancer, even those who have health insurance. 25 percent of cancer-inflicted mine workers will deplete their savings to pay for their cancer treatments and associated costs, and some will go bankrupt.

As a member of Congress, I'm standing up by supporting legislation that helps victims. The Radiation Exposure Compensation Act was the first step in recognizing some of the harmful effects of nuclear energy. I'm a proud co-sponsor of Assistant Speaker Ben Ray Luján's Radiation Exposure Compensation Act amendments in 2019, HR–3783, and I know Senator Udall is an original co-sponsor of the Senate version, S–947. These bills expand the scope of

RECA's reach so we can ensure that all those who were harmed by exposure receive what they are duly owed.

In addition to the monetary aspects of the act, it serves to highlight the ever-pressing problem of radiation exposure. Our miners, mill workers, and ore transporters are facing potentially hazardous conditions every single day, and we need to be proactive about managing the risks. Additionally, innocent bystanders have also reaped these horrific hazards. It forces us to own up to the known detriments associated with the nuclear forward society. The RECA amendments act holds our government accountable and implores us to not turn our back on those who are affected by their work environment. Instead, we applaud their hard labor and take responsibility for the ill effects of a job that we asked them to do.

Our workers deserve recognition and protections for the dedication they put into these dangerous jobs. In addition, the House National Defense Authorization Act includes an amendment by Assistant Speaker Luján to secure a congressional apology to New Mexicans and other downwinders for the actions of our government.

As a member of the conference committee negotiating the final NDAA, I am working hard for this provision and for the downwinders.

Before closing, Chairman, I would just like to say that the House Democrats and also you are pushing legislation, moving legislation forward in fighting climate change, protecting our public lands from gas and oil drilling and fossil fuel extraction, holding the United States accountable for its trust responsibilities to Indian tribes, and moving our country toward 100 percent renewable energy because we have this gigantic nuclear reactor in the sky. It's called the sun, and we get over 350 days of sun per year right here in New Mexico, and we should be moving toward clean energy. We have had enough of this energy that makes people sick and gives people cancer and scars our land forever. It's time to move our country forward with clean energy to make sure that we can protect every single worker into the future.

Thank you for inviting me, and I should say one last thing, Chairman. We were told earlier that so far, RECA has paid out $2.3 billion in compensation to workers and/or their families. And that sounds like a lot of money; right? But look. $8 billion President Trump was trying to take from the military to pay for a wall that will do nothing to move our country forward, a wall on the southern border, and billions to farmers, billions, more than $2.3 billion, billions to farmers for his failed tariff policies. And I am here to say that it's time for us to make sure that our country is putting our priorities straight and the health and safety of our citizens should be the top priority, and I promise you that every single one of us up here on this stage today pledge to do that for our country, for our state, and for everyone.

Thank you for inviting me, Senator Udall. I'm eager to learn from you.

Senator UDALL. Congresswoman Haaland, thank you very much for that opening, and I want to thank our witnesses that are with us here today. I know many of you have traveled long distances, andwe very much appreciate you being with us today.

We have here today Mr. David Gray, Deputy Regional Administrator at Region 6 of the Environmental Protection Agency. Mr. Peter O'Konski, Deputy Director, Office of Legacy Management of the Department of Energy. Dr. Loretta Christensen, Chief Medical Officer for the Navajo Area of the Indian Health Service.

And I want to remind the witnesses that your full written testimony will be made a part of the official hearing. Please keep your statements to five minutes, so that we may have some time for questions, and look forward to hear your testimony.

Why don't we begin with Mr. Gray, and proceed across to your left there. Thank you.

STATEMENT OF DAVID GRAY, DEPUTY REGIONAL ADMINISTRATOR, U.S. ENVIRONMENTAL PROTECTION AGENCY

Mr. GRAY. Thank you. Good morning, Vice Chairman Udall, members and distinguished guests. I'm David Gray. I'm the Deputy Regional Administrator for EPA Region 6, which covers Arkansas, Louisiana, Oklahoma, New Mexico, and 66 tribal nations. Thank you for the opportunity to testify today.

EPA has a long history of working with tribal partners to achieve our mission. The 1984 EPA Indian Policy was the first formal Indian Policy adopted by a federal agency, specifying how EPA would interact with tribal government and consider tribal interests. Every single EPA office, region, works with tribes whether it be through consultation and coordination, providing technical assistance and compliance assistance, administrating grants, or providing for direct implementation. EPA has been working with our tribal partners, particularly in Region 6, Region 8, and Region 9, to address historical uranium mining within Indian Country. To accomplish this mission, EPA has developed both a Navajo Nation five-year plan and a Grants mineral belt five-year plan. These two five-year plans were the first coordinated approaches by federal agencies and our tribal partners to outline a strategy to gain a better understanding of the scope of the problem and to address the areas with greatest risk.

While the plans address separate areas, the objectives in the plans are similar. I'd like to make a few highlights. EPA, Navajo Nation, and partner agencies have tested over 240 unregulated rural Navajo Nation water sources, which has greatly exceeded our goal of testing 70 sources. Of the 240 water sources tested, 29 exceeded drinking water standards and three wells were shut down. IHS, EPA, HUD, have provided approximately $200 million for water infrastructure processes, providing for access for piped water to over 3,800 homes.

The groundwater investigation at San Mateo Creek Basin showed aquifers were impacted by contaminated mine water discharge; five drinking water wells were found to be contaminated. In this case, EPA installed filter systems at four of the wells and provided a new well for the fifth.

EPA is in negotiations with several responsible parties regarding the remediation of San Mateo site, and EPA recently added the site to the administrator's emphasis list for Superfund site cleanups.

EPA, with the support of Laguna Pueblo, added Jackpile Mine to the national priorities list, and are now overseeing Atlantic Richfield's investigation at the site. The Pueblo's work is reimbursed through a management assistant grant fromEPA.

By the end of 2018, EPA entered into enforcement agreements and settlements valued at over $1.7 billion covering the investigation and cleanup of over 200 abandoned uranium mines on or near Navajo Nation. As part of the Tronox settlement, $900 million was received to address 54 mines. 34 of these mines are located on Navajo trust land, 20 mines are located here in New Mexico. EPA has also received approximately $89 million for the Quivira site on Navajo allotment lands. Approximately $45 million of the settlement goes directly to Navajo Nation for the Shiprock uranium mine site.

In June of 2019, EPA completed a prioritization methodology that relies on both removal site evaluations and risk factors. In August of 2019, EPA released removal site evaluations that describe the nature and extent of contamination for all the Navajo area uranium mines listed in the Tronox settlement. Once complete, our engineering and evaluation cost analysis reports will be provided for public comment before the selection of any remedies.

EPA Region 6 will release its third five-year plan for the Grants mineral belt by the end of 2020. Similarly, Region 9 and its partner agencies are working on a ten-year plan for the Navajo Nation, and we anticipate finalizing that plan early in 2020. These plans focus on the completing of negotiations and investigations of groundwater and surface water at San Mateo Creek, the completing and investigation and cleanup of over 200 abandoned uranium mines in Navajo Nation for which EPA has secured enforcement agreements and settlements, the conducting of water studies on Navajo Nation to assess if and to what extent uranium mines have impacted surface and groundwater; the continuing of time-critical response and actions necessary to prevent intermittent substantial endangerment; the continuing to conduct radiological assessments of structures; the continuing to look for additional sources of funding for assessments of mines that are not presently part of enforcement actions or settlement agreements; the continuing to involve community and tribal leaders in mine assessment, the cleanup process, and assure that EPA understands community concerns and considers community goals in its decisionmaking; and the coordinating closely with tribal partners to ensure that tribal governments are consulted and that tribal ecological knowledge is incorporated into our decisionmaking.

EPA remains firmly committed to protecting public health and the environment in collaboration with our federal partners and our state agencies and, most importantly, with our tribal partners. Our collaborative planning process has led to tangible results on the ground, and we are looking forward to future progress.

Thank you, and I'm happy to answer your questions.

[The prepared statement of Mr. Gray follows:]

PREPARED STATEMENT OF DAVID GRAY, DEPUTY REGIONAL ADMINISTRATOR, U.S. ENVIRONMENTAL PROTECTION AGENCY

Good morning Chairman Hoeven, Vice Chairman Udall, and Members of the Senate Committee on Indian Affairs. I am David Gray, Deputy Regional Administrator for U.S. Environmental Protection Agency (EPA) Region 6, which covers Arkansas, Louisiana, Oklahoma, New Mexico, Texas, and 66 Tribal Nations. Thank you for the opportunity to testify at this field hearing on the topic of "America's Nuclear Past: Examining the Effects of Radiation in Indian Country."

EPA's mission is to protect human health and the environment for all Americans, including American Indians and Alaska Natives across the United States.

EPA has a long history of working with our tribal partners to achieve our mission. The 1984 EPA Policy for the Administration of Environmental Programs on Indian Reservations (EPA Indian Policy)[1] is the foundational document for EPA's effective tribal program. It was the first formal Indian policy adopted by a federal agency specifying how EPA would interact with tribal governments and consider tribal interest.

Most of EPA's core statutes allow for tribes to apply to EPA for the authority to implement environmental programs within their jurisdictions. Approval of such applications by EPA is in line with multiple principles of the EPA Indian Policy—most notably Principle 2: "The Agency will recognize tribal governments as the primary parties for setting standards, making environmental policy decisions and managing programs for reservations..." and Principle 3: "The Agency will take affirmative steps to encourage and assist tribes in assuming regulatory and program management responsibilities for reservation lands." In April of this year, the EPA Administrator reaffirmed the EPA Indian Policy, reinforcing the importance of these principles.

EPA's 2018-2022 Strategic Plan[2] highlights our commitment to supporting more effective partnerships to achieve tangible environmental results in Indian country. Furthermore, EPA emphasizes how important tribal participation is to our mission by approving tribal program authority under most EPA statutes and allowing tribes to implement approved programs in Indian country.

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[1] https://www.epa.gov/tribal/epa-policy-administration-environmental-programs-indian-reservations-1984-indian-policy

[2] https://www.epa.gov/planandbudget/fy-2018-2022-epa-strategic-plan

Every single EPA office and region works with tribes—whether it be consultation and coordination pursuant to the EPA Policy on Consultation and Coordination with Indian Tribes,[3] providing technical and compliance assistance, administering grants, or conducting EPA direct implementation activities in Indian country.

In regard to uranium mining, EPA has been working with tribal partners, primarily in Regions 6, 8, and 9, to address historical uranium mining within Indian country and its effects on Native Americans. EPA is using the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to address uranium related impacts.

To accomplish our mission, EPA has partnered with several agencies, including the Bureau of Indian Affairs (BIA), the Nuclear Regulatory Commission (NRC), the Department of Energy (DOE), and the Indian Health Service (IHS), in consultation with the Navajo Nation, to develop two coordinated Navajo Nation Five-Year Plans to address uranium contamination located on Navajo Nation and Hopi Nation land. EPA also created a Grants Mineral Belt Five-Year Plan to address uranium mining contamination in New Mexico along with the Acoma and Laguna Pueblos, the New Mexico Environment Department (NMED), the New Mexico Energy, Minerals, and Natural Resources Department (EMNRD), the New Mexico Department of Health, and other federal agencies.

These Five-Year Plans (collectively, the Plans) were the first coordinated approach by the federal agencies and our tribal partners to outline a strategy to gain a better understanding of the scope of the problem and to address the areas with the greatest risk. While the Plans address separate areas, the objectives in the Plans are similar and share the common goal of addressing contamination from former uranium mines.

Assessment of Water Supply Sources for Contamination

EPA, Navajo Nation, and partner agencies tested 240 unregulated rural Navajo Nation water sources for unsafe levels of radiation or radionuclides, which greatly exceeded our goal of testing 70 sources. Of the 240 water sources tested, 29 sources exceeded the drinking water standard for uranium or radionuclides. With the support of Navajo Nation Chapter officials, three wells were shut down. Working together, EPA, Navajo Nation EPA, the Dine Network for Environmental Health (DiNEH) Project, the Centers for Disease Control and Prevention (CDC), and the University of New Mexico conducted a comprehensive public outreach campaign including meeting with Navajo Nation Chapter officials, posting warning signs regarding health risks at those 29 water sources, printing announcements in the Navajo Times, and broadcasting announcements on local radio stations.

IHS, EPA, and the U.S. Department of Housing and Urban Development (HUD) have partnered to provide approximately $200 million for water infrastructure projects. This effort has provided access to piped water for 3,809 homes from 2008 to 2018.

[3] https://www.epa.gov/tribal/epa-policy-consultation-and-coordination-indian-tribes

San Mateo Creek Basin

EPA, with support of NMED, has been investigating the San Mateo Creek Basin site. NMED conducted preliminary assessment in site inspections in 2008, 2010, and 2011. This work led NMED to issue a Public Health Advisory for private wells within the San Mateo Creek Basin.

EPA completed its own two-phased groundwater investigation of the San Mateo Creek Basin in 2018. This investigation showed aquifers have been impacted by contaminated mine discharge water. Five private drinking water wells were identified during these investigations. EPA installed filtration systems on four of the wells and provided a new well to the fifth home. EPA's groundwater report provides stakeholders, including the Navajo Nation, preliminary information regarding directional flow of contaminated waters and future use of the aquifers.

Currently, EPA is in negotiations with several potentially responsible parties to conduct a remedial investigation/feasibility study of the San Mateo Creek Basin site. EPA recently added the site to the Administrator's Superfund Emphasis List; thereby showing this site is a priority for EPA, and EPA is committed to reaching an agreement with the potentially responsible parties in a timely manner, if possible, or taking other actions as necessary and appropriate to ensure site remediation. Sites are added to the Administrator's Superfund Emphasis List when direct engagement from the Administrator can lead to progress at the site.

Assessment and Cleanup of Abandoned Uranium Mine (AUM) Sites

According to DOE's Defense-Related Uranium Mines Report to Congress (August 2014),[4] New Mexico produced more uranium ore for atomic energy defense-related activities of the U.S. than any other state from 1947 to 1970. Assessing the impacts of these mines within New Mexico, other states, and tribal lands has been an important objective of EPA and our partners.

Jackpile-Paguate Uranium Mine Superfund Site

The Jackpile-Paguate Mine is illustrative of the impacts legacy uranium mining and milling have in Indian Country. The mine was one of the world's largest open-pit uranium mines, and over 2,500 acres were disturbed by mining activities from 1952 to 1982. This disturbance originally included three open pits, 32 waste dumps, 23 protore (sub-grade ore) stockpiles, and 66 acres of buildings and roads. During the 30 years of mining, about 400 million tons of rock were moved within the mine area and about 25 million tons of uranium ore were transported to the Bluewater Mill.

EPA, with the support of the Pueblo of Laguna, added the Jackpile-Paguate Mine site to the National Priorities List (NPL) in 2013. Now, EPA and the Pueblo of Laguna Environment Department are partnering to oversee Atlantic Richfield's investigation at the site. Atlantic Richfield is conducting this investigation to determine the nature and extent of the contamination and identify potential surface and groundwater cleanup alternatives.

[4] https://www.energy.gov/lm/downloads/defense-related-uranium-mines-report-congress-august-2014

The Pueblo of Laguna's work is funded through a management assistance grant from EPA to help facilitate the technical capacity of the Pueblo of Laguna's Environment Department to conduct the tribal oversight. EPA is also working with the Pueblo of Laguna to develop outreach activities and updates, to keep the community better informed and educated about ongoing investigations and other site activities.

Navajo Abandoned Uranium Mines Program

From 2008 through 2012, EPA and Navajo Nation EPA conducted screening level assessments of 523 AUMs on or near Navajo Nation. In consultation with Navajo Nation, EPA developed criteria to prioritize work at AUMs based on the level of radiation and proximity to homes and sensitive environments. This screening level assessment led EPA to focus initial efforts on conducting detailed assessments referred to as Removal Site Evaluations at 46 mine sites (i.e., priority mine sites).

By the end of 2018, EPA had entered into enforcement agreements and settlements valued at over $1.7 billion, covering the investigation and cleanup at over 200 of the 523 AUMs on or near the Navajo Nation. This included 43 of the 46 priority sites in EPA Region 9. To date, 40 Removal Site Investigations have been completed at priority mine sites.

Tronox Navajo Area Uranium Mines

EPA is working closely with the Navajo Nation and New Mexico in implementing the Tronox Navajo Area Uranium Mines program. The Tronox Bankruptcy Settlement provided funding to assess and cleanup mines ("Navajo Area Uranium Mines") on or near the Navajo Nation. Fifty-four mines received over $900 million. Twenty mines under the settlement are located in New Mexico. EPA also received approximately $89 million for CERCLA response actions at the Quivira Mine Site, located on Navajo allotment land. The remaining 34 mines are located on Navajo Trust Land. The Tronox settlement mines are a subset of the $1.7 billion recovered. The funding is to be used for CERCLA responses at the Navajo Area Uranium Mines, which includes the Ambrosia Lake mining sub-district within the Grants Mining District in northwestern New Mexico. The settlement also provides approximately $45 million directly to the Navajo Nation in connection with the Shiprock uranium mill site.

A stakeholder group, comprised of EPA Region 6, EPA Region 9, New Mexico environmental and mining agencies, and Navajo Nation, formed to facilitate CERCLA site investigation and response work through communication, cooperation, and understanding of stakeholders with different cultural backgrounds. For example, the group is currently developing a mutual understanding of the role that traditional ecological knowledge has in the CERCLA process for these sites.

In August 2018, EPA's Inspector General released a report[5] that concluded EPA needs to finish prioritization and resource allocation methodologies for the Tronox Navajo Area Uranium Mines. Specifically, the Inspector General recommended EPA Region 6 and EPA Region 9 (1)

[5] https://www.epa.gov/sites/production/files/2018-08/documents/_epaoig_20180822-18-p-0233.pdf

fully develop and implement prioritization and resource allocation methodologies, and (2) complete the necessary removal site evaluations and engineering evaluations/cost analyses.

In June 2019, EPA fulfilled the first recommendation by completing the prioritization methodology. The Tronox prioritization methodology uses data collected during the removal site evaluation phase to score five risk factors: (1) radiation level above background; (2) potential migration to surface water; (3) potential impact to groundwater; (4) land-use scenario; and (5) accessibility. Once the five factors are scored, the mines will be grouped as high-risk, medium-risk, or low-risk to help guide cleanup decisions. Other factors, such as cost and feasibility of cleanup alternatives that are evaluated during the Engineering Evaluation/Cost Analysis phase, will also be included in the decision-making process. It is important to note that CERCLA is an iterative process where general information and environmental data is constantly being collected. The scoring factors may be refined as new information and data is reviewed to better define potential risks.

In August 2019, EPA completed the second commitment by releasing the Removal Site Evaluations that describe the nature and extent of the contamination for all of the Navajo Area Uranium Mines listed in the Tronox settlement. Removal Site Evaluations report out the findings of field work investigating contamination for each legacy mine site or groupings of sites where surface contamination is commingled.

Completing all the Removal Site Evaluations was a significant accomplishment due to the complexity of the field work. The mines vary in size and are located across various types of geographic terrain with varying degrees of geographic accessibility. EPA is using this site-specific information to evaluate and determine the potential costs for cleanup alternatives tailored to the conditions for each mine site or area of commingled contamination in the next step of the CERCLA process, the Engineering Evaluation and Cost Analysis. Once complete, the Engineering Evaluation and Cost Analysis Reports will be provided for public comment prior to selecting appropriate responses where needed for the mine sites. EPA will work closely with the Navajo Nation, New Mexico, stakeholders and impacted communities to obtain their comments on any potential cleanup proposal.

Assessment and Cleanup of AUM Sites

EPA, working with our tribal, state, and federal partners, has made additional strides in assessing and cleaning up AUMs. These accomplishments include:

- EPA and New Mexico identified 97 priority mines on private and federally managed land. Utilizing EPA's Airborne Spectral Photometric Environmental Collection Technology (ASPECT), EPA was able to identify mines with the highest exposure levels of radionuclides to help focus response resources.

- In 2011, EPA issued a cleanup plan for the removal of approximately one million cubic yards (CY) of mine waste from the North East Church Rock (NECR) mine site following extensive consultation with Navajo Nation and nearby communities. Concurrently, EPA and the responsible party conducted two large-scale interim cleanup actions to remove

130,000 CY of contaminated soil and addressed all known soil contamination remaining on the reservation from the adjacent NECR mine site. In 2018, United Nuclear Corporation/General Electric (UNC/GE) completed, and EPA approved, a design to place approximately one million CY of mine waste in a permanent repository on the former UNC Mill site within the State of New Mexico. Following completion of the design, UNC/GE submitted a license amendment request to NRC to allow mine waste from the NECR mine to be added to the existing disposal cell. NRC maintains regulatory oversight of the mill and must approve UNC/GE's request for a source materials license amendment. If NRC approves the license amendment request, UNC/GE would enter a consent decree with EPA and begin construction of the UNC waste repository.

Working with Communities, Federal Partners, and Local, State, and Tribal Governments

EPA will continue to work with our communities, tribal partners, and other stakeholders in assessing the impacts of uranium mining on Indian Country and other impacted regions. EPA Region 6 will release its third Five-Year Plan by the end of 2020. This Plan will be based on extensive discussions with our tribal partners, communities within the Grants Mining District, and representatives of state and federal agencies.

Similarly, EPA Region 9 and its partner agencies are currently developing a Ten-Year Plan that builds on the work of the 2008-2012 Five-Year Plan, the 2014-2018 Five-Year Plan, and the Tronox Addendum to the 2014-2018 Five-Year Plan. This Ten-Year Plan will make adjustments based on information gained during the previous Five-Year Plans and identify next steps needed to address the human health and the environmental risks associated with the legacy of uranium mining and milling on the Navajo Nation. We anticipate finalizing the Plan in early 2020.

These regional Plans will largely focus on:

- Completing negotiations with potentially responsible parties to conduct investigations of the groundwater and surface contamination in the San Mateo Creek Basin;
- Completing the investigation and cleanup of the over 200 AUMs in Navajo Nation for which EPA has secured funding through enforcement agreements and settlements;
- Conducting water studies in the Navajo Nation to assess if and to what extent AUMs have impacted surface water and/or groundwater;
- Continuing to conduct time-critical removal actions at sites found to pose an imminent and substantial endangerment to human health and the environment;
- Continuing to conduct radiological assessments at structures that meet program criteria to determine if there is a potential health risk to residents and implementing removal actions where contaminated structures and surrounding soils are found to pose a risk to residents;

- Continuing to look for additional sources of funding to initiate detailed assessments at the AUMs that are not presently funded through enforcement agreements or settlements. This may include partnering with other federal agencies, as well as pursuing further enforcement actions where viable potentially responsible parties exist;

- Continuing to involve the community and tribal leaders in the mine assessment and cleanup process to ensure that EPA understands community concerns and considers community goals in its decision-making process;

- Continuing to coordinate closely with tribal partners to ensure that tribal governments are consulted and Tribal Ecological Knowledge is incorporated in the CERCLA decision-making process.

Goal: Capacity Building

EPA's goal is to clean up AUMs in the Navajo Nation in a manner that supports capacity building and provides opportunities for Navajo Nation businesses and individuals to participate in the cleanup efforts. EPA has awarded over $10 million in grants to the Navajo EPA since 2008. Moreover, EPA has utilized unique evaluation factors that encourage training and employment opportunities for Navajo Nation businesses and individuals to evaluate responses to contract solicitations. This approach was used in the solicitation for EPA's Response, Assessment and Evaluation Services contract, which has $85 million in capacity and was awarded to Tetra Tech in October 2017. During Tetra Tech's first 18 months of performance, $768,080 in sub-contracting dollars have gone to Navajo Nation firms and 10,084 hours of labor were performed by Navajo Nation/American Indian employees.

Evaluation factors that encourage Navajo Nation capacity building were also used for EPA's Abandoned Mine Response and Construction Services (AMRCS) solicitation. The Request for Proposals (RFP) for the AMRCS solicitation was issued in April 2019 and responses to the solicitation are currently being reviewed. The contract capacity for AMRCS will be $220 million and EPA anticipates making multiple awards to small businesses (i.e., businesses with less than 750 employees).

EPA has also awarded three site-specific contracts for construction/remediation projects to Navajo Nation-owned small businesses for a total of approximately $5.8 million.

Capacity Building and the Quapaw Nation

EPA makes it a priority to work with tribes to ensure their direct involvement in the Superfund process. EPA has provided funding to the Quapaw Nation for over two decades to ensure their direct involvement in the investigation and selection of the remedy at the Tar Creek Superfund site in Oklahoma. This funding has allowed the Quapaw Nation to develop the technical capacity to provide input into decisions being made regarding the site.

Adding to this environmental experience, the Quapaw Nation utilized their construction expertise and applied for a grant to conduct the cleanup. EPA awarded the first-ever Superfund

construction grant to the Quapaw Nation in 2013 and continues to provide over $40 million to date to the Quapaw Nation to conduct cleanup work.

Utilizing this experience, and with the assistance of EPA's Indian Environmental General Assistance Program (GAP), the Quapaw Nation provided peer-to-peer assistance to the Pueblo of Laguna on issues related to developing capacity at the Pueblo that would allow the Pueblo to provide input into decisions being made regarding the Jackpile-Paguate Uranium Mine Superfund site. This included the Quapaw Nation's Environmental Department hosting representatives of the Pueblo on a visit to the Quapaw Nation and the Tar Creek site, as well as a visit by the Quapaw Nation Environmental Department to the Pueblo and the Jackpile-Paguate Uranium Mine site. EPA Region 6 will continue to support this peer-to-peer assistance in fiscal year 2020.

Conclusion

EPA remains firmly committed to protecting public health and the environment for American Indians and Alaska Natives, in collaboration with our federal and state agencies, and most importantly our tribal partners. Our collaborative planning process has led to tangible results on-the-ground and we look forward to our future progress. Thank you, and I am happy to answer any questions you may have.

Senator UDALL. Thank you very much, Mr. Gray.
Please proceed, Mr. O'Konski.

STATEMENT OF PETER O'KONSKI, DEPUTY DIRECTOR, OFFICE OF LEGACY MANAGEMENT, U.S. DEPARTMENT OF ENERGY

Mr. O'KONSKI. Good morning, Vice Chairman Udall, House members, and distinguished panelists. My name is Peter O'Konski, and I am Deputy Director of the Office of Legacy Management at the U.S. Department of Energy. The Office of Legacy Management was established in 2003 to manage DOE's responsibilities for closed and remediated defense nuclear sites.

Recently, we hit a milestone. We now have 100 sites nationwide. From Alaska to Puerto Rico, our sites are as diverse as they are geographically vast. They are located on tribal lands, rural areas, and within urban centers. My office works closely with our state and tribal partners in long-term surveillance and monitoring of these sites.

Today I'd like to just say a few words about our work with the Navajo Nation. Our partnership with the Navajo Nation began more than 20 years ago with the establishment of the Office of Uranium Mill Tailings. In coordination with this office, we maintain sites on Navajo lands in Shiprock, Mexican Hat, Tuba City, and Monument Valley. My office maintains a cooperative agreement with the Navajo Nation and the Hopi Tribe to ensure they have a voice in the decisionmaking process related to these sites.

I am pleased to report we have supported more than a dozen outreach events with the Navajos this year, to include hosting public open houses and site tours. We continue to provide STEM outreach at local schools, and our scientists and engineers support science education at the Navajo Nation's Diné College.

We are a participant in the Navajo Nation's five-year plan. Under the plan, we established a community outreach network to foster agency collaboration on outreach and educational activities cross-agency. Further, we established the Uranium 101 Working

Group, offering seminars providing a clear and layman's discussion on the nature and hazards of uranium.

I know mines are a very important topic, so I would like to say a few words about our work on the Defense-Related Uranium Mines Program. We call that the DRUM Program. The DRUM Program. LM manages the DRUM Program, a partnership between DOE, the federal land management agencies, and the state abandoned mine programs. The DRUM Program is verifying the condition of 2,500 defense-related uranium mines across the nation. Most of these mines are located out here in the western United States on public lands. Most are abandoned.

My office is conducting an inventory and assessment of these mines to validate existing data, document conditions, and identify risks. Reports are being prepared for each mine, summarizing the findings of our investigation. The reports are shared with the respective land management agencies to determine which mines may require further action.

