Attachment V
Response to Comments

Attachment V. Response to Comments
[Attachment to Quivira Mines Action Memorandum]

This Response to Comments, also known as a Responsiveness Summary, is included as an attachment to United States Environmental Protection Agency's (USEPA) Action Memorandum for the Quivira Mines site (Site) and is included in the Administrative Record for the Quivira Mines Engineering Evaluation/Cost Analysis (EE/CA) (available at https://semspub.epa.gov/work/09/100036462.pdf). This Response to Comments includes the following sections:

A. OVERVIEW OF THE QUIVIRA MINES SITE

The Quivira Mines site (Site) comprises two former uranium mines (Church Rock No. 1 [CR-1] and Church Rock No. 1 East [CR-1E]) and sediment dewatering ponds and a protore storage area (Kerr-McGee Ponds). The Site is located within the Red Water Pond Road and Pipeline Road communities in the Coyote Canyon and Standing Rock Chapters within the Eastern Abandoned Uranium Mine (AUM) Region of the Navajo Nation, approximately 20 miles northeast of Gallup, New Mexico. A portion of the Kerr-McGee Ponds is located on private property owned by United Nuclear Corporation. The CR-1 surface disturbance area covers about 42 acres with 147 acres of underground workings; the CR-1E surface disturbance area covers about 10.5 acres with 97 acres of underground workings; and the Kerr-McGee Ponds cover about 9 surface acres.

Active mining involved sinking shafts and excavating underground workings at CR-1 and CR-1E and extracting ore from 1,500 to 1,850 feet below ground surface (bgs). CR-1 and CR-1E were reclaimed between 1985 and 1986 by backfilling 14-foot and 12-foot diameter shafts with protore and sealing them with steel and concrete plugs, backfilling vent holes with mine waste rock and sealing them with steel and concrete plugs, removing mine equipment and buildings, removing sediment from the settling ponds, and grading and covering the mine waste rock piles with 6 to 12 inches of material. The Kerr-McGee Ponds were reclaimed between 1980 and 1982 by removing the pond berms and former protore stockpile.

The nearest residences to the Site are approximately 700 feet south of CR-1, 800 feet northeast of CR-1E, and 3,000 feet northwest of the Kerr-McGee Ponds. No water supply wells are located at the Site; however, monitoring wells are present at CR-1 and the Kerr-McGee Ponds.

The draft EE/CA was prepared by Tetra Tech, a contractor to USEPA, reviewed and commented on by USEPA and Navajo Nation EPA, and then finalized by USEPA in coordination with Navajo Nation EPA. USEPA published the final EE/CA for public comment in March 2024 at the same time that it published the final EE/CA for the Section 32/33 Mines, which is an abandoned uranium mine site in the same region. A separate responsiveness summary and action memorandum was prepared for the Section 32/33 Mines.

The Quivira Mines EE/CA details multiple removal action alternatives and compares the effectiveness, implementability and cost of the alternatives. The removal action alternatives are:

- Alternative 1: No Action
- Alternative 2: Consolidate Waste, Blend into Landscape, and Cap on Site
- Alternative 3: All Waste Removed and Disposed of at Proposed Red Rocks Disposal Facility
- Alternative 4: All Waste Removed and Disposed of at Deer Trail, Colorado

After comparing the alternatives, USEPA selected Alternative 3, All Waste Removed and Disposed of at Proposed Red Rocks Disposal Facility as the recommended removal action. Cleanup goals were developed for the Site that are protective of people and the environment. Materials exceeding the cleanup goals at the Site will be excavated and transported to a newly constructed repository at the Red Rocks Disposal Facility near Thoreau, New Mexico. The recommended haul route extends from the Quivira Mines site via Highway 566 to Interstate 40, then along Highway 371 to the Red Rocks Disposal Facility. After completing the recommended removal action, the Site will have pre-mining risk levels that allow for unrestricted land uses, as preferred by USEPA and the Navajo Nation government.

B. COMMUNITY INVOLVEMENT AND NAVAJO CONSULTATION

Before opening the public comment period for the Quivira Mines EE/CA, USEPA worked closely with the communities near the Site to develop and evaluate cleanup alternatives for the Site. USEPA met with communities potentially impacted by the hauling and disposal of the mine waste rock at a waste disposal facility to be constructed within the Red Rocks Disposal Facility. USEPA also implemented a two-phase government-to-government consultation process with Navajo Nation regarding the EE/CA that was agreed to by both USEPA and the Navajo Nation government. Outreach activities included:

<u>Community Meetings and Open Houses:</u>

- **Spring 2020 to Present:** USEPA held monthly meetings with the Red Water Pond Road and Pipeline Road communities.
- **10/18/2022**: USEPA presented the EE/CA removal alternatives to the Red Water Pond Road and Pipeline Road communities. USEPA also provided the draft EE/CA to the Navajo Nation government for review.

- **8/6 and 8/7/2023:** USEPA presented the Red Rocks Disposal Facility alternative and preferred and alternate haul routes to the Thoreau community and conducted a Red Rocks Disposal Facility tour for community members.
- **9/21/2023:** USEPA presented the Red Rocks Disposal Facility alternative and preferred and alternate haul routes to the Church Rock community.
- **11/8 and 11/9/2023:** USEPA presented the Red Rocks Disposal Facility alternative and preferred and alternate haul routes in a presentation and on posters to the Casamero Lake community.
- **12/12 to 12/15/2023:** USEPA held three Open House listening sessions in Baca/Prewitt and Thoreau communities to gather public input about EE/CA alternatives and haul routes, and to hear questions and concerns from community members. USEPA presented posters of the Red Rocks Disposal Facility alternative and preferred and alternate haul routes to the Thoreau and Baca/Prewitt Chapters.
- **1/22 to 1/26/2024:** USEPA gave presentations in six Chapters (Baca/Prewitt, Casamero Lake, Pinedale, Standing Rock, Thoreau, Church Rock) answering questions and concerns raised in December Open Houses on the Red Rocks Disposal Facility alternative and recommended and alternate haul routes.

Government-to-Government Consultation between USEPA and the Navajo Nation Government:

On June 20, 2023, USEPA and the Navajo Nation government conducted the first of two phases of government-to-government consultation meetings regarding the Quivira Mines and Section 32/33 Mines EE/CAs. The meeting was held between USEPA and the Navajo Nation Resources Development Committee and the Navajo Nation EPA. In accordance with a process agreed to by the Navajo Nation and USEPA, the first government-to-government consultation meeting presented the draft EE/CA alternatives prior to USEPA issuing the final EE/CAs with recommended alternatives for public comment.

On November 8, and December 2, 2024, USEPA and Navajo Nation conducted the second of two phases of government-to-government consultation meetings regarding the Quivira Mines and Section 32/33 Mines EE/CAs. This phase of government-to-government consultation included discussion of issues and concerns raised by the Navajo Nation and members of the public during the public comment periods for the EE/CAs, and USEPA presented its recommended cleanup alternatives. The primary issues raised included the location of the proposed repository within the boundary of the Red Rocks Landfill property and the impacts it might have on allottee mineral rights. Navajo Nation EPA invited the United States Bureau of Indian Affairs to the consultation meetings to better understand the allotment and mineral rights issues. Navajo Nation representatives also raised concerns about impacts to roadways and expressed a desire to receive general updates on permitting of the disposal facility as it proceeds. Based on the discussion, USEPA agreed to follow up with the Navajo Nation government on several aspects of the cleanup action during the permitting and design process.

Several points of discussion raised by Navajo Nation during the second phase of the government-to-government consultation on the Quivira Mines and Section 32/33 Mines EE/CAs concerned broader technical and policy issues that impact cleanup decisions at sites across Navajo Nation. These topics included how to employ high-pressure slurry ablation as a treatment technology at mine sites and how to address areas of naturally occurring radioactive material left behind after cleanup. No specific objections to the recommended alternatives were raised.

EE/CA Publication and Public Comment Period:

After completing the extensive community outreach described above, USEPA published EE/CAs for both the Quivira Mines and Section 32/33 Mines sites simultaneously and held a public meeting on March 23, 2024. This meeting was held at the University of New Mexico campus in Gallup, New Mexico and marked the opening of the 60-day public comment periods for both EE/CAs. Over 100 individuals attended the March 23, 2024, public meeting which lasted for five hours. USEPA used a court reporter to transcribe all comments made during the March 23, 2024, public meeting.

On May 15, 2024, during the public comment periods, USEPA, Navajo Nation EPA, and State of New Mexico representatives gave a presentation regarding the recommended alternatives at the Thoreau High School. Over 200 students attended the school-wide assembly. USEPA provided pre-paid postcards, USPS mail and email addresses for USEPA project management staff, and a toll-free voicemail phone number for community members to provide comments on the EE/CAs and USEPA's recommended alternatives.

The public comment period for the Quivira Mines and Section 32/33 EE/CAs opened on March 23, 2024, and closed on May 22, 2024.

Advertising:

USEPA advertised the availability of the EE/CAs, the March 23, 2024 public meeting date, time and location, and other ways for the public to voice opinions and concerns, and submit comments. Advertising methods included making radio announcements on KTNN, KGLP and KGAK, publishing newspaper advertisements in the Gallup Independent and the Navajo Times and distributing flyers in the Red Water Pond Road and Pipeline Road communities, the Thoreau, Baca/Prewitt, Casamero Lake and Church Rock Chapters, and the Thoreau community. The mailings included factsheets on the cleanup alternatives, and phone and email contact information for USEPA project management staff.

C. SUMMARY OF COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND USEPA RESPONSES

USEPA received comments in-person and via phone and video calls from community members during the March 23, 2024 public meeting held at the University of New Mexico in Gallup. USEPA also received comments via postcards, toll-free voicemail, email and USPS mail.

USEPA received a letter co-signed by 66 members of the Senior Class at Thoreau High School, approximately 40 emails from other students at Thoreau High School and approximately 15 comments from Thoreau and Crownpoint community members. Thoreau is approximately six miles west of the Red Rocks Landfill Facility. USEPA received approximately 25 comments from members of the Red Water Pond Road and Pipeline Road communities, which are the communities most directly impacted by the Quivira Mines site. In addition, there were several comments from other Navajo Nation community members who are concerned about AUM issues.

USEPA also received comments from multiple government agencies including the Navajo Nation EPA, the Dine Uranium Remediation Advisory Commission (DURAC), BIA, the State of New Mexico Environment Department (NMED) and the State of New Mexico Energy, Minerals and Natural Resources Department.

USEPA also received comments from several nonprofit organizations and from Rio Algom Mining, LLC, which is a potentially responsible party (PRP) for the Quivira Mine site.

In total, USEPA received input from over 150 commenters. USEPA carefully reviewed and considered each comment received and provided a response addressing each comment directly or as part of a group of similar comments. Because of the large number of comments and to streamline its response, USEPA provided a single response where possible to address similar comments made by multiple commenters. Many comments were not specific to the Quivira Mines site or the EE/CA and instead provided general input about community recommendations and concerns about the AUM sites and the legacy of harmful impacts from mining. Comments specific to the Quivira Mines site focused on support for and opposition to Alternative 3, the recommended cleanup alternative, support for and opposition to cleanup alternatives not recommended, and the evaluation of alternatives in the EE/CA. Comments also provided recommendations and identified concerns about engagement with communities on Navajo Nation. They focused on the Quivira Mines-impacted communities of Red Water Pond Road and Pipeline Road, and the Thoreau community where the mine waste disposal facility would be located.

A detailed record of all comments collected from the public meeting and received via postcard, email, USPS mail, and toll-free voice mail are included in the Administrative Record for the Quivira Mines Engineering Evaluation/Cost Analysis (available at: https://semspub.epa.gov/work/09/100036462.pdf).

Part I: Comments on Alternatives

For Part I, USEPA reviewed all comments and categorized them, if possible, into specific topics or issues presented and discussed below. Responses to comments are, therefore, a response to the issue and not necessarily the commentor. To avoid mischaracterization of comments, USEPA has summarized comments for each topic using direct excerpts from public comments without correcting grammar.

Most of the commenters focused on the recommended alternative, Alternative 3, with more commenters supporting the recommended Alternative 3 than opposing it. In general, commenters opposing the recommended alternative were from the Thoreau community, which is located near the proposed new mine waste rock disposal facility at the Red Rocks Landfill property, while commenters supporting the recommended alternative were mostly from the Red Water Pond Road and Pipeline Road communities, which are located near and impacted by the Quivira Mines site. Several comments supporting Alternative 3 were from individuals who do not live in the Red Water Pond Road, Pipeline Road, or Thoreau communities. Other comments received cover a wide variety of topics, including: descriptions of the harmful effects on family members and friends from the legacy of uranium mining; concerns for respecting the Diné culture and Mother Earth; technical issues about the characterization and extent of the mine waste rock; environmental factors at the mines and the disposal facility (e.g., geology, hydrology, erosional factors); suggestions for logistical improvements to support implementing a cleanup action; support for Alternative 5 (disposal at Deer Trails, CO); support for a new Alternative 6 to transport mine waste rock to a new repository located at mines in Ambrosia Lake; support for a more holistic approach for cleaning up the more than 500 mines on Navajo Nation and possibly managing the mine waste rock on federal lands; distrust of the federal government; and impacts to communities resulting from the cleanup of the mines (e.g., truck traffic, dust).

I-1. Infrastructure along Pipeline Road for Removal Action Activities

Comment: Many community members from the Pipeline Road community requested infrastructure repairs and improvements to support the removal action construction activities. These included paving Pipeline Road to control dust and improve access, repairing low spots (specifically at the turn off from Hwy 566), installing heavy duty culverts for water control, repairing two dams for flood control, repairing and improving the local well (#15K-303) to supply water for construction and dust control needs, and finding local soil for backfill.

Response: USEPA appreciates the input provided by community members and will consider the suggestions. USEPA agrees that infrastructure improvements will be needed to support the construction activities. The details of those improvements will be determined in the design phase and USEPA will work closely with the Pipeline Road community and all other communities along the haul route or near construction areas. USEPA will also work closely with these communities during the construction process to address issues raised and to determine post-construction repairs.

I-2. Support for the Recommended Alternative 3, All Waste Removed and Disposed of at Proposed Red Rocks Disposal Facility

Comment (General Support of Alternative 3): Many community members from the Red Water Pond Road community, the Pipeline Road community, and other areas expressed support for the recommended Alternative 3 – Disposal at the Red Rocks Disposal Facility. USEPA received approximately 40 comments supporting Alternative 3. Several comments were from family members of Red Water Pond Road and Pipeline Road community members or non-profits submitted on behalf of larger groups without internet access or resources to comment. Below is a collection of excerpts from and summaries of the comments received on this topic:

- It is the only practical solution that protects the communities near the mine while not harming others.
- The waste can be safely transported and capped at the proposed Red Rocks Disposal Facility.
- Alternative 3 protects Navajo people and land because the waste would go to a professional facility with monitoring.
- The waste at the mines is on the side of a mesa and can't be controlled like at the Red Rocks Disposal Facility which is engineered to handle waste.
- The proposed Red Rocks Disposal Facility can be built specifically to protect air, water and people, and it is already a landfill facility where my trash goes, so there would not be new harm to the land and environment by making an area specifically for uranium mine waste rock.
- There could be potential problems from transporting waste on Hwy 40, but this seems like the best overall option.
- The Red Rocks Disposal Facility is better than capping in-place because the communities near the mine have been impacted for too long and the Red Rocks Disposal Facility can safely protect groundwater and the communities near the facility.
- The communities of Red Water Pond Road and Pipeline Road have suffered the most from uranium mining – Alternative 3 restores our land and places the waste permanently in a safe facility.
- Alternative 3 is the best option for the local communities and the Navajo Nation; people live within a few hundred feet of the waste currently and there isn't an engineered containment like there would be at the Red Rocks Disposal Facility.
- There are people who live near the Red Rocks Disposal Facility, but the facility is large and there aren't people who would be right next to the waste.
- Transport to the Red Rocks Disposal Facility is the best compromise to minimize travel distance and accidents.
- We want the waste removed so that our plants and animals can grow again; we want the waste removed so our kids and future generations can live here on our Navajo and ancestral land with complete use of the land without restrictions or risk.
- A resident from near the Jackpile-Paguate Superfund site supported Alternative 3 because they have seen their parents and grandparents harmed by the legacy of

uranium mining; taking the waste to a safe place away from the Red Water Pond Road community will help that community where cancer currently exists.