So in conclusion, the Secretary of Energy has committed to meeting the department's Cold War post-closure responsibilities. This includes protection of human health in the environment, fostering access to records and information, beneficial reuse of these properties, and of course, community outreach. For those of us here that are in the long-term stewardship community, we are committed to fair treatment and meaningful involvement of all the partners. We recognize our success is predicated on collaboration and maintaining trust.

I want to thank you for allowing the Department the opportunity to be here at today's field hearing, and I look forward to answering your questions.

[The prepared statement of Mr. O'Konski follows:]

PREPARED STATEMENT OF PETER O'KONSKI, DEPUTY DIRECTOR, OFFICE OF LEGACY MANAGEMENT, U.S. DEPARTMENT OF ENERGY

Good morning Vice Chairman Udall and distinguished members of this Committee. My name is Peter O'Konski and I am the Deputy Director of the Office of Legacy Management (LM) at the U.S. Department of Energy (DOE). LM was established in 2003 to manage DOE's responsibilities associated with the closure of World War II and Cold War era sites. LM takes responsibility for sites after DOE's Office of Environmental Management, U.S. Army Corps of Engineers, and other environmental cleanup work is completed. The federal government used these sites to research, produce, and test nuclear weapons and conduct other scientific and engineering research. The operations conducted in this vast network of industrial facilities left a legacy of radioactive and chemical waste, environmental contamination, and hazardous facilities across the country and tribal lands.

Introduction

LM performs long-term surveillance and maintenance activities at nearly 100 sites nationwide. From Alaska to Puerto Rico, our sites are as diverse as they are geographically vast, being located on tribal lands, in rural settings, or within urban centers. LM works closely with Native American and Alaska Native stakeholders who are partners in our commitment to long-term surveillance and monitoring of legacy sites. We routinely collaborate on site inspections and environmental monitoring, document reviews, natural resource management, and community outreach, and frequently engage with tribal partners.

Work With The Navajo Nation

There are four LM sites on the Navajo Nation: Shiprock, New Mexico; Monument Valley, Arizona; Mexican Hat, Utah; and Tuba City, Arizona. LM monitors the three disposal cells (Shiprock, Mexican Hat, and Tuba City) constructed to contain the uranium mill tailings; actively treats or monitors groundwater contamination; and

is also responsible for one former processing site, Monument Valley. DOE established the Office of Uranium Mill Tailings Remedial Action on the Navajo Nation more than 20 years ago to oversee long-term stewardship activities and to assist in managing the sites.

Through a cooperative agreement administered by DOE, LM coordinates closely with the Navajo Nation Abandoned Mine Lands/Uranium Mill Tailing Remedial Action Program (AML/UMTRA) Department and the Hopi Office of Mining and Mineral Resources to inform tribal government leadership and communities about LM activities and provide opportunities for ongoing, two-way communication regarding site inspections, document review, and community outreach initiatives. The agreement provides financial support for tribal engagement in long-term stewardship activities and oversight, ensuring that tribal counterparts have a voice in LM's decision-making process.

LM has supported more than a dozen outreach events on the Navajo Nation this year, including hosting public open houses and site tours on a regular basis. LM is also committed to providing STEM (Science, Technology, Engineering & Mathematics) outreach at local schools to introduce students to topics such as radon, radiation, and the legacy of uranium mining and milling. LM scientists and engineers are actively engaged in supporting science education at the Navajo Nation's Diné College and other universities, through teaching and mentoring students in fieldwork activities.

The Navajo Nation Five-Year Plan

In 2007, Congress issued a directive for six federal agencies and various Navajo tribal agencies to create a Five-Year Plan to address uranium contamination within the Navajo Nation. The information gained during this initial period, would be applied to planning the next steps in addressing the most significant risks of uranium contamination to human health and the environment.

In 2014, the Five-Year Plan was updated to build on the work completed in the first five years and to make changes based on information gained and lessons learned during this time. One of the actions from the second Five-Year Plan (2014–2018) was to establish a "Community Outreach Network" with the purpose of facilitating collaboration among the agencies conducting outreach and educational activities as mandated by the Plan. The hub of this coordinated multi-agency effort is the Navajo Nation Community Outreach Network Office, located in Window Rock, Arizona, which is tasked with coordinating and supporting the multiagency effort through community outreach, joint agency and tribal planning, and information sharing.

Additionally, the Five-Year Plan identified a need for public uranium awareness education. The Uranium 101 workgroup continues to develop informational workshops to address that need.

The federal agencies involved in this effort are DOE, U.S. Environmental Protection Agency (EPA), U.S. Nuclear Regulatory Commission, Indian Health Service, Agency for Toxic Substances and Disease Registry, and the U.S. Department of the Interior. The Centers for Disease Control and Prevention also contributed to health objectives. The tribal entities include the Office of the Navajo Nation President and Vice President, Navajo Abandoned Mine Lands/Uranium Mill Tailings Remedial Action Department, Navajo Nation Department of Health, Navajo Nation EPA, and Navajo Nation Department of Justice, and the Hopi Tribe.

Meaningful collaboration is key for implementing long-term stewardship activities necessary to protect human health and the environment following cleanup and disposal of radioactive and chemical wastes on tribal lands and across the country. LM counts on local communities and tribal partners to present a solid, holistic examination of challenges so together we can formulate solutions.

Defense-Related Uranium Mines Program

LM manages DOE's Defense-Related Uranium Mines Program (DRUM), which is a partnership between DOE, federal land management agencies, and state abandoned mine lands programs to verify and validate the condition of 2,500 defense-related uranium mine sites across the nation by 2022. These mines provided uranium ore to private uranium mills that processed the ore for sale to the U.S. Atomic Energy Commission (AEC) for defense-related activities that occurred between 1947 and 1970. Most mines are located on public lands and are abandoned. LM conducts inventory activities, which include exchanging information with other federal agencies and state governments to improve the quality of mine-specific data, performing field inventories to document mining-related facilities at each location, conducting environmental sampling to evaluate safety and health risks, and producing reports

that document physical safety hazards, as well as potential risks to human health and the environment.

The Defense-Related Uranium Mines Program under Section 3151 of the National Defense Authorization Act for Fiscal Year 2013 mandated that the Secretary of Energy conduct a review of, and prepare a report on, abandoned uranium mines that provided uranium ore for defense and energy-related activities of the United States. DOE consulted with other federal agencies, affected states and tribes, and the public to develop the report. DOE finalized the report in August 2014, which documented that many data gaps still exist about these mine sites, most of which are located in the States of Arizona, Colorado, New Mexico, Utah, Wyoming, and South Dakota. DOE determined that further review of mine sites is needed to fully meet the Act's mandate.

LM has successfully partnered with the Bureau of Land Management, the U.S. Forest Service, and a number of state abandoned mine lands programs. LM's initial campaign has been focused on publicly managed lands, and we plan to complete all the inventory activities by the end of 2022. Initial planning for Campaign 2 has begun and will focus on the mines on tribal lands and private property. The inventory activity for those mines will begin in 2023 or sooner. This will require collaboration with the U.S. EPA and a number of tribal entities including the Navajo Abandoned Mine Lands Department and Navajo Nation EPA.

LM has successfully completed two full field seasons of inventorying defense-related uranium mines and is currently in the middle of completing its third field season. In New Mexico, specifically, we have inventoried more than 50 percent of the mines. The inventory in New Mexico focused on Bureau of Land Management and U.S. Forest Service-managed lands around the Grants area, where mines were most heavily concentrated.

In the next DRUM Campaign 2, LM validation and verification efforts will focus on mines located on tribal and private lands. The inventory on the number of DRUM on tribal lands is as follows:

Total Mine Counts on Tribal Lands:

- There are approximately 609 mines on the Navajo Reservation and Navajo trust lands.
- Of the 609 mines on tribal lands, there's approximately 419 DRUM (mines) supported by AEC, predecessor to DOE, ore purchase records.
- As the DRUM program reconciles additional historical information, a required step of the DRUM program, it is highly likely that a good portion of the remaining 190 mines will be DRUM. These are not supported by currently available purchase records but appear to be DRUM mines. We are looking for more historical records.

The completed, and ongoing, field inventory activities have identified primarily physical hazards and in relatively few cases the potential for human health and environmental risks. Physical hazards are the primary risk driver and include open shafts, open and unstable adits, and large unstable mine features. Reports are written on every mine summarizing the findings and potential risks. These reports are shared with the respective land management agencies.

LM is summarizing the environmental and human health risk data for each project area so the land management agencies can determine which mines may require no further action, reclamation, or additional investigation.

Conclusion

In closing, the Secretary of Energy has committed to diligently and resourcefully meeting the Department's post-closure responsibilities, which include the protection of human health and the environment, access to records and information, meeting commitments to former contractor workers, optimizing the use of land and assets no longer needed for Departmental missions, and community education and outreach efforts. For those of us in the Long-Term Stewardship community, it is about fair treatment and meaningful involvement of all stakeholders; it is about allowing people a way to verify the truth of what they are being told, and it is about establishing and maintaining trust and collaboration.

Thank you for allowing DOE the opportunity to testify at today's field hearing, and I look forward to answering your questions.

Senator UDALL. Thank you, Mr. O'Konski.

Dr. Christensen, please proceed.

STATEMENT OF LORETTA CHRISTENSEN, CHIEF MEDICAL OFFICER, NAVAJO AREA INDIAN HEALTH SERVICE

Dr. CHRISTENSEN. Yatahey. Good morning, Vice Chairman Udall and Members of Congress, Congressman Luján and Congresswoman Haaland. I'm Dr. Loretta Christensen, Chief Medical Officer at Navajo Area Office of the Indian Health Service. Thank you for this opportunity to testify at this field hearing on the topic of "America's Nuclear Past: Examining the Effects of Radiation in Indian Country."

I start by stating the IHS mission, which is to raise the physical, mental, social, and spiritual health of American Indians and Alaska Natives to the highest level. The Navajo Nation has a user population of about 241,000 people and the Navajo reservation covers an area of over 27,000 square miles, extending into the states of Arizona, New Mexico, and Utah.

Healthcare for the patients of Navajo Area is provided by five direct IHS service units, one urban Indian Health Center, two 638 contracted, three 638 compacted tribally authorized organizations. In addition, Navajo Area IHS has three 638 contracts with Navajo Nation.

The IHS is aware of the legacy and the history of uranium mining on Navajo Nation and its effect on the Navajo people. Several years ago, IHS partnered with several agencies and jointly submitted a five-year multiagency report of accomplishments to address nonoccupational exposures to individuals to uranium. This report was sent to Congress in January of 2013. The IHS accomplishments reported were: Increased delivery of clean water to homes during this period, continuation of a medical monitoring program with IHS-appropriated resources, partnering with the University of New Mexico in their implementation of a prospective Navajo Birth Cohort Study funded byCongress through the CDC and the Agency for Toxic Substances and Disease Registry; and continued service funded through the HRSA Radiation Exposure Screening and Education Program, RESEP, for individuals with occupation-related exposures to uranium.

All agencies during the first five years focused on collecting data, identifying the most imminent risks, and addressing contaminated structures, water supplies, mills, dumps, and mines with the highest levels of radiation. The agencies agreed at the conclusion of the first five-year plan to develop a second based on the information gained from the initial plan.

My written testimony contains the objectives and strategies for the 2014-through-2018 five-year plan that were developed to address impacts of uranium contamination in the Navajo Nation. I won't restate due to time constraints, but I'd like to go to the Navajo Birth Cohort Study.

This cohort study was funded by the Agency for Toxic Substances and Disease Registry, and concluded first phase in August of 2018 with the final developmental assessments completed. The study will continue in collaboration with theEnvironmental Influences on Child Health Outcomes, known as ECHO, with the NIH providing longitudinal surveillance of the birth cohort and the addition of new pregnancies. The first phase of the cohort study enrolled 781 women, and the Child Health Outcomes Program to date has re-

enrolled 292 of the original cohort and added 163 new pregnant women.

Early findings from the cohort study potentially related to radiation exposure include 36 percent of males and 26 percent of females in Navajo Nation have concentrations of uranium in the urine that exceed those found in the highest 5 percent of the U.S. population. Babies are born with concentration of uranium at those extremes which continues into the first year of life.

Neurodevelopment screening in the first year of life has shown that Navajo children's performance suggests a lower trajectory in many domains, particularly at the tenth-month landmark.

The cohort study is currently looking at the presence of anti-fetal-brain antibody production in mothers. We see a higher-than-expected prevalence of those autoantibodies as well as significant differences in exposure to heavy metals, including uranium and arsenic, between those who arepositive for antibodies and those who are not.

Neurodevelopmental batteries administered to three-to-five-year-olds in the cohort study and the child health outcomes initial phase have shown delays in language development, primarily in boys. In addition, significantly higher rates of autism spectrum disorder appear in those assessed to date. With no existing data on developmental trajectories, it is difficult to assess the importance of these indicators. The longer follow-up will enable a more informed interpretation of these results to strengthen intervention recommendation for these children, our children, our future.

To conclude, please know that the IHS remains firmly committed to improving quality, safety, and access to healthcare for American Indians and Alaska Natives in collaboration with our federal partners, especially HHS, across Indian Country and Congress.

I thank you, and I am happy to answer any questions you may have.

[The prepared statement of Dr. Christensen follows:]

PREPARED STATEMENT OF LORETTA CHRISTENSEN, CHIEF MEDICAL OFFICER, NAVAJO AREA INDIAN HEALTH SERVICE

Good morning, Chairman Hoeven, Vice-Chairman Udall, and Members of the Senate Committee on Indian Affairs. I am Dr. Loretta Christensen, Chief Medical Officer, Navajo Area Office (NAO), at the Indian Health Service (IHS). Thank you for the opportunity to testify at this field hearing on the topic of "America's Nuclear Past: Examining the Effects of Radiation in Indian Country." The IHS mission is to raise the physical, mental, social, and spiritual health of American Indians and Alaska Natives to the highest level. As an agency within the Department of Health and Human Services (HHS), the IHS provides federal health services to approximately 2.6 million American Indians and Alaska Natives from 573 federally recognized tribes in 37 states, through a network of over 605 hospitals, clinics and health stations.

The Navajo Nation has an IHS user population of 241,010 people and the Navajo reservation covers an area of 27,000 square miles extending into the States of Arizona, New Mexico and Utah. The Navajo Area IHS has 5 IHS Direct Care Service Units, 1 Urban Indian Health Center and 2 P.L. 93–638 contracted and 3 compacted tribally-authorized organizations. In addition, the Navajo Area IHS has 3 P.L. 93–638 contracts with the Navajo Nation.

The IHS is aware of the legacy of historical uranium mining on Navajo Nation land and its effects on the Navajo Nation people. Several years ago, the IHS partnered with several agencies and jointly submitted a 5-year multi-agency report of accomplishments to address non-occupational exposures of individuals to ura-

nium. This report was sent to Congress in January 2013. IHS accomplishments that were reported include:

- Increased delivery of clean water to homes during the 5-year period.
- Continuation of a Medical monitoring program using IHS appropriated resources.
- Partnering with the University of New Mexico (UNM) in their implementation of a prospective Navajo Birth Cohort Study (NBCS) funded by Congress through the Centers for Disease Control and Prevention (CDC) and the Agency for Toxic Substances and Disease Registry (ATSDR).
- Continued services funded through a Health Resources and Services Administration, Radiation Exposure Screening and Education Program (RECA) grant for individuals with occupation-related exposures to uranium.

All agencies during the first five years focused on collecting data, identifying the most imminent risks and addressing contaminated structures, water supplies, mills, dumps and mines with the highest levels of radiation. The agencies agreed at the conclusion of the first Five-Year plan to develop a second Five-Year Plan based on the information from the initial plan. The following objectives and strategies for the 2014–2018 Five-Year Plan were developed to address the impacts of uranium contamination in the Navajo Nation.

OBJECTIVE 1: Assessment and Cleanup of Contaminated Structures

Background: Uranium mining or milling waste was occasionally used as sand for an aggregate in construction so contaminated stone was incorporated into the walls and floors, including homes. If contaminated structures are occupied, there is a risk to the inhabitants from gamma radiation and alpha radiation (radon), which is a potent carcinogen to the lungs.

Specific Goals:

a. Navajo Nation Environmental Protection Agency (NNEPA) to scan 100 homes per year.

b. United States Environment Protection Agency (EPA) to conduct detailed assessments and remediation as necessary based on referrals and potential for health risk.

OBJECTIVE 2: Assessment of Contaminated Water Sources, and Provision of Alternative Water Supplies

Background: Water sources with levels of uranium and other radionuclides were identified by the Centers for Disease Control and Prevention, EPA, NNEPA and the Dine' Network for Environmental Health (DiNEH)

Specific Goals:

a. Complete water infrastructure projects.

b. Increase access to safe drinking water and expand to 55 Navajo Nation Chapters.

c. Continue to implement the water hauling program.

OBJECTIVE 3: Assessment of Abandoned Uranium Mines with Detailed Assessments of Those Most Likely to Pose Environmental or Health Problems

Background: Two-hundred and twenty-six mine claims show gamma radiation levels higher than ten times background levels. The proximity of mines to homes is an important factor in determining risk to residents. Thirty-eight of the mine claims are located within a quarter mile of a potentially inhabited structure.

Specific Goals: EPA, NNEPA and Navajo Nation Abandoned Mine Lands to conduct assessment and urgent cleanup work at the mines most likely to pose a risk to human health or the environment:

a. Gamma radiation more than ten times background levels located within a quarter mile of a potentially inhabited structure.

b. Gamma radiation more than two times background levels and located within 200 feet of a potentially inhabited structure.

c. Potential impact to aquatic resources.

d. Mines already identified for action.

OBJECTIVE 4: Cleanup of the Northeast Church Rock, New Mexico Mine Site and Additional High Priority Abandoned Mine Sites

Background: The Northeast Church Rock mine site was identified as the highest priority abandoned uranium mine for cleanup

Specific Goals:

a. To complete the design of the cleanup with input from Navajo Nation, community and other agencies to begin construction cleanup activities.

b. Identified parties to conduct work.

c. EPA to conduct/oversee assessments at additional high priority mines.

OBJECTIVE 5: Cleanup of the Tuba City, Arizona Dump Site

Background: The Tuba City Dump was used for over 50 years as an open, uncontrolled dump. Work is ongoing to identify a long-term cleanup strategy.

Specific Goals: a. After a remedy is selected, the BIA will begin the Remedial Design/Remedial Action process.

OBJECTIVE 6: Protection of Human Health and the Environment at Former Uranium Processing Sites

Background: The Department of Energy (DOE) responsibility for former mill sites includes ground water remediation and long-term surveillance and maintenance. The Nuclear Regulatory Commission (NRC) has oversight responsibility at the former mill sites on the Navajo Nation that have been transferred to DOE under an NRC general license.

Specific Goals:

a. DOE to revise groundwater compliance strategies for Shiprock and Tuba City disposal sites.

b. NRC will continue to review and comment on reports developed by DOE regarding the sites, conduct inspections of the sites in conjunction with DOE, and review and concur on DOE revisions to the long-term surveillance plan or groundwater compliance action plans before they are implemented.

c. DOE will work with NNEPA on a schedule to accept mill-site-related materials from any further cleanup.

OBJECTIVE 7: Health Studies

Background:

a. UNM performed a study funded by the National Institutes of Health, on the relationship between uranium in drinking water, kidney disease, and diabetes. Data from the study informed policy changes regarding uranium mining and remediation. The Navajo Area IHS participated in the study.

b. Navajo Area IHS implemented a Community Uranium Exposure Journey to Healing program consisting of medical screening of individual health histories and health status, and the provision of community based education and information gathering services across the Navajo reservation.

c. Navajo Area IHS Radiation Exposure Screening and Education Program (RESEP) services were funded by a HHS, Health Resources and Service Administration (HRSA) grant targeting potentially compensation eligible individuals as a result of the RECA.

d. Navajo Area IHS staff collaborated with the Navajo Nation Department of Health Epidemiology Program on a Navajo Nation cancer report and designation by the Epidemiology Program of a lead epidemiologist to work on uranium related issues.

e. CDC and ATSDR collaborated with the Navajo Area IHS to conduct health care provider training on the impact of uranium and other heavy metals on the health of individuals.

f. CDC and ATSDR funding was provided to the UNM, the Navajo Nation Division of Health, and the Navajo Area IHS to implement a NBCS of the health effects of non-occupational exposure on pregnancy outcomes and infant health.

Specific Goals:

a. Provision of Community Based Services.

• Listen to community concerns and provide location specific health education to community residents.

• Provide medical screening evaluations to non-occupationally exposed individuals.

• CDC and ATSDR will provide community education materials (such as environmental health "frequently asked questions"), handouts, and resources.

• IHS will transfer health information from medical screening evaluations to each individual's medical home health record.

• Provision of RESEP services. IHS will provide services as identified in the HRSA grant's Scope of Work to individuals with potentially compensable health conditions.

b. Collaboration with the Navajo Nation Division of Health Epidemiology Program. IHS and ATSDR will work with the Navajo Nation's Division of Health Epidemiology Program supporting its efforts to:

• Evaluate various cancer case rates by geographic location of cancer patient's residence and known radiation exposure sources.

• Evaluate the health status of descendants of uranium miners/mill workers.

• Evaluate the potential for a longitudinal human health impact study (as requested by the Navajo Nation to include physical, psychological and social parameters).

c. ATSDR funded NBCS.

• Continue and complete work on the NBCS in cooperation with the UNM, the Navajo Nation Community Health Representative Program, and Navajo Area IHS.

• Consider the viability of expanding the laboratory component of the study.

• Conduct outreach education about study results to participants and Navajo Nation leaders and others at community gatherings.

• Develop a sustainability plan to evaluate the potential for follow up and/or surveillance of children from the birth cohort study beyond the research study period (with guidance and input from the Navajo Nation).

d. Health Care Staff Training. Provide continuing education sessions to Navajo Nation hospital/clinic healthcare and community based staff.

Potential Limitations and Challenges:

Achievement of planned goals is dependent on availability of funding for the following objectives: 1) RESEP services, 2) work with the Navajo Nation's Epidemiology Center to conduct two studies and one evaluation, and 3) work on the NBCS.

Navajo Birth Cohort Study

The NBCS, funded by ATSDR, was concluded in August 2018 with the final developmental assessments completed. The study will continue in collaboration with the Environmental influences on Child Health Outcomes (ECHO) with the NIH providing longitudinal surveillance of the birth cohort and addition of new pregnancies. The data from the initial phase of the study is currently being analyzed. The first phase of the NBCS enrolled 781 women, and the early part of the ECHO phase has re-enrolled 292 of the original cohort with the addition of 163 new pregnant women. Early findings from the NBCS potentially related to radiation exposure include:

a. 36 percent of males and 26 percent of women in Navajo Nation have concentrations of uranium in the urine that exceed those found in the highest 5 percent of the U.S. population.

b. Some babies are born with concentrations of uranium at those extremes and exposures continue in the first year of life.

c. Exposures to multiple metals in the higher exposure clusters increase the likelihood of preterm birth. This does not include loss of pregnancy in the early stages.

d. Neurodevelopment screening in the first year of life has shown that Navajo children's performance on the Ages and Stages Questionnaire (ASQ), development screen suggests a slower trajectory in many domains especially at 10 months of age. There will be examination concerning the use of the screening to predict performance in later childhood.

e. Higher than expected rates of autoantibody production in parents in the NBCS. These rates have been associated with exposures, and are consistent

with increased autoantibody production in studies involving an older population previously.

f. Through the initial phase of NBCS/ECHO, we show that through age 5, uranium continues to be elevated and increases in some cases, and that arsenic shows a strong increase until age 5. The numbers of samples analyzed for metals in children from ages 2–5 years are very small at this point.

g. The study is currently looking at the presence of anti-fetal-brain antibody production in moms. These are autoantibodies that can cross the placental barrier and bind to developing fetal brain tissue and have been associated with neurodevelopmental delays as well as autism. We see a higher-than-expected prevalence of these autoantibodies, as well as significant differences in exposures to metals including uranium and arsenic between those who are positive for these antibodies and those who do not have them.

h. Neurodevelopmental batteries administered to 3–5 year olds in the NBCS/ECHO Phase I have shown delays in language development, primarily in boys. In addition, significantly higher rates of autism spectrum disorder appear in those assessed to date. The delays observed have really pushed us to use the ECHO funding to extend follow-up through 8 years (up to 9 years of age) in all children who will reach middle childhood during the 4+ additional active years of the study to determine if the observed delays persist, are increased, or recover with time. With no existing data on developmental trajectories, it is difficult to assess the importance of these indicators. The longer follow-up will enable a more-informed interpretation of these results to benefit the intervention recommendations for these children.

i. Moving forward the assessment of children's focus of attention through tracking of eye-movements, which has been shown to predict performance on some of the more detailed developmental assessments will be utilized. This language-free assessment that can be rapidly administered may provide a good way to do interim assessments that can be used to both validate the use of the standard tools, and to fill in gaps in the developmental trajectory to allow for finer grained assessments.

The IHS remains firmly committed to improving quality, safety, and access to health care for American Indians and Alaska Natives, in collaboration with our federal partners, especially in HHS, across Indian country, and Congress. Thank you, and I am happy to answer any questions you may have.

Senator UDALL. Thank you very much, Dr. Christensen, and we look forward to that study proceeding and getting us as solid information as possible.

Just listening to the witnesses, there's no doubt that we've made some progress, but I can tell you, in traveling in Indian Country and being in communities and talking to people, that there's so much more to do. There's no doubt about it. And all our witnesses are nodding today, so I see they know the magnitude of the task that we're dealing with.

I want to take this opportunity to remind you that the Senate Indian Affairs Committee has broad jurisdiction when it comes to all oversight matters with respect to Native Americans, Native Hawaiians, and Alaska Natives. And the issues we are discussing today directly impact Indian Country. There's no doubt about that. So I would like to get commitments from each one of you that you will work with me and my staff and Chairman Hoeven's staff on frequent updates on your progress on cleanup and efforts to improve public health. Can you answer that question with a yes or no, Mr. Gray?

Mr. GRAY. Yes.

Senator UDALL. Okay.

Mr. O'KONSKI. Yes, sir.

Dr. CHRISTENSEN. Yes.

Senator UDALL. Thank you very much for that commitment.

Dr. Christensen, I understand that the IHS is part of the five-year planning process, along with other agencies, such as the DOE and the EPA, sitting next to you. But some folks in the community have reported to me that your agency has not been very visible when it comes to addressing the public health concerns of the community, especially when it comes to analyzing cancer clusters or other health issues that may be attributed to radiation poisoning. How do you respond to those concerns?

Dr. CHRISTENSEN. Thank you for your question. The IHS does acknowledge that there is work to be done, particularly in public health and community health. We have committed this year our top priorities, the number one being improving cancer care in Navajo Country. This would entail increasing education to the patients in a culturally appropriate and sensitive manner to explain cancer and the need for treatment and surveillance.

The second goal would be to improve our screening across Navajo Nation. Although we do meet our measures for GPRA in screening, I don't feel it's enough and that we need to get out into the communities and increase our screening across the whole area.

And thirdly, we acknowledge that we need to track real time a central database of cancer occurrence and surveillance through the longitudinal time period of people's bouts with cancer. We are doing some retooling to our electronic health system at this moment to increase the reporting for uranium exposure, either working or in the vicinity of any uranium mines tailings or any of those areas, and therefore, this will be placed in the patient's records and will always be able to be identified as having had exposure, which did not exist before.

We will also try to create a central database with attention to where the cancers are occurring and general health status of our patients throughout the area. This will require a unified effort between IHS and Navajo Nation. Some of the first work that's been done by the epicenter there has been quite helpful, and we look forward to partnering with them with their health education department and with their community health representatives to thoroughly evaluate the health status of all occupants of Navajo area.

Senator UDALL. Please, did you finish there? Dr. Christensen, is the lack of cancer treatment centers a contributing factor? I know most of the cancer treatment centers are off reservation. Do you think that's a factor?

Dr. CHRISTENSEN. Well, I think it's just a challenge, Senator, that we don't get all the information back, because we do refer all of our cancer patients to appropriate cancer centers, most of which are a distance from the reservation. We do have two cancer centers in the border towns that we use, but we go to Flagstaff, we go to Banner in Phoenix, we go to Albuquerque, and some to Denver, which does not create the best flow of information. But I believe that's something we can overcome and create a system to where we can gather that information accurately.