- The New Mexico Environmental Law Center (NMELC) submitted comments on behalf of the Red Water Pond Road Association and reiterated many of the above comments in support of Alternative 3.
- Finally, the community supports drilling a construction water supply well if such a well can remain for community use after remediation is complete.

Response: USEPA appreciates the feedback and recognizes the physical and emotional impacts caused by the presence of the Quivira Mines waste in the Red Water Pond Road and Pipeline Road communities during the years of mining and the many years since. USEPA will continue to work with the communities throughout the permitting, design, construction, closure, and long-term stewardship of the waste disposal facility within the Red Rocks Landfill property, and throughout the design and cleanup at the Quivira Mines site. With respect to a construction water supply well, if the well is located on the Navajo Nation, USEPA intends for any such well to be made available through the Navajo Nation for community benefit after completion of the removal action.

The cleanup goals calculated for the Site carefully consider the various ways people, animals and the environment could be exposed to the mine waste rock and are based on conservative assumptions to ensure protectiveness of human health and the environment. USEPA worked with Navajo Nation EPA to select goals so that the Site will be suitable for unrestricted use for future generations.

Comment (Waste Transport): Several people commented that transporting the waste to the proposed disposal area at the Red Rocks Disposal Facility is not as bad as some people think. They explained that it is dirt and not ore or mill material with higher concentrations of contamination. The ore was hauled on the same roads years ago without concerns.

Response: Based on its evaluation in the EE/CA, USEPA agrees that the mine waste rock has lower concentrations of contaminants that can be safely handled and transported on the recommended haul route with minimal impact to the community.

Comment (Support of Alternatives 2 and 3): The New Mexico State Mining and Minerals Division and NMED both commented that the State could support both Alternative 3 (disposal at the proposed Red Rocks Disposal Facility) and Alternative 2 (cap on-site) which could be protective of human health and the environment. The State does not support Alternative 1 (no action) because it is not protective, nor does it support Alternative 4 (disposal at Deer Trails, CO) because it is cost prohibitive and may present great risk to human health and the environment. The State notes that Alternative 2 (cap on-site) meets state applicable or relevant and appropriate requirements (ARARs) and complies with the policies in the *2016 Joint Guidance for the Cleanup and Reclamation of Existing Uranium Mining Operations in New Mexico*. While Alternative 3 costs significantly more and poses additional short-term risks due to the transport of mine waste rock, it does completely remove the mine waste rock from within the impacted communities. Alternative 3 also requires a Mining Act Permit from the

New Mexico State Mining and Minerals Division and a Discharge Permit from NMED to construct the waste disposal cell within the Red Rocks Landfill Facility.

Response: USEPA appreciates the input from the State of New Mexico and will work closely with the State throughout the design and permitting process.

Comment (Traffic Suggestions for Alternative 3): Comments requested that USEPA reconsider the recommended haul route to avoid hauling waste through Thoreau. One recommendation is to drive the waste to the I-40 offramp in Prewitt and reconsider the problems described in the EE/CA concerning a surface railroad crossing. The second recommendation is to transport the waste by rail to the Red Rocks Disposal Facility property. Additional recommendations include electronic traffic controls at Challenger Road and several other locations, additional street lighting along Hwy 566 within the Village of Church Rock, limiting hauling to low traffic times, and properly covering and securing all loads.

Response: USEPA appreciates the suggestions for traffic controls and other traffic mitigation factors. USEPA will consider these suggestions in developing the traffic control plan and will engage with the communities on traffic control measures during the design phase. Working with the local Chapters, schools and communities is an integral part of the design process. USEPA's current analysis determined that the recommended route from Hwy 40 along Hwy 371 is the safest and most cost-effective route considering multiple factors, however, USEPA will continue to consider all potential haul routes.

The number of trucks per day required for hauling the mine waste rock is minimal compared to the existing traffic on Hwy 371. USEPA estimates Alternative 3 will require 96 truck trips per day for approximately four years, compared to the 6,000 trucks and 14,000 cars that travel daily on I-40 near Thoreau. Hwy 371 through Thoreau handles 4,900 vehicles per day. The haul trucks would be covered and secured to minimize any potential risk of dust release during transport through the Thoreau community.

Rail transport does not offer benefits over truck hauling because the waste would still need to be transported by truck through the Church Rock community and past schools to a train depot, then it would be handled a second time (increasing costs and risk) to transfer the mine waste rock from the trucks to the train, and then handled a third time after train off-loading for final trucking to the disposal facility.

I-3. Opposition to the Recommended Alternative 3, All Waste Removed and Disposed of at Proposed Red Rocks Disposal Facility

In general, community members in the Thoreau, Baca/Prewitt and Crownpoint area, including many students at Thoreau High School, expressed opposition to the disposal of uranium mine waste rock at the proposed Red Rocks Disposal Facility. The comments were grouped into related categories below to streamline responses.

Comment (Health Concerns): Multiple commenters had concerns about potential harmful health impacts from creating a new uranium mine waste rock disposal facility in Thoreau. These comments included:

- Uranium waste is highly toxic and can cause kidney failure, cancer, birth defects, harm organs.
- People will become radioactive and maybe grow extra eyes or two heads and other health impacts.
- The proposed new mine waste rock disposal facility poses potential harmful health effects to their communities and visitors, particularly the large number of elderly and future generations.
- The proposed new mine waste rock disposal facility poses potential harm to kids playing outside.
- The proposed new mine waste rock disposal facility could have harmful effects on the diverse local ecosystem, including contamination of local air, groundwater and soil that could lead to long-term ecological damage.
- The uranium could kill all of us in Thoreau and surrounding areas.
- The closest residents are families living only 0.5 mile away and they will be harmed.

Response: USEPA appreciates the concerns expressed about potential health impacts, especially to elders and youth. USEPA wants to provide additional information about the type of mine waste rock at issue at the Site, its source and how it differs from other radiological waste. The mine waste rock at the Quivira Mines site that requires cleanup is mostly soil and rock the miners excavated to reach the ore that contained higher levels of uranium and other valuable metals. Therefore, the mine waste rock that remains at the Quivira Mines site is made up of soil and rock with naturally occurring uranium and other metals too low in concentrations to be sold as ore. The mine waste rock does not have the same concentrations of uranium and other metals that radiological waste resulting from nuclear weapons manufacturing or nuclear power plants may contain. The Quivira Mines waste is considered mine waste rock with very low radiation levels that is not regulated by the Nuclear Regulatory Commission (NRC). While the Quivira and Sections 32/33 Mines waste rock with low concentrations of metals and radiation can potentially pose a risk to someone in some circumstances, for example someone living on top of the waste rock or next to an uncontrolled mine waste rock pile for most or all of their life, the waste rock can be safely handled during transport and managed in the long term at the Red Rocks Disposal Facility without posing a risk to the community.

The Red Rocks Disposal Facility is located on a large parcel of private land six miles east of the Thoreau community and more than one mile from any residence. The Red Rocks Disposal Facility has controlled access and is monitored to prevent exposure and releases. When all the waste rock from the Quivira and Section 32/33 Mines that is required to be removed has been transported, the waste disposal cell will be permanently closed by constructing an earthen cover, safely burying the waste to protect the community. The surface soil of the cover at the closed waste disposal cell at the Red Rocks Disposal Facility will have radiation levels similar to those of the natural surrounding soil.

Some commenters seemed to believe that USEPA's proposed action for the Quivira Mines and Section 32/33 Mines sites is related to a 2018 proposal by the NRC and Holtec International to transport spent fuel with high levels of radioactive substances from nuclear reactors through the Thoreau community. To distinguish these two unrelated projects, USEPA gave a presentation at the Thoreau High School on May 15, 2024, and provided an opportunity to ask USEPA questions.

Comment (Transportation Concerns): Multiple commenters had concerns about Alternative 3 and its potential harmful impacts from hauling waste to a new disposal facility in Thoreau. These comments included statements about the:

- Potential for additional traffic accidents from the extremely large number of haul trucks.
- Potential for spilling hazardous material during transport.
- Destruction of roads from heavy haul trucks.
- Dangers from driving large numbers of heavy haul trucks over the Continental Divide in bad weather.
- Increased diesel air pollution in the community from the large number of haul trucks.

Response: USEPA acknowledges the large total number of haul trucks that will be required under Alternative 3. USEPA recommended Alternative 3, in part, to minimize the risk of traffic accidents and emission of air pollution and greenhouse gases. The recommended alternative requires haul trucks to travel 42 miles from the Site to the disposal facility, compared to the 625 miles each truck would need to travel from the Site to dispose of the waste in Deer Trail, CO. While the total number of trucks required to complete the project is large, the number of truck trips made per day is small relative to the current volume of vehicle traffic on both I-40 and Hwy 371. USEPA estimates 96 truck trips per day for approximately four years, which would be a small percentage of the 6,000 trucks and 14,000 cars that travel daily on I-40 near Thoreau. Hwy 371 through Thoreau handles 4,900 vehicles per day. The additional truck traffic from the project will cause a small increase in traffic and air emissions and will not materially increase road damage or overall traffic risks.

In addition, the project will include measures to further prepare for and prevent impacts to the community and reduce risks. Transportation plans will include procedures for responding to spills and any training requirements. Excavation and hauling would likely be slowed or paused during any periods of bad weather, and the trucks will be scanned, and if necessary, cleaned before leaving the Site. Each truck will be covered to prevent dust while driving and to minimize spills in the event of an accident. If a truck was to spill its load, the cleanup would be relatively simple and require picking up the waste rock. The waste rock poses no short-term acute health risks, so risks to the community from a spill will be minimal. Risks from a truck spill to people driving on the road or living nearby would be minimal and short-term. USEPA also considers the greater risk of possible injury to truck drivers and other vehicles on the road. USEPA notes that transporting the waste to the Red Rocks Disposal Facility poses much lower risks of injury or

death due to traffic accidents than any other off-site disposal option, which are significantly further distances from the Site and would require haul trucks to drive more miles.

Comment (Economic Concerns): Several commenters noted the proposed waste disposal cell at the Red Rocks Landfill Facility could create economic impacts to the Thoreau community. These comments included statements such as:

- The presence of a nuclear waste disposal facility could deter investors, businesses and tourists.
- The Thoreau landfill should only be for local residents' trash.
- There could be damage to the natural landscape from building a new dump.
- No dumping on the land that our ancestors lived on and loved.
- Find a solution that helps the Red Water Pond Road community but that doesn't hurt the Thoreau community.
- Get more money from the government or donations to find a better solution.
- Several commenters questioned USEPA staff if they would live in or visit Thoreau if it had a uranium dump.

Response: The waste at the Quivira Mines that requires cleanup is mostly soil and rock with low-grade protore that mining companies excavated and discarded to reach the ore which had higher levels of uranium and other valuable metals. As a result, the mine waste rock is primarily made up of dirt and rock with low concentrations of naturally occurring uranium and other metals that were too low to be sold as ore. The mine waste rock is not the same as radiological waste from nuclear weapons manufacturing or nuclear reactors. Consequently, the proposed waste disposal cell at the Red Rocks Disposal Facility would not be a "nuclear waste disposal facility." The waste rock from the Quivira Mines site has low levels of radiation which can safely be handled with typical earth moving equipment and capped by layers of clean dirt and rock.

USEPA, the State of New Mexico, Navajo Nation and community leaders plan to conduct additional education and outreach events regarding the low-level threat from the Quivira Mines waste rock and how it will be safely disposed of at the proposed waste disposal cell at the Red Rocks Disposal Facility to alleviate economic and other concerns. After closure, the proposed waste disposal cell at the Red Rocks Landfill Facility will be graded and revegetated with native plants to look like the natural surrounding land. The Red Rocks Landfill Facility is on private land that has an operating municipal solid waste landfill, and the proposed waste disposal cell will not increase impacts on the surrounding land or communities. The Red Rocks Landfill Facility will continue to operate under existing permits and regulations.

In 2015, USEPA recovered almost $1 billion from a litigation settlement to address over 50 mines on and near the Navajo Nation for which Kerr McGee Corporation and its successor, Tronox, have responsibility. The court set aside $85 million from the settlement to address contamination at the Quivira Mines site. The total cost for the Alternative 3 cleanup including Red Rocks Disposal Facility monitoring and maintenance oversight is estimated at $182.5 million. Getting more money from the government or donations would not change the

recommended alternative because the analysis in the EE/CA showed that the proposed Red Rocks Disposal Facility is the best alternative for safely disposing of the mine waste rock.

Workers at the Red Rocks Disposal Facility would be protected from radiation exposure by worker protection requirements set forth in the Occupational Safety and Health Act (OSHA). These regulations require safe work practices and training to ensure worker safety. USEPA also adheres to these requirements when conducting work at AUM sites. Access to the Red Rocks Disposal Facility would be restricted to workers only.

Comment (Technical Concerns): Multiple commenters expressed concerns over technical issues related to building and operating a new disposal facility. These comments included statements such as:

- 30-60 mph winds seen locally could blow the cover topsoil off of the uranium waste and then uranium waste dust being spread to the community.
- The tarp at the bottom of the waste will create a swimming pool effect that will eventually leak.
- Rain and snow leaking into the waste in the landfill or trucks and uranium and water mixing can create explosions.
- Uranium could leak into the underlying aquifer; the uranium could contaminate water and kill our animals if the tanks leak or overflow.
- The facility may be safe at first but what about 1,000 years from now.
- Will the arroyos near the landfill carry water from the repository or cause erosion.
- The waste won't stay where you put it.
- Even secure buried barrels will eventually come out and harm the land and families in Thoreau.
- The presentation was confusing about whether liners would be used at the proposed facility or for the on-site option. The use of liners seems to change with every presentation.

Response: Design of the waste disposal cell at the Red Rocks Disposal Facility has not yet been completed. Permit requirements set by the State of New Mexico will be the basis for the design parameters and criteria for the proposed waste disposal cell at the Red Rocks Landfill Facility. Therefore, any information provided at this time about the design of the waste disposal cell is general in nature and typical of other disposal facilities that accept this type of mine waste rock.

It is typical that components of waste containment cells such as the cover (also referred to as a "cap") will be designed and built to be protective against extreme climate/weather impacts, such as high winds and rainfall. The waste containment cell design will also consider geological and hydrogeological features. After closure of the mine waste rock containment cell at the Red Rocks Disposal Facility, USEPA and the State of New Mexico will conduct regular inspections to ensure that the facility operator performs any needed maintenance and repairs any damage or erosion on the containment cell cover surface. Regular monitoring and maintenance would identify and repair issues before any waste would be exposed. Covers for mine waste rock

disposal cells are commonly designed to withstand a 1,000-year storm event. Even with that type of historic storm, the cap should last much longer with routine inspections and maintenance.