Senator UDALL. I think that would be very helpful to you and us from the policy perspective, and obviously, be very helpful to the patients to have full records and further doctors to be able to deal with these issues, the health issues that they're facing.

Mr. O'Konski, the Shiprock site is a uranium tailings site in the heart of Shiprock on the Navajo Nation. It's my understanding that this site has an evaporant pool liner to protect from groundwater contamination, but that the liner is at the end of its life. Residents are rightfully concerned about their groundwater and are worried about DOE's proposed options. What is the timeline to replace the liner, and is DOE working directly with the Navajo Nation and Shiprock on their concerns?

Mr. O'KONSKI. Thank you for the question, Senator. And I have got a couple of experts behind me, if I need to get a lifeline. That project is in the development phase as far as solutions and to address it. We are, I believe, two years out, approximately from addressing the permanent solution there. We are working closely with our Navajo partners, with our regulators to come up with a solution to that that answers all of the questions. We're trying to be very, very transparent, also.

Senator UDALL. And please commit to me you'll put the public health first.

Mr. O'KONSKI. Absolutely, sir. Public health and the environment is our first priority.

Senator UDALL. And the thing that worries me—I have been looking and reading about your options that you have talked about that you're considering, and one of the options that doesn't seem to be on the table is just removal of the tailings. I don't know if you have already come to a conclusion, but in many communities where tailings piles are close to the community, one of the things that the agencies that review everything, they say, "Well, let's do complete removal."

So have you come to a judgment on that, or is that still something that's on the table in terms of your review?

Mr. O'KONSKI. Sir, all options are on the table. And we are going to continue to work with the community to come up and look at which are the best solutions, prioritized, and we will work with our partners and with the Congress to implement that solution.

Senator UDALL. Thank you. It's my understanding that your office is monitoring an underground plume from the Tuba City site moving towards the Hopi Tribe. Residents there are worried about their groundwater. What is DOE doing to prevent a groundwater contamination from occurring there?

Mr. O'KONSKI. Sir, we're doing additional monitoring. We are actively watching the plume. We are working with the Hopi to establish alternative sources of water. Our highest priority is tomaintain a safe and healthy area for the residents.

Senator UDALL. Thank you. Thank you.

Mr. Gray, my office has been approached by representatives of the Red Water Pond community, a settlement on the Navajo Nation. It's my understanding that the EPA and the Army Corps of Engineers has agreed to relocate the members of the community due to contamination, but the members of the community have some real, legitimate concerns about this proposed relocation plan, specifically that the new location is not culturally appropriate.

First off, which agency is taking the lead on this relocation effort? It sounds like EPA is supposed to be the lead agency and

should be working with the Navajo Nation or the community directly on what their cultural needs are. Is that what is happening?

Mr. GRAY. So we are working with the community on relocation. The relocation is set to be completed by 2023 in order to allow further remedy to be put in place. The goal of the relocation is to move the residents out of direct contact during the high industrial work andconstruction work that's going to be required at the site, and to move them away. We are working aggressively with the community to look to an appropriate relocation. I understand today that half of the community has relocated and so we've been successful at achieving a shared common objective there.

We do understand—and thank you for your most recent letter; I know that we have a letter from you with community concerns that have been brought to our attention. We are working through those and will certainly be prepared to respond to all of those concerns raised by the community so that we can move forward in a way that addresses the concerns that looks to their needs and accomplishes both of our goals, which is to have them out of harm's way during that construction work.

Senator UDALL. Thank you.

Mr. O'Konski, it's been brought to my attention that there are some 6,000 boxes of Rocky Flats documents stored at LANL. You all remember Rocky Flats was the pit production facility until it closed. And so it's completely closed now, and they have moved those 6,000 boxes down to the Los Alamos National Laboratory, and that some potential Energy Employees Occupational Illness Compensation Program—the short for that is EEOICPA; I think most of us call it by that, so that we don't have to say all those words there—but those claimants have been denied access to those records because they are working through an advocacy group. And it's my understanding that these records could affect whether a claimant from Rocky Flats could be eligible for compensation under the program I just mentioned.

Will you work with my staff to sort out the details of this so that folks who may be eligible for compensation have the records they need to file a claim?

Mr. O'KONSKI. Yes, sir. We will work with your staff on that.

Senator UDALL. Great. Thank you very much.

Mr. Gray, I applaud the EPA for working diligently to complete the goals set out in the two prior five-year plans, and I'm also pleased that the next ten-year plan is building off of those successes. However, as the vice-chairman of the Indian Affairs Committee and a staunch supporter of tribal self-determination, I believe that the best2 decisions for tribes are made by tribes. So I want to make sure your agency is not setting a low bar for itself by simply saying you're making progress on these goals without consulting with the Nation. Was the Navajo Nation consulted and made an active participant in the underlying development of the prior five-year plans and the forthcoming ten-year plan? And I don't mean, were they asked to comment. I mean, was the Navajo Nation actively involved in setting the goals on a government-to-government basis?

Mr. GRAY. So I wasn't personally involved in the development of the five-year plan with Navajo Nation, being from Region 6, being

from the Dallas office. But it is my understanding from speaking with the leadership in the San Francisco office, which is Region 9, that the Navajo Nation has been engaged and a cooperative partner in the development of priorities throughout the development of the two previous five-year plans, and is certainly at the table and engaged substantively in the upcoming ten-year plan that will be coming out shortly. And so we will continue to maintain that relationship. We remain committed to that relationship. We understand the incredible opportunity of working directly with tribes and having our tribal nations be, as you mentioned, part of the exact decisionmaking process for their communities and for their lands, and we strive to make that happen also.

Senator UDALL. Great. Thank you.

Mr. O'Konski, you testified that the Office of Legacy Management manages DOE's Defense-Related Uranium Mines Program, known as the DRUM Program. This program is charged with verifying and validating the condition of thousands of abandoned uranium mines across the West by 2022. You further testified that many data gaps exist about these mine sites, most of which are located in New Mexico, and that further review is required to meet your office's obligations set forth in authorizing legislation. Do you mean to tell me that your office is currently unable to determine the exact location of abandoned uranium mines and the potential health and safety risks that they pose to adjacent communities?

Mr. O'KONSKI. Thank you for the question, Senator. As I mentioned, there's 2,500 of these mines. There are not great historic records. That is the reason we are taking the time to gophysically find them, touch them, visit them, and investigate them. We are planning to do 400 mines next year. We have reached—we have been to 1,000 of them. And we have found a lot of the records are good, but the mines are in very different conditions, depending on where they are. So that's the reason that we are physically going and finding them and writing a report that is specific to each one as to their condition and their risk.

Senator UDALL. So you're basically telling me your office is currently unable to determine the exact location of abandoned uranium mines and the potential health and safety risks that they pose to adjacent communities? You're doing some, but there's still many, many more to be found and then determined what the health risks are.

Mr. O'KONSKI. Yes, sir. There's hundreds more that we still have to get to and look at.

Senator UDALL. When will this work be completed, and how can we expedite progress? The people living near these sites should not be made to wait any longer for this important information about potential impacts to their health and safety. What's your timeline there?

Mr. O'KONSKI. We have multiple teams working on this. We are looking to do 400 to 500 of them next year and wrap this up by 2022.

Senator UDALL. Great. Thank you for your testimony.

And I think all of you can see, we've made some progress, but there's still an awful lot of work to do. And so at this point, I'm going to turn to Congressman Luján for his questions.

Mr. LUJÁN. To the panels that are assembled today, I want to say thank you, as well as to the panel in front of us, thank you for your work.

Mr. Gray, according to the U.S. Commission on Civil Rights report, Native Americans are at a higher risk for health issues due to water contamination. This report notes that in the past decade, tribal water systems experienced 57 percent more water quality violations than nontribal water systems and received 44 percent fewer inspections under the Clean Water Act from 2010 to 2015. As we know, water is life, and access to clean water is a human right. Lack of oversight and investment in infrastructure has harmed communities and damaged our economy, as water resources are essential to agriculture, economic development, and health.

Mr. Gray, the Safe Drinking Water Act and the Clean Water Act authorizes the EPA to ensure that these communities have access to safe and clean water and to work with federal, state, and tribal partners to implement water standards and ensure compliance. Yet when it comes to water quality, we see unacceptable conditions for tribes across the country. Why is the EPA unable to address this disparity?

Mr. GRAY. Thank you very much for that question. I can say that we are taking some very proactive actions, particularly from Region 6. We now have added two water inspectors here in New Mexico to solely work with our tribes, to work with our tribes both for increasing training and knowledge and education of their tribal operations of their own systems as well as to aid them with technical assistance in the need for compliance. We're doing this through a circuit-rider program, which is what we're calling it. We are piloting it in Region 6 and hoping to take it to our other regions, demonstrating the success of it. Today it is showing some great results in lifting the compliance that we have with tribally owned systems in New Mexico, and we believe, in Region 6, that that can be modeled in other places and that it's a way of significantly increasing the compliance and the ability of our tribal partners to have safe water.

Likewise, we initiated this past year a tribal program to test day-cares in schools at all of our tribes for lead in drinking water. It's been a highly successful program where we've been able to identify very quickly tribally owned and operated day-cares in schools that have elevated levels of lead in drinking water so that we can bring about very rapid abatement.

That program is providing us with some very interesting and positive results. We're seeing many schools and day-cares that may have one drinking water fountain that has elevated lead levels in it, so we're able to very quickly identify that, take that system out of service, and then provide for replacements.

And so we've been doing that throughout New Mexico as well as Oklahoma. Again, it's another pilot that we're using here in Region 6 that we believe are pilots that can be taken nationally and that can really change, as you mentioned, the statistics that we see across the country of needing to improve compliance and availability of safe drinking water in Indian Country.

Mr. LUJÁN. And as we all know, Mr. Gray, this is a trust responsibility, a treaty responsibility, sovereignty that is recognized by the United States Constitution through those treaties. And when we see the worst conditions, more violations than in other parts of the country with tribal water systems or with Native American communities and non, I hope that this helps us understand the urgency of the response; and while there's inspectors that have been made available, that there are recommendations coming from the EPA associated with infrastructure investments with the replacement of these systems. The testimony of Dr. Christensen to the elevated levels of uranium and arsenic—is it safe to assume, Dr. Christensen, that comes from probably drinking water?

Dr. CHRISTENSEN. That can be one of the sources of that, yes.

Mr. LUJÁN. So if that's the case, then this is one of the areas we can correct that goes back to, Mr. O'Konski, the question that Vice Chairman Udall posed associated with, you know, replacing the liner with another liner, getting to the end of its life—well, get rid of the stuff that's contaminating the water. If we remove it, then I think that that would be the answer to address these concerns.

So I appreciate that, Mr. Gray. There's more that we have to do in this particular area to be able to fix the problem.

Dr. Christensen, the Navajo Area Indian Health Service serves a patient population of over 240,000, I believe that you shared, across three states and 11 service providers. Nearly 7.3 percent of deaths reported in this patient population between 1999 and 2001 were due to cancer alone, a rate not seen in medical reports prior to World War II and the uranium boom in the region. We also know from the Navajo Birth Cohort Study that the uranium concentration in over a quarter of Navajo men and women measured exceed those found in the highest 5 percent of the U.S. population. That was part of your testimony.

Dr. CHRISTENSEN. Yes.

Mr. LUJÁN. Exceeded those found in the highest 5 percent of the U.S. population. Dr. Christensen, what trends have you seen in cancer diagnosis in your patient population that point to geographic, occupational, or generational spikes that we need to be paying more attention to in Congress?

Dr. CHRISTENSEN. Well, what is most significant in the cancer incidence and prevalence is that it's cancers you would not expect to be high. Generally speaking, American Indians and Alaska Natives don't have exceedingly high cancer rates. So the fact that these prostate, breast cancer, thyroid disease, kidney cancer, stomach and colorectal cancer are at the very high end of the prevalence and incident rate tells me that there's a reason for that.

I do believe there's environmental influence on those rates, certainly that large spike we saw in the early 2000s, and we continue to see these cancers occurring more frequently than they would in a normal population that you are surveilling across the United States.

So it is quite concerning. And you add lung cancer, which isn't reaching the levels that we would think it would, but it's still very prevalent and prominent in this population, particularly those that worked directly in the mines, the millings, inthose areas, got severe

cases of lung cancer that would not normally happen in this area. So it is quite concerning.

The other thing that is very concerning is: Some of these cancers weren't picked up until later in the course of the cancer. So that treatment options were less viable than if it had been detected much sooner. And that's why we are focused on increasing screening across the whole area so that we can intervene sooner and give quality of life and longevity to these patients.

Mr. LUJÁN. And Dr. Christensen, generational?

Dr. CHRISTENSEN. Yes, we do see generational. We see a lot of families suffering cancer in clusters that, again, are not in the normal variation of cancer recurrences, which is very concerning. But you made an excellent point when you said we haven't actually removed the provoking agent. So it's like keeping your hand over a flame and you keep it there, it will continue burning. If we continue having this contamination, we will continue to get these diseases. And that's why it is vitally important to work, as these gentlemen are, to really mitigate this as quickly aspossible so we can remove this exposure and return the health status of our patients and our people.

Mr. LUJÁN. That was profound, Dr. Christensen, and I hope that you and IHS will commit to the Committee and to the Congress that we can work together to make sure that we're using every available tool to collect data, making sure that when patients are coming in, that we work to understand if they worked in a mine, where they live, what the exposure rate is, did someone in the family work in those areas, so we can complement that so we can show what you just shared. Is that something you could commit to?

Dr. CHRISTENSEN. Absolutely commit to any needs of our patients in Navajo. And as I briefly mentioned, we have changed our electronic health record. We now do ask multiple questions about uranium, possible uranium exposure, which will then be in the permanent record. It also has been linked to the ICD–10 code to be in their history, as well. Therefore, anyone who receives their records will now have documentation of that exposure, whether it be direct exposure or exposure through family or exposure through their environment.

Mr. LUJÁN. So these families whoare living downwind from test areas, these families are living downwind from open uranium pits, these families are living downwind from berms like in Church Rock that burst open in 1978, at a time that the Navajo Nation received little attention. A year, later we saw the meltdown at Three Mile Island. There was a lot of federal response there. But we still have not done what needs to be done here in New Mexico on the Navajo Nation. It was the first place of the Trinity test site, that little story that I shared of that experience where the ash that was falling on clothing that was recently put up on a clothing line. You saw this ball off into the distance. These families lived downwind.

Does it surprise you—and I'd ask this question, whether it's yes or no, or you want to give a little bit more of an answer—does it surprise you that New Mexico is not included in downwind protections? The three states that have counties that were included with downwind protections were Nevada, Utah, and Arizona.

Should New Mexico be included with downwind protection, Mr. Gray?

Mr. GRAY. Thank you for that question. I'm a little less familiar with that particular partof this, but it sounds to me that it's important for us to understand the risks to all of our communities, whether or not they are on a location, adjacent to a location or downwind to a location where contamination has occurred.

Mr. LUJÁN. I appreciate that.

Mr. O'Konski?

Mr. O'KONSKI. I'm not sure about the exact details of the downwind, but I do absolutely agree that our people in our communities need to be protected.

Mr. LUJÁN. I appreciate that.

Dr. Christensen?

Dr. CHRISTENSEN. Absolutely.

Mr. LUJÁN. I appreciate that very much.

The last question I have, Senator Udall, is: Mr. O'Konski, you shared that of the 2,500 related mines that you are currently looking at and trying to measure, the follow-up question from Senator Udall of trying to identify more mines that are still unidentified, it's my understanding that in the 1950s and 1960s, the United States Government was complicit in actually contributing to this problem. The United States of America gave what I would describe as a finders fee to anyone that could go find a uranium mine. You had people driving around in their pickups with the little Geiger counter, I was told and I read, and they'd go find a site and then they'd report it, and then the United States would pay them $10,000. That's probably about $100,000 in today's money.

Is there a similar approach that we can take to help find the abandoned mines? Because the United States created the problem.

Mr. O'KONSKI. We can certainly look at the option of doing something like that. But there is absolutely no question that part of what we do, as part of identifying these, is working with the communities. Because more often than not, it's the community memory that helps to fill in the holes.

Mr. LUJÁN. I appreciate that. The last question is: You stated that there are documents that are being made available to the offices where those mines are. Are those documents able to be put in a database where they're in searchable format so that anyone who needs to see them can find them? Can we get that agreement?

Mr. O'KONSKI. Yes, sir. We will make sure that they are available.

Mr. LUJÁN. I appreciate that. Thank you very much.

Senator UDALL. Thank you, Congressman Luján.

Just one question of clarification, Dr. Christensen. You mentioned that now when patients come in, that you're making it a permanent part of the record that they have some radiation exposure if they did; is that correct?

Dr. CHRISTENSEN. Yes. That's what we've retooled.

Senator UDALL. And it would seem to me that supplementing the screening you're doing to try to find out earlier if people have cancer, that you could also, with that information, call patients together and educate them and indicate to them the kinds of symptoms they might see for these types of cancer you mentioned or

other illnesses that might be out there as a result of radiation. So it seems to me that that permanent record would be very important in terms of the education aspect.

Dr. CHRISTENSEN. Yes, it would be, and just in addition, the intention is to—and I'll call it geomapping—is to geomap the area, looking at both the health status of everyone and certainly addressing the environmental impact of uranium exposure and toxicity.

Senator UDALL. Thank you. Congresswoman Haaland, please proceed.

Ms. HAALAND. Thank you, Chairman. Thank you so much.

My first question is for Dr. Christensen. And I just want to follow up on a question that Chairman Udall had, and it has to do with the database you mentioned, that you're working on that to be better? Or what are you exactly doing with the database that will help this situation?

Dr. CHRISTENSEN. Thank you for your question. Our current database is based off of our electronic health system, which until now is run independently at each service facility. So that information does not flow into a central hub, meaning that to aggregate requires a lot of manual work, which can be done, but I'd like to see it to where we can also retool our system to feed it into a set database where we have real time numbers, real time geography; although it is understandably challenging on Navajo land because of addresses and the zip codes being the same, to actually specify an area or a region. That's why we look to partnering with Navajo Nation. The community health representatives are invaluable in helping us know where every single family is and every single person is so that we can evaluate them and check on them as needed.

So we'd like to have that database available to say, real time, we're seeing an increase in this cancer, we're seeing a decrease hopefully in this cancer, and by doing that central hub, we hope this would become more facile.

Ms. HAALAND. Thank you. And thank you for raising the importance of the community health representatives. Those are important all over Indian Country, and we need to always support them.

Now, you are the chief medical officer for the Navajo Area, but not every Indian community who suffers from illnesses caused by uranium and other radiation are in your area. So is the Indian Health Service as a whole, to your knowledge, working on making sure or moving this issue forward so that every single community can reap the benefits of modernization of the database in the electronic health records?

Dr. CHRISTENSEN. Thank you for your question. We do have support from headquarters and we do work with our adjacent areas of Albuquerque Service Unit and the Phoenix Service Unit, and we are more than willing to collaborate on any data and any gathering of information because, we do cross borders quite often, and we don't actually look at those as a barrier to helping anyone. We accept everyone at our hospitals, we're happy to help them, and we're happy to work with our two partners on either side of us to make sure we're collecting appropriate information.

Ms. HAALAND. Thank you so much. And within this data collection, do you collect data on the occupation of patients you treat so

you can potentially identify health conditions arising from workplace conditions?

Dr. CHRISTENSEN. Yes, we do. We ask a series of questions upon presentations to our facilities, which we continue to expand. I'm not sure the patients like answering all those questions all the time, but it's very vitally important to us to gather that information. We are also looking to include the social determinants of health and we now have proper coding for that, so we'll be able to also see who's suffering the most from thosechallenges of the determinants of health, and that also helps us align our resources for the patients and for the people.

Ms. HAALAND. Thank you so much. The Indian Health Service is the first line of defense when it comes to the healthcare needs of Indian Country, but it sounds like in some cases that the needs of patients who are exposed to radiation aren't necessarily being met in the best way possibility. Are there changes that need to be made to the law or IHS or to funding levels to ensure that all patients get the care they need? And I mean, we'd like to know, because as Members of Congress, we can likely move some of these things forward. So what's your opinion on that?

Dr. CHRISTENSEN. Well, certainly we have a big challenge ahead of us, because we do also have our tribal organizations in Navajo Area which we very much collaborate with along with Navajo Nation. So there are a lot of entities providing care. Some of the challenges for the victims of uranium exposure come from the type of examinations they must undergo to be certified, and that currently wasn't offered anyplace in Navajo.

We have worked to recruit two pulmonologists into our area, in Shiprock and Gallup, and we're going to bring some of the pulmonary function testing into our area, which will negate them having to travel to Denver and other places. So I think it's a matter of managing our resources and prioritizing what's needed. And that's included from the babies that are being born to our elders, that we have to see what is needed for each of those generations, because they have different needs. I think the collaboration between Navajo Nation and our tribal facilities is actually the most paramount things that needs to continue and strengthen.

Ms. HAALAND. Thank you so much.

I'd just like to let you know that our office is open. If there are any issues that you feel we need to know about, you're welcome to give me a call. That goes for all of you.

So I'll move on to Mr. Gray and Mr. O'Konski. And I just wanted to thank my colleague, Assistant Speaker Luján, for bringing up the downwinders in Tularosa and the Trinity Site. Those people made a tremendous sacrifice for our country. Right? I mean, World War II was—I mean, there could have been a different outcome if it weren't for the people here in this state specifically working to protect democracy around our world. And so I feel very strongly that the people here in New Mexico who have made those sacrifices—they deserve to be compensated. Full stop. So I just hope that you can understand how we feel about our citizens here in this state.

So I wanted to just talk about the number of uranium mines on Navajo Nation lands that have not been cleaned up. And I'll say

that on Laguna Pueblo, the Jackpile Mine, they are still waiting for—they need funds. I'll just say it like that. They need the money to clean up the Jackpile Mine. The job was not completed, and the job needs to be completed. And so since we're talking about commitments here, I would like your commitment to work with the governor of Laguna Pueblo and the council and their attorneys to make sure that you are open to their phone calls and their letters and that you are doing everything you possibly can to make sure that this gets done. The mine has been closed for around 40 years now. That is long enough for us to wait.

And so I'm just going to put it like that. I would like to have your commitment to work withthem to make sure that this job gets done.

Mr. GRAY. Absolutely. You absolutely have my commitment, the commitment of my organization. We share a common strategy for wanting to see that work completed. And it does take too much time, it is a daunting task, and I know that people become very frustrated and impatient with that. But we should not be more frustrated by having lack of conversation, lack of dialogue, and lack of input. And we'll make sure that happens.

Ms. HAALAND. Thank you.

Mr. O'Konski?

Mr. O'KONSKI. We are part of the team with EPA, and we stand by to assist.

Ms. HAALAND. Thank you very much.

And along those lines, when we look at the number or the amount of uranium extracted, you know, extraction in Indian Country, and other minority communities, and they wait years and years and years and in Laguna's case, decades, four decades, in fact, where other communities, where they're essentially nonminority communities, they tend to get it done in a timely manner. And so why doesn'tthe EPA enforce the Comprehensive Environmental Response Compensation and Liability Act, CERCLA, also known as the Superfund law, equally across all communities?

Mr. GRAY. Thank you for that question. My hope, after being with the agency for over 30 years, is that we do that, that we work very diligently to ensure that we are looking at all communities, that we're evaluating risks, that despite the economics of any given place, that we are bringing remedies, that we're bringing protections. We recognize through our environmental justice program that we have communities of lower economics that are also at higher risk because of the lack of air-conditioning, circulation, shelter in place, all those remedies that many of us that live in other neighborhoods take for granted.

And so I would hope that if there's ever a concern about a remedy or about a selection of a remedy at a location, and if there's ever concern of an unfairness, that you bring that immediately to our attention. We would be happy to explain that and to investigate that. Because it is personally important to me, as a leader in the Region 6 office, as well as to all of my colleagues, that that not bethe case.

Ms. HAALAND. Mr. O'Konski? Do you have anything to add?

Mr. O'KONSKI. No, ma'am, I don't have anything to add.

Ms. HAALAND. Okay. Chairman, those are all my questions.

And I just thank you all so much again for being here, and thank the audience for being here, as well. We are committed to fairness in every single thing we do. We're committed to fairness in our government, because no one should be left out of—you know, we talk about the American dream everywhere, and that's something that's a given to all of us, and to Native Americans in this country, this is. And if anyone ever wonders why we join the military in numbers higher than any other community, it's because this is our land and we want to protectit. So thank you so much.

Mr. LUJÁN. Mr. Gray, just one thing that I'd ask for you to consider conveying to the San Francisco office is: You'll later hear in testimony that's been filed by the president of the Navajo Nation, President Nez, he does respond to the two five-year plans that were put together, and I quote from his testimony, "that the Navajo Nation feels it was never adequately consulted on either plan," and now that the ten-year plan is coming forward, the Navajo Nation, I then quote, "was not an active participant in the underlying development of this plan and suspects that it too will be devoid of the same."

So just so we make sure we convey that to the San Francisco office and make sure they understand.

Mr. GRAY. Absolutely. Thank you.

Mr. LUJÁN. It's not a question of if. It's a matter of: It must be done. And as the Senator pointed out, it's not just asking for comments.

Mr. GRAY. Yes, thank you for sharing that thought. I'm happy to take that back. I'm happy to provide that feedback to them, and I'm happy also to share any models by which we can improve that.

Mr. LUJÁN. Thank you.

Senator UDALL. Thank you very much, and thank you, Congresswoman Haaland. Thank you, Congressman Luján, Assistant Speaker Luján.

Let me just say just one short comment on the testimony today. And it's really emphasizing that we have made progress, but there's so much more to do. There is really so much more to do. And when you get out, like the members of Congress here have in these communities, they feel an urgency. They feel that things need to be happening today. And that's just—they are on the ground, and I think they also feel some frustration with the pace that we're moving on. So I thought that was important to let you know a little bit about the kind of input that we get here.

And I just want to really thank you for your time and testimony today. I'd like to remind you that the members of the panel, maybe other members on the Senate Indian Affairs Committee may submit follow-up questions for the record. Our Committee expects a response to those questions within 30 days. You all are nodding. I hope you will help us with that. And we just want to just thank you again.

And I would excuse this panel and then we're going to take just a couple of minutes to change name tags and then to ask panel 2 to then come forward. So thank you very much.

Senator UDALL. We'll just be in a slight recess here as we shuffle.

[Recess from 12:14 p.m. to 12:27 p.m.]

Senator UDALL. We're reconvened here, and we have our five witnesses before us, and they're very cramped around that table. We apologize for that. But don't worry; there will be a microphone for you and we'll get it around, and you will be able to be heard, loud and clear. And we just, once again, want to thank you for being here. We know many of you have traveled distances, many of you are very busy folks, you have got things you're doing, and are taking the time off to share with the Senate Indian Affairs Committee and Congresswoman Deb Haaland what your thoughts are on what happened. And feel free, also, in your openings, to talk about—you may be questioned about this—what you have heard already, you know, and give us your frank opinion of what's going on on these very important issues.

And we'll now hear from our second panel of witnesses. Let me start from the left here, the Chairman of the Navajo Nation, the Honorable Jonathan Nez. We also have the Honorable Michael Chavarria, the Governor of the Santa Clara Pueblo and Chairman of the Eight Northern Indian Pueblos. We also have Mr. Ryan Riley, Councilman Riley from the Laguna Pueblo Council of Government. Mr. Phil Harrison, an advocate for the Navajo Uranium Radiations Committee. And Ms. Tina Cordova, advocate for the Trinity downwinders. And she was the cofounder of the Tularosa Basin Downwinders Consortium.

Once again, thank you to all of you and why don't we start with President Nez and work to your left there.

STATEMENT OF HON. JONATHAN NEZ, PRESIDENT, NAVAJO NATION

Mr. NEZ. Thank you and good afternoon, yatahey, Vice Chairman Udall and members of the Committee on Indian Affairs, Assistant Speaker Luján and Congresswoman Haaland.

My name is Jonathan Nez. I'm the president of the Navajo Nation. Thank you for this opportunity to present testimony on how our participation in supporting America's nuclear path has impacted the Navajo Nation.

Joining me today is former president, chairman, Peterson Zah, and also our council delegate Amber Kanazbah Crotty; Navajo EPA executive director Oliver Whaley; Navajo Department of Healthexecutive director Dr. Jill Jim; Navajo Nation Washington Office Executive Director Santee Lewis.