The design would likely partially bury the mine waste rock within waste disposal cells and cover those cells with an evapotranspiration (ET) soil and rock cap that will prevent water from entering into the mine waste rock disposal cells. The ET cap and a disposal cell liner will provide multiple features to protect groundwater. Details regarding the need for liners for the disposal cell will be specified in the final State of New Mexico permits. Any liners, if specified, would be an extra fail-safe measure because no water is expected to infiltrate through the ET cap.

The uranium in the mine waste rock is not reactive with water. Therefore, there is no possibility of an explosion or reaction of any kind. This is the same uranium-bearing rock found naturally at the surface in many mining areas on the Navajo Nation and elsewhere. The waste rock will be transported in trucks directly to the disposal facility and will not be stored in tanks or barrels and, thus, there is no possibility of leakage or overflow from such containers. The waste rock will be capped at the proposed disposal facility and there will be no transport by surface water run-off or into arroyos.

Comment (Other Potential Alternatives to Consider): Several commenters requested that USEPA consider alternatives not evaluated in the EE/CA. These comments included statements such as:

- Why can't the waste be placed back into the mine.
- The mine waste rock could be buried in deep geological disposal units or reprocessed into new fuel.
- Explore solutions that prioritize the safety of residents and the environment by investing in renewable energy sources and implementing stricter regulation on nuclear waste management.
- What about relocating people similar to what happened between the Navajo and Hopis so that people don't live near the waste.

Response: Placing the waste rock back into the mine dry or after creating a slurry was evaluated in the EE/CA and found to not be feasible. The mine tunnels are over 1,000 feet deep and the shafts were backfilled with mine waste rock during previous reclamation activities. Therefore, there is no space within the mine system to accept the volume of waste rock that needs to be addressed. Returning waste rock to the mines would require drilling new boreholes and creating a slurry of the mine waste rock, which would take hundreds of millions of gallons of scarce water and potentially cement that would greatly increase the waste volume. Consequently, even if other technical challenges were overcome, much of the mine waste rock volume would require disposal elsewhere. By comparison, the composition and nature of the mine waste rock means it can be safely handled at the proposed Red Rocks Disposal Facility.

The mine waste rock is not spent nuclear fuel or other enriched uranium product. When mined, the waste rock had concentrations too low to be sent to a mill to be processed into fuel. The

concentrations of uranium and other minerals in the mine waste rock are still generally too low to be economically recovered. USEPA agrees that investing in renewable energy sources is good for the environment; however, new energy policies will not affect the need to address the current piles of waste rock at the Quivira Mines site and safely clean up existing mine waste rock. Also, new, stricter nuclear waste management regulations would not change the need to address this current mine waste rock. This mine waste rock is not nuclear waste and therefore would not be affected by any new nuclear waste management regulations.

Permanent relocation of nearby residents was not considered as an alternative because it would remove people from their land. Residents from Red Water Pond Road were offered voluntary alternative housing during the planned construction period, but it was entirely voluntary, and the mine waste rock must still be addressed to ensure protectiveness for future generations.

Comment (No Trust in USEPA or the government): Several commenters claimed that USEPA is lying when USEPA says that the waste can be safely transported to, and capped at, the Red Rocks Disposal Facility and USEPA is lying about the Red Rocks Disposal Facility being a good solution. A commenter at the public meeting stated they don't trust the government and that the Thoreau Chapter would pass a resolution opposing Alternative 3.

Response: USEPA acknowledges that the commenters are distrustful of the government. USEPA is required to prepare detailed scientific and technical documents following the statutes, policy and guidance. USEPA's EE/CA and related documents, as well as statements made during public meetings, are based on science and engineering and are backed by data and experience addressing similar mine sites across the country. USEPA is required by CERCLA, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and Agency policy and guidance to follow a process for site evaluation and cleanup that involves extensive scientific review. The EE/CA and supporting USEPA documents and analysis supporting the EE/CA followed this process, which included review by the Navajo Nation EPA. USEPA is open to listening and clarifying any specific statements that the commenters believe are untruthful. USEPA received a copy of a resolution passed by the Thoreau Chapter and has included it in the Administrative Record for this action.

Comment (Environmental Justice): Many comments expressed concerns over environmental justice issues related to dumping uranium waste on Navajo lands. These comments included statements such as:

- The U.S. government has historic and current mistreatment of native Americans.
- Why dump in Thoreau? Is it because it is a small town of mostly native American people with no big companies or people who will object?
- Why not somewhere else away from Navajo lands, like Albuquerque or the existing landfill in Colorado or Yucca Mountain, NV?
- What if this kills off our Native families who have already lived with uranium mining for 70-80 years? Who then will teach us our ways?

- The government abuses their power and disregards the needs of indigenous people, and this is a form of colonialism.

Response: USEPA recognizes that there is a long history of government mistreatment of indigenous people that has led to a lack of trust towards the government. To help build and strengthen relationships, USEPA engaged with the communities, Chapters and Navajo government during the development of these documents and has held meetings to solicit community input and comment. USEPA has been meeting monthly with the mine-impacted Red Water Pond Road and Pipeline Road communities for more than four years to understand their concerns and help develop and select a cleanup alternative that meets their needs. For the past year, USEPA has been meeting with communities located along the proposed haul routes and near the Red Rocks Disposal Facility to explain the cleanup approach and why the risk associated with transporting the mine waste rock poses a low risk to their communities and outweighs the long-term challenges of leaving the mine waste rock in the Red Water Pond Road and Pipeline Road communities, where it is located now.

The selected alternative of excavating and disposing of the mine waste rock at the proposed Red Rocks Disposal Facility removes the mine waste rock from a Navajo community and places it on private land in New Mexico that has an existing municipal solid waste landfill where the mine waste rock can be safely managed away from residential properties. The waste disposal cell will be constructed, maintained, and permanently capped to protect the surrounding land and resources into the future. Disposing of the mine waste rock at a facility such as at Deer Trails, CO or facilities in other regions or states poses many additional challenges and risks from the long hauling distances and would not provide additional protection for the affected communities.

The mine waste rock can be safely managed at the proposed Red Rocks Disposal Facility, which will pose no immediate threat to community health and will not impact the ability of community members to teach Navajo ways to future generations. This permanent solution for the mine waste rock also protects everyone in the Red Water Pond Road and Pipeline Road communities, who have been living with uranium mining and mine waste rock for 70 to 80 years. It also provides for long-term, permanent management of the mine waste rock at a disposal facility with state and federal oversight.

Comment (More Waste Will Come to Thoreau from Other Sites): Several commenters asked if uranium waste from other parts of New Mexico or out of state would be disposed of at the facility. Other commenters added that once some uranium waste is placed at the Red Rocks Disposal Facility, they know that more mine waste rock will come from many other mine sites.

Response: Before mine waste rock can be disposed of at the Red Rocks Disposal Facility, the State of New Mexico must first approve a permit allowing the proposed disposal facility to accept mine waste rock. So far, the State has said that only waste from the Quivira Mines and the Section 32/33 Mines sites would be included in the permit. USEPA supports this position.

This permit has not yet been granted, and any changes to a final permit would require public input.

Comment (Thoreau High School Students Concerns): A total of 66 graduating senior students at Thoreau High School submitted a joint letter with multiple detailed questions and comments, summarized below:

> **Comment:** Why would USEPA place waste on uncontaminated land when usually waste is placed onto areas or facilities that are already contaminated? Why is USEPA proposing placing the waste at a Subtitle D Municipal Waste Facility that is only a few miles from a town of 2,500 people? What is the breakdown of costs for the new facility and payments to the State of New Mexico and Navajo Nation?
>
> **Response:** USEPA often manages waste in-place in an already contaminated area like on-site at a mine or in an existing waste management facility, but the primary goal of the removal action is to handle waste in a way that best protects human health and the environment into the future. Sometimes the best alternative can be disposing of waste in a new area within an existing facility, such as at the Red Rocks Landfill property, which is specifically built to handle the waste. The proposed new mine waste rock disposal cell would be separate from the existing solid waste landfill and permitted by the State of New Mexico to accept and manage mine waste rock only from the Quivira Mines and Section 32/33 Mines. The waste is rock and soil with low concentrations of naturally occurring uranium and metals that can be safely handled without endangering the town or residents who live near the facility. A permit application fee would be paid to the State of New Mexico, but the State requires no other payments. The landfill is located on private land and the Navajo Nation does not have regulatory authority over the landfill and therefore would not receive any payments.
>
> Regarding cost breakdowns, the EE/CA included a cost estimate of $183 million for the total action, $126 million of which is associated with transporting the mine waste rock and constructing and maintaining the proposed new repository. The disposal costs would be paid for through tipping fees to the facility operator as waste is disposed of at the facility.
>
> **Comment:** Is there a hydrology report for the existing landfill and where can the public view it (Like water run-off, saturation and retention)? What about the aquifer condition and levels and its distance from the containment areas? Are there estimated erosion control plans using a 100-year flood? What is the water source for construction and daily dust control and what is the estimated monthly use?
>
> **Response:** The hydrology at the proposed waste disposal cell will be fully evaluated during the permitting process and shared with the public by the State of New Mexico. The shallowest groundwater beneath the landfill property is 45 to 60 feet below the ground surface at the Red Rocks Disposal Facility and has dropped approximately 1 to 3 feet since 2008. This groundwater is located in a narrow sandstone layer with relatively

low permeability that flows away from Thoreau to the northeast and is not used regionally as a drinking water source. Beneath this shallow sandstone is the 500-foot thick Middle Chinle Mudstone aquiclude that protects the regional drinking water aquifer in the much deeper Sonsela Sandstone. In addition, the groundwater below the proposed repository location would be protected from infiltration by an ET cap and possibly a liner. Water for construction and dust control at the Red Rocks Disposal Facility would likely be sourced locally from existing on-site wells. The commenters should contact the Northwest New Mexico Regional Solid Waste Authority (NWNMRSWA) or McKinley County to obtain copies of the Subtitle D landfill hydrology or other reports.

Comment: Do you have an estimate for the number of jobs, worker training, pay scales and duration of time to construct and operate the new facility, install fences and new side roads, repair main roads and build new holding tanks?

Response: USEPA has not estimated the number of jobs created or related pay scales, but the new operation would require a significant number of new jobs to construct, operate and monitor the facility. Depending on their position and duties, construction workers would typically require OSHA safety training, with the workers handling or potentially being exposed to the mine waste rock requiring additional hazardous material safety training. The estimated duration for the removal of mine waste rock from the Site is four and half years. Permitting and constructing the waste disposal cell at the Red Rocks Disposal Facility is estimated to take two to three years. Regarding holding tanks, none would be necessary because the waste is in the form of dry dirt and rock that will be placed into repository cells and covered with an ET earthen cover/cap.

Comment: Will the facility receive uranium mine waste from other areas? How much is the maximum that the facility will hold?

Response: The State of New Mexico must first approve a permit allowing the proposed disposal facility to accept mine waste rock and the State has said that only waste from the Quivira Mines and the Section 32/33 Mines sites would be allowed to be disposed of at the facility pursuant to the permit. USEPA supports this position. Any changes to a final permit would require public input.

The estimated combined waste volume from the Quivira Mines and Section 32/33 Mines sites is approximately 1.2 million cubic yards. The State would hold public hearings during the permit process to share information about the facility and receive comments from the community.

Comment: Is there a weather station in Thoreau? What is the average rain and snow in the area and predictions for future weather based on climate change?

Response: The closest weather station to Thoreau is at the Grants-Milan Municipal Airport (KGNT); however, Gallup Municipal Airport (KGUP) has a more complete

historical climate record. The impacts on future weather from climate change are difficult to evaluate, but the current predicted storm event that would happen just once every 100 years (a 100-year storm) is a 10-minute storm delivering 0.994 inch of precipitation. Historical records from 1976 to 2016 at KGUP show 11.08 inches of annual precipitation with the most rainfall typically occurring in July (1.72 inches) and August (1.92 inches). Nonetheless, the area is semiarid with a high annual net evaporation rate of 54 inches per year, far exceeding the annual precipitation of 11.08 inches.

Comment: Is there an assessment of current conditions of all roads, bridges, exits, overpasses and underpasses on the proposed highways that will be used for the transport of the waste? Are there signed agreements for right-of-way authorizations from the proper authorities? Are there plans to reconstruct roads to prevent road damage, accidents and to not impede traffic? Especially on I-40 which is a major artery in the Western U.S. How many haul trucks will be used per day, what is their tonnage, and how long will the hauling last?

Response: The roads proposed in the haul route for the selected alternative are managed by state and federal agencies that have requirements for their ongoing inspection and maintenance. All trucks will meet the required Navajo Nation, State of New Mexico and/or federal Department of Transportation requirements for size and weight. Rights of way are not required for transport across state and federal roads. For other roads, USEPA commonly conducts pre-work inspections of the roads to determine conditions prior to use for the removal action. Any required authorizations and permissions will be obtained closer to when the work is to begin on the removal action.

USEPA will repair and improve the Red Water Pond Road and the Pipeline Road to support equipment and trucks prior to the start of construction and repair the roads after excavation and transport is completed.

USEPA will prepare traffic control plans to ensure traffic is not impeded and to try to prevent accidents at the exits from the work sites and at appropriate uncontrolled intersections. There will be approximately 96 haul trucks per day, which will account for a small percentage of the 6,000 trucks and 14,000 cars that travel on I-40 near Thoreau daily, on average, and of the 4,900 vehicles that travel on Hwy 371 through Thoreau daily, on average. Each of the trucks will carry approximately 25 tons of mine waste rock and the hauling portion of the construction schedule will last approximately four years.

Comment: What is the safety and legal jurisdiction of the private landfill? What is the chain of authorization in the event of an emergency or natural disaster?

Response: The new disposal facility would require a permit from the State of New Mexico that would specify how it would comply with all safety and emergency response requirements consistent with any applicable laws and regulations.

Comment: What is the composition of the containment units and their useful life to hold the mine waste contents, including dust, erosion, cracking, chipping, pealing, corroding, destruction by destructive devices, weather or natural disasters?

Response: The waste being excavated and disposed of at the Red Rocks Disposal Facility is comprised of mine waste rock and dirt that would be partially buried and capped with an ET earthen cap expected to be maintained in perpetuity. The proposed Red Rocks Disposal Facility, including the ET cap, would be designed to resist erosion from wind, water and disasters, such as a 1,000-year flood. There will be no risk of peeling or corroding because there will be no tanks or other metal or mechanical holding components. Regular inspections will identify any erosion of the cap, and maintenance and repairs would be performed to address any problems that arise. Because of the thickness and robust nature of the ET cap, there is no expectation that erosion would ever be deep enough to expose waste before the erosion is identified and repaired.

Comment: How will USEPA address the negative public perception of Thoreau being reclassified as a uranium dumping ground and the subsequent negative impacts on economic development and the education system? What are the plans for financial compensation to the community for the destructive reputation of a uranium holding ground?

Response: USEPA understands the Thoreau community's concern regarding negative perceptions of mine waste rock. USEPA will work with the community, the town of Thoreau and the State to further inform the public that the waste is waste rock and dirt with low concentrations of uranium and metals and that the Red Rocks Disposal Facility should not be considered a "uranium dumping ground." USEPA will continue to educate people that the facility will be designed, constructed and maintained to be protective and not release contamination to the surrounding areas.