Also, we have here today former uranium miners, impacted community members, and others who continue to seek justice on this very topic.

I also wish to express my appreciation to the Committee for convening this field hearing to examine the unique history and legacy of the atomic age and discuss whether the federal government lives up to its obligations related to the adverse impacts on people and our homelands. This hearing is long overdue, and we appreciate Chairman Grijalva also holding another meeting on the Navajo Nation last week. And a lot of the same folks that are here today were there, really heartfelt testimonies from our post '71 mine workers.

It has been 75 years since the United States opened up the Navajo Nation for uranium mining and 40 years since the catastrophic Church Rock uranium mine spill. To summarize, our participation

in the Cold War has devastated our lands and our way of life as Navajo people. The impact is not only physical, but spiritual and emotional, and will continue to cause much suffering for the Navajo people into the foreseeable future ata much greater rate if measures are not taken by the federal government to help mitigate the impacts.

Approximately 30 million tons of uranium ore was extracted from Navajo lands during mining operations from 1944 to 1986 to support America's nuclear activities such as the U.S. military's Manhattan Project, World War II, and the Cold War. At that time, the United States Atomic Energy Commission was the sole purchaser of all uranium ore mined in the United States until 1970.

The uranium mining boom transpired from these activities which led to the creation of hundreds of mines on and around the Navajo Nation. This meant that many of our Navajo people worked in these mines without proper safety measures, without knowing the long-term effects that it would have on them and their loved ones.

Once the Cold War ended and the federal government no longer needed uranium ore to produce nuclear weapons, all of these mines were abandoned without any reclamation, let alone remediation. There are approximately 524 abandoned uranium mine sites on the Navajo Nation, while the Navajo Nation estimates that there could be far more. Unfortunately, only 219 of these sites haveavailable funds for cleanup and remediation efforts, leaving a total of 305-plus sites not being addressed and that pose severe environmental health hazards to surrounding areas and people.

Although there's approximately $1.7 billion to clean up the 219 mine sites, it is not enough. The Navajo Nation estimates it will cost an additional $3.5 billion to address the remaining 305-plus sites, which does not include the cost of long-term monitoring and maintenance.

There are also four Uranium Mill Tailings Radiation Control Act sites, and many of them were brought to the first panel's attention. They are located within the Navajo Nation here. The radioactive mill tailings were merely capped with clay and rock and left at the former mill sites. As a result, the groundwater underneath these sites has been severely impacted with hazardous waste contamination.

There's also one other uranium mill processing site located immediately adjacent to the Navajo Nation in Church Rock, New Mexico. On July 16, 1979, an earthen dam was breached, releasing over 1,000 tons—1,000 tons—of radioactive mill waste and 93 million gallons—93 million gallons—of acidic radioactive tailings solutions in the Puerco River, the largest hazardous waste spill in the history of the United States, and we are still working with the federal government to clean up that area.

The uranium legacy on the Navajo Nation is expansive, costly, and remediation efforts are fragmented across numerous federal agencies, including the Environmental Protection Agency, Bureau of Indian Affairs, Nuclear Regulatory Commission, Department of Energy, Indian Health Service, and the Agency for Toxic Substances and Disease Registry, just to name a few. This fragmentation results in a constant state of evaluation and never seems to make any real changes.

In 2007 and 2014, the federal government developed a five-year plan to address uranium contamination, and there was little to no tribal input. With each five-year plan created for the Navajo Nation, the Navajo Nation was not adequately consulted, which is evidenced by the fact that these plans fail.

We are presently developing another ten-year plan with U.S. EPA, and once again, the Navajo Nation was not an active participant in theunderlying development of this plan, and we suspect that it, too, will be devoid of addressing our concerns.

The Navajo Nation has competent citizens who have gone to school and returned home to help, and they can provide a unique perspective from our way of life, teaching, culture, and tradition if we are able to have a seat at the table.

The Navajo Nation is addressing these issues and to help our own people, we are not sitting back. Our nation has created a Diné Uranium Remediation Advisory Commission to work with the Abandoned Mine Lands Office, the EPA, and others to examine the impacts and to identify solutions. With the support of Delegate Crotty and Phil Harrison, the Navajo Nation has set aside funds in our current fiscal year budget to hire a lobbyist to push for the reauthorization and expansion of benefits under the Radiation Exposure Compensation Act. Under the proposed RECA bill, downwinders and post '71 mine workers will receive benefits that they are fully entitled to. This will bring some justice to them and their families, as many of them continue to suffer from cancer and other serious health problems.

And today, there are many of our Navajo post '71 mine workers in attendance. Just to name a few, we have Leslie Begay and Tommy Reed and others, and we also have our brothers and sisters that are not from the Navajo Nation that are post '71 that have joined us today, as well. Thank you for your advocacy.

The Navajo Nation and the Tuba City Regional Healthcare Corporation also work with the cancer support community, Dr. Jill Biden, and other health professionals to establish the very first cancer treatment center on the Navajo Nation in the community of Tuba City, Arizona.

We are also working with the Indian Health Service to determine the feasibility of creating another cancer center as part of a new hospital facility that will replace the aging Gallup Indian Medical Center. These are a few examples of what the Navajo Nation is doing to help our own people. It is time for the federal government to step up and do their part, as well.

In conclusion, the federal government has failed us by allowing uranium mining on the Navajo Nation, leaving a mess, and by not ensuring adequate protection for U.S. citizens working in or living around uranium mine sites.

Again, we thank the Committee for holding this hearing today and look forward to working with Congress to see how we can address the contamination of our lands and help our people suffering from serious health problems. Thank you.

[The prepared statement of Mr. Nez follows:]

PREPARED STATEMENT OF HON. JONATHAN NEZ, PRESIDENT, NAVAJO NATION

Dear Chairman John Hoeven, Ranking Member Tom Udall, and Members of the Committee, I appreciate the opportunity to provide written testimony on the impact uranium mining has had on our Navajo people. It has been 75 years since the United States opened up the Navajo Nation for uranium mining and 40 years since the historic Church Rock uranium mill spill. To summarize, our participation in the Cold War has devastated our lands and our way of life as Navajo people. The impact is not only physical but spiritual and emotional and will continue to cause much suffering for the Navajo people into the foreseeable future.

From the time of our emergence as Navajo people into our present world, our *Diyin Dine'é* have entrusted us *Diné* people with protecting and preserving our environment and land. Consequently, our Navajo creation story, as well as all of our oral traditions are intrinsically connected to our environment and land. Therefore, each Navajo individual has a sacred duty to maintain *Hózhǫ́, which in the English language can be translated to living in harmony and balance with our environment, land, and all living beings.*

Additionally, our elders have taught us that it is only by living this way that we as Navajo people can experience wholeness, self-respect, and maintain an overall positive state of well-being. In contrast, when we don't do this, we experience *Hóchxǫ́,* which in the English language can be interpreted as all that is ugly, unhappy and disharmonious in our world, including all of the physical impacts that we are now experiencing across our Navajo Nation. From health issues like cancer and other diseases, to social issues like depression, suicide, domestic violence, and alcohol and drug abuse, to environmental issues like drought and now radiation exposure.

While the outside world might consider these beliefs to be folly, implausible and not grounded in science, logic, or reason, we, *Diné*, are a spiritual people, and as such, we understand that our thoughts, actions, and traditional practices contain very real and inherent metaphysical power, which ultimately transfers into our daily lives, both for good and bad.

In stating this, I hope it helps you to better understand why the issue of uranium contamination on the Navajo Nation is such an important and time-sensitive issue for our Navajo people. How can we live in harmony and balance when our people are chronically being exposed to radiation and our Mother Earth has been exploited and scarred with abandoned uranium mines?

I. The Legacy of Uranium Mining on the Navajo Nation

The United States first opened up Navajo land for uranium mining in 1944 to support the U.S. Military's Manhattan Project. Following World War II, uranium mining on Navajo lands increased due to the Cold War, and the United States Atomic Energy Commission (AEC) became the sole purchaser of all uranium ore mined in the United States until 1970.[1] This subsequent mining boom led to the creation of hundreds of mines on the Navajo Nation and our Navajo people working in those mines. According to the U.S. EPA, approximately thirty million tons of uranium ore was extracted during mining operations within the Navajo Nation from 1944 to 1986.[2] However, we won't know the actual amount of uranium mine waste left behind until remedial site evaluations are completed for all of the abandoned uranium mines on the Navajo Nation.

Once the Cold War ended and the federal government no longer needed uranium ore to produce nuclear weapons, all of these mines were abandoned without any reclamation, let alone remediation. Indeed, it was a requirement in the AEC's lease agreements with the private mining companies who were extracting the uranium ore that no reclamation work was to be performed in case the United States should ever decide to restart the uranium mining on Navajo land so it could again purchase the uranium ore.

According to U.S. EPA, there are approximately 524 abandoned uranium mine sites on the Navajo Nation, while the Navajo Nation estimates that there could be far more. Unfortunately, only 219 of EPA's identified sites have available funds for clean-up and remediation efforts, leaving a total of 305 sites not being addressed, and that pose severe environmental and health hazards to surrounding areas and

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[1] Brugee, Doug, Timothy Benally, and Esther Yazzie-Lewis. *The Navajo People and Uranium Mining*, Albuquerque: University of New Mexico Press, 2006.

[2] Navajo Nation: Cleaning Up Abandoned Uranium Mines. (2019, April 12). Retrieved July 9, 2019, from *https://www.epa.gov/navajo-nation-uranium-cleanup*

people.[3] Additionally, while these 219 sites have funds available, which total approximately $1.7 billion, it is not yet clear whether this amount is sufficient. Moreover, the Navajo Nation estimates that it will cost an additional $3.5 billion to address the remaining 305 sites, which does not include the cost of long-term monitoring and maintenance of areas where hazardous waste may be contained in a disposal cell.

There are also four Uranium Mill Tailings Remediation Control Act (UMTRCA) sites located within the Navajo Nation. These sites exist as a result of the uranium mill processing sites that were decommissioned by the United States. Here, the radioactive mill tailings were merely capped with clay and rock and left at the former mill sites. As a result, the groundwater underneath these sites has been severely impacted with hazardous waste contamination. These disposal cell sites are located in Mexican Hat, Utah, Shiprock, NM, Tuba City, AZ, and Monument Valley, Arizona.

There is also one other uranium mill processing site located immediately adjacent to the Navajo Nation in Church Rock, NM, which has caused severe heartache for the Navajo people living in that area. It was here, on July 16, 1979, that the largest hazardous waste spill in the history of the United States occurred when the earthen dam to the pond holding the processing mill's uranium tailings was breached.[4] The spill, releasing over 1,000 tons of radioactive mill waste and 93 million gallons of acidic radioactive tailings solution into the Puerco River, traveled downstream through the Navajo Nation, to the community of Sanders, AZ, located nearly 60 miles west of the spill site.[5] The effects of this spill are still being felt today and may be linked to the discovery of elevated levels of uranium in the local school's drinking water. The cleanup and management of these sites is currently being performed and monitored by the Department of Energy Office of Legacy Management at an annual cost of approximately $4 million.[6] This does not include cleanup of the Sanders water contamination.

At present, the uranium legacy on the Navajo Nation is not only costly, but the remediation efforts are also fragmented across numerous federal agencies, including the U.S. Environmental Protection Agency (EPA), U.S. Bureau of Indian Affairs (BIA), U.S. Nuclear Regulatory Commission (NRC), the U.S Department of Energy (DOE), Indian Health Service (IHS), and the Agency for Toxic Substances and Disease Registry, just to name a few. This fragmentation results in constant state of evaluations and re-evaluations but never promulgates steps toward expedited remediation.

II. Abandoned Uranium Mines and Clean-up Efforts

In October 2007, at the request of the U.S. House Committee on Oversight and Government Reform, USEPA, along with the BIA, the NRC, the DOE, and the IHS developed a coordinated Five-Year Plan to address uranium contamination on the Navajo Nation.

Because the plan's objectives in that initial Five- Year Plan were never completely met, a second Five-Year Plan was created in 2014, in an attempt address the work still needing to be done during the first five years, and to establish objectives and strategies in moving forward to better address the most significant risks to human health and the environment. However, the Navajo Nation feels that it was never adequately consulted on either plan, which is evidenced by the fact that these plans fail to contain issues, concerns, objectives, goals, and desired outcomes most important to the Navajo Nation.

Some of the aforementioned include: (1) comprehensive groundwater studies for all uranium impacted areas; (2) comprehensive Nation-wide studies regarding the health impacts to our Navajo people as the result of seven decades of chronic radiation exposure; (3); comprehensive Nation-wide studies regarding potential risk exposure pathways, including the plants we traditionally eat and use for ceremonial purposes, our sheep and livestock, which are primary sources of sustenance, and the water sources many of our Navajo people still use for drinking water and ceremonial purposes; (4) the establishment of cancer treatment centers on the Navajo Nation; (5) compensation and relocation for all Navajo families living in areas impacted by uranium mining; (6) the capacity building of our Navajo Nation Environmental Pro-

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[3] Abandoned Uranium Mine Settlements on the Navajo Nation. (2018, April). Retrieved July 9, 2019, from *https://www.epa.gov/sites/production/files/2018-05/documents/navajo_nation_settlement_fact_sheet-2018–04-18.pdf*

[4] Community Involvement Plan. (2016). Retrieved July 9, 2019, from *https://www.epa.gov/sites/production/files/2017-11/documents/cip_northeast_churchrock_kerrmcgee_quivira.pdf*

[5] *Id.*

[6] Federal Plans: Related Documents. (2018, September 20). Retrieved July 9, 2019, from *https://www.epa.gov/navajo-nation-uranium-cleanup/federal-plans-related-documents#docs*

tection Agency to take the lead on addressing the abandoned uranium mine sites on the Navajo Nation; (7) including traditional and cultural knowledge into the CERCLA clean-up process, as well as in determining risk assessment components, prioritization factors, and so forth; (8) accountability and communication to the Navajo Nation from the various federal agencies regarding their outlined objectives; (9) a comprehensive strategic plan outlining the roles and duties of each federal agency in relation to the Navajo Nation's own lead agency, the Navajo Nation Environmental Protection Agency; (10) a more direct funding approach in providing resources to the Navajo Nation Environmental Protection Agency so that it has flexibility and discretion to more effectively and efficiently operate; (11) utilizing and researching better practices and technologies for site assessment and clean-up of uranium waste, which could significantly reduce clean-up costs and provide better clean-up outcomes; and (12) a comprehensive plan to address how the federal government will fund the additional 305 sites not currently being addressed, just to name a few.

At present, another Ten-Year Plan is currently being developed, which is supposed to be submitted to the Navajo Nation's Environmental Protection Agency for comment. However, here again, the Navajo Nation was not an active participate in the underlying development of this plan, and suspects that it too will be devoid of the same said points.

Additionally, the Navajo Nation specifically requests the following from the United States:

1. That the Phase 2 Priority Orphan Mine Trust, which is the result of a settlement agreement between the Navajo Nation and the United States to complete remedial site evaluations at 30 abandoned uranium mine sites for which the United States is the responsible party, be expanded to 48 sites, and also include: (1) the 18 sites not currently being addressed in the Tachee/Blue Gap area; (2) the 9 sites not currently being addressed in the Cove area; and (3) the 8 sites not currently being addressed in the Tse Tah area. Additionally, in relation to groundwater contamination, the current settlement agreement only includes 2 water studies. The Navajo Nation would like this number expanded to 5, and to include the following geographic areas: (1) Sanders, AZ; (2) Cameron, AZ; (3) Church Rock, NM; (4) Tse Tah, AZ; and (5) and Tachee/Blue Gap, AZ. Lastly, that the settlement agreement be amended to not only include the completion remedial site evaluations for these 48 sites, but also clean-up.
2. That the Tronox abandoned uranium mine sites on the Navajo Nation receive first priority in relation to clean-up activities under the Tronox settlement agreement.
3. That the United States pass comprehensive legislation allocating permanent funds to the clean-up of all abandoned uranium mines on the Navajo Nation. However, in the interim, that the United States DOJ begins negotiations with the Navajo Nation for additional funding to address the 305 sites with no current funding.
4. That the USEPA works towards establishing the Navajo Nation Environmental Protection Agency as the lead agency for the clean-up of all abandoned uranium mine sites on the Navajo Nation.

Another area of concern for the Navajo Nation that is currently not being addressed as part of the present uranium contamination clean-up efforts is the previously mentioned UMTRCA sites within the Navajo Nation, which are overseen by the DOE. All of these sites have groundwater issues and the remediation strategy that was implemented has not been successful. As a result, DOE is now reevaluating their approach and is considering 3 across the board alternatives for these sites:

Alternative	Main Points
#1: Remove Pond—Continued Monitoring	Remove evaporation ponds; Cease contaminate extraction and use supplemental standards; Continued Monitoring; May include removal of unneeded infrastructure throughout site.
#2: Replace Pond—Implement Newer Technology	Replace pond; Continue contaminate extraction. Implement newer remediation technologies.
#3: No Action	Continue with current strategy; Monitor buildup of sediment in pond; Repair liner as needed.

As to these alternatives, 1 and 3 are not acceptable, but the Navajo Nation supports alternative 2 upon further consultation with the Navajo Nation.

III. Cancer Among the Navajo

Cancer is the second leading cause of disease and death for the Navajo people.[7] Cancer rates have doubled on the Navajo Nation from the 1970s to the 1990s. The Indian Health Service estimates that 7.3 percent of all deaths in the Navajo Area Indian Health Services region were due to cancer from 1999 to 2001. From 2005–2013, the cancers with the ten highest incidence counts among the Navajo were female breast, colorectal, stomach, prostate, kidney, uterine, stomach, non-Hodgkin lymphoma, pancreas, liver, and lung.

In comparing the incidence rates of cancers by gender, Navajo men were more likely to be diagnosed with cancer. Prostate cancer was the most commonly diagnosed cancer among Navajo men, followed by colorectal cancer, kidney cancer, and stomach cancer. Among Navajo women, breast cancer was the most commonly diagnosed cancer, followed by colorectal cancer and uterine cancer, and kidney cancer.

Reports of cancer among the Navajo people were published in the medical literature as early as the 1930. A common finding in these reports was the relative low number of cancers observed among the Navajo. For example, C.G. Salsbury, M.D., a physician who worked among the Navajo in Ganado, Arizona, wrote in the Arizona Medicine that cancer rates were lower among the Navajo compared to whites and questioned whether the Navajos were protected from diabetes and cancer by their diet and nutrition.

Following World War II, uranium mining swept onto the Navajo Nation and settled within uranium-rich regions including Arizona communities of Cove and Monument Valley, and New Mexico communities of Sanostee and Church Rock. Tailings from the milling process were left untreated in Shiprock, New Mexico, Tuba City, Arizona, and Kayenta, Arizona. Decades later, increasing rates of lung cancer (10.4 cases per 100,000 persons incidence rates, 2005–2013, males and females combined, all ages) in this generally non-smoking population were attributed to occupational exposure with working in the uranium mines.

Incidence (new cases) rates compared to incidence rate of non-Hispanic white (NHW), cases per 100,000 persons incidence rates, 2005–2013, males and females combined, all ages:

- Liver (9.9 incidence rate compared to 4.8 incidence rate of non-Hispanic whites)
- Stomach (15.0 incidence rate compared to 4.3 NHW)
- kidney (25.6 incidence rate compared to 14.0 NHW)

A report covering years 1989–1993 revealed that the mortality for all cancers among American Indians and Alaska Natives (AI/AN) remained lowered compared to whites. Yet, mortality rates, in populations comparative measure, for cancers of the liver, stomach, kidney, and gallbladder were much higher than whites.

Mortality (pass away) rates compared to incidence rate of non-Hispanic white, cases per 100,000 persons incidence rates, 2005–2013, males and females combined, all ages

- Liver (8.1 mortality rate compared to 4.6 mortality rate of non-Hispanic whites)
- Stomach (9.8 mortality rate compared to 2.2 NHW)
- Kidney (7.2 mortality rate compared to 3.5 NHW)
- Gallbladder (2.9 mortality rate compared to 0.4 NHW)

AI/AN women also had significantly higher mortality rates from cancer of the cervix than white women. In a report covering years 1999–2004, incidence rates for all cancers among AI/AN, including the Navajo in the southwest were lower than whites, while cancers of the stomach, liver, kidney, gallbladder, and cervix for females were much higher.

Navajos are 7.2 times more likely to pass away from gallbladder cancer, 4.4 times more likely to pass away from stomach cancer, 2.1 times more likely to pass away from kidney cancer, and 1.8 times more likely to pass away from liver cancer than non-Hispanic whites.

Among Navajo men, mortality from prostate cancer, stomach cancer, and liver cancer were most common. And, among Navajo women, mortality from breast cancer, stomach cancer and liver cancer were most common.

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[7] Navajo Nation Mortality Report, 2006–2009 (Rep.). (n.d.). Retrieved *http://www.nec.navajo-nsn.gov/Portals/0/Reports/Vital%20Statistics%20Report%202006%20to%202009%20FINAL.pdf.*

IV. Disturbing the Navajo Way of Life

The stories told by our Navajo uranium workers and families of deceased mine workers and community members is unfathomable. Some common examples include an individual who as a child played in an abandoned mine or mill tailing pile, a sheep herder who watered his sheep in an un-reclaimed open pit mine, an elderly woman who for many years washed the dust-coated clothing of her uranium miner husband, or a family who obtained their drinking water from a stream that ran through or near a uranium mine.

We also hear stories of families who have had to get rid of their entire livestock herd or had to tear down a house or Hogan made with radioactive materials. There are also families who have had to struggle to survive following the death of the main breadwinner in their family. And, there are those families who could not continue their participation in ceremonies for a variety of reasons such as limited mobility, loss of income, loss of traditional space/home, etc.

These stories are telling of the emotional, traditional, spiritual, and cultural loss our Navajo people have had to endure. What's more concerning is that the impact then becomes generational and our people are never able to fully heal. It is the Navajo way of life to life in harmony with everything that surrounds you; and if your land and environment remains contaminated, how do we return to a state of Hózhǫ́?

V. Conclusion

In conclusion, what the Navajo people desire most is to have their lands cleaned and remediated. It's been far too long. We need to bring this long and sad period of history to a close. As President of the Navajo Nation, I call upon Congress to work with the Navajo People to address the concerns we have raised for uranium mine workers, downwinders, and families.

Ahe'hee' (thank you),

Senator UDALL. Thank you very much, President Nez. Governor Chavarria.

STATEMENT OF HON. J. MICHAEL CHAVARRIA, GOVERNOR, SANTA CLARA PUEBLO

Mr. CHAVARRIA. Out of respect, and just good afternoon at this time, Chairman, members of the Committee.

My name is Michael Chavarria. I serve as governor for Santa Clara Pueblo. I also serve in the capacity of the chairman for the Eight Northern Indian Pueblos Council and the vice-chairman for the All Pueblo Council of Governors, which is a consortium of the 19 pueblos in New Mexico, to include the Pueblo of Isleta del Sur down in Texas.

For today's hearing, I'm going to be providing my testimony as the governor of Santa Clara Pueblo. Regarding the title of today's hearing, "America's Nuclear Past: Examining the Effects of Radiation in Indian Country," this help is quite important to many tribes and pueblos here in New Mexico. Today my testimony will focus on theissues related to my Pueblo as it pertains to Los Alamos National Laboratory, or LANL. LANL, originally referred to as Site Y, was opened in the town of Los Alamos in 1943 with a single mission at that time to design and manufacture the world's first atomic weapon. That mission was successful. The so-called "Fat Man" device was created, was successfully tested, and then dropped on Japan in 1945.

In 1942 the so-called "secret city" sprang up seemingly overnight as part of the Manhattan Project. However, this wasn't a secret city to us, as it was literally right in our backyard. Maps reveal that in the early days of the Manhattan Project, LANL once shared a boundary with Santa Clara Pueblo in an area called Area E within Site Y. During these times, our members recall visually observing explosive testings occurring, while feeling the shock waves and

concussions of those blasts while they were hunting, collecting medicinal plants, or gathering fuel wood.

I understand the critical need for national security, but at what cost? Due to our lifestyle living off the land, we rely strongly upon the plant, animals, and water resources of the area for a variety of purposes, including food, medicinal needs, traditional practices, production of crafts, and ceremonial purposes. We do have concerns about the health effects from activities at LANL, but we as pueblo people, must retain our traditions and lifestyle, living off the land, and it's not optional.

In my written testimony I discuss that in 1998, the Department of Energy provided funding to the Centers for Disease Control and Prevention to begin a study of records at LANL to better understand whether radioactive materials, known as radionuclides, and other toxic chemicals are released into the environment. During the historical operations from the 1940s through the 1960s, the CDC began the Los Alamos Historical Document Retrieval and Assessment Project in 1999, and continued to 2009. In 2010 the CDC, through its contractors, presented this report to the Pueblo, an official community survey, which document I would respectfully ask, Chairman, to submit for the record. I'll give a copy to Anthony.

Senator UDALL. No objection. So submitted.

Mr. CHAVARRIA. Thank you, Chairman.

In the summary of that report, the report confirms that airborne plutonium releases were higher at LANL in the 1940s and 1950s than earlier reports indicated and should be prioritized for future or further analysis. During that time, the reports state exhaust systems used to process plutonium in crude facilities during World War II were unfiltered. There were no high-efficiency particulate air, or HEPA, filters used and LANL was unusually hesitant or slow to implement installing of those filters, meaning raw materials were released into the atmosphere.

The report indicated the next step to address the impact on surrounding communities, both Native and non-Native, to include conducting a more detailed dose reconstruction for all or a selective set of releases and locations identified in the report. However, to this date, no funding has been provided for those next steps, which I feel is unacceptable.

For Santa Clara Pueblo, this remains a concern. The need for a formal dose reconstruction study needs to happen to get a full understanding of the health impact of those radiation releases from the past. So funding the CDC for this purpose isparamount. Santa Clara Pueblo does receive limited funding from the Department of Energy through a program known as the Los Alamos Pueblos Project, or LAPP, since limited funding helps to collect data to conduct our own analysis and includes oversight of the various processes occurring at LANL. However, such funding needs to be increased, as well.

In addition to the LAPP funding, the Department of Energy provides limited funding to allow Santa Clara Pueblo to participate in the Los Alamos National Lab Trustee Council, along with the Department of Energy, the U.S. Department of Ag, the Forest Service, the State of New Mexico, and the Pueblos of San Ildefonso, Jemez, and Cochiti. The task of the Trustee Council is to work coopera-

tively to conduct an assessment of natural resources potentially affected by radiological releases of contaminants from LANL. The end goal is to restore any injured natural resources in the condition they would have been but for the releases of the hazardous contaminants. The Department of Interior and BIA will not contribute funds to assist the Pueblo to participate in the Trustee Council, even though the Department of Interior funds natural resource damage assessment work for other tribesacross the nation. The Department of Interior has taken a stand because a potentially responsible party for the hazardous releases in this case is a sister federal agency, the Department of Energy.

So we are at a disadvantage compared to other tribes in having the financial and technical resources to fully assess the impacts of radionuclide releases at LANL.

So in closing, we request Congress to help allocate funding to the CDC by completing a true dose reconstruction at LANL to address what CDC identified as historical radionuclide releases from the early days of LANL.

So thank you very much for your consideration of this testimony. I stand for questions.

[The prepared statement of Mr. Chavarria follows:]

PREPARED STATEMENT OF HON. J. MICHAEL CHAVARRIA, GOVERNOR, SANTA CLARA PUEBLO

Introduction. Thank you Chairman Hoeven, Vice Chairman Udall, and Members of the Committee for the opportunity to provide testimony on this critically important topic addressing the impacts of the nation's nuclear history in Tndian country.

My name is J. Michael Chavarria and I am the Governor of Santa Clara Pueblo located in northcentral New Mexico and am testifying today in that capacity. I also have the honor of serving as the Chairman of the Eight Northern Indian Pueblos Council and as Vice Chairman for the All Pueblo Council of Governors.

This is a topic that is quite important to many different Tribes and Pueblos in New Mexico because of the very direct history the development of nuclear weapons plays in our little part of the world. I do not know that any amount of clean up or compensation can ever reclaim the cultural losses or fully address the health effects suffered by the peoples of Laguna Pueblo for the Jackpile Uranium mine on Laguna lands, or for the many continuing effects of uranium mining felt by Acoma, Zuni, and Navajo peoples, but my testimony today will focus more on issues related to my Pueblo and other Pueblos that are near Los Alamos National Laboratory, also known as LANL.