Comment: Are there other locations where these uncovered holding tanks are used?

Response: The selected remedy does not include any holding tanks because the waste is rock and soil. The proposed repository will be partially dug into the ground and capped with an ET earthen cover.

Comment: Why did USEPA pick the Thoreau landfill? USEPA mentioned the word "easy" three times in the presentation to the high school.

Response: USEPA selected the Red Rocks Disposal Facility for several reasons. First, the owner and operator of the facility is willing to apply for a permit from the State of New Mexico, construct the repository and manage the waste on its private property, which is located off the Navajo Nation. The Red Rocks Landfill Facility has a history of successfully managing a landfill and has demonstrated an understanding of what will be required to manage the mine waste rock in perpetuity. The proposed Red Rocks Disposal Facility is the closest location for a disposal facility to the mine sites and will require the shortest

haul distance. Therefore, it would result in the least air pollution, greenhouse gas emissions, cost, and potential for traffic accidents. The landfill offers the benefits of removing the waste from its current location immediately next to homes and placing it in a disposal facility designed and constructed to safely hold the mine waste rock indefinitely. While nothing in the world of cleanup of uranium mines is "easy" and the proposed Red Rocks Disposal Facility will take several years to be permitted following the State of New Mexico process, and constructed, USEPA determined it is the best alternative considering long- and short-term effectiveness, compliance and implementability.

I-4. Opposition to Alternative 2

Comment (Opposition to Alternative 2): The NMELC, on behalf of the Red Water Pond Road community, commented that Alternative 2, Capping On-site, should be completely removed from consideration. The well-documented harmful health impacts on the Red Water Pond Road and other communities show that capping on-site should not be considered and should not be implemented. Alternative 2 should be eliminated from any consideration because the EE/CA did not provide a technical basis for how capping on-site would be protective. First, the waste would remain close to the community. In addition, the EE/CA did not justify how an ET cover would limit radon flux in the arid local conditions, how vegetation would be supported and controlled, whether irrigation would be used, did not evaluate impacts from climate change and did not address key design concerns described in the US NRC *Basis for Technical Guidance to Evaluate Evapotranspiration Covers* (NUREG/CR-7297 (2022)). The repository would not be below grade and thus would be subject to erosion. The EE/CA should have included 10 CFR Part 40 Appendix A Criteria 2 and 3 as ARARs. Criteria 2 mandates centralizing waste disposal and Criteria 3 mandates serious consideration for waste placement below grade as the prime option. Finally, Alternative 2 would remove land from use by the Navajo and the EE/CA provided no justification for the claims that grazing and open space use could be supported on capped waste.

Response: In Alternative 2, the cover design would ensure compliance with the ARAR for radon flux. Also, given the low concentrations of radium-226 in the mine waste rock compared to the mill waste discussed in the comment, the potential failures for radon control discussed in the comment are unlikely. The Alternative 2 design would account for the low moisture content expected in an ET cover and the actual radium-226 concentrations in the mine waste rock, as well as a range of potential climate change effects. Design and construction of ET covers are well understood and have been documented to be protective in the Southwest of the United States. The EE/CA provided the general approach for how an ET cover would be designed and implemented and left the specific details to be determined during the design phase. Ultimately, Alternative 2 was not selected as the recommended alternative.

10 CFR Part 40 Appendix A Criteria 2 was not selected as an ARAR because it applies to small volumes of byproduct material specifically from former milling operations and does not apply to large volumes of mine waste rock. Criteria 3 was not selected as an ARAR because it offers general advisement that below-grade disposal is preferrable, but it is not a requirement nor a

standard. USEPA generally agrees that partially buried repositories (partially below grade) are preferable. But as Criteria 3 states, it is not always possible because of shallow bedrock or other considerations.

While homes and other structures would be prohibited from being constructed on capped waste, future grazing and open space use may be possible. This is supported by published studies on ET capped areas. However, because the property is private property with a landfill, it is likely that future reuse would be restricted.

I.5 Support for Alternative 4, Disposal at Deer Trails

Comment (Support for Alternative 4): Many members from the Thoreau and nearby communities, along with the DURAC supported Alternative 4 because it removes the waste entirely from the Navajo Nation and takes it far away. Community members stated that the high cost of Alternative 4 should not matter compared to the health of their communities. One person noted that they can't drink the water from their community well and that the same is true in Thoreau, Churchrock, Pinedale and many other Chapters. The commenter said that this shows the need to get all the waste from all the mines away from the Navajo Nation.

Response: USEPA understands some people's preference for completely removing uranium mine waste rock from the Navajo Nation, and that the proposed Red Rocks Disposal Facility, while on private land, is still near Navajo communities. With that understanding, the EE/CA documents the much larger short-term impacts of trucking the over 1 million cubic yards of mine waste rock from the Quivira Mines site to a disposal facility located more than 10 times further away compared to the much smaller short-term impacts of trucking the mine waste rock a shorter distance to the Red Rocks Disposal Facility. Cost is one of several criteria used to compare and evaluate alternatives, along with other factors such as short- and long-term effects on the community.

With respect to water resources, USEPA understands the importance of access to clean water on Navajo lands and Alternatives 2, 3, and 4 would all similarly protect water from future contamination by preventing mine waste from contacting or migrating to surface water or groundwater.

I-6 Support for a New Alternative at Ambrosia Lake

Comment (Support for a New Alternative at Ambrosia Lake): Several community members and Navajo Nation representatives asked about taking all the waste to mines or mills in Ambrosia Lake. This is an area with hardly any residents near the mines and it already has a large amount of mining that could be managed together. They said that the communities have brought this up many times and been told that the State of New Mexico said that no waste from Navajo Nation could be brought to New Mexico. But this is racist and the waste was not made by Navajo people. A solution like Ambrosia Lake would not pit one Navajo community against another, like moving waste to the Red Rocks Disposal Facility is doing. A mining company commented that the Ambrosia Lake area is outside of the Navajo Nation, has private land with similar uranium

mine waste rock that could function as a repository location without contaminating new land, the Quivira Mines waste is a small fraction of waste already present, and the haul distance is similar to the Red Rocks Disposal Facility.

Response: The Ambrosia Lake area was considered and screened out for several reasons. One reason is that in 2017, the State of New Mexico sent a letter to USEPA Region 9 demanding that USEPA not consider mines and mills in the Ambrosia Lake area as potential disposal alternatives for waste from the Quivira Mines site. This letter was signed by the Secretaries of NMED and the Energy, Minerals, and Natural Resources at that time. The State of New Mexico remains opposed to importing mine waste rock from outside Ambrosia Lake because it would reduce the capacity of such locations for mine cleanup actions in the Ambrosia Lake area. In November 2024, USEPA's Office of Land and Emergency Management signed a policy memorandum that highlighted the priorities for waste disposal and management in the Ambrosia Lake area. This memo states that the priority should be to use waste disposal capacity in Ambrosia Lake for mine waste in the immediate area.

Despite commenters implying that there are no residents near the mines in the Ambrosia Lake area, the communities of Milan and Bluewater are located downgradient of the mines and mills in Ambrosia Lake and along a potential haul route, and they strongly oppose waste being disposed of in Ambrosia Lake. They likewise request that waste be taken to other locations outside their communities.

An additional reason for screening out disposal locations in Ambrosia Lake is because it would take extensive time to address waste at dozens of existing Ambrosia Lake uranium mines that would be given priority to use mines and mills as disposal locations, thereby significantly delaying cleanup. In addition, there is additional NRC regulated material in the Ambrosia Lake area that may need to be placed at Uranium Mill Tailings Radiation Control Act (UMTRCA) cells and would require license amendments by NRC. The Department of Energy (DOE) and NRC regulations and policies currently do not regulate low level mine waste rock to be addressed under UMTRCA, the law that USEPA and NRC use to manage uranium mill tailings.

I-7 Support for a Holistic Approach

Comment (Support for a Holistic Approach): Several people commented that there are over 500 mines on Navajo lands and that there should be a holistic approach to address all the mines and not do it one-by-one. A comment acknowledges that it is not within the scope of the USEPA EE/CA to evaluate a holistic solution to the intractable problem of historic uranium mine waste rock within the Navajo Nation. However, the comment urges USEPA to begin a dialogue between frontline communities, the Navajo Nation government, the New Mexico government and various federal agencies to work together toward a holistic solution for all uranium mine waste rock. For example, USEPA could take a leadership role in convening a series of intergovernmental and community working groups to identify potential sites for one or more regional uranium mine waste disposal facilities. The community sees this moment as an opportunity to move away from capping mine waste rock in place as the default uranium mine waste disposal policy. Other people opposed moving mine waste rock from one Navajo

community to another and asked for a comprehensive approach to all the mines that results in the waste rock from all the mines being taken away from the Navajo Nation. One person stated that the Navajo Nation bought a ranch near Pueblo, Colorado and that this location should be a new Alternative 5 as a closer alternative than Alternative 4 at Deer Trails to dispose of waste rock from many mines. Commenters also asked about taking the mine waste rock to the White Mesa Mill and to sites on land managed by the Department of the Interior. Navajo people have been asking about these other possible locations for years and they would all be better than the alternatives presented here and would not pit Navajo communities against one another by moving mine waste rock between Navajo communities.

Response: USEPA appreciates the urging to find comprehensive solutions that result in all mine waste rock being taken away from the Navajo Nation. USEPA is working with the Navajo Nation government and several federal land management agencies to investigate the potential for large regional repositories to handle mine waste rock from multiple mines on federally owned land. The proposed Red Rocks Disposal Facility is an example of a solution to remove waste from one of the largest mines on the Navajo Nation, but the State of New Mexico is currently only willing to permit the facility to accept waste from the Quivira Mine site and the Section 32/33 Mines site. USEPA also appreciates the suggestions of other solutions that Navajo officials and community members have shared many times over the years.

For over five years, USEPA has been working with other federal agencies to identify solutions for taking uranium mine waste rock off the Navajo Nation and disposing of it on federal lands. USEPA has spent countless hours negotiating with federal land management agencies in the Department of the Interior, the Department of Agriculture's U.S. Forest Service, DOE, and the Department of Defense. To date, no such solutions have been identified; however, USEPA will continue to engage with our federal partners to identify any opportunities in the future for other sites. The Navajo Nation has purchased numerous ranches, but to USEPA's knowledge, none have been proposed by the Navajo Nation as potential locations for uranium mine waste disposal.

Part II: Specific Regulatory, Legal and Technical Questions

II-1. Concerns about Descriptions of Land Use and Navajo Nation Legal Processes, Cleanup Levels and Treatment in the EE/CA

Comment (Allotment Land Issues): BIA commented that the haul routes from the Quivira Mines and the Section 32/33 Mines cross multiple allotment lands, which are held in trust by the United States government for the benefit of allottees and their heirs. BIA advises that USEPA should investigate the status of any rights-of-way encumbering those allotments. USEPA or any PRP acting at USEPA's direction should consider securing a right-of-way to authorize traversing allotments if no right-of-way currently exists.

BIA, Navajo Nation EPA and DURAC all commented that the proposed Red Rocks Disposal Facility, while on private property, is within Indian Country and allottees and the Navajo Nation retained mineral rights underlying the location of the proposed repository. The EE/CA does not

discuss the issue of mineral rights having different ownership than the land surface. The construction of the repository would remove the ability to develop the mineral rights for oil drilling in the future. In addition, the excavation of the repository cells may constitute "mining" itself. BIA urges USEPA to ensure that proper consent is obtained and that the mineral rights holders receive fair market value compensation.

The NMELC, on behalf of the Red Water Pond Road community, noted that claims by several Navajo Nation officials that Navajo Nation or Navajo allottees own subsurface rights at the Red Rock Disposal Facility property are unsupported.

Response: USEPA appreciates the information and will work with the BIA, the allottees and the Navajo Nation to investigate the existing rights-of-way and to resolve any potential access issues prior to performing the removal action. USEPA agrees that such issues will need to be resolved prior to the start of a cleanup action and USEPA appreciates BIA's willingness to work diligently with USEPA during this process.

USEPA agrees that any potential access issues for mineral rights or other issues related to surface land usage over an area with separate mineral rights should be resolved between USEPA, the NWNMRSWA, the State of New Mexico, BIA, the Navajo Nation and the allottees prior to any issuance of a permit for a disposal facility at the Red Rocks landfill. The issue of subsurface mineral rights at the Red Rocks Landfill Facility would need to be resolved during the State of New Mexico permitting process. Because the Red Rocks Landfill Facility property is privately owned land in New Mexico, efforts to resolve mineral rights issues would be initiated by the landowner and would need to be resolved prior to permitting of the mine waste disposal facility.

Comment (White Mesa Mill and Ablation): The NMELC, on behalf of the Red Water Pond Road community, stated strong opposition to any current or future disposal at the White Mesa Mill and to the use of ablation treatment for the mine waste rock at the Quivira Mines site. They also commented that the cleanup level for the former Kerr-McGee Ponds on UNC-owned land should be the same concentration as the cleanup level for contamination on Navajo land because of the potential for future cross-contamination.

Response: USEPA acknowledges some community members' opposition to disposal at the White Mesa Mill and to ablation treatment at this time for mine waste rock from the Quivira Mines site. In the EE/CA, USEPA screened out high-pressure slurry ablation (HPSA) treatment from further consideration for the Quivira Mines site based on results of a USEPA Treatability Study. HPSA would not achieve the cleanup levels necessary to leave processed mine waste rock on site for unrestricted reuse. HPSA results in two primary outputs: a concentrated waste stream and a cleaner coarse fraction. Because concentrations of contaminants of concern in both outputs would be higher than cleanup levels, both outputs would require disposal off-site. This would not reduce disposal costs and would significantly add to the cost of cleanup due to HPSA treatment costs.

Regarding White Mesa Mill, USEPA considered the facility as a disposal option in the EE/CA and stated that if it came into compliance with USEPA's Off-Site Rule, it would be considered as a disposal location under Alternative 4. While White Mesa Mill is now in compliance with the Off-Site Rule, USEPA did not recommend and is not selecting Alternative 4. Therefore, the specific facility to which mine waste rock would be transported for disposal under Alternative 4 is irrelevant. Disposal of mine waste rock at White Mesa Mill would not significantly lower the cost or improve short-term effectiveness compared to other facilities considered for Alternative 4, since it is over 200 miles from the Quivira Mines site and would pose significant transportation risks.

Finally, the cleanup level for contamination on UNC-owned land in the Kerr McGee Ponds area of the Quivira Mines site is consistent with cleanup levels used by NRC and DOE for the UNC Mill property. USEPA Region 6 has concurred with USEPA Region 9's cleanup levels for the Kerr McGee Ponds. Creating a separate cleanup level for a small portion of the property would not affect future protectiveness at the Quivira Mines site. Migration potential to nearby Navajo land is low.

II-2. Comments from Navajo Nation EPA.

Navajo Nation EPA provided multiple comments on specific legal, policy, technical and community engagement issues. The specific comments and responses are listed below.

Comment (Consideration of Land Use): Several statements in the EE/CA concerning land use and land use policy on the Navajo Nation are not completely accurate. The entire discussion of land use restrictions or land use policy on the Navajo Nation is incomplete and should be fully examined if they are to be included or referenced as critical factors in establishing cleanup goals.