Key Background regarding LANL and its relationship to surrounding Pueblos. Originally referred to as "Site Y," what is now known as LANL (the laboratory's official name has changed over the decades) was opened in the town of Los Alamos in 1943 with a single mission at that time—to design and manufacture the world's first atomic weapons. LANL succeeded in that mission. The so-called "Fat Man" device was tested at the Trinity Site in the Tularosa Basin of New Mexico on July 16, 1945 and then the bomb was dropped on Japan less than a month later. Los Alamos is one of three "secret cities" that sprang up seemingly overnight as part of the Manhattan Project to support the efforts of the U.S. Government to develop and test nuclear weapons. The Manhattan Project was so secret at its inception that knowledge of the project was even kept from then-Vice President Harry S. Truman.

LANL was built on a very beautiful volcanic plateau known as the Pajarito Plateau and is essentially encircled by four different Pueblos—Jemez Pueblo, the Pueblo de Cochiti, the Pueblo de San Ildefonso, and Santa Clara Pueblo. The Pueblo de San Ildefonso shares a direct border with the lab. However, maps reveal that, in the early days of the Manhattan Project, LANL once shared a boundary with Santa Clara Pueblo at a location called "Area E" within "Site Y." In fact, members of our Pueblo recall explosives testing occurring during the Manhattan Project and feeling shock waves from those tests at Santa Clara. Our Pueblo's current closest border to LANL is approximately 5 miles as the crow flies from the current-day boundary

of LANL. It has been well-documented that Santa Clara Pueblo is in the path of the prevailing winds of LANL. We are thus part of the LANL down-winders.

Since time immemorial, ancestral Puebloan people occupied extensive areas of the Pajarito Plateau including areas of the plateau that eventually became LANL. The Pueblos of Cochiti, Jemez, San Ildefonso, and Santa Clara, as well as other Pueblos in the region, continue to actively use and rely upon the plant, animal, and water resources of the area for a variety of purposes including food, medicinal needs, traditional practices, production of crafts, and ceremonial purposes. There are concerns about the health effects of conducting activities in this area, but we as Pueblo people must maintain our traditions. It is not optional.

It is also important to remember that Pueblo people are land-based people. Although each Pueblo is unique in its traditions, our shared values are based on the fundamental belief that all people are inherently interconnected with the land. We believe all of the natural ecosystems must be respected and cared for so that all peoples remain healthy now and into the future. When this sacred area of the Parajito Plateau was seized by the U.S. Government for the Manhattan Project, the Pueblo peoples were denied access to areas of traditional and cultural importance that had been respected and cared for by our ancestors. Being denied access to sacred areas so that weapons of destruction could be developed in those places is an upsetting part of our history.

Moreover, LANL's mission continues to include the development of plutonium pits for nuclear weapons which continues that cycle of destruction. The Pueblos are patriotic people and we care deeply about protecting the national security of the United States, but using such a sacred area to promote destruction is an on-going harm that Pueblo people feel in our hearts. To help heal that hurt, we at Santa Clara Pueblo are trying to find ways to promote clean-up and restoration of the natural resources that were injured by LANL and upon which we depend for our ongoing traditions through collaborative processes with the Federal Government and the State of New Mexico.

Past Federal Efforts to Examine Radiation Impacts of LANL on surrounding communities. In 1998, the Department of Energy (DOE) provided funding to the Centers for Disease Control and Prevention (CDC) to begin a study of records at LANL to better understand whether radioactive materials known as radionuclides and other toxic chemicals were released into the environment by the lab during its historical operations in the 1940s through 1960s, and to gather the applicable documentation in one place to support doing an off-site dose assessment. The CDC began the "Los Alamos Historical Document Retrieval and Assessment Project" (LAHDRA) in 1999 and continued its work through 2009. In 2010, the CDC, through its contractors, presented its LAHDRA report to the public, an official "community summary" of which is attached to this testimony for the record. The CDC's study team indicated in the report that they compiled enough information to reconstruct public exposures resulting from the most significant of LANL's historic releases to allow health professionals to assess the extent of measurable significant health effects—effects that the Pueblos remain deeply concerned about today.

The report summarized a wealth of historic documents about areas of radiation exposure and included a preliminary conservative screening analysis of potential exposures to certain key radionuclides of greatest concern. The LAHDRA report confirmed that airborne plutonium releases were higher at LANL in the 1940s and 1950s than earlier reports had indicated and should be prioritized for further analysis. The report described how plutonium was processed in crude facil ities during World War II and how many of the exhaust systems for those facil ities were unfiltered. The report also stated that "LANL was unusually slow in implementing the use of high efficiency particulate air (HEPA) filters on the exhaust systems ofplutonium facilities." (LAHDRA Community Summary, page 10.) In addition to plutonium, the CDC also recommended that tritium and uranium be pat1 of the radionuclides that should be considered in further analyses of impacts from historic releases. The CDC indicated that a possible next step to address impacts on surrounding communities could include conducting a more detailed dose reconstruction for all or a selected set of releases and locations identified in the report.

Dose reconstructions involve developing methods to assess and estimate environmental doses and to determine risk of environmental exposures through selected calculation methods. The CDC had no funding to proceed to this next important step, however. Some efforts were made back in 2010 to secure that funding but the efforts did not succeed, even though the information a formal dose reconstruction could provide is still very much needed and should be considered by Congress now.

Need for additional federal funds to assist the Pueblos near LANL in fully understanding impacts of radionuclide releases at LANL. We still have unfinished business from the CDC's LAHDRA report. There is still a need for a formal

dose reconstruction study to be done to help both Native and non-Native communities surrounding LANL understand the health impacts of radiation releases that occurred in the early years of LANL before environmental laws went into effect. This is important information that the Pueblos sti ll need to know even though some of the Pueblos are conducting human health risk assessments using more recent data. The CDC, through the LAHDRA work, gathered the necessary information demonstrating that airborne plutonium releases were high during historic LANL operations. Inhalation of plutonium particles is a concern because plutonium particles can imbed in the lungs and emit alpha and gamma radiation for many years and increase the risk for certain cancers. Our Grandmas and Grandpas who inhaled these plutonium particles may have already passed on but we are still owed that information as Pueblos whose ancestral lands were seized for the production of this plutonium.

In addition, more funding is needed to assist the on-going efforts of the four Pueblos closest to LANL to collect and analyze more recent data and to participate in collaborative processes to restore natural resources of cultural importance to us that were injured by LANL radionuclide releases. The four Pueblos that are closest to LANL—Cochiti, Jemez, San Ildefonso and Santa Clara—all receive limited funding from the DOE through a program known as the Los Alamos Pueblos Project or LAPP. LAPP funding helps the four Pueblos collect data and conduct their own analyses and provide oversight of various processes addressing LANL. In addition, DOE provides very limited funds to allow the four Pueblos to participate in the LANL Trustee Council along with the DOE, the U.S. Department of Agriculture, and the State of New Mexico. The LANL Trustee Council is working cooperatively to conduct an assessment of natural resources potentially affected by releases of contaminants from LANL. The end goal of the LANL Trustee Council's work is to restore any injured natural resources to the condition they would have been in but for the release of the hazardous contaminants. Based on the constraints ofCERCLA, however, the LANL Trustee Council has to focus more of its work on LANL releases since the 1980s and cannot fully embrace all of the historical releases of concern from the early days of the lab's operations.

These processes through the LAPP program and the LANL Trustee Council will help the four Pueblos to better understand the Western science impacts of radionuclide releases at LANL but the Pueblos would be greatly benefited by additional funds to do this imp011ant work. The funding from DOE is appreciated but it is woefully inadequate. The Department of Interior (DOl) will not contribute funds for the four Pueblos to participate in the LANL Trustee Council even though DOl funds natural resource damage assessment work of other Tribes across the nation. DOl has taken this position because the potentially responsible party for the hazardous releases in this case is a sister federal agency, DOE.

Thus, the four Pueblos really are at a disadvantage compared to other Tribes in having the financial and technical resources to fully assess impacts of radionuclide releases at LANL. This is an area where Congress can help with additional funds. Congress can also help by finally authorizing and funding a true dose reconstruction at LANL to address what the CDC has already identified concerning historical radionuclide releases from the early days of LANL.

Thank you for your consideration of this testimony. We look forward to working with Congress, the DOE, and other appropriate federal agencies to address these critical issues.

Senator UDALL. Thank you very much, Governor.

Councilman Ryan Riley. Thank you.

STATEMENT OF HON. RYAN RILEY, COUNCIL REPRESENTATIVE, PUEBLO OF LAGUNA

Mr. RILEY. Good afternoon. On behalf of Governor Herrera, the Pueblo of Laguna extends its gratitude to Vice Chairman Udall for chairing this hearing today; to Representatives Luján and Haaland for your interest in attendance. To also Chairman Hoeven and the Committee, and to the Committee staff who have made the journey here today.

I would also like to acknowledge our Pueblo of Laguna membership that has traveled from Laguna to attend this hearing today. Thank you for coming today.

The Pueblo deeply appreciates the opportunity to testify on the effects of radiation in Indian Country, a subject of great long-standing and ongoing concern to the Pueblo of Laguna. This statement is submitted by the Pueblo of Laguna to apprise the Committee of the impacts of radiation exposure on the Pueblo's tribal lands. The needs of Pueblo members and families afflicted by mine-related diseases must be addressed. Further, the Pueblo's land, contaminated by past uranium mining, must be remediated as required under federal statute.

The Pueblo of Laguna is a federally recognized Indian tribe with 8,800 tribal members affiliated with six different villages on 530,000 acres just west of Albuquerque, New Mexico. Those tribal lands contain the site of what was once the world's largest open-pit uranium mine, the Jackpile-Paguate Mine. The Pueblo's members and our land continue to suffer from radiation exposure,death, disease, polluted water, and thousands of fenced-off acres are the mine's legacy today.

The United States aggressively promoted, encouraged uranium exploration and mining in an effort to develop nuclear capability for military purposes at the end of World War II and throughout the Cold War. It exercised extensive control over the uranium industry. Beginning in 1952 Anaconda Mining Company entered into BIA-approved leases to mine uranium on the Laguna reservation. Under the federal government's oversight, Anaconda, over a 30-year span, mined 24 million tons of uranium-bearing ore from Laguna tribal lands. After the United States had stockpiled enough uranium to meet its military needs, mining ended on the Pueblo's land in 1982, and the mining company finally left.

Despite Anaconda's resistance, the Bureau of Indian Affairs required reclamation of the mine after its closure. But lacking federal standards that would adequately address a uranium mine cleanup, the BIA and Bureau of Land Management developed a reclamation plan intended primarily to restore the site back to its natural state or as close to as practicable.

The limited reclamation was completed in 1995, but the Pueblo's members are still suffering profound health effects from not only the mining and reclamation periods, but also ongoing contamination. All told, 1,000 or more Pueblo members worked at the mine from 1953 to 1995. Many more, including women and children, were and continue to be exposed to radiation and hazardous substances in the water, in the air, in plants and meat that we eat, and even from the earth used to build homes, particularly in Paguate Village, which is situated on the edge of the largest mine pit at Jackpile.

While no comprehensive health study has ever been conducted on the Pueblo, existing academic and medical studies supplemented by surveys confirm that cancer and respiratory illnesses have plagued Pueblo members for decades and still do to today. For example, a startling 88 percent of 402 pueblo home health patients who worked at the mine after 1971 have been diagnosed with pulmonary fibrosis, a RECA-compensable disease. In fact, research collected by the Southwest Research and Information Center shows no meaningful difference in the health effects on pre- and post-1971 mine workers.

But the focus on uranium workers is too narrow. A regional survey found that 40 percent of the women who washed their spouses' contaminated work clothing reported a wide range of adverse reproductive outcomes, including miscarriages, stillbirths, and children with birth defects. 72 percent of Paguate homes tested over a three-month period in 2011 had excessive radon levels with a cancer risk equivalent to smoking between one to two packs of cigarettes per day.

Accordingly, the Pueblo urges not only immediate expansion of RECA to include uranium workers from 1972 to 1990, but also further research and legislation to address the more widespread effects that have been ignored to date.

EPA has listed the Jackpile Mine as a Superfund site in 2013. The Pueblo is encouraged by the long-needed decision to remediate the mine and the preliminary steps taken to clean up the contamination under CERCLA to the extent that it is possible.

In conclusion, uranium mining during the Cold War era left a long legacy of contamination borne significantly by a few American Indian tribes, including Laguna Pueblo. The people of our pueblo have already paid a devastating and steep price toassist the United States in its time of need. We continue to pay as our members struggle with death and disease and an enduring scar on the tribal landscape today. We implore the United States to repay its debt to the pueblos' members by addressing the health and welfare of our people and by cleaning up the environmental devastation left behind.

Thank you for allowing the Pueblo of Laguna to testify today, Vice Chair. Our written testimony goes into greater detail. If you have any questions, I am ready to answer. Thank you.

[The prepared statement of Mr. Riley follows:]

PREPARED STATEMENT OF HON. RYAN RILEY, COUNCIL REPRESENTATIVE, PUEBLO OF LAGUNA

Good morning. The Pueblo of Laguna extends it gratitude to Vice Chairman Udall for chairing this hearing, to Representatives Lujan and Haaland for your interest and attendance, to Chairman Hoeven and the Committee, and to the Committee staff who made the journey here. The Pueblo deeply appreciates the opportunity to testify on the Effects of Radiation in Indian Country, a subject of great, long-standing, and ongoing concern to the Pueblo of Laguna.

This statement is submitted by the Pueblo of Laguna ("Pueblo" or "Laguna") to apprise the Committee of the impact of radiation exposure on the Pueblo's tribal lands. The needs of Pueblo members and families afflicted by mine-related diseases must be addressed. Further, the Pueblo's lands, contaminated by past uranium mining, must be remediated as required under federal statute.

The Pueblo

The Pueblo of Laguna is a federally recognized Indian tribe located 45 miles west of Albuquerque, New Mexico. The Pueblo has approximately 8,800 members who are affiliated with six different villages. The Pueblo's lands consist of more than a half million acres in Cibola, Sandoval, and Bernalillo counties. Those lands contain the site of what was once the world's largest open pit uranium mine: the Jackpile-Paguate Mine.

Summary

In an effort to develop nuclear capability for military purposes at the end of World War II and throughout the Cold War, the United States promoted and encouraged uranium exploration and mining. The Pueblo of Laguna was a very early focus given its location in the Grants Mineral Belt, which stretches from the Pueblo to east of Gallup and has especially rich uranium deposits. During this period, the United States exercised extensive control over the domestic uranium industry, including ex-

ploration, production, processing, and marketing. For example, the United States set the price for uranium and established itself as the sole purchaser of uranium ore until the late 1960s. The rapid development of uranium mining in the Southwest during the Cold War left a long legacy of contamination. That price, paid for our national defense, was and is borne significantly by American Indian tribes.

Beginning in 1952, Anaconda Mining Company entered into BIA-approved leases to mine uranium on the Laguna Reservation. Under the federal government's oversight, Anaconda mined 24 million tons of uranium-bearing ore from Laguna tribal lands over a 30-year span, during a time when environmental controls were unsophisticated and undeveloped.

Mining ended on the Pueblo's lands in 1982, and the mining company left. Despite Anaconda's resistance, the Bureau of Indian Affairs required reclamation of the mine after its closure. But, lacking federal standards that would adequately address a uranium mine cleanup, BIA and BLM developed a reclamation plan intended primarily to restore the site back to its natural state, or as close to it as practicable. That limited reclamation was completed in 1995, but the Pueblo's members are still suffering profound health effects from past exposure and ongoing contamination.

To understand the horrible and lasting effects radiation and other uranium-related contamination have had for decades, and continue to have, on the Pueblo and its members, it is important to understand the history of the mine. That history spans almost seventy years, from the early 1950s when mining began through the mine's closure in 1982, followed by reclamation, post-reclamation, and finally the CERCLA remediation period beginning under the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA") in 2013 and still in its early stages.

Mining at Laguna

Consistent with the United States' aggressive promotion of uranium mining, in May 1952, the Anaconda Mining Company (later Atlantic Richfield or ARCO) entered into a lease with the Pueblo, approved by the Secretary of the Interior, to mine uranium on 4,988 acres of Laguna land near the Village of Paguate. Additional BIA-approved leases were signed in 1963 and 1976 bringing the total to almost 8,000 acres. As a result, Anaconda operated what was then the world's largest open pit uranium mine at the Pueblo from 1953 until 1982. The vast majority of uranium produced on Indian land between 1950 and 1968 was purchased by the U.S. Atomic Energy Commission.

Anaconda utilized three open pit mines and nine underground mines at Laguna to produce 24 million tons of uranium-bearing ore. More than 400 million tons of earth had to be moved to obtain that ore. The pit located next to the Village of Paguate was the deepest at 625 feet. Mining conducted from the underground mines primarily began in the 1970's. The mine employed as many as 800 tribal members, the majority of the Laguna workforce.

Anaconda closed the mine on March 1, 1982, after the United States had the stockpile of uranium it needed for military purposes, international competition increased, and concerns about the nuclear power industry were growing.

The 1980s

Despite requirements in the mining leases and federal mining regulations, Anaconda resisted its responsibility to reclaim the mine after its closure, even threatening litigation. As a result, the site lay dormant for seven years before efforts to reclaim the mine began. More than 2,000 acres of land and several pits needed to be reclaimed. Some pits were filled with contaminated water that had seeped up over the years. During that time, stockpiled waste blew into surrounding areas, including the Paguate Village, located just 30 yards from the mine. In addition, rain water washed waste from the mine into surface water tributaries.

A draft environmental impact statement recommended reclaiming the mine because the site was a public health and safety hazard, noting that more serious hazards would develop if the site was not reclaimed.

Reclamation would eventually begin only after Anaconda, the United States, and the Pueblo reached an agreement in 1986, approved by the Secretary of Interior, by which the Pueblo would perform the limited reclamation work under a contract with Bureau of Indian Affairs ("BIA") funded by Anaconda (now Atlantic Richfield).

Reclamation

There were no standards for reclaiming a closed uranium mine in place at that time. CERCLA was in its infancy and was not even mentioned in the almost 1,000-page environmental impact statement prepared by BIA and BLM. Accordingly, the reclamation was conducted with BIA and BLM oversight according to a Record of Decision and Management Plan developed by BIA in cooperation with other federal

agencies and according to regulations under which BIA and BLM controlled mining and reclamation on tribal lands. The limited reclamation work by the Pueblo's newly created tribal corporation, Laguna Construction Co., began in 1989 under a Public Law 638 contract between the Pueblo and the BIA.

As the Pueblo's trustee, the BIA is responsible for monitoring the site and its ongoing health and environmental impacts, and much remains to be done to mitigate the health and environmental impacts. Even then, nothing can erase the scar in the land, bring back the lives that have been lost, restore broken families, or heal the terminally ill.

EPA Designation of the Jackpile-Paguate Mine as a Superfund Site

EPA listed the Jackpile Site on the National Priority List (NPL) by publication in the Federal Register on December 12, 2013, thereby making it a Superfund site. In summary, the results from EPA's preliminary site investigation showed that despite the surface reclamation of the mine areas, releases of hazardous materials from the site are still occurring and elevated levels of isotopic uranium have been detected in the surface waters of Rio Paguate, Paguate Reservoir, and downstream in the Rio San Jose. Surface water is used for fishing, livestock and wildlife consumption, and traditional/cultural activities.

The first major step in the CERCLA process, the Remedial Investigation/Feasibility Study, is underway to identify the options for the ultimate CERCLA cleanup. But forty years after the mine's closure is forty years too long.

Radiation Impacts at Laguna

Given this tortured history and the hazardous materials inherent in uranium mining, it was perhaps inevitable that members of the Pueblo would suffer from serious, all-toooften fatal, diseases.

The Village of Paguate, situated on the edge of the largest open pit in the mining area, was significantly affected by the mining activity. In the village, often-daily blasting caused old stone and mud houses to crack apart. Paguate residents recall dust that seemed to linger for hours after a blast before settling on their homes, crops, and clothes.

Little is yet understood about the stability of the radioactive pollutants and additional risks, including their migration into local groundwater supplies or into the atmosphere. Of the 24 million tons of ore mined from the Jackpile-Paguate Mine, approximately 23.7 million tons were left as waste, which is still dangerous because of radioactive elements it contains. In addition, water that flows through the site, including the Rio Moquino and the Rio Paguate, is contaminated from radioactive elements. Communities and families lost their water wells because of unsafe levels of radiation. Because water is so scarce in our arid part of New Mexico, the contamination of our water resources is particularly devastating to our people and to the entire region.

Miners and mill workers were largely unaware of the dangers of radiation exposure. Even as the understanding of those dangers grew, the Federal Government failed to protect uranium workers and their families from the hazards of exposure to radioactive materials. Radiation exposure can cause disease that may not show up for 10–40 years, and recall that Pueblo members worked actively on reclamation efforts as recently as 1995.

Former mining and reclamation employees, as well as Pueblo members living in Paguate and downwind or downstream continue to report growing numbers of mining- and cancer-related illnesses. Many Laguna members have died, and many more suffer from disease linked to radiation exposure attributed to uranium mining. The United States is indebted to those Pueblo members who sacrificed their health and even their lives to provide uranium for America's Cold War nuclear arsenal.

We asked the Southwest Research and Information Center (SRIC), an organization with significant expertise in uranium impacts, to help us prepare for this hearing by cataloging and analyzing available research on the health impacts of uranium, particularly on Laguna members. We hope to supplement this written testimony with a written report from the SRIC, but from the preliminary memorandum already provided to the Pueblo, at least four conclusions can be highlighted.

First, the health impacts on Pueblo members specifically are profound. For example, a startling 88 percent of 402 Pueblo home health patients who worked at the mine site after 1971 have been diagnosed with pulmonary fibrosis, a RECA-compensable disease. That number alone is staggering and confirms what the Pueblo has known for decades: mining has had a devastating and ongoing effect on our community.

Second, at least three studies on uranium mine workers show that there is little to no difference in the health effects on workers who were in the industry before

and after 1971, the current RECA cutoff and when safety conditions supposedly improved. For example, a recent 2017 study conducted in our area showed that 66 percent of mine workers employed after 1971 had abnormal chest X-rays indicative of pneumoconiosis, a RECA-listed lung disease. That is only two percent less that the pre-1971 workers in the same study. In a survey of some 1,300 post-1971 mine workers in our region only a decade ago, more than 70 percent reported "uranium-related medical conditions" as defined by federal agencies, but only nine percent of those illnesses would have been compensable under RECA because of the restrictive list of covered conditions. RECA must be amended, not only with respect to the time period, but also with respect to the scope of conditions covered.

Third, the focus on mine workers is too narrow. The same regional survey found that 40 percent of women living with mine workers reported a wide range of adverse effects on their reproductive health, including miscarriages, stillbirths and children with birth defects, primarily because they were the ones who washed the contaminated work clothes worn by mine workers. And the risks of exposure to non-mine workers are ongoing. Seventy-two percent of Paguate homes tested over a three-month period in 2011 had excessive radon levels, with a cancer risk equivalent to smoking between a pack and two packs of cigarettes a day, and often more.

Fourth, more research is nevertheless necessary. No comprehensive and focused study has been done on the health effects at the Pueblo. At a listening session in Paguate last month conducted by the University of New Mexico METALS Superfund Research Center, Village residents expressed a wide range of concerns about chronic health problems. Primary concerns included lung cancer and other cancers; respiratory diseases, asthma, and other breathing problems; potential health effects of ingesting crops grown in contaminated soils or meat from livestock and game exposed to mine wastes; and hypertension and cardiovascular disease. Pueblo members stand ready to volunteer for community-based health studies and medical screening programs, and to implement interventions to lessen the effects of exposure. There was strong demand for programs that include the generations that have followed the uranium workers of the 1950s through the 1980s.

In short, the health effects and environmental dangers are real, they are ongoing and multigenerational, and they are not confined to mine workers. We at the Pueblo have known this for decades. If the United States needs still more data to understand and believe the endemic health and environmental damage its nuclear program has unleashed, then please fund the research.

Radiation Exposure Compensation Act (RECA)

The Pueblo has worked with the New Mexico Congressional delegation to amend the Radiation Exposure Compensation Act to cover former uranium workers beyond the 1971 cutoff period. Again, the Jackpile-Paguate Mine did not close until 1982, ten years after the cutoff date under RECA, and many Pueblo members worked on the reclamation project, which continued until 1995. As shown above, post-1971 mine workers suffer the same health effects at virtually the same rates as pre-1971 workers. They should be afforded the same benefits under RECA. The Pueblo therefore is grateful that S.947, the Radiation Exposure Compensation Act Amendments of 2019, would extend coverage through 1990.

While the Pueblo strongly supports the legislation, it should also be apparent from this testimony that it does not go far enough. What of the ill Pueblo members who worked on the reclamation project, which continued until 1995? What of the Pueblo women and children in Paguate who have died or are ill because they lived within a stone's throw of the largest uranium mine pit in the world? What of the Pueblo members of all ages and genders who have been exposed through other pathways? Justice does not end with the current RECA amendments.

Conclusion

The Pueblo deeply appreciates the Committee's attention to this issue and the opportunity to testify, and hopes that finally real progress can be made. Sadly, not a whole lot has changed since, for example, our testimony in support of amendments to the Surface Mining Control and Reclamation Act seven years ago. The Pueblo is encouraged by the preliminary steps that have been taken toward remediation of the Jackpile-Paguate uranium mine under CERCLA and appreciates the cooperation of its federal trustee in facilitating the CERCLA process. The Pueblo is hopeful that RECA will be expanded, but much more remains to be done, and it must be done.

Thank you for allowing the Pueblo to testify before this Committee. If you have any questions, please do not hesitate to contact me.

Senator UDALL. Thank you very much, Councilman Riley, and all the testimony of all the witnesses. Your longer testimony will be in the record.

Mr. Phil Harrison.

STATEMENT OF PHIL HARRISON, CONSULT/ADVOCATE, NAVAJO URANIUM RADIATION VICTIMS COMMITTEE

Mr. HARRISON. Thank you. Good morning. My name is Phil Harrison. I'm an enrolled member of the great Navajo Nation. I'm a former underground uranium miner, remediation worker, and victim of the past Cold War era.

It is an honor and privilege to be invited and present my statement today before the Senate Committee on Indian Affairs. I would like to personally thank Senator Udall and your colleagues who bring the oversight field hearing to New Mexico. The theme of "America's Nuclear Past: Examining the Effects of Radiation on Indian Country" certainly hits home, as it brings sadness and memories of our loved ones who died from uranium mining exposure and milling yellowcake.

During the Cold War era, the Atomic Energy Commission under the United States Government looked towards the Navajo Nation for uranium when the U.S. discovered it in various parts of the Navajo Nation. The mining of uranium was fully engaged from about the late 1940s to the year 1990. My late father, Phillip Harrison, Sr., died from lung cancer at the age of 44. He was one of the early miners, along with my uncles, and hundreds more who went to work. The miners from the onset were never warned and unknowingly exposed to excessive radiation and toxic chemicals. Nor did they know the rationale behind mining uranium and not understanding what being patriotic was. It is sad to say that they did not speak English or write English.

The federal government conducted several studies pertaining to uranium exposure. One of those studies was by the U.S. Public Health Service and the National Institute of Occupational Safety and Health. These records are held by Centers for Disease Control in Atlanta, Georgia. Through these studies, it is a known fact if you mine or mill uranium, you will get lung disease or lung cancer. After the fact, there are so many sad stories that many of our people and others across the nation have lost their loved ones in the Southwest United States.

However, compensation programs were established and being administered by the U.S. Department of Justice and the provisions were too stringent. According to the 2018 report by the U.S. Department of Justice, 6,447 members of 22 Indian tribes applied for RECA compensation. 4,253 were approved, and 2,078 were denied pursuant to RECA as of February 2018. Of this amount, 5,523 Navajos submitted, 3,489 were approved, and 1,957 were denied. The same numbers are also evident under the U.S. Department of Labor rules and regulation.