The Navajo Nation does employ land use restrictions in the development of Navajo Nation lands. The Navajo Nation Division of Natural Resources utilizes land development regulation, policy and criteria to restrict land use in identified flood plain areas; in identified areas where there are known cultural resources that require protection pursuant to the National Historic Preservation Act; and in identified areas where endangered and sensitive species habitat requires protection. These land use restrictions are prominent aspects of the Navajo Nation's review of proposed Home Site Lease applications.

The Navajo Nation EPA Superfund Program coordinates directly with the Division of Natural Resources on such land use development matters, and Navajo Nation EPA is a party to the proposed Home Site Lease application review processes, specifically to advise the Division of Natural Resources Land Department on the locations of identified AUM sites. This effort is focused on minimizing the construction of new homes on or very near to existing and known AUM sites and is focused on increasing safety for Navajo Nation home developers and owners by reducing human exposures to known and potential contaminants of concern at these AUM sites. This effort began in 2007 with the publication and distribution of the AUM Atlas maps and metadata to Navajo Nation programs and Chapters.

Navajo Nation EPA is coordinating with the Navajo Nation Department of Justice and Division of Natural Resources on developing and improving land use policy to address the needs for AUM cleanup projects and the eventual completion of AUM cleanup projects that may result in the creation of mine waste rock piles that will require long term maintenance and monitoring.

Response: USEPA appreciates the clarification on Navajo Nation land use policies and the implementation of those policies. USEPA will continue to work with Navajo Nation EPA, Navajo Nation Department of Justice and the Navajo Nation Natural Resources Department to ensure that future EE/CAs accurately describe the necessary information and that all decisions that might be influenced by land use considerations are made in consultation with the Navajo Nation. USEPA developed a risk assessment methodology that is consistent with these land use policies, assuming residential use of all lands that are not restricted from use as residential. Because of this assumption, future residential reuse scenarios are common and used for the majority of the Quivira Mines site. This results in the most protective cleanup levels for the entire site.

Comment (Navajo Nation EPA Consideration of Ablation): While the final EE/CA includes information about the potential retention of a treatment technology known as ablation, there seems to be an inconsistent logic in reading some of the stated conclusions for how ablation would increase costs without reducing risk of some of the stated Alternatives.

The recent High-Pressure Slurry Ablation Treatability Final Study developed by DISA Technologies, USEPA and Navajo Nation EPA was reviewed and verified by USEPA in December 2023. In the final EE/CAs, USEPA states "the pretreatment technology pilot-scale studies at three (3) sites on the Navajo Nation including the Quivira Mines site has shown that up to 95 percent removal of uranium mass from the coarse sand fraction can be achieved, that the treated materials are not RCRA hazardous, and do not generate leachable metals or radionuclides above USEPA and Navajo Nation water quality standards."

The Treatability Study further states, "Ablation pretreatment could be retained after additional scalability testing and when a viable off-site disposal alternative at a similar cost is not available and the community would like containment mass and volume reduction before on-site consolidation and capping."

Navajo Nation EPA would like to recommend that before USEPA finalizes its selection of a final cleanup alternative that USEPA provide more analysis and clearly depict the pros and cons of the application of HPSA technology and consider the following:

1) The January 2024 USEPA PowerPoint presentation to Navajo Nation EPA of the pilot-scale results demonstrated cost reductions for the proposed cleanup alternatives, primarily due to the reduction of mass and volume of the contaminants of concern.
2) The aspect of the costs for mine waste rock removal/hauling and long-term maintenance of containment on site are not incorporating the reduction of volume.
3) The improvements in reducing leachability of metals and radionuclides and the increased protection of Navajo Nation water resources are not explained.

4) USEPA has not provided adequate outreach to the communities regarding the results of the HPSA Technology Treatability Final Study; perhaps this is because the final study was approved in December 2023. The 2022 field demonstrations and actual acquisition of soil samples for the Treatability Study established an expectation to follow through with communication to the communities regarding the final results.
5) USEPA and Navajo Nation EPA should work together to scale up the technology and test it again at higher treatment rates to verify its efficacies and ability to effectively reduce waste volumes, increased water resources protections, and potentially reduce overall costs, including the long-term maintenance costs for smaller containment cells and caps.

Response: USEPA agrees that ablation treatment is promising and may have some applications for future uranium mine sites on the Navajo Nation and may be retained for other sites if cleanup levels can be achieved. However, while the ablation treatability study demonstrated reductions of uranium and radium 226 concentrations, the levels attained did not meet the cleanup standards for the Quivira Mines site and the Section 32/33 Mines site. Thus, for these Sites, there would be no reduction in volume and all the mine waste rock would still require either capping on-site or excavation and hauling off-site to a disposal facility, consistent with Alternatives 2, 3, and 4 presented in the EE/CA. The reduction in the concentrations of the coarse fraction after treatment may reduce leachability, but the mine waste rock will be protected from leachate generation at the proposed Red Rocks Disposal Facility, so the concentration reduction significantly increases costs without providing additional environmental or health benefits. USEPA notes that in addition to the selected quotes from the EE/CA highlighted by the commenter, the following quote provides a final decision about whether to consider ablation further, "Ablation was not retained as a standalone or pretreatment treatment technology because it would increase costs without significantly reducing risk."

Ablation treatment also generates a smaller portion of highly concentrated waste requiring disposal at a licensed hazardous waste landfill, such as the one at Deer Trails, CO, or a licensed uranium mill, like White Mesa Mill. Transport and disposal of this concentrated waste adds extra risk to the action due to the long hauling distances compared to the recommended alternative at the Red Rocks Disposal Facility. USEPA looks forward to working with Navajo Nation EPA to continue investigating/considering the uses of ablation treatment. USEPA notes that the Red Water Pond Road and Pipeline Road communities have received extensive consultation about HPSA from the Southwest Research and Information Center (SRIC), the Multicultural Alliance for a Clean Environment (MACE), and NMELC. They have also coordinated with the Ute Mountain Ute Tribe to better understand the Tribe's concerns with the White Mesa Mill facility. These communities have expressed a concern about HPSA and disposal of waste at the White Mesa Mill.

Ablation treatment was discussed further with Navajo Nation EPA during the second phase of government-to-government consultation in November and December 2024. These discussions further explained why HPSA was screened out as a cleanup alternative for the Quivira Mines site. USEPA also provided additional data received in November 2024 from Energy Fuels

regarding waste disposal costs at White Mesa Mill, which confirmed that any revenue from uranium recovery would not cover the increased transportation cost of waste disposal at that facility.

Comment (Traffic and Community Engagement): The haul route will pass several schools. Have the McKinley County schools been consulted about this fiasco of heavy traffic? The open house meetings were poorly communicated and coordinated with the impacted communities resulting in very low turnouts at most meetings. Scheduling of public meetings and community meetings were decided by USEPA's schedule and not the preferred schedules of communities. In addition, there were no visuals or presentations at the community meetings because it was all verbal discussions. It was only later in the process that visual presentations were added at Navajo Nation EPA's insistence. The results of the Stennett Analysis by USEPA Headquarters were not shared with Navajo Nation EPA.

Response: Considerations for managing traffic caused by trucks driving past schools and scheduling breaks in traffic during school drop-off and pick-up times and other busy times will be coordinated with the school districts and the individual schools during the design phase. The additional traffic during the cleanup project will involve up to 96 haul trucks per day, which is minimal compared to the 4,900 average daily vehicles on Hwy 371 passing through Thoreau. USEPA evaluated multiple haul routes and found that the recommended haul routes passed the fewest schools and use the safest roadways. An analysis of the haul routes was prepared for the Quivira Mines site and Section 32/33 Mines site and is included in the Administrative Record.

Regarding community engagement, USEPA established a two-step process for community engagement in December 2023, and January 2024, before the final EE/CA was released. The first meetings in December 2023 were open house "listening sessions," where USEPA representatives were gathering input from community members to inform the second step, which would be to provide a presentation and other materials informed by the listening sessions. The January 2024 presentations to communities provided specific responses to community concerns heard during the listening sessions and provided large maps to allow the community members to visualize the Sites, cleanup alternatives, and haul routes. USEPA coordinated the meetings with Chapters in the hopes of achieving high attendance. The December meetings were well attended, but poor weather conditions in January suppressed attendance at the last minute. USEPA announced both sets of meetings in newspapers, on the radio, and through fliers posted at each Chapter house to reach as many community members as possible. The Stennett Analysis referred to in the comment has since been provided to Navajo Nation EPA and is included in the Administrative Record.

Comment (Voluntary Alternative Housing for Pipeline Road Community): The Pipeline Road community should have been offered voluntary housing assistance similar to that offered to the Red Water Pond Road Community.

Response: USEPA acknowledges that the Pipeline Road community will be impacted by construction. However, the level of impact to Pipeline Road residents will be significantly less than the impacts to the Red Water Pond Road community. Dust will be actively monitored using

air sampling around the construction activity and controlled to eliminate any health risk to the community. The remaining impacts will be primarily from additional construction traffic.

When comparing the potential impacts to the nearby communities, USEPA calculated that the CR-1E mine area on Pipeline Road is about 15% of the size of the CR-1 mine area on Red Water Pond Road. In addition, the offer of voluntary alternative housing to the Red Water Pond Road community was primarily necessary because of the combined effects of the Northeast Church Rock (NECR) Mine site and the Quivira CR-1 Mine, both of which are within the Red Water Pond Road community. Road improvements will be part of the design to handle additional traffic for the Pipeline Road community. Finally, USEPA will consider offering temporary alternative housing for residents living closest to Quivira CR-1E due to short-term traffic impacts during the time that CR-1E will be excavated.

Comment (Community Health Monitoring During Construction): Where are the plans to control dust for the Red Water Pond Road community during the action and plans for liners, soil compaction, types of soil, dike designs, construction details, etc.? How has the health of the impoundments been monitored over the years?

Response: Dust control and construction details are typically only discussed conceptually in an EE/CA. During the design phase, the specifics of each project component including those cited in the comment will be detailed in design documents and work plans, which will be shared with the communities.

II-3. Regulatory Issues Related to Permitting a New Facility at Red Rocks to Accept Uranium Mine Waste

Comment (State Permit for New Facility): The NMED commented that the Red Rocks Disposal Facility is only currently permitted to receive domestic and industrial waste and that mine waste rock is specifically excluded. Thus, the recommended alternative requires the construction of a new facility on property owned by the NWNMRSWA and new permits issued by the State of New Mexico specifically allowing uranium mine waste disposal. The State further commented that the State will only consider such a permit for acceptance of mine waste rock from the Quivira Mines site and Section 32/33 Mines site.

Response: USEPA understands the permitting issues and will work closely with the State of New Mexico throughout the permitting process for the new proposed mine waste rock disposal facility.

Comment (Soil Sampling): The NMED noted that sample results from the Sites passed the RCRA toxicity characteristic leaching procedure test and are thus not defined as RCRA hazardous waste, but the State asked if sampling results from the sites were compared against *State of New Mexico Risk Assessment Guidance for Site Investigations and Remediation – Volume 1 Soil Screening Guidance for Human Health Risk Assessment*. The State further noted that any State of New Mexico regulations or guidance which could apply to transport and disposal of mine waste rock should be considered as ARARs or to be considered (TBC) and that sampling results should be compared against those ARARs or TBCs.

Response: The sampling results from the Sites were not compared against State of New Mexico soil screening levels. The State of New Mexico soil screening levels are meant to be used in human health risk assessments and are not regulatory standards for transport or disposal of waste. USEPA did conduct risk assessments consistent with both USEPA and the State of New Mexico risk assessment guidance and determined that the mine waste rock poses an unacceptable risk in its current condition. USEPA has identified, in consultation with the State of NM, state laws and regulations which are considered ARARs or TBCs in the EE/CA. USEPA does not consider the Soil Screening Guidance as an ARAR or TBC for transport or disposal because it is not a standard for cleanup, transport, or disposal. USEPA requests that the State identify any potential ARARs and TBCs for USEPA's consideration prior to implementing this action.

Comment (Excavation Area): Will soils from the Unnamed Arroyo be excavated for disposal?

Response: USEPA does not plan to excavate soils from within the Unnamed Arroyo as part of this removal action. The removal site evaluation investigations showed that average exposure point concentrations within the arroyo do not pose an unacceptable risk because they are below cleanup levels that are protective of humans and the environment.

Comment (Geotechnical Testing and Construction Water Testing): The State of New Mexico requested additional detail and results for geotechnical testing of the mine waste rock. The State requested testing of all water used in construction and dust control to ensure the water quality meets State of New Mexico water quality standards for all waste which could be transported and disposed of at the Red Rocks Disposal Facility.

Response: USEPA agrees and, consistent with the required permitting process, will work with the NWNMRSWA to perform and report the required geotechnical testing. USEPA will also work with the NWNMRSWA to test all water to be used for construction and dust control to ensure compliance with the appropriate state, Tribal and federal standards.

II-3. Concerns over Deficiencies and Discrepancies in the EE/CA

Rio Algom Mining, LLC (RAML) submitted many comments claiming: the EE/CA contains deficiencies and discrepancies in the evaluations of alternatives; the EE/CA contains inconsistencies with EE/CAs USEPA has published for similar Navajo Nation AUM sites; and the EE/CA did not analyze all viable alternatives. The comments are summarized by broad categories below for responses.

Comment (Short-Term Effectiveness): The EE/CA inappropriately assigned a rating of "average" for short-term effectiveness to both Alternative 2 (Cap On-site) and Alternative 3 (Disposal at the Red Rocks Disposal Facility). The Non-Time Critical Removal Action (NTCRA) Guidance states that short-term effectiveness should analyze risks to the community and workers in the time it takes to complete the action. These risks include, among other items, potential exposure to the contaminants during that time, transportation accidents, fuel consumption and greenhouse gas emissions. The EE/CA states that Alternative 3 will have 10 times higher risk for construction and traffic fatalities and in fact, that risk is higher than the cancer risk under No Action. The greenness score which aggregates many short-term effectiveness considerations is significantly

higher for Alternative 2 than for Alternative 3. Given that Alternative 2 is significantly better than Alternative 3 for nearly every consideration, USEPA should re-evaluate the scoring for short-term effectiveness to use a consistent approach.

Response: USEPA agrees that Alternative 2 provides better short-term effectiveness than Alternative 3 and should have received a short-term protectiveness rating of Good. This rating change is reflected in the updated Exhibit 1 shown below at the end of this response. Exhibit 21 of the EE/CA would likewise change similarly. It is important to note that although Alternative 2 will take nearly as long as Alternative 3 (4 years versus 4.5 years) and Alternative 2 will likewise require extensive use of heavy equipment to move all of the mine waste rock from the three site areas to one consolidated repository, the extent of off-site truck hauling for Alternative 3 warrants a rating of Average while Alternative 2 warrants a rating of Good for short-term effectiveness. This distinction is reflected in the written evaluations. The ratings are meant to illustrate the evaluation and are not a "score." The recommended alternative is based on a comprehensive evaluation of all the criteria including both positive and negative impacts. In this case, while the short-term effectiveness of Alternative 2 may be somewhat better than the other alternatives, the long-term effectiveness of moving the mine waste rock out of a community and into a managed facility outweigh the difference in short-term benefits.