There are some flaws in the law as to which we are requesting an executive discussion to recommend some proposed changes. These proposed changes would certainly benefit the former uranium workers and ease the requirements. Under the proposed changes, the RECA amendment of 2019, the post-'71 uranium

workers are included. The post-'71 uranium workers are suffering the same consequences, which many have died from lung disease and lung cancer. Our neighboring tribes, Laguna Pueblo, have also experienced the same deadly consequences within their tribe and continues to wait for the federal government to recognize, apologize, and compensate them fairly for their illness.

In conclusion, in examining the effects of radiation in Indian Country, it should not be that hard to understand there was harm being done. The federal government knew the danger of radiation exposure and the deadly consequences. In addition, the Native people rendered services for national security and created America's nuclear weapons program.

Furthermore, many Natives served in the U.S. Armed Forces, and as you know, the story behind the Navajo code talkers and how they won the war so we could have freedom. For all the sacrifices they have made, it is imperative to act on the proposed changes in the RECA law.

So Vice Chairman, we have some concerns over the laws being administered by the Department of Justice and the Department of Labor. There's a list here that we have and one of them is that we would like to have the passage of the RECA amendment and also to meet with the Judicial Committee as soon as possible, the hearing that has been planned. And there are some flaws in the medical benefits, the wage laws, and impairment evaluations. So these are some things that we would like to have addressed as we go along with this struggle.

Thank you, Mr. Vice Chair.

Senator UDALL. Thank you so much, Mr. Harrison, for that testimony.

And please proceed, Ms. Tina Cordova.

STATEMENT OF TINA CORDOVA, CO-FOUNDER, TULAROSA DOWNWINDERS CONSORTIUM

Ms. CORDOVA. Good afternoon, Vice Chairman Udall. It's an honor to be with you here today to provide this testimony. I want to thank you for inviting me to participate, but I also want to acknowledge that I feel very honored to be a part of this distinguished panel.

I hope you won't feel that I'm out of order when I mention something, because you invited our comments after the testimony we just heard. I think it's very unfortunate that Mr. Gray and Mr. O'Konski didn't remain, because we were here patiently listening to their testimony, and they have exited before we gave ours.

As you know, Senator, I'm a native New Mexican, a mother, a grandmother, a daughter, a granddaughter, a sister, an aunt, a friend, and I'm also a small business owner of over 29 years. But I'm a cancer survivor and a downwinder, and a volunteer community organizer, co-founder of the Tularosa Basin Downwinders Consortium, or TBDC for short.

Joining me today in the audience are many other downwinders representing communities from all across New Mexico. Some of these people have had cancer themselves or are battling cancer now. All of them have lost loved ones, far too many to mention

here. We certainly know and understand the importance of these hearings.

Senator Udall, as we thank you for this hearing and your support, we also want to acknowledge and thank your father, Secretary Stewart Udall, posthumously for the dedication he and, as a matter of fact, your entire family has had to the issue at hand. The creation and passage of the Radiation Exposure Compensation Act, or RECA, has its origins in your family, in the tireless work of your father, who possessed the moral compass to well understand the damage that was done to human health as our government sought to develop and test nuclear devices.

In a 1992 article published in The New York Times, your father stated the following, and I quote: "There is nothing comparable in our history to the deceit and the lying that took place as a matter of official government policy in order to protect this industry. Nothing was going to stop them, and they were willing to kill our own people."

Senator, we know that if it were within your power and your control, we wouldn't be here today to request the support of the U.S. Senate to pass the amendments to the Radiation Exposure Compensation Act. We would be here, Senator, today to celebrate with you the justice we have all fought so hard to achieve, the justice your father so doggedly fought for on behalf of the downwinders and uranium workers.

Today we ask again for the support of the U.S. Senate in the passage of Senate Bill S–947, amendments to the Radiation Exposure Compensation Act, and adoption of the language to coincide with and match the language in the recently introduced House Bill HR–3783, whose primary sponsor is Congressman Ben Ray Luján of New Mexico and which is completely supported by Congresswoman Haaland. We ask that the U.S. Congress extend compensation to the people of New Mexico, noting that New Mexico has played a pivotal role in this country's national security as home to the Manhattan Project, all the uranium mines that have been described here today, the Trinity Test Site, two national laboratories, Los Alamos and Sandia, and many other large government installations, too many to mention.

Senator, as part of this testimony, I won't go into the specifics about the Trinity test that made it so devastating to human health. That was included in my written testimony already submitted. I want to focus on the at least three significant events that occurred this summer that support and advance our work.

First, we were able to consult with Dr. Arjun Makhijani of the Institute for Energy and Environmental Research. He brought to our attention that when nuclear bombs were tested aboveground at the Nevada Test Site, monitors were in place in New Mexico that indicated fallout traveled to all parts of our state. The fallout didn't end at the New Mexico border, as is sometimes depicted in maps used by our government. It is important to note that exposure to radiation is cumulative. And while many people in New Mexico received a high dose of radiation from the Trinity test, New Mexicans also continued to receive chronic doses from the fallout produced at the Nevada Test Site well into the summer of 1962.

This data is documented in the book entitled "Under the Cloud: The Decades of Nuclear Testing," by Richard Miller.

Second, Robert Alvarez and Kathleen Tucker authored an article published in the July 2019 issue of the Bulletin of Atomic Scientists entitled "The Most Significant Hazard of the Entire Manhattan Project," that brings attention to the sharp rise in infant mortality recorded after the Trinity test. This spike was seen after there had been a steady multi-year decline in infant mortality.

Senator Udall, babies in New Mexico were dying. And when the government was asked about why or how, the government again refused to admit they had over-exposed people in New Mexico to high levels of ionizing radiation.

This is unconscionable. We should all be outraged that we were losing our babies and we were refused assistance by the U.S. Government.

Last, Dr. Joseph Shonka, a health physicist and nuclear engineer, delivered a lecture entitled "The First Dirty Bomb: Trinity" at a scientific symposium in Denver this summer. Dr. Shonka worked extensively on the Los Alamos Historical Document Retrieval and Assessment, or LAHDRA, Project, a project commissioned by the Centers for Disease Control and Prevention. His work on LAHDRA focused on Trinity, and he's considered to be a foremost expert on all things relative to the Trinity test. His lecture focused on the extensive fallout produced by the Trinity bomb and the subsequent negative consequences to human health.

We're working to bring Dr. Shonka to New Mexico to deliver his lecture in locations all across our state, because we believe that the people of New Mexico deserve to hear what Dr. Shonka has to say about the toxic nature of the Trinity test to validate what we've experienced and to inform everyone why it's vital to amend RECA to include the downwinders of New Mexico.

And so Senator, members of the TBDC are here again today asking for justice, asking for fairness, asking that after 74 years we be treatedthe same as other downwinders that have received compensation since RECA was first passed in 1990, over 29 years ago. We're hoping and praying that after 74 years, members of the U.S. Senate will hear us with open ears, open hearts, and open minds.

Senator, no other state in the United States sacrificed more than New Mexico for our national security during World War II, and yet New Mexicans continue to fight to be acknowledged and compensated for that sacrifice, even as people continue to suffer and die as a result.

So as we approach the 75th anniversary of the Trinity test in 2020, there is an urgent moral and ethical imperative to right this wrong. There is a path to healing for the uranium miners and the downwinders of New Mexico whose lives and lands were taken advantage of and exploited during the Manhattan Project and beyond. It starts with the recognition of our service and our sacrifice to this great nation and is complete only when we are afforded the exact same care and coverage as other downwinders. Not one dime more, Senator Udall, not one dime less. Thank you.

[The prepared statement of Ms. Cordova follows:]

PREPARED STATEMENT OF TINA CORDOVA, CO-FOUNDER, TULAROSA DOWNWINDERS CONSORTIUM

Good Morning Vice Chairman Udall,

It is an honor to be with you here today, Senator, to provide testimony. Thank you for inviting me to participate. I want to acknowledge that I also feel very honored to be a part of this distinguished panel to offer testimony on behalf of all the Downwinders of New Mexico. As you know, my name is Tina Cordova. I'm a native New Mexican, a mother, a grandmother, a daughter, a granddaughter, a sister, an aunt, a friend and I'm also a small business owner of 29 years. I have employed countless people through the years as one of very few women who hold a construction license in the State of New Mexico. I'm also a cancer survivor, a community organizer and the Co-Founder of the Tularosa Basin Downwinders Consortium (TBDC).

Joining me today in the audience are many other Downwinders representing communities all across New Mexico. Some of these people have had cancer themselves or are battling cancer now. All of them have lost loved ones, far too many to mention here. We certainly know and understand the importance of these hearings.

Senator Udall, as we thank you for this hearing, we also want to acknowledge and thank your father, Secretary Stewart Udall, posthumously, for the dedication he and, as a matter of fact, your entire family has had to the issue at hand. The creation and passage of the Radiation Exposure Compensation Act (RECA) has its origins in your family in the tireless work of your father who possessed the moral compass to well understand the damage that was done to human health as our government sought to develop and test nuclear devices.

In a 1992 article published in the *New York Times*, your father, Secretary Stewart Udall, stated the following:

> "There is nothing comparable in our history to the deceit and the lying that took place as a matter of official Government policy in order to protect this industry. Nothing was going to stop them and they were willing to kill our own people."

Senator, we know that if it were within your power and your control, we wouldn't be here today to request the support of the US Senate to pass the Amendments to RECA. We would be here today to celebrate with you the justice we have fought so hard to achieve—the justice your father so valiantly fought for on behalf of the Downwinders and Uranium Workers.

Today we ask again for your support for the passage of Senate Bill S. 947 Amendments to the Radiation Exposure Compensation Act, and adoption of language to coincide with and match the language in the recently introduced House Bill H.R. 3783 whose primary sponsor is Congressman Ben Ray Lujan of New Mexico. We ask that the U.S. Congress extend compensation to the people of New Mexico, noting that New Mexico has played a pivotal role in this country's national security as home to the Manhattan Project, two national laboratories, Los Alamos and Sandia, and many other large government installations, such as Cannon, Holloman, and Kirtland Air Force Bases, and White Sands Missile Range.

On July 16, 1945, the first nuclear device was detonated in the desert of New Mexico at the Trinity site. The government has always characterized the area as remote and uninhabited, but we know from the US census data that there were at least 40,000 people living in a 50-mile radius of the test site. We've identified ranching families that lived as close as 12 miles to the test site. A few of these people are alive today to tell the stories of how one by one their loved ones have lost their lives to cancer.

The atomic bomb at Trinity had some unique qualities that produced significant fallout. It was the first nuclear device to ever be tested. Because the scientists working on the project had to make certain the test was a success, the bomb was packed with 13 pounds of plutonium. Only three pounds fissioned. The remaining ten pounds of unfissioned plutonium was joined with the soil, the sand, and the animal and plant life in the area and incinerated. The mushroom cloud rose over seven miles beyond the atmosphere, penetrating the stratosphere. The plutonium utilized has a half-life of 24,000 years. A green glass-like substance called Trinitite was produced at the site when the sand in the soil melted from the heat of the blast and was joined with the plutonium. The only place in the world you'll find Trinitite is in the desert of New Mexico.

Trinity was also the only bomb ever detonated on a platform, 100 feet off the ground. In comparison, the bombs dropped on Hiroshima and Nagasaki were detonated at a height of 1,600 to 1,800 feet. The Trinity blast literally had nowhere to

go once it impacted the earth and is the reason radioactive material was dispersed widely across the Tularosa Basin.

This radioactive fallout settled on everything. On the soil, in the water, in the air, on the plants, and on the skin of every living thing, both human and animal. It was a public health and an environmental disaster of grand proportions.

To fully understand how the fallout negatively impacted human health, we also have to understand what life was like in rural New Mexico in 1945. People lived very organic lifestyles. They had no running water and used cisterns, holding ponds, or ditches to collect water for drinking, cooking, bathing, cleaning and doing laundry. They depended on the earth, the soil, the water to produce all the food they ate. They had gardens and orchards and raised cows, pigs, chickens, sheep, goats, and the like for food. They hunted wild game when it was necessary. One man told me, "We didn't have much, but we had all we needed, and it was all destroyed after the bomb."

Dr. Louis Hempelmann, the physician who served as the Manhattan Project Medical Director, stated afterwards, and I quote:

> "A few people were probably overexposed, but they couldn't prove it and we couldn't prove it so we just assumed we got away with it."

Part of the history of Trinity is that there was a time following the detonation when people were allowed to freely go in and out of the site without obstruction. Children were taken there on field trips, ate their lunches there, and then packed their pockets with the radioactive Trinitite I mentioned before. They stored shards of Trinitite in cigar boxes under their beds along with other childhood treasurers. People picnicked at the site and some ranchers have told me they hunted wild game there all the time.

New Mexicans were the first people in the world to be overexposed to radiation as a result of a nuclear test. The New Mexico Downwinders are the collateral damage that resulted from the extraction of minerals, the research, and development and testing of the first atomic bomb and the unfettered disposal of nuclear waste.

Few knew what had taken place when the bomb was detonated. It produced more heat and light than the sun and was more powerful than the bomb at Nagasaki. The blast took place before dawn and most people alive at the time have told me they thought it was the end of the world.

While it was not the end of the world, it was the beginning of the end for so many people, people like my own father who a four-year-old child was living in Tularosa about 40 miles south of the Trinity site, the way the crows fly. Like his neighbors, he and his family lived a simple but full life in rural New Mexico. As a result of his exposure, he paid the ultimate price for simply being a child raised in a downwind community.

My father, Anastacio Cordova, died after suffering for more than eight years with three different cancers for which he had no risk factors. He didn't smoke, drink, use chewing tobacco, or have any viruses, yet he developed two distinctly different and rare oral cancers along with prostate cancer—which are all compensable under RECA. The doctors told us, "This just doesn't happen. We just don't see this."

My father's overexposure to high levels of radiation from the Trinity test as a child damaged his cells, which led to cancer and altered his DNA. Those genetics were passed on to me, and I am thank goodness a cancer survivor. Through our exposure we continue to pass on the damaged DNA to our children and our children's children from one generation to another never to be the same.

As a result, we experience a cycle of poverty associated with the cost of taking care of our health when we get sick. Living in rural New Mexico, we can never get treatment at home because there are no medical facilities in the small towns and villages where we live. Since 1990, the RECA program has resulted in the establishment of medical clinics and screening and treatment facilities in other downwind communities. The proposed amendments would generate similar results where New Mexicans will be able to receive care.

People tell me stories of how they hold bake sales to buy pain medications or how they have to sell cattle to pay for their chemotherapy. How a wife has to go door to door in her Pueblo community to try to raise money for fuel to get her husband to and from his treatments in Albuquerque. When a family must spend all they have to obtain the medical care they need to survive cancer, they have nothing left to pass on but the damaged genetic legacy.

We would also like to add that this summer at least three significant events occurred that support and advance our work:

1. We were able to consult with Dr. Arjun Makhijani of the Institute for Energy and Environmental Research (IEER). He brought to our attention that when nuclear bombs were tested above ground at the Nevada test site, monitors were in place in

New Mexico that indicated fallout traveled to all parts of New Mexico. The fallout didn't end at the New Mexico border as is sometimes depicted in maps used by the government. It is important to note that exposure to radiation is cumulative and while many people in New Mexico received a high dose of radiation from the Trinity test, New Mexicans also continued to receive chronic doses from the fallout produced at the Nevada test site well into the summer of 1962. A sample of this data is chronicled in the book entitled *Under the Cloud: The Decades of Nuclear Testing*, by Richard L. Miller.

2. Robert Alvarez and Kathleen M. Tucker authored an article published in the July issue of the *Bulletin of Atomic Scientists* entitled *The Most Significant Hazard of the Entire Manhattan Project* that brings attention to the sharp rise in infant mortality recorded after the Trinity test. This spike was seen after there had been a steady multi-year decline in infant mortality. Senator Udall, babies in New Mexico were dying and when the government was asked about why or how the government again refused to admit they had overexposed the people in New Mexico to high levels of ionizing radiation. This is unconscionable. We should all be outraged that we were losing our babies and we were refused assistance by the government..

3. Finally, Joseph J. Shonka, Ph.D., a health physicist and nuclear engineer, delivered a lecture entitled *The First Dirty Bomb, Trinity*, at a scientific symposium in Denver. Dr. Shonka worked extensively on the Los Alamos Historical Document Retrieval and Assessment (LAHDRA) Project, a project of the Centers for Disease Control and Prevention. His work on LAHDRA focused on Trinity and he is considered to be a foremost expert on all things relative to Trinity. His lecture focused on the extensive fallout produced by the Trinity bomb and the subsequent negative consequences to human health. We are working to bring Dr. Shonka to New Mexico to deliver his lecture in locations across our state. We believe the people of New Mexico deserve to hear what Dr. Shonka has to say about the toxic nature of the Trinity test to validate what we've experienced and to inform everyone why it is vital to amend RECA to include the Downwinders of New Mexico.

Members of the Tularosa Basin Downwinders Consortium are here again today asking for fairness, asking that, after 74 years, we be treated the same as other Downwinders that have received compensation since RECA first passed in 1990. After all, RECA recognizes the responsibility of the Federal Government to apologize and provide health care and monetary compensation to individuals who contracted certain cancers and other serious diseases following their exposure to radiation during atmospheric nuclear weapons test. Downwinders and Uranium workers covered by RECA have received more than $2.3 billion in claims. While this is a significant amount of money, and as you well know would be meaningful to the people of New Mexico what we covet most is fairness and inclusion in the health care coverage afforded by RECA. We don't want one dime more, or one dime less than what other Downwinders receive.

New Mexico Downwinders are hoping and praying that after 74 years, members of the US Senate will hear us with open ears, open hearts, and open minds. We ask that you put yourself in our shoes that you consider what it's like to walk with us just one day. Imagine what it's like to attend a funeral, a chemo infusion, or receive the horrible news that the cancer you've been fighting is back. Can you imagine telling their children that you are dying, and all you can wonder is: Did I pass on my damaged genes to my children and grandchildren?

No other state in the United States sacrificed more than New Mexico for our national security during World War II. And yet New Mexico continues to fight to be acknowledged and compensated for that sacrifice even as people continue to suffer and die as a result of that sacrifice.

As we approach the 75th anniversary of the Trinity test in 2020 there is an urgent moral and ethical imperative to right this wrong. There is a path to healing for the Downwinders of New Mexico whose lives and lands were taken advantage of and exploited during the Manhattan Project and beyond. It starts with the recognition of our service and our sacrifice to this great nation and is complete only when we are afforded the exact same care and coverage as other Downwinders. Not one dime more. Not one dime less.

Thank you, and I stand for questions.

Referenced:

New York Times Article published in 1992 entitled Santa Fe Portrait; A Longtime Pillar of the Government Now Aids Those Hurt by Its Bombs.

Sample of Data from Under the Cloud: The Decades of Nuclear Testing, by Richard L. Miller.

Article from Bulletin of Atomic Scientists entitled The Most Significant Hazard of the Entire Manhattan Project.

Dr. Joseph Shonka Resume and Abstract from lecture entitled The First Dirty Bomb, Trinity.

Senator UDALL. Thank you very much, Ms. Cordova, for that very, very powerful testimony. And I just want to let you know, on one of the points you raised, we specifically asked the witnesses that were before you to stay, and asked them to stay and hear your testimony today. I have been told that there are individuals from the departments here in the audience that are going to report back to the departments, and please be assured that the departments will be asked in subsequent hearings about your testimony, and also the testimony will be available publicly, because this is a public hearing and when it's finally reported, it will be out there for everyone to see. So thank you very much.

President Nez, you testified that the Navajo peoples creation story is deeply connected to your environment and land, and what the Navajo people desire most is to have their lands cleaned and remediated. So it only makes sense that the Navajo people have a say on the type of cleanup that occurs on your lands; and to actively plan and participate in that cleanup, perhaps even using traditional ecological knowledge.

To your knowledge, has the federal government ever included traditional and cultural knowledge into the cleanup process?

Mr. NEZ. Thank you, Vice Chair, for that question. Not to my knowledge, Vice Chair. But as you know, Chairman, Vice Chair, a lot of the departments throughout the federal government are beginning to be open to utilizing indigenous traditional knowledge in their programs. As you know, Park Services has been beginning to open their eyes and ears to traditional knowledge and techniques of restoring lands. And I can see the same thing happening here in uranium mine reclamations work.

We have a lot of great talent on the Navajo Nation. You know, we tell our young folks to go to school, gain that experience, and to come home and help out. And they have that knowledge when they return home, that dominant way of thinking when they come home. But they also balance it with our own way of life teaching, our culture and tradition.

And that is one of the reasons why we say that we want to be at the table when it comes to the ten-year plan. And I think Navajo professionals and young people today can bring valuable insight to the plan as well as the remediation work, in our minds, today.

And lastly, I just want to say, you know, that the Gallup Indian Medical Center that's going to be rebuilt there, we are wanting to really advocate for a cancer treatment center there, as well, and also include traditional and cultural teaching to bring balance. And if you see my testimony, it says (in Dine). In Navajo, (in Dine) means a restoration and a move to balance and harmony. (In Dine) is imbalance. And we want to return our lands back to harmony as well as our people; not just Navajo people, but all peoples here in the Southwest.

Thank you, Vice Chair.

Senator UDALL. Thank you, President Nez.

And one of the things that I think comes out from the testimony is the issue of consultation and how consultation is performed, because I think, many times, what sometimes the leaders of federal

agencies and others think is that consultation means we draw up a plan and then we present it to the tribe and say, you know, "You have a chance to comment."

To me, consultation means you are equals and before any plan is drawn up, there is a thorough consultation and then, through that process, the plan is come up with, with vigorous consultation00 throughout, rather than this kind of one-sided presentation. And so we're always at the Indian Affairs Committee trying to remind federal agencies that that's true. Do you agree with that?

Mr. NEZ. Thank you, Vice Chair. And I do agree, you know. Administrator Gray from Region 6 spoke earlier. And as you know and many of us here know on the Navajo Nation, we have three regions: We have Regions 9, 6, and 8. And really, Region 9 is the go-to region in terms of all of Navajo. We got New Mexico, Utah, Arizona, all overseen by Region 9.

So it would have been great to hear Administrator Mike Stoker testify before you, but I know that his heart is with the Navajo people. He has visited us. I do have our executive director behind me, Oliver Whaley, our Navajo EPA. So we're looking for ways to bring more resources to the Navajo Nation and we even challenge them to open their own office, uranium office, on the Navajo Nation; an EPA office, a suboffice as well, on the Navajo Nation.

So I do agree with your comment, Vice Chair, and we look forward to bringing everyone together, you know, Department of Energy, EPA, andIHS. You know, when those mandates come from Congress, it's usually the federal programs and the federal offices that begin to coordinate. And tribes—I think we can all agree, tribes are kind of just left on the side wondering what is being planned for the communities. And we advocate for being at that table, Vice Chair. Thank you. SENATOR UDALL: Thank you.

Councilman Riley, you testified that the Village of Pojoaque is located on the edge—excuse me. I know, Paguate. Sorry. I went a little bit further there with my E. It's located on the edge of what was at one time the largest open pit mine in the world, and that the village was significantly affected by mining activity. Sometimes radioactive dust lingered for hours on homes and on crops and on clothes. Was the community ever warned of the possible public health risk during the mining activity?

Mr. RILEY. Thank you for the question, Senator. I think many of us in this room know the answer to that. There was not any information provided by the United States Government on the effects or the outcomes that actually could happen to not only the workers but the communities surrounding the Jackpile Mine boundary area.

And as we become a more mobile community, the health effects of water, surface water, all our ecosystems within our Pueblo of Laguna, we do not and will not be leaving the area anytime soon. So this problem is certainly something that holds great interest to us. So I believe that if the federal government had provided its right information on those effects, I think we might have seen a little bit different outcome how many decades later.

Senator UDALL. Yes. Yes. Can you describe any lingering effects of uranium contamination present today from your observations and things that you have seen?

Mr. RILEY. One of the great curious—you know, looking back in history, not being able to quantify at times all the things that were there prior to the uranium mining, but also being able to see what the effects on surface water in particular have on the local communities and how it's mobile going down to different parts of our reservation. So I think that's probably one of the most prominent.

Secondly, the health effects of cancer, radioisotope outcomes. As mentioned early on in the presentations, the human safety and the environment are a priority to the Pueblo of Laguna and all tribal communities. And we want to make sure that in all those respects, that we take care of those issues today. We can do better than this.

Senator UDALL. Thank you very much.

Governor Chavarria, you testified that the Los Alamos Historical Document Retrieval and Assessment Project concluded that LANL was slow to implement the use of HEPA filters on the exhaust systems of plutonium facilities and the need to further study the effects. Has there been a comprehensive study on cancer or other public health studies on Santa Clara and other northern pueblos in New Mexico? And if not, what do you think is needed there?

Mr. CHAVARRIA. So Chairman, members of the Committee, part of my testimony is to provide funding for the CDC to do that. Those reconstructions really give us a formal understanding, because we owe that to Grandma and Grandpa. You know, it was them that faced those consequences. So the inhalation of plutonium particles is a concern because plutonium particles can embed in the lungs and emit alpha and beta—or gamma radiation for many years and increase the health risk for cancers. Again, our grandmas and grandpas who inhaled these plutonium particles, they've already passed. But we still owe them that information.

And so for now, we have been working with the University of New Mexico, the Cancer Research Center, to help us. Because we can't just rely on the federal government. We have to look at other outside entities to support us in that collection of data. And then it comes back to HIPAA. You know, confidentiality of that data that's been collected. And we heard earlier from the Indian Health Service that, yeah, funding for those specialty type of services are no longer available in the Indian Health Service, so they got to refer the patients out to specialty type healthcare facilities.

But to me, they're not sharing that data. And that should be very important. And I found out yesterday through HIPAA we had a death of one of our veterans, our grandpa. Once an individual is deceased, HIPAA is no longer. It's open to then get that medical record of that individual. But I got to work with the Office of the Medical Investigator. Today I'm working on the death certificate to identify what the actual cause of death to that individual was.

So there's a lot more gaps that need to be filled in. But ultimately, working together is going to be important, because we need that data to actually show the impacts. And how do you put—you can't put a dollar figure on a human, the impact to the health, impact to the natural resources or materials that we utilize for our traditional cultural religious activities. It's priceless.

So how do you put a price on compensation? Even though our lands might be impacted, where do we go? We can't just pack up our bags and leave. We have nowhere else to go because all of our

traditions, our cultures, have been embedded in those lands, aboriginal lands, and surrounding areas, and that's very critical.

All this is very important, Chairman and members of the Committee, that we get the full support from the federal government, the state government, but also tribes, but also higher education institutions to help us fill in those gaps and voids, come to a better conclusion of those health scenarios or health risk assessments as it pertains to us as pueblo, tribal, and tribalnations, people in general.

Senator UDALL. Thank you very much for that answer.

Ms. Cordova, Tina, you testified that to fully understand the impacts of the Trinity test, you must understand life in rural New Mexico in 1945. Could you expand on how the nuclear fallout from the Trinity test affected the land and the water in the area, and what that means for those who raise livestock and eat from their gardens?

Ms. CORDOVA. First of all, to answer that question, Senator Udall—and I appreciate the question, because it's very important for people to understand that in 1945, life was dramatically different than it is today. First of all, the radioactive cloud of debris that was dispersed by the bomb at the Trinity Test Site exceeded the atmosphere and penetrated the stratosphere. They overpacked the bomb with plutonium. They actually utilized 13 pounds of weapons-grade plutonium and only three pounds fission. That means that the remaining ten pounds of unfissioned plutonium that went in that fireball exceeded the atmosphere. For days afterwards, documented by the government, at least for five days afterwards, an ash fell from the sky, a radioactive ash.

We didn't have running water in the villages of New Mexico in 1945, so now the ash was joined with our water supply. It was also joined with the earth and literally got on the skin of every living thing, both animal and humans.

We didn't have grocery stores in 1945 in rural New Mexico. We didn't have refrigeration. So everything that people ate they either grew or harvested or raised or hunted, and our entire food supply was then affected by the fallout that came down.

We tend to live today very differently from that. We lived very organically back then. But when you collect water in a cistern for every purpose, for drinking, for bathing, for cleaning, for cooking, and that water is contaminated, in a closed space with no place for it to go, it remains there forever. Plutonium has a half-life of 24,000 years. Imagine.

And so the people's way of life was completely and totally impacted. And we stress that as we talk about the exposure that we received. I thought it was really interesting that Congressman Luján referenced in the LADHRA study the passage that says that the CDC believes that the exposure the day of the event was 10,000 times what is considered acceptable today. That is hard to wrap our minds around. And so that is in answer to your question.

Senator UDALL. Thank you very much. And I think you know in studying this and listening to the experts and the person that you talked about that you're trying to urge to come to New Mexico, that just the smallest amount of plutonium, just so everyone knows, the size of a small grain of sand or something on the tip of a pen, if

you get that in your body, through either inhaling it or through a cut or something along that line, there's a substantial, substantial likelihood that you're going to get cancer. That's the evidence that's out there today.

So we need to know, we all need to know that when you have a nuclear blast like that and then it settles on a community, it isn't just that one day. The exposure is over a long period of time. And I think your points are very, very well made.

Ms. CORDOVA. Senator, can I say one other thing?

Senator UDALL. Yes, please.

Ms. CORDOVA. Our government—I was just at the opening of the Trinity Site Saturday. We do a peaceful demonstration. We stage ourselves there to make sure that the entire history of the test is told. They still today on the inside at the Trinity Site say that it was remote and uninhabited, that nobody lived in the area. But we know from the census data that there were tens of thousands of people living in a 50-mile radius. And Dr. Hempelmann, who was assigned to the test, said afterward—and I won't get it exactly right—but something to the effect of, "We can never do this again here because we so overexposed people to radiation. And if we ever do it anyplace else, we have to find an area with a 150-mile radius uninhabited."

Well, if you draw a radius around Trinity 150 miles, it pretty much encompasses all of our state. And so by the own admission of the government, they damaged our way of life basically forever.

Senator UDALL. And I would invite you to put the actual quote in the record and you can do that.

Ms. CORDOVA. It is in my written testimony that I submitted. It's there.

Senator UDALL. Thank you very much.

Phil Harrison. You have decades of experience as an advocate for uranium miners, but have also seen firsthand the effects of the uranium legacy in Navajo as a miner yourself. Could you describe some of your observations growing up near uranium mines and the effects on the people around you?

Mr. HARRISON. Thank you. Thank you, Mr. Chair.

When I was in high school, I went to work as a miner to help my father. They gave me a shovel and told me to keep the tracks clear, which I did. And when I was not cleaning up the tracks, I was helping the drilling. And they asked me to do drilling, they were full throttle on the lever. And if I wasn't doing that, I was supplying dynamite and fertilizer and primer cord and blasting caps.

The day I went into that mine, I was never told that this is going to be dangerous and there's going to be some consequences. And I drank that water probably like eight to ten cups a day. So did the rest of the miners. And I have observed that. During the weekends they would load up their canvas bags of water, canvas bags, and take them home, back over here to Shiprock. And all the years that the miners' family—they lived on the site and they were exposed to the tailings that were there, the ore tailings that was there. They used dynamite boxes for their kitchen cupboards. They used vent bags also as kind of like an apron on their cupboards, too.

So I have seen all of that and observed that at a young age. My father would come back in the morning or evening, he would rub his pants and shake it, and all the contaminants would be spread in the living area. Clothes were washed in one basket along with the clothing that came from the mine.

And besides what has happened there at the mine site, the Navajo families, so probably other neighboring tribes, have been exposed to a lot of radiation. The background radiation is like 20 radiation levels. And I would think it was more where the Navajo people lived. So the family members, the children that grew up on the mines, were probably just as affected as the miners when they went into the mine, in the mines.

So I think the whole community, the family, the water sources, the structures, all of those were impacted by 50 years of mining, and that's what I have seen.

I myself went through a major surgery and I was approved for medical benefits but there was no compensation. And also I'm going to bring this out that why were the post-'71 workers not approved for compensation, whereas the remediation workers? They're post-'71 and they're eligible to file a claim; they're eligible for medical benefits, but there are certain illnesses that's not compensated. They're not allowed for compensation. Some of us are in that detrimental category today.

So we ask Members of Congress to include what is not included in the compensable list for miners and also downwinders.

Senator UDALL. And as you know, on the post-'71 miners, all the legislation that was mentioned over in the House, from the Members of Congress here and my legislation in the Senate, is to deal specifically with that issue of the post-'71 miners, because it's really important that we recognize that what we have learned over the years—there may have been some reason in the past, if you go way back. But we have learned that the exposure has continued and that was there.

So would you say that the post-'71 miners are facing the same sort of health issues as those covered under RECA, Radiation Exposure Compensation Act?

Mr. HARRISON. Chairman Udall, I can say that being among our people, a lot of post-'71 miners at a young age have passed. A lot of their children also contracted cancers. We just had a funeral for a young lady two weeks ago. And we just lost a uranium miner about a week ago. We had that funeral. He was a veteran of the Armed Forces.

And I would say that I went to a symposium a couple days ago in Laguna, and I heard from four widows. They lost their husbands all from lung disease. That's typical. Pulmonary fibrosis, silicosis, pneumoconiosis, fibrosis of the lung, cor pulmonale. They died from the same lung disease as the pre-'71. So it's pretty much evident that their lives are shortened. Their lives are shortened and they're not going to be able to enjoy what Western society says, the American dream. A lot of our fathers did not get to the point where they would have that Navajo dream or Western dream. They did not. They were deprived of their life, such as my father died at age 44. My siblings, my grandchildren never got to know who their father, who their grandfather, was. And this is typical among all the fami-

lies, all the workers and all the neighboring tribes. They're experiencing that now, Mr. Udall. They are hurt, and there's pain and suffering and frustration, even with the criteria. There's a lot of thresholds that you have to jump so high to pursue compensation. That's pretty evident now.

Senator UDALL. Phil, to your knowledge, was your father ever screened for cancer or considered high risk for cancer?

Mr. HARRISON. My father was part of the cohort studies that was done by the NIOSH and Public Health Service. Like I said earlier, there was like 744 Navajo miners that were studied. The government has a logbook of who was studied: Their Social Security number, their birthday, when they entered the mine, when they died, when they were diagnosed, what they were diagnosed with. But one day in the meeting in Shiprock, I seen that booklet. I said, "You have the information. Why are we going through the conversation and frustration proving to you that these guys actually mined uranium?"

My father was already dying slowly and he didn't last a year after he left the mine in 1970. He died January 11, 1971. So he was part of the people that was studied. And I know that the government continues to study those miners somewhere, and it's hard to find medical records, and nowadays, just like this gentleman had mentioned, someone passes. If the Department of Justice wants medical information, you have to hire an attorney again. You put the burden on the family to find the executor of the estate. You have to go through tribal court to prove to the federal government that a father died from lung disease. And that just creates more frustration for our people. It's getting harder and harder every day for those that have not been compensated.

Senator UDALL. Yes, I know, we understand. That's what we're trying to do with this legislation, to bring some justice to this situation.

President Nez, in my opening statement, I mentioned the Red Water Pond community, a settlement on the Navajo Nation and the EPA's proposed relocation plan. I think you would agree that when tribes hear the word "relocation," especially by the federal government, it causes some anxiety. In fact, we have heard directly from the Red Water Pond community with concerns about the EPA's proposed relocation plan. To your knowledge, has the EPA or the Army Corps of Engineers reached out to the Navajo Nation government on the proposed relocation plan?

Mr. NEZ. Thank you again, Vice Chair, for the question. Not to my knowledge. And let me just say that I heard from the first panel that cleaning up those uranium mine sites can be done. I know that at times we're told by the departments, federal departments, that it has to be an act of Congress to clean up uranium mines. You know, many of our Navajo people—and I think all of them, you know—their umbilical cords are buried there in their home community, in their homeland. And when you try to relocate somebody to another place foreign to them, you know, that brings a lot of heartache and hardship. And we know that from the history of the Navajo Hopi land dispute, the land settlement, where people were forced to relocate to other places. And sometimes, you

know, they go through much more hardship than others on the Navajo Nation.

But while I have the floor, Vice Chairman, I wanted to mention the fact-finding hearing or the meeting that occurred by Raul Grijalva, the chairman of the House Natural Resource Committee, last week. And we heard testimonies from post-'71 mine workers. Leslie Begay, who is sitting here today. Tommy Reed, who is seated here today. Walter Marble. Johnny Begay. I sat there, front row seat, while they were testifying about what they have gone through, their health. And I felt very sad. I shed a tear; I shed many tears sitting there. But after that, I got angry. And I think there's a lot of anger amongst the many of us here today, wondering why the federal government has yet to help the people that are going through these health problems.

And as you heard from the first panel, as well, if we clean up these uranium mines, then the second, third generations down the road don't have to go through the same health problems as these individuals are going through today.

Leslie there, his testimony about medication not being available at IHS, and the specialization care that he gets off the Nation. Some of them, they can't afford transportation or fuel to go many, many hundreds of miles to get their care. And that's why there's a need for an oncology cancer treatment facility for many of our tribes. It was quite interesting to hear that when we opened the cancer treatment facility in Tuba City, that that was the first cancer treatment facility to ever open up in Indian Country. With these high rates of cancers throughout Indian Country, there was not one. And that's being worked on right now.

And because of the many stories of our Navajo people and those post-'71 mine workers, you know, the hardship they have gone through, I'm sure that is the reason why—I believe that's the reason why the Navajo Nation banned uranium mining on our lands. And I understand that there's even going to be a referendum to solidify that and say, "Yes, enough is enough." And we're not going to condone any more uranium mining on our Navajo lands.

But transportation of radioactive material and waste—there is a ban. Unless they're getting rid of it. Take it out. Take it off our lands. And if we can do that, then there will be no need for relocation of our citizens. And that would bring harmony, restoration, just and fair compensation to all our mine workers here, those post-'71 Navajo workers as well as our brothers and sisters that are not Native, as well. They should get that compensation that they deserve. Thank you, Vice Chair.

Senator UDALL. Thank you. Thank you very much.

Councilman Riley, EPA is currently working on the Grants mineral belt cleanup plan which covers Laguna Pueblo. Can you give the Committee some insight from the Pueblo's perspective on how the cleanup plan is progressing? Also, has EPA worked directly with the Pueblo on setting up cleanup goals?

Mr. RILEY. Thank you again for the question, Senator. And like any project of this complexity, complication, working side by side always can be better. And I think that it goes to great lengths that our federal agencies and our offices need to continue to do the best they can in working with not only our Pueblo of Laguna, but other

tribal communities as well. So I think that that is something that we can continue to strive for as a nation-to-nation of sorts, and I hope that once we move forward with the Grants mineral belt activities.

One thing that I want to point out, Senator, is having to deal with the outstanding issue of having to do mining. There's a moratorium at the Pueblo of Laguna for uranium mining. It's been longstanding. And when you have other entities that are doing or trying to do those type of initiatives, it's very tough and challenging, especially when you look at water authority, water jurisdiction, water rights, and having the Pueblo of Laguna continue to have to fight for water rights and this whole process.

Vice Chairman, I just want to make just a brief comment. Very thankful for the candid discussion that we've had today. Words like government responsibility, accountability, trust responsibility, justice. And the tribal contributions to the United States' well-being is unrefuted. And I believe that when the tribes come to the table and might have an answer that the rest of the Grants mineral belt may have, like no mining, or watch out for the water, because here's the effects—we don't have to revisit those stories again—that they look at that in good faith with us. Because I mentioned earlier, we're not going anywhere. We're going to be there forever.

So I want to just say that we are citizens of three areas: The United States, the State of New Mexico, and the Pueblo of Laguna. And I think that's something that is unrefutable and we're very proud of and we want our people's health and our people's environment protected, and we can do better.

Senator UDALL. Thank you very much. And we're nearing the end here, but I just want to take this opportunity to allow anyone who may want to add any parting words from the panel here, thoughts or comments for the record before we adjourn.

Mr. Harrison. And then we'll come to the governor here.

Mr. HARRISON. Senator Udall, I just want to express my appreciation on your late father. We certainly did work with him and he understood the damages that had taken place among our people and all the uranium workers. We do appreciate that. We remember him very well. And a lot of our Navajo people in our public meeting, they often mention your father.

And I'm really sorry to hear that you're going to be leaving the Senate, and before you leave, we'd like to have our amendment passed byCongress.

Senator UDALL. That's what we're working on.

Mr. HARRISON. The other thing is, talking about being our homeland here, the Department of Justice is asking the downwinders to prove residency. This is very alarming and very hurtful to many people, actually a slap in the face, where the government asks a grandpa or grandma, "Where did you live between 1951 and 1958? Or in one month of 1962, where did you live?"

And I once said that, you know, the federal government has the title of federal trust land. It has title to our land, and yet you're asking Grandma to prove residency. Well, she corralled there for the longest time. They did not come from Australia or Siberia. We have been there for the longest time. And in the amendment, we listed that affidavits be used where there's a recognized tribal lead-

er can say that Grandma lived here with a grazing permit from 1941; therefore, let this be in record to prove residency for Mrs. Yaie or Mrs. Benally.

So that's something that's been very hard. There's extreme disparities for the Navajo downwinders getting compensation because it's hard for them to come up with records to prove residency. They ask for such things as Lions Club, Rotary Club, Elks Club, VFW. It never existed back in those days. And it's hard to prep a case for—it takes a year. No wonder the attorneys run from it, because if you take $1,000 and divide that by $12, how much is that for them? They don't want to mess with it.

The other thing that—I might not sleep tonight—I have to mention this. In my research when I was in Washington, I heard about the 911 Compensation Fund. It didn't take very long for the federal government to approve billions. And I also looked to the Internet. And I was looking down the list. You know, we really do appreciate the first responders, what they did in clean-up of the Twin Towers. And it's very alarming to hear about what happened. But they got sick, too, just as much as our uranium miners got sick. And I was looking at the rate, the compensation rate. The cases were like over $1 million, $2.1 million, $1.3 million for breast cancer. And I went down the list now following the gentleman that was diagnosed with pulmonary fibrosis, he received $883,000 compared to $100,000. I don't think it's fair. So I want to take my father, being at 44. If he still lived, if he was still with us and got to 66 years old, so if you take 20 years times like about maybe $30,000 a year, he would have made $500,000 to $600,000 during that lifetime. But when you come back and you just give the spouses $100,000, that is very, very low. And it's alarming and it doesn't sit well with me. So we need to do something about the compensation rate.

Thank you, Mr. Vice Chairman.

Senator UDALL. Thank you very much.

Governor Chavarria.

Mr. CHAVARRIA. Yes. Chairman, Members of the Committee. I'd also like to thank you, Chairman. You have been a champion for us, the Native people in your tenure both in the House and the Senate. You know, it's going to be hurtful and a loss for all of us, because you have been pushing and helping us along with many of these issues as the Vice Chairman for the Senate Committee of Indian Affairs, and we wish you well.

You know, it's up to all of us as brothers and sisters to work on these challenging issues together, coming up with solutions. And yes, the other federal agencies were possibly the trustees, but at times they challenge us. They want to see we're actually capable, competent, of providing these services for our own people. That's a challenge that we all face together. But for us as a Native people, it goes back to the power of prayer. We're all unique. You know, we share that same value of our traditions, our cultures, and our religious activity. And those sacred values are based upon the landscape, the resources, the water, the animals, the plants that we use with that fundamental belief that we have that inherent interconnection to our land.

The Pueblo people are patriotic people. We care deeply about protecting, yes, the national security, but using that sacred area to

hurt us is unacceptable. Yes, we're trying to find ways to promote cleanup and restoration of those resources, our lands. As was mentioned, the half-life of those radioactive isotopes is thousands of years. Where do we dispose of that material? Right now there's not no permanent disposal site in the United States or in the entire world. Yeah, you have WIPP, but that's only a temporary disposal area.

And so this legacy waste is what we're dealing with, with the Department of Energy right now, with all the waste and the legacy. But now we're having to deal with the Department of Energy environmental management with the current waste. And so funding is very important, which is a challenge. And for us as tribes, it's confusing, because now they're both one agency, but now it's separate roles and responsibilities they're having to undertake.

And so to having to be at the table to fully understand which team do we have to deal with for the legacy, but also for the current and future waste, is also critical. But yet, they're using our lands to transport maybe to the highways, the railroads. But then if something happens, who does it impact? It impacts all of us.

And so that's very important and critical: How do we engage to come up with positive solutions? You talked about consultation. For us it's coming to the table to reach consensus. The issue is to identify the challenged obstacles, but what are the solutions we're looking at? There's not no one agency that has all that money to support. It comes back to Congress and the president to fully allocate those appropriations and deal with many of these issues. Yes, this is one issue. But you got healthcare, you got education, you got employment. All these issues that we as tribal leaders would deal with for our constituents.

And you have seen that, Senator. And you feel that pain. And this is why you have called this meeting for today, this hearing. So we ask: How do we help you? How do we help you then go to that next level by addressing and advocating in Washington, D.C. for those committee chairmen of those respected committees to make sure they have a full understanding of these commitments, of these discussions and dialogue we're having today? Because if we don't do it, who's going to do it for us? It's not for us. It's for the ones that have went, the ones that are yet to come. That's who we do it for. But as tribal leaders, it's up to us now to engage in those critical discussions to fulfill our obligations to our people, our lands, the community, our animals, the plants that we still utilize today for our tradition and cultural religious activities because that's who we are. And we can never get away from that.

So I appreciate you, Senator, members of the Committee, for hosting this hearing today. And that's why I ask however I can help, whatever else I need to do to help you, please let me know. And I'm willing to roll up my sleeves to help all of us in this room, and move to a positive conclusion or outcome. But again, as I say, there's not no dollar figure you can put on a life. That's priceless.

So again, I'd just like to thank you for the opportunity to be here today, Chairman and members of the Committee.

Senator UDALL. Thank you.

Ms. CORDOVA. Senator Udall, I would just like to please bring your attention to part of my written testimony and oral testimony

that I delivered. Senate Bill 947 does not have language that we think goes far enough. There has been new language introduced in House Bill 3783 that extends the eligibility period and addresses other areas that we think are shortcomings in the Senate bill. So today, there are only two things that I really want to stress. And that is part of them, that we need language to mirror the language in the House bill.

The other thing, sir, that I think that I need to stress is that—and the Congresswoman did a great job when she mentioned about the cost of doing this, because we hear that all the time. I don't know how many times I have heard, "It's going to cost too much." Well, we can't place a value on human life, and we've all given far too much. I always say, "I don't know what else we can give to this cause." We bury our loved ones on a regular basis. I don't know what else we can give.

So we all need to start developing language around this idea that it's going to cost too much to take care of the people of New Mexico. This has had a grave economic consequence to this state. I believe that it's part of what locks us into a cycle of poverty that we can't ever get out of. When we spend all that we have to take care of our health because we're so sick and we're dying, we have nothing to pass on to the next generation. And we should be afforded the same opportunity to the American dream that other people are afforded all across this country.

And so on behalf of all of us, I have to say that I am so tired of hearing that, that it's going to cost us too much. We need to develop messaging around that idea that it costs too much.

Senator UDALL. Excellent testimony.

Thank you.

Please, Councilman Riley.

Mr. RILEY. First off, I want to thank you, Senator, for all of your help and assistance all these years on going up to Washington, D.C., on behalf of the Pueblo of Laguna, all the different issues and projects and initiatives. You're always there standing side by side with us and helping us, and your staff, for many, many long meetings. So I want to thank you for your service and thank you for the projects, especially this one, as very complex.

At the end of the day, I have faith and trust that the United States must take responsibility for the cleanup of these uranium mines at the end of the day. But no matter where we're located, no matter how big or small our tribes are, we have to be working together side by side. And I came to this hearing on behalf of Governor Herrera and our Pueblo Council, and I walk away today with a good sense of hope and faith that you're going to be helping not only our people but those that have been affected, post-'71, downwinders and all those folks, that should get justice because they have contributed so much in their land and their health and, unfortunately, in the passing of many of our tribal members.

But thank you very much, and I wish you well. And if there's anything that we can do at the Pueblo of Laguna, please let us know. And thank you for letting us participate in the hearing.

Senator UDALL. Thank you very much.

President Nez.

Mr. NEZ. Just as our tribal leaders and advocates have mentioned, thank you for being the champion for Indian Country, Vice Chairman Udall. And your staff. Let's not forget the staff. And all the many advocates that are here today. I think this is a charge that we all need to take seriously for our relatives throughout our tribal communities throughout the Southwest here. We need to come together as one, advocate on behalf of our people that are sick, because we now need to have the federal government step up to the plate and clean up these uranium mines throughout the Southwest. That is key. And if not now, you know, we're going to be in the second, third, many generations after this, going through the same problem. I think here and now is the opportunity that we all bind together. I always say that in our Navajo language, you know, (in Dine) that means weall are five-fingered beings. I think all of us here are five-fingered beings. It doesn't matter what color our skin is. You can see uranium affects everybody. And it's not color-blind. And so our drinking water is affected, our food, our farms, the livestock that we have and we take and we eat affects us.

And you know, we haven't yet even started talking about the Gold King Mine spill, even that, with a lot of heavy metals that came through all these mines. Even that mine, those mines, many mines, thousands of mines up there, are ready to burst. And we need to all come together and really educate our lawmakers in Washington, D.C. Let them know that this is a problem in Indian Country as well as the Southwest.

I'm going to conclude by this statement that I have heard once, and I'm going to reiterate that since we have a lot of our veterans here today. Our veterans—and it was mentioned earlier that our veterans—I think it was Representative Haaland who mentioned it—that Native Americans, a high percentage of ethnic group, volunteer for service. And let's not forget our Navajo Code Talkers, where the Navajo language was used to win the war. And I know that my brothers and sisters from other tribes that have Code Talkers, as well. And for Navajo, we used our language to win the war, as well as the uranium that was extracted from our homeland. And to this day, there are over 300-plus uranium mines still open, and it affects everybody.

You all know that we have lots of high winds in our region. And when that radiation goes up into the atmosphere, which way does the wind blow? Eastward. And it affects each and every one of us on a daily basis.

So thank you, Vice Chairman, for your advocacy. And I know with your help we are going to do some great things in getting these uranium mines cleaned up, not just in Indian Country, but all over the Southwest.

So if you all can help me give him a big round of applause, our Senator Udall. Thank you so much, Senator.

Senator UDALL. Thank you. Thank you.

Thank you very much to the entire panel today.

Governor Chavarria asked, you know, what can you do? Well, the five of you have done an enormous thing here by coming forward with this powerful testimony and really getting to the root of what

we need to fix. And that really, really makes a difference, and it helps me enormously in doing my job in Washington.

And so you may feel that, you know, coming here and giving testimony is like a small rock dropping in a pond and is just a small ripple. But I think what happens is, because of that ripple and the five of you and then others speaking out, we're going to build that into a tidal wave to get all of this done. So that's what we're working on doing, and you have really helped us do that.

And I also want to thank—many of you said very nice things about my service. First of all, I just want to tell you, I'm not retiring. I'm going to continue public service. Okay? I never use the word "retire." And I'm not leaving until January of 2021. That's when my term expires. And so you can see there's a ways to go, and so there's an opportunity to get a lot of these things done that we've been talking about here.

I also want to acknowledge the many folks and advocates for downwinders and post-'71 miners that came here today, people like Linda Evers, who's been a tireless advocate for post-'71 miners. And I just want to thank you so much for coming here and making the effort and being a part of this, because you're also the help that spreads the ripple that builds into the tidal wave. So thank you. Thank you very much for that.

And there are no more questions at this point, so I would remind folks that senators may also submit follow-up written questions for you for the record. The hearing record will be open for two weeks until October 21st, and I just really thank you for your time and testimony today.

I also want to thank Senator Hoeven, my chairman. He couldn't be here with us, but he sent his top guy here, and he's been listening to every single word.

And I also want to thank my staff, both Mike, Senator Hoeven's top guy, and Jennifer. They have worked very hard to pull this all together and do a very, very professional hearing. So let's give them a round of applause. I don't know that rounds of applause in a Senate hearing are etiquette, but I only did it once, so I hope I'm not violating too much.

But this hearing is now adjourned.

[Whereupon, at 2:00 p.m., the Committee was adjourned.]

A P P E N D I X

PREPARED STATEMENT OF HON. MAX A. ZUNI, GOVERNOR, PUEBLO OF LSLETA

The Pueblo of lsleta shares many of the same concerns expressed by other tribes regarding open pit mining and possible radiation contamination from federal entities. The three major federal entities that are upstream of the Pueblo are Los Alamos National Laboratory ("LANL"), Kirtland Air Force Base (KAFB) and Sandia National Laboratories. Discharges by these federal entities into any waters have the potential to reach the Pueblo's waters.

Like many pueblos, our way of life is tied to the land and water. Whether the health of our community has been compromised by the mining operations conducted by these federal entities is unknown. However, similar to other communities that provided testimony, cancer and other diseases are present in our community.

Los Alamos National Laboratory alone has the potential to release 20,000 pounds of hazardous air pollutant chemicals to the air. It also has the potential to discharge toxic chemicals to the water and the potential to generate and/or manage at least 2,200 pounds of hazardous waste in a month. A compound list for LANL can be found at: *http://www.atsdr.cdc.gov/toxprofiles/index.asp.*

At Sandia National Laboratories, a total of 1,902 pounds of toxic releases from 2009 to 201 7 have been reported and are in EPA's Enforcement and Compliance History Online (ECHO) database.

The Pueblo of Isleta is also very concerned about the mixed-waste landfill, a 2.6-acre dumpsite, which operated from 1959 to 1988. This site is located within 3 miles of the Pueblo's northern boundary. According to the Concerned Citizens for Nuclear Safety, a non-profit environmental justice group out of Santa Fe, New Mexico, the mixed-waste landfill contains an estimated 1,500,000 cubic feet of radioactive, toxic and hazardous wastes from experiments and the development of nuclear weapons. Plutonium, americium, tritium, depleted uranium, lead, beryllium, PCB's and chlorinated solvents are some of the highly hazardous materials that have been disposed of at this site. This site has the potential of contaminating the Pueblo's groundwater.

Radioactive decay in half-life of 250,000 years or more means that the uncertainty of long-term effects on human health and the environment from a radioactive release or exposure will be with the Pueblo permanently for many generations into the future. The Pueblo insists that our people and land be protected from harm under Federal law, the importance of which is underscored by adherence to the significant trust responsibility of the Federal government to Indian tribes.

At Kirtland Air Force Base, there have been a total of 4,209 pounds of toxic (lead and naphthalene) releases from 2009 to 2017 reported and recorded in EPA's ECHO database. The effects of lead can lead to permanent adverse health effects, particularly affecting the development of the brain and nervous system. Naphthalene can cause neurological problems, anemia, kidney and liver damage and cataracts. Naphthalene is an insecticide meant to kill insects. Humans and other mammals are not immune to its effects.

From these three federal upstream entities, 8,381 pounds of toxic pollutants have the potential of entering Pueblo waters by way of non-perem1ial, ephemeral or intermittent streams. The Pueblo is concerned that the pollutants released from KAFB and Sandia National Laboratories may be entering the Pueblo waters by way of Tijeras Arroyo. Tijeras Arroyo discharges into the Rio Grande less than 5 miles upstream of the Pueblo's north boundary.

We are also concerned about possible contamination of the Rio Puerco resulting from the Jackpile-Paguate Uranium Mine. The Mine, in operation from 1952 to 1982, is approximately 20 miles from our Pueblo's western edge and 40 miles from the village area of our Pueblo. The Rio Puerco runs over 47 miles through Pueblo lands from north to south, on the Pueblo's western edge boundary and is also the eastern boundary for the Pueblo's Comanche Ranch, which was placed into trust in 2016. The Rio San Jose is a concern for the Pueblo because it is a tributary to the Rio Puerco and enters the Rio Puerco on Isleta Pueblo lands. Again, the possible

impact to our community of potential uranium exposure and contamination from the operation of the Jackpile-Paguate Mine is unknown.

Further, although mining has ceased on the Laguna Pueblo, the former mining operation creates a potential upstream source of metal and radionuclide contamination from releases of tailings solutions. We are concerned about any radioactive isotopes and heavy metals from mining processes that could originate from the Jackpile-Paguate Mine and other upstream mining operations in the Rio San Jose. The Pueblo of Isleta's Environment Department regularly conducts special collections of the Rio Puerco for radioactive material and heavy metals. To date, the results have shown that no contaminants are reaching the Pueblo, but the potential threat remains.

It is also unknown whether our community has been affected by particulate matter from the Jackpile-Paguate Uranium mine. Particulate matter has the potential of traveling hundreds of miles. Being exposed to particulate matter can cause adverse health effects causing both heart and lung disease.