Exhibit 1. Summary of Alternative Ratings

Alternative		Attainment of Threshold Criteria[a]	Effectiveness	Implementability	Cost Rating (Million)[b]
1	No Action	Fail	Short-Term: Average Long-Term: Very Poor	Tech: Very Good Admin: Very Good	Very Good ($0)
2	Consolidate and Cap All Waste On Site	Pass	Short-Term: Good Long-Term: Good	Tech: Good Admin: Good	Good ($61.6)
3	Dispose of All Mine Waste Off Site at Red Rocks Disposal Facility	Pass	Short-Term: Average Long-Term: Very Good	Tech: Very Good Admin: Average	Poor ($182.5)
4	Dispose of All Mine Waste Off Site at a RCRA C or LLRW Facility	Pass	Short-Term: Very Poor Long-Term: Very Good	Tech: Very Good Admin: Good	Very Poor ($563)

Notes:

[a] Threshold criteria are (a) overall protection and (b) compliance with ARARs.

[b] Estimated costs are net present value.

Admin Administrative feasibility

LLRW Low-level radioactive waste
RCRA CResource Conservation and Recovery Act, Subtitle C
Tech Technical feasibility

Comment (Long-Term Effectiveness): The EE/CA claims that only short-term maintenance for revegetation would be necessary on-site after complete removal of contaminated soils and thus implies that there would be no long-term maintenance of the mine waste rock material. However, this is not accurate because mine waste rock disposal will require long-term maintenance at the disposal site. There was no evaluation in the EE/CA of whether a new facility at the Red Rocks Landfill Facility could handle this type of material and no technical basis for why maintenance and long-term protectiveness would be better at a new facility. Thus, the relative scoring of "Good" for Alternative 2 and "Very Good" for Alternatives 3 and 4 should be reconsidered.

Response: USEPA agrees that long-term maintenance would be required at any disposal facility. However, long-term maintenance at the proposed Red Rocks Disposal Facility would be the responsibility of the facility operator, with the State of New Mexico and USEPA providing oversight. If waste is left on the site, as would be the case under Alternative 2, the level of monitoring and maintenance required would be significantly greater. The proposed Red Rocks Disposal Facility is unique in that it would be newly constructed and permitted specifically and only for mine waste rock from the Quivira Mines and Section 32/33 Mines sites. The current landfill operator has over 30 years of experience operating and maintaining a RCRA-permitted solid waste landfill with no significant permit violations. In many respects, management and maintenance of mine waste rock is less complex than municipal solid waste. The permit issued by the State of New Mexico for the new repository will specify the monitoring and maintenance requirements and it will require the operator to maintain financial assurances to cover the cost of cleanup in the case of future inability to pay.

Management and monitoring of the mine waste rock at the proposed Red Rocks Disposal Facility will be easier to implement at a permitted, operating facility. Disposal of the mine waste rock at the Red Rocks Disposal Facility keeps the waste away from the residential communities and in a more geologically suitable location. The current locations of the mine waste rock are at the base of steep mesas with uncontrolled water run-on and near major arroyos that could cut into the mine waste rock. Finally, the mine waste rock can be partially buried at the proposed Red Rocks Disposal Facility to reduce surface elevation contours and thus offer better erosion control than any on-site consolidated configuration.

Comment (Implementability/Technical Feasibility): The EE/CA did not correctly apply the criteria as defined in the NTCRA Guidance for implementability and should have rated Alternative 2 as "Very Good," rather than "Good," and Alternative 3 as "Good," rather than "Very Good". Key criteria considerations were not fully evaluated including:

- Construction: Alternatives 2 and 3 both require the design and construction of a new disposal cell. However, the EE/CA does not provide an explanation for why construction at the Red Rocks Disposal Facility would be any different than construction on-site.
- Demonstrated Performance: Because neither location has demonstrated performance, there is no difference between Alternatives 2 and 3 for this consideration.
- Adaptability to Environmental Conditions: Both Alternatives 2 and 3 require completely new facility design and no evidence is provided for why one may be more adaptable to environmental conditions than another.
- Timing: The EE/CA says that Alternative 2 would take years less to plan and complete than Alternative 3.

Here, the first three considerations for technical feasibility were indistinguishable between Alternatives 2 and 3 and the timing consideration was shorter for Alternative 2. It would thus be appropriate to revise the scoring to reflect that Alternative 2 is better than Alternative 3 for technical feasibility. At a minimum, Alternative 2 should not score lower than Alternative 3 in technical feasibility.

Response: The primary difference between Alternatives 2 and 3 is in management, monitoring, and maintenance in perpetuity, which are not described in the bullets from the commenter, but are described in section 4.3.6.2 Implementability of the EE/CA. The requirements for managing, monitoring, and maintenance of an on-site repository under Alternative 2 would also include extensive institutional controls which would lower the rating for implementability. The management, monitoring, and maintenance for Alternative 3 is performed by the Red Rocks Disposal Facility operator with State of New Mexico and USEPA notification and oversight. Therefore, the rating for this component of implementability is significantly higher for Alternative 3 than for Alternative 2. Note that timing is evaluated under Effectiveness criteria rather than Implementability. As previously stated, the recommendation for Alternative 3 was not based on a computation from the ratings. Because the comparative analysis rating for Effectiveness did not differentiate between the two alternatives, this did not affect the selection of the recommended alternative.

Comment (Implementability/Administrative Feasibility): The EE/CA underrepresented the difficulties in engineering and permitting a new uranium mine waste disposal facility. RAML believes that the 2-5 year estimated timeframe to permit a new disposal facility at the Red Rocks Landfill Facility is unrealistic. The planning and technical work is likely to take 2-5 years and the permitting process is likely to consume an additional 2-5 years. Finally, the controversial nature of uranium recovery and uranium waste disposal in northwest New Mexico may prevent issuance of required permits. Thus, the rating for administrative feasibility for Alternative 3 should have been “Poor”. Finally, because on-site work requires no permits, the rating for administrative feasibility for Alternative 2 should be revised from “Good” to “Very Good”.

Response: The timeframes for permitting in the EE/CA are based on estimates provided by the State of New Mexico, which supports the recommended Alternative 3. The EE/CA was written

based on the best available information. Opposition by communities to uranium waste disposal is likely to impact the timing of all alternatives. As shown in this Response to Comments, USEPA has received community comments opposing Alternatives 2, 3 and 4. Based on the implementability considerations described in the EE/CA, the assigned rating for Alternative 2 was better than the rating for Alternative 3 and the text explains that Alternative 2 is administratively easier than Alternative 3. A reason provided in the EE/CA for why Alternative 2 was not rated "Very Good" is that, even though no permits are required, there would be significant coordination with multiple Chapters and the Navajo Nation required for consolidating and capping on-site.

Comment (Cost): The EE/CA did not describe how alternatives were evaluated based on cost. Alternative 3 is three times more expensive than Alternative 2 and thus should have been scored as "Very Poor" rather than "Poor". The inclusion of the very high cost of Alternative 4 may skew the scoring and it should have been screened out according to language in Section 4.1.1 that an option can be eliminated if its cost is substantially higher than other options and at least one retained option is protective.

Response: The EE/CA did show the overall costs for all alternatives and those costs are more informative to decision making than the ratings. As previously explained, all the ratings are subjective, are not computed as a score, and are meant for comparative purposes. Alternative 4 was retained to be consistent with all other EE/CAs for Navajo Nation AUM sites and at the request of the Navajo Nation government during consultation. The language on being able to eliminate a high-cost alternative is "can be" rather than "must be," therefore, USEPA chose to retain Alternative 4 despite its high cost.

Comment (Cost-Benefit): Alternative 3 which costs $121 million dollars more than Alternative 2 and has a traffic fatality risk at least 10 times higher should be scored as "Very Poor" when there is at least one alternative with 10 times less short-term risk and similar long term performance characteristics available at one third of the cost.

Response: The comment is labelled as "Cost Benefit" but there are no such criteria, although USEPA does weigh the benefits and costs in the Comparative Analysis section of the EE/CA. The comment implies that the "Very Poor" score should be assigned as an overall score, but as previously stated, each individual rating is included for comparative purposes, and they are purposefully not aggregated or computed into an overall score. The 10-times difference is between a potential risk of 0.1 and 0.01 for traffic fatalities and is small for both alternatives 2 and 3. It is not appropriate to compare potential short-term risk numbers to long-term excess lifetime cancer risks. The excess lifetime cancer risks are computed for a single lifetime duration; however, those risks do not end after the one-lifetime but continue into the future. This is one reason a small difference in long-term effectiveness may outweigh a larger difference in short-term effectiveness and one reason ratings are not aggregated.

Comment (Uncertain Cost Estimate): Exhibit 17 shows the strong dependency of the total cost of Alternative 3 on the tipping fees. However, the EE/CA states that "Exact costs have not been obtained for the Red Rocks Disposal Facility yet. This placeholder cost … will be updated with

information from the facility when available." It is inappropriate to use a placeholder cost to support selection of a recommended alternative. Additionally, the EE/CA does not establish the facility's experience with uranium waste disposal and offers no explanation for why the costs are three to four times lower that costs at facilities with appropriate experience such as Deer Trails. This benchmarking suggests that the estimated tipping fees are significantly underestimated, which would affect the evaluation of a recommended alternative.

Response: The estimated tipping fees in the EE/CA were provided by the NWNMRSWA (the owners/operators of the Red Rocks Landfill Facility and the proposed Red Rocks Disposal Facility). While the cost estimates in the EE/CA are preliminary estimates, they are likely to be reasonably accurate and more than a placeholder as termed in the EE/CA. The lower estimated tipping fees for the uranium mine waste rock at the proposed Red Rocks Disposal Facility compared to current fees at licensed hazardous waste facilities such as Deer Trails reasonably reflects the nature of the waste. The waste from the Quivira Mines site is rock and dirt with low concentrations of uranium. A hazardous waste facility must handle combinations of liquids and solids with much higher concentrations of a broad range of contaminants. Thus, mine waste rock and dirt with low concentrations of uranium, radium, and metals are easier to handle and manage, leading to the lower costs for the construction, operation, closure and post-closure maintenance of the proposed Red Rocks Disposal Facility. Note that any tipping fee quoted at the time of the EE/CA that is provided by any facility is considered an estimate, since the actual fee at the time of waste disposal is likely to differ from the quote used for the EE/CA.

Comment (Inconsistent Selection of On-Site Capping Versus Off-Site Disposal): Several other recent EE/CAs recommended on-site capping, including Ruby Mines, Mariano Lake Mine, and Charles Huskon #12 Mine. The scoring in the EE/CAs did not make clear the reasons why on-site were considered best for these sites and off-site disposal was considered best for the Quivira Mines site. In addition, the EE/CA did not sufficiently analyze institutional controls or explain why unrestricted use was considered so important for the Quivira Mines site but not the other mines.

Response: The other mines mentioned in the comment each have specific site conditions which differ from the Quivira Mines site. The location of the Ruby Mines waste repositories is better suited geomorphically for on-site capping and is not immediately adjacent to homes. The Mariano Lake Mine EE/CA recommended complete excavation with disposal at another mine site (Mac #1) which has better geomorphic conditions to allow on-site capping. The Charles Huskon #12 Mine is a pit mine where the mine waste rock was placed back into the pit below grade. The location is also geomorphically better suited for long-term mine waste rock disposal than at the Quivira Mines site. The Charles Huskon #12 Mine has high concentrations of uranium in the side walls and surrounding land surface such that complete removal would not reduce exposure. The Quivira Mines site is not in a geomorphically stable area and is adjacent to major arroyos (more than 10 feet deep) with high energy water flows located immediately adjacent to the mine waste rock piles. In addition, there are homes within several hundred yards of CR-1. Alternatives that result in unrestricted use of Navajo lands after the action are always a favorable outcome, but it is not the only deciding factor. Often, other mine sites do not

have a nearby off-site disposal facility or suitable prospective regional repository as is the case for the Quivira Mines site. The text in all of the EE/CAs referenced in the comment described balancing unrestricted use against other criteria such as short-term and long-term effectiveness, implementability and cost. This balancing cannot be accomplished with a simple assignment of scores.

Comment (Uncertainties with Alternative 3): The EE/CA did not adequately evaluate the: availability of land and size required for the proposed disposal facility; suitability of environmental conditions at the proposed facility; ability to comply with the CERCLA off-site rule with no operating history; land use at the proposed facility and surrounding areas and need for long-term institutional controls; or availability of specialized workers and equipment to run a uranium disposal facility.

Response: The NWNMRSWA property covers 640 acres and the proposed repository will be located in a suitable portion covering less than 25 acres. The environmental conditions at the property are suitable for mine waste rock disposal as evidenced by the permitted solid waste landfill at the facility. Complete details about the repository design and construction will be developed and available through the State of New Mexico permitting process. The CERCLA Off-Site Rule determination will be made by USEPA Region 6 considering the operating history of the solid waste landfill and the permit conditions for the proposed uranium mine waste rock facility. It is likely that institutional controls will be necessary for the areas of the proposed uranium mine waste rock repository at the Red Rocks Landfill Facility. This land is privately owned and will be under institutional controls because of the adjacent municipal solid waste landfill, so future development or impacts on housing or traditional Diné use is not likely, unlike at the Quivira Mines site.

Comment (Long-Term Viability of Red Rock Landfill Operator): The EE/CA did not provide information about the NWNMRSWA, which is the entity that will operate the proposed facility, and little information is publicly available. This precludes any ability to judge the ability of the NWNMRSWA to properly manage the uranium waste. Is the NWNMRSWA a government agency? How is it funded? Does it have the qualifications to manage the waste? Will it be viable to manage the waste in the long-term? What type of waste would be accepted and how would it be handled?

Response: USEPA acknowledges the EE/CA did not provide detailed information which could help evaluate the short-term and long-term capabilities of the Red Rocks Disposal Facility's owner/operator. This information is best suited for the State of New Mexico to consider and evaluate in its permit process. The EE/CA included consideration of the implementability uncertainty related to whether the State would approve a permit. For short-term and long-term effectiveness, evaluation of the viability and suitability of the Red Rocks Disposal Facility operator will be addressed by the State in its permitting process. The State of New Mexico will require financial assurances from the NWNMRSWA as part of the permit process to ensure that the facility continues to operate even if the current operator becomes unviable.

The NWNMSRWA is a private entity formed from several local agencies and regulated by the State of New Mexico. The proposed Red Rocks Disposal Facility would be funded by the tipping fees for the disposal of mine waste rock from the Quivira Mines and Section 32/33 Mines sites. The State of New Mexico has indicated that only mine waste rock from the Quivira Mines and Section 32/33 Mines sites will be allowed to be disposed of at the new repository within the Red Rocks Disposal Facility.

Comment (Not All Viable Alternatives Were Developed): Several alternatives were screened out which had the same limitations as the recommended alternative, such as a new permit required, new construction required and long lead times. The EE/CA should explain why these limitations were responsible for screening out several alternatives while the limitations did not negatively impact the selection of the recommended alternative. Specifically, there were two suitable locations screened out which have many benefits compared to the proposed Red Rocks Disposal Facility. The UNC Mill, which is the selected disposal facility for the nearby NECR Mine site, is close to the Quivira Mines site, is on private land, will be managed long-term by the DOE, and is designed to handle uranium waste. The Ambrosia Lake area is outside of the Navajo Nation, has private land with similar uranium mine waste that could function as a repository location without contaminating new land, the Quivira Mines waste is a small fraction of waste already present, the haul distance is similar to the proposed Red Rocks Disposal Facility, and joint and several liability concerns could be resolved with a dedicated cell.

Response: With regards to the UNC Mill, the NRC stated only waste from NECR would be considered in the permit modification for the former mill to accept mine waste rock. Thus, there was no currently viable alternative for disposing of the Quivira Mine waste rock at the former UNC Mill. The Ambrosia Lake area is heavily impacted by multiple mill sites and mine sites with downgradient groundwater contamination impacting a community and private water wells. USEPA Region 6 and the State of New Mexico are considering using the Ambrosia Lake area for disposal of mine waste from mines in that area rather than from outside Ambrosia Lake. USEPA's OLEM issued a policy memorandum in November 2024 stating USEPA's position on waste disposal and management in the Ambrosial Lake area. Thus, the Ambrosia Lake region was screened out.

Comment (Target Risk): The EE/CA should not discuss other issues or sites without a clear nexus to the issues at the Site. In particular, the EE/CA quotes USEPA policy which allows an upper limit to cancer risk of $3x10^{-4}$ but then selects $1x10^{-4}$ as the target risk for cleanup at the Quivira Mines site. The EE/CA should justify the selection of a target risk which is lower than that allowable under USEPA guidance. This is especially applicable to the material at the former Kerr-McGee ponds area on UNC property which pose an estimated potential risk of $2x10^{-4}$, which is lower than the risk allowed in USEPA guidance, yet USEPA is still selecting excavation for the former Kerr-McGee ponds.

Response: The acceptable risk range as published in regulations and law is 10^{-4} to 10^{-6}. This is a purposefully wide range and without a defining integer in front of the scientific notation. USEPA policy interprets 10^{-4} as allowing up to $3x10^{-4}$, but that is not a default upper limit. In fact, USEPA

frequently selects $1x10^{-6}$ as a target cancer risk and generally uses $1x10^{-4}$ in making risk management decisions. The point made in the EE/CA is that $3x10^{-4}$ is the absolute upper bound and that the selected cleanup goal is more conservative than that, while still being less conservative than 10^{-6}. The $3x10^{-4}$ upper bound is rarely used to develop cleanup levels and almost never used for arsenic. Because both Ra-226 and arsenic are present in uranium mine waste, consistency with typical decisions for an upper bound for arsenic was one factor in using $1x10^{-4}$ as the target cancer risk. Finally, while using a higher target cancer risk would have allowed for no excavation on UNC property, the Quivira Mines waste at the former Kerr-McGee Ponds is directly adjacent to Navajo lands with a low risk of migration. Therefore, USEPA considered site-wide consistency when determining the cleanup level.

Comment (Inaccurate Corporate History): The EE/CA does not properly describe the corporate history of the Quivira Mining Company.

Response: USEPA will ensure that future documents more accurately describe the corporate history.

Part III. Comments on Health Effects, Historic Impacts from Uranium Mining, US Government Injustice, Honoring Navajo Culture and Community Engagement

III-1: Mistrust of the US Government and US Government Injustice

Comment (Government Discrimination Against Indigenous People): Many commenters stated that the US government has a history of ignoring and or harming indigenous people and the US government and USEPA continued this with inadequate responses to the harmful effects of uranium mining. Spills in non-native communities get cleaned up much faster. The slow response to cleaning up the waste is discrimination.

Response: USEPA acknowledges the distrust of the US government agencies by the Navajo Nation. USEPA addresses the AUMs on the Navajo Nation using the same CERCLA authorities and process as other sites around the country. In addition, USEPA incorporates several policies and processes specific to CERCLA cleanups on Tribal lands that require additional effort, and sometimes additional time. For example, consistent with the USEPA Policy on Consultation with Indian Tribes, USEPA engages in government-to-government consultation with Tribal governments when USEPA actions or decision may affect Tribes. As stated above, USEPA implemented a government-to-government consultation process on the EE/CA and Action Memo that was agreed to by both USEPA and the Navajo Nation government. In addition, cultural surveys and biological clearances and the need for cultural monitors during work also require additional resources and time. USEPA also incorporates Navajo-specific lifeways into our risk assessments to reflect the unique exposure considerations more accurately for Navajo lifeways used by the Navajo people. Finally, the complex network of Chapters and Chapter governments necessitates more extensive community engagement which takes resources and time. USEPA works hard to effectively and efficiently cleanup AUMs on the Navajo Nation.

Comment (Community Engagement): Several commenters stated that there is very little trust from Native communities for the federal government. This lack of trust has caused an

unintended consequence in the EE/CA process that Diné communities are now in conflict over alternatives in the EE/CA. USEPA and the Navajo Nation leaders should explore peacemaking processes consistent with the Navajo Nation EPA's Guidance. Many community members live in remote areas and do not have computers or internet access. The outreach by USEPA depended too heavily on internet and USEPA should use culturally appropriate methods to engage with community members. Several community members commented that the presentation at the public meeting was hard to follow, used lots of jargon and provided information that conflicted with previous presentations. The presentation focused on the "USEPA will" which sounds like USEPA already decided. They said that the Red Rocks Disposal Facility "will be permitted" and that the facility "will be created". The presentation should make it clear that the permit is uncertain and that the communities will be able to voice their opinions during the permit process and that the permit may not be approved. USEPA should spend more time asking what the community wants. USEPA met with Thoreau Chapter officials several times prior to the public meeting and wasn't clear on where waste was coming from, they first said Churchrock, then Quivira and then at a later meeting added the Section 32/33 Mines. They also didn't explain that the waste was uranium waste during the first meetings. One person said that Alternative 3 was presented at a Navajo Council meeting and that this looks like a predetermined decision and that the community comments don't matter.

Response: USEPA acknowledges the lack of trust that Native communities have towards the federal government and appreciates the feedback and advice on ways to build trust. USEPA is working with communities, Chapters and Navajo Nation government agencies to build trust and approaches that transcend individual EE/CAs and looks forward to seeking input from the communities and making additional progress in the future. USEPA appreciates the advice on engaging with community members and will continue to work with Navajo Nation and Chapter officials as well as the individual communities to ensure that all interested people have the opportunity to share their experiences and knowledge and to learn about what USEPA is doing.

USEPA also appreciates the feedback on the public meetings. USEPA will continue to work with the Navajo staff and Navajo Nation EPA to improve future presentations and the information shared with communities. Some issues have evolved over the years so new information may be different from what was presented years ago. USEPA will work with our partners to identify specific issues that may require explaining changes to technical approaches in future meetings.

USEPA first met with the community of Thoreau at the Chapter House on August 6, 2023, and outlined that one alternative being considered to clean up the Quivira Mines site was to take it to a proposed new facility on the property of the Red Rocks Disposal Facility. Between that meeting and meetings held in Thoreau in Winter 2023, the State of New Mexico allowed USEPA to also consider mine waste rock from the much smaller Section 32/33 Mines site to be disposed of at the proposed Red Rocks Disposal Facility. This permission was granted because both the Quivira Mines site and the Section 32/33 Mines site impact both Navajo Nation and private New Mexico lands. In winter 2023/2024, USEPA conducted a two-step community engagement process with the Thoreau, Baca/Prewitt, and Casamero Lake Chapters at which time USEPA discussed the inclusion of the Section 32/33 Mines site. This community

engagement process included multiple listening sessions in December 2023 to hear community concerns, followed a month later by presentations to six Chapters to answer specific questions and concerns raised in the previous month.

USEPA acknowledges that the process to obtain the permits for the new repository at the Red Rocks Disposal Facility is still in the future and while that was explained during one part of the presentation, it should have been clearly conveyed throughout the presentation. Further, USEPA will try to avoid using terms like "will" for issues that have not yet been decided. USEPA presents a range of alternatives at the public meetings and asks for community input during this public comment process. USEPA is always open to feedback and wants to hear what the community members think.

III-2. Honor Navajo Culture and Mother Earth

Comment (Navajo Culture): Several commenters stated that the US government should honor the Navajo culture and the Navajo respect and love for Mother Earth and incorporate Navajo cultural principles into the EE/CA and cleanup process.

Response: Wherever possible, USEPA considers Navajo culture and Navajo respect and love for Mother Earth into our community engagement and decision making. For example, USEPA worked with the Navajo Nation EPA to develop methods for incorporating Navajo lifeways into our risk assessment process. This results in more conservative risk management decisions at the Navajo Nation AUMs than at similar mines not on the Navajo Nation lands. USEPA has agreed with the Navajo Nation government to change our consultation process for decision making that allows for two input opportunities, one before a recommended alternative is selected and one after the recommended alternative is selected and public comments are collected and reviewed. USEPA acknowledges the importance of incorporating Navajo Fundamental Law into cleanup actions wherever possible and practical. While many aspects of the CERCLA process are rigid and set in federal law and regulation, USEPA works to go beyond the minimum requirements to incorporate Navajo lifeways.

III-3. Historic and Existing Health Impacts from Uranium Mining

Comment (Health Impacts from Uranium Mining): Many people stated that they had grandparents, parents and other relatives and neighbors with serious health problems as a result of uranium mining. They requested immediate medical care for the people suffering with breathing or other health problems. Some requested financial assistance or payment for the harm to their health. Can USEPA help applying for payments through the Radiation Exposure Compensation Act (RECA) program?

The NMELC, on behalf of the Red Water Pond Road community, stated that the EE/CA should have provided information on known impacts on the community from uranium mining to provide a more thorough and accurate comparison among the proposed alternatives. The comments summarized multiple technical articles and studies detailing known health impacts to the immediate community near the Quivira Mines site and other communities in uranium mining districts. Several people described their personal experiences of working in the confined

spaces of the mines with no safety or health protection and the serious health effects such as lung transplants that they went through with no medical support from the government. Many people from the Red Water Pond Road community talked about living near the NECR and Quivira Mines sites and how that hurt their physical and mental health. Many of them have moved away from their land for the sake of their children and they and their children described how much they want all the waste removed so they can move back and get their traditional lives back. Several people described their relatives going to war as code talkers because it was an emergency. No one said let's wait or let's think some more, when an emergency happens we have to act. The health effects to our people are an emergency and the government has to act like it's an emergency.

Response: USEPA acknowledges the harmful health effects and the physical, emotional and mental impacts that communities have suffered from the legacy of uranium mining. The selected removal action addresses the source of potential risk to communities and the environment and is protective of public health and the environment.

Addressing the risks and the community impacts of the mine waste rock at the Quivira Mines site is critically important and a high priority for USEPA. At the same time, there are many complex issues that require discussions among multiple agencies and communities before USEPA makes a decision.

The risk assessment in the EE/CA summarizes many harmful health effects from uranium mining and potential exposure to mine waste rock, and these risks are the reason taking an action is warranted. USEPA also understands the importance of living on ancestral lands and being connected to the land. The selected removal action, Alternative 3, involves removing all the mine waste rock from the Red Water Pond Road community and will allow for unrestricted future use of the land.

Part IV. Technical and Legal Comments from the Diné Uranium Remediation Advisory Commission (DURAC)

IV-1. ARARs and Other Legal Issues

Comment (ARARs): Comments from DURAC addressed several topics as summarized below:

1. Principles from Navajo Nation laws, including the Diné Natural Resources Protection Act (DNRPA), Navajo Nation CERCLA and the Fundamental Law of the Diné, along with several other laws or regulations, should be included in the ARARs for the Quivira Mines EE/CA.
2. The EE/CA does not show how all alternatives other than Alternative 4 will meet the DNRPA, Navajo Nation CERCLA and Fundamental Law of the Diné requirements for permanent protectiveness and harmony.
3. The EE/CA does address how ARARs for managing radon gas would be achieved under Alternative 3. The ARARs list must include the 2012 Navajo Nation Radioactive and Related Substances Equipment, Vehicles, Persons and Materials Transportation Act as an ARAR. In addition, the ARARs list must include the entire statement from the Navajo

Nation in the Second Five Year Plan. Part of the statement concerned returning *leetso* to its natural balance with Mother Earth.

4. The Navajo Nation Bill of Rights requires "just compensation" for the loss of use of land, an issue not considered for Alternatives 1 and 2.

Response:

Item 1 - Principles from Navajo Nation Laws: USEPA recognizes Navajo sovereignty and understands the importance of Navajo laws, such as Navajo Nation CERCLA and the Fundamental Law of the Diné, to the Navajo people and government. To ensure a proper interpretation and implementation of Navajo laws and customs, USEPA developed the ARARs in coordination with the Navajo Nation Department of Justice and Navajo Nation EPA. Thus, the final ARARs include many specific Navajo Nation laws and regulations. The analysis concerning Fundamental Law and Navajo Nation CERCLA and the descriptions and utilization are approved by the Navajo Nation.

The ARARs tables contain explanations that clarify that Fundamental Law and the accompanying 2022 Guidance will be TBCs to the extent they do not conflict with the U.S. CERCLA or the NCP.

Items 2 and 3 – CERCLA and Radon ARARs: The requirements listed in the comments concerning Navajo Nation CERCLA are the same as, or similar to, but not more stringent than the U.S. CERCLA and consequently are not listed as ARARs. By meeting the requirements of the U.S. CERCLA, the design for the recommended alternative (Alternative 3) will also meet the requirements described in the comments concerning the Navajo Nation CERCLA, Fundamental Law and issues of permanent protectiveness and harmony. The selected alternative for disposal at the proposed Red Rocks Disposal Facility meets the requirements described in the comments for permanent closure and elimination or substantial reduction in the release of radioactive substances for current and future generations. The Quivira Mines site will be reclaimed to restore balance and harmony in the Navajo communities impacted by the Site after the complete removal of the mine waste rock. The proposed Red Rocks Disposal Facility is on private property, but even so, the design would incorporate final closure that includes revegetation with the goal of ensuring balance with the surrounding natural environment.

ARARs are for on-site actions and do not apply to off-site transport or disposal. Thus, the EE/CA included potential ARARs for radon flux for the on-site capping alternative, but not for off-site disposal. Radon flux at the proposed Red Rocks Disposal Facility would be regulated by the State of New Mexico and complied with by the disposal facility operator. Similarly, the Radioactive Materials Transportation Act applies directly to off-site transport and would be enforced by the Navajo Nation when on Navajo Nation roads and is thus not an ARAR. The Five-Year Plan is not an ARAR because ARARs must be promulgated laws or regulations.

Item 4 - Compensation: Under the selected Alternative 3, the land at the Quivira Mines site will be released for unrestricted use and therefore would involve no taking of land rights or restrictions on traditional Navajo lifeways usage.

Comment (Design Issues at Red Rocks Disposal Facility): DURAC submitted multiple comments with references to technical papers and advice on how to appropriately design a cover that could be durable for the length of time necessary to contain uranium mine waste rock. DURAC noted repeatedly that the EE/CA presented insufficient information concerning design and operation of the proposed Red Rocks Disposal Facility and how it would meet legal requirements for radon flux, longevity, erosion resistance, water infiltration and other design considerations.

Separately, a video presented by USEPA at a public meeting and a presentation by the State of New Mexico provided example design concepts including a 90-foot-high pile with steep and long slopes that differ from the design concepts in the State of New Mexico "Joint Guidance for the Cleanup and Reclamation of Existing Uranium Mining Operation in New Mexico (2016)." The clay radon barrier shown in the presentation would soon become ineffective due to settling and desiccation cracking. The presentations apparently did not consider geologic information about the site available in the NM Bureau of Geology and Mineral Resources Open-File Geologic map for the quadrangle containing the proposed facility. The presentation by the State of NM stated that there would be a requirement for financial assurance lasting 100 years. The NWNMRSWA thus knows that their long-term requirements expire after 100 years; however, the Navajo tribal members living near the repository expect their descendants will be on the land for many generations. The arid conditions at the site may not always support vegetation which would decrease the effectiveness of the ET cover. The EE/CA did not provide information on how water flow and related erosion would be controlled.