In conclusion, our land, water and air are crucial elements to our everyday life as Pueblo people. As Pueblo people, not only do we depend on good water quality for agricultural purposes, our customs and traditions, but we are stewards of our tribal lands. Protecting what we have in order to provide a clean environment that is safe for our community, as well as all wildlife, aquatic and plant life, is key to our continued survival and our future generations.

Attachment

SUPPLEMENTARY INFORMATION SUBMITTED BY CHRIS SHUEY, MPH, DIRECTOR, URANIUM IMPACT ASSESSMENT PROGRAM, SOUTHWEST RESEARCH AND INFORMATION CENTER

This memorandum is submitted to supplement the Pueblo of Laguna's testimony for the Senate Indian Affairs field hearing on October 7, 2019, in Albuquerque. It is a revised version of a memorandum provided to the Pueblo prior to the hearing. The material here is organized by issues raised by the Pueblo in advance of the hearing, and where appropriate, copies of relevant documents are attached.* I request that this communication be placed in the record of the hearing.

Issue 1: Laguna Pueblo's interests in supporting Radiation Exposure Compensation Act (RECA) reform legislation to develop more accurate data on Pre-71 an d Post-71 Laguna uranium workers.

The Jackpile-Paguate Mine operated from 1952 to 1982 and employed many Pueblo of Laguna members, along with non-Pueblo members who were brought in to work the mine in the 1950s, 1960s and 1970s. Some Laguna members also worked at the St. Anthony Mine on the Cebolleta Land Grant located immediately north of the Pueblo boundary (operated from 1951 to 1982), while others worked at the Anaconda Company's Bluewater Uranium Mill at Bluewater, NM, about 45 miles west of Laguna.

Despite this long history of mining on the Pueblo, the exact number of tribal members who worked in the uranium industry before and after 1971 has not been quantified and can only be estimated. Information from various sources suggests that the total is several hundred individuals and may approach or exceed 1,000 individuals. Home healthcare organizations that serve Laguna members and residents report having records for 150 Pre-1971 workers, many of whom are deceased.[1] Of 402 Post-71 Laguna uranium workers reported to have received home health services, 352 (or 87.6 percent) have been diagnosed with pulmonary fibrosis, a RECA compensable disease. These individuals received their diagnoses from examinations conducted in a mobile van brought to the area by the Miners' Colfax Medical Center, based in Raton, NM. While these exams were conducted without cost to the workers, many of these individuals lack personal financial resources to pay for treatments, prescription drugs and other healthcare services related to their occupational exposures and effects.

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*The information referred to has been retained in the Committee files.

[1] Unfortunately, most miners who worked on the Colorado Plateau from 1942 through 1971 and for whom records were available to Government agencies are deceased. A vital status update of the Pre-1971 cohort (Schubauer-Berigan et al., 2009) showed that nearly 75 percent of white miners (N=3,358) and nearly 70 percent of Native American miners (N=779; tribal affiliations not identified), who were alive on Jan. 1, 1960, had died by Dec. 31, 2005. Not all Pre-71 uranium miners are included in National Institute for Occupational Safety and Health's database because many miners, especially Native American miners, were often paid in cash and were not included in company records during the 1940s and 1950s.

In numerous community meetings and symposia over the past two decades, many current residents of Paguate and other Laguna villages have identified themselves as former uranium workers or family members of former workers who worked after 1971. Many have reported having a variety of malignant and non-malignant respiratory diseases. This concern was highlighted in statements attributed to Frank Cerno, Pueblo Secretary, in a March 7, 2017, article in the Navajo Times (Madeson, 2017): "Uranium is a 'human carcinogen and a toxic heavy metal that leads to devastating illnesses such as kidney failure and respiratory illnesses.'"

Two recent studies by researchers at the University of New Mexico (UNM) and the Miners' Colfax Medical Center (Assad et al., 2019; Kocher et al., 2017) found that Post-71 workers have similar radiogenic lung disease partners to Pre-1971 workers. Kocher et al. (2017) reported that of 81 miners who were examined at the Colfax mobile miners' clinic, 68 percent of Pre- 1971 workers and 66 percent of Post-71 workers had abnormal chest X-rays indicative of pneumoconiosis, a RECA-listed miners' lung disease. The authors concluded that:

> *the prevalence of abnormal chest radiograph pattern is not significantly different between pre-1971 and post-1971 uranium industry workers. . .This argues that post-1971 uranium industry workers should be screened for the presence of respiratory diseases and that expansion of RECA to this group may be warranted* [emphasis added].

A follow-up study (Assad et al., 2019) involving 122 Post-71 workers also found little difference in abnormal chest X-rays, forced expiratory volume (FEV) and various lung diseases between the Pre-1971 (N=47) and Post-71 (N=122) groups. In this study, 56 percent of the Post-71 workers were Native Americans (tribal affiliation was not identified, however). The authors concluded that their findings:

> support the conclusion that. . .uranium miners continued to be exposed to harmful levels of mining dust, resulting in a high burden of respiratory disease among former uranium workers in New Mexico, employed after 1971. Our findings argue that medical screening for respiratory diseases. . .should be extended to post-RECA era uranium workers, especially if large epidemiologic studies confirm our results.

Furthermore, a lay survey of more than 1,300 Post-71 workers by the Post-71 Uranium Workers Committee (UWC) based in Milan, NM, found that more than 70 percent had one or more "uraniumrelated medical conditions," as defined by federal agencies, but only 9 percent had medical conditions compensable under RECA because of the limited number of uranium-related medical conditions defined in the statute (Evers et al., 2009. Seventy percent of Post-71 workers reported having a uranium-related respiratory condition, of which 53 percent were identified as "Pueblo" workers. (Of the 216 Post-71 respondents to the Post-71 UWC survey, 86 identified as "Pueblo" residents, but tribal affiliations were not given.)

The Post-71 UWC survey also found that 30 percent of female uranium workers (N=132) and 40 percent (N=169) of female spouses of uranium workers reported a wide range of adverse reproductive outcomes, including miscarriages, stillbirths and children with birth defects. For non-worker women, the principal source of exposure to uranium contamination was washing the clothing of their worker spouses. Laguna Pueblo is aware that women members were both workers and spouses of workers who were exposed to contaminated dust on their spouses' clothing. However, spouses are not eligible for compensation under the current RECA scheme for their own exposures, but are eligible as beneficiaries of their deceased spouses.

That Native American women and children are at risk from exposure to uranium mine and other hardrock mining wastes was documented in a 2015 paper published by my colleagues at UNM, led by Dr. Johnnye Lewis, a toxicologist and director of the UNM Community Environmental Health Program (CEHP). Lewis and colleagues explored potential risks of adverse reproductive outcomes and child developmental concerns from widespread exposure to more than 160,000 hardrock mining sites (including more than 10,000 uranium mines [USEPA, 2008]) in the 13 western states with the highest percentage of Native American populations. The authors concluded that existing data demonstrate:

> . . .a strong potential for exposures to metal mixtures associated with mining wastes in Native American populations in the Western United States,. . .a linkage of exposures to developmental disabilities and congenital malformation in population and laboratory studies. . .higher rates of several congenital anomalies in Native American populations, and. . .a lack of comprehensive data on rates and types of developmental disabilities in Native populations.

The Post-71 UWC survey results have been reported to Congress and academic institutions, but they have not been accepted as scientifically valid because the survey was originally written and administered by lay members of the Post-71 group. A second version of the original survey was developed by the UWC group with the assistance of researchers at UNM, Colorado College and SRIC. These results should be given weight in legislative proceedings because they were obtained from direct responses from more than 1,300 former workers, making the survey the largest assessment of Post-71 concerns to date. However, the surveys have been preserved and are available for analysis.

Despite these findings, the Federal Government has not systematically examined either the vital status of Post-71 uranium workers or its own responsibility for overseeing the uranium industry's compliance with in-mine exposure standards enacted in the 1970s. For example, a recent report by the Congressional Research Service (2019) noted that "[a]n expansion of RECA to cover post- 1971 uranium activities would largely cover workers in the commercial uranium sector, which would expand the program *beyond its original statutory intent*" [emphasis added]. Yet there is evidence that the Federal Government did not enforce various worker-protection requirements of the Mine Safety and Health Act of 1977.

MSHA required mining companies to monitor and report in-mine gamma radiation and radon gas exposures of all workers and to report those records to a central database. However, officials with MSHA in Denver and the National Institute of Occupational Safety Health (NIOSH) in Cincinnati could not identify where these records were consolidated when contacted by SRIC staff working with the Post-71 UWC in 2009–2011. NIOSH officials provided a link to a spreadsheet that was said to contain exposure records by mining company and mine. Our examination of those data indicated that no information was compiled *prior to 1983*—the year after Jackpile Mine and most other mines in the Grants Mineral Belt of New Mexico had closed. The database contained only three entries for the Anaconda Company (or Atlantic Richfield or ARCO), and only one entry for a worker at the Jackpile-Paguate Mine. Accordingly, the database is not particularly useful for calculating the number of Laguna Post-71 workers or for evaluating their exposure histories against their medical conditions.

The apparent lack of enforcement of MSHA to compel companies to comply with protecting worker health during the "commercial" era, coupled with the lack of data on legally mandated exposures to Post-71 workers, including Laguna workers, suggests a Federal responsibility in the development and lack of treatment of radiogenic disease patterns among the Post-71 workers. Congress could initiate a GAO inquiry into why miner exposure records were not reported, or if they were reported, why the data are not available or where they may be physically located. Once located, analyses of these data by MSHA and NIOSH would be justified to assess the relationship between exposures and health outcomes.

Finally, Laguna members were also employed as ore haulers and uranium millers after 1971, but again, the exact number is not known. Two studies (Waxweiller et al., 1983; Thun et al., 1985) found an excess of kidney disease among Pre-1971 millers, but this excess was not apportioned between white and Native American millers. NIOHS concluded that additional research was needed to examine links between mill exposures and mortality from end-stage renal disease and non-malignant lung diseases (Pinkerton and Bloom, 1997). Like Post-71 miners, Post-71 ore haulers and millers should be eligible for the same screening benefits now afforded under RECA.

The need to expand and fully fund the RECA program has come before the United States Congress on several occasions over the past 20-plus years, and that the issues addressed in this supplemental statement were raised in considerable detail in hearings in 1998 and 2004. In a June 25, 1998, hearing before the House Judiciary Committee, tribal representatives—including former Laguna Governor Roland Johnson—along with my SRIC colleague Wm. Paul Robinson, gave testimony and written materials addressing the need to cover Post-1971 workers among many issues. (See, Record of Hearing on H. R. 3539, Radiation Workers Justice Act of 1998 at *http://commdocs.house.gov/committees/judiciary/hju59930.000/hju59930_0f.htm.*) On July 21, 2004, the Senate Judiciary Committee received testimony from Government officials on supplemental funding needed to address an expected shortfall in compensation benefits for the Pre-1971 uranium workers and downwinders. (See S. Hrg. 108–883, An Overview of the Radiation Exposure Compensation Act, available at *https://www.govinfo.gov/content/pkg/CHRG-108shrg25152/html/CHRG-108shrg25152.htm*). I recommend the Senate Indian Affairs Committee review the records for these hearings for additional and historic perspectives on Native American uranium workers.

Issue 2: Impacts on Pueblo of Laguna public health from exposures to wastes on and around the Jackpile-Paguate Uranium Mine are pervasive but require additional focused research.

Although the data above provides strong evidence regarding health impacts to Pueblo of Laguna members, no comprehensive or even focused population-based studies have been conducted on Laguna Pueblo to ascertain if releases from the Jackpile Mine are associated with adverse health outcomes. By "population-based" studies, we mean studies that examine health status and exposures specifically among Laguna community members who volunteer. Ascertainment of exposure can be, and usually is, through a combination of personal interviews, environmental measures of contaminants in air, soil and water, personal monitoring of individual exposures to airborne, waterborne, and soil- and crop-borne contaminants, and collection and analysis of biological samples, typically blood and urine. As noted above, some Laguna members have had medical examinations associated with their occupational histories. Survivors among these individuals would be included in a population-based study if they volunteered.

The UNM METALS Superfund Research Program (SRP), of which SRIC is a partner, conducted a Listening Session at Paguate Village on September 12, 2019 and heard a wide range of concerns from residents about chronic health problems. Among the top concerns were:

- Respiratory diseases, asthma, other breathing problems
- Lung cancer and other cancers
- Hypertension and cardiovascular disease
- Potential health effects of ingesting crops grown in contaminated soils or meat from livestock and game exposed to mine wastes

Residents overwhelmingly indicated that they would volunteer to participate in community-based health studies, interventions to lessen effects of exposures, and medical screening programs, especially if they were aimed at the generations that have followed the uranium workers of the 1950s through the 1980s. A summary of the major concerns expressed at the meeting was contained in an article published in the October 2019 edition of the *TownCrier*, the Laguna community newspaper. The METALS SRP will be summarizing and analyzing these responses in the coming months.

That residents of Paguate have had multiple decades of exposures to releases from the Jackpile Mine that have occurred across multiple generations is not disputed. The METALS SRP group categorized these exposures by pathway—air, water, plants-animals, and a combination of pathways—in a poster prepared and presented at the September 2017 Laguna Environmental Open House. The community concerns were derived from community meetings held at Mesita Village and Paguate Village in Fall 2016. A copy of the poster is Exhibit D to this memorandum.

Concerns about dust settling on agricultural lands and crops were among the most frequent comments during those meetings. Impacts of dust from the mining and reclamation activities have been described in the published literature. For example, Paguate native June Lorenzo, Ph.D., reported observations about the impacts of these releases in a recent paper in the Journal of American Indian Education (2018):

> *Paguate residents were exposed to the dust from daily blasting that took place very close to the village. This blasting caused damage to many of the traditional rock and adobe homes; a common complaint by residents was cracked walls in their homes. The side of the village with the plaza and two-story buildings, dating back over 100 years, was closer to the uranium mine than other areas of the village and sustained a lot of damage. Some people eventually moved out of their traditional homes due to damage from the explosions.* . . . [emphasis added].

Indoor radon and surface gamma radiation rates were assessed by USEPA and its contractors in Laguna communities, including in Paguate, in 2010–2011 (Laguna ENRD, 2011). About a quarter of the 144 homes tested exceeded the EPA's indoor "action level" of 4.0 picoCuries per liter (pCi/l) during 7-days tests. Of 32 homes tested over a 91-day period, 72 percent exceeded the EPA action level. Mitigation measures were installed in at least 23 of the 143 homes tested for radon.

According to EPA, indoor radon is the second leading cause of lung cancer in the U.S.(see, *https://www.epa.gov/radon/health-risk-radon*). Thus, the indoor radon observed in Paguate homes is a significant source of exposure and public health risk. Further, it should be noted that the World Health Organization (WHO) recommends taking action to reduce indoor Rn levels at a concentration of 2.7 pCi/l (see, *https://www.who.int/news-room/fact-sheets/detail/radon-andhealth*). For comparison, my

group—working with UNM–CEHP, the Navajo Nation Department of Health and the Navajo Area Indian Health Service on the federally funded Navajo Birth Cohort Study—has tested more than 800 homes on the Navajo Nation for indoor radon since 2013, and found the average indoor concentration to be about 1.0 pCi/l. Only about 6 percent of those homes had radon concentrations equal to or greater than 2.7 pCi/l, which is our "referral" level. For comparison, EPA's action level of 4.0 pCi/l carries a lifetime lung cancer risk equivalent to smoking between 1 and 2 packs of cigarettes a day.

Previous opportunities to assess community health in a comprehensive and specific way through valid environmental health disciplines, involving toxicity and epidemiology, were missed. For example, the Draft Environmental Impact Statement for Reclamation of the Jackpile Mine (USDOI, 1985) stated that possible health impacts of mining on former miners and residents of Paguate, and any psychological effects on local residents from mine operations and closures, were not within the scope of the EIS. More recently, the Agency for Toxic Substances and Disease Registry (ATSDR, 2017) concluded in its Public Health Assessment (p. iv) that it did not have enough information to conclude whether past exposure of people living or spending time in the former mine housing area or in Paguate Village could harm their health.

ATSDR's Public Health Assessment and risk assessments performed by USEPA at Superfund sites like the Jackpile-Paguate Mine use available environmental monitor data for comparison with regulatory standards to develop an understanding of the potential public health risks of CERCLA sites. Such risk assessments are not population-based public health studies, though, which, as noted above, include some form of surveying, environmental and biomonitoring. Accordingly, it is vitally important that Congress ensure that public health studies are conducted by qualified academic institutions with a track record of having conducted rigorous environmental health research, in collaboration with such federal agencies as the National Institutes of Health and National Institute of Environmental Health Sciences.

Issue 3: Recent research documents ongoing impacts of releases from the Jackpile Mine to Laguna water resources.

Numerous environmental studies on the Jackpile Mine have been conducted by various agencies over the past five decades. Those studies are in the record of EPA's designation of the mine as a National Priorities List Superfund site in December 2013. In this section, I discuss just a few of the recent studies conducted by colleagues at the UNM METALS Superfund Research Center. Our group is available to provide the Committee with additional, detailed documentation of the studies and their findings discussed here briefly.

The UNM METALS group conducted surface water studies in the Rio Paguate both upstream of the Village of Paguate and in stream segments inside of the Jackpile lease area and farther downstream in Paguate Reservoir behind Mesita Dam between 2014 and 2017. Grab samples were also taken from the Rio San Jose upstream of the mine in Old Laguna and downstream of the mine in Mesita. Field work to support those studies was subject to applicable permits from the Pueblo of Laguna and was conducted in collaboration with Laguna ENRD.

The UNM researchers, led by geochemist Johanna Blake (now with the U.S. Geological Survey) and Professor Jose Cerrato, an environmental engineer, investigated the mobility of uranium in water and accumulation in sediments along the Rio Paguate and in the wetlands of Paguate Reservoir, located 5 kilometers (about 3.1 miles) south of the Jackpile Mine (Blake, et al., 2017). (See, also, Exhibit E, UNM METALS Research Brief 3.) Dr. Blake and colleagues found that ore and mine wastes on the surface of the Jackpile Mine were the source of high concentrations of uranium in the Rio Paguate surface water. They also found that the concentration of uranium in the Rio Paguate varies seasonally, with higher concentrations (up to more than 700 micrograms per liter, or nearly 25 times greater than the federal drinking water standard of 30 micrograms per liter) observed during the summer monsoon season runoff. While the uranium concentration in surface water decreases downstream of the mine, the uranium itself was found to accumulate in organic-rich sediments in the Paguate Reservoir wetland. [2]

These recent findings are consistent with studies conducted in the late 1970s when the Jackpile Mine was operating. New Mexico Bureau of Mines and Mineral

[2] It should be noted that sampling in the Rio Paguate upstream of the village, and therefore, upstream of the Jackpile Mine, found very low concentrations of uranium—about 2 micrograms per liter—in multiple tests between 2014 and 2017. All other water quality parameters were similarly low, indicating that water running off the eastern flank of Mt. Taylor is of high quality before the passes through the backfilled North Pit.

Resources researchers found increased concentrations of uranium, other metals and radioactive elements derived from the decay of uranium in the bottom sediments of the Reservoir (Popp, et al., 1983). Studies by the U.S. Geological Survey during the same time period also detected elevated concentrations of uranium and other trace metals in surface water as it passed through the mine (Zehner et al., 1985). These studies, spaced 35 to 40 years apart, document continuing impacts of the mine on Laguna water sources, even long after mining stopped and initial reclamation was conducted.

UNM researchers have also found that some stream-side vegetation, especially salt cedars, is concentrating uranium in plant roots (El Hayek, et al., 2018). Calcium in the water and sediments appears to increase uptake of uranium, suggesting that the nuisance specie could be used as a phytoremediation method.

The UNM METALS group, led by Drs. Adrian Brearley and Matthew Campen, is also assessing the presence and toxicity of "nanoparticles" containing uranium, vanadium and other metals in tiny clusters in mine wastes (Exhibit F, METALS Research Brief 2.1, 2019). These clusters are very small, less than 1 micron, but consist of many even smaller particles that can be broken off and potentially transported by air separately or attached to other dust particles. A micron is onemillionth of a meter; for comparison, a human hair is about 50 microns in diameter. Generally, particles 2.5 microns or less can be inhaled deeply into the lung where they may cause damage to the breathing sacs. Recent laboratory animal studies showed indications of cardiopulmonary toxicity in mice exposed to dusts collected near an abandoned uranium mine on the Navajo Nation in northwestern Arizona (Zychowski, et al., 2018; available at https://academic.oup.com/toxsci/article/164/1/101/4962180). And recent meteorological data collected by Dr. Campen and colleagues at the AirCare1 mobile lab, stationed in Paguate next to the North Pit, showed that winds are coming from the mine toward the lab—and therefore, toward the village—about 30 percent of the time.

These preliminary findings could provide an environmental link to self-reported respiratory disease among Paguate residents, and gives added weight to the need for public health studies in Paguate and other Laguna villages impacted by the Jackpile Mine.

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PREPARED STATEMENT OF KATHY SANCHEZ, ENVIRONMENTAL HEALTH AND JUSTICE PROGRAM MANAGER, TEWA WOMEN UNITED

We, from the Northern Pueblos of New Mexico ,are Downwinders of Los Alamos National Laboratory (LANL), which began operations in April1943 to create the first atomic bomb. The proposed amendments to the Radiation Exposure Compensation Act (RECA), Senate Bi11947 and House Bill 3783, begin coverage for overexposure to radiation on June 30, 1945. They do not cover those overexposed to radiation from early operations of LANL.

We respectfully request that the eligibility period for Downwinders in New Mexico begin on April 20, 1943, when the University of California signed a contract with the U.S. Army Corps of Engineers to operate the secret laboratory on the Pajarito Plateau in the Jemez Mountains of Northern New Mexico. We have orally handed down and first hand expert testimony from our 1st generation relatives who worked during the creation of the bombs in our sacred Jemez Mountain homelands. We

have felt and still feel the spirit core of our beings was invaded and shattered as nuclear energy is invasive and has no boundaries of time and space of radical disturbance of death and destruction. Our generational cells hold cancerous decaying smells.

We offer the following to support our request to expand the eligibility period from April 20, 1943:

1. In 1999, the Centers for Disease Control and Prevention (CDC) began a multi-year study, called the Los Alamos Historic Document Retrieval and Assessment (LAHDRA) Project. The CDC and its contractors reviewed the materials in 40,000 boxes of documents, as well as microfiche, and other electronic data storage devices.

We, Tewa Women United were part of the collaborative organization called Las Mujeres Hablan and have been involved in the LAHDRA process since 1999, when CDC and its contractors held their first public meeting in Taos, New Mexico.

2. Chapter 16 of LAHDRA provides a Partial Chronology of Accidents, Incidents, and Events at LANL. Some of the incidents of interest include chemical releases, fires, explosions, radiation exposures to workers, and other notable accidents that occurred at LANL. The accidents that are potentially relevant to off-site releases or health effects are of particular importance." ld., p. 16–1.

The researchers reviewed over 30,000 pages in over 500 documents to compile Table 16–1 Partial Chronology of Accidents, Incidents, and Important Events at LANL.

Between 1944 and 1962, a total of 254'radioactive lanthanum (RaLa) experiments were conducted in Bayo Canyon using 301 ,802 Curies. ll;L,, p. 9–11.

The first listed incident is RaLa Shot No. 1 on September 21, 1944. It involved approximately 25 to 60 Curies, with an explosive charge of 201 to 350 lbs. No sampling is reported.

In all, 30 RaLa shots took place before June 30, 1945, utilizing a maximum of 1 060 Curies, with an explosive charge of between 601 to 750 lbs. Sampling was focused on Technical Area 1 (TA–1). The first mention of sampling in Espanola, downwind of LANL, is for RaLa Shot No. 158 on August 29, 1952.

Contamination was found above and below background in Española on:

- August 5, 1954 (RaLa Shot No. 168–1500 Curies with an explosive charge of 101 to 200 lbs.),
- September 16, 1954 (no fallout above background was detected) (RaLa Shot No. 170–300 Curies with an explosive charge of 101 to 200 lbs.),
- November 16, 1954–2440 Curies with an explosive charge of 101 to 200 lbs.),
- October 19, 1955 (RaLa Shot No. 192–2000 Curies with an explosive charge of 101 to 200 lbs.),
- October 26, 1955 (RaLa Shot No. 193–3987 Curies with an explosive charge of 101 to 200 lbs.),
- November 3, 1955 (RaLa Shot No. 194–3500 Curies with an explosive charge of 101 to 200 lbs.),
- April12, 1956 (RaLa Shot No. 204–3740 Ci with an explosive charge of 20–100 lbs.),
- March 29, 1957 (RaLa Shot No. 219–3079 Curies with an explosive charge of 20 to 100 lbs.),
- April17, 1957 (RaLa Shot No. 220–3249 Curies with an explosive charge of 101 to 200 lbs.),
- April 2, 1959 (RaLa Shot No. 236–980 Curies with an explosive charge of 20 to 100 lbs.)

LANL conducted some calculated dose assessments studies for its personnel, finding the largest dose of 17 mrem in 1955. None of the LANL studies were independently critiqued by the LAHDRA team. p. 9–10. We understand that no study of the cumulative effects of exposure to the radioactive lanthanum experiments by the residents of the downwind and downstream communities has been done.

CITATIONS:

Beata Tsosie-Peña is the author of the Community Introduction to the LAHORA Report, Final Report of CDC's LAHDRA PROJECT, pp. i-iii. *https://wwwn.cdc.gov/LAHDRA/Contentlpubs/Finai%20LAHDRA%20Report%20201O.pdf*

3. Introduction to Community Summary of CDC's LAHDRA Project, pp. i-iii. *https://wwwn.cdc.gov/LAHDRA/Content/pubs/Final%2OLAHDRA%20Community%20Summary__December%2002%20201O.pdf*

Demonstrated citations which show the amount of plutonium emissions at LANL:

The final June 2009 LAHDRA draft report states:

"If airborne plutonium releases from DP West Building 12 stacks between 1948 and 1955 were as high as the 1956 reports by the Lab's industrial hygiene staff indicate, plutonium releases from LANL could easily exceed the independently reconstructed airborne plutonium release totals from the production plants at Hanford, Rocky Flats, and Savannah River combined, even without the other sources and other years at LANL included." ES–11, Draft Final Report of CDC's LAHORA Report—Executive Summary.

Unfortunately, the final November 2010 LAHDRA report was modified by a new project leader to mask the facts to read:

"Using only LANL summaries of DP West Building 12 stacks alone, and correcting the sample line loss and filter burial (corrections that LANL failed to apply when the data was compiled in the 1970's), the releases greatly exceed the independently established total releases from routine operations for all other DOE plutonium production facilities." ES–14, Final Report of CDC's LAHDRA Project—Executive Summary.

Given that LANL operations continue to emit pollution into the air, discharges to surface and ground water, and burials of radioactive, toxic, and hazardous wastes above the drinking water aquifer and the Rio Grande, we respectfully request that the proposed amendments to the Radiation Exposure Compensation Act extend the eligibility period from April 20, 1943, when LANL operations began. This is when our men and women were taken up to the laboratory operations to work in removing the highly contaminated experimented and exposed materials. I as a child went with my aunties to clean the homes of the scientists. My memory of sacred mountains and life bloods of Mother Earth need to be honored.

I have included maps and other information as attachments. Thank you.*

PREPARED STATEMENT OF JERRY BENALLY, PRESIDENT, NAVAJO URANIUM RADIATION VICTIMS COMMITTEE

Congress needs to pass the Radiation Exposure Act Amendments to provide fair and practical compensation to those who suffered the consequences of our nation's radiation and nuclear history. I urge to bring the Senate Bill and House Resolution forward in Congress.

It is long past time for our families and friends to be compensated for their radiation exposures as down winders, uranium miners, post 71 miners and others.

My personal comments: We the people are stilt being jacked around. Our point is simple. People are dying do to the rules and regulations of the {1) one year duration of work and 40 working level months because they don't qualify. Research has proven (1) one month of work in a uranium mine exposes miners to radiation. (Seidman, Selikoff Etal.1979} and see (Goldyn, Condos Etal, 2008) The working level months needs to be reduce to 10 WLM and duration of work to 3 months. We demand these changes to be included in the 2019–2020 Radiation Exposure Compensation Act.

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*The information referred to has been retained in the Committee files.