Response: USEPA appreciates the detailed information concerning ET cover design and will work with the NWNMRSWA and the State of New Mexico to ensure the design follows best engineering and geotechnical design methods and principles. USEPA acknowledges, as is typical of this stage, that the EE/CA purposefully did not contain details about the design and operation of the proposed Red Rocks Disposal Facility. Both the video and the PowerPoint presentation at the public meeting were conceptual in nature and do not represent any actual design or design requirements. If the video appeared to present a 90-foot pile, it was a result of animation distortion, and the final pile will likely have gentler slopes and will not be 90 feet high.

The design of the repository will go through the full permitting process by the State of New Mexico and the final design will consider and account for the local geology and topography, meet the legal requirements for radon flux and other considerations, and incorporate appropriate engineering and geotechnical principles. The design will account for vegetation or lack thereof, representative of the local arid conditions. The slopes, gravel admixtures, swales, water run-on/off controls, and other features will be designed to properly control erosion considering the arid environment with sudden rainstorms. Factors such as probable maximum precipitation (PMP) and probable maximum flood (PMF) events will be incorporated into the calculations. The design will go through a separate public review process as part of the permitting process. The State of New Mexico groundwater protection permit will not have a duration, and thus will exist in perpetuity. The permit will stipulate the timeframes and criteria for monitoring and maintaining the disposal facility.

Comment (Traffic): The EE/CA did not consider damages and repairs to roads, the impacts to traffic on local roads and impacts to traffic on the major transportation corridor on I-40. The comment suggests considering various road improvements and consulting with the US Federal Highway Administration (FHWA) and the New Mexico Department of Transportation (DOT).

Response: USEPA appreciates the suggestions and will likely consult with both the US FWHA and New Mexico DOT during the design process and will consider whether any road improvements prior to the action, or repairs after the action, are necessary. However, the action will add an estimated 96 trucks per day to the existing I-40 traffic of, on average, 14,000 cars and 6,000 trucks daily, which is a small fraction of the daily traffic and thus is expected to have a limited impact on I-40.

Comment (Groundwater): The Quivira Mines pumped large amounts of water from the mine workings into on-site ponds with likely overflow or discharge into arroyos. The water would thus infiltrate and contaminate groundwater. The EE/CA does not address potential groundwater contamination.

Response: The comment is correct that the dewatering discharges may have seeped into groundwater and that groundwater was not addressed in the EE/CA. The EE/CA purposefully does not evaluate any potential groundwater impacts which could require a different cleanup from that required for the dirt and rock waste cleanup. Consequently, the EE/CA only addresses potential risks from exposure to the dirt and rock mine waste and contaminated soils at the surface. USEPA completed a groundwater investigation of the main water bearing aquifer beneath the Quivira Mines site in December 2023 titled, *Impact of Mine Water Discharge in the Upper Gallup, Zone 3*. This document can be found in the Administrative Record.

Comment (Subsidence): The comment states that mine workings with room and pillar techniques that are less than 150 feet deep may develop sinkholes and that mine workings deeper than 150 to 200 feet deep may develop a surface sag that is a shallow depression in the ground surface. The mine workings were 1,500 to 1,800 feet deep at the Quivira Mines and the mining involved room and pillar techniques. A common practice with room and pillar was to trim the pillars and retreat near the end of the mine operation. This could lead to subsidence at the surface and thus monitoring for subsidence should be conducted in the future. This would be especially important if large surface mass such as a new uranium repository was added.

Response: The selected alternative includes the removal of the existing large mine waste rock pile. As the comment correctly states, most of the Quivira mining operations were deep at 1,500 to 1,800 feet below the surface and in solid sandstone bedrock overlain by multiple layers of solid sandstone and shale. The comment states that mine workings deeper than 150 to 200 feet may result in a shallow depression at the surface. The 1,500 to 1,800-foot-deep mine workings at the Quivira Mines are so deep that they are unlikely to exhibit even a shallow surface subsidence. This action addresses potential risks from exposure to mining-related contaminants. Concerns about subsidence would be addressed separately by the Navajo Nation.

Comment (Technically Enhanced Naturally Occurring Radioactive Material or TENORM): The USEPA policy concerning definitions of naturally occurring radioactive material (NORM) and TENORM must be applied to the Quivira Mine site EE/CA. While not specifically mapped in the Quivira EE/CA, there is petrified wood found throughout the Dalton formation which outcrops in several areas around the Site, as noted in other comments by DURAC. Petrified wood is frequently a source of NORM with elevated concentrations of uranium.

Response: The concepts and definitions of NORM and TENORM in the Quivira Mines site EE/CA are consistent with the document referenced in the comment and material which has been disturbed in a way that increases potential for exposure is considered TENORM in the EE/CA.

Comment (Design Issues at the Quivira Mines Site): The EE/CA describes geomorphic considerations for on-site capping design, which appears related to experience by the Navajo Abandoned Mine Lands Reclamation Department (NAMLRD). However, the NAMLRD was addressing short-term physical hazards and not designing for the long-term. In addition, the capping design should include scientific calculations for erosion and mass wasting. Cover designs should also include gravel admixtures in the surface layer, however, the design with a gravel admixture used at the Bureau of Land Management Farmington site, Sandia site, or Sunrise Landfill should not be used as a basis. The EE/CA did not describe the computation of water flows and the water flows calculated for the previous work at the Low Water Crossing on Pipeline Road and the Quivira Bridge may not adequately address issues related to a repository.

Response: Alternative 2 (on-site capping) was not the recommended alternative and all mine waste will be removed from the Site under the selected Alternative 3. However, USEPA agrees that any capping design at any AUM on Navajo Nation should incorporate best engineering and scientific principles. USEPA plans to incorporate geomorphic design concepts, the local expertise of NAMLRD staff and standard engineering principles into any repository design on Navajo Nation. USEPA agrees gravel admixtures in the surface layer are beneficial and their design would be site-specific and not based on other sites. Water flows would also be calculated specifically for each site to address all issues related to repository design.

Comment (Principal Threat Waste): The EE/CA states that no distinct areas of principal threat waste (PTW) were found at the Quivira Mines site. The comment states that the Site includes a temporary cover, that surface testing was limited, and that PTW is likely to exist. The Site is similar to the nearby NECR site, should have PTW similar to the NECR site and should follow the criteria from the nearby NECR site. Following the NCP, PTW should be treated whenever practicable. If PTW is present and not treated, then containment poses extra difficulties with design for radon flux, water infiltration and other potential risks which would require separate design and handling.

Response: The sampling at the Quivira Mines site included many deep boreholes in addition to surface sampling and no distinct areas with concentrations that could be considered PTW were identified. In addition, the PTW identified at the NECR site was in settling ponds and the similar ponds at the Site were previously reclaimed by the PRP, have since been extensively sampled, and did not show concentrations at levels that could be considered PTW.

PTW is a concept to promote treatment and does not represent a "bright line" cleanup number or a requirement for a particular response or handling. The types of waste described as PTW in the USEPA guidance "A Guide to Principal Threat and Low-Level Threat Waste" are mobile liquids or source materials which are unlike the dirt and rock comprising the mine waste rock at the Quivira Mines site. Even though PTW was not identified at the Site, the EE/CA still followed the intent of the policy and performed a full evaluation of treatment approaches.

Comment (Ablation and Radon): The commenter disagrees with statements in the EE/CA that ablation treatment "would increase costs without significantly reducing risk." The commenter stated that ablation treatment would remove higher concentrations of Ra-226 and thus reduce the radon barrier thickness. Treatment could also reduce the size and location of a bio-barrier and thus reduce the costs of a bio-barrier. If PTW recovery will be a requirement for waste transportation or placement, then ablation will substantially eliminate that construction cost. The commenter stated the cover design to manage water storage and infiltration will not allow for proper management of radon flux with the arid conditions and resulting low soil moisture found in the region.

Response: USEPA agrees that treatment should always be evaluated as a first option and ablation may have some uses at Navajo Nation AUMs. However, ablation was fully evaluated for the Quivira Mines site, and it requires extra handling of all waste through the treatment input and output, does not reduce the overall volume of waste requiring disposal and creates a separate volume of highly concentrated waste requiring disposal at a facility such as Deer Trails or Waste Management Solutions (both over 500 miles away). These factors increase the short-term risk, increase the project construction duration, greatly increase the cost, and do not decrease the risk at the new repository at the Red Rocks Disposal Facility. While the overall concentrations in the waste in the repository would be slightly lower, they would still contain concentrations that pose an unacceptable risk.

An ET cap, whether on-site or at a facility such as the one proposed at the Red Rocks Disposal Facility, can be safely designed and implemented to meet radon flux standards and prevent water infiltration even at the concentrations identified as PTW at the NECR site, which are significantly higher than those found at the Quivira Mines site. The soil gradation requirements and functional soil moisture levels are compatible for purposes of managing both radon flux standards and water and will be addressed in the design.

Concentrations of Ra-226 at the Quivira Mines site, and even in the material identified as PTW at the NECR site, are much lower than the mill waste regulated under the UMTCRA standards at mill sites and therefore the UMTCRA and Clean Air Act standards for radon flux would be readily achievable. The cover design, including radon attenuation, would be unchanged because the radon concentrations generated from the Ra-226 concentrations found in the mine waste rock at the Site would not drive the need for a thicker cover than needed post-treatment. The design is driven by moisture retention and release and erosion resistance with no future exposure of the mine waste rock, in addition to radon attenuation. Designs at similar sites have integrated radon attenuation with the cap without a separate radon barrier. A reduction in concentrations

also would not affect a bio-barrier. A bio-barrier is either selected to prohibit burrowing or not selected.

Comment (Paleontological Resources): Publicly available United States Geological Survey maps describe various paleontological resources found in the geologic units outcropping at the Quivira Mines site. While not typically considered as cultural resources, they may still have value for Diné traditional teachers and practitioners. The fossils at the Quivira Mines site are the property of the Navajo Nation and they are the decision makers for all consideration of fossils and similar objects.

Response: USEPA appreciates the information provided regarding paleontological resources and, as always, will work with the Navajo Nation Department of Natural Resources to determine areas, features or objects requiring special attention or protection during the cleanup activities. USEPA has conducted extensive cultural resources surveys in the area to identify such resources.

Comment (Alternative 2): The descriptions of Alternative 2 do not provide information on how it would permanently minimize human exposure to the uranium waste by isolating the waste from erosion that would be protective for future generations. A new Alternative 2B should be added that provides an assurance of longevity and an accurate presentation of construction and long-term maintenance costs for capping on-site.

Response: The descriptions and cost estimates in the EE/CA for Alternative 2 do provide accurate estimates of costs (within accuracy of 30% below and 50% above the actual cost) and describe the responsibility for permanently maintaining the on-site repository. The EE/CA provided general goals, concepts, and basic design details. The exact details would be provided in the final design, if Alternative 2 were selected. USEPA is selecting Alternative 3, therefore the detailed designs for an on-site closure repository were not developed and are not provided.

Comment (Alternative 4): Alternative 4 is the only alternative which permanently removes uranium mine waste from the Navajo Nation and thus complies with the DNRPA requirement of "permanent closure of uranium mining and processing sites … for the purpose of eliminating or substantially reducing releases of radioactive and toxic substances to the air, land, and water … to prevent or substantially minimize human exposure to such substances now and for future generations".

Response: Alternatives 3 and 4 both remove mine waste from Navajo Nation. Alternatives 2 and 3 also meet the objectives quoted in the comment from the DNRPA to eliminate or substantially reduce releases of radioactive materials. Both Alternatives 2 and 3 would be constructed with durable covers and maintained to eliminate exposure to the mine waste rock. Alternative 3 provides a better overall balance of the U.S. CERCLA criteria than Alternative 4.

Comment (Comprehensive Approach and Lack of Transparency): An additional aspect of a comment regarding the permanence of Alternative 4 asked for a comprehensive approach to all mines rather than individual EE/CAs. It also claimed that financial evaluations are not true and transparent for Off-Navajo disposal. The comment also claimed that comments at other public

meetings have made it clear that communities have a consensus for complete removal of mine waste away from the Navajo Nation to achieve balance and harmony.

Response: USEPA, the Navajo Nation EPA and other offices of the Navajo Nation are working comprehensively on the more than 500 AUMs on Navajo Nation. Each mine or group of mines to be remediated through USEPA's NTCRA process will go through the EE/CA process. The range of cleanup alternatives is limited, and each EE/CA includes the alternatives appropriate for the specific site considering the waste present and the site-specific conditions and considerations. The EE/CA process under CERCLA requires that USEPA consider community input for each non-time critical removal action taken. The cost estimates for disposal at Deer Trails or similar disposal facilities are accurate for the purposes of an EE/CA and transparent and would not change by evaluating more sites together in a comprehensive action.

USEPA disagrees that there is a consensus on communities' opinions regarding mine waste rock. Rather, many community commenters at the public meetings have stated the mine waste rock is from Navajo land and must remain on Navajo land to maintain harmony and balance. Others have said that mine waste should be removed from Navajo land, but there is no consensus on how to interpret or apply the concepts from Diné Fundamental Law. Many community members have stated a preference for avoiding having years of truck transport through their communities as would be required with off-Navajo disposal. USEPA has presented to and listened to comments from over 30 Navajo Chapters and the input from community members is diverse and USEPA has not heard community consensus around a single option.

Comment (ìishjání ádooniíl): The commenter expressed concern that recent Chapter meetings and presentations for the EE/CAs did not provide a forum for ìishjání ádooniíl (making things clear) and the Navajo practice of "talking things out." Perhaps some future opportunity will be established that implements "making things clear" and "talking things out" for both Diné and English speakers.

Response: USEPA appreciates the concerns for honoring the Navajo traditions for clear communication and will work with its Navajo partners to improve future communication. With this Navajo tradition of "talking things out" in mind, USEPA has been meeting with each community for years throughout the entire investigation and the EE/CA process. USEPA has met monthly with the Red Water Pond Road and Pipeline Road communities to discuss the Quivira Mines site over the last four years. The formal and legally required public meetings for the EE/CAs are just the last step in a long process of engaging with community members, Chapters and various Navajo Nation government officials. The community and Navajo Nation EPA have been, and continue to be, partners in the cleanup process every step of the way.

D. ACRONYMS

ARAR	Applicable or relevant and appropriate requirement
AUM	Abandoned uranium mine
bgs	Below ground surface
BIA	Bureau of Indian Affairs
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CIC	Community Involvement Coordinator
CIP	Community Involvement Plan
DURAC	Diné Uranium Remediation Advisory Commission
EE/CA	Engineering Evaluation and Cost Analysis
ET	Evapotranspiration
ICIAP	Institutional Control Implementation and Assurance Plan
IHS	Indian Health Service
MBJ	Mac and Black Jack Mines
MLM	Mariano Lake Mine
NECR	Northeast Church Rock
Navajo Nation EPA	Navajo Nation Environmental Protection Agency
NTCRA	Non-time-critical removal action
NTUA	Navajo Tribal Utility Authority
NWNMRSWA	Northwest New Mexico Regional Solid Waste Authority
PRP	Potentially responsible party
PTW	Principal threat waste
RECA	Radiation Exposure Compensation Act
RSE	Removal site evaluation
TBC	To be considered
USEPA	U.S. Environmental Protection Agency